

IN THE 30TH JUDICIAL CIRCUIT COURT FOR
ST. CLAIR COUNTY, ALABAMA
PELL CITY DIVISION

THOMAS C. DYER, ET AL,	)	
	)	
Plaintiff,	)	
	)	
vs.	)	NO. CV-93-250
	)	
MONSANTO COMPANY, ET AL,	)	
	)	
Defendant.	)	

Consolidated For Discovery With

SHELTER COVE MANAGEMENT,	)	
INC., ET AL,	)	
	)	
Plaintiff,	)	
	)	
vs.	)	NO. CV 94-50-PH
	)	
MONSANTO COMPANY, ET AL,	)	
	)	
Defendant.	)	

DEPOSITION OF MICHAEL A. PIERLE
Taken on behalf of the Plaintiff
October 28, 1998

COPY

REPORTER: Kevin J. Weichman, CSR-RPR No. 084-003189

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I N D E X O F E X A M I N A T I O N

QUESTIONS BY:	PAGE
MR. GRAMMAS	5

I N D E X O F E X H I B I T S

Plaintiff's 1	5
Plaintiff's 2	5
Plaintiff's 3	5
Plaintiff's 4	78
Plaintiff's 5	79
Plaintiff's 6	79
Plaintiff's 7	79
Plaintiff's 8	122
Plaintiff's 9	138
Plaintiff's 10.....	150
Plaintiff's 11.....	156
Plaintiff's 12.....	167
Plaintiff's 13.....	167
Plaintiff's 14.....	199

1
2
3
4
5
6
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THE DEPOSITION OF MICHAEL PIERLE, produced,
sworn, and examined on behalf of the Plaintiff, on
Wednesday, October 28, 1998, at 9:15 a.m., at the
offices of Taylor & Schroeder Reporting & Video, 7494
Ethel Avenue, St. Louis, Missouri, before KEVIN J.
WEICHMAN, a Certified Shorthand Reporter, Registered
Professional Reporter, and Notary Public within and for
the County of St. Louis, State of Missouri.

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IT IS STIPULATED AND AGREED by and between
counsel for the Plaintiff and counsel for the Defendant
that the deposition of MICHAEL PIERLE may be taken
pursuant to and in accordance with the provisions of
the Federal Rules of Civil Procedure pertaining to such
depositions, by and on behalf of the Plaintiff, on
Wednesday, October 28, 1998, at the offices of Taylor &
Schroeder Reporting & Video, 7494 Ethel Avenue, St.
Louis, Missouri, before KEVIN J. WEICHMAN, a Certified
Shorthand Reporter and Notary Public within and for the
County of St. Louis, State of Missouri.

* * * * *

MICHAEL PIERLE,
of lawful age, being produced, sworn, and examined on
the part of the Plaintiff, after answering "I do" to
the oath administered by the court reporter, deposes
and says:

MR. PECK: Usual stipulations?

MR. GRAMMAS: Does he want to read and sign?

MR. PECK: Do you want to read and sign, Mike?

MR. LOWE: We'd prefer him to.

(PIERLE EXHIBIT NOS. 1 THROUGH 3 WERE FIRST DULY
MARKED, RECEIVED AND MADE A PART OF THE RECORD.)

DIRECT EXAMINATION

1 BY MR. GRAMMAS:

2 Q. Could you state your full name for the record,
3 please.

4 A. Michael Anthony Pierle.

5 Q. And where do you currently live, Mr. Pierle?

6 A. 801 Greenwich Green Lane in Town and Country,
7 Missouri.

8 Q. Is that near St. Louis?

9 A. It is.

10 Q. And what is your current position?

11 A. Vice president of environmental safety and
12 health for Solutia.

13 Q. How long have you held that position?

14 A. Since the company was created the 1st of
15 September, 1997.

16 Q. If I understand from prior testimony, Solutia
17 was a company that Monsanto had spun off?

18 A. That's correct.

19 Q. And all of the people -- well, not all, but a
20 significant number of people making up employees of
21 Solutia currently were employed by Monsanto before
22 September of 1997?

23 A. That's correct.

24 Q. There wasn't a big shift in employees and that
25 type stuff, I mean, it was really basically a name

1 change and what was part of a division of Monsanto is
2 now a separate company?

3 A. That's correct.

4 Q. And what did you do, sir, before you were
5 employed as the vice president of environmental safety
6 and health for Solutia?

7 A. I virtually had the same position as vice
8 president of environmental safety and health for
9 Monsanto Company.

10 Q. And how long have you -- how long did you hold
11 that position?

12 A. I began that position somewhere around April
13 or May of 1991.

14 Q. And did your job responsibilities change from
15 Solutia -- once you became employed by Solutia, were
16 they basically the same as your job responsibilities
17 when you were employed by Monsanto?

18 A. They're basically the same.

19 Q. I was on the Internet for Monsanto and what I
20 observed on the Internet was a -- I guess a "bio," for
21 lack of a better word, on you. Is that an accurate
22 description of what I've just shown you now as
23 Plaintiff's Exhibit No. 1?

24 A. Is the content accurate; is that what you are
25 asking?

1 Q. Is this a bio of your -- basically a general
2 description of your background as far as education and
3 employment?

4 A. Yes.

5 Q. And before we start, I asked you to look over
6 that and I asked you if it was all true and accurate,
7 and you noticed that there may have been a couple
8 things that weren't quite correct. Could you clarify
9 what you believe may need some further discussion.

10 A. Yes. In the second-to-last paragraph on the
11 first page, it indicates that I'm a member of the board
12 of directors of the Monsanto Fund. That is incorrect.
13 It should be the Solutia Fund. And in the sentence
14 following that, which is: "He is chairman of the
15 National Wildlife Federation's Corporate Conservation
16 Council," that council no longer exists. So I'm no
17 longer in that capacity.

18 Q. Before September 1997, were you a member of
19 the board of directors of the Monsanto Fund?

20 A. Yes.

21 Q. So this is not necessarily incorrect, it's
22 just incomplete in that it should also state in here
23 that you're now a board of director for the Solutia
24 Fund?

25 A. That's a fair point. You had started and said

1 that was off of the Monsanto Internet. It's quite
2 confusing.

3 Q. Yeah. What I did, I typed in "Monsanto" and
4 some things from Monsanto came up and some things for
5 Solutia came up. This apparently has a Solutia
6 Internet address on it.

7 A. I would have thought so.

8 Q. And it's like www.solutia.com, et cetera, et
9 cetera. But I pulled this up off of the Monsanto site.
10 Apparently they're interrelated.

11 All right. Let's talk a little bit, then,
12 about some of the things contained in this Plaintiff's
13 Exhibit 1. Your educational history, could you just
14 briefly give that to me.

15 A. I graduated with a civil engineering degree
16 from Purdue University in 1966 and I received a
17 master's degree in engineering from Washington
18 University in 1971. And then in addition to those
19 formal degrees, I attended two sort of executive
20 management programs at the University of Texas and at
21 Stanford.

22 Q. Did you say your master's was in engineering
23 also?

24 A. Yes.

25 Q. And what were these executive -- how did you

2

1 describe them?

2 A. They're basically executive management
3 sessions. Probably the best description is they are
4 sort of mini-master's of business programs. But
5 there's no degree associated with them.

6 Q. Is it more of a seminar or course work?

7 A. It is -- it's basically course work.

8 Q. And how long did it take you to complete the
9 courses?

3

10 A. Well, the one program in Texas, I think, ran
11 four or five weeks and the Stanford program ran eight
12 weeks.

13 Q. And you did that continuously, you took time
14 away from Monsanto?

15 A. Yes.

16 Q. When did you attend these management --

17 A. I think the exact dates are on the exhibit.
18 The Texas program was in the '80s and the Stanford
19 program was in 1990.

20 Q. Because I didn't see -- and I've read this. I
21 didn't see those two mentioned anywhere in this
22 exhibit.

23 A. I thought that they were mentioned at the
24 bottom of it.

25 Q. You're right, they are. I'm sorry.

3

1 Once you got your first civil engineering
2 degree from Purdue in 1966, where did you begin work?

3 A. I joined the Monsanto Company.

4 Q. And what was the reason for you going to
5 Monsanto?

6 A. Best job offer that I had at the time.

7 Q. I mean, did you have any particular ties to
8 Monsanto, parents work there, friends work there,
9 anything like that?

10 A. None.

11 Q. And what did you start out as at Monsanto in
12 1966?

13 A. I started as basically a beginning engineer
14 position with the company.

15 Q. And what types of things would you do, did you
16 do?

17 A. I was in an environmental group at the time
18 that was basically doing environmental monitoring,
19 primarily air and water work.

20 Q. And what was it about a civil engineering
21 degree that qualified you to take that position?

22 A. In the civil engineering program at Purdue,
23 there are several elective areas, one of which was
24 environmental engineering, and I had taken a
25 concentrated set of courses in that portion of civil

3

1 engineering; and that as much as anything sort of
2 introduced me to the area and created interest and I
3 was able to, you know, find employment initially in
4 that field.

5 Q. Now, what types of things would you do as far
6 as monitoring environmental activities relating to air
7 and water for Monsanto at that time when you first
8 began employment with them?

9 A. Basically the work was looking at sampling
10 systems, developing certain sampling systems for water.
11 We were primarily concentrated there around
12 measurements of phenol and something called "COD," or
13 chemical oxygen demand. And in the air area, most of
14 the work that we were doing was sulfur dioxide
15 emissions primarily associated with power plants.

16 Q. Did any of your work involve studying the
17 impact that Monsanto's manufacturing operations had on
18 the environment?

19 A. You know, at that time we were looking at
20 certain, you know, effluents and discharges. You know,
21 to some extent that's looking at releases, but not
22 ultimate impact in the environment.

23 Q. Was there a division at Monsanto at that time,
24 when you first joined Monsanto in 1966, that was
25 charged with the responsibility of looking to see what

3

1 impacts Monsanto's manufacturing operations had on the
2 environment?

3 A. I don't know whether -- we're dealing with
4 word definition here, you know, so I don't know what
5 you really mean by "impact on the environment."

6 Q. Well, what I mean by that is if you're
7 manufacturing chemicals and you're discharging
8 chemicals, either through permits or otherwise, into,
9 say, bodies of water, what impact those chemicals may
10 have on aquatic life, on the river systems, on people
11 who swim, boat, fishing, on people who eat the fish,
12 that type stuff?

13 A. My recollection of most of the plants at that
14 time had persons or people who were looking at
15 discharges in accordance with regulatory permits,
16 primarily at the state level, and determining
17 conformance with those. Again, I think the general
18 assumption there was that the discharges in accordance
19 with allowable permits and releases were acceptable
20 to -- were acceptable to the environment.

21 Q. Do I understand your testimony correctly,
22 then, in that you're saying that there was not a
23 particular division or department here in St. Louis
24 that oversaw all of the plants that Monsanto had around
25 the country, dealing with potential impacts of its

3 1 plant operations on the environment?

2 A. I don't know. I mean, in looking back at that
3 time, you know, my position at that point in time was
4 fairly narrow as a new engineer and I really didn't
5 have at that time a total understanding of what the
6 company's efforts and programs and their resources
7 were.

8 Q. But the position you held as an environmental
9 monitor -- and I don't know if that's a correct job
10 description, maybe it is, maybe it's not -- didn't deal
11 with studying the impacts of chemicals being left in
12 the environment and what impacts that would have, if at
13 all, on the community?

4 14 A. I think I've described what it is, and at that
15 time the sense was if you're discharging things within
16 your permit limits, that that's what constituted
17 acceptable protection in the environment and the
18 community.

19 Q. What permits in 1966 did Monsanto hold at its
20 Anniston plant in Anniston, Alabama, that gave it the
21 right to discharge PCBs into Snow Creek, Choccolocco
22 Creek?

23 A. I was not familiar with the plant at that
24 time, so I don't know what their factual permitted
25 situation was.

4

1 Q. Are you aware of any permits at all that
2 Monsanto ever had at any plant that allowed it to dump
3 PCBs into a river system?

4 A. As I recall, the structure of the permitted
5 systems is that back at state levels, and then when
6 federal permits came in in the '70s, is that the
7 permits dealt with what was restricted; things that
8 were not included were not unrestricted.

9 Q. Things that were not included were not
10 unrestricted. That's a triple negative. I'm trying to
11 figure out what that means. If something was not
12 included on a permit, Monsanto could dump as much of it
13 as it wanted into the river system?

14 A. I think that's the right legal interpretation.
15 The permits tend to focus on and limit what the
16 regulatory authorities thought was important to limit,
17 and it did not set limits on other potential discharge
18 components.

19 Q. You understand, sir -- or do you understand --
20 what this lawsuit is about, and what the class of
21 representatives that I represent who are suing Monsanto
22 and Solutia is about?

23 A. I understand that there is a lawsuit in the
24 class and I would say in general what the issue is
25 about.

4 1 Q. Describe for me, if you would, sir, what you
2 believe the lawsuit is about.

3 A. As I understand this lawsuit, it's a class of
4 property owners around a lake that are basically suing
5 the company for basically charges of diminished
6 property value. Basically that's what I understand it
7 to be.

8 Q. Do you understand it to be a lawsuit involving
9 a claim of damaged riparian rights to the property that
10 these people own?

11 A. I'm not that versed in the language in what
12 you've just said.

13 Q. Have you had any personal involvement in
14 working in this lawsuit, other than your conversations
15 with lawyers?

16 A. I don't know that I fully understand the
17 question, but I'm not -- I mean, this is the extent of
18 my involvement in the details of the legal proceeding.

19 Q. None of your employees, managers, agents have
20 discussed with you in official company meetings the
21 merits of this lawsuit, the potential ways to resolve
22 the lawsuit, or anything like that?

23 MR. PECK: I'm assuming with that question
24 you're excluding conversations he's had with his legal
25 counsel?

4

1 MR. GRAMMAS: Yeah, that's a good assumption.

2 MR. PECK: To the extent that you're not, I
3 would object to the question. He's certainly not to --

4 MR. GRAMMAS: I don't want to --

5 MR. PECK: -- disclose communications with his
6 legal counsel.

7 BY MR. GRAMMAS:

8 Q. Any question I ask you today, Mr. Pierle, if
9 you interpret to mean to include conversations that
10 you've had with your attorneys, I don't want you to
11 answer the question to that extent. I'm not entitled
12 to that and I don't want to know that. But what I do
13 want to know is conversations you had with employees of
14 Monsanto or Solutia, your managers, your employees that
15 work under you, about the merits of this lawsuit and
16 ways to resolve it.

17 A. No. I'm really not involved in any of those
18 conversations, if it exists. I don't know that they
19 exist.

20 Q. Is it your position, then, or do you believe
21 that none of those conversations or those types of
22 conversations have occurred between Monsanto employees?

23 A. You know, I know this case is being handled by
24 the legal department and basically it's up to them to
25 determine what conversations do or don't happen.

4

1 Q. What are your job responsibilities as --
2 basically you're the head of the entire environmental
3 department for Solutia, correct?

4 A. That's correct.

5 Q. And when I -- I will use "Solutia" and
6 "Monsanto" interchangeably in the lawsuit, especially
7 given the fact that your job duties really didn't
8 change much since you took this position. But for lack
9 of a better word, Mr. Pierle, the buck stops at your
10 desk with respect to environmental issues concerning
11 Monsanto and Solutia, right?

12 A. Yeah. I mean, I think that depends on what
13 you determine to be environmental issues.

14 Q. Well, PCBs being dumped into a river system,
15 does that fall under your direction?

16 A. Certainly matters with respect to the
17 regulatory side of that, the remediation side do. The
18 matters that pertain to the legal side do not.

5

19 Q. Right, I understand that. And what I want to
20 talk to you about is issues other than the legal
21 aspects of it. The lawyers will deal with that, but
22 what I want to know is, is what your responsibilities
23 are as the vice president of Solutia in dealing with
24 issues involving PCB contamination in river systems
25 and, in particular, in Anniston. What involvement have

5 1 you had in considering these issues, if any?

2 A. At my level, I'm aware of the team working,
3 you know, at the plant site and with respect to the
4 various remediation projects, and am aware of and
5 involved in, where appropriate, the decisions
6 associated with those aspects around the Anniston
7 plant.

8 Q. Would that include cleaning up PCBs that
9 Monsanto put into the river system?

10 MR. PECK: Object to the form of the question.

11 THE WITNESS: It involves currently the work
12 that we're doing concerning both remediations that are
13 undertaken as well as investigations that are underway
14 today.

15 BY MR. GRAMMAS:

16 Q. Who set the policies for Solutia, and Monsanto
17 at the time, on what is going to be done, if anything,
18 to clean up PCBs that were discharged into Snow Creek,
19 Choccolocco Creek, and Lake Logan Martin?

20 MR. PECK: Object to the form of the question.

21 THE WITNESS: In general, policies have been
22 set, both at Monsanto and at Solutia, by policy
23 committees. They're not set by me, for example.

24 BY MR. GRAMMAS:

25 Q. Are you on the committee?

5

1 A. In Monsanto, at a time, I was on an
2 environmental policy committee. In Solutia, those
3 decisions actually happen in a policy committee today,
4 but I'm not on that committee.

5 Q. Have you ever been on that committee?

6 A. Not in Solutia, no.

7 Q. Do you have the authority, sir, to order a
8 cleanup of the PCB contamination in Snow Creek,
9 Choccolocco Creek, and Lake Logan Martin?

10 A. I have the authority to make decisions with
11 respect to cleanup projects for the company to certain
12 levels.

13 Q. And what does that mean?

14 A. To the extent that there are decisions and to
15 the extent that the financial aspects of those are
16 quantified, I have authority to certain levels and at
17 certain levels I do not have authority.

18 Q. To what extent does your financial authority
19 go in ordering a cleanup of PCB contamination?

20 A. You've used the word "order." I don't think
21 I'm ordering, I believe the right terminology would be
22 in "approving" cleanup projects that come up through
23 the processes that are in place. I don't know if
24 that's responsive or not.

25 Q. Well, it's not, sir.

5

1 The question was: How much money can you
2 direct -- or, how much cleanup can you direct and how
3 is it limited by money?

4 A. Yeah. The authority that I have is generally
5 at about \$5 million per project, which in general is
6 significant to do most of the project and project work
7 that we have underway.

8 Q. How much money has Monsanto and/or Solutia
9 spent to clean up the PCBs around its own properties
10 and the neighboring properties out at the Anniston
11 plant to date?

12 A. I think in general the number we're using, on
13 a cumulative project basis, is somewhere around \$30
14 million.

15 Q. And did anyone other than you -- did the
16 authority -- or, did the decision to do that cleanup
17 come from you, sir?

18 A. Again, the way the process works is that I
19 either have authority or it's been delegated authority
20 to commit to the work.

21 Q. All I want to know is: Did -- somebody at
22 Monsanto decided to spend \$30 million to clean up its
23 own backyard. Who did that?

24 A. In some of those cases, on an aggregate basis,
25 those decisions were made inclusive of decisions at the

5 1 board-of-director level. That's consistent with the
2 2 financial accounting requirements and practices.

3 3 Q. Who's on the board of directors today?

4 4 A. I don't have the full list of those people.

5 5 Q. Could you give me the list as complete as you
6 6 know it?

7 7 A. The internal members are Robert Potter and
8 8 John Hunter.

9 9 Q. John Hunter?

10 10 A. Right.

11 11 Q. Those are the only two?

12 12 A. Those are the only two Solutia employees that
13 13 are board of directors members.

14 14 Q. What about Monsanto employees?

15 15 A. Monsanto's not a member of the Solutia board.
16 16 It's a separate company.

17 17 Q. Who else is on the board besides Mr. Potter
18 18 and Mr. Hunter, that you're aware of?

19 19 A. I know that Bill Ruckleshouse (PHONETIC) is.
20 20 The balance of the board, I'm just not recalling their
21 21 names.

22 22 Q. Mr. Pierle, if you decided that a cleanup was
23 23 warranted in Anniston, Alabama, and the surrounding
24 24 areas of Snow Creek, Choccolocco Creek, and Lake Logan
25 25 Martin -- and when I say a "cleanup," I mean removing

6

1 PCBs from the soils and sediments in the river
2 system -- do you have the authority to order that
3 cleanup to be done?

4 MR. PECK: Object to the form of the question.

5 THE WITNESS: With respect to projects -- and
6 I define "cleanup" different than that. It could be
7 inclusive of that, but it could be many other things.
8 To the extent that the financial cost is within my
9 authority or has been delegated by an action above me,
10 I would have the authority to commit to a project work.
11 BY MR. GRAMMAS:

12 Q. And your limit is a \$5 million decision?

13 A. Unless larger levels have been approved and
14 authority delegated.

15 Q. If it costs a half a billion dollars to remove
16 the PCBs from Snow Creek, Choccolocco, and Lake Logan
17 Martin, would you have the authority to order a cleanup
18 of that magnitude?

19 A. No.

20 Q. Where would that go? Who would have to make
21 that decision, legal department?

22 MR. PECK: Object to the form of the question.

23 THE WITNESS: At that level, I mean, it's
24 difficult to comprehend, number one. So I assume
25 you're asking a speculative kind of question. Any

6 1 authority that would require that level, if possible,
2 would clearly have to involve the board of directors,
3 the officers and the board of directors of the company.

4 BY MR. GRAMMAS:

5 Q. In 1966 when you began your employment, when
6 was the first time you heard about PCB-related issues?

7 A. It was probably in the '68-to-'69 period when
8 there was general literature information available on
9 an increased, I think, awareness in the country around
10 PCBs.

11 Q. Did Monsanto -- how many people -- how many
12 companies other than Monsanto manufactured PCBs here in
13 the United States?

14 A. I don't know. There were others, but I don't
15 know how many.

16 Q. You didn't understand who Monsanto's
17 competitors were during the time you were working with
18 them?

19 A. No.

20 Q. That wasn't something that concerned you?

21 A. No.

22 Q. What percentage of PCBs roughly, sir, did
23 Monsanto manufacture in the United States?

24 A. I don't know.

25 Q. Isn't it a true statement, sir, that Monsanto

6 1 manufactured 98 percent of the PCBs in the entire
2 world?

3 A. I don't know.

4 Q. You've never heard those numbers?

5 A. No.

6 Q. Isn't it a true statement, sir, that Monsanto
7 was the overwhelming manufacturer of PCBs in the entire
8 world?

9 MR. PECK: Object to the form of the question.

10 THE WITNESS: I'm not aware of those facts or
11 what the market-share position was. I just don't know.

12 BY MR. GRAMMAS:

13 Q. Who manufactured PCB in the state of Alabama
14 other than Monsanto?

15 A. I don't know.

16 Q. You said you became aware of PCB-related
17 issues in the late '60s, 1968 time frame, I believe you
18 said. What was your knowledge of PCB-related issues at
19 that time?

20 A. In general there were questions raised about
21 the environmental significance of PCBs and there were
22 efforts at that time generally to understand PCBs and
23 their sources and presence in the environment.

24 Q. And where was this information or literature
25 coming from?

6

1 A. Well, as I recall, some of that was just in
2 the general news, things of that nature.

3 Q. Was Monsanto studying the impacts of PCBs on
4 the environment at that time internally?

5 A. There was work inside Monsanto around that
6 time relative to understanding its PCB losses. I don't
7 know what else was going on.

8 Q. Most of the information was coming from
9 sources outside of Monsanto that you became aware of in
10 the 1968 time frame?

11 A. Yeah, at the front end of that.

12 Q. Do you believe, sir, that Solutia today has
13 the responsibility to fully research, before it ever
14 begins manufacturing, what environmental impact a
15 product may have before it begins making it?

16 A. I think that we do look at the product and its
17 properties and a fair amount of that is also now
18 regulated by government under rules, and we do that
19 work if we're in the business of looking at new
20 materials.

21 Q. Would Solutia manufacture a product that it
22 knew would have an adverse impact on -- let me ask you
23 this: As the chief environmental manager for Solutia
24 today, would you allow this company to manufacture a
25 product that you personally knew would have an adverse

6 1 impact on the environment regardless of whether it was
2 2 regulated or not?

3 3 A. Under what use conditions?

4 4 Q. What do you mean? Under any use conditions.

5 5 A. If you manufactured a product with hazardous
6 6 properties but it was intended to be managed correctly
7 7 such that those did not cause damage, then I think
8 8 those kind of materials could be produced today.

9 9 Q. I understand that, and what I'm saying is:
10 10 Would you personally allow Solutia to manufacture a
11 11 product that you knew would have an adverse impact on
12 12 the environment regardless of how carefully you handled
13 13 that product even if it was not a regulated product?

14 14 MR. PECK: Object to the form of the question.

15 15 THE WITNESS: I think again in very specific
16 16 situations there can be products that are made today
17 17 that have hazardous properties that -- I mean, I can't
18 18 conceive of one not being true of regulatory approval,
19 19 which was part of your question.

20 20 BY MR. GRAMMAS:

21 21 Q. Right. And what I'm saying is: If you knew
22 22 something was going to have a bad impact on the
23 23 environment or people that used the product and you
24 24 were ahead of the curve on it and knew that in fact the
25 25 government didn't know about it, you wouldn't

7

1 manufacture it anyway just because it wasn't regulated,
2 would you?

3 A. No.

4 Q. That's where I'm really coming from. And the
5 fact that a product is regulated or not really
6 shouldn't impact your decision on whether you're going
7 to manufacture it if you know personally that it's
8 going to have some type of adverse impact?

9 A. Under its intended consequences and use,
10 that's correct.

11 Q. Okay. Don't you think, sir, that Monsanto had
12 a responsibility during the decades that it was
13 manufacturing PCBs to fully understand the impact PCBs
14 had on the environment internally?

15 MR. PECK: Object to the form of the question.

16 THE WITNESS: I'm not sure that I understand
17 the question.

18 BY MR. GRAMMAS:

19 Q. Monsanto was the company manufacturing PCBs,
20 right?

21 A. One of the companies.

22 Q. And Monsanto manufactured PCBs in Anniston
23 from the '30s up to the '70s, right?

24 A. I believe that's correct.

25 Q. And over that 40-year period, don't you

7

1 believe that Monsanto should have known everything
2 about that product and its adverse effects, if any, on
3 the environment --

4 MR. PECK: Object to the form of the question.

5 BY MR. GRAMMAS:

6 Q. -- as it was manufacturing it?

7 A. By the standards that were in existence during
8 that period of time. I mean, I think it would be
9 difficult to say by the standards that exist today or
10 the knowledge or whatever, that you would apply that
11 back to 1930.

12 Q. Well, the knowledge that we have today
13 about -- first of all, before I ask you that question,
14 you will agree with me that PCBs are a hazardous
15 product, won't you?

16 MR. PECK: Object to the form of the question.

17 THE WITNESS: PCBs do have hazardous
18 properties, that's correct.

19 BY MR. GRAMMAS:

20 Q. And it's not good to eat PCBs, is it?

21 A. I don't know that it's ever been shown to be a
22 true human health hazard. So the answer to your
23 question gets tied up into how much and when and what.

24 Q. Let me ask you a simple question. Would you
25 eat spoonfuls of PCBs every day?

7

1 A. I mean, why would I? It's not part of a food
2 diet. So the answer to that is: Why would I want to
3 do that?

4 Q. It's not supposed to be in the food diet, is
5 it?

6 A. No, I'm sure --

7 Q. You-all didn't manufacture PCBs to be eaten,
8 did you?

9 A. No.

10 Q. You don't want anybody eating PCBs, do you?

11 A. I wouldn't think that that would be something
12 somebody would want to sit down and intentionally do.

13 Q. It would actually be something that somebody
14 would want to avoid, wouldn't it?

15 A. Yeah, similarly you would avoid that on lots
16 of things.

17 Q. Like what?

18 A. Eating too much table salt, eating too much
19 sugar. I mean, lots of things that you would say, you
20 know, you just -- you don't want to do because they're
21 probably not healthy for you.

22 Q. And eating PCBs is one of them?

23 A. Again, the question there is: Does ingestion
24 of PCBs cause adverse health consequences? And I think
25 everything that we see says that has not been a proven

7

1 conclusion.

2 Q. Okay. Now, you're the head man over the
3 environmental safety issues for Solutia.

4 A. That's correct.

5 Q. And I assume that you have read articles
6 regarding adverse health effects PCBs have on human
7 beings.

8 A. I have read a fair amount of information that
9 discusses that topic.

10 Q. And you, as the head of the environmental
11 affairs at Solutia and once held that same position at
12 Monsanto, are testifying that you're unaware of a
13 single scientist who has concluded that ingesting PCBs
14 poses a health hazard to human beings?

15 MR. PECK: Object to the form of the question.
16 Mischaracterizes his prior testimony.

17 THE WITNESS: Yeah, I didn't say that.

18 BY MR. GRAMMAS:

19 Q. I thought you said that there's nothing really
20 proven that PCBs cause adverse health effects in human
21 beings.

22 A. That wasn't the question you asked me.

23 Q. Did you not testify to that, Mr. Pierle; did I
24 misunderstand you?

25 A. I think what I said was that our general

7
9

1 conclusion, looking at all the information about PCB
2 studies, health studies, and all that, is that it does
3 not indicate that PCBs have been shown to be a human
4 health -- or, an adverse human health material.

5 Q. Are you aware of a single scientific study
6 that disputes what you just told me?

7 A. I can't tell you specifically studies. There
8 are many of them at different doses that look at dose
9 response and that, but in general, the conclusion we
10 make out of the body of studies is that that is not --
11 that is not an appropriate conclusion.

12 Q. Okay. And what I'm hearing you saying, Mr.
13 Pierle, is that you're looking at a group of studies
14 and you're reading all of them that you're aware of and
15 that you have read, and then after you've read all of
16 these studies, you're making a conclusion on your own
17 based on the work of other people as to whether or not
18 PCBs cause or may cause adverse human health effects,
19 right?

20 A. Yes.

21 Q. Now, some of those find that it doesn't, I
22 assume, is what you're testifying to, correct?

23 A. I haven't looked at every individual study.
24 I'm saying that when I talk with experts in my
25 department and look at that, that is the general

8

1 conclusion that we come to.

2 Q. Have you personally ever read a single
3 scientific study that disagrees with your conclusion
4 that you've testified to today?

5 A. My conclusion is based upon the weight of
6 evidence of all of the information, and there are
7 varying studies in there.

8 Q. So the answer --

9 A. So the proper way to look at it is to look at
10 all the information, not to look at individual studies,
11 but to look at all the information and derive
12 conclusions from the body and the weight of evidence of
13 all the studies.

14 Q. You've never seen a study that says that PCB
15 ingestion causes adverse health effects or may cause
16 adverse human health effects; is that your testimony,
17 yes or no?

18 A. No.

19 Q. So, then, can I understand that you have seen
20 scientific studies that suggest that ingestion of PCBs
21 causes or may cause adverse human health effects?

22 A. Yes, I have seen the studies.

23 Q. Okay. And can you identify who these people
24 were that conducted these studies?

25 A. I don't recall.

8

1 Q. Were they Monsanto employees?

2 A. I don't believe so.

3 Q. Do you know of a single study conducted by
4 anyone within Monsanto or Solutia that has concluded
5 that the products that this company manufactured for 30
6 years, PCBs, cause or may cause adverse human health
7 effects if ingested?

8 A. I don't know of any.

9 Q. Are you aware of any studies that Monsanto has
10 conducted that show the opposite conclusion; in other
11 words, that ingestion or exposure to PCBs does not
12 cause adverse human health effects?

13 A. Again, I'm not familiar with each and every
14 study that we have conducted or others have conducted.
15 That's just not a level of detail, I think I said, that
16 I would get down to. I rely on the experts in the
17 organization that have worked for both companies to
18 provide general conclusions and recommendations in
19 those areas.

20 Q. What did you do for the Department of Commerce
21 in 1974 and 1975?

22 A. I was basically on loan in the Department --
23 or, the Commerce Department, in a small group there
24 that was the Office of Environmental Affairs, and our
25 primary role was to participate on behalf of the

8 1 department in a governmental process that was called
2 2 Quality and Life Review on Governmental Regulations.

3 3 Q. Did it have anything to do with regulating
4 4 PCBs?

5 5 A. None. Did the process have any -- I don't
6 6 know whether the process did or not during my period of
7 7 time. I specifically stayed away from any regulatory
8 8 matters that were pertaining to the chemical industry.

9 9 Q. Why is that?

10 10 A. I think as basically just a prudent step that
11 11 says that -- my background was in that industry, there
12 12 should be no question about being involved in any
13 13 regulations that would pertain to that industry. There
14 14 were plenty of other folks in the department that could
15 15 look at those things, and I specifically focused on
16 16 things outside that industry.

17 17 Q. Who paid for your services at that time?

18 18 A. I was an employee of the Department of
19 19 Commerce.

20 20 Q. Did you give them any special types of breaks
21 21 or anything as far as how much money you would receive
22 22 during that period of time?

23 23 A. No.

24 24 Q. Why is it that they selected you to do this,
25 25 sir?

8 1 A. In the Department -- at Commerce, in that
2 group, they had a practice of rotating on an -- roughly
9 3 an annual basis, somebody out of industry and in prior
4 years it had been other companies and I'm not really
5 sure how my name got into the nomination process. And
6 so I was nominated and accepted and spent a year there
7 and then returned to Monsanto.

8 Q. And it was always known that it was going to
9 be a one-year position and that you were going to
10 return to Monsanto when the position was completed?

11 A. No. It was -- you asked two questions there.
12 One, it was known that it was going to be a one-year
13 assignment, but I was under no obligation to return to
14 Monsanto. I had basically stopped my employment with
15 Monsanto Company prior to that.

16 Q. This bio, Exhibit 1, says in 1974 to 1975 you
17 were "on leave" to work for the Department of Commerce.
18 That suggests to me that Monsanto knew that you were
19 going to do this and encouraged you to do it and
20 allowed you to do it and wanted you to come back when
21 you were through. Am I reading that wrong?

22 A. Basically they encouraged it. They did
23 basically allow it, but the point is that I had no
24 contractual commitment to come back. They had no
25 commitment to me to a specific position, and I had no

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1 commitment to come back. I think the hope was that,
2 from a personal standpoint, I'd be able to return in
3 another responsible position.

4 Q. What benefits did Monsanto receive, if any,
5 from you working for the Department of Commerce in the
6 Office of Environmental Affairs during that year?

7 A. None.

8 Q. There wasn't any political advantage gained?

9 A. No. I mean, I was a Grade 14GS person. I
10 mean, it was a learning position. It wasn't a position
11 of influence or consequence in the department.

12 Q. Do you believe that the single biggest
13 challenge today that Monsanto and Solutia now has is
14 PCB-remediation issues, as far as environmental cleanup
15 issues?

16 A. I mean, it's an important issue to us. I
17 don't know whether it's the single biggest issue and I
18 can't speak for Monsanto. Their issues today are much
19 different.

20 Q. And when I say "Monsanto," I don't mean
21 Monsanto as of September 1997, I mean Monsanto prior to
22 the spinoff of Solutia and the responsibilities that
23 you held with Monsanto. Do you understand what I'm
24 saying?

25 A. Not really.

9

1 MR. PECK: Your question, Pete, was asking for
2 a current -- you said "today." Today Monsanto and
3 Solutia are two separate companies. I think that he's
4 got to make that distinct.

5 MR. GRAMMAS: That's fair.

6 BY MR. GRAMMAS:

7 Q. If, sir, you don't believe that PCBs cause
8 human adverse human health effects, why is it that
9 you're concerned about remediation of them in the first
10 place?

11 A. I think we are in a process that began, you
12 know, a few years back at the plant site with respect
13 to PCBs, whether or not they exist at levels that would
14 cause adverse harm to the environment or to people, and
15 I think that our posture through this process is to
16 make sure that we understand that question and whether
17 or not there is a basis then for action. So we're in
18 it to understand and to find out and to discover
19 whether there are issues or situations that need
20 attention.

21 Q. Okay. Monsanto knew in the '50s that PCBs can
22 cause adverse human health effects, didn't it?

23 A. I don't know that for a fact.

24 Q. You've never seen literature from Monsanto
25 employees that said, We know PCBs are toxic to humans,

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1 in the '50s?

2 A. Again, I have not gone back and looked at all
3 those documents. I wasn't involved in that. I mean, I
4 wasn't even employed at that time.

5 Q. Well, I wasn't even born at that time, sir,
6 but I've read a document produced by your company that
7 said that they knew in the late '50s that -- this is a
8 document that I've seen, I'm sure there are others, but
9 one of the documents that I've seen said that Monsanto
10 knew in the late '50s that PCBs cause adverse human
11 health effects.

12 MR. PECK: Object to the form of the question.
13 I don't think that's an accurate characterization of
14 the document. If you want to ask him about the
15 document, show him the document.

16 BY MR. GRAMMAS:

17 Q. It seems to me, sir, as the head man over the
18 department of environmental affairs at Solutia, you
19 would at least be aware of such a document.

20 MR. PECK: Object to the form of the question.
21 It mischaracterizes the document.

22 BY MR. GRAMMAS:

23 Q. Is it your testimony that you've never seen
24 any documents dated back in the late '50s that
25 discussed human health effects on PCBs?

9 1 A. You know, I don't recall what I have or
10 2 haven't seen.

 3 Q. All right. Well, at some point you will admit
 4 that you became aware -- "you" being Monsanto, now
 5 Solutia, and you personally -- became aware that PCBs
 6 do in fact cause adverse human health effects at some
 7 level of exposure?

 8 A. I think most of the discussion of my
 9 recollection around PCBs is around environmental
10 consequences, not human health consequences.

11 Q. When did you first become aware that PCBs harm
12 the environment?

13 A. Again, I think the data that I referred to in
14 the late '60s was around whether or not PCBs are
15 causing or alleged to be causing issues with respect to
16 environmental and critters within the department.

17 Q. How do PCBs hurt the environment?

18 A. I think the concerns are whether or not they
19 can -- at that time, interfered with certain processes
20 around birds and eggs that caused soft shells, and the
21 question was: Are PCBs a causative agent in what was
22 being observed at that time?

23 Q. Any other factors that show PCBs hurt the
24 environment? And don't limit your knowledge to that
25 time. Tell me all the ways you're aware of that PCBs

10

1 harm the environment.

2 MR. PECK: Object to the form of the question.

3 THE WITNESS: Again, you know, I don't recall
4 the specific studies and works. I think what we're
5 looking at is whether or not, because of information
6 about PCBs, which I've described, we're to be sensitive
7 to whether or not they are in the environment and
8 causing any concern, and that's why we're doing the
9 studies and the work that we're doing today, to see
10 whether or not remediation is necessary and
11 appropriate.

12 BY MR. GRAMMAS:

13 Q. You're talking about remediation in Anniston?

14 A. That's correct.

15 Q. Here's where I'm getting at, and it's probably
16 obvious: Monsanto's known since the '50s and '60s that
17 PCBs cause harm, to both the environment and to
18 individuals, at certain levels. I realize Monsanto
19 debates what levels cause harm and all that, I
20 understand that. But at certain levels, everyone in
21 the world will agree that PCBs cause harm to the
22 environment and human beings, and Monsanto's known it
23 since the '50s and '60s. Here it is 1998. We're
24 almost at the year 2000 and it's your testimony that
25 Monsanto, and now Solutia, is still studying the issue

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1 as to whether it causes harm to the environment or not
2 to determine whether you're going to remediate it or
3 not; is that your testimony, sir?

4 MR. PECK: Object to the form of the question.
5 It completely mischaracterizes his testimony, misstates
6 numerous facts, and is completely without foundation.

7 If you can answer that question, you can try.

8 THE WITNESS: I can't answer it.

9 BY MR. GRAMMAS:

10 Q. Why can't you?

11 A. You asked -- you've stated several things
12 which I don't believe are true, and you've stated them
13 three or four times and I think we've covered that. So
14 how do I answer a question that has within it
15 statements that we believe are not true?

16 Q. What statements in there do you believe are
17 not true?

18 A. Well, you've dealt with "known to cause" and
19 "several studies" about the human health consequences
20 of that. So I don't -- you went on for a long period
21 of time, and you've got me, I guess, at the minimum,
22 confused.

23 Q. Okay. Well, let me break it down. Since the
24 '60s, Monsanto became aware of knowledge that PCBs harm
25 the environment, true or false?

10

1 A. I would add the word "could" harm the
2 environment, and then I would agree with you.

3 Q. You're not convinced, as the head
4 environmental person at Solutia, that PCBs do in fact
5 harm the environment; is that what I'm hearing you say?

6 A. I think what I'm saying is that the work that
7 we're underway with is to understand whether or not
8 PCBs exist, whether they are at levels that could harm
9 the environment, and whether or not something needs to
10 be done about those. And that's the process that is a
11 very common process that's used throughout the United
12 States to deal with remediation issues, and that's the
13 process we're in.

14 Q. When did that process in Anniston begin?

15 A. My more recent understanding is that it was
16 sometime in the '90s when there was some data around
17 the storm water permit that raised a question as to
18 whether or not PCBs were leaving the site; and that
19 information, which we acted on diligently and pursued,
20 has led to a continuation of studies and understanding
21 in the area and project-related work.

22 Q. Monsanto did not begin this process of
23 studying whether or not the PCBs are harming the
24 environment until the 1990s in Anniston?

25 A. I don't know when they may have started or if

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1 they had done anything before that. What I'm saying is
2 that my recollection of what started this level of
3 study began at about that time.

4 Q. And Monsanto at that very plant manufactured
5 PCBs from the '30s through the '70s, true?

6 A. I believe that's true.

7 Q. And during that entire period of time,
8 Monsanto engaged in a process it called "sewering," did
9 it not?

10 MR. PECK: Object to the form of the question.

11 BY MR. GRAMMAS:

12 Q. Have you ever heard of that?

13 A. No.

14 Q. You've never heard of the word "sewering"?

15 A. I know what sewerage is.

16 Q. What does "sewerage" mean?

17 A. It's a discharging of materials into a sewer.
18 That would be my common definition of that.

19 Q. You're not aware that it was common practice
20 for employees at the Anniston plant in Monsanto to
21 sewer PCBs out of its plant into Snow Creek and
22 Choccolocco Creek during that entire period of time of
23 manufacture?

24 MR. PECK: Object to the form of the question.
25 Lack of foundation.

11 1 THE WITNESS: It's my understanding that there
2 was a discharge from that plant site that went through
3 a neutralization treatment basin and subsequently was
4 discharged.

5 BY MR. GRAMMAS:

6 Q. Into Snow Creek/Choccolocco Creek?

7 A. I believe that's correct.

8 Q. Now, over that 40-year period while Monsanto
9 is dumping all the PCBs into this river system, why
10 didn't it study the effects of PCBs during that time?
11 Why did it wait until the '90s to engage in this
12 process you're now talking about to determine what
13 impacts if any PCBs have on the environment and the
14 folks that live down there?

15 MR. PECK: Object to the form of the question.

16 THE WITNESS: I don't know what they did, you
17 know, relative to plant operations and what was done at
18 that point in time. It was certainly not a common
19 practice. I mean, you're looking at a set of processes
20 that exist today that did not exist years ago, so
21 you're sort of applying a set of understandings to
22 conditions 40 years ago that simply didn't exist.

23 BY MR. GRAMMAS:

24 Q. That brings up an interesting point. Does
25 Monsanto, and now Solutia, take the position that it

11

1 was perfectly proper for them to dump PCBs into the
2 river system during the '30s, '40s, '50s, '60s, and
3 early '70s?

4 MR. PECK: Object to the form of the question.

5 BY MR. GRAMMAS:

6 Q. "Because everybody was doing it we could do
7 it."

8 MR. PECK: Object to the form of the question.

9 Assumes facts not in evidence.

10 THE WITNESS: I don't know how to answer that.

11 BY MR. GRAMMAS:

12 Q. Truthfully.

13 A. Of course.

14 Q. You were dumping them. Not you personally,
15 but your company was dumping them into the rivers.

16 A. There were discharges and systems in place,
17 and what was common practice at that point in time was
18 that many effluents of treatment from cities, from
19 homes, and from industry plants were basically
20 discharged into rivers and streams. That was a very
21 common practice.

22 Q. Including Monsanto, in Anniston, PCBs,
23 correct?

24 MR. PECK: Object to the form of the question.

25 Asked and answered.

11

1 MR. GRAMMAS: It's been asked, but it hasn't
2 been answered yet.

3 MR. PECK: He explained to you how the system
4 worked, Pete. You didn't like the answer, so you
5 changed the facts of the question.

6 BY MR. GRAMMAS:

7 Q. You can answer the question, Mr. Pierle.

8 A. I think what I told you was I don't know what
9 the facts were in the '40s, and that's what you're
10 asking me now to discuss.

11 Q. Okay. You're the head honcho for remediation
12 on PCB-related issues as we sit here today, right?

13 A. That's within my department.

14 Q. And you don't report to anybody, really, other
15 than the board of directors.

16 A. That's not true. I didn't say that.

17 Q. With respect to remediation.

18 A. Correct. I have a supervisor.

19 Q. Who's your supervisor?

20 A. My current supervisor is John Ferguson.

21 Q. And what position does he hold with Solutia?

22 A. I'm not sure of his exact title, but he is the
23 head of the shared service organization, of which I am
24 a member.

25 Q. What is that? I've never heard of that.

11

1 A. It basically -- the environmental safety and
2 health department provides services to the enterprise
3 and other functions that provide service to the
4 enterprise and we report to John, who is the supervisor
5 of that shared service group.

6 Q. What enterprise?

7 A. Solutia.

8 Q. Is that shared service with Monsanto?

9 A. No.

10 Q. Sort of like a blend of Monsanto/Solutia
11 employees?

12 A. This is Solutia.

13 Q. Okay. Now, don't you believe, sir, as the
14 senior employee of environmental affairs, charged at
15 least in part with the responsibility of deciding
16 whether a remediation should take place in Anniston
17 regarding PCB exposure and contamination, that you
18 should have an understanding of the amount of PCBs that
19 were put into that river system by Monsanto and now
20 Solutia?

21 MR. PECK: Object to the form of the question.

12

22 THE WITNESS: I think what we're trying to
23 understand with the work that we're doing now is what
24 is the situation today, the factual situation with
25 respect to the presence of PCBs, and that's what we've

12 1 been working diligently on and are continuing to work
 2 on.

3 BY MR. GRAMMAS:

4 Q. And that's the work you started in the 1990s?

5 A. That's correct.

6 Q. And Monsanto knew about -- as you put it --
7 the potential adverse impacts PCBs would have on the
8 environment as early as the late 1960s.

9 A. I think I said what, the late '60s?

10 Q. 1968 is really what you said.

11 A. Okay.

12 Q. So Monsanto knew in 1968 that PCBs could cause
13 harm to the environment, right?

14 A. Could.

15 Q. Monsanto knew from 1968 to the early 1990s,
16 before this diligent study began that you're talking
17 about, that it put PCBs into Snow Creek, Choccolocco
18 Creek, and Lake Logan Martin, right?

19 MR. PECK: Object to the form of the question.
20 It mischaracterizes his testimony.

21 MR. GRAMMAS: That's not a
22 mischaracterization, Adam. I'm asking him this
23 question. How can I mischaracterize something he
24 hasn't answered?

25 MR. PECK: Well, you have asked him, he has

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1 answered, and now you're mischaracterizing it.

2 BY MR. GRAMMAS:

3 Q. Monsanto knows, sitting here today -- Solutia
4 knows, sitting here today, that Monsanto put PCBs into
5 Snow Creek, Choccolocco Creek, and Lake Logan Martin,
6 true or false?

7 A. That's not true.

8 Q. You don't believe that Monsanto put PCBs into
9 Snow Creek, Choccolocco Creek, and Lake Logan Martin?

10 A. I believe what I said to you is that we are --
11 part of this work and investigation is trying to find
12 out answers to those questions.

13 Q. One of the questions you-all are actually
14 studying -- and if I'm understanding your testimony
15 correctly, Mr. Pierle, you were truthfully telling me
16 under oath that you're going to study whether or not
17 y'all are a responsible party for putting the PCBs in
18 that system?

19 A. I think that is one of the most important
20 questions that we need to factually understand.

21 Q. Is there any doubt in your mind, sitting here
22 today, under oath, testifying, that Monsanto is a party
23 that put PCBs into Snow Creek, Choccolocco Creek, and
24 Lake Logan Martin?

25 A. Listen, we wouldn't be there if we weren't

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1 trying to understand factually that question and
2 whether we are or others are or aren't. That's what
3 we're trying to find out.

4 Q. That's not what I asked you, Mr. Pierle. I
5 asked you: Sitting here today, as the head
6 environmental manager for Solutia, is there any doubt
7 in your mind that Monsanto is a responsible party for
8 putting PCBs into Snow Creek, Choccolocco Creek, and
9 Lake Logan Martin?

10 A. And I think I answered that question.

11 Q. I didn't hear the answer if you did.

12 A. Then I'll repeat it, I guess, is that we're
13 down there trying to find out the answer to that
14 question. I don't presume anything with respect to
15 these situations and remediations. The facts need to
16 be found out and they will speak for themselves at that
17 time.

18 Q. Don't you think these studies should have been
19 conducted back in the '60s when you-all first became
20 aware that PCBs you were making may have an adverse
21 impact on the environment?

22 MR. PECK: Object to the form of the question.
23 Asked and answered.

24 THE WITNESS: I don't know that the questions
25 and the reasons why we're pursuing things today,

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1 whether they would have existed have been known to
2 prompt those questions at that time.

3 BY MR. GRAMMAS:

4 Q. In fact, what prompted this diligent research
5 you're talking about in the 1990s is the fact that
6 you're being sued over PCB contamination in the river
7 system; isn't that true?

8 A. No.

9 Q. And if you weren't being sued, you wouldn't be
10 studying it sitting here today, would you?

11 A. No, we would.

12 Q. Well, you weren't sued in 1968 through the
13 early 1990s, were you?

14 A. We did begin our work before there were any
15 suits. The suits were filed as a result of the
16 information which began and became available as a
17 result of the work that we're doing. So I think the
18 sequence is fairly clear as to where the suits -- and
19 when they started in this time line.

20 MR. PECK: Can we take a break?

21 MR. GRAMMAS: Sure.

22 (A SHORT BREAK WAS HELD.)

23 BY MR. GRAMMAS:

24 Q. Mr. Pierle, how in the world can Solutia
25 undertake a legitimate study of this problem, as you've

12 1 been testifying, without understanding the history of
 2 PCB exposure or discharging from the Anniston plant
 3 into the river system?

13 4 A. I think part of what, you know, we're trying
 5 to understand in that study is a variety of things that
 6 would include what you've described as well as issues
 7 around the presence, as well as the hydrogeology of the
 8 systems and the whole complexity of that. So, you
 9 know, my sense is that again is part of the work that
10 10 is ongoing down there at this point.

11 11 Q. Why 1990? And can you give me a more specific
12 12 date as to when this project began?

13 13 A. I can't. I know it started with -- or at
14 14 least a part of the issue was around the storm water
15 15 permit application where we discovered some
16 16 information. There were also some discussions on the
17 17 West Side Landfill or something, but that's my
18 18 recollection of what -- of where this sequence of
19 19 events began.

20 20 Q. 1993, Alabama Power and Monsanto had an issue
21 21 relating to some property that was swapped back in the
22 22 '60s; is that your recollection?

23 23 A. That's correct.

24 24 Q. Is that what started all this?

25 25 A. Well, that was part of it. As I say, there

13

1 were sort of events that were happening around the same
2 time.

3 Q. These studies didn't begin before 1993, then,
4 is what I'm hearing you say?

5 A. I think what I said is that I don't recall
6 exactly when they did begin.

7 Q. I understand the exact date you're not going
8 to be able to recall, but they didn't begin before that
9 1993 Alabama Power land issue, did they?

10 A. I don't know.

11 Q. All right. Now, what in the world is Monsanto
12 going to do to determine the number of pounds of PCBs
13 it dumped into Snow Creek and Choccolocco Creek during
14 the history of its manufacturing processes?

15 A. I think what we've been focusing on there is
16 what's present and what needs to be determined. That's
17 what we got into up around the plant sites and in the
18 front end of Snow Creek. So I think we're trying to
19 deal with what is the current situation and facts and
20 help us understand whether or not there is a basis
21 for -- and a requirement for remediation and the extent
22 that Solutia should be involved.

23 Q. Does Monsanto accept responsibility for the
24 PCBs contained in the upper portion of Snow Creek as
25 you just described -- or, found rather?

13

1 A. I mean, what we've been doing is working and
2 trying to -- as we determine that -- and we're doing
3 some projects which we're basically trying to correct
4 and take responsibility for and do appropriate
5 remediation.

6 Q. In the late 1980s the Alabama attorney general
7 noticed a PCB problem at the Monsanto site. Are you
8 aware of that?

9 A. I have some vague recollection that there was
10 an issue back sometime in the '80s that resulted in
11 some cleanup and removal of materials.

12 Q. And Monsanto spent several hundred thousand
13 dollars cleaning up or removing sediment from Snow
14 Creek at that time, didn't it?

15 A. I don't recall what the cost was.

16 Q. But you do recall that Monsanto removed
17 sediment from Snow Creek that contained PCBs?

18 A. Yes.

19 Q. Did Monsanto take responsibility for putting
20 the PCBs there?

21 A. I think, in simple terms, by the fact that we
22 went ahead and did that, we probably didn't debate the
23 accountability. We said it ought to be done. There's
24 at least a likelihood that they came from the site, so
25 we ought to get on and deal with that situation.

13

1 Q. You're the head guy here over environmental
2 affairs and the head guy over remediation, Mr. Pierle,
3 and all the other witnesses we've talked to have
4 pointed up the chain to you, which is how we got to
5 your deposition. Is there any doubt in your mind that
6 the PCBs in that part of Snow Creek that Monsanto went
7 in and removed came from Monsanto's plant process, any
8 doubt whatsoever?

9 A. I mean, there's a set of facts that I'm just
10 simply not aware of at that point in time. There was
11 enough justification obviously for the folks who were
12 in charge at the time to go do something and be
13 involved with that. I don't know what the whole set of
14 facts were about that.

15 Q. I'm going to show you what's been marked as
16 Plaintiff's Exhibit 2 and ask if you recognize that to
17 be a Monsanto news release dated approximately 1970?

18 A. That's what it's entitled and dated.

19 Q. And does that look to be the official company
20 Monsanto letterhead and that type stuff?

21 A. It looks like it is.

22 Q. Okay. Read out loud, please, for the jury the
23 first sentence on the news bulletin.

24 A. "Monsanto Company, sole U.S. producer of an
25 industrial chemical called polychlorinated biphenyl

13

1 (PCB), today said recent political charges and
2 sensational headlines about the chemical causing a
3 major ecological crisis completely ignore voluntary
4 actions the company has taken to restrict use of the
5 material."

14

6 Q. According to that news release that Monsanto
7 put out, sir, isn't it true that Monsanto was the only
8 producer in the entire United States of PCBs?

9 A. That's what this says.

10 Q. And you don't have any reason to dispute that,
11 do you?

12 A. No.

13 Q. Tell me, have you ever had any course studies
14 particularly designed to educate you on PCB-related
15 issues?

16 A. No.

17 Q. Do you feel like, as the head environmental --
18 manager of remediation, that's something that you
19 should be extremely familiar with?

20 A. I think those are the -- the details of that
21 are what I have a very competent staff and experts in
22 the organization to understand, and I rely on them
23 to -- for that detailed knowledge and understanding.

24 Q. Do you consider PCBs to be a hazardous waste?

25 A. There are some regulatory definitions of that

14

1 and I don't know whether PCBs are, quote, "a hazardous
2 waste" by regulation or not.

3 Q. Is it because it's not important enough for
4 you, sir, to determine whether they are a hazardous
5 waste or not?

6 A. No.

7 Q. You don't believe that as the head man over
8 the environmental affairs and, in particular,
9 remediation projects for PCBs, you don't need to know
10 whether it's a hazardous waste or not?

11 A. I think people inside my organization that
12 work for me know the answer to that question very
13 specifically, and I rely and must rely on their
14 knowledge and judgment.

15 Q. I mean you personally, sir. You're the man
16 who makes decisions on which direction this company
17 will take as far as environmental policy, right?

18 A. Would you repeat the question.

19 Q. Yes, sir. You're the man who makes decisions
20 with respect to which direction Solutia will take with
21 respect to environmental policy?

22 A. In part, that's correct.

23 Q. And one of the decisions you made while you
24 were the vice president of environmental affairs at
25 Monsanto, and continue to make while you're the vice

14

1 president at Solutia, is to rectify the mistakes of the
2 past that this company has made, correct?

3 A. I do not categorize these as mistakes.

4 Q. You don't believe it was a mistake for
5 Monsanto, for almost a 40-year period, to dump
6 thousands of pounds of PCBs into Snow Creek,
7 Choccolocco Creek, and now Lake Logan Martin?

8 MR. PECK: Object to the form of the question.
9 It assumes facts not in evidence.

10 BY MR. GRAMMAS:

11 Q. You don't believe that was a mistake, even
12 looking back with perfect 20/20 hindsight, Mr. Pierle?

13 A. You can't look back and ask that question
14 legitimately. That's the fallacy of your question.

15 Q. No, that is the beauty of the question because
16 we can. That's the purpose of --

17 MR. PECK: Pete, you can ask him questions.
18 We're not here to have your jury speeches read into the
19 record. Ask him questions and he will answer them. .

20 BY MR. GRAMMAS:

21 Q. Mr. Pierle, did you or did you not take the
22 position that your company is charged with the
23 responsibility of rectifying the mistakes of the past?

24 A. We're responsible for understanding whether or
25 not we have obligations today that may deal with issues

14

1 of the past and we are about fulfilling those
2 responsible obligations.

3 Q. I'm going to ask you a very simple
4 straightforward question and it calls for a yes-or-no
5 answer. If you want to explain it after that, I
6 encourage you to do so. You're the environmental
7 manager for Solutia. Sitting here under oath, sir, is
8 it your testimony that Solutia should correct the
9 mistakes that it has made in the past, yes or no?

10 A. I have commented already on your definition of
11 the word "mistakes." I think that, you know,
12 throughout the time that I've worked at Monsanto, we
13 have been very responsible about our actions with
14 respect to a lot of things, including the environment
15 and the health of our workers and communities, and I
16 think that we have acted always in that fashion.

17 Q. Well, Mr. Pierle, if Monsanto -- and if I
18 understand what you're saying is, during the period of
19 40 years when Monsanto was discharging these PCBs into
20 the environment, it was not aware of a problem in doing
21 so; is that what you're saying?

22 A. I'm saying that, again, my understanding is
23 that we have acted as the responsible person given the
24 norms and standards and expectations that existed at
25 the -- at that point in time.

14 1 Q. Right. So what you're saying is that in the
2 2 '30s, '40s, '50s, '60s, and '70s, when there were no
3 3 applicable federal regulations, when there were no
4 4 state regulations confining or describing how Monsanto
5 5 should discharge PCBs, it was acceptable at that time
6 6 during those decades for Monsanto to discharge PCBs
7 7 into the environment as waste?

15 8 A. Yes, and based upon, you know, the knowledge
9 9 of information that was available at that time.

10 Q. At that time. So if we later learn that that
11 11 was not a good practice, in hindsight can't we look at
12 12 it and say that was a mistake to do that? It may not
13 13 have been a mistake in your mind at the time, but can't
14 14 we look at it in hindsight, sitting here today, and say
15 15 that was wrong, that was a mistake?

16 A. No, I don't think that you can -- I don't
17 17 think you can say that.

18 Q. Okay. So the only way that Monsanto will
19 19 rectify mistakes of the past is if the mistakes in the
20 20 past were intentionally done and at the time were known
21 21 to be mistakes?

22 MR. PECK: Object to the form of the question.
23 23 Mischaracterizes his testimony.

24 THE WITNESS: I think I've been fairly clear,
25 25 and what I'm saying is that as we learn more about what

15

1 happened in the past and we apply today's standards and
2 expectations, then we are about taking care of those
3 issues. I do not categorize those as mistakes.

4 BY MR. GRAMMAS:

5 Q. So when Mr. -- who's Mr. Mahoney, Richard J.
6 Mahoney?

7 A. He's a former chairman of Monsanto Company.

8 Q. Where is he today?

9 A. I have no idea.

10 Q. Did he get fired?

11 A. He retired.

12 Q. Is he in St. Louis?

13 A. I have no idea.

14 Q. Do you know the man personally?

15 A. I certainly have met him and know him, but
16 we're not personal -- close personal friends or
17 contacts.

18 Q. Do you respect the man as far as a
19 professional?

20 A. Yes.

21 Q. Did you follow the commitments that he made
22 for the Monsanto Company while you were employed by
23 Monsanto?

24 A. I believe I did.

25 Q. Was he your boss?

15

1 A. No.

2 Q. He wasn't your boss?

3 A. Not my immediate boss. He was everybody's
4 boss.

5 Q. That's right, including yours, because he was
6 the chairman of the board at Monsanto.

7 A. That's correct.

8 Q. And no one was higher, as far as an officer's
9 position, than Mr. Mahoney on January 30, 1990?

10 A. He reported to the board of directors.
11 Everybody always has a boss.

12 Q. But no single individual was a higher person
13 than Mr. Mahoney.

14 A. He was the chairman and CEO of the company,
15 that's correct.

16 Q. And if he said in an official statement that
17 Monsanto must rectify the mistakes of the past, you're
18 testifying to this jury that that does not mean
19 cleaning up PCBs that it discharged into a river system
20 over 30 years, because you don't believe that was a
21 mistake?

22 A. That's not what I'm saying.

23 Q. Well, that's what I'm trying to get at, sir.
24 Do you believe, yes or no -- and I think you've already
25 answered it -- that it was not -- strike that. Too

15

1 many negatives.

2 Do you believe, yes or no, that it was a
3 mistake for Monsanto to discharge PCBs into Snow Creek,
4 Choccolocco Creek, and now Lake Logan Martin over a
5 40-year period?

6 MR. PECK: Object to the form of the question.

7 THE WITNESS: Yeah. Again, I think what I've
8 said is, you know, looking back, had we wished we
9 hadn't done certain things? By today's standards,
10 that's probably a right thing to do and to say and
11 that's what we're about, trying to resolve today and
12 over the last several years.

13 BY MR. GRAMMAS:

14 Q. Okay. I'll ask the question again because it
15 was obviously confusing. Do you believe, sir, that
16 Monsanto discharging PCBs out of its plant in Anniston
17 into Snow Creek, Choccolocco Creek during the 1930s,
18 '40s, '50s, '60s, '70s was a mistake?

19 MR. PECK: Object to the form of the question.

20 THE WITNESS: By today's standards?

21 BY MR. GRAMMAS:

22 Q. Yeah.

23 A. I'm troubling with --

24 Q. By today's standards.

25 A. I'm just going to answer it that basically it

15

1 was something that I wished wouldn't have happened.
2 That doesn't mean that -- in my mind, that that is a
3 mistake.

4 Q. Okay. Again, sir, my question has not been
5 answered.

6 MR. PECK: You have asked it twice. He's
7 answered it twice.

8 MR. GRAMMAS: I have asked it twice.

9 MR. PECK: You don't like it. I'll let you
10 ask it one more time.

11 MR. GRAMMAS: I'll ask it as many times as it
12 takes to get an answer.

13 MR. PECK: That ain't going to happen.

14 MR. GRAMMAS: Well, it's going to happen.

15 MR. PECK: It's not going to happen.

16 BY MR. GRAMMAS:

17 Q. Do you personally believe, as the senior
18 environmental manager for Solutia, that Monsanto's
19 discharging of PCBs into Snow Creek and Choccolocco
20 Creek during the 1930s through the '70s was a mistake,
21 yes or no? And if you want to explain it, you can, but
22 the question is simple: Was it a mistake?

23 MR. PECK: You can answer the question however
24 you want. You don't have to accept Pete's instruction
25 as to how to answer the question.

15 1 THE WITNESS: Again, I think I've tried to be
2 2 pretty clear on this, that had I wished it didn't
3 3 occur? Yes. Are we about taking care of it? Yes. In
16 4 my mind, you're using the word "mistake" and that, to
5 5 me, is not a mistake.

6 6 BY MR. GRAMMAS:

7 7 Q. So when Mr. Mahoney stood up at a meeting of
8 8 the Corporate Conservation Council of the National
9 9 Wildlife Federation, of which you were on the board of
10 10 directors, on January 30, 1990 --

11 11 A. No, I was not.

12 12 Q. Exhibit 1 of your deposition, which is your
13 13 bio that we discussed earlier --

14 14 A. Correct.

15 15 Q. -- says that you were the chairman of the
16 16 National Wildlife Federation's Corporate Conservation
17 17 Council. Did I read that correctly?

18 18 A. Yes, you did.

19 19 Q. And you're saying that that's not true?

20 20 A. That wasn't the question that you asked me.

21 21 Q. What did I ask you?

22 22 A. Let him repeat the question.

23 23 Q. It doesn't matter what I asked you. You will
24 24 admit that you were a chairman of the National Wildlife
25 25 Federation's Corporate Conservation Council?

16

1 A. Yes.

2 Q. Okay. Now, is that different from the
3 National Wildlife Federation?

4 A. Yes.

5 Q. How are they different?

6 A. This is a council. That is the federation.

7 Q. But they're related?

8 A. The council was an affiliated group that was
9 sponsored by the federation.

10 Q. Were you present at this January 30, 1990,
11 meeting with the Corporate Conservation Council of the
12 National Wildlife Federation?

13 A. I don't believe so.

14 Q. Did you ever have any conversations with Mr.
15 Mahoney about what he meant when he said, We, Monsanto,
16 must rectify the mistakes of the past?

17 A. No.

18 Q. Sitting here today, sir, do you believe that
19 as part of his corporate goal, as stated at this
20 meeting on January 30, 1990, that rectifying mistakes
21 of the past would include removing PCB-contaminated
22 sediments in Snow Creek, Choccolocco Creek, and Lake
23 Logan Martin --

24 MR. PECK: Object to the form of the question.

25 THE WITNESS: I think.

16

1 BY MR. GRAMMAS:

2 Q. -- that Monsanto put there?

3 MR. PECK: Object to the form of the question.

4 THE WITNESS: I think what his response would
5 have included was that Monsanto will take a
6 constructive attitude towards questions of prior waste
7 disposal and discharges and we will be an effective
8 player in the resolution of such issues.

9 BY MR. GRAMMAS:

10 Q. I'm going to show you what's been marked to
11 your deposition as Plaintiff's Exhibit 3. What is
12 that, sir?

13 A. It appears to be a copy of the speech that he
14 made at this meeting on January 30.

15 Q. What's the top of it say?

16 A. It says "Monsanto Pledge."

17 Q. And the first page says Page 1 of 2, and the
18 second page says 2 of 2. Do you recognize this
19 document as having come off of the web page that
20 Solutia has?

21 A. That's what the heading says.

22 Q. Have you ever surfed this web page?

23 A. I've been on the web page.

24 Q. Do you have the authority to approve what goes
25 on and what does not go on the web page with respect to

16

1 environmental issues?

2 A. I may review some of the things, but not all
3 the things.

4 Q. The purpose of the web page is to allow the
5 public to, at their leisure, read what Monsanto chooses
6 and Solutia chooses to put on the web page to educate
7 them about the type of company Monsanto and Solutia is,
8 right?

9 A. I mean, I think that's part of the purpose.

10 Q. It's almost like sort of public relations-type
11 information.

12 A. I would say -- I would just more categorize it
13 as information.

14 Q. Right. And you certainly don't want any false
15 information to be put out on a web page where millions
16 of people can read it, do you?

17 A. I wouldn't want any false information to be
18 put out, period.

19 Q. And that's because you don't want millions of
20 people who may stop on the Monsanto web page to read
21 information that does not accurately and truly and
22 correctly reflect the company's position as it's
23 described on the web page, right?

24 A. That's correct.

25 Q. Now, this particular document that we got out

16

1 is entitled "Monsanto Pledge" and it states here that:
2 "The Monsanto pledge was announced by chairman and CEO
3 Richard Mahoney at a meeting of the Corporate
4 Conservation Council of the National Wildlife
5 Federation in Washington on January 30, 1990."

6 Did I read that correctly?

7 A. Yes.

8 Q. And then it says: "Here is the pledge as
9 announced by Mr. Mahoney," and it starts off with a
10 series of quotes and paragraphs; is that correct?

11 A. That's correct.

12 Q. The tenth paragraph delivered to these folks
13 by Mr. Mahoney says what, sir?

14 A. "We must rectify the mistakes of the past
15 while we continue to develop and introduce the new
16 technologies to provide the essentials for mankind in
17 the future."

18 Q. Now, are you testifying under oath today that
19 that does not include and it never was intended to
20 mean -- when Monsanto said "We're going to rectify
21 mistakes of the past," to remove PCB contaminants that
22 it placed in sediments in Snow Creek, Choccolocco
23 Creek, and Lake Logan Martin?

24 MR. PECK: Object to the form of the question.

25 THE WITNESS: Two points; one for

17

17

1 clarification, that the paragraphs of the pledge itself
2 are included in the first basically seven statements.
3 These quotes are part of the general communication
4 around that pledge.

5 Now, specifically to your question, I think
6 what this would basically say describes the process
7 that we're in that says that if there have been past
8 disposal or practices or waste for which Monsanto --
9 and we would say Solutia -- is responsible, that we
10 will be a proactive and constructive part of the
11 process to bring those to resolution.

12 BY MR. GRAMMAS:

13 Q. All right, but nowhere in that statement or
14 that pledge does he say what you just described, does
15 he? What he says in very simple, easy, and
16 understandable terms is, quote/unquote: "We must
17 rectify the mistakes of the past."

18 A. I think what I'm giving you is basically the
19 practice that we had at Monsanto and we have at Solutia
20 that would implement that statement. It would be wrong
21 for any officer or chairman to basically say we have an
22 open checkbook to the world for whatever anybody
23 alleges against the company, and that's what your
24 statement seems to imply.

25 Q. No, sir, it does not, and I'm sorry if you

17 1 interpret it that way. That's why -- see, originally I
2 2 asked you if you felt it was a mistake for Monsanto to
3 3 put the PCBs in this river system in the first place.
4 4 Do you recall that question?

5 A. I believe I do and I think I answered it three
6 6 times.

7 Q. I think you skirted answering it three times.
8 8 I don't think I ever heard an answer.

9 MR. PECK: Listen Pete, you can ask him
10 10 questions, you're not here to debate with him or to
11 11 argue with him. That's all inappropriate.

12 BY MR. GRAMMAS:

13 Q. I don't think I ever heard an answer --

14 MR. GRAMMAS: Are you finished?

15 BY MR. GRAMMAS:

16 Q. I don't think I heard an answer --

17 MR. PECK: I heard an answer three times.

18 BY MR. GRAMMAS:

19 Q. -- yes or no whether it was a mistake or not,
20 20 and because I never heard an answer, to my
21 21 satisfaction, anyway, that it was a mistake, I
22 22 presented you with Mr. Mahoney's statement that we
23 23 must -- "we" being Monsanto not me, I didn't write
24 24 these words, did I? These are Mr. Mahoney's words,
25 25 aren't they?

17

1 A. They appear to be.

2 Q. These are the words that Solutia puts on a web
3 page for millions of people to read at their leisure,
4 right?

5 A. I mean, the technical response is both web
6 pages, because of the company's setup are both
7 interchangeable, but those systems have now been
8 separate and what you will find is that the Solutia and
9 the Monsanto web pages, I believe, today are separate.

10 Q. Okay. But on this document it says the
11 Monsanto pledge and then there's the Solutia logo on
12 the top right-hand corner of the page, right?

13 A. That's correct.

14 Q. So Solutia adopted the statements Mr. Mahoney
15 made in here, too, haven't they?

16 A. I think that we have very similar statements.
17 We've not adopted those statements as they exist or
18 were placed on the walls at Monsanto.

19 Q. Does Solutia believe that it, like Monsanto,
20 should rectify the mistakes of the past?

21 A. I think I have answered that question, that --
22 again, that basically says that we feel that where we
23 have responsibilities and need to act in a responsible
24 manner with respect to actions of the past, we will do
25 so and we will do so proactively, not in an adversarial

17

1 process.

2 Q. Do you believe, sir, that Monsanto has
3 responsibilities to clean up the PCBs at Snow Creek,
4 Choccolocco Creek, and Lake Logan Martin, and now
5 Solutia?

6 A. I think if we continue our study work and it
7 determines that we have responsibilities as a result of
8 that, we will be there taking care of remediation which
9 is appropriate.

10 MR. PECK: Pete, let me tell you, this is an
11 additional document that I meant to produce at the
12 beginning of the deposition. It's something that we
13 should have provided that is similar to things you
14 have, but when we searched Mr. Pierle's records, the
15 notebook that this was found in was at somebody else's
16 desk and it came up and we should have produced it.

17 MR. GRAMMAS: I think you may have already
18 produced something like that.

19 (A SHORT BREAK WAS HELD.)

20 BY MR. GRAMMAS:

21 Q. In 1986, Mr. Pierle, you were named the
22 director of the environmental operations of Monsanto
23 Chemical Company; is that correct?

24 A. That's correct.

25 Q. And that was an operating unit of Monsanto

17

1 Company?

2 A. Yes.

3 Q. And your responsibilities, among others in
4 that position, were to implement compliance programs
5 and cleanup of Superfund sites?

6 A. That's correct.

7 Q. How many Superfund sites have you worked with?

18

8 A. I think we have something on the order of 100
9 sites over time, maybe a few more where there have been
10 alleged Monsanto or Solutia responsibilities.

11 Q. How many of those sites involve PCBs? And if
12 you don't know the exact number --

13 A. My answer would be not many, very few.

14 Q. Tell me the PCB Superfund sites over which
15 you've had cleanup responsibility for Monsanto Company.

16 A. I don't think we've had any what I would
17 characterize "PCB Superfund sites."

18 Q. How many Superfund sites have you had cleanup
19 responsibilities for for Monsanto that involve PCBs?

20 A. Again, I don't remember. It's been a few.

21 Q. Could you tell me those locations?

22 A. The one I recall was a site in Texas called
23 Motco that had, I think, some levels of PCB material in
24 it. I'm really struggling. I don't recall any others
25 where PCBs were a significant question or issue.

18

1 Q. Has Monsanto been involved in any Hudson River
2 PCB remediation?

3 A. No.

4 Q. Are you aware of any issues relating to PCBs
5 on the Hudson River?

6 A. Yes.

7 Q. How are you aware of those?

8 A. Through the general literature and
9 understanding of Superfund cases.

10 Q. Motco, was that a customer of Monsanto's that
11 purchased PCBs?

12 A. No.

13 Q. Why is it Monsanto is involved in PCB
14 remediation in Texas?

15 A. We were involved in the remediation, which
16 included PCBs, at that site. I didn't say that they
17 were Monsanto PCBs and that's why we were involved.

18 Q. Why were you involved with that site at all?

19 A. It was a materials reclaiming site that was
20 owned by multiple and succeeding owners that was
21 reclaiming basically styrene tar materials, and the
22 owner basically took a hike, and through the sort of
23 pre-Superfund and Superfund investigative process, it
24 was determined that some of those materials had
25 originated at Monsanto sites and that brought us into

18

1 the involvement at that location.

2 Q. Some of those materials included PCBs, right?

3 A. Again, there were materials at the site that
4 were PCBs, again a small amount. I don't recall
5 whether those were ever part of Monsanto's
6 responsibility.

7 Q. What role did you have in drafting the
8 environmental guidelines back in the 1989 time frame
9 through today, both for Monsanto and now Solutia?

10 A. Well, I've been involved in the process, to
11 varying degrees, in reviews and rewrites as part of my
12 job responsibilities and led the rewrite in Solutia as
13 we became a separate company.

14 Q. Now, the environmental guidelines for Solutia
15 are still in their draft form, correct?

16 A. We have finalized those.

17 Q. The document that I see, and we'll talk about
18 it in a minute, is Solutia's commitments manual. Is
19 that what you're talking about?

20 A. No. I think that is a -- what I referred to
21 was the commitment statements themselves, the six
22 commitment statements which are the broad policy
23 statements, I believe are complete.

24 Q. You're talking about -- not to interrupt you,
25 but just so the record's clear, you're talking about

18

1 these six statements right here?

2 A. That's correct.

3 MR. GRAMMAS: Let's go ahead and mark that.

4 (PIERLE EXHIBIT NO. 4 WAS FIRST DULY

5 MARKED, RECEIVED AND MADE A PART OF THE RECORD.)

6 BY MR. GRAMMAS:

7 Q. Plaintiff's Exhibit 4, could you identify that
8 for me, please, sir?

9 A. This appears to be a document, again taken off
10 of the Solutia web site, which states Solutia's
11 environmental health -- or, environmental safety and
12 health commitments, and there are basically six
13 statements.

14 Q. Those are the broad policies that dictate
15 Solutia's environmental conduct?

16 A. That's correct.

17 Q. All right. Now, Solutia commitments manual,
18 dated June 9, 1998, with a big "Draft" stamp on it,
19 it's about two inches thick and it's got "Draft"
20 written on every page, what is this?

21 A. That is a document that is intended to further
22 really expound upon these statements and to delineate
23 for us guidance and requirements and practices to be
24 followed within Solutia.

25 (PIERLE EXHIBIT NO. 5 WAS FIRST DULY

18

1 MARKED, RECEIVED AND MADE A PART OF THE RECORD.)
2 BY MR. GRAMMAS:

3 Q. Now, I've identified this as Exhibit No. 5,
4 the June 9th document that you were just describing.
5 This document, Exhibit No. 5, has not been implemented
6 yet; is that correct? It's still in the draft phases?

7 A. The document is in its draft phase. It
8 represents, though, many of the practices that were in
9 existence and documented at Monsanto; and therefore,
10 many of these are in practice today, but perhaps not
11 all, because indeed what we're trying to do is to
12 tailor this specifically to Solutia's businesses.

13 (PIERLE EXHIBIT NOS. 6 AND 7 WERE FIRST DULY
14 MARKED, RECEIVED AND MADE A PART OF THE RECORD.)
15 BY MR. GRAMMAS:

16 Q. We're going to talk about them in a minute.

17 Plaintiff's Exhibit 6, sir, looks to me to be
18 a document created sometime around May 22nd, 1989,
19 according to a cover letter attached to worldwide
20 guidelines that Monsanto followed on environmental
21 safety and health guidelines. Is that a correct
22 statement?

23 A. You did say '89?

24 Q. Yes, sir.

25 A. Yes.

19

19

1 Q. And Plaintiff's Exhibit No. 7 is a similar
2 type document, with a different cover letter, dated
3 November 11, 1992, which I believe in prior depositions
4 have been -- has been described as an updated version
5 of the 1989 guidelines; is that correct?

6 A. I think that's accurate.

7 Q. Now, what involvement did you have in drafting
8 this 1989 and this 1992 environmental safety and health
9 guidelines for Monsanto?

10 A. Again, I was an active participant at both
11 times. In the '89 document I would have been in the
12 chemical company, so I would have been looking at,
13 reviewing, and participating, along with others, in the
14 development of this. And again, this was a revision of
15 the further -- of a prior version itself.

16 And in this case, in '92, I had less of a
17 hands-on, you know, working with this as opposed to
18 sort of getting a process underway to update these and
19 to include basically what was inclusive of the Monsanto
20 pledge.

21 Q. Now, you had a fairly involved role in
22 drafting, creating, and making sure that these
23 guidelines for Monsanto were implemented and followed
24 by the plants that fell under the Monsanto Company,
25 right?

19 1 A. That role changed from time to time. In the
2 2 '89 time period, it included implementation; whereas,
3 3 in '92, in a corporate role, the direct implementation
4 4 was again up to the operating units, and the role of
5 5 myself and the corporate staff at that time was one
6 6 more of oversight.

7 Q. On November 11, 1992, you wrote to Monsanto
8 8 employees distributing the 1992 updated version of the
9 9 guidelines, right?

10 A. That's correct.

11 Q. Now, in this November 11 letter you write to
12 12 Monsanto employees that the Monsanto pledge serves as
13 13 the umbrella for Monsanto's overall environmental
14 14 safety and health programs, right?

15 A. That's correct.

16 Q. And in support of that commitment, you
17 17 developed this -- what you refer to as the Monsanto
18 18 pledge guidelines, right?

19 A. That's correct.

20 Q. And these guidelines replace the guidelines
21 21 from the environmental safety and health guidelines,
22 22 which is Exhibit 6, right?

23 A. Assuming this was the version that was in
24 24 effect at that time, because this one does not refer to
25 25 the '89 document specifically.

19

1 Q. But it does refer to environmental safety and
2 health guidelines, which are the bold words contained
3 on the very first page of the 1989 document, right?

4 A. Yes.

5 Q. And you state in here that the November 11,
6 1992, Monsanto pledge guidelines set forth the
7 management expectations for environmental safety and
8 health performance, correct?

9 A. Correct.

10 Q. And that these guidelines describe key results
11 against which progress will be measured, right?

12 A. That's correct.

13 Q. Were you a member of the environmental policy
14 committee that approved these guidelines?

15 A. Yes.

16 Q. So you voted in favor of implementing the
17 Monsanto pledge guidelines; is that a fair statement?

18 A. Yes.

19 Q. Now, you direct all Monsanto employees that
20 received a copy of these Monsanto pledge guidelines to
21 conform with the spirit of these guidelines, correct?

22 A. Yes.

23 Q. In fact, you say that conforming with the
24 guidelines is not -- strike that.

25 You say that they don't have a choice in

19

1 whether they can conform or not conform, right?

2 A. I think what it says specifically, and I'll
3 read it: "Conformance with the spirit of the
4 guidelines is not optional, although considerable
5 latitude and innovation is expected in tailoring the
6 guidelines for specific operating units."

7 Q. Okay. You direct these employees to follow
8 these guidelines in a non-optional fashion, right?

9 A. Again, it's important to make the distinction
10 that says what the spirit of the guidelines are and
11 what that then says is that you are expected to be
12 smart and innovative and there is latitude in tailoring
13 the guidelines for the specific operating units.

14 Q. Did the latitude -- and by the way, who has
15 the latitude in tailoring these guidelines, plant
16 manager?

17 A. I think that would depend upon what the
18 particular issue was within the guidelines. They would
19 not have latitude to change policy, but within here
20 they would have latitude on implementation of programs,
21 timing of results, things of that nature.

22 Q. Would you consider the Monsanto pledge an
23 environmental policy?

24 A. The high-level statements within the pledge
25 itself would be generally considered to be the policies

19 1 that we expect people to operate under.

2 Q. And if the jury believes, based on Plaintiff's
3 Exhibit 3, which is entitled the "Monsanto Pledge" that
20 4 we've just identified in your deposition, that part of
5 the pledge was for Monsanto to rectify mistakes of the
6 past, that would not be something that, say, a plant
7 manager in Anniston could just willy-nilly ignore,
8 correct?

9 A. I think I made it clear that that particular
10 statement that you referred to is not part of the
11 Monsanto pledge.

12 Q. And is that because Monsanto, and now Solutia,
13 does not believe that it should, as one of its
14 environmental policies, rectify mistakes of the past?

15 A. That's not what I said. I think what I said
16 on a factual basis is that the first seven statements
17 deal with what the "Monsanto pledge," as it came to be
18 called, was the direction provided the employees as
19 policy direction.

20 Q. You had the authority of setting policy,
21 environmental policy for Solutia and Monsanto when you
22 held that position there, right?

23 A. I could not unilaterally set policy, no.

24 Q. You mean to tell me if you felt like a good
25 policy for Monsanto, and now Solutia, to have is to

20

1 rectify mistakes of the past, you couldn't ensure that
2 that policy was implemented?

3 A. What I'm saying to you is I do not have
4 unilateral authority within the structure to do that.

5 Q. Again, in the 1989 environmental safety and
6 health guidelines, who is Mr. Corbett, H.J. Corbett?

7 A. He was at that time the senior executive that
8 had responsibility for environmental health and safety
9 and some other functions.

10 Q. So he basically was your predecessor at
11 Monsanto?

12 A. Well, he held the position -- it was at sort
13 of a little bit different level and different scope,
14 but with respect to environmental safety and health
15 matters, he was a former leader of that area.

16 Q. And in 1992 you wrote the letter distributing
17 the Monsanto pledge guidelines, right?

18 A. That's correct.

19 Q. And based on his similar position as you, in
20 1989 he wrote the letter distributing the environmental
21 safety and health guidelines?

22 A. That's correct.

23 Q. Now, it was also his instruction that the
24 employees of Monsanto, it was not optional for them not
25 to follow the spirit of the guidelines implemented,

20

1 correct?

2 A. If I could review the document.

3 Yeah, it says compliance with the spirit of
4 the guidelines is not optional.

5 Q. And you received these guidelines, did you
6 not?

7 A. That's correct.

8 Q. And you, like every other employee, were
9 required to follow these guidelines, too, in setting
10 your environmental policies, right?

11 A. Again, the spirit of those guidelines, that's
12 correct.

13 Q. Now, the words contained in these guidelines
14 have significant meaning, do they not?

15 A. Yes.

16 Q. And these words were not empty promises that
17 Monsanto made in an effort to trick people into
18 believing that they were concerned about the
19 environment, were they?

20 A. No.

21 Q. The promises made in these guidelines were
22 self-imposed obligations that Monsanto, as an
23 environmental policy, committed to follow, correct?

24 A. Again, the guidelines contain sort of two or
25 three different levels. One is a set of policy that

20 1 sets the conduct and behavior. There are programs and
2 2 specifics that were at that time intended to represent
3 3 what we were doing and we were serious about those,
4 4 that's correct. But in some cases, the programs or the
5 5 dates and things changed as things became practical to
6 6 do or impractical to do or for other reasons.

7 Q. But the bottom line is, sir, these guidelines
8 8 set the standards, promises, duties, and
9 9 responsibilities of Monsanto and its employees to its
10 10 stakeholders, correct?

11 A. I would say that what was set specifically and
12 12 communicated to the public were the high-level policy
13 13 statements. The balance of it and the more specific
14 14 guidelines were the internal programs that were
15 15 evolving and being developed. So there's a slight
16 16 difference there.

17 Q. There is a slight difference, and I don't mean
18 18 to be confusing and I appreciate you being clear in
19 19 your answer, but we'll limit it to what was set in
20 20 stone to the policy guidelines, okay? Those policies
21 21 were self-imposed standards that Monsanto expected and
22 22 demanded its employees to follow, right?

23 A. That's correct.

24 Q. Now, Solutia has not as of yet adopted the
25 25 more detailed standards that we find in Plaintiff's

20

1 Exhibits 6 and 7 because Solutia's basically still in
2 draft form, right?

1

3 A. I think what we have said is to the greatest
4 extent, we should continue to use the content of these
5 guidelines as the direction until they are replaced
6 with a new set of guidelines.

7 Q. You read my mind. That's where I was going
8 next. So until the new guidelines are replaced,
9 Solutia's required to follow the Monsanto pledge
10 guidelines contained in your November 11, 1992, letter,
11 right?

12 A. Yeah. Again, in reading the statement, that
13 those at the time in '92 said that latitude and
14 innovation was expected in tailoring the guidelines for
15 specific operating units. So, to an extent that
16 qualifier still exists today.

17 Q. Right. Same exact expectations of Monsanto in
18 1992 apply today to Solutia as far as these Monsanto
19 pledge guidelines are concerned?

20 A. Again, just to be clear with respect to our
21 policy statements and guidance, those have been cleared
22 and clarified in our commitment statements and to the
23 extent that these set out, you know -- guidelines are
24 what they are. Guidelines are things that basically --
25 you know, they're intended to be developed to be

1 followed, the spirit of the guidelines. So part of it
2 is if the guideline doesn't apply to you, then
3 obviously you don't follow it.

4 Q. Right, but if it does apply to you, you do
5 follow it.

6 A. Unless you have some situation or set of facts
7 that says, you know, that for some reason it's not --
8 you're not able to do it.

9 Q. Okay. Now, when some individual manager of a
10 plant or some individual low-level employee is faced
11 with a decision about whether or not to follow one of
12 these guidelines and makes the decision that it is not
13 required to follow it, for whatever reason, because
14 under the spirit of the guidelines, he feels like he
15 doesn't have to, what must he do in order to not follow
16 the guidelines, if anything?

17 A. Your question confused me because you said
18 "under the spirit of the guideline, he feels he doesn't
19 have to do it." I think what this document says is
20 that if it's under the spirit of the guideline and that
21 would be his understanding, then the person would have
22 to do it.

23 Q. What I meant to say was, I interpret that
24 sentence -- when you talk about "spirit of the
25 guidelines," it's both in your November letter and in

1 Mr. Corbett's May 1989 letter -- that following the
2 spirit of these guidelines is not optional.

3 A. That's correct.

4 Q. That means there's some leeway -- or does it
5 mean, rather, that there's some leeway that managers or
6 lower-level employees have to not follow these
7 guidelines?

8 A. Again, let me make two comments. One, if they
9 felt that there was an issue with respect to the spirit
10 of the guideline, they would bring that issue back up
11 through the process to the policy committee at which
12 time there could be a consideration to change the
13 policy and a specific guideline. If the individual was
14 following, in their minds, the spirit of the guidelines
15 but was doing it in a different way or doing something
16 slightly different that was still within the spirit,
17 then they may have the authority just to do that
18 themselves or, within their unit, have a different
19 process for making that decision.

20 Q. I think we're on the same page. Really what I
21 want to know is, Mr. Pierle, if some lower-level
22 employee, or any employee, for that matter, makes a
23 decision that they're not going to follow these
24 guidelines, what must they do to bring that to the
25 attention of Monsanto, and now Solutia, if anything?

1 A. Well, again, if it's the spirit of the
2 guideline, they would bring that probably back up
3 through their sort of chain of command, to use a common
4 expression, for consideration. If it dealt with
5 specific execution of a portion of this which is
6 defined as optional, then they may feel free to make
7 that decision on their own.

8 Q. And if it dealt with a portion of what is
9 defined as not optional and they wanted to not follow
10 it, what would they have to do?

11 A. I think they may have the ability -- again,
12 not on a policy matter, but they may have the ability
13 to say, That doesn't apply to me; therefore, I don't
14 have to follow that specific -- that specification.

15 Q. We're almost there. We're almost there.

16 A. So they can make that judgment themselves.

17 Q. We're like this close to where we need to be,
18 but we've got to jump that next hurdle to get to the
19 last statement, Mr. Pierle. There may be situations
20 where some employee feels like they don't have to
21 follow it, but yet according to the guidelines, it's a
22 non-optional category. Do you see the conflict now?
23 The employee thinks, I don't have to follow it; when,
24 in fact, you, as the highest-level manager would say,
25 No, you're wrong, you'd better follow that. In that

2 1 situation, what must the employee do to bring it to
2 your attention or someone else's attention, if
3 anything?

4 A. I think I described that they would bring that
5 situation -- we would hope they would bring that
6 situation back up through a chain of command or through
7 their plant people or business people, or whatever,
8 back to say, I've got an issue here that we need to
9 discuss.

10 Q. What happens if you become aware of employees
11 or plants ignoring the policies that don't fall within
12 some of these exceptions we're talking about, they just
13 violate the policy stated in the --

14 A. We have a very aggressive audit program that
15 we have had since 1980 that basically looks at the
16 conformance with external requirements and internal
17 requirements. The results of those audits are
18 tabulated and actions are put in place to, you know,
19 rectify or improve the situation. If, in that process,
20 there was a discovery of an employee who had blatantly
21 disregarded it, it could be subject up to dismissal of
22 the individual.

23 Q. Are you aware of that ever happening, and in
24 particular at Anniston?

25 A. I don't know whether it has or hasn't.

2 1 Q. Would that be something that would normally
2 2 come to your attention at the level you're at?

3 3 A. Not necessarily.

4 4 Q. All right. Now, what, in your mind, sir, does
5 5 someone have to do to prove to you, as the lead
6 6 environmental manager over remediation, that your
7 7 company is fairly established as a responsible party
8 8 for causing pollution or contaminants in general?

9 9 A. Again, I think there has been an evolution of
10 10 definition around that responsible party.

11 11 Q. And I don't mean that in a term of art. Okay?
12 12 What I want to know is: What does the government or a
13 13 person just bringing something to your attention or a
14 14 plaintiff suing Monsanto, and now Solutia, have to do
15 15 in your mind -- not legally, but in your mind -- to
16 16 prove to convince you that your company's conduct was
17 17 fairly established as the source of pollution?

18 18 A. I think there would have to be a factual
19 19 presentation that basically not only were our materials
20 20 there, but it was a result of some action that was
21 21 assignable or definable to the company.

22 22 Q. Okay. If, for example, they showed you, as
23 23 the environmental manager chief over remediation, that
24 24 one of your plants discharged thousands of pounds of
25 25 PCBs into a river system and that they were finding

2 1 concentrations of the PCBs, both in the sediment and in
2 fish, and that there was no other apparent source of
3 PCBs, would, in your mind, that fairly establish that
4 Monsanto was the party responsible for putting it
5 there?

6 MR. PECK: Object to the form of the question.

7 THE WITNESS: You had too many hypotheses in
8 there.

9 BY MR. GRAMMAS:

10 Q. We'll break them down. All right. If the
11 person showed you, through evidence, that Monsanto
12 discharged thousands of pounds of PCBs for close to 40
13 years, we'll just say approximately 40 years, into a
14 river system -- you got that hypo?

15 A. Yes.

16 Q. -- and no apparent other source remotely close
17 to Monsanto discharged that quantity of PCBs into the
18 river system -- are you with me?

19 A. Yep.

20 Q. -- and finally, that concentration levels of
21 PCBs are being found in fish in the river system and in
22 sediment in portions of the river system, those three
23 things are shown to you to exist -- and I can repeat
24 them if you want to because we were kind of going slow
25 writing them -- in your mind, if you were faced with

2 1 those three facts, sets of facts, would you believe
 2 that that person who presented you those facts has
 3 fairly established Monsanto as being a responsible
 4 party for the source of the PCBs in the river and fish?

 5 MR. PECK: Object to the form of the question.

 6 THE WITNESS: I think not necessarily, but it
 7 would sure cause me to want to understand answers to
 8 some additional questions.

 9 BY MR. GRAMMAS:

 10 Q. Tell me, Mr. Pierle, as the head environmental
 11 manager over remediation for Monsanto, what a person
 12 has to show you to fairly establish -- notice I didn't
 13 say "conclusively" establish that you were the source,
 14 I just said "fairly" establish that you're the source,
 15 what in the world does somebody have to prove to you to
 16 establish that you would be the source of PCBs in the
 17 situation I've just described to you?

 18 A. I think what I said was that that would cause
 19 me to feel that there's enough information that says
 20 we're probably there. But within that, I would say
 21 there are more things that I then want to understand
 22 with respect to that site and the facts around that
 23 that would help me to understand then what -- you know,
 24 how fair is that and how extensive is it?

 25 Q. But under those facts, yes or no, would that

3 1 fairly establish in your mind that you're a source that
2 would then prompt you to do some other things?

3 A. I think what I said is that that would cause
4 me to make sure we were involved in understanding,
5 then, the extent and whether there's an issue there or
6 not.

7 Q. And you, based on your own guidelines, sir,
8 know that once those things are fairly established,
9 your role is to immediately get involved in that
10 process, don't you?

11 A. I think under different laws that, you know,
12 you could or you couldn't.

13 Q. Well, we're not talking about laws, we're
14 talking about the self-imposed guidelines, sir, that
15 you had a direct hand in making.

16 A. And I think what I said is that that would
17 cause us to get proactively involved in further
18 understanding that and that we would do that and that's
19 exactly the path that we're following. That's why
20 we've such extensive investigations and studies
21 underway right now in cooperation with ADEM and others
22 down there to understand what the factual situation is.

23 Q. Sir, your obligation under Monsanto
24 guidelines, the health and safety guidelines in 1989,
25 was to immediately get involved as soon as you became

3 1 aware of those issues being fairly established, true?

2 A. Yes, and I think we have.

3 Q. Now, is "immediate," in your mind, waiting 30
4 years to do something about it?

5 A. You are again asking a question that wasn't 30
6 years. Number one, you know, the guidelines aren't 30
7 years old. So you're confusing the question. You're
8 certainly confusing me. I think what the guideline
9 says is that based upon our experience that produced
10 those guidelines, was that with respect to looking at
11 retroactive actions and things that happened, that
12 Monsanto would take a position, and Solutia, to get
13 immediately involved in that process, not to stand back
14 and say, We're not involved, go away, come back. And
15 that's exactly the guidelines, the spirit of the
16 guidelines, and that's exactly what we're doing.

17 Q. Okay. When you say "immediately," what does
18 that mean to you? To me it means whoa, we've done
19 something, let's do something to figure out what's
20 going on and fix this problem. That's what
21 "immediately" means to me, the second you become aware
22 of it. What does it mean to you?

23 A. Well, I'll give you an example at another
24 site, a Superfund site, like Motco and others, we
25 became immediately involved in the process.

3

1 Q. Let's talk about Anniston.

2 A. That process has gone ten to 12 years. In
3 many of these, immediate involvement leads to a process
4 that, through no fault of anybody, is extremely
5 extensive. So that's what "immediately" means to me.

6 Q. And that would apply in Anniston, Alabama.

7 A. And I think that's exactly what I've described
8 and what we've done.

9 Q. And if you became aware in the '80s that there
10 was PCB contamination because the attorney general told
11 you that they were finding high level of PCB in Snow
12 Creek, it was your responsibility at that time to take
13 immediate action to remediate not only what the
14 attorney general found, but to start this process that
15 you started four years later, and you're doing eight,
16 ten years later, to determine what impact your
17 discharges may have had on the river system, right.

18 MR. PECK: Object to the form of the question.

19 THE WITNESS: Again, what you described in
20 '85, we got immediately involved with the extent of the
21 problem that was defined and we stayed through it
22 through the remedy of that issue.

23 BY MR. GRAMMAS:

24 Q. Sir, you did not do anything other than
25 remediate the upper portion of Snow Creek, which is

3 1 what I believe the attorney general asked you to do,
2 2 right?

3 MR. PECK: I object to the form of the
4 4 question.

5 THE WITNESS: I'm not familiar with what the
6 6 specific --

7 BY MR. GRAMMAS:

8 Q. And you didn't start looking into this more
9 9 pervasive study, this process you've been describing,
10 10 until around 1993 --

11 MR. PECK: Object to the form of the question.

12 BY MR. GRAMMAS:

13 Q. -- when the Alabama Power personnel brought to
14 14 your attention PCBs were leaching from property you had
15 15 given it 30 years earlier, right?

16 MR. PECK: Object to the form of the question.

17 THE WITNESS: We didn't give them the
18 18 property. They bought the property with knowledge of
19 19 what was there. So, again, your factual statements in
20 20 your question are --

21 BY MR. GRAMMAS:

22 Q. You-all didn't begin this process that you're
23 23 currently in until 1993.

24 A. Thereabouts.

25 Q. You will admit that that's four years after

4

1 this remediation you did on the upper portion of Snow
2 Creek.

3 A. It is, but it's also immediately upon
4 discovery of a situation, as I say, with a landfill and
5 the runoff question that we have continued to stay
6 with.

7 Q. How long does it take to do a study like this?
8 If you started in 1993 and your sole focus was to
9 determine the exact impact of what these PCBs were
10 doing to the environment, if anything, how long does it
11 take?

12 A. Again, what I've described is that through a
13 process that's been open and with the regulatory
14 officials, we have been in a stepwise process to
15 understand what the factual situation is; and
16 unfortunately, I guess that takes a long time. But the
17 reality is we're moving as fast as we can with respect
18 to sampling, understanding, determining remedies,
19 dealing with sources of problems, and doing this in a
20 very responsible way.

21 Q. Okay. And the first step you took was to
22 clean your own property, wasn't it, sir?

23 A. I think the first step, an accurate
24 characterization of that, was to deal with what was
25 defined at that point in time as a potential source of

4 1 PCB into Snow Creek, and that involved part of our
 2 property, but almost immediately, as well, took us to
 3 property that was adjacent to the plant site and we
 4 were just as quickly dealing with property owners
 5 adjacent to the plant site.

 6 Q. The first step Monsanto took, in your own
 7 words, sir, was to clean up its own backyard, right?

 8 MR. PECK: Object to the form of the question.
 9 Those were never his words.

 10 THE WITNESS: Those are your words.

 11 BY MR. GRAMMAS:

 12 Q. I'm asking you. Do you understand what I'm
 13 asking?

 14 A. You're not asking me. I told you "no" to that
 15 question.

 16 Q. That was not the first thing you did. You-all
 17 hadn't cleaned up your own backyard as we sit here
 18 today; is that what you're telling me?

 19 A. What I'm telling you, we've undertaken several
 20 actions, which include actions with respect to property
 21 we own, with respect to properties that we do not own,
 22 because that was -- the collective judgment is that's
 23 where the priority actions should occur.

 24 Q. Collective judgment of whom?

 25 A. Of the people involved in the process.

4 1 Q. And that would be Monsanto people?

2 A. Including the regulatory people. The public

3 is certainly aware of this and there's been an open

4 conversation about the steps and the actions that are

5 appropriate.

6 Q. Now, how large of a company in terms of

7 dollars in revenues is Monsanto?

8 A. Are you asking Monsanto or Solutia?

9 Q. Monsanto, and now Solutia. But at the time

10 this was happening, Monsanto, back in the late '80s,

11 early '90s. How many billions of dollars did it

12 generate?

13 MR. PECK: Object to the form of the question.

14 Irrelevant.

15 MR. GRAMMAS: It's not irrelevant.

16 MR. PECK: It's absolutely irrelevant. It's

17 not coming into evidence. You can ask him the

18 question, but it's not coming into evidence.

19 MR. LOWE: At what stage?

20 MR. PECK: At any stage. We haven't changed

21 the law in Alabama to allow that stuff into evidence

22 yet, guys, and I don't think our current Court's going

23 to do that.

24 MR. GRAMMAS: Okay.

25 MR. LOWE: There's an election later.

4

1 THE WITNESS: Am I instructed to answer?

2 MR. PECK: If you know what he's asked you.

3 BY MR. GRAMMAS:

4 Q. What's your gross revenues approximately in
5 this time period for Monsanto, just approximately?

6 A. About \$8 billion.

7 Q. What were the profits in that time
8 period?

9 A. I don't know.

10 Q. Roughly.

11 A. I don't know.

12 Q. You have no idea?

13 A. No, I don't.

14 Q. Billions of dollars, though, would it not be?

15 A. I doubt that. I don't think the company's
16 ever made that much in a year.

17 Q. Certainly there was no financial impediment,
18 Mr. Pierle, that you're aware of, as the senior
19 environmental over remediation, for Monsanto to look
20 into the issues of PCBs on its property and the
21 neighboring properties and simultaneously do this study
22 downriver to see how bad Monsanto may have affected
23 those properties, was there?

24 MR. PECK: Object to the form of the question.

25 THE WITNESS: And I think I've said, typically

4 1 the process that you get into here, and it's very
2 common at cleanups everywhere in the United States, is
3 that you look at these things and segment it in piece
4 fashion, and that's exactly what we're doing.

5 BY MR. GRAMMAS:

6 Q. Okay, and my question to you had nothing to do
7 with your answer, in all due respect, sir. My question
8 to you was: From a financial perspective, was there
9 anything that you're aware of that prevented Monsanto
10 from doing it simultaneously?

11 A. And my judgment is that's not a relevant
12 question.

13 Q. Well, I don't care what your judgment of
14 relevant is, quite honestly.

15 MR. PECK: Let him answer.

16 BY MR. GRAMMAS:

5 17 Q. You have to answer the questions I ask, and
18 the question is: Was there anything of which you were
19 aware from a financial standpoint, as the environmental
20 manager over remediation for this entire process from
21 start to finish, that would prevent Monsanto from
22 simultaneously looking at PCB-related issues on its
23 property and at the same time look at it in Snow Creek,
24 Choccolocco Creek, and Lake Logan Martin?

25 MR. PECK: Pete, he's right. You're being

5 1 subjected to having to answer his questions, but you
2 2 can answer his question however you need to honestly
3 3 answer it.

4 4 BY MR. GRAMMAS:

5 5 Q. And I want you to answer it honestly, Mr.
6 6 Pierle.

7 7 A. That to me is not a relevant question in the
8 8 process. What is relevant about that when faced with
9 9 that set of circumstances is: Are we proceeding on
10 10 what is appropriate and relevant to the question? And
11 11 in almost all cases, that process starts with: What
12 12 are the priorities that we need to do here? Is there
13 13 anything imminent that is a problem to the health or
14 14 the environment? If so, you do removal. No, there's
15 15 no imminent issue that needs to be dealt with. So what
16 16 do you do at that point in time? You then say: Let's
17 17 investigate what we understand, then, the depths of the
18 18 problem to be and the steps that need to be taken. And
19 19 that is precisely what we are doing.

20 20 MR. GRAMMAS: Adam, would you please confer
21 21 with your witness and ask him to answer the questions
22 22 that I'm asking. I understand he --

23 23 MR. PECK: He's answering the questions you're
24 24 asking, you just don't like the answers.

25 25 MR. GRAMMAS: Adam, he didn't. He says it's

5 1 not relevant and I'm not going to answer it. I want to
2 2 know a simple question: Did they have any financial
3 3 impediments to do them both at the same time? I'm not
4 4 asking him why he didn't do both at the same time, and
5 5 I'm entitled to an answer to that question, Adam.

6 MR. PECK: Then ask him the question. If you
7 7 don't like his answer, ask him again, but I'm not going
8 8 to instruct my witness how to answer your questions. I
9 9 don't particularly like your questions. I don't like
10 10 the tone with which you ask those questions, I don't
11 11 like the tone with which you treat my witnesses. I
12 12 don't like anything about it and I'm not going to
13 13 instruct him how to answer the questions. I'd just as
14 14 soon walk out.

15 MR. GRAMMAS: I'm sure you would.

16 MR. PECK: I would. I'm not used to people
17 17 treating my witnesses so impolitely.

18 MR. LOWE: How many have we taken?

19 MR. PECK: Well, that's true. The ones that
20 20 Pete's taking, I'm getting used to him treating my
21 21 witnesses impolitely. Not so much Clay, but Pete
22 22 generally, you're right.

23 BY MR. GRAMMAS:

24 Q. Mr. Pierle, I'm here to ask you questions and
25 25 I'm sorry if I'm being impolite to you, but when I

5 1 don't get answers or I get nonresponsive answers, I
2 2 don't accept that as an alternative. I'm doing my job
3 3 and I understand you're here doing your job. All I
4 4 want to know is: Are you aware of any reason,
5 5 financial or otherwise, that would prevent Monsanto at
6 6 that time from doing remediation work on its property
7 7 and on the neighboring properties? That's the question
8 8 that I'm asking you.

9 A. And my response was that is not a question
10 that we ask ourselves. So how can I respond to it? To
11 us, in that process, that's not part of what you ask
12 yourself up-front.

13 Q. So the answer is: You don't know the answer?
14 You don't know the answer to that question?

15 A. I think I've answered the question to the best
16 of my ability.

17 Q. Are you aware of any reason why Monsanto could
18 not have cleaned up its property and the neighboring
19 properties simultaneously? Are you aware of any
20 reason?

21 MR. PECK: He's answered that question three
22 or four times. If you must have him answer it again,
23 he'll answer it one more time.

24 BY MR. GRAMMAS:

25 Q. Are you aware of any reasons, sir?

5

1 A. I don't know how to answer your question any
2 better than what I've answered it up to now.

3 MR. PECK: How long is this going to go? Are
4 we going to need to take a lunch break?

5 MR. GRAMMAS: Adam, that is a very central
6 question and it deserves an answer.

7 MR. PECK: He just answered your question.

8 MR. GRAMMAS: He said it's not relevant to me,
9 so I don't know the answer to it. That's fine, let me
10 hear him say "I don't know."

11 MR. PECK: You've heard his answer.

12 MR. GRAMMAS: No, I haven't.

13 MR. PECK: You've heard his answer.

14 MR. GRAMMAS: No, I haven't. I've heard his
15 answer, but it hasn't answered the question. I mean,
16 it's a fair question, Adam.

17 MR. PECK: I'm not going to instruct my
18 witness how to answer your questions, Pete. That's
19 not -- that's not my job here.

20 MR. GRAMMAS: Do you think the question is a
21 fair question?

22 MR. PECK: No, I don't think it's a fair
23 question.

24 MR. GRAMMAS: Why is it not fair? Tell me so
25 I can cure it.

5

1 MR. PECK: Because he has told you that's not
2 what they even ask themselves. They don't even ask
3 themselves that question.

4 MR. GRAMMAS: That doesn't matter whether they
5 ask or not. Maybe they should have asked themselves
6 that, Adam.

7 MR. PECK: Well, no, because it wasn't
8 relevant. They didn't even consider the financial
9 issue. That's the answer to your question. They
10 didn't even consider it.

11 MR. LOWE: Let's move beyond that. Why
12 couldn't you do it simultaneously, period?

6

13 MR. PECK: Are you going to ask that question?

14 MR. GRAMMAS: I've already asked it three
15 times, is there any reason why it couldn't be done
16 simultaneously? I've asked it three times.

17 MR. PECK: No, you haven't asked that question
18 three times. You've asked if there was a financial
19 impediment.

20 MR. GRAMMAS: Let's not argue, Adam.

21 MR. PECK: Are we going to have a lunch break
22 or not?

23 MR. GRAMMAS: Yeah, after we get the answer to
24 the question.

25 MR. LOWE: Seven minutes to 12. He's got

6

1 seven minutes to answer the question.

2 MR. LOWE: What's the question?

3 MR. PECK: Why couldn't you proceed with doing
4 Snow Creek, Choccolocco Creek --

5 MR. LOWE: No, no, no, the question is --

6 MR. PECK: -- at the same time you did the
7 plant site remediation?

8 MR. GRAMMAS: No, that's not the question,
9 Adam.

10 MR. PECK: Well, then ask your damn question.

11 MR. GRAMMAS: I'm going to. I've asked it.

12 MR. PECK: Is Clay asking the questions or are
13 you asking the questions? I think we're entitled to
14 one person asking the questions and you choose it to be
15 you.

16 MR. GRAMMAS: I'm asking the questions, Adam.
17 Clay hasn't asked any questions.

18 MR. PECK: Ask the question. Ask the
19 question. We're going to answer that question and
20 we're going to go to lunch.

21 MR. GRAMMAS: I agree. The question is the
22 same as it's been.

23 MR. PECK: Ask it.

24 MR. GRAMMAS: Adam, don't scream at me.

25 MR. PECK: Ask it.

6

1 MR. GRAMMAS: Don't scream at me.

2 MR. PECK: You've been screaming at my
3 witness.

4 MR. GRAMMAS: I have not raised my voice a
5 single time. Now, you may think my manner may be
6 impolite --

7 MR. PECK: I do.

8 MR. GRAMMAS: -- but I haven't raised my voice
9 to your witness. I haven't raised my voice to you.
10 Don't scream at me.

11 MR. PECK: Ask the question.

12 MR. GRAMMAS: I don't want to hear that.

13 MR. PECK: Ask the question.

14 BY MR. GRAMMAS:

15 Q. Is there any reason, Mr. Pierle, why the
16 remediation could not be done simultaneously on your
17 property at Monsanto's Anniston site and on my
18 plaintiffs' properties, or at least looked into
19 simultaneously?

20 A. And I answered that question, that in looking
21 at what was known, what was needed to be understood and
22 known, whether or not there was an immediate reason for
23 the removal or a quick go-do-something action, that did
24 not exist. So what needed to happen, and this is very
25 typical, is you have to go about a more methodical

6 1 process to understand what is the problem, is there a
 2 problem, what needs to be done, what are the
 3 remediation options, what are the technology options,
 4 and you tend to do that in a way that looks at priority
 5 first. And whether it's the right priority or not,
 6 generally what you do is say, Where might there be
 7 potential sources, what action can we do relative to
 8 that, and that's where you go focus your attention.
 9 Then you still have to deal with the issues, Well, now,
 10 what else might there have been as a result of that? I
 11 mean, that's the process that we're in. It's very
 12 typical. It's generally been assumed to be a right in
 13 areas where we and many others are dealing, and I think
 14 that's the answer to the question.

 15 Q. Okay. I didn't hear you mention the word
 16 "finances" in there at all. Is that because finances
 17 did not play a role in this decision to clean up
 18 Monsanto's property first?

 19 A. And my response to that was that we don't ask
 20 ourselves, you know, what is it going to cost, what --
 21 can we afford to begin or not. I think, as our
 22 guideline said, we will immediately get involved in
 23 understanding what the issue is and the definition of
 24 the issue, and that's exactly what we're doing.

 25 Q. And cost to Monsanto, and now Solutia, is not

6 1 an issue it considers in deciding whether to clean up
2 2 PCB-contaminated sediment that it is possibly
3 3 responsible for causing?

4 4 A. That's not what I said.

5 5 Q. I'm asking you that.

6 6 A. Cost is a very relevant factor in the
7 7 selection of remedies and in the options that get
8 8 looked at. So, yes, cost is a very relevant factor in
9 9 every decision that gets taken by anyone with respect
10 10 to a remediation action.

11 11 Q. Do you believe, sir, that at this site, the
12 12 Snow Creek/Choccolocco Creek/Lake Logan Martin site
13 13 immediately downstream from your plant that
14 14 manufactured PCBs over these periods of decades we've
15 15 talked about today, that you-all are not the, but a
16 16 major contributor to the PCB concentrations that are
17 17 being found in this river system?

18 18 MR. PECK: Object to the form of the question.
19 19 No foundation.

20 20 THE WITNESS: I mean, again, I thought we had
21 21 sort of covered this ground in a prior conversation and
22 22 questioning where I said, you know, that we are there
23 23 because there is factual information that says it's
24 24 important for us to be part of this solution at this
25 25 site, which means that there is a probability that we

6 1 have some responsibility. What we're about is trying
2 2 to determine is that in fact real and what is the
3 3 extent of that.

4 4 BY MR. GRAMMAS:

5 5 Q. Now, when this probability existed you have
6 6 some responsibility, is it your opinion at this point
7 7 in time, sir, that you will not delay cleanup by
8 8 unnecessary legal yet negatively perceived litigious
7 9 steps?

10 10 MR. PECK: Object to the form of the question.
11 11 He's quoting from a section of the guidelines, and if
12 12 you want to ask him about that section, show it to him.

13 13 BY MR. GRAMMAS:

14 14 Q. You can answer the question.

15 15 A. It's very clear that we are committed to
16 16 pursuing the process that we're in to its completion,
17 17 and that although we'd never give up a legal remedy,
18 18 which you wouldn't advise me as my counsel to do that,
19 19 our priority on these is to try to work through these
20 20 in as acceptable a manner as we can, such as to get on
21 21 with solving a problem if it exists, not worrying about
22 22 litigating and delay.

23 23 Q. Right, but my question, though, is a little
24 24 more simple than that, Mr. Pierle. My question is: Is
25 25 it your position that you are not going to delay

7 1 cleaning up the PCB problem through unnecessary legal
2 steps?

3 A. And I think I answered that and that -- just
4 as I described, that we are moving through that with
5 the anticipation that we will get through a process and
6 understand whether there's a problem that needs
7 remediation, what the extent of that is. If we have
8 obligations, what obligation that is and how can we be
9 part of that solution. That does not mean that if
10 there is an outrageous under -- determination by
11 someone that a remedy is wholly inappropriate for what
12 the solution is, that if we have legal remedies
13 available to us, that we will not pursue those. We are
14 looking for a remedy as a priority.

15 Q. Do you believe, sir, as the head of
16 environmental management over remediation for Solutia
17 and, in the past, for Monsanto, that Monsanto's
18 responsibility for the PCBs in Snow Creek, Choccolocco
19 Creek, and Lake Logan Martin, as we sit here today,
20 have been fairly established?

21 MR. PECK: Object to the form of the question.

22 BY MR. GRAMMAS:

23 Q. As has that word as stated in your 1989
24 Worldwide Guideline No. 2 under a heading called "Waste
25 Management," Section 4, "Corrective and Remedial

7

1 Action."

2 MR. PECK: Do you want to show him that?

3 MR. GRAMMAS: He's read it. He's seen it. He
4 helped write it.

5 BY MR. GRAMMAS:

6 Q. Do you believe that your -- that Monsanto's,
7 and now Solutia's, responsibility for the PCBs in Snow
8 Creek, Choccolocco Creek, and Lake Logan Martin have
9 been fairly established, as those words mean under that
10 guideline?

11 MR. PECK: Object to the form of the question.

12 MR. GRAMMAS: I've got one more question and
13 then we can take a lunch break.

14 THE WITNESS: I think, by the words of the
15 definition of this guideline, we're not at this step of
16 having responsibility fairly established.

17 BY MR. GRAMMAS:

18 Q. Now, what is being done by Monsanto, or now
19 Solutia, at Choccolocco Creek, Snow Creek, and Lake
20 Logan Martin to convince you that you are not a source
21 of PCBs that are being found there, if anything?

22 MR. PECK: Object to the form of the question.

23 THE WITNESS: You know, there is an extensive
24 study underway looking at the hydrology of the system,
25 the sources, potential sources, and that report will be

7 1 instrumental in helping to -- for us to understand our
2 responsibilities or the extent of those with respect to
3 what you've described. I think we've said on Snow
4 Creek, you know, we've already demonstrated a
5 responsibility there, and I think the work that is
6 underway will go a long way towards defining if there
7 is additional responsibility.

8 MR. GRAMMAS: Okay.

9 MR. PECK: Lunch?

10 MR. GRAMMAS: Yes.

11 (LUNCH RECESS.)

12 BY MR. GRAMMAS:

13 Q. Mr. Pierle, has Monsanto completed the cleanup
14 work in and around the plant and the neighboring
15 property for PCB cleanup?

16 MR. PECK: Did you ask "completed"?

17 MR. GRAMMAS: Yes.

18 THE WITNESS: I don't think all that work is
19 done yet.

20 BY MR. GRAMMAS:

21 Q. Has Monsanto determined who put the PCBs
22 there?

23 A. I think, with respect to most of that, we just
24 accepted the fact that it probably came from us and,
25 you know, with enough work around, how it may have got

7 1 there and sort of moved on per our practice here and
2 2 took over accountability for it and have moved through
3 3 remediation in most of the areas.

4 Q. Are you sitting here today, sir, any less than
5 5 100 percent certain that Monsanto's PCB manufacturing
6 6 processes over the 30-year period is what caused the
7 7 plant to be contaminated with PCBs?

8 A. I don't know that we've identified any other
9 9 reason.

10 Q. Okay. Did that answer my question? Are you
11 11 less than 100 percent certain that you are the source?

12 A. I guess the answer is I don't know that I
13 13 needed to be 100 percent certain in that case. There
14 14 was enough certainty for us to move forward and to act,
15 15 and we did.

8 16 Q. In that case, there was enough certainty to
17 17 fairly establish that Monsanto was the source of PCBs
18 18 on its own property, correct?

19 A. I believe so.

20 Q. Now, during this process that you-all engaged
21 21 in in cleaning up your own property and the neighboring
22 22 properties, did you identify any other potential
23 23 sources of PCB contamination in the area?

24 A. I know that there were some issues on some of
25 25 the related property with PCB contamination that could

8 1 have come from, I think, a prior -- I forget if it was
2 2 a -- some sort of a metal operation, but yes, there
3 3 were other users of PCBs in the area that could have
4 4 contributed materials to the property.

5 Q. But all of those other users got their PCBs
6 6 from Monsanto, correct?

7 A. I don't know.

8 Q. You don't know that even though on Exhibit No.
9 9 2 Monsanto has admitted that they are the sole United
10 10 States manufacturer of PCBs?

11 A. I think you're asking a different question,
12 12 because there were other people that sold PCBs, as I
13 13 understand it, from outside the U.S. So there were
14 14 other manufacturers. I don't have the records. I
15 15 don't know where they would have come from or not.

16 Q. Under the Monsanto guidelines where we're
17 17 reading from on the corrective and remedial action
18 18 section, the section dealing with when Monsanto's
19 19 responsibility for cleanup is fairly -- excuse me, when
20 20 Monsanto's responsibility for contamination is fairly
21 21 established, it will take a leadership role in cleaning
22 22 up, that is the policy that Solutia employs today also,
23 23 isn't it?

24 A. I think the words say yes, that we're
25 25 following the words that you've identified. I think

8 1 they're somewhat different than what you paraphrased in
2 2 your statement. I mean, I think it says we'll take a
3 3 leadership role in the process in moving it along.

4 Q. And Solutia does that also?

5 A. Yes.

6 Q. All right. Now, Mr. Pierle, do you believe
7 7 that Monsanto was fairly established to be the source
8 8 of the PCB contamination in that part of Snow Creek
9 9 that you-all removed some of the sediment to try to
10 10 remediate that portion of the creek back in the late
11 11 1980s?

12 A. Again, I don't recall, you know, the specifics
13 13 of that case. Certainly there was enough information
14 14 there and the judgment made to proceed and take
15 15 responsibility for that and to move on. I don't know
16 16 what the factual basis around that was.

17 Q. But there was enough information there to at
18 18 least let Monsanto determine that it was "a" major
19 19 contributor, not necessarily "the," but at least "a"
20 20 major contributor in the PCB contamination on Snow
21 21 Creek that was somewhat remediated, correct?

22 A. I don't want to be argumentative about this.
23 23 I think what I'm saying is that if the judgment around
24 24 what you described was a couple hundred thousand
25 25 dollars to do the remediation and the work, that there

8

1 was probably a sense that we could have been, we ought
2 to be part of this process, let's just get it done and
3 move beyond it. I do not know in that context how much
4 was done about factually, Is it yours, is it somebody
5 else's, could they have come from someplace else. I
6 just don't know how much of that was done.

7 Q. Before we broke for lunch, I asked you what it
8 would take to convince you that Monsanto was a fairly
9 established source of potential contamination in a
10 given situation. Do you recall that question or one
11 similar to that?

12 A. Probably.

13 Q. Do you recall telling me, sir, that if you
14 were presented with facts that demonstrated that
15 materials manufactured in Monsanto were present on-site
16 at a particular location and that the chemicals were
17 attributable to Monsanto's actions, then in your mind
18 that would fairly establish that Monsanto in that
19 situation would be a source of the contaminant?

20 A. I recall us writing down three sets of
21 assumptions of which I think you've talked about two.
22 So I don't know if you're asking me the same question
23 or a different question than what we responded to
24 before.

25 Q. I thought I wrote your testimony down, and

8 1 correct me if I'm wrong, that you said if someone
2 2 presents a set of facts that Monsanto manufactured
3 3 materials or discovered them being there as a result of
4 4 actions that can be attributed to the company, then in
5 5 your mind it is fairly established that Monsanto was a
6 6 contributing source of the contamination; is that not a
7 7 correct statement?

8 8 A. I think what I said at that point, that would
9 9 be sufficient information for us to get involved in the
10 10 process and to more fully understand the factual
11 11 situation around that.

12 (PIERLE EXHIBIT NO. 8 WAS FIRST DULY
13 MARKED, RECEIVED AND MADE A PART OF THE RECORD.)
14 BY MR. GRAMMAS:

9 15 Q. I'm going to show you -- first of all, before
16 16 I show you this, do you know who Mr. H.S. Bergen, Jr.,
17 17 is?

18 18 A. I'm vaguely familiar with the name.

19 19 Q. Who is he?

20 20 A. You know, I don't remember much more than
21 21 Howard "BER gun", or "BER zhun", seemed to be involved
22 22 with one of the businesses some time ago, but I don't
23 23 really recall.

24 24 Q. Do you know who John Mason is?

25 25 A. What is the middle initial?

9 1 Q. Doesn't have one. It just says "John Mason."

2 A. There's been more than one John Mason, I
3 think, at Monsanto; although I'm not sure. I know a
4 John Mason.

5 Q. Who is he, the one that you know?

6 A. The one that I know is the head of the
7 Monsanto Fund. He's at Monsanto.

8 Q. What is the Monsanto Fund?

9 A. A philanthropic fund operated by a board of
10 directors and president that disburses basically
11 contributions that the company makes to the fund, and
12 the fund makes judgments about, on a philanthropic
13 basis, where to deploy the funds.

14 Q. Does it ever deploy them for any environmental
15 issues, cleanups, stuff like that?

16 A. No. For cost of cleanup and things like that,
17 no.

18 Q. Mr. E.P. Wheeler, do you know who he is?

19 A. I believe he was a member of the corporate
20 medical department back in the late '60s, something
21 like that.

22 Q. How about Mr. Papageorge?

23 A. I know Mr. Papageorge. I worked for him back
24 in the '70s and he worked for me for a while in the
25 '80s.

9 1 Q. What did he do for you in the '80s?

2 A. I think he was part of -- at the time, was
3 part of the chemical company's organization when we
4 formed in '86, and I believe at the time he was dealing
5 with safety and industrial hygiene kinds of issues for
6 us.

7 Q. PCBs?

8 A. I don't think so, I mean, not for what he was
9 doing for me. I wasn't doing anything with PCBs. It
10 was basically for safety and health programs across the
11 chemical company of Monsanto.

12 Q. F.J. Holzapfel?

13 A. Holzapfel.

14 Q. H-O-L-Z-A-P-F-E-L.

15 A. Right.

16 Q. Who's that?

17 A. I knew Mr. Holzapfel when I was at a plant, I
18 guess, in New Jersey. He was the director of
19 manufacturing, I believe.

20 Q. What did he have to do with PCBs?

21 A. I have no idea.

22 Q. How about Mr. D.B. Hosmer?

23 A. Mr. Hosmer was a technical manager for a while
24 and was also a manager of an environmental and
25 utilities group in, I believe, industrial chemicals --

9 1 well, he was when I came back from the government in
2 2 1975. He was my immediate supervisor at the time.

3 3 Q. What, to your knowledge, does he have to do
4 4 with PCBs for Monsanto?

5 5 A. At that time we were sort of getting out of
6 6 manufacturing, but he was, in general, at a company
7 7 level, responsible for environmental matters. I don't
8 8 know what his specific -- I mean, he had people working
9 9 with him that were dealing with more specific matters.

10 10 Q. How about Mr. J.R. Savage?

11 11 A. I know Mr. Savage. He was sort of a technical
12 12 director and a licensing manager at a point in time.

13 13 Q. What did he have to do with PCBs?

14 14 A. I'm not certain.

15 15 Q. How about Mr. G.L. Jessee?

16 16 A. Well, I knew Gene when he was in the
17 17 environmental group that I was in in the corporate
18 18 structure in the mid-'80s.

19 19 Q. What did he have to do with PCBs?

20 20 A. I don't know. He was a former plant manager
21 21 at Anniston.

22 22 Q. Was he the plant manager in and around August
23 23 1970, to your knowledge?

24 24 A. I don't believe so. I'm not certain.

25 25 Q. How about Mr. J.C. Landwehr, L-A-N-D-W-E-H-R?

9

1 A. I'm not familiar with that name.

2 Q. How about Mr. Paul Hodges, have we talked
3 about him before?

4 A. Paul was, I think, an environmental manager
5 that worked for Mr. Hosmer --

6 Q. Do you know --

7 A. -- at one point in time.

8 Q. Do you know why all of the individuals that we
9 just talked about would receive a letter from Mr.
10 Hodges regarding a PCB cleanup program at Anniston? Do
11 you know why those individuals would have been selected
12 to receive such a letter?

13 A. I really don't.

14 Q. Is it Solutia's policy, and was it Monsanto's
15 policy, to fully disclose to the public any and all
16 impacts that its manufacturing processes and disposal
17 processes of its chemicals would have on the public or,
18 in particular, people that lived downstream from one of
19 its plants?

20 MR. PECK: Object to the form of the question.

21 THE WITNESS: I really don't -- at what time
22 period?

23 BY MR. GRAMMAS:

24 Q. At any time period.

25 A. We have that as an explicit part of the policy

9 1 and pretty much had since the mid '80s, I believe. I
2 don't know -- I don't know that there was anything
10 3 written or what the practice was before then. My own
4 experience was that most of those conversations would
5 typically happen with regulatory agencies who were the
6 representatives of the public, and that's typically
7 where most of the discussions that -- that was a
8 more -- more the practice back before the '84 time
9 period, as I recall.

10 Q. Can you think of any legitimate reason why
11 Monsanto would deliberately try to conceal information
12 it was aware of regarding PCB contamination of Snow
13 Creek, Choccolocco Creek, and fish contained in those
14 bodies of water from the people who live on those water
15 systems?

16 MR. PECK: Object to the form of the question.

17 THE WITNESS: No.

18 BY MR. GRAMMAS:

19 Q. Would it offend you, sir, to know that in
20 1970, Monsanto in fact embarked on a course of conduct
21 to deliberately conceal information it had discovered
22 regarding PCB contamination and Snow Creek, Choccolocco
23 Creek, and fish therein?

24 MR. PECK: Object to the form of the question.

25 THE WITNESS: It would if that were true.

10

1 BY MR. GRAMMAS:

2 Q. Can you think of any legitimate reason why a
3 company would want to keep confidential information
4 that it discovered regarding the amount of PCBs it was
5 discharging into Snow Creek on a given day; and not
6 only keep that information confidential within the
7 company, but to destroy the information once the
8 recipients of the information received the document
9 describing the amounts?

10 A. I mean, it's conceivable that at a point in
11 time, depending on where folks were with conversations
12 and with outside regulatory folks, what they may have
13 judged to be appropriate. I'd have to understand more
14 about the facts to be able to respond any more to that
15 question, and then I'm not sure I could.

16 Q. Okay. I'm going to show you what has been
17 marked as Plaintiff's Exhibit 8 and draw your attention
18 to the first highlighted paragraph under the section
19 entitled "Status." Do you see that, sir?

20 MR. PECK: You're free to read the entire
21 document.

22 THE WITNESS: I do see that statement.

23 BY MR. GRAMMAS:

24 Q. If you'd like to read the entire document, you
25 can. I'm going to ask you questions about this

10

1 statement right here, though.

2 Could you read that statement, please, out
3 loud.

4 A. The entire --

5 Q. First of all, this is a Monsanto document
6 dated August 7, 1970, correct?

7 A. Yes.

8 Q. And it's written to Mr. H.S. Bergen,
9 B-E-R-G-E-N, Jr., correct?

10 A. Yes.

11 Q. And the people that we were discussing moments
12 ago are all listed as recipients of the letter, right?

13 A. Yes.

14 Q. And who wrote the letter, sir? If you can
15 turn to the last page -- or, actually it's a memo.
16 It's an internal memorandum.

17 A. It looks like a Mr. Paul B. Hodges.

18 Q. And that's the same gentleman we talked about
19 earlier, right?

20 A. Yes.

21 Q. And in the top of the memo, in bold and
22 underlined for importance, is the words -- and
23 actually, all capitalized, in the words "Confidential,"
24 right?

25 A. Yes.

10

1 Q. And then it says capital F, capital Y, capital
2 I. What does that mean?

3 A. I assume it's "for your information."

4 Q. And then after that it says what, sir?

5 A. "And destroy."

6 Q. So we've got a document written by Mr. Hodges
7 to these individuals that said that this is
8 confidential and this is strictly for your information
9 and after you read it, destroy it, right?

10 A. Uh-huh, yes.

11 Q. Now, under the heading entitled "Status," it
12 says what, sir, that's highlighted?

13 A. Well, highlighted in yellow is the first
14 sentence: "We're presently discharging to Snow Creek
15 about 16 pounds per day of PCBs, down from 250 pounds
16 per day in 1969."

17 Q. Okay. So we know, as of August 7, 1970,
18 Monsanto had decreased from 250 pounds a day, the year
19 earlier, discharging 16 pounds every day of PCBs into
20 Snow Creek, right?

21 A. That's what this statement says.

22 Q. You don't have any reason to doubt the
23 veracity of that statement, do you?

24 MR. PECK: Object to the form of the question.

25 THE WITNESS: I guess I would really want to

1 make sure I read the whole one to make sure that there
2 were weren't any other qualifications.

3 BY MR. GRAMMAS:

4 Q. I understand, but as that statement appears,
5 you have no reason, sitting here today, to doubt that
6 it's true, correct?

7 A. Not having read only that statement.

8 Q. As a matter of fact, sir, as the head of
9 environmental affairs, charged with the responsibility
10 of remediating this project here in Anniston with
11 respect to PCBs, this is the exact type of document you
12 would expect to read in determining what type of PCBs
13 may have been put into Snow Creek in the past that
14 Monsanto is responsible for, right?

15 A. I wouldn't personally expect to necessarily
16 read this, no.

17 Q. But somebody under your responsibility, if you
18 directed to go out and find out how many pounds of PCBs
19 were put into Snow Creek by Monsanto over the years,
20 would go to documents like this and read it and rely on
21 it, right?

22 MR. PECK: Object to the form of the question.

23 THE WITNESS: It could be one source of
24 information, sure.

25 BY MR. GRAMMAS:

11

1 Q. Now, in the third numbered paragraph in this
2 letter it says that: "Joe Crockett, secretary of the
3 Alabama Water Improvement Commission, will try to
4 handle this problem quietly without release of the
5 information to the public at this time."

6 Did I read that correctly?

7 A. Yes.

8 Q. Now, if you would, sir, turn to the very last
9 page of the letter.

10 MR. PECK: You know, Mr. Pierle, he's taking
11 you all through the letter, different things he wants
12 you to read, and has asked you about pieces from it.
13 Feel free to read the entire thing.

14 BY MR. GRAMMAS:

15 Q. If you want to read the entire letter, you're
16 more than welcome to.

17 MR. PECK: Thank you.

18 BY MR. GRAMMAS:

19 Q. Let me know when you're finished.

20 (WITNESS REVIEWS DOCUMENT.)

21 (A SHORT BREAK WAS HELD.)

22 THE WITNESS: I have read it.

23 BY MR. GRAMMAS:

24 Q. Okay, sir. After having now the benefit of
25 reading the entire document, is there anything that we

11

1 have discussed about the internal memorandum at this
2 point that is not 100 percent true?

3 MR. PECK: Object to the form of the question.
4 No foundation.

5 THE WITNESS: I really don't have the basis
6 to -- you know, to answer that. I mean, my assumption
7 would be that it's true.

8 BY MR. GRAMMAS:

9 Q. And what I'm getting at more particularly is
10 the items about 16 pounds a day being discharged in
11 1970 versus 250 pounds a day of PCBs being discharged
12 into Snow Creek in 1969. That statement that contained
13 at the beginning of the letter and nothing in the
14 remainder of the letter brings into question the
15 accuracy of it, does it?

16 A. Well, there's some further statements here
17 about overall accuracy of sampling and the methodology,
18 which indicates to me at least that they're looking at
19 the accuracy in their measuring devices to see whether
20 these are right. But it doesn't go on to describe --

21 Q. And that's what they found based on their own
22 measuring devices, right?

23 A. Based on what methodology they were using at
24 that time.

25 Q. And you have no reason to doubt that the

11

1 methodology that they were using was accurate, do you?

2 MR. PECK: Object to the form of the question.

3 BY MR. GRAMMAS:

4 Q. I mean, you talk about methodology. These are
5 documents produced by Monsanto, right?

6 A. Yes.

7 Q. These are documents that Monsanto management
8 was relying on in determining what, if anything, to do
9 about the PCB problem in Anniston, right?

10 A. Yes.

11 Q. And is there any reason to think that the
12 information they were looking at was not accurate in
13 making these decisions?

14 A. I think they would have felt it was the best
15 that they had and as accurate as they could be.

16 Q. And you couldn't make decisions based on the
17 PCB contamination problem with inaccurate information,
18 could you, or couldn't make the right decisions with
19 inaccurate information, could you?

20 A. Again, my sense is it was probably as accurate
21 as it could be for what they were trying to do at that
22 time.

23 Q. So based on this document in 1969 in Anniston,
24 you-all were losing about 250 pounds a day of PCBs into
25 Snow Creek, right?

11 1 A. What it says is at the time the document was
2 written, it was 16 pounds a day, and that that number
3 had represented an earlier period.

4 Q. No, what I was asking you about was in 1969,
5 this letter says that you-all were losing 250 pounds a
6 day.

7 A. That's the reference that's made in the
8 letter.

9 Q. And they were basically bragging about being
10 able to reduce those losses from 250 pounds a day to 16
11 pounds a day a year later, right?

12 A. I don't know if they were bragging. I think
13 what they're saying is factually they had been able to
14 do that, which represents, you know, a pretty good
15 reduction.

16 Q. Okay. Now, do you think it's good policy,
17 sir, for a company to knowingly discharge 250 pounds of
18 chemicals a day into a river system that it knows was
19 toxic?

20 A. Again, now you raised a whole different
21 question, toxic and what concentration to whom and to
22 what. So I don't think that this statement says that
23 they knew it was toxic in the stream or in the
24 conditions of Snow Creek.

25 Q. My question didn't ask you what your

11 1 understanding of toxic was, sir. My question to you
12 2 was simply: Do you think that it was good practice for
3 a company to knowingly discharge 250 pounds of PCBs
4 into Snow Creek a day in 1969 and, according to this
5 document, 16 pound of PCBs into Snow Creek in 1970,
6 when all along, while it was dumping those chemicals
7 into Snow Creek, it knew that the chemicals were toxic?

8 MR. PECK: Object to the form of the question.

9 BY MR. GRAMMAS:

10 Q. Do you think that's good practice?

11 A. Again, I have to define "toxic" to be able to
12 answer that question, and I did, and I answered that it
13 was common practice for more pounds of that of
14 materials and chemicals to be discharged into rivers
15 and streams in the United States at that point in time,
16 which in generally was viewed as acceptable.

17 Q. And because -- when you say it's "common
18 practice," that meant not only Monsanto was doing it,
19 but other chemical manufacturers were dumping toxic
20 chemicals into the river systems, too, right?

21 A. And municipal treatment -- municipal systems
22 and discharges and commercial entities and basically
23 that was the norm of the day.

24 Q. And because everybody else was doing it, it's
25 okay for Monsanto to do it; is that what I'm hearing

12 1 you say?

2 A. I think what I'm saying is that was generally
3 accepted practice based upon the information that one
4 knew at that point in time.

5 Q. Now, was it generally accepted practice that
6 these other chemical companies and cities and whoever
7 you're referring to generally, but not by name, who
8 were discharging -- are you saying that they too knew
9 that what they were discharging into their systems was
10 toxic or that they were just discharging without
11 knowledge at all?

12 A. What I'm saying is that people knew that there
13 were discharges going that contained materials that may
14 have hazardous properties. I'm not saying that people
15 were knowingly discharging hazardous materials that had
16 toxic end-point conditions to the environment or to
17 human health.

18 Q. Who is Dr. R. Emmet Kelly?

19 A. Dr. Kelly was the medical director for
20 Monsanto Company for a period of time back in -- well,
21 I don't know when he started. He was there when I was
22 there in the mid-'60s, it seemed like, to '70s,
23 somewhere in that time. At least that's where I'm
24 familiar with the name.

25 Q. Did you ever have an opportunity to work with

12

1 him?

2 A. I think I met Dr. Kelly a time or two, but I
3 don't recall really any project work that I did with
4 him. I recall he was pretty senior and I was pretty
5 junior.

6 Q. Do you know what his reputation was within
7 Monsanto?

8 A. I really couldn't characterize that. I didn't
9 know him well enough or didn't know of him enough to
10 know of that. I think subsequent to that, you know, I
11 think there's a general sense that he was a very good
12 doctor.

13 (PIERLE EXHIBIT NO. 9 WAS FIRST DULY
14 MARKED, RECEIVED AND MADE A PART OF THE RECORD.)
15 BY MR. GRAMMAS:

16 Q. Mr. Pierle, I'm going to show you what's been
17 marked as Exhibit 9 to your deposition, and ask if this
18 is not a letter dated September 20, 1955, to Dr. J.W.
19 Barrett from Dr. Kelly? You can look at the second
20 page for his signature.

21 MR. PECK: And again, he's going to talk to
22 you about the letter. Feel free to read it.

23 THE WITNESS: It is a letter from Dr. Kelly
24 to -- it looks like a J.W. Barrett, yes.

25 BY MR. GRAMMAS:

12 1 Q. And J.W. Barrett has the word "doctor" before
2 his name, too, doesn't it?

3 A. It does. I don't know what that means.

4 Q. The subject of this letter is Dr. Barrett's
5 September 8 letter to Mr. -- it looks like Mason, about
6 Aroclor toxicity, correct?

7 MR. PECK: He's going to ask you about the
8 subject of the letter, and you're going to have to read
9 the letter.

10 THE WITNESS: I will.

11 BY MR. GRAMMAS:

12 Q. Isn't that what the subject says at the top,
13 sir?

14 A. Yes.

15 Q. Aroclor is a company name for PCB, right?

16 A. Can I read the letter?

17 Q. You can read the letter, sure.

18 (WITNESS REVIEWS DOCUMENT.)

19 THE WITNESS: I have read the letter.

20 BY MR. GRAMMAS:

21 Q. Now, Mr. Pierle, I want to draw your attention
22 to the last paragraph on the first page. MCC, what is
23 MCC, Monsanto Chemical Company?

24 A. It probably is.

25 Q. Doesn't Dr. Kelly tell Dr. Barrett that

12 1 Monsanto Chemical Company's position about PCBs can be
2 2 summarized in the following fashion, and see if I read
3 3 this correctly. "We know Aroclor" -- first of all,
4 4 Aroclors are PCBs, right?

5 A. Again, I think they can be. I'm not 100
6 6 percent conversant on the product terminology that was
7 7 used.

8 Q. Well, assume for me that Aroclors are PCBs,
9 9 okay, because that's been the testimony in the past.

10 MR. PECK: Object to the form of the question.
11 I'm not sure that that's an accurate characterization.
12 I think the testimony's been that Aroclor includes
13 PCBs. It's not necessarily all PCBs.

14 MR. GRAMMAS: Well, we'll take that
15 definition.

16 BY MR. GRAMMAS:

13 17 Q. Monsanto Chemical Company's position can be
18 18 summarized in the following fashion. "We know Aroclors
19 19 are toxic, but the exact limit has not been precisely
20 20 defined."

21 Did I read that correctly?

22 A. Yes.

23 Q. Dr. Kelly goes on to state: "It does not make
24 24 too much difference, it seems to me, because our main
25 25 worry is what will happen if an individual develops any

13

1 type of liver disease and gives a history of Aroclor
2 exposure. I'm sure the juries would not pay a great
3 deal of attention to MCC's position."

4 Did I read that correctly?

5 A. I think you did, up until the last word, and I
6 think that refers to MACs, attention to MACs, and I
7 think that's used someplace else in here.

8 Q. Yeah, I think you're right. I misread that.

9 In any event, Dr. Kelly, back in 1955, wrote
10 to Dr. Barrett, who was another Monsanto doctor, that
11 Monsanto doctors on staff knew that PCBs were toxic to
12 human beings, didn't they?

13 A. No.

14 Q. Okay. And he didn't also write that he's
15 worried that exposure of individuals to Aroclors may
16 cause liver disease. He didn't write that either, did
17 he?

18 A. That's not how I interpret what he says. What
19 I interpret what he says here is that -- and I don't
20 know that Dr. Barrett is Monsanto. So, again, I'm not
21 agreeing to your front end. I just don't know. You
22 made that factual statement.

23 Q. I just assumed he was. Dr. Kelly wrote a
24 letter to an individual. Regardless of whether that
25 individual's employed by Monsanto, you will admit that

13

1 Dr. Kelly was employed by Monsanto?

2 A. Yes.

3 Q. And he wrote a letter to this man stating in
4 1955 that Monsanto Chemical Company knew that Aroclors
5 were toxic.

6 A. I think what this is saying is that based on
7 some tox test that was available, I think he describes
8 up above that Aroclors are toxic. Almost everything's
9 toxic. So there's nothing new about that. The
10 question here, as I read this, is: At what level is
11 there toxicity? And what he goes on to say, as I read
12 that, it says what's important here is that we
13 understand if there is any liver disease in humans and
14 is there Aroclor exposure that may have contributed to
15 that. So this doesn't say that he is stating that
16 Aroclor causes liver disease, he is simply stating that
17 I don't know whether there's a reason to do more
18 toxicological studies on animals or how valuable that
19 would be.

20 Q. Well, he says Monsanto knows that Aroclors are
21 toxic, but the actual limit has not been precisely
22 defined.

23 A. Right. That's correct. And most toxicity is
24 done in animals, and my interpretation of that is it's
25 a question of at what level is toxicity exhibited in

13

1 the animal.

2 Q. And, of course, you're going to point me to a
3 study that Monsanto has that says, We know discharging
4 250 pounds of this toxic chemical a day does not rise
5 to that level of toxicity that Dr. Kelly was concerned
6 about. Where's that document?

7 MR. PECK: Object to the form of the question.

8 THE WITNESS: I didn't -- I didn't suggest
9 that there was a document, if you state it in fact.

10 BY MR. GRAMMAS:

11 Q. Exactly. So the best you can tell me is, in
12 1955, Monsanto knew that it was discharging a toxic
13 chemical -- scratch that.

14 In 1969, Monsanto knew that it was
15 discharging, according to Plaintiff's Exhibit 8 to your
16 deposition, 250 pounds of this toxic chemical a day
17 into Snow Creek, right?

18 A. That's what the one document suggests.

19 Q. Well, the two documents together prove that
20 Monsanto knew they were discharging a toxic chemical of
21 up to 250 pounds a day into Snow Creek, right?

22 A. No. I mean, what it says is we're
23 discharging -- it's two separate things. One, we're
24 discharging up to or were, which has been reduced; and
25 Aroclors exhibit toxic properties in test animals. And

13 1 what it goes on to say, as I read it, that is
2 2 questioning down here further as to what's important,
3 3 is: Are we seeing any adverse effects in human beings
4 4 and are there any actual exposures to PCBs which may
5 5 cause that effect?

6 6 Q. Mr. --

7 7 A. The presence of the material and the fact that
8 8 a material has toxicity does not allow one to conclude
9 9 that there's any risk to the environment or an
10 10 individual as a result of that.

11 11 Q. I didn't ask you any of those things, Mr.
14 12 Pierle, and I appreciate your contributing all of that
13 13 unnecessary information, but that's not what I asked
14 14 you. My questions are very simple, they're very
15 15 pointed, and I want answers just to those questions and
16 16 we can get out of here a lot faster.

17 MR. PECK: Mr. Pierle can answer the question
18 however he feels fit.

19 BY MR. GRAMMAS:

20 Q. When you do that, it makes me come back and
21 show that the witnesses in these letters did not say
22 the things you just said. So that's what we're going
23 to do here.

24 In this 1955 letter, Mr. Pierle, Dr. Kelly is
25 not talking about rats. He's talking about human

14 1 beings, isn't he? You've already read the whole
2 letter.

3 A. No, he is not saying that they have determined
4 that Aroclors were tested on human beings and toxic to
5 human beings. The letter does not say that.

6 Q. He did not mention the word "rats," "animals,"
7 "mice," "dogs," "puppies," "gerbils," anything of that
8 sort in this 1955 letter, did he?

9 A. Well, let me look at it again, but he did not
10 say that they were -- it refers to test work that was
11 done; and the best I know, it was not common practice
12 to test human beings directly for toxicity for
13 chemicals. The standard practice was to test animals.
14 So maybe it doesn't say it specifically, but it's a
15 fairly simple deduction for someone to make from this
16 discussion.

17 Q. I'm not asking you to deduce anything. And if
18 your lawyer wants to talk to you about that, that's
19 fine.

20 MR. PECK: Sure, you are. You're asking him
21 to deduce things. You're asking about documents. If
22 you don't want to know his interpretation of the
23 document, stop showing him the document.

24 MR. GRAMMAS: If your lawyer wants to ask you
25 questions about why you feel like something should have

14

1 been written in that letter that wasn't, then he can
2 have every opportunity to do that. What I'm asking --

3 MR. PECK: You asked him -- you had asked him
4 if the letter said toxicity to humans, Pete.

5 MR. GRAMMAS: Adam, be quiet. I know what I'm
6 asking.

7 MR. PECK: Well, you apparently don't, because
8 you're getting answers to your questions and you don't
9 like them and you don't know what the answer means.

10 MR. GRAMMAS: Whatever, Adam.

11 MR. PECK: And that's why you have to keep
12 asking him the same questions

13 MR. GRAMMAS: Whatever.

14 MR. PECK: Listen to his answers, Pete, and
15 stop asking him the same questions over and over again.

16 BY MR. GRAMMAS:

17 Q. Can you answer the question, sir.

18 MR. PECK: Read back his answer.

19 BY MR. GRAMMAS:

20 Q. There's nothing in there about rats, mice,
21 animals, gerbils, dogs, puppies, cats, anything, is
22 there?

23 A. My interpretation of MAC is "maximum allowable
24 concentrations." That is a term that is very commonly
25 used around the testing of laboratory animals. So

14

1 again, someone with some understanding of scientific
2 testing -- and I'm not an expert -- would sure assume
3 and deduce from this letter that's exactly what they're
4 talking about.

5 Q. That would have been a perfect answer if I
6 asked you to assume and deduce for me what they're
7 talking about. But my question was: Do those words
8 appear in this letter anywhere, about animal studies,
9 dogs, rats, mice, gerbils, anything like that? Do they
10 appear in this letter, sir?

11 A. Again, MACs would interpret that, and nothing
12 in the letter says it's talking about human toxicity
13 testing either.

14 Q. Fine. Where were you in 1955?

15 A. I was born --

16 MR. PECK: Now he is trying to disqualify him.
17 BY MR. GRAMMAS:

18 Q. What were you doing in 1955?

19 A. I was 12 years old, so I was probably in grade
20 school.

21 Q. What grade would you have been in?

22 A. Is this relevant?

23 Q. Uh-huh. Yes, sir.

24 A. I was probably in the seventh grade.

25 Q. You were in the seventh grade. You were a

14

1 12-year-old boy when Dr. Kelly wrote this letter.

2 A. That's correct.

3 Q. And he states in here that Monsanto Chemical
4 Company's position -- not Dr. Kelly's, he said this is
5 the chemical company's position -- is that they know
6 Aroclors are toxic.

7 A. That's correct.

8 Q. Now, and we've know that from 1955.

9 A. Yes.

10 Q. What's the date of Exhibit No. 8, sir?

11 A. August 7, 1970.

12 Q. Now, according to Exhibit No. 8, which is a
13 Monsanto document, how many pounds of PCBs were being
14 dumped into Snow Creek in 1969 on a daily basis?

15 A. This suggests their best information says it's
16 250 pounds a day.

17 Q. Simple question. Based on these two documents
18 together, can you not tell me that Monsanto was dumping
19 250 pounds a day of a toxic chemical into Snow Creek?

20 MR. PECK: Object to the form of the question.

21 THE WITNESS: No.

22 BY MR. GRAMMAS:

23 Q. Back to Exhibit No. 8, sir, which is the Paul
24 Hodges letter dated August 7, 1970, he discusses in the
25 last paragraph of his letter that high concentrations

15

1 of PCBs were being found in mud and fish in Choccolocco
2 Creek, doesn't he?

3 A. He says: "...fish samples from nearby
4 Choccolocco creek also showed high levels of PCBs,
5 we're instituting more sampling to determine the extent
6 of the problem."

7 Q. Right. Back in 1970 -- where in that letter,
8 by the way, does he say, But Monsanto's not the party
9 responsible for the high levels of PCBs in these fish?

10 A. I don't think he discusses responsibility at
11 all.

12 Q. Where in there does he say that Monsanto is
13 not responsible for doing it?

14 A. I didn't say that he said that.

15 Q. I know. I'm asking you where is it that he
16 says that, if he does?

17 A. I don't know why he wrote the letter and what
18 he put in the letter, whether that was even pertinent.

19 Q. Would you not say that, reading that letter,
20 it's a fair conclusion to take from it, sir, that Mr.
21 Paul Hodges believed that Monsanto was the party
22 responsible for the high levels of PCBs in the fish
23 found in Choccolocco Creek?

24 A. I think what they're doing there again, as I
25 read that letter, is looking at facts and information.

15

1 Certainly there was enough that caused him to go look
2 and ask the question and they were also disclosing that
3 and discussing with the state officials.

4 Q. At the same time, they were making sure that
5 the public didn't get a copy of this and didn't find
6 out this information, right?

7 A. That's what this letter says. I don't know
8 how many other letters or what else was produced. This
9 doesn't say that they wouldn't give it to the public.
10 It just says with respect to this letter, it's
11 confidential.

12 Q. What's the date of that letter?

13 A. August 7, 1970.

14 Q. Who's Mr. G.W. Miller?

15 A. I don't know.

16 (PIERLE EXHIBIT NO. 10 WAS FIRST DULY
17 MARKED, RECEIVED AND MADE A PART OF THE RECORD.)
18 BY MR. GRAMMAS:

19 Q. Well, I'm going to show you a letter dated May
20 7, 1970, sir, and I ask if you would, please, review
21 that letter. I want to ask you a few questions about
22 it.

23 (WITNESS REVIEWS DOCUMENT.)

24 BY MR. GRAMMAS:

25 Q. Have you had an opportunity to read Mr.

15

1 Miller's letter to Mr. Jessee?

2 A. Yes.

3 Q. It's actually an internal memorandum, as
4 opposed to a letter, but it's dated May 7, 1970,
5 correct?

6 A. Yes.

7 Q. And it deals with the subject of Monsanto
8 putting PCBs from its Anniston plant into Snow Creek
9 and Choccolocco Creek, doesn't it?

10 A. I don't think it mentions Choccolocco Creek.

11 Q. Just Snow Creek?

12 A. I believe that's what the letter says.

13 Q. All right. Under the third full paragraph,
14 there are some topics of discussion, correct?

15 A. Yes.

16 Q. And Mr. Miller is telling Mr. Jessee that
17 Monsanto has made the decision to "Give no statements
18 or publications which would bring the PCB contamination
19 to Snow Creek's situation to the public's attention."

20 Isn't that what he says?

21 A. This says his recommendation, "his" referring,
22 I believe, to Mr. Crockett. So these were the
23 recommendations of the Alabama state administrator to
24 do that. And he goes on to say: "If approached,"
25 people are free to discuss the situation and that it's

15

1 under study and Mr. Crockett -- under his direction.

2 Q. All right. Maybe you didn't understand my
3 question. He states in here that Monsanto is going to
4 take the position that it will "Give no statements or
5 publications which would bring the situation to the
6 public's attention."

7 Did I read that correctly?

8 MR. PECK: He answered your question, Pete.
9 If you didn't like the answer, then stop asking him
10 questions.

11 BY MR. GRAMMAS:

12 Q. Did I read it correctly?

13 A. Again, what that says is his recommendations,
14 the way I read that, that Mr. -- those were Mr.
15 Crockett's statements and recommendations. Those were
16 not the statements of Mr. Miller.

17 Q. What's AWIC?

18 A. I believe it's the regulatory authority in
19 Alabama at that time.

20 Q. Let's read this paragraph above that section
21 for a moment. Paragraph 3 of the letter says: "Mr.
22 Crockett was most appreciative of Monsanto's approach
23 to the problem and the fact that Monsanto came to him."

24 Did I read that sentence correctly?

25 A. Yes.

15

1 Q. And the problem, again, is PCB contamination
2 from Monsanto's plant into Snow Creek, right?

3 A. I think it's a variety of information that had
4 been discovered concerning PCBs, the plant site, and
5 Snow Creek.

6 Q. "He," being Mr. Crockett, "alluded that our
7 action" -- that's Monsanto, right?

8 A. Yes.

9 Q. -- "would produce a situation that was
10 beneficial to the protection of both the Monsanto and
11 AWIC positions."

12 Correct?

13 A. Yes.

16

14 Q. "His recommendations were as follows," and
15 then it says: "Give no statements or publications
16 which would bring this situation to the public's
17 attention."

18 Did I read any of that incorrectly?

19 A. No, you did not.

20 Q. Now, tying it back to the words of Mr. Miller,
21 would not "giving no statements or publications to the
22 public" protect Monsanto's position with respect to
23 PCBs being dumped into Snow Creek at that period of
24 time, sir?

25 A. That is not the way I read the letter.

16

1 Q. Okay. Have you ever been aware of the fact
2 that free globules of Aroclors had been seen in Snow
3 Creek from Monsanto's plant?

4 A. I don't believe so.

5 Q. Would that surprise you to know that?

6 A. If those levels of discharge were accurate,
7 that would be possible.

8 Q. Do you think that's good corporate practice,
9 even back in 1969, to dump so much PCB into Snow Creek
10 that free-standing -- what was the word they used? --
11 "free globules" of the stuff can be seen in the creek?

12 A. You know, again, by today's standards, we
13 wouldn't do that, we couldn't do that. By the
14 standards that existed at that point in time, that was
15 not uncommon practice.

16 Q. But --

17 A. Folks knew about it, the public knew about it.
18 It was accepted. Things changed and the laws changed
19 and there was a whole structure put in place to deal
20 with that, but that was accepted behavior and practice
21 at that time.

22 Q. The public knew about it. Is that what I
23 heard you say?

24 A. What I'm saying to you in general, the
25 question of discharges of pollutants in the rivers and

16

1 streams at that time was public knowledge, generally
2 available. People knew there was pollution at that
3 point in time. People knew and regulators knew there
4 were things that floated on streams and sank to the
5 bottom. So, you know, anyone at that point in time
6 would have known that that was not uncommon.

7 Q. Including the people at Monsanto?

8 A. I think everybody pretty much was aware of
9 that.

10 Q. Now, does the fact that there were free
11 globules or Aroclors found in Snow Creek, the fact that
12 there were 250 pounds a day of PCBs being discharged
13 from your plant directly into Snow Creek, influence in
14 any manner whatsoever your opinion that Monsanto is a
15 potentially responsible party or the responsible party
16 for the problem that we're seeing in the creek and the
17 lake today?

18 A. I think, again, we've talked about this. With
19 respect to what was in Snow Creek, that situation, it
20 has been addressed and is being addressed. With
21 respect to Choccolocco Creek and the lake, there's
22 significant studies which we are leading, participating
23 in, that are getting additional answers to that
24 particular question. And the reason why we're there
25 doing that is because there's enough information that

16

1 says, by our policies and guidelines, we ought to be in
2 the process of understanding what's there.

3 Q. And we had that information, sir, as early --
4 "we" being you -- had that information as early as May
5 12, 1969, didn't you?

6 A. They had information relative to Snow Creek
7 and it was disclosed and discussed with the regulatory
8 authorities.

9 Q. Well, let's look at -- Exhibit 8 is dated
10 August 7, 1970, and it's talking about fish samples in
11 Choccolocco Creek, isn't it?

12 A. It does.

13 Q. So Monsanto had information in the '69 time
14 period that its manufacturing process and discharges of
15 PCBs were impacting Snow Creek and Choccolocco Creek,
16 right?

17 A. I think it says there were PCBs there. This
18 does not say that that plant was the source or only
19 source of that material.

20 (PIERLE EXHIBIT NO. 11 WAS FIRST DULY
21 MARKED, RECEIVED AND MADE A PART OF THE RECORD.)
22 BY MR. GRAMMAS:

23 Q. All right. Sir, I'm going to show you what
24 has been marked as Plaintiff's Exhibit 11 and ask if
25 you can identify that for me just by looking at the

16

1 date, the author, and the recipients?

2 A. How do you want me to identify this?

3 Q. By telling me who wrote it, what it is, and
4 what -- the date it was written, and who got it.

5 A. It's a letter from Mr. Hodges to a Mr. Kuhn
6 dated May 12, 1969, subject, "Aroclor Cleanup from
7 Plant effluents.

8

9 MR. PECK: He's going to ask you questions
10 about the document, Mike, you'll have to read it.

11 BY MR. GRAMMAS:

12 Q. Heading 3 of this document says: "Work to
13 Minimize Losses at Anniston."

14 Did I read that correctly?

15 MR. PECK: He's going to ask you questions
16 about the document, Mike, you need to read it.

17 BY MR. GRAMMAS:

18 Q. Read that whole document. I'm going to run to
19 the restroom.

20 MR. GRAMMAS: Adam, we'll be here all day
21 reading these.

22 MR. PECK: That's fine. That's your choice.

23 MR. GRAMMAS: All right. Well, just so this
24 gentleman knows that the reason he's here all day is
25 because you're making him read letters.

16 1 MR. LOWE: That's okay.

2 (WITNESS REVIEWS DOCUMENT.)

3 (A SHORT BREAK WAS HELD.)

17 4 THE WITNESS: I have read the document.

5 BY MR. GRAMMAS:

6 Q. Now, let's turn our attention to Roman --
7 Section Roman numeral III, it's "Work to Minimize
8 Losses at Anniston," right?

9 A. Yes.

10 Q. And they define the problem, do they not, in
11 this document; does Monsanto not define the problem?

12 A. That's a heading that's used.

13 Q. And the definition of the problem is that:
14 "External to the plant -- that a problem exists at
15 Anniston is evident because 'free' globules of Aroclors
16 can be seen in Snow Creek."

17 Did I read that correctly?

18 A. Yes.

19 Q. "We do not know what problem exists in
20 Choccolocco Creek and the Coosa River."

21 Did I read that correctly?

22 A. Yes.

23 Q. Now, it says: "Two sets of mud and water
24 samples will be taken in Choccolocco Creek."

25 Right?

17

1 A. That's what it describes.

2 Q. Okay. Now, we know -- well, that was May 12,
3 1969, right?

4 A. Yes.

5 Q. And we know, as of August 7, 1970, those
6 samples were taken by Monsanto at Choccolocco Creek,
7 right?

8 A couple months later, we have the results of
9 the fish samples that we talked about in the prior
10 document, Exhibit No. 11.

11 A. Well, I mean, it's over a year between the two
12 documents, so I'm not sure if they're talking the same
13 samples or not.

14 Q. But you will admit that there are samples from
15 Choccolocco Creek that show positive readings of PCBs
16 in the fish there?

17 A. Yes.

18 Q. Okay. Now, on another section here, entitled
19 "Internal Plant Problems," on the following page,
20 paragraph 2 e., states that Monsanto should "Establish
21 continuous monitoring stations on Choccolocco Creek for
22 Aroclors (and PNP and Parathion)."

23 Did I read that correctly?

24 A. Yes.

25 Q. What does EDC mean?

17

1 A. I think it's "estimated date of completion."

2 Q. June 1st, 1970, right?

3 A. Yes.

4 Q. Tell me how many monitoring stations Monsanto
5 has on Choccolocco Creek right now, sir, checking for
6 PCBs.

7 A. I don't know that we have any.

8 Q. Is it safe to say that it's now, what, 28
9 years later, you didn't -- Monsanto didn't meet their
10 estimated date of completion for putting those
11 monitoring stations in to check the PCB contamination
12 in Choccolocco Creek?

13 A. No.

14 MR. PECK: Object to the form of the question.

15 BY MR. GRAMMAS:

16 Q. It's not, why not?

17 A. They were probably put in, work done, and
18 taken out. That's relatively common practice when
19 you're doing monitoring and that. Nothing in that
20 document says we're going to put them in and leave them
21 forever. This was a document that describes the work
22 plan aimed at definition of problems --

23 Q. So --

24 A. -- of a project.

25 Q. So you know for a fact, as the environmental

17 1 manager for Solutia, that as of 1970, Monsanto had
2 installed monitoring stations in Choccolocco Creek to
3 check for PCBs?

4 A. I didn't say that.

5 Q. Well, you said that they probably did them and
6 took them out.

7 A. You asked me a different question as to
8 whether or not they existed today. My response was the
9 fact that they said that they would put them in doesn't
10 mean if they did, they would be in existence today.

11 Q. And the fact that they said that they should
12 put them in doesn't mean that they did, either, does
13 it?

14 A. I don't know whether they did or not. From
15 that note, I can't tell.

16 Q. Monsanto employees back in 1969 thought it was
17 important enough to put PCB monitoring stations in
18 Choccolocco Creek; you will agree with me at least as
19 to that, based on this document?

20 A. It says it was part of that comprehensive work
21 plan.

22 Q. And isn't that because as early as that date,
23 y'all knew that your PCBs were getting into Choccolocco
24 Creek and you just wanted to know how much?

25 A. I think what that whole program describes is

17

1 an investigatory set of work that was undertaken at
2 that point in time to understand losses at the plant
3 and where they might be going.

4 Q. And back then they thought they were going as
5 far as Choccolocco Creek, didn't they, May 12, 1969?

6 A. I think what that suggests is they wanted to
7 check and see if that was the case or not. It doesn't
8 assume that they knew that they would.

9 Q. But we know now in hindsight that the PCBs
10 were in fact getting into Choccolocco Creek, don't we?

11 A. I think that one date says that there are
12 PCBs. It doesn't say where they're from and it says
13 that they're there; and as a matter of fact, there were
14 subsequent actions, I think, by the State on that at a
15 point in time. I don't know when it was, but again,
16 this is open -- I believe, open knowledge.

18

17 Q. But it's not open because of anything that
18 Monsanto chose to disclose to the public, is it?

19 A. Absolutely, because if you choose to disclose
20 it to the regulatory agency who is the public.

21 Q. Okay. And the fact that you-all say on
22 August 7, 1970, that this is confidential information,
23 that once the recipients read it, they should destroy
24 the letter, and that they should try to handle the
25 problem without releasing the information to the

18 1 public, doesn't affect, in your mind, or doesn't draw
2 2 you to conclude that Monsanto's doing everything in its
3 3 power to conceal this problem from the public?

4 A. I think what all of that suggests is there was
5 5 open communication to the state agencies and the State
6 6 was well aware of it and the State basically said,
7 7 We're working on this together, there's no need to
8 8 alarm the public with it. And basically, though, if
9 9 asked, that people will tell there's a program underway
10 10 to investigate and understand the situation.

11 Q. And the fact that y'all were writing these
12 12 memos on August 7, 1970, saying, Let's keep this from
13 13 the public, let's read this among ourselves and then
14 14 destroy this information, didn't have anything to do
15 15 with the fact that y'all were worried about the public
16 16 finding out and suing y'all over these issues; is that
17 17 what I'm hearing you saying?

18 MR. PECK: Object to the form of the question.

19 THE WITNESS: No, you're reading one letter in
20 20 '70 and you're showing me another letter that talked
21 21 about a conversation that wasn't marked that way that
22 22 would have been open and available. So I don't derive
23 23 any special meaning from that designation.

24 BY MR. GRAMMAS:

25 Q. Okay. Well, we'll go through it, then, in

18

1 detail so we won't mislead anything or anyone.

2 Again, Mr. Paul Hodges' letter dated August 7,
3 1970, to Mr. Bergen, in bold, underscored, all capital
4 letters, says: "Confidential, For Your Information and
5 Destroy."

6 Did I read any of that incorrectly?

7 A. No.

8 Q. And it says in the third paragraph of this
9 letter that we're going to do everything we can to keep
10 this from the public, right?

11 A. No.

12 Q. Okay. What does it say?

13 A. It says exactly what it says.

14 Q. Read it.

15 A. Mr. Crockett "will try to handle the problem
16 quietly, without release of the information to the
17 public at this time. He believes that FDA will not
18 precipitate this matter...Dr. Myers, Director of Public
19 Health...wants toxicity information on PCBs and will
20 convey this personally to him the next week. That
21 clearly indicates to me there's an open flow of
22 information with state agencies, and I can't call that
23 confidential at that point.

24 Q. I didn't ask you what -- anything about a
25 state agency. I'm talking about the people.

18

1 A. You asked me to read the statement, and I did,
2 and the state agencies are the ones that made the
3 statement that you attributed to Monsanto or Solutia,
4 and I'm just pointing that out.

5 Q. Okay. Well, let me ask you this, then, Mr.
6 Pierle: Monsanto, according to what I'm hearing you
7 say, never took the position that it personally wanted
8 to keep this quiet from the public to avoid being sued
9 by someone; that was never a concern on your part?

10 A. I don't know what these people were thinking.
11 I'm talking to you about what's in this document at
12 this point in time. Clearly there was an open
13 discussion with people at this -- outside of Monsanto,
14 of the information.

15 Q. There was no discussion of this with the
16 general public, was there, based on that letter,
17 Exhibit No. 8?

18 A. I don't know at what point in time there was.

19 Q. At this point in time, sir.

20 A. It doesn't describe that it is, no.

21 Q. As a matter of fact, it says don't tell the
22 public this stuff.

23 A. I answered that question and that's not what
24 that says.

25 MR. PECK: Let's take a break.

18

1

(A SHORT BREAK WAS HELD.)

2

BY MR. GRAMMAS:

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Q. Mr. Pierle, are you testifying today that Monsanto, during this period of time, 1969/1970, when all these memos that we've been discussing came out, did not undertake to keep this quiet from the general public to avoid being sued by anyone with respect to the PCB losses that you-all knew were occurring in Anniston?

A. I can't conclude that from these documents.

Q. You were employed with the company at this time, were you not?

A. Yes.

Q. You were working with some of these people, weren't you?

A. To some extent, but not in detail.

Q. And it never came to your attention, either at that period of time or during the course of your promotion within the company, and even today as the head environmental manager, that Monsanto tried to keep PCB losses a secret from the public so it wouldn't be sued? That was the real reason to keep it a secret, wasn't it?

A. No.

Q. Did you say no?

19

19

1 A. I'm saying no, it wasn't kept a secret, from
2 my reading of the documents.

3 (PIERLE EXHIBIT NOS. 12 AND 13 WAS FIRST DULY
4 MARKED, RECEIVED AND MADE A PART OF THE RECORD.)

5 BY MR. GRAMMAS:

6 Q. Toby Bell, who is that, do you have any idea?

7 A. I don't know.

8 Q. I'm going to show you a memo dated September
9 18, 1970, again from Mr. Paul Hodges. Now, who did you
10 say that Mr. Hodges was and what did he do at that time
11 for Monsanto?

12 A. I think he was an environmental manager
13 working for Mr. Hosmer.

14 Q. September 1970, Mr. Hodges wrote Mr. Bell and
15 he told him in that letter that I've just handed you as
16 Plaintiff's Exhibit -- what is it, 13?

17 A. Yes.

18 Q. -- that Monsanto was extremely reluctant to
19 let the public know about any of these PCB lawsuits
20 because you were afraid you were going to be subpoenaed
21 and you were going to be sued, correct?

22 A. Can I read the letter?

23 Q. Yes, sir.

24 (WITNESS REVIEWS DOCUMENT.)

25 THE WITNESS: I've read the letter. Can you

19

1 repeat the question.

2 BY MR. GRAMMAS:

3 Q. Yeah. You-all were concerned, deeply
4 concerned, about being sued during that period of time,
5 weren't you, based on that letter?

6 A. I think it says "from the legal standpoint,"
7 which again I would interpret to be, you know, the law
8 department's standpoint. That's how I would interpret
9 that.

10 Q. Well, all lawsuits are legal in nature, aren't
11 they?

12 A. Yeah. That wasn't my response to it.

13 Q. I mean, that goes without saying.

14 A. There are legal departments, there are
15 management departments, and business people, and if you
16 were a lawyer inside Monsanto, I think you would
17 probably advise that, you know, this could be tough
18 from a legal standpoint. I don't read that that's the
19 basis on that decision making -- that's one input into
20 this note. That's how I read the memo.

21 Q. Well, rather than using your words to describe
22 this memo, don't you think it would be better to use
23 Mr. Hodges' words, the man who wrote the memo?

24 A. You're asking me to react to a memo, and I'm
25 simply putting it in my context of understanding what

19

1 my interpretation to be. You would have to ask Mr.
2 Hodges, if you could, and you can't unfortunately.

3 Q. Has he passed away?

4 A. He has.

5 Q. Well, Mr. Hodges said, and I'll quote it and
6 you tell me if I'm reading it incorrectly: "There is
7 extreme reluctance to report even the relatively low
8 emission figures because the information could be
9 subpoenaed and used against us in legal actions."

10 Did I read that correctly?

11 A. It started with "from a" -- "From the Legal
12 standpoint," and then you read it correctly. It also
13 states in there we've got to give the data to the State
14 folks. So they're going to give it to them anyway. He
15 goes on to ask, then, what else can be done, even at
16 those low levels, to reduce them further.

17 Q. What it's saying is that Monsanto had hoped
18 that they would be able to improve what was happening
19 and demonstrate a favorable trend to the State, but
20 rather than being able to improve that, the emissions
21 had considerably increased based on the information
22 that they found; didn't he say that, sir?

23 A. Yeah, I think it's a disappointment that the
24 programs had not reduced it, and he goes on to say what
25 else can be done to reduce it.

19

1 Q. And given the content of this letter, sir, is
2 it still your testimony that Monsanto at that period of
3 time was not consciously concealing from the general
4 public the data that it was collecting to avoid being
5 sued by the people who were being affected by the
6 discharges that they were putting into Snow Creek and
7 Choccolocco Creek?

8 A. Again, I think there were at least three
9 questions in there.

10 Q. There was only one question.

11 A. Maybe you could shorten it and ask it to me
12 again.

13 MR. GRAMMAS: Would you read it back to him.

14 (THE PREVIOUS QUESTION WAS READ BACK.)

15 THE WITNESS: Again, I read that to be common.
16 What I said was that I don't believe that I see
17 anything in here that Monsanto was attempting to
18 intentionally keep matters from the public because of a
19 concern about a lawsuit.

20 BY MR. GRAMMAS:

21 Q. Despite the letters and the words and the
22 sentences contained in Mr. Hodges' September 18, 1970,
23 memo to Mr. Bell, which is Exhibit 13 to your
24 deposition?

25 A. Yes.

19 1 Q. All right. I'm going to show you a fairly
2 2 lengthy document. It's 12 pages. If you want to read
3 3 it, you're free to read it. I'm not going to ask you
4 4 about all 12 pages, I'm going to ask you about certain
5 5 sections. Do you want to read the whole document or
6 6 not?

7 A. I think it has been important so I understand
8 8 the context in which the sentences are that you pull
9 9 out.

10 (WITNESS REVIEWS DOCUMENT.)

11 (A SHORT BREAK WAS HELD.)

12 BY MR. GRAMMAS:

20 13 Q. Have you had an opportunity, sir, to read
14 14 Plaintiff's Exhibit 12?

15 A. Yes.

16 Q. It's an October 2nd, 1969, memo regarding a
17 17 report from the Aroclor ad hoc committee, correct?

18 A. Yes.

19 Q. And it's to Mr. Bergen and Springate. We
20 20 haven't talked about him. Who's that?

21 A. I remember him as another business manager,
22 22 business director.

23 Q. From Hodges and several other individuals,
24 24 right?

25 A. Yes.

20

1 Q. Can you identify the handwritten notes on this
2 document, do you know who wrote them?

3 A. No.

4 Q. All right. Do you believe that the toxicity
5 of PCBs toward certain species is high?

6 A. I believe -- I think that's what the document
7 refers to.

8 Q. Is that your understanding of the nature of
9 PCBs as we sit here today?

10 A. I think it can be. There was some confusion
11 that I'm not certain about with respect to wildlife as
12 to whether or not, you know, back at that time PCB was
13 the agent or DDT. There was some confusion back then,
14 but I think kind of the assumption was all through this
15 that there is, you know, environmental toxicity that we
16 need to be concerned about.

17 Q. And you will agree with me that PCBs are a
18 very persistent chemical?

19 A. Yes.

20 Q. And you will agree with me that the likelihood
21 of natural -- it says "origin," what does that mean?

22 A. I don't know.

23 Q. It says "or degradation," that makes more
24 sense to me, but the "likelihood of
25 natural...degradation of PCBs is remote."

20

1 Do you agree with that?

2 A. You know, I think at that time it was true.
3 I'm less certain if we know any more about that today.

4 Q. And that's a fancy way of saying once the
5 stuff gets into the environment, it ain't very likely
6 to go away on its own, right?

7 A. Yes.

8 Q. All right. Now, under this section entitled
9 "Recommendations" in this same memo, Plaintiff's
10 Exhibit 12 to your deposition, the gentleman who wrote
11 this memo said that: "In view of legal and moral
12 considerations," that Monsanto should notify all
13 Aroclor customers of environmental contamination
14 problems. Did I read that correctly?

15 A. Yes.

16 Q. All right. But it doesn't say anywhere in
17 here that Monsanto should notify all the people who
18 live downstream from its plant in Anniston who were
19 receiving PCBs being dumped into their river system
20 about the environmental contamination problem, does it?

21 A. It says what it says.

22 Q. You've read --

23 A. You're presuming in your statement, at least
24 to me, that there was knowledge and fact about that it
25 was -- you know, where there were exposures to human

20

1 beings. I don't read that in this document. Like what
2 this is saying is our customers are buying this from
3 us, using this, we know to some extent what those uses
4 are and we ought to tell them what we know -- or, what
5 the current situation is about PCBs. Obviously we
6 weren't hiding anything at that point.

7 Q. Well, you had a recommendation to tell your
8 customers, right? We can see that.

9 A. Right.

10 Q. Does it say anywhere in here a recommendation
11 to tell the people that lived downstream from your
12 plant about these same environmental problems?

13 A. No, it does not.

14 Q. And would you not believe that the people who
15 lived downstream from you are just as important, had
16 just as much right to know about environmental problems
17 as did your customers at that time?

18 A. As I read that memo and at that point in time,
19 it talks about understanding again what else we know
20 about the manufacturing facilities and where it is and
21 certain facts in there and a work plant around that,
22 and that was again in and around the time that the
23 agencies were known. That refers to other people in
24 the scientific community that are being communicated
25 with. So the answer directly is that no, there was no

20

1 statement in there; but the people at that time and
2 representing the public, like the Alabama AWIC, were
3 informed as to what was going on.

4 Q. Sir, do the people who live downstream from
5 Monsanto's plant, are they considered to be just as
6 important as your customers?

7 A. Sure.

8 Q. All right. Do you believe that the people who
9 lived downstream from your plant in Anniston had the
10 same rights to know about environment contamination
11 problems as your customers did?

12 A. I don't even know in 1970 or 1969 if there
13 were people downstream.

14 Q. Sir, I'm asking you a simple question.
15 Sitting here today, do you believe that people who live
16 downstream from your manufacturing facilities have the
17 same right to know about environmental contamination
18 problems that your facilities may cause as your
19 customers do?

20 MR. PECK: 19 --

21 THE WITNESS: And that's exactly what we do
22 today and have been and I've already commented about
23 the difference between the time frame that you're
24 talking about and what were generally accepted
25 practices for communicating this information.

20
1

1 BY MR. GRAMMAS:

2 Q. All right. And if there were people who lived
3 downstream from your plant in 1970 -- 1969, excuse me,
4 when this memo was written, did they have every right
5 to know about the environmental contamination problems
6 that your plant was causing, at least as much as your
7 customers had a right to know?

8 A. And I think at that point in time those
9 communications were basically with the regulatory
10 authorities who represent the public, and that was in
11 essence a discharge of that communication obligation.

12 Q. And you knew on August 7, 1970, that the
13 Alabama department charged with regulating it was going
14 to keep this quiet from the public, didn't you?
15 Monsanto knew that, didn't it?

16 A. Listen, we've been through these documents, it
17 seems to me, before; and the answer to that is I don't
18 know that that's what he says.

19 Q. The document says that's what he says.

20 A. Well, but you read one line and I read the
21 whole document, and if you read the whole document, I
22 think you'd probably come to a different conclusion,
23 too.

24 Q. Mr. Pierle, you're trying to explain to me
25 that you, Monsanto, discharged its obligations to

1 1 notify the public by telling state agencies about the
2 2 problem; am I hearing you correctly in saying that?

3 A. I think what I said very specifically was that
4 4 the normal practice at that time, if people even
5 5 communicated; and in many cases the question is: Would
6 6 you even tell them? We did openly discuss this with
7 7 the regulatory agencies. The regulatory agencies were
8 8 the governmental unit responsible for public
9 9 information. Only in the late -- mid-'80s and late
10 10 '80s did the public get -- express their demand for
11 11 involvement directly in such information, and the
12 12 standard of practice has changed substantially.

13 Q. I didn't ask you anything about what you told
14 14 me, Mr. Pierle.

15 A. I answered your question.

16 Q. No, you didn't.

17 MR. PECK: Yes, he did. Don't argue with him,
18 18 Pete, just ask him questions.

19 MR. GRAMMAS: Adam, stop telling me how to
20 20 take a deposition.

21 MR. PECK: I'm not going to let you argue with
22 22 my witness.

23 MR. GRAMMAS: I'm not arguing with him. I'm
24 24 trying to move this thing forward.

25 MR. PECK: Well, then stop asking questions

1 and we'll move forward.

2 BY MR. GRAMMAS:

3 Q. Mr. Pierle, we'll be here -- I don't care how
4 long it takes to finish your deposition. We're going
5 to finish it. It doesn't matter if it takes tonight,
6 tomorrow, we come back, we're going to finish this
7 deposition.

8 A. You're not -- you know, you're asking me to
9 answer the questions you want me to answer in your way.
10 I'm answering them truthfully from my knowledge.

11 Q. I asked you: Did Monsanto believe that by
12 disclosing things to the public -- to the state
13 agencies -- that it discharged its responsibilities to
14 disclosing it to the public?

15 A. I answered that question.

16 Q. And that's all I asked you, and you went into
17 a filibuster on what was standard practice in the '70s
18 and the '80s. I didn't care about all that. All I
19 want to know is: At that time did y'all take the
20 position that if you told the Alabama agency charged
21 with certain responsibilities about the environment
22 what you were dumping into the river, that you didn't
23 have to tell anybody else?

24 A. I answered your question as truthfully and
25 honestly as I can.

1 Q. Okay. There's a whole section in here on this
2 confidential memo dated October 2nd, 1969, about PCB
3 contamination, dedicated to notifying customers of
4 Monsanto; is that correct?

5 A. Yes.

6 Q. It goes on for pages; is that correct?

7 A. I believe so.

8 Q. And there ain't nothing in here about
9 notifying people who live downstream, is there, other
10 than notifying the government or whatever you said?

11 A. I think I've answered that question.

12 Q. Is that a yes?

13 A. My answer is what I said it was.

14 Q. All right. On Bates number 014621, in a
15 section, I guess, continued for the "Basis for
16 Recommendations" title, there's a No. 4 section, titled
17 "Losses from Monsanto Plants."

18 Did I read that correctly?

19 A. Yes.

20 Q. Mr. Pierle, did not Monsanto state in 1969
21 that, quote: "It is impossible to establish a limit as
22 to what can be discharged 'safely,'" unquote, with
23 respect to PCBs?

24 A. That's the statement that's contained here.

25 Q. And again, that was 1969, right?

1 A. Yes.

2 Q. That was the same period of time that we know,
3 based on prior exhibits, you-all were dumping about 250
4 pounds of PCBs into the river system in Anniston,
5 correct?

6 A. Yes.

7 MR. PECK: Object to the form of the question.

8 BY MR. GRAMMAS:

9 Q. This memo that we're talking about goes on to
10 say -- let's follow up something for a second.
11 Monsanto knew in 1955 that Aroclors were toxic,
12 correct, at some level? That's what Dr. Kelly said, do
13 you remember that memo?

14 A. Yes.

15 Q. All right. Monsanto knew in 1969 it was
16 dumping about 250 pounds of this toxic chemical into
17 Snow Creek and into Choccolocco Creek, right?

18 A. We've been through that discussion of toxics,
19 yes.

20 Q. And the dumping of the 250 pounds and all
21 that, do you remember the memo dated 1970 that we
22 talked about?

23 A. Yes.

24 Q. Okay. And in 1969, that same period of time
25 that you-all were dumping these toxic chemicals out,

2

1 you-all had no idea what levels could be safely
2 discharged, did you?

3 MR. PECK: Object to the form of the question.
4 No foundation.

5 BY MR. GRAMMAS:

6 Q. According to that memo that I'm reading from.

7 A. I think what that basically says is what it
8 says. It doesn't know if there's a safe level of
9 discharge. It goes back to the earlier memos around
10 toxicity, what do we know and what are we trying to
11 find out. It doesn't say it's unsafe, it doesn't say
12 we don't know what is safe.

13 Q. And despite the absence of knowledge regarding
14 what levels are safe, despite the risk that it very
15 well could be that no levels are safe, because if you
16 knew it was toxic in 1955, despite those things,
17 you-all continued to dump 250 pounds of PCBs out of
18 your plant in Anniston into Snow Creek every single day
19 in 1969, not knowing what effect that would have on the
20 environment, on the fish, or on the people that live
21 there, correct?

22 MR. PECK: Object to the form of the question.
23 No foundation.

24 THE WITNESS: I don't think that's what that
25 says.

2

1 BY MR. GRAMMAS:

2 Q. No, that's what I'm asking you. Knowing
3 everything now that we've read, isn't it true that
4 knowing all this knowledge, knowing the fact that you
5 didn't have any idea, Monsanto didn't have any idea
6 what levels were safe or not, it still dumped 250
7 pounds of this stuff into the creek every day.

8 A. I think what that document says is -- in its
9 entirety and why I read it is it lays out a very
10 aggressive program for saying we don't know if it's
11 safe. We are now about significantly reducing the
12 discharges, the exposure, the use of the materials, and
13 basically we -- "safe" has to have an exposure
14 component to it. There's nothing in here that says we
15 know about the exposure or the consequences of that
16 document -- of what was going on.

17 Q. That's right.

18 A. So I think that's a very aggressive plan at
19 that time to find out and reduce losses, to basically
20 be cautious about that -- about the knowledge that they
21 had, or the lack of knowledge, to secure more
22 knowledge, and too at the same time significantly
23 reduce the releases and, as it says in there, I think
24 someplace else, to minimal levels.

25 Q. I didn't ask you all that Mr. Pierle.

2

1 MR. PECK: Yes, you did.

2 MR. GRAMMAS: Adam, would you please stop
3 interrupting?

4 MR. PECK: Stop telling him what you didn't
5 ask him. He's answering your questions. He's going to
6 keep answering your questions. You might as well stop
7 that preface because it's argumentative and it's
8 improper.

9 MR. GRAMMAS: Then just object to the form.

10 MR. PECK: I'm getting tired of it. I wish
11 you'd stop.

12 MR. GRAMMAS: You just object to the form.
13 That's your role here.

14 MR. PECK: No, that's not my role.

15 MR. GRAMMAS: Yeah, it is your role.

16 MR. PECK: That's not my role. You don't have
17 a right to argue with my witness.

18 MR. GRAMMAS: I thought we said usual
19 stipulations?

20 MR. PECK: You don't have a right to argue
21 with my witness.

22 MR. GRAMMAS: Did we not say usual
23 stipulations?

24 MR. PECK: Yes, and you do not have the right
25 to argue with my witness under whatever stipulations it

2

1 is, wherever we are.

2 MR. GRAMMAS: When we say "usual
3 stipulations," doesn't that mean, Adam, that you object
4 to the form and all other objections are reserved for
5 trial.

6 MR. PECK: Yeah, but I can't just object to
7 the form and point out to you why I think it's improper
8 for you to argue with my witness, because we're not
9 going to do that, Pete, and if you keep it up, we will
10 just go.

11 BY MR. GRAMMAS:

12 Q. Mr. Pierle --

13 MR. PECK: I don't have to sit here and let
14 you treat my witness disrespectfully.

15 BY MR. GRAMMAS:

16 Q. Mr. Pierle, I'm trying to get answers to
17 questions. I'm not trying to be disrespectful to you,
18 but when I sit here and I ask you a fairly simple
19 question and I get a filibuster, it aggravates me.

20 A. You're not getting a filibuster, you're
21 getting an answer that integrates the information that
22 you're putting in front of me.

23 Q. Well --

24 A. And that's entirely appropriate to understand
25 the types of questions that you're asking.

2 1 Q. Okay. We'll just do this little line in very
2 2 simple sentences. In 1969, it was impossible for
3 3 Monsanto to establish a limit as to what discharges of
4 4 PCBs could be done so safely, correct?

5 5 A. Yes.

6 6 Q. In 1969, at that same time period, sir,
7 7 Monsanto was dumping 250 pounds of PCBs a day into Snow
8 8 Creek, correct?

9 9 A. Correct.

3 10 Q. In 1969, Monsanto was dumping 250 pounds of
11 11 PCBs into Snow Creek and did not know what levels if
12 12 any were safe for PCBs to be discharged into that
13 13 system, correct?

14 14 A. Could have been more than that could have been
15 15 safe. Could have been less.

16 16 Q. Correct?

17 17 A. I answered your question.

18 18 Q. Okay. Don't you think that that's a conscious
19 19 disregard for the rights of people who live downstream
20 20 from you?

21 21 A. No. It's a very responsible document and plan
22 22 to understand exactly what is going on and to take
23 23 responsible action.

24 24 Q. This memo dated 1969, which is Plaintiff's
25 25 Exhibit 12, says that an investigation by Monsanto "has

3 1 miles downstream from the plant, came from the Monsanto
2 2 plant?

3 3 A. Well, I don't know what they concluded in
4 4 their mind, because it doesn't say that it came from
5 5 the plant. They were certainly concerned about the
6 6 presence of that material and they were certainly doing
7 7 something about it.

8 8 Q. They never cleaned it up, did they?

9 9 A. I don't know that there was ever a need to
10 10 clean it up.

11 11 Q. Do you believe there's a need to clean it up
12 12 today?

13 13 A. I believe we're going to find an answer to
14 14 that question when we complete the studies with respect
15 15 to presence and whether or not there's risk and impact,
16 16 then we will know.

17 17 Q. These studies, according to this memo, should
18 18 have started back in 1969, shouldn't they?

19 19 A. I don't know what else transpired or happened
20 20 after that time period, series of conversations with
21 21 state and regulatory agencies about what should be done
22 22 or shouldn't be done. I don't know what the end of
23 23 those conversations were.

24 24 Q. According to this document, Exhibit 12,
25 25 studies should have been done back in 1969 to address

3 1 shown that the waters in receiving streams below the
2 2 Anniston plant contain significant...concentrations of
3 3 PCB."

4 Did I read that correctly?

5 A. Yes.

6 Q. But the more ominous concern of Monsanto at
7 7 that time was "the fact that sediment in the bottom of
8 8 these streams miles below the plant may contain up to 2
9 9 percent Aroclor."

10 Did I read that correctly?

11 A. You're characterizing that statement.

12 Q. Did I read it correctly?

13 A. I will read it as it's written, and I can't,
14 14 you know, do any better than that: "More ominous
15 15 perhaps is the fact that sediment in the bottom of
16 16 these streams miles below our plants may contain up to
17 17 2 percent Aroclor."

18 Q. Okay. This is in a section entitled "Losses
19 19 from Monsanto Plants," right?

20 A. Yes.

21 Q. Now, isn't it a fact, sir, that in 1969 these
22 22 gentlemen who authored this, Mr. Farrar, Mr. Hodges,
23 23 Mr. E.V. John, Mr. Richard, and Mr. Wheeler took the
24 24 position and belief that the PCBs immediately below
25 25 Monsanto's plant, in the receiving streams and up to

3

1 and rectify the problems that we still have in Snow
2 Creek, Choccolocco Creek, and Lake Logan Martin with
3 respect to the PCB contamination. Is that a fair
4 statement?

5 A. It sounds to me like studies were done.

6 Q. Is that a fair statement?

7 A. Were being done.

8 Q. What I said, is that correct?

9 A. I would like -- you know, you're asking me a
10 question. I don't know what the conclusion of this
11 exercise was. If they did the studies and the
12 conclusion was we understand what's there, it's not a
13 hazard, then the answer today would be that everything
14 that was done at that point in time that was
15 appropriate was done. I don't know what the next set
16 of steps and information was as a result of these data,
17 studies, and findings.

18 Q. How much money has Monsanto put aside to
19 conduct this process that you keep talking about to
20 determine whether or not some remediation needs to be
21 done to Snow, Choccolocco Creeks, and Lake Logan
22 Martin?

23 A. Whatever we -- I don't know the exact number
24 whatever we estimate at this point in time the cost of
25 those studies to be.

3 1 Q. You're responsible for establishing the
2 reserves that this company's going to put aside to
3 address these problems?

4 A. Yes.

5 Q. What are the reserves currently?

6 A. I don't know. We have reserves for up to,
7 like, 200 projects. I don't know in detail each
8 line-by-line item. In the aggregate, it's something
9 like \$200 million or something a little less than that.

10 Q. For the Anniston plant?

11 A. No.

12 Q. That's what I'm asking you.

13 A. No, it wasn't. You asked me what were
14 Monsanto/Solutia's environmental reserves for projects
15 like this. I told you I don't know what the cost in
16 the reserve is for the Anniston plant.

17 Q. Do you have a guesstimate?

18 A. No.

19 Q. Is it less than \$100 million?

20 A. I already indicated to you that we have \$200
21 million in aggregate. We have no projects at that
22 level.

23 Q. Is it less than \$20 million?

24 A. Listen, you're going to walk me down number by
25 number. I told you I don't know what the number is.

4

1 That's my answer.

2 Q. And you're the man responsible for setting it
3 up?

4 A. Yes.

5 Q. Now, the number -- I know you don't know, but
6 it's certainly in the millions of dollars; you'll agree
7 with me on that?

8 A. Listen, I told you I don't know.

9 Q. All right. Well, you're willing to embark
10 this company, Solutia, on a course of events to spend
11 whatever sum of money you've set aside, but can't
12 recall, to study this problem of PCB contamination in
13 this ecosystem, right?

14 A. Yes, we are.

15 Q. And in doing that, you don't know whether
16 those studies have already been conducted back in the
17 late '60s and the '70s which have already determined
18 that there wasn't a problem at all?

19 A. What I know is we are about a set of studies
20 today. That's what I know. I don't know what went on
21 in the past in detail.

22 Q. I thought you testified moments ago, sir, that
23 in 1969/1970 when these memos say, Hey, we need to go
24 out and do some studies to figure out what's going on
25 out here, I thought I heard you say that you may have

4 1 very well done that and concluded that there was no
2 problem. Did you not say that?

3 A. I didn't say I knew that.

4 Q. Well, I know. You said that you may have done
5 that and you may have decided that there really wasn't
6 a problem out there with respect to PCBs, didn't you?

7 A. Yeah, "we" being the vernacular with the
8 government people and everybody that was involved.

9 Q. If that were the case, sir, don't you think
10 that would be something you'd want to know right now
11 before you embark on this course and spend all this
12 money unnecessarily to study a problem that you've
13 already determined doesn't exist?

14 A. My belief would be that the people that work
15 for me know that in detail, we know where we are in the
16 conversation. Today is not the 1970s, today is the
17 1990s and we feel committed that it's appropriate to do
18 additional studies, and that's what we're about.

19 Q. We've identified some environmental
20 guidelines, I believe it's Plaintiff's Exhibits 6 and
21 7. It's the 1989 guidelines that dictated you-all's
22 course of conduct during that period of time up through
23 1992, and the 1992 Monsanto pledge guidelines under
24 your signature that dictated Monsanto's
25 responsibilities from then up until 1997 and Solutia's

4 1 responsibilities from September 1997 through today,
2 correct?

3 A. Yes.

4 Q. Now, this one, Exhibit 5 --

5 A. With the provision that this draft is --

6 Q. Right, may replace it. And that's where I was
7 going to. This one may replace it, but it hasn't yet.

8 A. Some of the practices in here, we may have
9 already made judgments and decisions on what needs to
10 be changed. So, again, this is a working draft to
11 adopt a set of decisions that we have made. Many of
12 those are made -- as I indicated, are relatively
13 low-level decisions, so it's conceivable that this
14 document is reflecting changes that are already
15 acceptable practices in Solutia.

16 Q. Now, where in these two exhibits, sir,
17 Exhibits 6 and 7, that you were instrumental in
18 creating, does Monsanto, and now Solutia, address the
19 issue of PCB remediation? Is it in this section
20 entitled "Corrective and Remedial Action"?

21 A. I'd have to go back and look at the documents
22 again. I mean, that's not a document that I pull out
23 and read every day.

24 Q. Now, let me ask you: You've read this part of
25 the document already, Corrective Remedial Action.

4 1 We've been through that earlier, before lunch, do you
2 recall that testimony?

3 A. Yes.

4 Q. Doesn't that section deal with PCB-related
5 issues?

6 A. It would deal with it with respect to
7 remediation activities associated with it.

8 Q. Right. Is that the only thing that you're
9 aware of, sitting here today, that dictates how
10 Monsanto, and now Solutia, should deal with
11 PCB-remediation issues?

12 A. You know, there are other general rules around
13 PCB use and regulations and requirements and systems
14 and we basically say we'll comply with all rules and
15 regulations. So whether specifically referenced, if
16 there's anything to deal with that on a regulatory
17 matter, they're probably addressed generically in other
18 sections.

19 Q. But as far as a cleanup activity is concerned,
20 and in particular here at Anniston where we know
21 thousands of pound of this stuff was discharged from
22 the plant, this Corrective Remedial Action section in
23 the 1989 environmental guidelines dealt with how
24 Monsanto would remediate issues up until 1992, correct?

5 25 A. It dealt with remediation matters in general.

5 1 Q. Right, but it covered PCB-remediation issues,
2 that's what I'm getting at, right?

3 Well, let me ask you this: If I go up to a
4 jury and I say, I spoke with Mr. Pierle directly, the
5 man who was intricately involved in creating this
6 document, would I be correct, Mr. Pierle, in saying
7 that you believe that from 1989 until 1992, the section
8 entitled "Corrective and Remedial Action" dictated how
9 Monsanto should go about remediating PCB-related issues
10 in the river system in Anniston? Would I be correct in
11 saying that?

12 A. I think that's generally correct.

13 Q. Now, I assume you have similar language in the
14 Monsanto pledge guidelines, do you not?

15 A. I believe so.

16 Q. I'm trying to find them. I've read them.

17 Are the people who live downstream from your
18 plant -- strike that.

19 Are the people who lived and still live
20 downstream from the Monsanto plant, and now Solutia, in
21 Anniston considered stakeholders of the company?

22 A. I think, in the broad definition of the
23 "stakeholders," we include communities and, you know,
24 people in and around the plant site.

25 Q. Because when I read -- this is Exhibit 6,

5 1 under Worldwide Guideline No. 6, "Product Stewardship,"
2 2 it says: "Monsanto products and intermediates will not
3 3 present an unreasonable risk of harm to human life or
4 4 health or to the environment when they are properly
5 5 handled, transported, used, or disposed. Stakeholders
6 6 will be provided information regarding" -- what I just
7 7 read. And then it says: "Employees, customers, and
8 8 the community are all stakeholders."

9 So that basically answers my question that I
10 just asked you, correct?

11 A. Yeah. I think in this case, because we deal
12 with it in different sections, that, you know, product
13 stewardship deals with the community of people who are,
14 you know, associated with customer use and that of
15 product. I think we deal with communities in general
16 around plant sites and that is in additional sections.

17 Q. But here under, "Product Stewardship,"
18 stakeholders were defined as the community, right?

19 A. Yeah.

20 Q. And that would include --

21 A. I'm suggesting that that community may be a
22 different community around where we make the product.

23 Q. So that community does not mean the people who
24 live downstream from the plant?

25 A. I think what I said was they are covered in

5 1 this document in additional sections. They're very
2 2 important.

3 Q. In determining what actions Monsanto will or
4 4 should take with regard to any PCB remediation in Snow
5 5 and Choccolocco Creeks and Lake Logan Martin, Mr.
6 6 Pierle, isn't it a fact that you or people under your
7 7 instruction will rely on the types of documents and on
8 8 these very documents that we have identified in your
9 9 deposition today as Exhibits 8, 9, 10, 11, and 12 --

10 MR. PECK: Object to the form of the question.

11 BY MR. GRAMMAS:

12 Q. -- in determining what steps if any need to be
13 13 taken?

14 MR. PECK: Object to the form of the question.

15 THE WITNESS: I don't know to what extent
16 16 these documents exist, you know, outside of this
17 17 litigation process, you know, if they're generally
18 18 available. We're going to rely on whatever
19 19 information, you know, we can gather to help us
20 20 understand the factual situation that I described
21 21 earlier.

22 BY MR. GRAMMAS:

23 Q. And are you aware of any individuals that are
24 24 still alive today who worked at the Monsanto plant who
25 25 may be able to provide testimony or information to you

5 1 in your fact-finding mission to determine what impacts
2 2 you-all's plant had back during this period of time?

3 A. Well, I know that Mr. Papageorge is still
4 4 alive and I believe Mr. Jessee is still alive, but the
5 5 balance I don't know.

6 Q. Do you know where Mr. Jessee is?

7 A. No, I don't.

8 Q. What makes you think he's still alive?

9 A. Well, I mean, it's sort of by deduction.
10 Typically inside the company when people pass away,
11 there's some sort of notice. I don't recall having
12 seen one, so I conclude from that that he is probably
13 still alive.

14 Q. Do you have any idea how old he would be, or
15 Mr. Papageorge, how old they are?

16 A. I think Mr. Papageorge would be in excess of
17 70. Mr. Jessee, I'm not sure.

18 Q. If you-all needed to -- first of all, do you
19 believe you need to understand what conduct occurred in
20 the past at the plant in order to properly assess what
21 remediation, if any, needs to be done today?

22 A. I don't think we need to understand -- well, I
23 don't know what you mean by "conduct." I think we need
24 to understand, as best we can, you know, facts.

25 Q. Like how much PCBs were put into the river

6

1 system and things like that?

2 A. It would be useful. I would say, you know, in
3 any one piece of information, probably not critical.
4 As you go through these studies, it's more critical to
5 understand how much is there, is it exposed to anyone,
6 is there a risk, is there remediation. These kind of
7 documents would go more to allocation of
8 responsibilities.

9 Q. Yeah. That's really what I'm getting at.
10 These documents will be viewed internally by Monsanto
11 as to what extent, if any, it was responsible for
12 putting PCBs into the river system that they're being
13 sued over today?

14 A. As I said, my sense would be that -- to the
15 extent that they're generally available. I don't know
16 that they are. They're probably relevant, but I don't
17 know the importance of the documents in the work that
18 we have underway.

19 Q. Who's Mr. Hanley, Mr. John W. Hanley, do you
20 know who he is?

21 A. Could I see the note?

22 Q. Yeah, I'm going to show it to you in a minute,
23 but do you know who he is just off the top of your
24 head?

25 A. There were several John Hanleys in Monsanto,

6

1 so I don't know -- there was a guy that was a CEO.
2 There's guys at different levels. There's more than
3 one John or Jack Hanley that has existed in Monsanto.

4 Q. What involvement, if any, did you have with
5 PCB-remediation issues in 1975?

6 A. I don't believe any.

7 (PIERLE EXHIBIT NO. 14 WAS FIRST DULY
8 MARKED, RECEIVED AND MADE A PART OF THE RECORD.)
9 BY MR. GRAMMAS:

10 Q. I'm going to show you what's been marked as
11 Plaintiff's Exhibit 14 and ask you if you can tell me
12 who Mr. Hanley is? His name and title appear at the
13 end of the document as having received a copy of it.

14 A. Well, the back page says he was president of
15 Monsanto Chemical Company, so I think that describes
16 who he is.

17 Q. Did you ever have any conversations with Mr.
18 Russell Train, the administrator of the United States
19 Environmental Protection Agency, in 1975?

20 A. No.

21 Q. Have you ever had any conversations with him
22 at any time?

23 A. I think I met Mr. Train several years
24 subsequent to that at an environmental law institute
25 dinner and said hello. That's about it.

6

1 Q. Do you agree with Mr. Train's assessment of
2 the PCB issues that are contained in highlighted
3 portions of this letter? And I'll read them for the
4 court reporter: "For at least five years, the Federal
5 Government and the manufacturing industry have been
6 aware that polychlorinated biphenyls (PCBs) pose a
7 threat to human health and the environment. Last
8 month, at EPA's national conference on polychlorinated
9 biphenyls in Chicago, leading experts clearly
10 documented the fact that PCBs are pervasive in the
11 environment, are causing disruptive and economic harm
12 to commercial fishing in many areas, and are creating a
13 serious potential health hazard to the public."

14 Do you agree with those statements, sir,
15 sitting here today?

16 A. I think what we've said before, that with
17 respect to the human health impacts of that, we have a
18 different viewpoint.

19 Q. But everything else you agree with?

20 A. The "everything else" being basically that
21 there are impacts on wildlife and fishing, and that was
22 again what we felt was the principal concern.

23 Q. I'm being more specific. Everything else that
24 I read out of this letter you agree with other than, in
25 your opinion, PCBs' effects on humans? And I'm talking

6 1 about just the highlighted sections that I read.

2 A. I think with the exception of the words "human
3 health," we don't agree with that, and again, my
4 comment on environment, yes, we agree that there were
5 areas of concern with that. That's what was driving,
6 you know, our thinking and our work.

7 Q. And there still are areas of concern as of
8 today?

9 A. Well, I think that's what we're -- in part
10 what we're looking at.

11 Q. And it's also what this lawsuit's about, isn't
12 it, according to your understanding?

13 A. I believe those are the allegations.

14 Q. Tell me, sir, all the ways you're aware of, as
15 the environment manager, the head environmental manager
16 at Solutia, to properly dispose of PCBs. And I don't
17 mean PCB-contaminated material, I mean during the
18 manufacturing process, if you had some waste that was
19 being generated, what are the proper ways that you're
20 aware of to dispose of them?

21 MR. PECK: Object to the form of the question.
22 Foundation.

23 THE WITNESS: Today?

24 BY MR. GRAMMAS:

25 Q. Yeah, today.

6 1 A. I think the requirements are -- well, nobody
2 2 makes PCBs. There are PCBs in the systems. I think
3 3 you can incinerate them, although there's some pressure
4 4 against incineration in general. I know there are
7 5 other technologies working at decoupling carbon atoms
6 6 and then trying to work with the residual materials,
7 7 but I think if you were generating a liquid waste
8 8 today, emptying a transformer or something, I think
9 9 that you'd pretty much have to burn the material.

10 Q. Could you throw it into a river system?

11 A. I don't believe so.

12 Q. At any level?

13 A. I don't think so. I think there are
14 regulations against spilling and dumping of this at
15 pretty low levels.

16 Q. We're going to jump out of sequence here.
17 Earlier I was asking you -- with respect to PCB-related
18 remediation issues, I directed you to Exhibit 6 to your
19 deposition, which is the '89 guidelines in effect
20 through '92, and particularly the corrective and
21 remedial action section, and asked if that was the
22 policies, procedures, and ways that Monsanto during
23 that period of time would have or should have gone
24 about remediating PCBs, do you recall those questions?

25 A. Yes.

7 1 Q. And I believe you said that it was in fact the
2 guidelines that they should and would follow, correct?

3 A. Yes.

4 Q. All right. Now I'm going to show you the
5 Monsanto pledge guidelines, what Mr. Lowe just found
6 for me, and ask you if you would read the title
7 "Superfund." It's not entitled "Corrective and
8 Remedial Action," which is probably why I couldn't find
9 it. Are those the same guidelines in general that you
10 would apply in cleaning up or remediating PCB-related
11 issues today?

12 MR. PECK: Just for the record, you're looking
13 at Plaintiff's Exhibit 7.

14 MR. GRAMMAS: It's the Monsanto pledge
15 guidelines.

16 THE WITNESS: I think that's generally the
17 practices that we're using today.

18 BY MR. GRAMMAS:

19 Q. That would apply even if the PCB-related -- or
20 the PCB contaminants you were going to remediate were
21 not related to a Superfund site, correct?

22 A. In general I think that's correct, yes.

23 Q. Like for example, this is the exact guideline
24 you expect to follow in deciding whether or not to
25 remediate the PCBs in Snow Creek, Choccolocco Creek,

7

1 and Lake Logan Martin, right?

2 A. I think this describes the behavior that's
3 expected and that's what we would follow.

4 Q. And that's what you should follow?

5 A. Sure.

6 Q. And again, that's -- for the record, it's the
7 Monsanto pledge guidelines dated under your cover
8 November 11, 1992, Section 6.4, entitled "Superfund,"
9 correct?

10 A. Yes.

11 MR. PECK: Let's take a break.

12 (A SHORT BREAK WAS HELD.)

13 BY MR. GRAMMAS:

14 Q. Mr. Pierle, do you think it's responsible for
15 a company to discharge hundreds of pounds of chemicals
16 into a system, knowing that the chemical is toxic,
17 while at the same time not knowing what safe limits
18 there are?

19 A. Back in 1968, '69, '70, I think that was
20 acceptable practice.

21 Q. Could you define for me, sir, all of your
22 current job responsibilities.

23 A. I am responsible for remediation matters, as
24 we have discussed here today. I'm responsible for
25 providing to Solutia, the entire enterprise, services

7 1 as are needed with respect to product stewardship
2 2 support and sort of following governmental regulations
3 3 and the development of company policy where
4 4 appropriate.

5 Q. Regarding environmental issues?

6 A. Environmental health and safety matters, and
7 we also provide services, again to the entire
8 organization, technical services and scientific
9 services, engineering services and regulatory services
10 needed to comply with laws and regulations.

11 Q. And with respect to environmental issues,
12 health and safety issues, and remediation, is there
13 anyone within Solutia more senior to you, sir?

14 A. No.

15 Q. In 1983 when you were charged with the
16 responsibility of --

17 A. I'm sorry, what year?

18 Q. In 1983.

19 A. '83.

20 Q. I know we're jumping out of context.

21 In 1983 when you were charged with the
22 responsibility of being the regulatory manager and
23 director of hazardous waste -- do you recall those
24 responsibilities?

25 A. Yes.

7 1 Q. -- did that include PCB-related issues for
2 Monsanto?

3 A. Not specifically.

4 Q. You currently sit on the board of directors at
5 the Chemical Institute of Toxicology?

6 A. That's correct.

7 Q. Does that institute involve anything --
8 involve itself with any PCB-related issues?

9 A. No.

10 Q. Has it ever?

11 A. I don't believe so.

12 Q. What does it take for a company to get the
13 president -- for Solutia, I guess, to get -- actually,
14 it wouldn't be.

15 What would it take for Monsanto and/or
16 Solutia, a plant within the company, to get the
17 president's safety award?

18 A. We annually look at safety-related
19 performance. This is basically personal safety in the
20 workplace, and we look at the best performers.

8 21 Q. Receiving that award doesn't have anything to
22 do with, like, PCB discharges, exposure,
23 responsibilities for cleanup, that type of stuff?

24 A. No.

25 Q. Is the Monsanto site a PCB-free site, sir --

8

1 excuse me, Anniston.

2 MR. PECK: Anniston.

3 THE WITNESS: The Anniston site, is it PCB
4 free?

5 BY MR. GRAMMAS:

6 Q. Uh-huh.

7 A. I believe it is by our terminology on "PCB
8 free."

9 Q. Could you tell the world that, We're PCB free,
10 without explaining what that meant? Could you fairly
11 say that you're PCB free without explaining what that
12 means in your terminology?

13 A. I don't know how to answer that. Are you
14 asking me to answer it?

15 Q. Well, you just said if someone held themselves
16 out, someone within Solutia held the Anniston plant out
17 as being PCB free, don't you think that would be a bit
18 misleading to the public if they didn't also give them
19 Monsanto, and now Solutia's, unique definition of what
20 it means to be PCB free?

21 MR. PECK: Object to the form of the question.

22 THE WITNESS: I don't know that that would --
23 what was your term, "irresponsible"? What term did you
24 use.

25 MR. PECK: Misleading.

8

1 THE WITNESS: I don't believe so.

2 BY MR. GRAMMAS:

3 Q. So you think someone could fairly tell a group
4 of people, We're PCB free, and not feel like that's
5 misleading to them without explaining what that means?

6 A. I mean, I think that they would or that
7 someone would probably ask, What do you mean by that?

8 Q. And what do you mean by that?

9 A. We established a program some years ago, with
10 respect to use of PCBs in the systems, that we would
11 remove PCBs from active use within our facilities.
12 That means if we were using some sort of an electrical
13 system, that we would be PCB -- in other words, we
14 would get the PCBs out of those electrical systems.

15 Q. But that's not to say or suggest to anyone
16 that there aren't any PCBs on your property down there
17 in Anniston, is it?

18 A. No, that was not, you know, the definition in
19 which that was intended.

20 Q. Now, how many pounds of PCBs are currently
21 stored on the Monsanto property?

22 A. I have no idea whether any are.

23 Q. You don't know that out at the West End
24 Landfill there are thousands of pounds of that stuff
25 being stored out there?

8

1 A. Yeah. Again, we were talking about active,
2 utilizable PCBs, and when you asked me that, I was in
3 that follow-up question.

4 Q. No, I'm just talking about PCBs in general.
5 That's the confusion of saying, We're PCB free. Nobody
6 really knows what that means. But when I say, How many
7 pounds of PCBs are out there right now? I mean in any
8 shape, form, or fashion, stored in landfills, barrels,
9 whatever.

10 A. I don't use the word "stored." They're
11 disposed, properly disposed. That would be my
12 terminology. When you deal with respect to the
13 "landfill," if you use the word "stored," my definition
14 would be different. So, as you say, it's important to
15 understand the definition of terms.

16 Q. How many pounds of PCBs are out there?

17 A. I don't know.

18 Q. How many landfills are on the Monsanto
19 property?

20 A. I think we've dealt with two. I think --

21 Q. And both landfills have PCBs in them, right?

22 A. I think that they have PCBs or
23 PCB-contaminated materials. Again, I'm uncertain, but
24 they do have PCB in them.

25 Q. There are regulations that are in existence

8

1 today that discuss the methods by which a company must
2 dispose properly of PCBs found, like, in soil, which
3 are 50 parts per million or greater, aren't there?

4 A. Yes.

5 Q. And what do these regulations require?

6 A. They're kind of complicated. I know they
7 exist to deal with, you know, current waste and
8 produced waste of materials.

9 Q. And you're --

10 A. I don't know exactly what they are. People in
11 my organization know the answer to that question and I
12 expect them to know it and they do.

13 Q. And you expect them to follow --

14 A. Yes.

15 Q. -- the regulations?

16 A. Yes.

17 Q. That would mean that if something was greater
18 than 50 parts per million in sediment, let's say,
19 that's supposed to be stored in a hazardous landfill,
20 isn't it?

21 A. No.

22 MR. PECK: Object to the form of the question.

23 BY MR. GRAMMAS:

24 Q. It's not?

25 A. No.

8

1 Q. There are no documents that I can read in
2 Monsanto's possession that say, When we collect these
3 samples of dirt out at Snow Creek, if it's greater than
4 50 parts per million, we should take it to a --

5 A. I don't know what the requirements are with
6 respect to sampling or -- I mean, we would -- the
7 documents would say that we should comply with the
8 regulations.

9

9 Q. Well, what I'm asking you is: Back in the '89
10 time frame when you-all were remediating the Snow Creek
11 issues and getting PCBs out of the Snow Creek portion
12 that the attorney general is dealing with, are you
13 aware of any requirements that that sediment, that
14 soil, once it dried and was measured to be greater than
15 50 parts per million PCBs, should have been taken to a
16 landfill in Alabama that was designated as a hazardous
17 waste landfill?

18 A. I don't know what the regulations were at that
19 time.

20 Q. Do you know where that dirt went, that soil?

21 A. No, I don't.

22 Q. Do you know that it went out to your landfills
23 right there on site?

24 MR. PECK: Object to the form of the question.

25 THE WITNESS: I don't know that.

9

1 BY MR. GRAMMAS:

2 Q. Do you know whether the landfills on site are
3 hazardous waste landfills?

4 MR. PECK: Object to the form of the question.
5 No foundation.

6 MR. GRAMMAS: I'm asking him if he knows.
7 That is the foundation.

8 MR. PECK: Well, your question assumes facts
9 that are not in evidence. That's why I'm objecting, if
10 you want to know why I'm objecting. They
11 mischaracterize his testimony in the case.

12 BY MR. GRAMMAS:

13 Q. Do you know whether or not, Mr. Pierle, the
14 landfills out there on the Anniston plant are
15 hazardous -- or, qualified to be hazardous waste
16 landfills?

17 MR. PECK: Object to the form of the question.
18 No foundation.

19 THE WITNESS: I'm not specifically aware of
20 what their regulatory designation is today.

21 BY MR. GRAMMAS:

22 Q. Do you know if they're Subtitle D landfills?

23 A. I don't know.

24 Q. Have you outlined in your mind or have any of
25 your managers under you outlined a flow chart of

9

1 possible scenarios that may occur with regard to the
2 PCB-remediation issues in Snow Creek, Choccolocco
3 Creek, and Lake Logan Martin?

4 A. I have not seen anything.

5 Q. Okay. What is the best possible scenario, in
6 your mind, that could result out of this process that
7 Monsanto is now undertaking as it relates to whether
8 it's going to clean up the PCBs in this area?

9 A. That a remediation properly determined by the
10 process of the health and the environment is
11 implemented.

12 Q. Is the best scenario, in your mind, a
13 determination by the people you hire that no
14 remediation is necessary at all?

15 A. I think we're in the process of trying to
16 develop the answer to the question that you're asking,
17 so I don't have a prejudgment about that.

18 Q. Well, I know I don't have a prejudgment, but
19 sitting here today, can you not tell the members of
20 this jury that the best possible scenario for Monsanto
21 would be that there doesn't need to be any remediation
22 at all?

23 A. No, I can't say that.

24 Q. The worst possible scenario for Monsanto, sir,
25 would be what?

9 1 A. I don't know. Again, there is only one
2 scenario, I think at the end of today, with respect to
3 remediation, and that is we come to a determination as
4 to what the process yields as a conclusion and that's
5 the remedy that's implemented.

6 Q. So as the highest executive officer in health,
7 environment, and safety Mr. Pierle, is it your
8 testimony, then, that if this process that you-all are
9 undergoing reveals that Monsanto should remediate all
10 of the PCBs in Snow Creek, Choccolocco Creek, and Lake
11 Logan Martin by some form of dredging operation and
12 remove them entirely from the system, that Monsanto
13 would be willing to do that?

14 A. I'm not going to speculate to that
15 hypothetical because I think we're going to have to ask
16 whether or not that's the outcome of the process.

17 Q. Well, I'm asking you --

18 A. Dredging is not a typical answer to these
19 sorts of issues. So my general inclination is that's
20 probably not probable, but I'm sure it will be looked
21 at.

22 Q. Let's talk about the different possible
23 outcomes with respect to this remediation issue. At
24 one extreme, an outcome is that Solutia/Monsanto does
25 nothing, right?

9 1 A. I guess that's always an option.

2 Q. Do you think that's a very likely option, sir,
3 given all the information you know as the environmental
4 manager over this problem?

5 A. I've learned long ago not to speculate or try
6 to guess what a probable or possible outcome is. It's
7 fact-specific and you can't make a judgment from one
8 site to another as to what's probable, and we'll find
9 out what the answer to that question is.

10 Q. And Monsanto has known about this problem,
11 according to the documents we've produced today at
12 least, since 1969, right?

13 A. What problem?

14 Q. The PCB problem at Snow Creek, Choccolocco
15 Creek, Lake Logan Martin.

10 16 A. I think the documents speak for themselves,
17 without going back through them. I didn't see anything
18 in this relative to Lake Logan Martin. Maybe I missed
19 it, but --

20 Q. It was dealing with Snow Creek and Choccolocco
21 Creek, but now we know that it's in Lake Logan Martin,
22 right, PCBs?

23 A. I think there's a fish advisory, so there's
24 knowledge, and I think that lake and the area is being
25 studied.

10 1 Q. Now, 30 years of knowledge hasn't been enough
2 time for Monsanto to figure out this problem, and now
3 Solutia has it.

4 A. I think I have responded that we have been
5 very aggressively working on the issue since it came
6 about in '93 or thereabouts and we're moving as fast as
7 we can towards understanding and resolution.

8 Q. Well, the issue came about in 1969, didn't it,
9 sir, according to you-all's documents?

10 A. I don't know what the issue is. You're
11 describing --

12 Q. PCB-related problems. PCB discharges into
13 Snow Creek, Choccolocco Creek?

14 A. You're talking about the presence of PCB.
15 That is different than a problem. So you're talking in
16 these documents about the presence of PCBs.

17 Q. Like you said, the documents will speak for
18 themselves and they call the PCBs "problems" on
19 numerous occasions and we don't need to go back through
20 that. What I'm saying is: Monsanto's been aware of
21 the presence of PCBs in this river system for over a
22 30-year period --

23 MR. PECK: Object to the form of the question.

24 BY MR. GRAMMAS:

25 Q. -- and that amount of time has not been long

10 1 enough for you-all to figure out whether doing nothing
2 is a possible scenario to this problem, correct?

3 MR. PECK: Object to the form of the question.

4 THE WITNESS: Again, looking at the
5 involvement of the agencies over time, the fact that
6 what needed to be done got done, as we've discussed
7 with respect to Snow Creek, the information in the
8 '70s. So I have to conclude from that that the actions
9 that were appropriate relative to the knowledge that
10 was in hand, those actions were taken.

11 BY MR. GRAMMAS:

12 Q. I understand you're going to conclude that
13 you-all didn't do anything wrong. My question, though,
14 is: Based on this almost 30-year period, from 1969
15 to -- it's almost now 1999, and knowledge that PCBs are
16 getting into this system, this river system, that
17 period of time has not been long enough for Monsanto,
18 and now Solutia, to at least determine that they're not
19 going to do anything about the presence of the PCBs in
20 the river system, right?

21 MR. PECK: Object to the form of the question.

22 THE WITNESS: You keep mixing "over 30 years,"
23 "is" getting into the system. I think the information
24 we've talked about is -- you know, the information
25 about what was getting into the system was the subject

10 1 of the '70s reduction program. There's nothing I see
2 where it's getting into the system. The '80s system
3 around Snow Creek, whatever Snow Creek is in that
4 determination, was what was there was removed. The
5 discussion about '90s, about what could be getting into
6 the system around the storm water runoff is what --
7 again, when we said there's evidence here that
8 something may be getting into the system and we need to
9 go act and do something about it.

10 Q. Another possible scenario, rather than doing
11 nothing, is to do some type of cleanup, is it not?

12 A. Well, when you look at remediation options,
13 they range from do something to what looks like is
14 technically/economically/environmentally feasible, and
15 that's what we expect this study to help define for us.

16 Q. One thing is to do nothing, right?

17 A. Yes.

18 Q. That's one scenario --

19 A. Right.

20 Q. -- where you just leave it there and just let
21 it be.

22 A. Right.

23 Q. The next scenario is some form of cleanup,
24 correct?

25 A. I don't want to mince words with you. We're

10 1 talking about remediation, you're using "cleanup."
2 Another option is to do something. If one's to do
3 nothing, then there's an option to do something.

4 Q. Right. Let's talk about some of those
5 options. One extreme is to do nothing, the other
6 extreme is to dredge the entire river system and take
7 out every PCB that's found in there that's humanly
8 possible to do; isn't that another situation?

9 A. I think I've answered that question. I see no
10 value in speculating as to what possibilities are. I
11 think we need to stay in the process we're in to
12 identify what those possibilities are within, again,
13 the process that we're in, and that will tell us what
14 the range of possibilities are.

15 Q. Have you read any of the expert reports that
16 the plaintiffs have submitted to this Court, sir?

17 A. No.

11 18 Q. So you're not in a position to disagree with
19 any of the opinions that those experts have provided
20 today, are you?

21 A. Listen, I'm dealing with the remediation
22 question associated with this as best we can. The
23 lawyers are dealing with the third-party litigation and
24 the property damage claims and I'm focusing on the
25 remediation process. That's what I'm focused on.

11

1 Q. And in your mind, the two don't overlap in the
2 least bit, do they?

3 A. I don't know whether they do or not.

4 Q. So you're not going to tell me today, as the
5 head environmental manager, what the possible scenarios
6 of remediation could be.

7 A. No, I'm not. I mean, I rely on a lot of
8 people and we have consultants and the whole process
9 around the United States yields answers to that
10 question. People don't sit in chairs and pontificate
11 over it. I'm not going to do that.

12 Q. And you don't want the jury who's going to
13 read this testimony to know of the possible scenarios
14 that the head manager over environmental affairs and
15 remediation thinks may exist with respect to any
16 cleanup, if there is one?

17 A. I would hope that the jury would ask what's
18 the process by which those are determined and whether
19 or not those remedies were being appropriately looked
20 at.

21 Q. Have you been informed by any of your managers
22 or are you aware that the lawsuit that you're here
23 today to testify about also involves remediation as a
24 claim?

25 A. I've heard that there are attempts to get at

11 1 the question of remediation in the lawsuit, but again,
2 as I said, I'm dealing with the Alabama authorities and
3 the question of remediation. That's the issue that's
4 in my domain and that's what I'm dealing with.

5 Q. Do part of those Alabama authorities that
6 you're dealing with, does that include the judge who's
7 hearing this case and who will be hearing the
8 plaintiff's claims for remediation cleanup?

9 A. I don't know what the judge is going -- we're
10 dealing with the regulatory authorities.

11 Q. I understand that.

12 A. The lawyers are dealing with the judges.

13 Q. Are you aware, as a manager, as the manager of
14 environmental affairs and safety-related issues for
15 Solutia, that this judge may very well order this
16 company that you work for to do some type of cleanup of
17 the PCB problem we're alleging exists out there in the
18 river system?

19 MR. PECK: Object to the form of the question.

20 BY MR. GRAMMAS:

21 Q. Are you aware of that fact?

22 A. I think I answered that. I think that I said
23 I understand that may be part of that case and that
24 discussion, but the focus and the process that we're in
25 that's leading to that answer, that I'm involved with,

11 1 is the remediation discussion with the agencies.

2 Q. And this process that Solutia is engaged in
3 and has embarked upon to determine what remediation if
4 any should be done, are they hiring contractors to do
5 work to study these issues?

6 A. I believe so.

7 Q. Do you know the names of these contractors?

8 A. No, I really don't, not all of them. I mean,
9 we've had a variety of different contractors doing work
10 down there.

11 Q. Do you know if any of the contractors that
12 you're hiring to, I guess, make these findings are
13 being retained by your company to provide expert
14 testimony in this lawsuit?

15 A. Again, that process is managed by the law
16 department. I don't manage that process.

17 Q. Have you paid any contractors to determine
18 what sources other than Monsanto may have been
19 responsible for putting the PCBs in Snow Creek,
20 Choccolocco Creek, and Lake Logan Martin that are being
21 detected as we sit here today?

22 A. I think that work -- there is work ongoing on
23 that as part of the whole study. I don't know who's
24 directing that work.

25 Q. You don't know which contractor is responsible

11

1 for doing that?

2 A. No.

3 Q. Which one of your managers is responsible for
4 making sure that gets done?

5 A. Well, again, I don't know whether it's one of
6 my managers or whether that is coming from the law
7 department.

8 Q. Okay. Sitting here today, sir, as the head
9 environmental manager of safety and health and
10 remediation for Solutia, can you identify a single
11 source other than Monsanto that may have been
12 responsible for putting the PCBs into Choccolocco
13 Creek, Snow Creek, and Lake Logan Martin?

14 A. Well, as I said earlier with respect to the
15 close end, the person that used PCB materials out of a
16 metal mill, and I don't know what kind of metal. There
17 was some question as to whether or not there was
18 someone further down Snow Creek. There are other
19 entries, as I understand it, into Choccolocco Creek and
20 into the lake that need to be looked at, and one of the
21 hardest things to find in some of these cases is
22 whether or not, you know, folks have done any kind of
23 dumping over time, and we've found at times you have to
24 ask that question, as well. So I would assume that all
25 of that is being looked at. That would be typical to

12

12

1 what we would look at ourselves or with other PRPs in
2 an examination of a site.

3 Q. Tell me the names, Mr. Pierle, of sources
4 other than Monsanto that contributed to the PCB problem
5 that we have been talking about all day today?

6 A. I've categorized them the best I can.

7 Q. Do you know the names?

8 A. I do not know the names.

9 MR. PECK: You just don't like the answer.

10 MR. GRAMMAS: "I don't know of any," is the
11 answer.

12 MR. PECK: That's not the answer. The answer
13 is he doesn't know the names. He categorized
14 possibilities for you, Pete.

15 BY MR. GRAMMAS:

16 Q. But you can't identify a single name of a
17 single person or company that's done --

18 A. I do not know the names.

19 Q. Okay. And by your own testimony, Monsanto's
20 been looking at this problem since the early '90s,
21 right?

22 A. Yes.

23 Q. It's over eight years, by your testimony.

24 A. I think that we said 1993.

25 Q. All right, five years. Five years, right?

12

1 A. Yes.

2 Q. And sitting here today, on this five-year
3 study that you-all have been doing, nobody's come up to
4 you and said, Mr. Pierle, guess what, we've learned
5 that A, B, C, D, and E are pumping -- discharging PCBs
6 into this river system, it's not us, it's them. Nobody
7 has told you that, have they?

8 A. That hasn't been the primary focus of what
9 we're doing today.

10 Q. I didn't ask you if it was the primary focus,
11 Mr. Pierle, I asked you if anybody's ever told you
12 something like that?

13 A. They have said that we have information or
14 indications that these couple of people that I've
15 described are potential contributors, yes.

16 Q. Have they ever come up to you and said, You
17 can remove the word "potential," A, B, C, D, and E are
18 contributing to this problem?

19 A. We never -- I mean, PRPs, part of -- you never
20 remove the word "potential." I mean, it's part of the
21 vernacular.

22 Q. So when you say Monsanto is a -- do you
23 believe that Monsanto is a potential responsible party
24 for the PCBs in this system?

25 A. I think I've answered that before.

12 1 Q. I didn't hear the answer, if you did. Do you
2 believe that Monsanto is a potential responsible party
3 for the PCBs in the river system at --

4 A. And my answer was that on the information we
5 have, we're acting according to our policy that we
6 certainly could have potential responsibilities here.

7 Q. And when you say "potential" here, you just
8 mean that in the vernacular, and really you can take
9 that word out of the sentence and say, yeah, we have
10 responsibilities?

11 A. That's not what I said.

12 Q. Okay. Let me ask you this: Do you believe
13 this is a frivolous lawsuit, sir?

14 A. Others are going to answer that question.

15 Q. What is your personal opinion as an
16 environmental manager?

17 A. As soon as I know more facts about the
18 situation, I'll be better able to understand that. My
19 understanding to date, there are fish restrictions on
20 the lake. I don't know the extent of concern that
21 causes or how that supports a base for lawsuit. I
22 really don't know.

23 Q. Do you own any lakefront property, sir?

24 A. No.

25 Q. Have you ever owned any lakefront property?

12

1 A. No.

2 Q. Are you a fisherman?

3 A. Very, very seldom.

4 Q. Do you like to eat fish?

5 A. Sure.

6 Q. Would you eat fish out of a river where a
7 state agency has posted signs all up and down that
8 river saying: Warning -- I think it says -- Public
9 Health Advisory: Do not eat the fish out of this river
10 system?

11 A. I think based on what I know, I probably -- it
12 wouldn't bother me to do that infrequently.

13 Q. Would it bother you to do that frequently?

14 A. I probably wouldn't. I'd say, What are my
15 other options and what else can I do?

16 Q. And that's because you don't want to expose
17 yourself to any undue risk of having adverse health
18 effects, right?

19 A. I don't know whether it's that. It's just,
20 you know, do I need to do that or don't I? Do I need
21 to eat those fish? I don't know that it's that clear
22 in my mind.

23 Q. If Monsanto is found to be substantially -- is
24 found to be a substantial or part contributor to the
25 PCB problem in this ecosystem that we've been talking

12

1 about today, sir, and is responsible for the fish
2 advisories posted out there, do you believe that
3 Monsanto should take action at a minimum that would
4 allow the state of Alabama to remove the fish
5 advisories?

6 MR. PECK: Object to the form of the question.

13

7 THE WITNESS: I think that's a pretty complex
8 question. At that point we'd be taking some actions in
9 conjunction with the State and others that I would
10 assume all would agree is appropriate. Whether that
11 would result in the elimination of those advisories, I
12 don't know.

13 Q. What I'm saying is: If Monsanto's conduct
14 caused the fish advisories to be put up there, don't
15 you think Monsanto should do whatever -- and now
16 Solutia, should do whatever it takes to remove the
17 problems that are causing the fish advisories to be
18 there?

19 MR. PECK: Object to the form of the question.

20 THE WITNESS: I think if the people that are
21 involved in this process determine that that is not an
22 undue problem versus other potential remedies and
23 that's the collective judgment and decision that's
24 made, I don't know that we'd do more than that.

25 BY MR. GRAMMAS:

13

1 Q. Okay. Who's making these collective decisions
2 that you keep talking about? Monsanto certainly's
3 going to be part of it. Who else is going to be a part
4 of it?

5 A. Well, the State and the regulatory people and
6 the public's involved in this process, and that's going
7 to generally -- you know, that's the process for making
8 decisions about remediation.

9 Q. And I know you don't want to guess or
10 speculate about what may come out of this study, Mr.
11 Pierle, but what I'm hearing you say is that after
12 Monsanto spends all this money to conduct the studies
13 to see what if anything needs to be done, it may very
14 well be that the fish advisories that are posted all
15 along that creek won't come down as a result of any of
16 your conduct, true?

17 MR. PECK: Object to the form of the question.

18 THE WITNESS: I mean, it seems to me that's a
19 possibility.

20 BY MR. GRAMMAS:

21 Q. And you can't tell me -- you're a man, as you
22 testified earlier, that can set environmental policies
23 for this company, right?

24 A. No, I didn't say that.

25 Q. I thought you told me that.

13

1 A. No, I think I was pretty clear that I am a
2 member and I can recommend policy. I didn't say that I
3 could set policy.

4 Q. You could recommend as a policy that Solutia
5 take whatever course is necessary to get these fish
6 advisories taken off of the river system, right, you
7 could recommend that?

8 MR. PECK: Object to the form of the question.
9 No foundation.

10 THE WITNESS: I guess on a speculative basis.
11 I don't know how to answer the question.

12 BY MR. GRAMMAS:

13 Q. Well, answer the question as best as you can,
14 given your understanding of your job responsibilities.
15 Could you go up tomorrow and write a memo -- who would
16 you write a memo to if you would wanted to enact some
17 new policies, environmental policies?

18 A. It would go to our policy committee, corporate
19 policy committee.

20 Q. And who all's on that committee?

21 A. Again, I think I said it's Mr. Potter, Mr.
22 Hunter, and there are a few others that -- again, I
23 don't know the current listing of those folks.

24 Q. All right. Whoever these people may be, sir,
25 you could go to your office in the morning and dictate

13

1 a memo to these people that says, As the head
2 environmental manager over health and safety, I believe
3 Solutia should embark on a course of conduct to do
4 whatever it takes to get fish advisories removed from
5 Choccolocco Creek and Lake Logan Martin.

6 A. I could do that if I felt that that was
7 appropriate and necessary to do and it was our
8 responsibility to do that, yes.

9 MR. GRAMMAS: That's all the questions I have.
10 Thank you.

11 (DEPOSITION ADJOURNED)

12

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1 STATE OF MISSOURI)
)
2 COUNTY OF ST. LOUIS)

3 I, KEVIN J. WEICHMAN, CSR, RPR, Notary Public
4 in and for the County of St. Louis, State of Missouri,
5 do hereby certify that pursuant to stipulation there
6 appeared before me on the 28th day of October, 1998,
7 Taylor & Schroeder Reporting & Video, 7494 Ethel
8 Avenue, St. Louis, Missouri, MICHAEL PIERLE, who was
9 first duly sworn by me to testify to the whole truth of
10 his knowledge touching the matter in controversy
11 aforesaid, so far as he should be interrogated
12 concerning the same; that he was examined and the
13 examination was taken down in shorthand by me and
14 afterwards transcribed by computer-aided transcription.

15 IN WITNESS WHEREOF, I have hereunto set my
16 hand and affixed my notarial seal on this 28th day of
17 October, 1998.

18
19
20
21
22
23
24
25

KEVIN J. WEICHMAN, CSR/RPR
Notary Public

13

1 STATE OF MISSOURI)
 2)
 3 COUNTY OF ST. LOUIS)

4 I, MICHAEL PIERLE, do hereby certify:

5 That I have read the foregoing deposition;

6 That I have made such changes in form and/or
 7 substance to the within deposition as might be
 8 necessary to render the same true and correct;

9 That having made such changes thereon, I
 10 hereby subscribe my name to the deposition.

11 I declare under penalty of perjury that the
 12 foregoing is true and correct.

13 Executed this _____ day of _____,
 14 1998, at _____, _____.

15

16

17

18

19

MICHAEL PIERLE

20

21

22 Subscribed and sworn before me this _____ day
 23 of _____, 1998.

24

25

My Commission Expires: _____

 Notary Public

13

DEPOSITION CORRECTION SHEET

DEPONENT: MICHAEL PIERLE

RE: THOMAS C. DYER, ET AL vs. MONSANTO COMPANY, ET AL
 Consolidated For Discovery With SHELTER COVE
 MANAGEMENT, INC., ET AL vs. MONSANTO COMPANY, ET AL

Upon reading the deposition and before subscribing
 thereto, I would like to indicate that the following
 changes should be made:

Page ____ Line ____

Should read _____

Reason assigned for change: _____

Page ____ Line ____

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CAREER
OPPORTUNITIES



Michael A. Pierle

Michael A. Pierle is a Vice President of Solutia Inc. with responsibility for environment, safety and health. He assumed his present position on Sept. 1, 1997. In this new position, he continues to hold the responsibilities of the position he previously held since April 1991, as Monsanto Company's Vice President, Environment, Safety and Health. These include: issue identification and management, development of policy initiatives, compliance oversight of both internal and external

requirements in the areas of environment and worker and community health and safety.

Mr. Pierle joined Monsanto in 1966 in environmental engineering and worked in a variety of areas ranging from energy conservation programs to the environmental control management over the next eight years. In 1974-1975, he was on leave to work for the Department of Commerce in their Office of Environmental Affairs.

In 1975, Mr. Pierle was named Manager of Environmental Protection for the Monsanto Industrial Chemical Company. In the following year, he became the Manager of Environmental and Energy Affairs of the Monsanto Chemical Intermediates Company. In 1979, he was appointed Regulatory Management Director-Water for Monsanto Company and Director of Regulatory Management-Hazardous Waste in 1983. In 1984, he was appointed Director of Environmental Management for Monsanto Company.

In 1986, he was named Director of Environmental Operation of Monsanto Chemical Company, an operating unit of Monsanto Company, with responsibilities for implementing compliance programs, cleanup of Superfund sites and managing product safety and approval programs.

Mr. Pierle is on the Board of Directors of the Chemical Industry Institute of Toxicology (CIIT), The American Lung Association of Eastern Missouri and The Monsanto Fund. He is Chairman of the National Wildlife Federation's Corporate Conversation Council. He also serves on the Advisory Committee of the Purdue University School of Engineering and Washington University School of Engineering and Applied Science.

Mr. Pierle received a B.S. degree in civil engineering from Purdue University in 1966. He then received his M.S. in environmental engineering in 1971 from Washington University. In 1983, he attended the advanced management program at the University of Texas. Mr. Pierle completed the Stanford Executive Program in 1990. He is a licensed



professional engineer.

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NEWS

the PCB
Monsanto

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E. V. John
(314) 694-2891

PUBLIC RELATIONS DEPARTMENT
Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63168

WASHINGTON, D. C.
SAM PICKARD

19•

MONSANTO CITES
ACTIONS TAKEN ON
ENVIRONMENTAL ISSUE

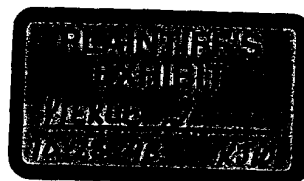
ST. LOUIS, July 16 -- Monsanto Company, sole U.S. producer of an industrial chemical called polychlorinated biphenyl (PCB), today said recent political charges and sensational headlines about the chemical causing "a major ecological crisis" completely ignore voluntary actions the company has taken to restrict use of the material.

"Our program began back in 1968 with the proper identification and measurement of PCB in the environment and will conclude this year by our unilateral action to restrict its use," Howard L. Minckler, company vice president and general manager of its Organic Chemicals Division, said.

He added that Monsanto had not been pressured into action by any legislation or organized group. "We have taken decisive action based on evidence that PCB is a persistent chemical which builds up in the environment."

-more-

DSW 019301



WATER_PCB-SD0000021239

--2 MONSANTO: MINCKLER'S REPLY TO PCB CHARGES xxx environment."

Commenting on a recent report that PCB can induce birth defects in animals, Minckler said, "Monsanto is not aware of any scientific data that indicates polychlorinated biphenyls may cause birth defects. The results of comprehensive toxicity studies, sponsored by Monsanto and using the usual species of laboratory animals, have failed to produce such effects."

"Scare tactics and sensational reporting do not serve the public interest nor solve ecological problems," he said. "Only a few reports have stated why PCBs were ever developed and why they are used today. Nor have the consequences of not using PCB been explained."

"What should be emphasized," Minckler continued, "is that PCB was developed over 40 years ago primarily for use as a coolant in electrical transformers and capacitors. It is also used in commercial heating and cooling systems. It is not a 'household' item."

"Anyone who lives in a large city is familiar with power failures. During periods of peak power needs, air conditioning and refrigeration fail, lights go out and commuters are stranded. If power companies were to remove PCB from equipment, we have been told that major blackouts would occur throughout the world."

-more-

DSW 019302

--3 MONSANTO: MINCKLER'S REPLY TO PCB CHARGES xxx world.

"PCB is used in electrical equipment as a safety fluid. It has replaced combustible oil products which have, on many occasions, exploded and burned, causing deaths and injury to human life. Today state and local laws all over the country require the use of non-flammable fluids in certain electrical equipment as a safety feature. At the moment, there are no substitutes available which equal the safety performance of PCB."

Monsanto said it intends to continue selling PCB for "closed-system" uses such as electrical components and heat-transfer systems. "With rigid control over where the product goes, how it is handled and disposed of, we believe the safety functions of the product can continue to serve society and the environment can be protected," Minckler said. "We are discontinuing sales into 'open systems' -- adhesives, sealants, chlorinated rubber, specialty paints, etc.

"For other uses, such as fire-resistant hydraulic fluids, where PCB cannot be strictly controlled, we have reformulated some fluids and they are on the market. The new products contain other fire-resistant ingredients. We will continue to develop alternate formulations which do not contain persistent PCB. We will not abandon hydraulic fluid users," Minckler commented, "as has been reported."

DSW 019303

-more-

--4 MONSANTO: MINCKLER'S REPLY TO PCB CHARGE xxx reported."

Monsanto has also established a new system for disposal or recycle of spent PCB. A special high-temperature incinerator will break down PCB into harmless materials. The company also regenerates spent fluids for reuse. The incinerator will be offered to customers who cannot otherwise destroy or regenerate their old fluids.

"Although loss of PCB from our manufacturing plants has been negligible, we have further tightened up our production techniques and installed new pollution abatement devices," the Monsanto executive said.

"I repeat," Minckler concluded, "our program was initiated and conducted by Monsanto alone. It will be concluded this year. We believe it is a position any responsible company would take."

-oOo-

DSM 019304

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Monsanto Pledge

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OPPORTUNITIES](#)

The Monsanto Pledge was announced by Chairman and CEO Richard J. Mahoney at a meeting of the Corporate Conservation Council of the National Wildlife Federation in Washington, D.C., on Jan. 30, 1990. Here is the pledge as announced by Mahoney:

"It is our pledge to reduce all toxic and hazardous releases and emissions, working toward an ultimate goal of zero effect. It may take time, but we will not be satisfied with anything else.

"It is our pledge to ensure that no Monsanto operation poses any undue risk to our employees and our communities.

"It is our pledge to work to achieve sustainable agriculture with the lowest inputs feasible, through new technology and new practices.

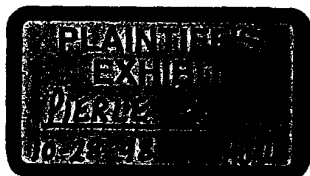
"It is our pledge to ensure the safety of groundwater. If our products are found to pose a problem, we will solve it by whatever means necessary. We will make our technical resources available to farmers who may have concerns about groundwater contamination, even if none of our products is involved.

"It is our pledge to keep our plants open to our communities, bringing the community into plant operations. Our employees and our communities will be kept fully informed of any significant hazard – if we can't eliminate the hazard, we'll work to eliminate the source of it.

"It is our pledge to do our part to halt deforestation and declining biodiversity. All corporate real estate, including plant sites, will be managed with the benefit of nature as a serious operating factor.

"It is our pledge to search worldwide for technology that will reduce and eliminate waste from our operations, with the top priority being not making it in the first place.

"Our commitment is to achieve sustainable development for those aspects of the environment where we have an impact. Our commitment is to



achieve sustainable development for the good of all people in both developed and less-developed nations.

"But it is not enough to simply 'unpollute' the world. We must provide food and energy for ever-growing populations, most of which are in the Third World and not in the developed nations, which have the resources and freedom to worry about these vital environmental issues.

"We must rectify the mistakes of the past while we continue to develop and introduce the new technologies to provide the essentials for mankind in the future.

"And we must ensure, as we know we can, that these new technologies will not create problems to be dealt with by our children, grandchildren, and great-grandchildren.

"I have described the Monsanto Pledge. We are determined to achieve it and we are pursuing the programs needed to achieve it."

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Solutia's Commitments to Environment, Safety & Health

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PRODUCTS

COMMUNITY

EMPLOYEE NEWS

CAREER
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Solutia's Environmental, Safety & Health Commitments are based on our strong convictions that continuous improvement in these areas is critical to creating value for all stakeholders. These commitments are drivers for a better future.



We will ensure that our operations and distribution systems are safe for our employees, site contractors and guests, communities and the environment.



We will make products that are safe when used responsibly.



We will keep our operations open to our communities, and foster open communications with all of our stakeholders.



We will continuously improve our raw material and energy utilization efficiencies to reduce our impact on the environment and improve the sustainability of our businesses.



We will encourage active participation in and positive contributions to safety, health, and environmental stewardship by our employees.



We will search worldwide for new technologies that bring environmental, safety and health value to all of our stakeholders.



Solutia People Talk About the Commitments

Background on Solutia's ES&H Heritage

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

RECEIVED

DEC 29 1975

J.M.H.

December 22, 1975

OFFICE OF THE
ADMINISTRATOR

Dear Mr. Hanley

For at least five years, the Federal Government and the manufacturing industry have been aware that polychlorinated biphenyls (PCBs) pose a threat to human health and the environment. Last month, at EPA's National Conference on Polychlorinated Biphenyls in Chicago, leading experts clearly documented the fact that PCBs are pervasive in the environment, are causing disruption and economic harm to commercial fishing in many areas and are creating a serious potential health hazard to the public. While certain voluntary measures have been initiated in the past, the widespread and persistent occurrence of PCBs underscores the failure of existing practices to adequately control the escape of PCBs into the environment.

Today I announced a broad EPA program of regulatory and non-regulatory actions to reduce the levels of PCBs in the environment. My statement, (which is enclosed), stated that we must, as a society, accept and work toward a goal of totally eliminating the production, importation and use of PCBs as rapidly as possible. Toward that end, I am asking you, as a principal member of the PCB industry, to commit yourself to a deliberate and expeditious search for alternatives.

I recognize that this effort will not be easy. A careful examination and balancing of the environmental consequences of alternatives will be required. The economic impacts of the changeover will have to be considered. I also recognize that such an effort cannot be accomplished overnight. Nevertheless, I have confidence that American industry has the capacity to solve this difficult task, and I solicit your full cooperation and participation in this effort.

So that we can begin this undertaking as soon as possible, I am inviting you and other representatives of your industry to meet with me on January 14 to discuss this undertaking and work towards the development of plans on how it can be accomplished as smoothly and rapidly as possible.

I have also asked representatives of the principal users of PCB-containing transformers and large capacitors to meet with me on January 22 to discuss ways that we can effectively manage and control PCBs in current use. I am enclosing a copy of my letter to these companies. At our meeting on January 14, we might also discuss some of the matters outlined in that letter.

DSW 012433



I am looking forward to meeting with you at EPA in Room 1112, 1921 Jefferson Davis Highway, Crystal Mall #2, Arlington, Virginia, on January 14, from two to five in the afternoon. If you have any questions concerning the arrangements for this meeting, you may contact Dr. I. E. Wallen, (202) 755-6956.

Sincerely yours,

Russell E. Train
Russell E. Train
Administrator

Mr. John W. Hanley
President
Monsanto Chemical Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166

DSW 012434

IN THE 30TH JUDICIAL CIRCUIT COURT FOR
ST. CLAIR COUNTY, ALABAMA
PELL CITY DIVISION

THOMAS C. DYER, ET AL,

Plaintiff,

vs.

MONSANTO COMPANY, ET AL,

Defendant.

NO. CV-93-250

Consolidated For Discovery With

SHELTER COVE MANAGEMENT,
INC., ET AL,

Plaintiff,

vs.

MONSANTO COMPANY, ET AL,

Defendant.

NO. CV 94-50-PH

DEPOSITION OF MICHAEL A. PIERLE
Taken on behalf of the Plaintiff
October 28, 1998

COPY

REPORTER: Kevin J. Weichman, CSR-RPR No. 084-003189

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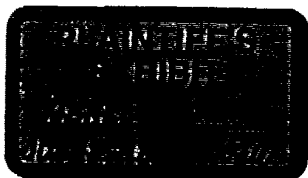
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SOLUTIA COMMITMENTS MANUAL

<DRAFT>

June 9, 1998



DSW 122270

DSW 122271

TABLE OF CONTENTS

I. INTRODUCTION - THE SOLUTIA COMMITMENTS

II. GENERAL

1. Internal Global Environmental, Safety, and Health (ESH) Requirements Setting Procedure (to be written)
2. Chemical Distribution
3. Outside Processors
4. Community Awareness at Manufacturing Sites
5. Environmental, Safety and Health Reviews of Capital Projects
6. Environmental Safety and Health Reviews of Divestitures or Acquisitions of Property and/or Businesses (to be written)
7. Environmental, Safety and Health Protection for Investments Over Which the Company Does Not Have Operating Control (to be written)
8. Environmental, Safety, Health, and Occupational Medicine Compliance Auditing

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III. ENVIRONMENTAL

1. Pollution Prevention
2. Groundwater and Soil Quality
3. Ozone-Depleting Chemicals (CFCs)

IV. SAFETY

1. Safety Management Process
2. General Requirements
3. Tiered Requirements/Hazard Levels
4. Variance Procedure
5. Safety Guidance Documents

DSW 122272

V. HEALTH

- 1. Industrial Hygiene Management Process**
- 2. General Requirements**
- 3. Tiered Requirements/Hazard Levels**
- 4. Variance Procedure**
- 5. IH Guidance Documents**

VI. PRODUCT STEWARDSHIP

- 1. Product Stewardship**
- 2. Premanufacture Notification to the United States Environmental Protection Agency Under the Toxic Substances Control Act**
- 3. Recording Allegations of Significant Adverse Reactions Under the Toxic Substances Control Act**
- 4. Transmittal to the United States Environmental Protection Agency of Substantial Risk Information Under the Toxic Substances Control Act**
- 5. Transmittal of Toxicology and Health-Related Data to United States Regulatory Agencies**
- 6. Use of Animals in Research Facilities**

VII. OCCUPATIONAL MEDICINE

Insert Occupational Medicine section here

VIII. CROSS-REFERENCE: Commitments Manual and Responsible Care (to be written)

IX. REFERENCE: Responsible Care Program

DSW 122274

INTRODUCTION

The Solutia Commitments

Solutia Inc. is dedicated to ensuring the safety of our employees, customers, communities and the environment. Through the Solutia Commitments, we are publicly obligated to pursue a course of stewardship that goes beyond what is required by the law. This ideal is best described in a memo issued jointly by Bob Potter and John Hunter on March 5, 1998. It is as follows:

Solutia's Commitments to the Environment, Safety & Health

Even before we began operating as our own company, we knew that stewardship for the environment, safety and health was critical to our long-term success. That's why one of our five business imperatives is "Being a responsible company that operates safely, with respect for the environment and the communities in which we do business."

Notice that we called this a business imperative. Our rich heritage in ES&H stewardship as well as our participation in the Responsible Care program of the Chemical Manufacturers Association, has taught us that taking care of the environment, our own people's health and safety, and the safety of our communities is basic to earning the public's right-to-operate, and basic to our long-term business success.

To support our business imperatives, we have developed what we're calling Solutia's Commitments to the Environment, Safety & Health. These commitments were developed by Solutia people, and approved by our Executive Management Team and the Board of Directors.

Our Commitments are based on our strong convictions that continuous improvement in these areas is critical to creating value for all of our stakeholders. These Commitments are drivers for a better future:

- *We will ensure that our operations and distribution systems are safe for our employees, site contractors and guests, communities and the environment.*
- *We will make products that are safe when used responsibly.*
- *We will keep our operations open to our communities, and foster open communications with all of our stakeholders.*
- *We will continuously improve our raw material and energy utilization efficiencies to reduce our impact on the environment and improve the sustainability of our businesses.*
- *We will encourage active participation in and positive contributions to safety, health, and environmental stewardship by our employees.*

- *We will search worldwide for new technologies that bring environmental, safety and health value to all of our stakeholders.*

... We're asking each of you for your full support for and full participation in our Commitments to ES&H and Responsible Care. They are more than nice-sounding statements; they represent who we are as a company.

*Bob Potter
Chairman and CEO*

*John Hunter
President and COO*

<DRAFT>

THE SOLUTIA COMMITMENTS

- *We will ensure that our operations and distribution systems are safe for our employees, site contractors and guests, communities and the environment.*
- *We will make products that are safe when used responsibly.*
- *We will keep our operations open to our communities, and foster open communications with all of our stakeholders.*
- *We will continuously improve our raw material and energy utilization efficiencies to reduce our impact on the environment and improve the sustainability of our businesses.*
- *We will encourage active participation in and positive contributions to safety, health, and environmental stewardship by our employees.*
- *We will search worldwide for new technologies that bring environmental, safety and health value to all of our stakeholders.*

DSW 122278

Program GEN6

**ENVIRONMENTAL, SAFETY AND HEALTH
REVIEWS OF DIVESTITURES OR ACQUISITIONS
OF PROPERTY AND/OR BUSINESSES**

(to be written)

<DRAFT>

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DSW 122279

Program GEN7

**ENVIRONMENTAL, SAFETY AND HEALTH
PROTECTION FOR INVESTMENTS OVER WHICH
THE COMPANY DOES NOT HAVE OPERATING
CONTROL**

(to be written)

<DRAFT>

filename:nocontr.doc (in Nepran M-private) rev. 6/9/98

DSW . 122280

Program GEN8

Environmental, Safety and Health Compliance Auditing

OVERVIEW

Introduction

This program describes the auditing policy and procedures to be taken to confirm that site management systems are in place to ensure continuous improvement and compliance with government regulations and company, business unit and subsidiary policies and procedures.

Policy

The company will conduct environmental, safety and health compliance audits to confirm that site management systems are in place to ensure continuous improvement and compliance with both government regulations and company, business unit and subsidiary policies and procedures.

For Further Information

When further information or clarification is required, you may contact the following:

ISSUE OWNER:

Garth Fort, Leader, ESH Policy & Compliance, F2EI
(314) 674-8886

TECHNICAL CONTACTS:

SAFETY AND PROPERTY PROTECTION

H. D. (Dunny) Toy, ESH Policy & Compliance, F2EI
(314) 674-6698

INDUSTRIAL HYGIENE

H. D. (Dunny) Toy, ESH Policy & Compliance, F2EI
(314) 674-6698

OCCUPATIONAL MEDICINE

David C. Shepperly, Solutia Medical Director, F2EF
(314) 674-7862

ENVIRONMENTAL COMPLIANCE

Neil E. Prange, ESH Policy & Compliance, F2EI
(314) 674-6740

Program Approval

The content of this program was approved by

DSW 122281

P17.1 PROCEDURES

P17.1.1 Introduction

This section describes the procedures to be used in ESH Compliance Auditing.

P17.1.2 Standard

Each business unit and subsidiary will be responsible for ensuring that audits are conducted in accordance with criteria shown in the following table:

ESH Compliance ..	will ..
Auditing Programs	• be consistent with the five-step auditing approach as outlined by the outside consulting firm of Arthur D. Little, and • follow protocols approved by the Leader, ESH Policy & Compliance
Auditors	• be appropriately trained, knowledgeable of the subject they audit, and skilled as compliance auditors, and • be independent of the location/site they audit.

P17.1.3 Audit Frequency

ESH compliance audits will be performed on a three-to-five year maximum cycle.

Frequency for each site will be reviewed by Policy/Planning Team and will depend upon

- results of the last audit,
- degree of risk,
- complexity, and
- compliance issues.

P17.1.4 Audit Reviews

Reports of the actual audit findings and/or recommendations will be reviewed by appropriate legal staff and distributed, at a minimum, to

- site managers,
- directors of manufacturing (or equivalent for non-manufacturing locations),
- legal,
- ESH Leader,
- Leader, ESH Policy & Compliance, and
- Operational Excellence Process Leader.

P17.1.5 Followup

Audit findings/recommendations followup will be the responsibility of each business unit and subsidiary.

The Leader, ESH Policy & Compliance will request periodic status reports of auditing and followup corrective actions for communication to upper management.

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DSW 122282

Program GEN1

**INTERNAL GLOBAL ENVIRONMENTAL, SAFETY,
AND HEALTH (ESH) REQUIREMENTS SETTING
PROCEDURE**

(to be written)

<DRAFT>

filename:reqset.doc (in Nepran M-private) rev.6/9/98

DSW 122283

Program GEN2

Chemical Distribution

OVERVIEW

Introduction

This program describes the policies, goals, standards and procedures necessary to implement Solutia's commitment to "... ensure that our operations and distribution systems are safe for our employees, site contractors, communities and the environment."

Policy

The company will reduce the potential risk to its employees, the public, carriers, distributors, contractors, customers' employees and the environment in the distribution of chemicals.

Goals

Business units must work toward incident-free performance in the distribution of chemicals, including

- raw materials,
- intermediates,
- finished products,
- byproducts, and
- wastes.

Measuring Progress

Appropriate measurement systems will ensure continuous improvement toward stated goals and objectives.

For Further Information

When further information or clarification is required, you may contact the following:

ISSUE OWNER

David E. Williams, Supply Chain, F2W1
(314)674-8644

Program Approval

The content of this program was approved by

In This Program

This program contains the following procedures.

Procedures	See Page
P5.1 INCIDENT REDUCTION	P5-2
P5.2 SAFETY STANDARDS FOR WAREHOUSES AND TERMINALS	P5-5

DSW 122284

P5.1 INCIDENT REDUCTION

P5.1.1 Introduction

This section describes procedures used to accomplish the company's specific goals for incident reduction in chemical distribution in order to effect incident-free performance.

P5.1.2 Definition

An *incident* is defined as any undesirable event occurring during a chemical distribution process over which the company has direct control or influence that results in

- an injury,
 - an unintentional release of a chemical, and/or
 - damage to property or the environment.
-

P5.1.3 Actions

To achieve the goal of incident-free performance, the company will

- improve the carrier selection process to identify and contract transportation services with carriers who consistently demonstrate safe performance in the movement of the company's chemical products,
 - improve the safety of chemical transportation practices through application of continuous improvement concepts,
 - develop and apply technological advancements to improve chemical distribution safety and share these with the industry as appropriate,
 - provide technical advice and assistance through its emergency response system in a responsible and timely manner for "outside plant gate" incidents involving its chemical products,
 - measure and continuously improve its response capabilities, and
 - have trained personnel physically present, in an expeditious manner, at the emergency site
 - upon request of the local emergency responder or public official, or
 - when the company feels a qualified emergency team can lessen the severity of an incident or ease a community's concerns about the company's products.
-

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DSW 122285

P5.1 INCIDENT REDUCTION, Continued

P5.14 Emphasis Areas

The company's effort to effect incident-free performance will include the emphasis areas shown below.

Emphasis Area	Details
Emergency Response	• Each shipping location will have a current plan for responding to chemical transportation emergencies involving products/materials within its scope. • The locations' emergency responders will receive regular training that meets or exceeds regulatory or industry standards. • Training history for all emergency response personnel will be documented. • Partnerships with local communities & local emergency responders along chemical transportation routes, as well as in those communities where its chemical plants are located, will be encouraged. • The total emergency response plan will be continuously monitored and improved. • Detailed post-incident reports and preventive action plans will be provided as training aids to all emergency responders.
Community Awareness	• Community outreach programs will be supported by offering plant facilities and mutual training to emergency responders in communities neighboring the company's distribution network. • Through routine communication with the public, continuous improvement in safe chemical distribution will be emphasized and public concerns will receive response. • Trained plant employees will be the company's "ambassadors" to the community to convey company progress and commitment to improving the safety of chemical distribution and the effectiveness of its emergency preparedness and response.

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DSW 122286

P5.1 INCIDENT REDUCTION, Continued

P5.1.4 Emphasis Areas (con't)

Emphasis Area	Details
Risk Assessment	• Distribution accidents/incidents and any resulting loss of containment will be reduced according to a documented distribution risk management methodology. • An initial qualitative risk assessment methodology will be made available for use. • Quantitative risk assessment models will be evaluated for especially sensitive materials.
Compliance	• Regulatory changes that affect the distribution of the company's products will be monitored and changes will be communicated to shipping locations. • Compliance audits and training will be conducted at all company shipping locations as appropriate and reported annually.
Adding Value	The company will recognize, as appropriate, the potential for adding value to its products.

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DSW 122287

P5.2 SAFETY STANDARDS FOR WAREHOUSES AND TERMINALS

P5.2.1 Introduction

This section describes the procedures used to accomplish the company's specific goals for incident reduction in chemical distribution in order to effect incident-free performance as related to warehouses and terminals that receive the company's products.

P5.2.2 Standards

To extend a seamless policy of operating safety results to warehouses and terminals that receive the company's products, the following standards, comparable to the company's, will be incorporated.

- Precontracting requirements will be used to assess firms that can handle the company's products in a manner that is safe for its employees, the public and the environment.
- Information on the company's policies, procedures and requirements regarding the safe handling and transportation of chemicals will be provided to warehouse and terminal personnel.
- Continuous improvement concepts will be applied to all aspects of contract management for improvement in safety and reliability of provided services.
- Agreed-upon performance measurements and periodic reviews will be used as indicators of progress toward zero-incident status.
- The recognition of public concerns about emergency preparedness and safe distribution practices will be extended to all the company's distribution locations.

P5.2.3 Emphasis Areas

The company's effort to extend a seamless policy of operating safety results to warehouses and terminals that will receive the company's products will include the emphasis areas shown below.

Emphasis Area	Details
Selection Criteria	Documented selection criteria that include appropriate safety measures will be maintained.
Information Flows	Defined flows of information concerning company policies, procedures and requirements on the safe handling of its products will be maintained.
Performance Reviews	Reviews of performance against company requirements will be conducted on a specified review cycle.
Risk Management	Risk management and emergency preparedness activities will be supported at all the company's distribution locations.

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DSW 122288

Program GEN3

Outside Processors

OVERVIEW

Introduction	This program describes policies, goals, standards and procedures necessary to implement Solutia's commitment to "... ensure that our operations and distribution systems are safe for employees, site contractors, communities and the environment."
Policy	To support its operations, the company will select outside processors that will operate with concern for • worker safety, • regulatory compliance, • community protection, and • protection of the environment.
Goal	The company will pursue into its outside processor plan the specific goal to manage the company's exposure to present and future liabilities associated with the use of outside processors by maintaining current assessments and written contracts for each outside processor used.
Measuring Progress	To measure progress against this goal, the company will maintain records that document the • outside processors used, • status of assessments, and • status of contracts.
For Further Information	When further information or clarification is required, you may contact the following: ISSUE OWNER H. D. (Dunny) Toy, Policy & Compliance, F2EI (314)674-6698
Program Approval	The content of this program was approved by

Continued on next page

DSW 122289

OVERVIEW, Continued

In This Program This program contains the following procedures.

Procedures	See Page
P7.1 OUTSIDE PROCESSORS	P7-3
P7.2 TOLL MANUFACTURERS	P7-4

<DRAFT>

DSW 122290

P7-2

COMPANY CONFIDENTIAL

P7.1 OUTSIDE PROCESSORS

P7.1.1 Introduction	This section describes procedures to be used to accomplish the company's specific goals regarding outside processors.
P7.1.2 Applicability	This section applies to firms which provide services related to Solutia chemicals, products or wastes. This includes toll manufacturers, which are a subset of Outside Processors and which are detailed in the next section of this chapter.
P7.1.3 Selection Elements	The company will use only outside processors that have been selected and periodically assessed to ensure their • ability to protect the public, employees and the environment adequately from any adverse effect of the company's chemicals, products or wastes, • compliance with all applicable laws and regulations, • knowledge of potential hazards and any applicable manufacturing requirements associated with the handling of company materials, and • use of waste disposal methods and locations as specified by contracts, with recordkeeping of all material use and waste disposal.
P7.1.4 Assessments	Before they are used by the company, outside processors will be subject to • contracts, • on-site assessments unless waived (see 7.1.6, Waivers), • approval by the appropriate Director of Manufacturing or equivalent, and • approvals and reviews by others as appropriate. NOTE: The Leader, ESH Policy & Compliance co-approves selection of waste management firms, including cleaning firms.
P7.1.5 Assessment Requirements	Initial assessments are intended to be thorough and multi-disciplinary. Periodic reassessments will concentrate on general performance and deficiencies previously defined.
P7.1.6 Waivers	On-site assessments of outside processors are required unless waived by both the Leader, ESH Policy & Compliance and the Director of Manufacturing and formally documented. Any such waivers must be resolved or re-approved every three years or less.
P7.1.7 Waste Management	For outside processor categories other than toll manufacturing (waste management, cleaning services, etc.), a processor's waste management practices will be reviewed as part of the on-site assessment.

Continued on next page

P7.1 OUTSIDE PROCESSORS, Continued

DSW 122291

P7.1.8
Worldwide
Applicability

These elements will be implemented worldwide, with modifications to reflect local conditions and the extent of the company's operating control.

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DSW 122292

P7.2 TOLL MANUFACTURERS

P7.2.1 Introduction

This section describes procedures to be used to accomplish the company's specific goals regarding toll manufacturers.

P7.2.2 Applicability

This section applies to toll manufacturers, which are firms under arrangements where Solutia owns two or more of the following factors:

- raw materials,
- process technology, or
- some or all of the output.

Pilot plant operations for process development and/or market introduction are included.

P7.2.3 Accountability

The Director of Manufacturing is the primary person accountable for ensuring that the initial assessments, contracts and other provisions are in place prior to commencing operations.

Approval must be based on the assessment and any waivers (see 7.2.10, Waivers).

The Director of Manufacturing will consult as needed with business and environmental management.

The decision to toll will be reviewed and re-approved by the Director of Manufacturing, or equivalent, at least every three years.

P7.2.4 Selection Elements

In addition to the selection elements listed for outside processors, the company will use only toll manufacturers that have been selected and periodically assessed to ensure their

- ability to produce to market demands, producing quality product cost-effectively,
 - capability to manage key external relations, and
 - financial condition, which must be able to prevent business interruption and support the value of indemnifications.
-

P7.2.5 Initial Assessment

Sites will be assessed against Solutia as the standard.

The initial assessment is intended to be thorough and to cover

- environmental compliance,
 - groundwater history/protection,
 - safety and IH status and programs,
 - waste management,
 - knowledge of Solutia technology, and
 - general knowledge/performance against the tenets of Responsible Care or similar programs worldwide.
-

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DSW 122293

P7.2 TOLL MANUFACTURERS, Continued

P7.2.6 Reassessment and Additional Requirements	Periodic reassessment will be conducted at least every three years. For those operations under contract to Solutia, tollers must also have a • spill response plan, and • Groundwater Protection Plan.
P7.2.7 Waste Management	Toll manufacturers, including bulk terminals and transloading, will • take title to, adopt and own any wastes generated, and • manage them as their own under manifests and contracts.
P7.2.8 Shipping Operations	Toll manufacturers involved in shipping of hazardous or regulated materials for Solutia will be supported and controls verified to be in place at the same level as such operations at Solutia locations.
P7.2.9 Cost Accounting	Where feasible and desired by the Director of Manufacturing, costs of toller assessment, oversight and management will be borne by the tolled products at the cost-of-goods level.
P7.2.10 Waivers	The Director of Manufacturing is authorized to • reduce the scope of assessments where warranted, • waive requirements for prior assessments or contracts in abnormal situations, and • accept, conditionally or otherwise, any deficiencies noted in the assessments. Any such waivers must be resolved or reapproved every three years or less. Where improvements are stipulated as a condition of approval, the work plan will be reviewed annually.
P7.2.11 Exclusions	Vendor equipment tests or bench-scale manufacture of small quantities/samples are conditionally excluded, dependent on • coverage by purchase order or contract, • Solutia stipulation of return of materials or disposal method/location of wastes, and • exchange of material safety and handling information.
P7.2.12 Termination	A termination plan, put into place when toll operations are initiated, will be executed when operations are discontinued. filename:sol7.doc (in Nepran M-public) rev. 6/9/98

DSW 122294

Program GEN4

Community Awareness at Manufacturing Sites

OVERVIEW

Introduction	This program describes the policies, goals, standards and procedures necessary to implement Solutia's commitment to "keep our operations open to our communities, and foster open communications with all of our stakeholders."
Policy	The company will • foster its employees' and the public's right-to-know through openness, involvement and community dialogue, and • be responsive to questions and concerns about human safety, health and the environment at its manufacturing sites.
Goals	The company will openly share information on safety and the environment and establish and maintain community advisory panels at manufacturing sites.
Measuring Progress	The following indicators will be used to measure progress against this goal: • Active community advisory panels at manufacturing sites. • Participation in training and planning for Risk Management Program communications. • Annual dissemination of data on toxic chemicals and other chemicals of local concern. • Wide distribution of the <i>Environmental Annual Review</i> to report the company's status against stated environmental, safety and health goals. • Progress toward developing routine and convenient ways (such as internet access) for interested parties to become familiar with the company's - manufacturing sites, - operations, - products, and - efforts to protect human safety and health and the environment.

Continued on next page

DSW 122295

OVERVIEW, Continued

For Further Information

When further information or clarification is required, you may contact the following:

ISSUE OWNER

John L. Henshaw, ESH Region 3, F2EP
(314)674-8830

TECHNICAL CONTACTS

Kevin S. Cahill, Public/Government Affairs, G4WA
(314)674-7518

Beth L. Rusert, Public/Government Affairs, G4WA
(314)674-8527

Loren W. Wassell, Public/Government Affairs, G4WA
(314)674-7002

Program Approval

The content of this program was approved by

In This Program

This program contains the following procedures.

Procedure		See Page
P8.1	COMMUNITY INVOLVEMENT AND DIALOGUE	P8-3
P8.2	INFORMATION ON CHEMICAL RELEASES/INCIDENTS	P8-5

DSW 122296

P8.1 COMMUNITY INVOLVEMENT AND DIALOGUE

P8.1.1 Introduction

This section describes procedures to be used to accomplish the company's specific goals for community involvement and dialogue.

P8.1.2 Openness Policy

Each manufacturing site will implement a policy of openness that provides convenient ways for interested individuals to become familiar with the facility and its

- operations,
 - products, and
 - efforts to protect human safety, health and the environment.
-

P8.1.3 Activities

To involve the community in plant operations, the following activities, among others, may be used:

- community advisory panels,
 - open houses,
 - plant tours, and
 - environmental awareness days.
-

P8.1.4 Community Outreach

Community outreach programs will be implemented at each manufacturing site to inform key audiences (emergency responders, government officials, the media, employees, other businesses and the community) about the facility's

- emergency response program,
 - chemical inventory,
 - impact evaluation, and
 - potential risks to the community.
-

P8.1.5 Information Details

The information provided will include details on such topics as

- waste minimization,
- emissions reduction,
- health effects of chemicals, and
- efforts to ensure safe transport of chemicals.

All information will also include planned improvements in each of these critical areas as well as expansion activity and other projects of general interest to the community.

P8.1.6 Ongoing Communications

An ongoing dialogue with employees and members of the community will be used to

- assess and respond to their questions and concerns about environmental, safety and health issues, and
 - involve them in the community outreach effort.
-

Continued on next page

DSW 122297

P8.1 COMMUNITY INVOLVEMENT AND DIALOGUE, Continued

P8.1.7 Assessments

Each manufacturing site will conduct an ongoing assessment of employee and community questions and concerns about the site. The effectiveness of the ongoing community communications effort will be evaluated regularly by the site.

P8.1.8 Training

Communications training will be provided for key site and company personnel who communicate with employees and the public concerning human safety, health and the environment.

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DSW 122298

P8.2 INFORMATION ON CHEMICAL RELEASES/INCIDENTS

P8.2.1 Introduction

This section describes procedures to be used to accomplish the company's specific goals regarding information on chemical releases and safety.

P8.2.2 Chemical Releases/ Safety Information

Each operating location will make available to appropriate audiences (neighbors in the community, employees and/or the news media), timely information about

- routine or accidental releases of toxic and other chemicals of local concern, and
- progress and future plans for achieving the company's stated goals to reduce emissions, prevent pollution and improve safety.

P8.2.3 Personal Communications

When possible, the information on chemical releases/safety should be at a personal, face-to-face level and should emphasize listening to others and discussing their concerns and ideas.

P8.2.4 Annual Publication

The company will publish and distribute an *Environmental Annual Review* that articulates the company's

- environmental, safety and health policies, and
- progress toward achieving stated environmental, safety and health goals.

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DSW . 122299

Program GEN5

Environmental, Safety and Health Reviews of Capital Projects

OVERVIEW

P9.1 Introduction	This program describes the policy and procedure to be used for environmental, safety and health reviews of capital projects.
P9.2 Policy	The company's capital projects will • meet Solutia policies, goals, standards and procedures, • be in compliance with existing and anticipated governmental regulatory requirements, and • be reviewed at all levels for environmental, safety and health impact before, and as a condition of, project funding.
P9.3 Responsibilities	The Vice President, Environmental, Safety and Health or his/her designee will review those projects requiring approval by the Chief Operating Officer (COO), the Chief Executive Officer (CEO) or the Board of Directors (BOD). The ESH Regional Leads will participate in the project Major Accountability & Premise (MAP) reviews. A system for reviewing other smaller projects will be established at the sites with ESH Shared Service.
P9.4 Procedure	The Company will follow the CPM and New Fixed Investment Management Process. The effects of the public climate of opinion and of existing and future governmental, environmental regulations that may apply also are to be considered. Employees assigned to evaluate a new location for operation will prepare an internal environmental impact assessment addressing potential environmental limitations at the site as a result of the existing socioeconomic and biophysical conditions.
P9.5 Exceptions Approval	Any exceptions to this document must be approved by the Solutia Leadership Team.
P9.6 For Further Information	When further information or clarification is required, you may contact the following: ISSUE OWNER John L. Henshaw, ESH Region 3, F2EP (314)674-8830

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DSW 122300

OVERVIEW, Continued

P9.7
Program
Approval

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DSW 122301

DSW 122302

Program ENV1

Pollution Prevention

OVERVIEW

Introduction

This program describes the policies, goals, standards and procedures necessary to implement Solutia's commitment to the continuous improvement of our health, safety, and environmental program.

Policy

The company is committed to continuously improve the health, safety, and environmental performance of our products and operations.

We will:

- ensure that our operations and distribution systems are safe for employees, site contractors, communities and the environment;
 - make products that are safe when used responsibly;
 - keep our operations open to our communities, and foster open communications with all of our stakeholders;
 - continuously improve our raw material and energy utilization efficiencies to reduce our impact on the environment and improve the sustainability of our businesses;
 - encourage active participation in and positive contributions to safety, health, and environmental stewardship by our employees; and
 - search worldwide for new technologies that bring environmental, safety and health value to all of our stakeholders.
-

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DSW 122303

OVERVIEW, Continued

Goals

These specific goals must be integrated into raw material yield and energy improvement plans for each business.

Compliance Date	Goal
End of 1998	• Define major products supported by deep well injection and major energy consuming products for enterprise focus. • Each business will establish baselines for raw material yields, energy utilization and associated five year improvement targets. Businesses will also establish tracking mechanisms to measure continuous improvement consistent with corporate direction issued to ensure consistency.

Measuring Progress

The following indicators will be used to measure progress against these goals:

- Achievement of contingency planning for withdrawal from injection wells, if required.
- Annual verification of no new uses of deep well injection.
- Reduction of total organic releases and SARA reportable inorganic releases to deep injection wells per pound of product manufactured. Data will be tracked for defined major products making use of injection wells.
- Reduction in total BTUs required to manufacture defined major energy consuming products.

Continued on next page

DSW 122304

OVERVIEW, Continued

For Further Information

When further information or clarification is required, you may contact the following:

GENERAL POLICY MATTERS

Garth F. Fort
(314) 674-8886

SECTOR LEAD - WASTE PROGRAMS

J. Pat Hyland
(314) 674-6715

SECTOR LEAD - AIR PROGRAMS

David S. Krawczyk
(314) 674-3666

SECTOR LEAD - WATER PROGRAMS

Steven D. Smith
(314) 674-4660

Program Approval

The content of this program approved by

In This Program

This program contains the following procedures.

Procedures		See Page
P1.1	Reducing Releases and Emissions from Process and Nonprocess Waste	P1-4
P1.2	Underground (Deep Well) Injection Waste	P1-5
P1.3	Handling Land Disposal and Land Application	P1-6
P1.4	Assessing Impact of Air Emissions	P1-8
P1.5	Assessing Impact of Water Releases	P1-9

DSW 122305

P1.1 REDUCING RELEASES AND EMISSIONS FROM PROCESS AND NONPROCESS WASTE

P1.1.1 Introduction

This topic describes procedures to be used to accomplish the company's specific goals for improving raw material yields and reducing energy requirements to ensure no negative impact to people and the environment from our products and operations.

P1.1.2 Integration of Corporate Goal into Business Plans

The businesses will integrate this corporate goal into their business plans and will utilize key measures established to ensure consistency of approach to track progress.

P1.1.3 Additional Improvement Measures

Continuing measures to improve raw material yields and reduce energy requirements include:

- the emphasis of the development and use of new manufacturing and energy conservation projects and technologies, and
 - aggressive evaluation and implementation of co-product and product recycle/reuse opportunities
 - customer and product user interface to identify recycle/reuse and product modification opportunities
-

P1.1.4 Nonprocess Waste Yield and Energy Tracking

Each facility will maintain for each of its products the following information:

- DRAFT**
- raw material yields (#/100#F.P.)
 - energy requirements (BTUs/100#F.P.)

The above data will be compiled annually beginning with calendar year 1995. Key raw materials will be selected by the businesses for quarterly tracking using the balanced scorecard approach.

DSW 122306

P1.2 UNDERGROUND (DEEP WELL) INJECTION WASTE

P1.2.1 Introduction

This topic describes procedures to be used to accomplish the company's specific goals for deep well injection wastes.

P1.2.2 Contingency Plan for Deep Well Withdrawal

The company will use the following methods to prepare for the potential of regulations mandating the withdrawal from deep wells.

- Perform study-grade estimates to achieve non-brine, treated surface discharge to select optimal technical strategies for total withdrawal from deep wells, and
 - Continue to challenge the technical impediments to total withdrawal from deep wells.
-

P1.2.3 New Uses of Deep Wells

New internal or external uses of deep wells are not permitted unless prior approval of the Policy/Planning Team is obtained.

A new use of deep wells is defined as

- injection of streams from new products,
 - the addition of substances not previously injected at that site
 - injection of remediation wastes not previously disposed of by deep well injection
-

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DSW 122302

P1.3 HANDLING LAND DISPOSAL AND LAND APPLICATION

P1.3.1. Introduction

This topic describes the procedures to be used to accomplish the company's specific goals for handling land disposal and land application.

P1.3.2 Landfill

The company will not practice landfill of

- acutely hazardous wastes, and
- incinerables.

NOTES:

- *Acutely hazardous wastes* are those listed in 40CFR261.33(e), plus any mixtures containing greater than 5 percent of the listed wastes.
 - *Incinerables* are hazardous wastes or wastes managed as hazardous, with a heat of combustion greater than 6000 BTU/lb.
-

P1.3.3 Hazardous Waste and Managing Wastes as Hazardous

For hazardous wastes and wastes managed as hazardous, fixation of particularly mobile, persistent or bioaccumulative wastes will be accomplished whenever warranted and feasible. When making the decision to manage wastes as hazardous, the company will take into account

- public expectations,
 - emerging trends, and
 - worldwide company practice regarding the same or similar wastes.
-

P1.3.4 Off-Site Landfills

The company will subject contractors hired for land disposal of process wastes to contracting and assessment requirements, as described in Program 7, *Outside Processors*.

In the United States, the use of off-site hazardous waste landfills will be

- approved by the Policy/Planning Team and
 - limited in number.
-

P1.3.5 Medical Wastes

Company sites will arrange to

- incinerate medical wastes generated at the company's locations, prior to land disposal of residues, and
 - obtain assurance of incineration of medical wastes via manifests or equivalent documents.
-

P1.3.6 Non-Solutia Wastes

The company will discourage use of Solutia facilities to commercially treat, store or dispose of non-Solutia wastes. Any such use or joint ventures (other than in-site guest/host relationships) must be reviewed and approved by the Policy/Planning Team.

Continued on next page

DSW 122308

P1.3 HANDLING LAND DISPOSAL AND LAND APPLICATION, Continued

P1.3.7 Land Application of Process Byproducts and Residues	The company will prepare proposals for land application of process byproducts and residues, for beneficial use or disposal, by using as guidance the <i>Monsanto Guidance Document: Land Application of Process Byproducts and Residues</i>. The ESHA discipline (including 5-year reviews) will be followed.
P1.3.8 Land Application Approval	The company will require approval of all new applications by the appropriate [Business General Manager and the ESH Policy Director.]???? The Policy/Planning Team must approve new applications if beneficial use is not included.
P1.3.9 Documentation	Each company location will maintain a record of the on-site and commercial waste treatment, storage and disposal sites it uses.

<DRAFT>

DSW 122309

P1.4 ASSESSING IMPACT OF AIR EMISSIONS

P1.4.1 Introduction

The company will assess air emissions from new processes or new businesses or existing businesses as new information on potential hazards might dictate.

<DRAFT>

DSW 122310

P1.5 ASSESSING IMPACT OF WATER RELEASES

P1.5.1 Introduction

The company will assess releases of water pollutants from new processes or new businesses or existing businesses as new information on potential hazards might dictate.

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DSW 122311

Program ENV2

Groundwater and Soil Quality

OVERVIEW

Introduction

This program describes policies, goals, standards and procedures necessary to implement the groundwater and soil quality aspects of Solutia's commitment to "... ensure that our operations ... are safe for ... the environment."

Policy

The company will

- design and operate facilities to protect groundwater and soil quality,
 - assess groundwater and soil quality at its facilities,
 - pursue remedies for releases that threaten health or the environment, and
 - address on-site and off-site containment of groundwater and soil attributable to its operating and waste practices to ensure protection of health and the environment.
-

Goals

The following specific goals will be integrated into the company's groundwater and soil quality plans:

- <DRAFT>**
- Establish an active groundwater assessment program at the company's facilities.
 - Ensure there are no adverse public health impacts attributable to the company's wastes.
 - Minimize the financial impact of remedial action and third-party liability attendant to waste sites.
 - Resolve, as soon as reasonably possible, the company's share of liability and remedial plans for Superfund sites where it has a responsibility, while securing timely and cost-effective resolution.
-

Measuring Progress

To measure progress against these goals, there will be an annual groundwater assessment at each site.

For Further Information

When further information or clarification is required, you may contact the following:

ISSUE OWNER

Bruce S. Yare, ESH Remediation, F2EA
(314)674-6370

Program Approval

The content of this program was approved by

Continued on next page

OVERVIEW, Continued

In This Program This program contains the following procedures.

Procedures	See Page
P6.1 ASSESSMENT	P6-3
P6.2 PROTECTION	P6-4
P6.3 SUPERFUND	P6-5

<DRAFT>

DSW 122313

P6-2

COMPANY CONFIDENTIAL

P6.1 ASSESSMENT

P6.1.1 Introduction

This section describes assessment and response procedures used to accomplish the company's specific goals to

- establish an active groundwater assessment program in its facilities, and
 - ensure there are no adverse public health impacts attributable to the company's wastes.
-

P6.1.2 Assessment Plans

Programs for assessment and tracking of groundwater quality will be organized at

- all major locations, and
 - lesser sites that have known groundwater issues.
-

P6.1.3 Corrective Action

Appropriate assessment of impacts on human health and the environment will be carried out when on-site waste or groundwater and/or soil contamination is discovered.

Corrective action will be taken, as necessary, in a planned, orderly process to remediate soil or groundwater impacts that threaten human health and the environment.

P6.1.4 Newly Purchased Sites

Any newly purchased, existing operation will be subjected to the seven-point protocol for assessment of possible groundwater contamination. The issue owner of this chapter will supply a copy of the assessment protocol upon request.

<DRAFT>

DSW 122314

P6.2 PROTECTION

P6.2.1 Introduction

This section describes operating and design procedures used to accomplish the company's specific goals to ensure there are no adverse public health impacts attributable to the company's wastes.

P6.2.2 Groundwater Protection Plans

Each location will maintain a Groundwater Protection Plan that includes inspection, testing and maintenance of facilities that could contaminate groundwater, e.g.

- sewers,
- process lines,
- sumps,
- tanks, and
- loading/unloading areas.

The groundwater protection plans and designs will be commensurable with the risk posed by the specific situations.

P6.2.3 Facility Design

To provide improved assurance against groundwater contamination, new, replacement or expansion facility designs (including sewers and lines) will consider such options as

- aboveground and/or double containment,
- improved materials of construction, and/or
- cathodic protection.

New, replacement or expanded surface impoundments for wastewater treatment or storage must be approved by the Policy/Planning Team on an exception basis.

P6.2.4 Storage Tanks

New storage tanks for materials that could cause contamination will be provided with impervious secondary containment (e.g. dikes, liners, vaults, double wall) unless a clear showing is made on a tank-by-tank basis during project reviews that vessel contents (e.g. dilute wastewaters) or setting (e.g. in-battery containment or other adequate containment systems) do not warrant such containment.

Existing storage tanks will be reviewed in normal environmental audits.

DSW 122315

P6.3 SUPERFUND

P6.3.1 Introduction

This topic describes procedures used to accomplish the company's specific goals to

- minimize the financial impact of remedial action and third-party liability attendant to waste sites, and
- resolve its share of liability and remedial plans for sites where it has a responsibility while securing timely and cost-effective resolution.

P6.3.2 Action to be Taken

When the company becomes aware of involvement in "Superfund" sites, it will

- act to ensure that there are no public health impacts attributable to its wastes,
- actively participate in potentially responsible parties' efforts to achieve settlement, and
- seek a leadership role, when appropriate, to facilitate resolution.

The business units will cooperate to establish responsibility for sites where several units contributed wastes.

P6.3.3 Legal Approach

The company intends a lessened legalistic approach to site cleanup negotiations through the following actions:

- The company will pursue fair legislation and regulations on the general issues in the public arena, but minimizing legal risk will not be the determining factor in the site-specific decisions.

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DSW 122316

Program ENV3

Ozone Depleting Chemicals

OVERVIEW

P16.1 Introduction

This program describes the policy, scope and site applicability for minimizing the uses and environmental releases of ozone-depleting chemicals (CFC's).

P16.2 Policy

The company will

- initiate actions at all of its sites worldwide to minimize the uses and environmental releases of the chemicals subject to this program, and
 - seek out acceptable substitute chemicals, when possible, on or before applicable compliance dates set by the site's local country laws and regulations.
-

P16.3 Scope

The following chemicals are those listed in the *Montreal Protocol* and are the minimum number subject to this policy.

CFC-11	CFC-112
CFC-12	CFC-211
CFC-113	CFC-212
CFC-114	CFC-213
CFC-115	CFC-214
Halon-1211	CFC-215
Halon-1301	CFC-216
Halon-2402	CFC-217
CFC-13	Carbon Tetrachloride
CFC-111	Methyl Chloroform

Each company site should add to the list any other chemicals of local country concern and treat them according to this policy in conformance with local country laws and regulations.

P16.4 Applicable Sites

Company sites subject to this policy include the following sites where the company owns or operates facilities that use or contain one of the chemicals subject to this policy:

- plants,
- offices,
- R&D facilities,
- sales offices, and
- warehouses.

This coverage includes any subsidiary in which the company is a greater than 50 percent owner.

Continued on next page

DSW 122317

Ozone Depleting Chemicals, Continued

**P16.5
For Further
Information**

When further information or clarification is required, you may contact the following:

ISSUE OWNER and TECHNICAL CONTACT:
Deborah K. Grissett, Senior Environmental Engineer, 1690
(850)968-8839

**P16.6
Program
Approval**

The content of this program was approved by

filename:sol16.doc (in Nepran M-public) rev. 6/9/98

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DSW 122318

DSW 122319

DRAFT

SOLUTIA INC. SAFETY MANAGEMENT PROCESS

1.0 INTRODUCTION

1.1 Solutia Commitment Statement

It is our commitment to ensure our operations and distribution systems are safe for employees, guests, communities and the environment.

1.2 Purpose

These safety requirements support Solutia's ESH Commitments and additional efforts in Solutia's Voluntary Protection Program, Responsible Care, and the Behavior Based Safety Process by defining the safety systems necessary to control risks in Solutia's manufacturing facilities. This document describes, in broad terms, the required elements of these systems and defines the level of hazard that a process/operation offers.

1.3 Scope

This document applies to worldwide manufacturing operations where Solutia has direct operation control. Application of its concepts is encouraged in all other Solutia relationships.

1.4 For Further Information

When further information or clarification is required, you may contact the following:

John V. Birtwistle
Paul M. Villane
Dale E. Dressel

1.5 Document Approval

This document was approved by the Solutia _____
on _____.

DSW 122320

DRAFT

1.0 INTRODUCTION, Continued

1.6 In This Document

This document contains the following sections:

Section	See Page
1.0 Introduction	1
2.0 General Requirements	3
3.0 Tiered Requirements/Hazard Levels	4
4.0 Variance Procedure	7
5.0 Safety Guidance Documents	8

DRAFT

2.0 GENERAL REQUIREMENTS

2.1 General Requirements

These are the minimum requirements for all Solutia sites. Where state, federal, or country regulations are more stringent, they take precedence. Programs with tiered requirement levels (Items 2.12 through 2.15) are discussed in Section 3.0 and the individual requirements document.

2.2 Safety Requirements

Document Number	Requirement
2.1	Safety Program Management
2.2	Contractor Guest Safety
2.3	Incident Investigation
2.3.1	Incident Loss Report
2.4	Safe Work Practices and Operating Procedures
2.4.1	Lockout/Tagout Program
2.4.2	Hot Work Permit
2.4.3	Confined Space Entry
2.4.4	Breaking Into Pipelines & Equipment
2.4.5	Temporary Connections/Installations/Situations
2.5	Security
2.6	Emergency Response
2.7	Interlock Management
2.8	Volunteer Protection Program (VPP) Participation
2.9	High Hazard Material (HHM) Management Program
2.10	Fire Protection
2.10.1	Fire Protection Impairment Control
2.10.2	Fire Protection Equipment Inspections
2.10.3	Acceptance of New Fire Protection Installations
2.11	ESH Compliance Audits
2.12	Training
2.13	Mechanical Integrity
2.14	Process Hazard Analysis
2.15	Management of Change
2.16	Solutia Injury/Illness Classifying and Reporting Decision Process

DSW 122322

DRAFT

3.0 TIERED REQUIREMENTS/HAZARD LEVELS

3.1 Introduction

This section describes the approach of Tiered Requirements and the Hazard Levels involved in the management of Safety programs. Refer to the individual requirement documents for more details.

3.2 Tiered Requirement Programs

Tiered Requirements have varying degrees of effort and complexity depending on the program and hazard level. In general, the higher the hazard, the more diligent the control measure.

Tiered requirement programs include:

- ESH Compliance audits
- Training
- Mechanical Integrity
- Process Hazard Analysis, and
- Management of Change

3.2.1 Auditing

The intent of the ESH compliance audits are to:

- confirm that regulatory and Solutia requirement requirements are being met,
- provide objective feedback to both the location and management that systems are in place and functional,
- assess safety management and control systems are designed to assure compliance and conformance, and
- assess Safety conformance with industry accepted standards and good practice.

3.2.1.1 ESH Compliance Audit Techniques

The techniques for ESH Compliance Audits are as follows:

Level	Audit Group
1	Safety Regional (Corporate)
2	Safety Plant
3	Process Unit

DSW 122323

DRAFT

3.0 TIERED REQUIREMENTS/HAZARD LEVELS, Continued

3.2.2 Training

The intent of training is to:

- inform the employee (functional, awareness, and management levels) of recognized hazards in the workplace,
 - provide skills so the work can be conducted in a safe and healthy manner for himself, co-workers and the community, and
 - determine the understanding of the material for which the training was conducted.
-

3.2.2.1 Training

The requirements for training are summarized in the requirement procedure.

3.2.3 Mechanical Integrity

The intent of mechanical integrity is to have a documented mechanical integrity system which includes the following elements:

- appropriate design standards,
- vessel and piping inspection system,
- relief device testing system,
- fire protection inspection system, and
- system to control replacement of equipment and parts.

These requirements will be tiered as described in applicable corporate and site ESH Procedures and engineering standards.

3.2.4 Process Hazard Analysis (PHA) Requirements

The intent of process hazard analyses is to :

- identify, evaluate and control the hazards in the process,
 - assign a priority to the recommendations developed, and
 - provide documentation of the review.
-

3.2.5 Management of Change

The intent of management of change is to:

- provide a technical basis for the proposed change,
 - assess the impact of the change on safety & health,
 - identify required modifications to written documents,
 - identify time period required to incorporate the change, and
 - provide authorization for the change.
-

DRAFT

3.0 TIERED REQUIREMENTS/HAZARD LEVELS, Continued

3.3 Hazard Levels

The management of Safety programs is a complex task. In today's environment, elements of Safety are regulated on a number of different levels by national or local laws as well as by internal company requirements and procedures. These requirements

- provide a holistic view of the Safety programs which provides assurance of external and internal compliance,
- provide thorough coverage of all aspects of the Safety programs referred to in this requirement document, and
- optimizes resources needs with the establishment of clear requirements.
- are based upon defining the level of hazard that a process/operation can offer to the employees that work there.

The following table defines these hazards levels

3.3.1 Hazard Levels Table

The following table defines these hazard levels:

Level	is a hazard that ...	This includes ...
1	can create an immediate life threatening event at the facility fenceline.	• release of toxic chemicals, and • vapor cloud explosions
2	can create an immediate life threatening event inside the facility or cause health impacts or evacuation outside the facility fenceline.	• release of toxic chemicals, and • vapor cloud explosions
3	can cause health impacts, personal injury or environmental impact inside a facility.	• chemical fires, • toxic releases, and • vapor cloud explosions
4	is not beyond those managed by general manufacturing safety practices.	• transportation, • personnel safety, and • fire protection

DSW 122325

4.0 VARIANCE PROCEDURE

4.1 Purpose

The purpose of a formal variance procedure is to allow deviations from the requirements in this document. It should be recognized that while these requirements are generally applicable to all facilities, circumstances may dictate the best course of action is a formal variance request, reviewed and approved by management.

4.2 Variance Requested Elements

The variance request shall include the following elements:

- a statement requesting a variance
- a statement of the deviation and its duration, as existing or proposed, referencing the Safety requirement involved.
- an assessment of the hazards and consequences associated with the deviation, and
- an explanation of the proposed variance request would deal with the above.

4.3 Procedure

Step	Action
1	The variance request is submitted to the location's Director of Manufacturing (or equivalent).
2	Director of manufacturer (or equivalent) determines who should review the document.
3	Document is reviewed and comments are gathered.
4	Appropriate disposition of the variance requested is determined, location is notified of results and action plans.
5	All active, approved variances are reviewed during the site's ESH auditing process.

V. HEALTH

DSW 122327

DRAFT

SOLUTIA INC. INDUSTRIAL HYGIENE MANAGEMENT PROCESS

1.0 INTRODUCTION

1.1 Solutia Commitment Statement

It is our commitment to ensure our operations and distribution systems are safe for employees, guests, communities and the environment.

1.2 Purpose

Industrial Hygiene Requirements support Solutia's efforts in Solutia's Voluntary Protection Program, Responsible Care, and the Behavior Based Safety Process by defining the industrial hygiene systems necessary to control health risks at Solutia's locations. This document describes, in broad terms, the required elements of these systems.

1.3 Scope

This document applies to worldwide manufacturing operations where Solutia has direct operation control. Application of its concepts is encouraged in all other Solutia relationships.

1.4 For Further Information

When further information or clarification is required, you may contact the following:

Paul E. Shelton
Steven N. Hacker
Janet L. Weaver

1.5 Document Approval

This document was approved by the Solutia _____
on _____

DSW 122328

1.0 INTRODUCTION, Continued

1.6 In This Document

This document contains the following sections:

Section	See Page
1.0 Introduction	1
2.0 General Requirements	3
3.0 Tiered Requirements/Hazard Levels	4
4.0 Variance Procedure	7
5.0 IH Guidance Documents	8

DSW 122329

2.0 GENERAL REQUIREMENTS

2.1 General Requirements

These are the minimum requirements for all Solutia sites and where state, federal, or country regulations are more stringent they take precedence.

2.2 IH Requirement Documents

Document Number	Requirement
2.1	Hazard Communication
2.2	Respiratory Protection
2.3	Hearing Conservation
2.4	Ergonomics
2.5	Occupational Exposure Control to Ionizing Radiation
2.6	Local Exhaust Ventilation
2.7	Exposure Assessment/Monitoring Frequency
2.8	Chemical Control
2.9	Monitoring Data Integrity
2.10	Automatic Continuous Area Monitors
2.11	Chemical Protective Clothing/Gloves
2.12	Laser Safety Program

DSW 122330

3.0 TIERED REQUIREMENTS/HAZARD LEVELS

3.1 Introduction

This section describes the approach of Tiered Requirements and the Hazard Levels involved in the management of Industrial Hygiene programs.

3.2 Tiered Requirement Programs

Tiered Requirements have varying degrees of effort and complexity depending on the program and hazard level. In general, the higher the hazard, the more diligent the control measure.

Tiered requirement programs include:

- Compliance audits
- Training
- Routine maintenance/Calibration
- Monitoring/Assessments

3.2.1 Auditing

The intent of the audits are to:

- confirm that regulatory and Solutia requirements are being met,
- provide objective feedback to both the location and management that systems are in place and functional,
- assess IH management and control systems designed to assure compliance and conformance, and
- assess IH conformance with industry accepted standards and good practice.

3.2.1.1 Audit Techniques

Level	Audit Group
1	IH Regional (Corporate)
2	IH Plant
3	Process Unit

DSW 122331

3.0 TIERED REQUIREMENTS/HAZARD LEVELS, Continued

3.2.2 Training

The intent of training is to:

- inform the employee (functional, awareness, and management levels) of recognized hazards in the workplace,
 - provide skills so the work can be conducted in a safe and healthy manner for himself, co-workers and the community, and
 - determine the understanding of the material for which the training was conducted.
-

3.2.3 Maintenance/ Calibration

The intent of maintenance/calibration is to:

- evaluate systems designed to minimize employee exposure to hazardous materials to determine if they are operating at design specifications and
 - ensure that results are a valid determination of the exposure monitoring and to compare to regulations and guidelines.
-

3.2.4 Monitoring/ Assessments

The intent of monitoring/assessment is to:

- document qualitative and quantitative exposure potential determinations for comparison to recognized exposure limits and guidelines, as well as good industry practices.
-

DSW 122332

3.0 TIERED REQUIREMENTS/HAZARD LEVELS, Continued

3.3 Hazard Levels

The management of Industrial Hygiene programs is a complex task. In today's environment, elements of Industrial Hygiene are regulated on a number of different levels by national or local laws as well as by internal company requirements and procedures. These requirements:

- provide a holistic view of the Industrial Hygiene programs which provides assurance of external and internal compliance,
- provide thorough coverage of all aspects of the Industrial Hygiene programs referred to in this requirement document,
- optimizes resources needs with the establishment of clear requirements, and
- are based upon defining the level of hazard that a process/operation can offer to the employees that work there.

The following table defines these hazards levels.

Level	is a hazard that ...	This includes ...
1	can create an immediate life threatening event at the facility fence line or inside the manufacturing department (e.g., ERPG 3 (Emergency Response Planning Guidelines)), relates to the handling of regulated chemicals and known or suspected human carcinogens in manufacturing processes.	• OSHA regulated chemicals. • materials with ERPG-3 values, • any material with a country specific regulation, • human carcinogens
2	is related to any material with a recognized exposure limit, has a IDLH value not previously addressed by ERPG 3 values, is a significant physical hazard.	• PEL's, TLV's, MAK's, etc., • Ergonomics • noise • radiation
3	is considered a hazardous chemical, but has no recognized exposure limit.	• dusts NOC, • p-nitrophenol, • boric acid, • some consumer products

DSW 122333

4.0 VARIANCE PROCEDURE

4.1 Purpose

The purpose of a formal variance procedure is to allow deviations from the requirements in this document. It should be recognized that while these requirements are generally applicable to all facilities, circumstances may dictate the best course of action is a formal variance request, reviewed and approved by management.

4.2 Variance Requested Elements

The variance request shall include the following elements:

- a statement requesting a variance
- a statement of the deviation and its duration, as existing or proposed, referencing the IH requirement involved.
- an assessment of the hazards and consequences associated with the deviation, and
- an explanation of the proposed variance request would deal with the above.

4.3 Procedure

Step	Action
1	The variance request is submitted to the location's Director of Manufacturing (or equivalent).
2	Director of manufacturer (or equivalent) determines who should review the document.
3	Document is reviewed and comments are gathered.
4	Appropriate disposition of the variance requested is determined, location is notified of results and action plans.
5	All active, approved variances are reviewed during the site's EHS auditing process.

DSW 122334

5.0 IH GUIDANCE DOCUMENTS

5.1 Documents Available

The following documents are available for additional guidance for Solutia IH issues. Contact your regional IH professional for copies, if needed.

5.1.1	IH Bulletins
5.1.2	IH Audit Protocol

STEWARDSHIP

DSN 122336

Program PS1

Product Stewardship

OVERVIEW

Introduction

This program describes the policies, goals, standards and procedures necessary to fulfill the product responsibilities implicit in the Solutia Commitments.

Policy

The company will research, develop, design, assess, manufacture, market and dispose of its products so that they

- meet ever-increasing societal expectations, and
- do not pose undue risks to human health or the environment during all stages of their life cycles.

The company will work with product stakeholders (suppliers, employees, distributors, customers, consumers and disposers) to understand and reduce risks over the life cycle of the company's products.

Goals

The following specific goals must be integrated into the company's product stewardship plans.

- Practice the principles and key elements of Product Stewardship, as specified in appropriate programs around the world, in all the company's global operations and markets.
- Provide appropriate safety and handling information, including Material Safety Data Sheets (MSDSs), to potentially exposed employees, contract employees and product receivers.

NOTE: Materials Safety Data Sheets (MSDSs) and Safety Data Sheets (SDSs) are interchangeable terms and refer to similar requirements in different countries.

- Work toward the goal of no undue risk through systematic risk reduction throughout a product's life cycle.
 - Incorporate concepts of eco-efficiency into product and process evaluations to improve their sustainability.
 - Gain a competitive advantage by applying product stewardship principles that add value to the company's product offerings.
-

Continued on next page

DSW 122337

OVERVIEW, Continued

Measuring Progress

To measure progress against these goals, the following indicators will be used:

- Demonstrated progress in meeting internal and external requirements for all new product introductions (i.e., NPPD process, ESHA approvals, and governmental approvals);
- Demonstrated progress in determining product hazards;
- Visible growth in knowledge of the use of company products and the resultant exposures to people and the environment;
- Availability of adequate environmental, safety and health data to the ultimate product receiver;
- Increased understanding and diminution of the risks and environmental impacts associated with a product throughout its life cycle; and
- Differentiation of company products in the marketplace.

For Further Information

When further information or clarification is required, you may contact the following:

ISSUE OWNER

Jeffrey D. Felder, Product Stewardship, F2EC
(314)674-4489

Program Approval

The content of this program was approved by

In This Program

This program contains the following procedures.

Procedures	See Page
P4.1 ESH INFORMATION AND RISK CHARACTERIZATION	P4-3
P4.2 RISK MANAGEMENT SYSTEM	P4-5
P4.3 PRINCIPLES AND KEY ELEMENTS	P4-6
P4.4 PRODUCT HAZARD EVALUATION	P4-8

DSW 122338

P4.1 ESH INFORMATION AND RISK CHARACTERIZATION

P4.1.1 Introduction

This section describes procedures to be used to accomplish the company's specific goals regarding environmental, safety and health information and risk characterization.

P4.1.2 Definitions

Terms are used in this program as defined in the following table.

Term	Definition
Product	Chemical substances and mixtures, materials and equipment, articles, licensed technology and services related to product use that are • sold, • distributed in commerce, or • otherwise provided.
Product Receiver	An entity (not an individual) to whom the company transfers product. This includes product receivers such as brokers or transporters who may not fall into the traditional customer category.

P4.1.3 Product Risk Characterization

A preliminary product risk characterization (ESHA Level 1 to 3, as appropriate, and an R&D MSDS) with adequate supporting environmental, safety and health exposure information will be prepared for

- new chemical products,
- new isolated process intermediates, and
- significant new uses for existing chemical products.

An MSDS will be furnished

- at the earliest practical stage of R&D, and
- prior to off-site shipment.

A product risk characterization (including an ESHA Level 4 or equivalent, a final MSDS and a shipping classification) will be completed before new product commercialization.

P4.1.4 MSDS Program

The company's process for generating, reviewing, and maintaining an MSDS is comprehensive and, when coupled with human experience and professional judgment, fulfills the requirement for a product risk characterization for most products. For products with significant inherent hazard, an ESHA Level 5 is required.

Significant new information will be reviewed in a timely fashion as part of the MSDS program to satisfy regulatory and product risk characterization requirements.

An MSDS review/product risk characterization or an ESHA Level 5 is periodically performed commensurate with product risk. Revisions are performed, at a minimum, every five years, unless waived by the VP, ESH based on a consideration of lack of inherent hazard.

Continued on next page

P4.1 ESH INFORMATION AND RISK CHARACTERIZATION, Continued

P4.1.5 Product Files or Information Systems

Product files or information systems will be maintained for all products or product families, and will contain the data necessary to fulfill regulatory requirements and perform product risk characterizations and assessments as appropriate. The data need not be in a single file or system but must be readily available to all likely users (e.g. Product Stewardship and other ESH staff). The data will include:

- Relevant information on composition, CAS name and number, common name and synonyms, physical properties, raw materials, manufacturing processes, principal byproducts, protective measures, exposure information, energy requirements, wastes and disposal practices,
- References to relevant literature or internal reports dealing with health and safety (toxicology, epidemiology, industrial hygiene, flammability, reactivity, etc.),
- Material Safety Data Sheets,
- Information on product use, including handling, transport, packaging and storage, which will either be
 - estimated (typically for new products), or
 - obtained by visits or reviews of customer, distributor and consumer practices,
- A critical review of health and environmental effects and exposure information, such as
 - ESHA Level 1 to 3, as appropriate,
 - ESHA Level 4,
 - ESHA Level 5,
 - *Solutia Workplace Permissible Exposure Guideline (SWPEG) Reviews,*
 - Health Effect Reviews, and
 - Toxicology Reviews,
- Technology Risk Reviews, and
- Allegations of health concerns of customers, employees or the public.

DSW 122340

P4.2 RISK MANAGEMENT SYSTEM

P4.2.1 Introduction	This section describes procedures to be used to accomplish the company's specific goals regarding systematic risk reduction.
P4.2.2 Approach	A systematic approach to risk management will be implemented and maintained for new products. Existing products will be managed on a case-by-case basis.
P4.2.3 Options	Risk management options, where needed, will be an integral part of the follow-up to each phase of a product risk characterization (as detailed in section 4.1, <i>ESH Information and Risk Characterization</i>).
P4.2.4 Product Labeling	All products will be appropriately labeled for hazard or risk and will conform at a minimum to pertinent governmental requirements and appropriate consensus standards (e.g. OSHA, EU, ANSI, ISO, etc.).
P4.2.5 Documented Actions	Documented risk management actions will be recorded in product files. (Examples of specific risk management actions are detailed in section P4.3, <i>Principles and Key Elements</i> .)

<DRAFT>

DSW 122341

P4.3 PRINCIPLES AND KEY ELEMENTS

P4.3.1 Introduction

This section describes procedures used to accomplish the company's specific goals regarding the principles and key elements of Product Stewardship, including

- product and process design and improvement,
- employee education,
- product use feedback,
- information provided to contract manufacturers, distributors, customers and other direct product receivers,
- information received from suppliers, and
- responsibilities involved.

P4.3.2 Product and Process Design and Improvement

R&D materials used in the laboratory will be handled under Prudent Laboratory Practices (as outlined in TSCA Section 5) or equivalent guidance.

ENV1

Pollution prevention principles (see Program 1, *Pollution Prevention*) will be included as review criteria in technology risk reviews for new and existing chemicals and will be incorporated into the ESHA, NPPD and equivalent assessments. This includes opportunities for improving energy and resource (e.g. water) efficiency of our products and processes and seeking to replace existing products with those that are more environmentally friendly, as measured by scientifically valid indices that are developed.

P4.3.3 Employee Education

Employee education in the safe handling and use of chemicals is addressed in Program 2, *Employee and Community Safety and Health*.

P4.3.4 Product Use Feedback

Employees with significant customer interaction will be trained to recognize and feed back to the company's ESH network, information about product use and misuse.

Feedback systems are appropriate to listen to stakeholders, including commercial and technical service liaisons with customers, product hotlines, poison control centers, etc.

P4.3.5 Information Provided to Contract Manufacturers

In addition to items covered in Program 7, *Outside Processors*, the company will provide guidance and information to contractor personnel on the safe handling and transportation of company products.

Continued on next page

DSW 122342

P4.3 PRINCIPLES AND KEY ELEMENTS, Continued

P4.3.6 Information Provided to Direct Product Receivers

As appropriate, the company will

- ensure that MSDSs and other appropriate safety documents are provided to all direct product receivers,
- actively involve product receivers in dialogue and outreach regarding appropriate risk characterization, management and reduction,
- work with the product receiver, when improper practices involving company products are identified, to improve the practices,
- take appropriate action, including termination of sale if necessary, to obtain adequate improvement, and
- actively seek product receiver involvement in the continuous improvement of company products and as a means of differentiating those products in the marketplace on the basis of ESH stewardship.

P4.3.7 Information Received From Suppliers

Up-to-date product information, sufficient to allow risk management decisions including, as appropriate, composition data and MSDSs, will be obtained from suppliers for all new materials.

In addition, suppliers will be engaged as necessary, in assessing environmental, safety and health impacts of raw materials, commensurate with raw material risks.

P4.3.8 Responsibilities

Product stewardship responsibilities are shared among ESH Product Stewardship staff and product stewards in each business and world area.

DSW 122343

P4.4 PRODUCT HAZARD EVALUATION

P4.4.1 Introduction	Solutia's products will not present an unreasonable risk of harm to human life or health or the environment when they are properly handled, transported or used.
P4.4.2 Responsibility	ESH Product Stewardship has the responsibility for assessing hazards, if any, of chemicals that Solutia produces or imports. This includes evaluating the adequacy of data developed to assure the safety and environmental aspects of products and intermediates produced in Solutia workplaces and shipped to Solutia customers.
P4.4.3 Safety and Environmental Compatibility Assessment	Each new chemical or proposed new use of an existing chemical will undergo a safety and environmental compatibility assessment. Established products will be periodically reviewed to assure that their characteristics have been adequately assessed and classified and that a Material Safety Data Sheet (MSDS) exists with health and safety information. Final approval of physical and health hazard assessments will be rendered by the Leader, Product Stewardship (L,PS) or designee. The L,PS will inform the Leader, Medical & Epidemiology of all assessments.
P4.4.4 Hazard Assessment	Solutia products and chemicals will be carefully evaluated for potential for human injury and environmental damage. As appropriate, ESH Product Stewardship will consider the following in performing hazard assessments: • Product and Chemical Name • CAS number (if available) • Common names and synonyms • Trade names • Molecular weight • Physical property data • Composition including known or expected impurities • Expected major areas of use and volume • Toxicity known • Expected environmental impact from manufacturing process wastes and from product use and disposal • Molecular and structural formula • Countries of production and sales
P4.4.5 Hazard Determination	The Hazard Assessment will be used to make the hazard determination required by the appropriate Hazard Communication Standard and regulations (Table I). Professional judgement will be required in defining the scope of the assessment review. Computer data bases such as MSHI.MSDSARIEL Query will be used to determine the applicable regulatory requirements for Solutia products and components of Solutia products.

Continued on next page

DSW 122344

**P4.4.6
Material Safety
Data Sheets
(MSDSs)**

Product Stewardship will update Solutia product and intermediate MSDSs when it becomes aware of significant new information. Supplier-provided MSDSs will be accepted as factual and will be used for employee training and for developing MSDSs for products containing these materials.

**P4.4.7
Other Existing
Legal
Requirements**

In addition to the MSDS effort described above, some products may also be evaluated under other applicable laws such as FIFRA, TSCA, FFDCA, CEPA, EU Dangerous Substances Directives, EU Existing Substances Regulations, etc. These may require different approaches to support regulatory approval and compliance.

Table 1

Country or Region / MSDS standard or regulation	Requirement
USA / OSHA Hazard Communication Standard (29 CFR 1910.1200)	Appendices A and B
EU / Commission Directive 93/112/EC	Annex

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.DSW 122345

Procedure PS2

Premanufacture Notification to United States Environmental Protection Agency Under The Toxic Substances Control Act

OVERVIEW

Introduction

This section describes the company's procedure for development of premanufacture notification (PMN) to the United States Environmental Protection Agency (USEPA) as required under Section 5 of the Toxic Substances Control Act (TSCA).

Requirements Abstract

A PMN is required to be submitted to USEPA for all new chemical substances at least 90 days before the substance can be manufactured for commercial purposes.

NOTE: A number of substances are exempted from these requirements including, but not limited to,

- drugs,
- food and food additives,
- pesticides,
- R&D substances,
- nonisolated intermediates, and
- substances on the TSCA inventory.

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For Further Information

When further information or clarification is required, you may contact the following:

ISSUE OWNER & TECHNICAL CONTACT:

Jeffrey D. Felder, Product Stewardship, F2EC
(314)674-4489

Procedure Approval

This procedure was approved by

Continued on next page

DSW 122346

CP4-1

COMPANY CONFIDENTIAL

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OVERVIEW, Continued

In This Procedure

The following areas are covered in this procedure:

Areas	See Page
CP4.1 PMN REQUIREMENTS	CP4-3
CP4.2 PMN PROCESS	CP4-5
CP4.3 FOLLOWUP ON A PMN	CP4-8
CP4.4 RESPONSIBILITIES	CP4-10

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DSN 122342

CP4-2

COMPANY CONFIDENTIAL

CP4.1 PMN REQUIREMENTS

CP4.1.1 Introduction	This section describes the various requirements for the development of premanufacture notifications.
CP4.1.2 PMN Determination Checks	At a very early stage of new product development, including isolated intermediates and new imports, several checks should be made to determine if a PMN will be required for the product. These checks include determining if the product is • exempt under TSCA, or • "new" under TSCA.
CP4.1.3 Exemptions	Section 2(b) of TSCA exempts broad classes of substances such as pesticides, food, food additives, mixtures and others. The PMN rule exempts • small quantities for R&D purposes, • substances for test marketing low volume and polymer manufacture, • impurities, • some byproducts, • some articles, and • nonisolated intermediates.
CP4.1.4 Exemption References	Refer to TSCA law and regulations or the company's PMN manual for details or contact • the business unit Product Stewardship Manager, or • the Leader, Product Stewardship (L,PS).
CP4.1.5 TSCA Non- Confidential Inventory	To determine if the substance is "new" under TSCA, the Product Stewardship Manager should search the TSCA nonconfidential inventory for the substance. If the substance is on the TSCA nonconfidential inventory, it is not new under TSCA definition and a PMN is not required.
CP4.1.6 TSCA Confidential Inventory	If the substance in question is not on the nonconfidential inventory, the confidential inventory must be searched. To search the confidential inventory, a <i>Bona Fide Intent to Manufacture</i> (BIM) notice must be submitted to USEPA. A copy of the instruction for submitting a BIM can be found in 40CFR720.25. Send a copy of the BIM to the L,PS for corporate recordkeeping purposes.
CP4.1.7 New Substances	If USEPA reports that the substance is not on the confidential inventory, then the substance is a new substance under TSCA and a PMN is required unless the material is exempt under Section 4.1.3.

Continued on next page

DSW 122348

CP4.1 PMN REQUIREMENTS, Continued

CP4.1.8 Contacts Listed

Each PMN will identify a technical contact in addition to an authorized official. The technical contact will typically be

- a commercial development representative,
- an R&D contact, or
- the business unit's Product Stewardship Manager.

CP4.1.9 Submission Timing

The PMN must be submitted to USEPA at least 90 days before the product can be manufactured for commercial purposes, including test marketing.

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DSW 122349

CP4.2 PMN PROCESS

CP4.2.1 Introduction

This section details the process necessary to develop a PMN.

CP4.2.2 Procedure Details

The PMN process should be integrated into the development scheme of a new project. In most cases, the PMN development will be initiated during the earliest phases of commercialization of a product.

CP4.2.3 Initiating a PMN

The following table lists the steps necessary to initiate a PMN.

Step	Action
1	Business unit Product Stewardship Manager submits an ESHA document, if one has not already been submitted, to the Toxicology Group. NOTE: See ESHA Procedures.
2	Business unit Product Stewardship Manager drafts a PMN using USEPA form.
3	Business unit Product Stewardship Manager calls a scoping meeting, consisting of, at a minimum, • the business unit contact/Product Stewardship Manager, • the business unit technical contact, • an aquatic toxicologist, • a mammalian toxicologist, and • the L.P.S. Copies of the PMN drafts, along with approved ESHA for the substance are supplied to the participants in advance. NOTE: The scoping meeting can be bypassed at the discretion of the business unit Product Stewardship Manager.
4	A scoping meeting is held with decisions made by the business unit Product Stewardship Manager regarding • the scope and detail of optional information to supply, • the need for an optional risk analysis and, if desired, assignments to toxicology, industrial hygiene, etc., and • the need for an ESHA before PMN submission. NOTE: It is appropriate at this stage of product development to initiate a Material Safety Data Sheet (MSDS) and a TF-837 for label and freight classification.

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DSW 122350

CP4.2 PMN PROCESS, Continued

CP4.2.4 Finalizing a PMN

The following table lists the steps involved in finalizing a PMN:

Step	Responsible Person(s)	Action
1	Business unit Product Stewardship Manager	Prepares final draft using input from the scoping meeting as well as followup input from Toxicology.
2	Business unit Product Stewardship Manager with patent department representative	• Reviews final draft for confidential information, and • Develops appropriate confidentiality claims with substantiation, where necessary.
3	Scoping meeting participants	Circulate final draft for review.
4	Business unit Product Stewardship Manager	Calls meeting for final comments/approvals, if needed.

CP4.2.5 PMN Information Required

The required PMN information falls into the category of either General Information or Risk Assessment Data. USEPA will accept additional data. To assist USEPA with their assessment, in many cases it is desirable to submit

- risk analysis,
- pollution prevention data, or
- other information.

Since the company performs a risk analysis on all new products via the *Commitment Manual* and the ESHA procedures, the information is available for this purpose.

CP4.2.6 PMN Information References

Final rules detailing PMN requirements can be found in 40CFR720. All PMNs must be submitted on USEPA Form 7710-25 (5/95). Copies of this form and instructions for its use are available from the LPS.

CP4.2.7 PMN Submissions

After final review/approval, the business unit Product Stewardship Manager forwards the PMN to the business unit Director of Technology (authorized official) for submission.

The submission will include both confidential and nonconfidential PMNs using applicable USEPA requirements. A copy of each will be provided to the LPS for recordkeeping purposes.

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DSW 122351

CP4.2 PMN PROCESS, Continued

CP4.2.8 PMN Fees

A \$2500 fee, sent to a separate USEPA office from where the PMN is sent, is required for all PMNs. Exceptions are

- intermediates filed at the same time as the final product (\$1,000 fee), or
- exemptions (zero cost).

A unique six-digit TS-user fee identification must

- be assigned to each PMN, and
 - appear on the check.
-

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CP4.3 FOLLOWUP ON A PMN

CP4.3.1 Introduction

This section describes how PMN followup is handled.

CP4.3.2 USEPA Followup

The USEPA may

- extend the review period by an additional 90 days,
 - ask for more information under Section 5(e),
 - issue a jointly agreed upon consent order which can include restrictions on manufacture or use in lieu of information, and
 - restrict manufacture or use under Section 5(f).
-

CP4.3.3 Company Followup

The company may

- request USEPA to stop the clock on PMN reviews at any time during the review period, and
 - commence manufacturing at any time after the USEPA review period expires, subject to any 5(e) or 5(f) restrictions.
-

CP4.3.4 Notice of Commence to Manufacture (NCM)

A *Notice of Commence to Manufacture* (NCM) must be submitted to USEPA within 30 days of the first manufacture for commercial purposes.

The information to be included in the notice is detailed in 40CFR720.

Confidential claims must be made again at this time, as appropriate.

Send a copy of the NCM to the LPS for corporate recordkeeping purposes.

Once an NCM is filed with the USEPA, the PMN substance is placed on the TSCA inventory.

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DSW 122353

CP4.3 FOLLOWUP ON A PMN, Continued

CP4.3.5 Phone Contact

All calls from the USEPA will be handled as follows:

Call Content	Response/Action
Non-confidential inquiries	• Discuss at time of call, or defer to obtain answer if unknown or if unsure of USEPA's authority in asking question. • Follow up with written response when deemed appropriate.
Confidential inquiries	• Discuss at discretion of technical contact if inquiry was previously discussed with USEPA or claimed confidential in the PMN. • Address all other verbal confidential inquiries by written response only.
All verbal responses	• Follow up, at technical contact's discretion, with written letter documenting conversation and indicating areas of confidentiality. • Give copy to L,PS.

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CP4.4 RESPONSIBILITIES

CP4.4.1 Introduction

This section describes responsible parties and responsibilities involved in the PMN process.

CP4.4.2 Responsible Parties and Responsibilities

The following table describes persons involved in the PMN process and their responsibilities.

Responsible Party	Responsibilities
Business Unit Product Stewardship Manager	• Determines if product is - exempt under TSCA, - on TSCA non-confidential inventory, or - on TSCA confidential inventory. • Receives information regarding PMN, • Drafts a PMN, • Calls and makes decisions at scoping meetings, • Prepares and reviews PMN final drafts, • Forwards PMN to the DRM, TSCA, and • Follows up on the PMN submission.
Business Unit Director, Technology	• Serves as company's authorized official, and Submits PMNs to USEPA. • Reviews and approves all PMNs, • Serves as reference for details regarding PMNs, • Receives copies of BIMs for corporate recordkeeping, • Serves on scoping committee, • Provides PMN submission forms, • Maintains copies of PMNs submitted to USEPA, and • Receives copies of NCMs for recordkeeping.
Technical Contact (as described in Section P4.1.8)	• Receives calls from USEPA on technical matters, • Documents conversations with USEPA and forwards copies to LPS, and • Determines if written responses to USEPA conversations are necessary.

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DSW 122355

Procedure PS3

Recording Allegations of Significant Adverse Reactions Under the Toxic Substances Control Act

OVERVIEW

Introduction

This section describes the company's procedure for handling the Recordkeeping Requirements of the United States Environmental Protection Agency's (USEPA) Final Rule Under Section 8(c) of the Toxic Substances Control Act (TSCA). Similar requirements in other nations are referenced.

Abstract of 40 CFR Part 717

Manufacturers and certain processors of chemical substances and mixtures must maintain records of significant adverse reactions to health or the environment alleged to have been caused by a substance, mixture, article, process, effluent or emission. These records are subject to USEPA inspection. (Reference: 40 CFR Part 717 - 48 FR 38178 - August 22, 1983)

NOTE: The Rule does not apply to pesticides, food, food additives, drugs or cosmetics when manufactured, processed or distributed only for these uses.

For Further Information

When further information or clarification is required, you may contact the following:

ISSUE OWNER & TECHNICAL CONTACT
Jeffrey D. Felder, Product Stewardship, E2EC
(314)674-4489

Procedure Approval

This procedure was revised and approved by

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DSW 122356

CP3-1

COMPANY CONFIDENTIAL

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OVERVIEW, Continued

In This Procedure

The following procedures are covered in this section:

Procedures	See Page
CP3.1 ADVERSE REACTION ALLEGATIONS HANDLING	CP3-3
CP3.2 HEALTH AND ENVIRONMENTAL ALLEGATIONS HANDLING	CP3-6
CP3.3 LITIGATION CLAIMS	CP3-9
APPENDIX CP3.A - Reporting Form for Allegations of Significant Adverse Reaction to Health	CP3-10
APPENDIX CP3.B - Flow Diagram of Solutia Procedure for Handling Allegations Subject to TSCA 8(c)	CP3-11
APPENDIX CP3.C - TSCA 8(c) Review Procedure of Litigation Claims	CP3-12

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DSW 122357

CP3-2

COMPANY CONFIDENTIAL

CP3.1 ADVERSE REACTION ALLEGATIONS HANDLING

CP3.1.1 Introduction

This section describes the procedure for handling allegations of adverse reactions under TSCA.

CP3.1.2 Definitions

The table below defines terms used in this procedure. (See Section 717.3 of the Rule for a complete listing of definitions.)

Term	Definition
Allegation	A statement made without formal proof or regard for evidence. NOTE: In this instance, the allegation infers that a chemical substance or mixture has caused a significant adverse reaction to health or the environment.
Known human effect	A commonly recognized human health effect of a particular substance or mixture described in: • scientific articles or publications abstracted in standard reference sources, or • the firm's product labeling or material safety data sheets (MSDS). NOTE: An effect is not a "known human effect" if it meets any of the following criteria: • significantly more severe toxic effect than previously described, • manifestation of a toxic effect after a significantly shorter exposure period or exposure level than described, or • manifestation of a toxic effect by an exposure route different from that described.
Significant adverse reaction	Reactions that may indicate • a substantial impairment of normal activities, or • long lasting or irreversible damage to health or the environment.

CP3.1.3 Rule Exemptions

The following are exemptions from the Rule that relate to the company:

- Activities involving solely mining or other extractive functions,
- Significant adverse reactions that are known human effects, and
- Significant adverse reactions to the environment directly attributable to incidents of environmental contamination that have been reported to the United States federal government under any applicable authority.

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DSW 122358

CP3.1 ADVERSE REACTION ALLEGATIONS HANDLING, Continued

CP3.1.4 Allegation Receptors

Because allegations can come from a variety of sources including employees, contractors, customers and neighbors, the company's receiving network must be broad. Initial receptors include

- plant, laboratory and other company location supervision,
- plant and other company location managers,
- the company's medical community at all locations,
- the business unit ESH liaisons,
- sales and marketing contacts,
- switchboard operators at all locations, and
- environmental network contacts.

CP3.1.5 Key Contacts

Each domestic plant or other company-designated domestic location or laboratory will have at least one identified and trained TSCA Section 8(c) key contact. Key contacts for the general offices will be

- the business unit Product Stewardship liaison, and
Leader, Product Stewardship (L, PS)
- the director of Product Stewardship (DPS), or designee.

The business unit Product Stewardship liaison has the responsibility under this procedure for free-standing divisions and subsidiaries of which the company

- owns 50 percent or more of the voting stock or other equity rights, or
- has power to control the management and policies of the firm.

CP3.1.6 Recordkeeping

The TSCA Section 8(c) file will be kept in the Office of the Director, Product Stewardship. The file structure will conform to requirements of Section 717.15 of the Rule.

CP3.1.7 Record Retention

Files pertaining to adverse reactions to health of employees will be retained for 30 years.

Files pertaining to other adverse reactions will be maintained for five years.

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DSW 122359

CP3.1 ADVERSE REACTION ALLEGATIONS HANDLING, Continued

CP3.1.8 Communications

Disposition of written allegations will be communicated back to the individual making the allegation. The key contact will facilitate the communication.

A summary of the TSCA Section 8(c) procedure will be periodically

- communicated to all affected employees, and
- updated as appropriate.

CP3.1.9 Recording Oral Allegations

Solutia Form 8(c)A (shown as Appendix CP3.A) is available to be used for all employee related oral allegations of health effects and can be used at the discretion of the business unit Product Stewardship Liaison for external oral health allegations.

All key contacts must note the date of receipt on a written allegation.

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CP3.2 HEALTH AND ENVIRONMENTAL ALLEGATIONS HANDLING

CP3.2.1 Introduction

This section describes the procedure for handling health or environmental allegations. This procedure is further shown on a flowchart in Appendix CP3.B.

CP3.2.2 Review and Decision Process

The company's Toxic Substances Control Act (TSCA) Section 8(c) procedure consists of a four-step review and decision process as detailed in the following table.

NOTE: A determination that an allegation is not recordable under the Rule can be made at any step in the process.

Step	Action		
1	Initial receptors will transfer to the key contact at their location • persons making oral allegations, and • written allegations. Decisions regarding the disposition of allegations are made according to the following table:		
	If ...	and ...	then ...
	the initial receptors are members of either the Occupational Medicine group (physicians) or the business unit Product Stewardship Liaison	the allegation is oral	these individuals may judge at Step One if the allegation is excluded.
	the decision is made that the allegation is excluded	the allegation is oral or written	it will not be acted on under this procedure.
	the allegation is not excluded	the allegation is oral	the key contact will inform the alleger that such allegation may be recordable under the Rule, and request that the alleger submit a written and signed allegation to the key contact.

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DSW 122361

CP3.2 HEALTH AND ENVIRONMENTAL ALLEGATIONS HANDLING, Continued

CP3.2.2 Review and Decision Process (con't)

Step	Action		
2	The key contact at a location or the appropriate business unit Product Stewardship Liaison or DPS for the general offices will provide company employees with Form 8(c)A for oral allegations. The written allegations will then be reviewed by a key contact who will make a decision according to the following table:		
	If ...	and ...	then ...
	the allegation is written	the allegation is exempt from the Rule	it will be discarded.
		the allegation is not exempt	it will be sent to the appropriate business unit Product Stewardship Liaison for review.
3	The business unit Product Stewardship Liaison will review allegations received from location key contacts and general office key contacts. If the allegation is not recordable under the Rule, it will be discarded.		

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DSW 122362

CP3.2 HEALTH AND ENVIRONMENTAL ALLEGATIONS HANDLING, Continued

CP3.2.2 Review and Decision Process (con't)

Step	Action								
4	The Director, Product Stewardship (DPS), will form a committee to make decisions with respect to allegations that must be recorded under the Rule. This committee will be chaired by the DPS and consist of the appropriate members of • OM director for human effects, • Toxicologists for human effects, • Environmental scientists for environmental effects, and • Environmental Law. Step 4 decisions will be made according to the following table: <table border="1"><tr><th>If ...</th><th>then ...</th><th>and ...</th></tr><tr><td>the allegation is not recordable under the Rule</td><td>the allegation will be discarded</td><td rowspan="2">the business unit Product Stewardship Liaison will provide feedback to the location key contact.</td></tr><tr><td>the allegation is recordable under the Rule</td><td>the DPS will place the allegation and documents mandated by the Rule in the TSCA Section 8(c) file and will notify the ESH staff at Louvain-La-Neuve (LLN) and LaSalle</td></tr></table>	If ...	then ...	and ...	the allegation is not recordable under the Rule	the allegation will be discarded	the business unit Product Stewardship Liaison will provide feedback to the location key contact.	the allegation is recordable under the Rule	the DPS will place the allegation and documents mandated by the Rule in the TSCA Section 8(c) file and will notify the ESH staff at Louvain-La-Neuve (LLN) and LaSalle
If ...	then ...	and ...							
the allegation is not recordable under the Rule	the allegation will be discarded	the business unit Product Stewardship Liaison will provide feedback to the location key contact.							
the allegation is recordable under the Rule	the DPS will place the allegation and documents mandated by the Rule in the TSCA Section 8(c) file and will notify the ESH staff at Louvain-La-Neuve (LLN) and LaSalle								

CP3.2.3 Wear-Dated® Hotline

Allegations received by the Wear-Dated® hotline will be handled as follows:

Step	Action
1	Allegations received by the Wear-Dated® hotline will be documented by the phone operator on a standard form.
2	The documented call will be reviewed by the Product Stewardship Liaison for TSCA 8(c) relevance.
3	The hotline allegations that are judged by the Product Stewardship Liaison as meeting TSCA 8(c) recordkeeping requirements will be forwarded to the DPS for filing.

DSW 122363

CP3.3 LITIGATION CLAIMS

CP3.3.1 Introduction

This section describes the procedure necessary to process litigation claims.

CP3.3.2 Detailed Procedure

The steps for handling litigation claims are detailed below.

Step	Action
1	(a) Litigation complaints will be reviewed by the law department asking the following questions for relevance to TSCA 8(c) recordkeeping: • Is the claim against a Solutia product or process? • Is the product(s) in question one that is covered by TSCA, i.e., other than pesticide, herbicide, food, food additive or pharmaceutical? • Is the claim a health or environmental claim? (b) If all criteria are met, the claim will be sent to the OM director.
2	(a) Litigation claims forwarded to the law department will be reviewed by OM based on EPA's definitions of • <i>known human effects</i>, and • <i>significant adverse reactions</i> (40 CFR 717). (b) OM may need to contact the environmental scientist for assistance with environmental effects or toxicologists for assistance as to human effects. (c) Claims meeting TSCA 8(c) criteria will be forwarded to the DPS for filing. (d) Claims that do not meet this criteria will be dropped from further TSCA review of this step.
3	The DPS will request from the Law Department a copy of the complaint, abstract and answer.
4	The Law Department will forward a copy of the complaint, abstract and answer to the DPS for filing in the TSCA 8(c) file and notify the ESH staff at LLN and LaSalle. The complaint, abstract and answer will constitute the TSCA 8(c) recordable allegation and followup for all litigation filings.

CP3.3.3 Flow Diagram

A flow diagram of the TSCA 8(c) process for litigation complaints appears as Appendix CP3.C.

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DSW 122364

TO: SITE KEY CONTACT _____

Form 8(c)A 10/97

APPENDIX CP3.A

**REPORTING FORM FOR
ALLEGATIONS OF SIGNIFICANT ADVERSE REACTION TO HEALTH**

Toxic Substances Control Act, Section 8(c) 40 CFR Part 717

Name of Allegor: _____

Date: ____/____/____ (mo/date/yr)

Address: (If not employee)

Site Location: _____

Site Loc. Code: _____

(If health effect only): M___ F___ (check one)

Year of Birth: _____

Employer (if other than Solutia): _____

DESCRIPTION OF ALLEGED ADVERSE HEALTH EFFECT:

1. What is the health effect being claimed? _____

2. How long did it last? _____

3. How often have you experienced effect? _____

4. In what way did it affect your normal activities? _____

5. How were you exposed? _____

What substance, mixture, process or operation do you think caused the effect you described:

Signature

For company use only:

Received on: _____

By: _____

.DSW 122365

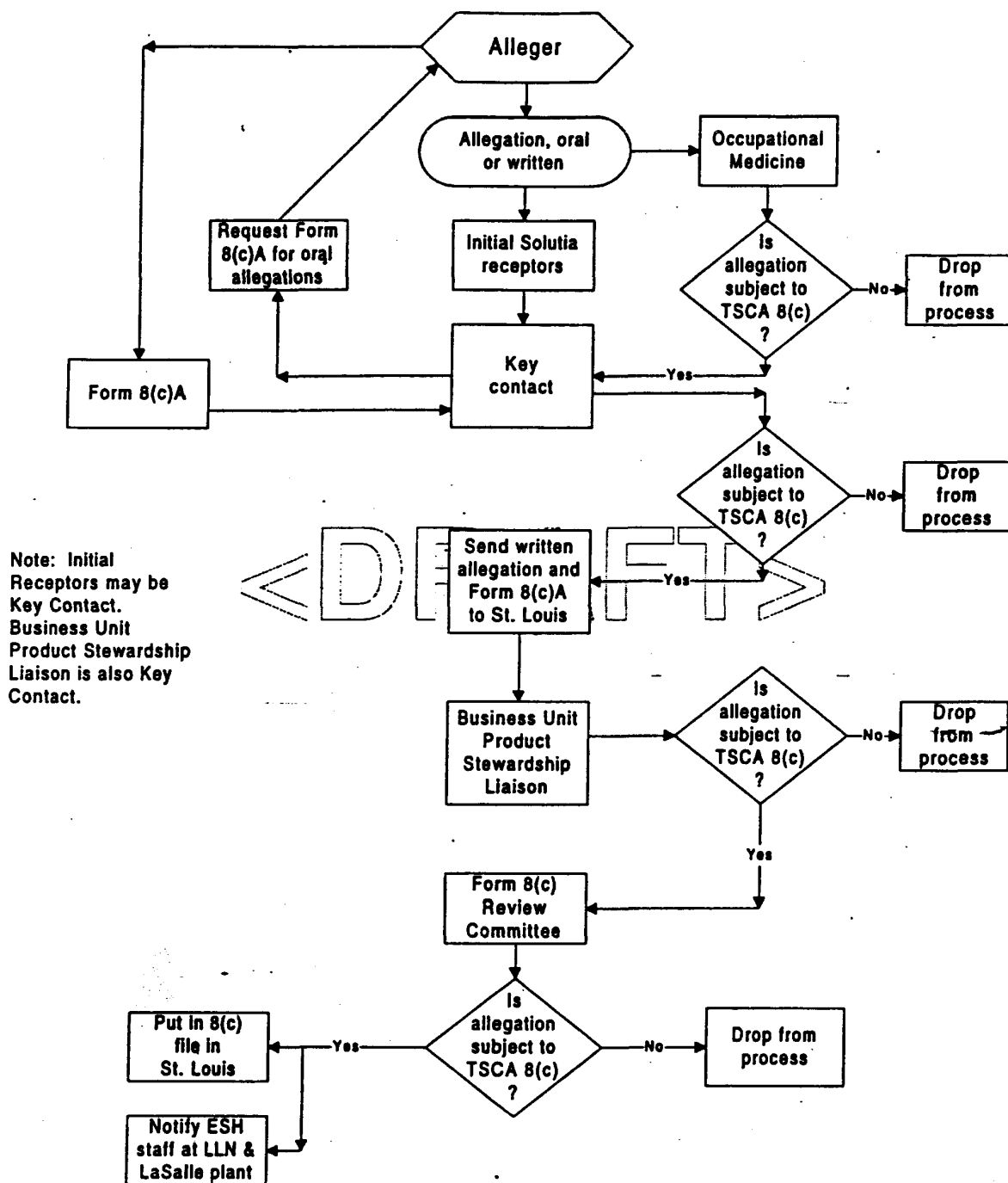
CP3-10

COMPANY CONFIDENTIAL

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APPENDIX CP3.B

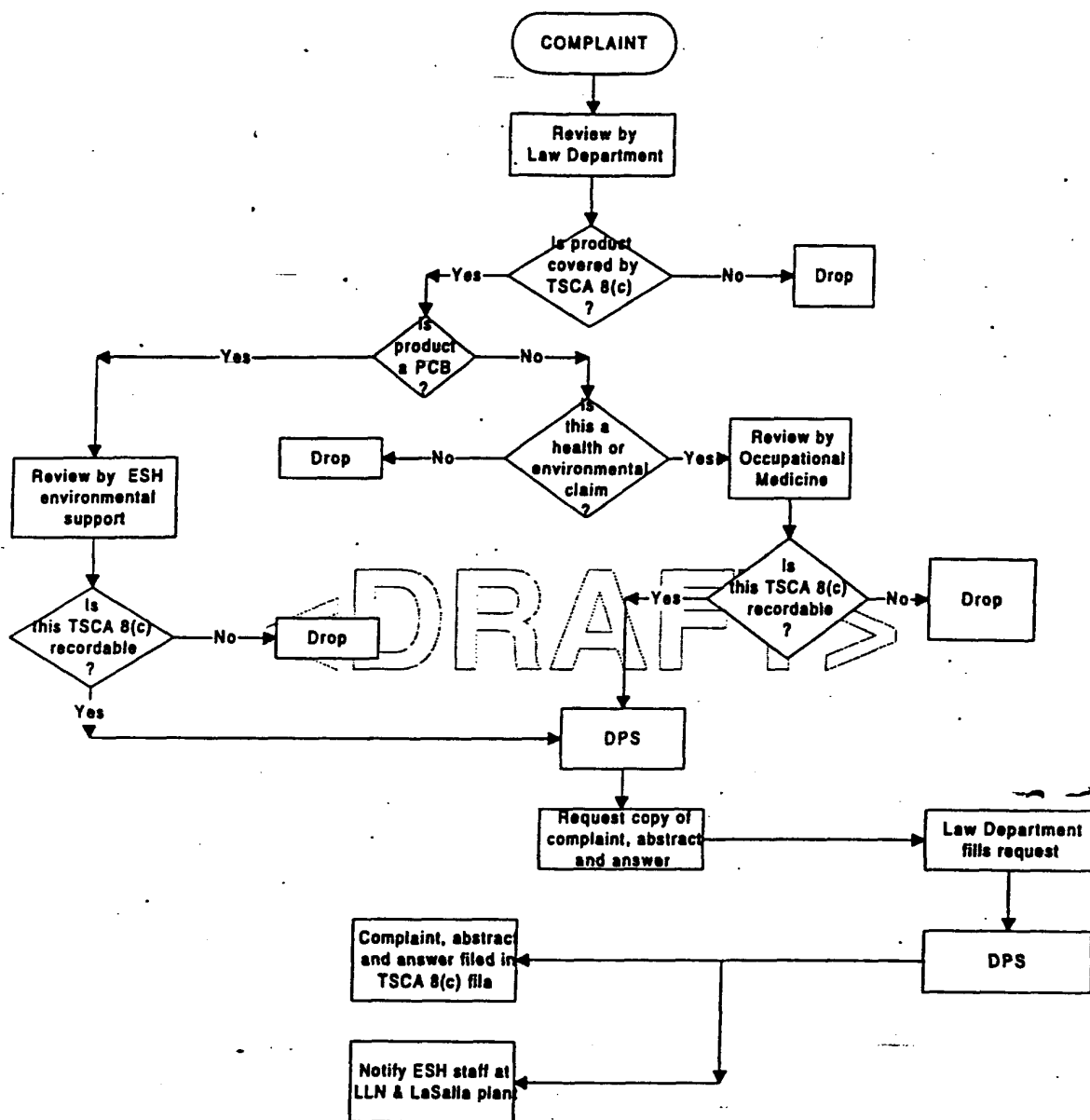
Flow Diagram of Solutia Procedure for Handling Allegations Subject to TSCA 8 (c)



DSW 122366

APPENDIX CP3.C

TSCA 8 (c) Review Procedure of Litigation Claims



DSW 122367

Procedure PS4

Transmittal to the United States Environmental Protection Agency of Substantial Risk Information Under The Toxic Substances Control Act

OVERVIEW

Introduction	This section describes the company's procedure for handling the reporting of information to the United States Environmental Protection Agency (USEPA) under the 8(e) substantial risk section of the Toxic Substances Control Act (TSCA). Similar requirements that may exist in other nations are referenced.
Abstract of TSCA 8(e) Requirements	TSCA Section 8(e) requires that the EPA be immediately informed of any person (company) who • manufactures, processes or distributes in commerce a chemical substance or mixture, and • obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment.
For Further Information	When further information or clarification is required, you may contact the following: ISSUE OWNER & TECHNICAL CONTACT Jeffrey D. Felder, Product Stewardship, F2EC (314)674-4489
Procedure Approval	The content of this procedure was approved by

DSW 122368

CP2-1

COMPANY CONFIDENTIAL

WATER_PCB-SD0000021348

CP2.1 DETAILS

CP2.1.1 Introduction	This section gives details on the company's method for handling the reporting of information to the USEPA under TSCA 8(e) and for transmitting information to other world areas that may now or in the future have similar requirements.
CP2.1.2 Reporting Responsibility	The requirements of Section 8(e) of the TSCA apply to "...any person who manufactures, processes or distributes in commerce." It is the company's position that the "person" who engages in the commercial activity is only the business organization, whether a sole proprietorship, corporation, partnership or association.
CP2.1.3 Designated Company TSCA 8(e) Individuals	Company organizations that might receive TSCA 8(e) information will have a designated individual to whom such information shall be communicated. At least annually, the Leader, Product Stewardship, will publish a list of the designated individuals.
CP2.1.4 Employee Notification of 8(e)	All exempt company employees throughout the world and others so designated by their organizational unit (plant nurses, contract physicians, scientists and engineers, etc.) within organizations that might receive or have access to TSCA 8(e) information, shall • be informed of the provisions of Section 8(e), and • be reminded annually of 8(e) requirements. Records documenting the information communication will be maintained by the Leader, Product Stewardship.
CP2.1.5 Information Transmittal Chain	Information of the type given in the requirements abstract and detailed by EPA in their TSCA Section 8(e) Reporting Guide dated June 1991, should follow the following information transmittal chain: • Employee submits information to supervisor, • Supervisor immediately relays information to the location or department manager, whichever is applicable, • Location or department manager transmits information to the proper designated individual in the organization, and • Designated individual transmits information directly to the Leader, Product Stewardship.
CP2.1.6 Timing of Information Flow	It is imperative that the flow of information through this transmittal chain be rapid. In the event of non-availability of a member of the communication network at the time information is first obtained, such member should be bypassed in the interest of speed.

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DSW 122369

CP2.1 DETAILS, Continued

CP2.1.7 Records of Information

All individuals involved in submission of substantial risk information to the Leader, Product Stewardship should keep a record of date of receipt and pertinent identifying details.

CP2.1.8 8(e) Committee

The designated official 8(e) committee will make decisions with respect to information that must be reported to the EPA under Section 8(e) of the TSCA. This committee will be comprised of the following:

- the Senior Medical Officer,
 - Lead, Product Stewardship Risk Assessment & Risk Management,
 - Environmental Counsel,
 - Leader, Product Stewardship,
 - the appropriate business unit ESH Business Liaison and/or Product Stewardship Manager, and
 - Additional ad hoc members may be asked to participate as circumstances may require.
-

CP2.1.9 Committee Decisions

Appropriate senior management will be informed of committee decisions.

In the event that a committee decision is not unanimous, the next appropriate level of management shall be consulted and the matter will be resolved at the highest level, if necessary.

Minutes of the meeting will be retained by the Leader, Product Stewardship who will arrange for notification of action to the submitter.

In the event that the committee decides information must be reported to EPA, ESH staff at Louvain-La-Neuve and LaSalle plant will also be informed so that they may comply with similar requirements that may exist in their world areas. The Leader, Product Stewardship will make notifications that may be required by other world areas.

CP2.1 DETAILS, Continued

CP2.1.10 Employee Notification of Committee Action

Information submitted by employees will be handled according to the following table:

If...	and...	then...
An employee submits information	the information is submitted through company channels	the employee will be notified of action taken by the 8(e) committee and the reasons for such action.
An employee submits information directly to the EPA without the company's prior knowledge	the company has evaluated and determined the information is not reportable under 8(e)	the company should review the situation to determine what action, if any, it should take with the EPA.

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CP2-4

COMPANY CONFIDENTIAL

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Procedure PS5

Transmittal of Toxicology and Health-Related Data To United States Regulatory Agencies

OVERVIEW

**CP6.1
Introduction**

This section describes the policy and procedure for supplying health-related information to regulatory agencies.

**CP6.2
Policy**

Health-related information should be submitted through ESH Stewardship.

**CP6.3
Test Data
Submission**

All toxicology or health-related data will be reviewed with ESH Stewardship prior to submission to any regulatory agency.

**CP6.4
Human Health
Effects Data**

If the submission include data on human health effects, it is preferable that the information be submitted to the regulatory agency by the ESH Toxicology Team.

**CP6.5
Human Health
Effects Data**

The letter of transmittal for any toxicology or health-related data must include a list of the materials being transmitted, including sufficient bibliographic information for subsequent retrieval of the original data.

Any such information transmitted must be recorded and the copy of the final submission retained by both

- the Leader, Product Stewardship, and
 - the involved business unit.
-

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DSW 122372

Transmittal of Toxicology and Health-Related Data to United States Regulatory Agencies, Continued

CP6.6 Regulatory Agency Agreements

Agreements with a regulatory agency that commit the company to the future transmittal of toxicology or health-related data must

- be reviewed and approved in advance by ESH Leader, Product Stewardship,
- have concurrence of ESH Leader, Product Stewardship regarding the feasibility of meeting commitment dates, and
- have appropriate records of such commitments maintained by both the involved business unit and ESH Leader, Product Stewardship in order to ensure future compliance with such agreements.

CP6.7 Exceptions

Any exceptions to the above must be approved by the Leader, Product Stewardship.

CP6.8 For Further Information

When further information or clarification is required, you may contact the following:

ISSUE OWNER:

Jeffrey D. Felder, Product Stewardship, F2EC
(314)674-4489

TECHNICAL CONTACT:

Frederick R. Johannsen, Product Stewardship, F2EC
(314)674-8815

CP6.9 Procedure Approval

The content of this procedure was approved by

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CP6-2

COMPANY CONFIDENTIAL

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Program PS6

Use of Animals in Research Facilities

OVERVIEW

Introduction	This program contains details of the company's policy and practices regarding the use of animals in research facilities.
Policy	The company will ensure that all animals used on its behalf in its research programs • are involved in projects of importance to society, and • receive humane and professionally competent care and treatment.
For More Information	When further information or clarification is required, you may contact the following: <u>ISSUE OWNER:</u> Frederick R. Johannsen, ESH, F2EC (314) 674-8815.
Program Approval	The content of this program was approved by <DRAFT>

DSW 122374

P15.1 DETAILS

P15.1.1 Introduction

This section describes the details of the company's practices regarding the use of animals in contract research facilities.

P15.1.2 Background

The company

- develops industrial products that are used to better the quality of human life throughout the world, and
 - works to ensure that these products
 - provide valuable benefits to society, and
 - are safe to use.
-

P15.1.3 Need for Use of Laboratory Animals

In conducting research to ensure product efficacy and safety, company scientists use a variety of new technologies, such as

- computer models,
- cell culture systems, and
- other processes.

These technologies are used to

- identify effective products early in the process, and
- detect potential health problems or undesirable side effects.

These systems are limited, however, because they do not fully represent the complex processes of the human body. For this reason, product research and evaluation requires the use of laboratory animals.

P15.1.4 Information Requirement

The company requires all scientists, technicians and managers associated with animal research programs to be fully cognizant and supportive of the specifics and spirit of this chapter.

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DSW 122375

P15.1 DETAILS, Continued

P15.1.5 Program Supervision

The facilities contracted to support company animal research are

- directed and monitored by an attending doctor of veterinary medicine, and
- fully accredited by the American Association for the Accreditation of Laboratory Animal Care (AAALAC).

P15.1.6 Research Animals Used

Since rodents account for over 90% of all research subjects, the vast majority of animals used are rabbits, rats and mice. The remainder includes dogs, pigs, sheep, cattle, goats and occasionally monkeys.

NOTE: The company does not contract with laboratories that buy animals from pounds or shelters.

P15.1.7 Animal Use Protocol

Since the company's goal is to give the highest consideration to the well-being of all animals used in research, it requires that contract laboratories follow these steps:

STEP	ACTION
1	Assign all company research animals to a specific protocol under the direction of a principal investigator.
2	Review each protocol according to procedures prescribed by governmental regulations and adhered to by the ACUC. NOTE: This must be done before research can commence.
3	Review and approve each protocol by an attending veterinarian and the ACUC.
4	Maintain records of research use and routine care for each animal.

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DSW 122376

P15.1 DETAILS, Continued

P15.1.8 Research Facilities

The company requires that its contractors conduct all animal research in modern, well-maintained facilities that meet or exceed all regulatory standards.

P15.1.9 Information Requests

General information on the company's policy and procedures regarding animals used in research may be requested from Solutia ESH Communications, 10300 Olive Boulevard, P.O. Box 66760, St. Louis, Missouri 63166-6760. The telephone number is (314) 674-8552.

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MEDICINE

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DSW 122379

**CROSS-REFERENCE: COMMITMENTS MANUAL
AND RESPONSIBLE CARE(R)**

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RESPONSIBLE CARE

DSW 122381



RESPONSIBLE CARE®
A PUBLIC COMMITMENT

GUIDING PRINCIPLES

As a member of the Chemical Manufacturers Association, this company is committed to support a continuing effort to improve the industry's responsible management of chemicals. We pledge to manage our business according to these principles:

- To recognize and respond to community concerns about chemicals and our operations.
- To develop and produce chemicals that can be manufactured, transported, used and disposed of safely.
- To make health, safety and environmental considerations a priority in our planning for all existing and new products and processes.
- To report promptly to officials, employees, customers and the public, information on chemical-related health or environmental hazards and to recommend protective measures.
- To counsel customers on the safe use, transportation and disposal of chemical products.
- To operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public.
- To extend knowledge by conducting or supporting research on the health, safety and environmental effects of our products, processes and waste materials.
- To work with others to resolve problems created by past handling and disposal of hazardous substances.
- To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.
- To promote the principles and practices of Responsible Care® by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of chemicals.



RESPONSIBLE CARE®
A PUBLIC COMMITMENT

10 Elements of Responsible Care®

Guiding Principles

These statements of the philosophy of Responsible Care® outline each CMA member and Partner's commitment to environmental, health, and safety responsibility in managing chemicals. Members and Partners pledge to manage their businesses according to these principles.

Codes of Management Practices

At the heart of the Responsible Care® initiative are the six codes of management practices. The Codes focus on management practices in specific areas of chemical operations. Members and Partners must make continuous progress in attaining the goals of each Code.

The Community Awareness and Emergency Response (CAER) Code promotes emergency response planning and calls for ongoing dialogue with local communities.

The Pollution Prevention Code commits industry to the safe management and reduction of wastes.

The Process Safety Code is designed to prevent fires, explosions, and accidental chemical releases.

The Distribution Code focuses on reducing employee and public risks from the shipment of chemicals and applies to the transportation, storage, handling, transfer and repackaging of chemicals.

The Employee Health and Safety Code protects employees and visitors at company sites.

The Product Stewardship Code makes health, safety and environmental protection an integral part of designing, manufacturing, marketing, distributing, using, recycling and disposal of products.

Public Advisory Panel

A group of environmental, health and safety thought leaders assists the industry in identifying and developing programs and actions that are responsive to public concerns.

Self-Evaluations

Members and Partners submit reports annually on their progress in implementing each of the Codes. These self-evaluations provide a measure of company progress and are a valuable management tool for CMA and individual companies in directing assistance efforts.

Measures of Performance

Recognizing the need for measurement that goes beyond self-evaluations, performance measures are being developed for each of the Codes. Through these measures, the industry and the public will gain a better appreciation for the progress CMA members and Partners are making in carrying out Responsible Care®.

Management Systems Verification

The Management Systems Verification process assists members and Partners in their management and implementation of Responsible Care ®. The process provides participating companies with an external view of the effectiveness of their management systems for carrying out Responsible Care® and helps demonstrate the integrity of the initiative to key audiences.

Executive Leadership Groups

Senior level support for Responsible Care® continues to be an essential ingredient of the initiative's success. Regular regional meetings provide a forum for senior executives to share experiences and take action on advancing the implementation of Responsible Care®.

Mutual Assistance

Direct company-to-company mutual assistance has surfaced as one of the most effective methods for advancing Responsible Care®. Members and Partners at the executive contact, Responsible Care® Coordinator, and practitioner levels regularly share information through the mutual assistance network, often through state chemical associations, which are vital to the success of the network.

Partnership Program

The Partnership Program provides an opportunity for those who otherwise may not be eligible for membership in CMA to participate directly in the Responsible Care® initiative. Companies that take ownership or possession of chemicals and chemical-related associations are eligible for membership in the Responsible Care® Partnership program.

Obligation of Membership

CMA Bylaws obligate member companies to participate in Responsible Care® as defined by the Board. This includes ascribing to the Guiding Principles, participating in the development of the initiative and making good faith efforts to implement the program elements of the Responsible Care® initiative.



RESPONSIBLE CARE®
A PUBLIC COMMITMENT

Community Awareness and Emergency Response Code of Management Practices

Purpose:

The goal of the Community Awareness and Emergency Response (CAER) Code of Management Practices is to assure emergency preparedness and to foster community right-to-know. It demands a commitment to openness and community dialogue. The code has two major components: first, to assure that member facilities that manufacture, process, use, distribute or store hazardous materials initiate and maintain a community outreach program to openly communicate relevant, useful information responsive to the public's questions and concerns about safety, health, and the environment; and second, to help protect employees and communities by assuring that each facility has an emergency response program to respond rapidly and effectively to emergencies.

The community outreach component will communicate program activities and performance under all codes of management practices and will promote an open, ongoing dialogue with employees and the community. Information should be provided about such activities as waste minimization, emission reduction, health effects of chemicals, and efforts to ensure the safe transport of chemicals.

The CAER Code of Management Practices is supported by, and will build on, CMA's CAER process. CAER supports the community's right to know about chemical industry operations and their effect on safety, health, and the environment. CAER originally was a voluntary initiative focused on emergency response issues. The new CAER Code of Management Practices broadens the facility-community dialogue to cover the full range of safety, health and environmental issues.

Relationship to Guiding Principles:

The Code helps achieve several of the Responsible Care(r) Guiding Principles:

- To recognize and respond to community concerns about chemicals and our operations.
- To report promptly to officials, employees, customers, and the public, information on chemical-related health or environmental hazards and recommend protective measures.

- To participate with government and others in creating responsible laws, regulations, and standards to safeguard the community, workplace and environment.
- To promote the principles and practices of Responsible Care(r) by sharing experiences and offering assistance to others who produce, handle, use, transport, or dispose of chemicals.

Management Practices:

A. Community Awareness and Outreach

Member facilities that manufacture, process, use, distribute or store hazardous materials shall have a community outreach program that includes:

For Employees:

1. An ongoing assessment of employee questions and concerns about the facility.
2. Communications training for key facility and company personnel who communicate with employees and the public concerning safety, health, and environmental issues.
3. Education of employees about the facility's emergency response plan and safety, health, and environmental programs.
4. An ongoing dialogue with employees to respond to their questions and concerns and involve them in community outreach efforts.
5. A regular evaluation of the effectiveness of the ongoing employee communications efforts.

For Community:

6. An ongoing assessment of community questions and concerns about the facility.
7. An outreach program to educate responders, government officials, the media, other businesses and the community about the facility's emergency response program and risks to the community associated with the facility.
8. A continuing dialogue with local citizens to respond to questions and concerns about safety, health, and the environment, and to address other issues of interest to the community.

9. A policy of openness that provides convenient ways for interested persons to become familiar with the facility, its operations, and products, and its efforts to protect safety, health, and the environment.
10. A regular evaluation of the effectiveness of the ongoing community communications efforts.

B. Emergency Response and Preparedness

Member facilities that manufacture, process, use, distribute or store hazardous materials shall have an emergency response program that includes:

1. An ongoing assessment of potential risks to employees and local communities resulting from accidents or other emergencies.
2. A current, written facility emergency response plan which address, among other things, communications and the recovery needs of the community after an emergency.
3. An ongoing training program for those employees who have response or communications responsibilities in the event of an emergency.
4. Emergency exercises, at least annually, to test operability of the written emergency response plan.
5. Communication of relevant and useful emergency response planning information to the Local Emergency Planning Committee.
6. Facility tours for emergency responders to promote emergency preparedness and to provide current knowledge of facility operations.
7. Coordination of the written facility emergency response plan with the comprehensive community emergency response plan and other facilities. If no plan exists, the facility should initiate community efforts to create a plan.
8. Participation in the community emergency response planning process to develop and periodically test the comprehensive community emergency response plan developed by the Local Emergency Planning Committee.
9. Sharing of information and experience relating to emergency response planning, exercises, and the handling of incidents with other facilities in the community.



RESPONSIBLE CARE®
A PUBLIC COMMITMENT

Pollution Prevention Code of Management Practices

Purpose:

This Code is designed to achieve ongoing reductions in the amount of all contaminants and pollutants released to the air, water, and land from member company facilities. These reductions are intended to respond to public concerns with the existence of such releases, and to further increase the margin of safety for public health and the environment.

The Code is also designed to achieve ongoing reductions in the amount of wastes generated at facilities. These reductions are intended to help relieve the burden on industry and society of managing such wastes in future years.

In implementing the Code, each company should strive for annual reductions, recognizing that production rates, new operations, and other factors may result in increases. Despite these fluctuations, however, the goal is to establish a long-term, substantial downward trend in the amount of wastes generated and contaminants and pollutants released. Quantitative reduction goals will be established for giving priority to those pollutants, contaminants and wastes of highest health and environmental concern.

This code also includes practices that address the broader waste management issues beyond source reduction and other waste and release reduction efforts. Each member company must manage remaining wastes and releases in a manner that protects the environment and the health and safety of employees and the public.

This Code complements, and should be implemented in conjunction with current and future Codes of Management Practices. Key terms are defined in the Glossary, which should be consulted for assistance in interpreting the provisions of this Code.

Relationship to Guiding Principles:

Implementation of this Code helps achieve the following Guiding Principles:

- To recognize and respond to community concerns about chemicals and our operations.
- To develop and produce chemicals that can be manufactured, transported, used and disposed of safely.

- To make health, safety, and environment considerations a priority in our planning for all existing and new products and processes.
- To report promptly to officials, employees, customers and the public, information on chemical-related health or environmental hazards and to recommend protective measures.
- To operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public.
- To extend knowledge by conducting or supporting research on the health, safety, and environmental effects of our products, processes, and waste materials.
- To promote the principles and practices of Responsible Care® by sharing experiences and offering assistance to others who produce, handle, use, transport, or dispose of chemicals.
- To work with others to resolve problems created by past handling and disposal of hazardous substances.
- To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.
- To promote the principles and practices of Responsible Care® by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of chemicals.

Management Practices:

Each member company shall have a pollution prevention program which shall include:

1. A clear commitment by senior management through policy, communications, and resources, to ongoing reductions at each of the company's facilities, in releases to the air, water, and land and in the generation of wastes.
2. A quantitative inventory at each facility of wastes generated and releases to the air, water, and land, measured or estimated at the point of generation or release.
3. Evaluation, sufficient to assist in establishing reduction priorities, of the potential impact of releases on the environment and the health and safety of employees and the public.
4. Education of, and dialogue with, employees and members of the public about the inventory, impact evaluation, and risks to the community.

5. Establishment of priorities, goals and plans for waste and release reduction, taking into account both community concerns and the potential health, safety, and environmental impacts as determined under Practices 3 and 4.
6. Ongoing reduction of wastes and releases, giving preference first to source reduction, second to recycle/reuse, and third to treatment. These techniques may be used separately or in combination with one another.
7. Measurement of progress at each facility in reducing the generation of wastes and in reducing releases to the air, water, and land, by updating the quantitative inventory at least annually.
8. Ongoing dialogue with employees and members of the public regarding waste and release information, progress in achieving reductions, and future plans. This dialogue should be at a personal, face-to-face level, where possible, and should emphasize listening to others and discussing their concerns and ideas.
9. Inclusion of waste and release prevention objectives in research and in design of new or modified facilities, processes, and products.
10. An ongoing program for promotion and support of waste and release reduction by others, which may, for example, include:
 - a. Sharing of technical information and experience with customers and suppliers;
 - b. Support of efforts to develop improved waste and release reduction techniques;
 - c. Assisting in establishment of regional air monitoring networks;
 - d. Participation in efforts to develop consensus approaches to the evaluation of environmental, health, and safety impacts of releases;
 - e. Providing educational workshops and training materials;
 - f. Assisting local governments and others in establishment of waste reduction programs benefiting the general public.
11. Periodic evaluation of waste management practices associated with operations and equipment at each member company facility, taking into account community concerns and health, safety, and environmental impacts and implementation of ongoing improvements.

12. Implementation of a process for selecting, retaining, and reviewing contractors and toll manufacturers taking into account sound waste management practices that protect the environment and the health and safety of employees and the public.
13. Implementation of engineering and operating controls at each member company facility to improve prevention of and early detection of releases that may contaminate groundwater.
14. Implementation of an ongoing program for addressing past operating and waste management practices and for working with others to resolve identified problems at each active or inactive facility owned by a member company taking into account community concerns and health, safety, and environmental impacts.

Industry Trend Data:

To develop and maintain statistical industry trends, CMA will collect currently available data. Each company shall report annually to CMA, or its designated agent, for each facility:

- Releases of substances as reported under SARA Section 313; and
- Wastes generated, as defined and reported in CMA's annual waste survey.



RESPONSIBLE CARE®
A PUBLIC COMMITMENT

Process Safety Code of Management Practices

Purpose:

The Process Safety Code is designed to prevent fires, explosions and accidental chemical releases. The Code is comprised of a series of management practices that reflect this goal, with the expectation of continuous performance improvement for each management practice. The practices are based on the principle that facilities will be safe if they are designed according to sound engineering practices, built, operated and maintained properly and periodically reviewed for conformance.

Process safety is an interdisciplinary effort. Consequently, the Code is divided into the following four elements: management leadership, technology, facilities and personnel. Each element is composed of Management Practices. Individually, each Practice describes an activity or approach important to preventing fires, explosions and accidental chemical releases. Collectively, the Practices encompass process safety from the design stage through operation, maintenance and training. The scope of this Code includes manufacturing, processing, handling and on-site storage of chemicals. This Code must be implemented with full recognition of the community's interest, expectations and participation in achieving safe operations.

The process safety management program in each facility is complemented by workplace health and safety programs, as well as waste and release reduction programs which address and minimize releases and waste generation. These three programs, and others, will help assure that CMA member facilities are operated in a manner that protects the environment and the health and safety of personnel and the public.

Relationship to Guiding Principles:

The Code helps achieve several of the Responsible Care® Guiding Principles:

- To recognize and respond to community concerns about chemicals and our operations.
- To make health, safety and environmental considerations a priority in our planning for all existing and new plants and processes.

- To operate our plants and processes in a manner that protects the environment and the health and safety of our employees and the public.

Management Practices:

Each member company shall have an ongoing process safety program that includes:

Management Leadership

1. Leadership by senior management through policy, participation, communications and resource commitments in achieving continuous improvement of performance.
2. Clear accountability for performance against specific goals for continuous improvement.
3. Measurement of performance, audits for compliance and implementation of corrective actions.
4. Investigation, reporting, appropriate corrective action and follow-up of each incident that results or could have resulted in a fire, explosion or accidental chemical release.
5. Sharing of relevant safety knowledge and lessons learned from such incidents with industry, government and the community.
6. Use of the Community Awareness and Emergency Response (CAER) process to assure public comments and concerns are considered in design and implementation of the facility's process safety systems.

Technology:

7. Current, complete documentation of process design and operating parameters and procedures.
8. Current, complete documentation of information relating to the hazards of materials and process technology.
9. Periodic assessment and documentation of process hazards, and implementation of actions to minimize risks associated with chemical operations, including the possibility of human error.
10. Management of changes to chemical operations to maintain or enhance the safety originally designed into the facility.

Facilities:

11. Consideration and mitigation of the potential safety effects of expansions, modifications and new sites on the community, environment, and employees.
12. Facility design, construction and maintenance using sound engineering practices consistent with recognized codes and standards.
13. Safety reviews on all new and modified facilities during design and prior to start-up.
14. Documented maintenance and inspection programs that ensure facility integrity.
15. Sufficient layers of protection through technology, facilities and employees to prevent escalation from a single failure to a catastrophic event.
16. Provision for control of processes and equipment during emergencies resulting from natural events, utility disruptions and other external conditions.

Personnel:

17. Identification of the skills and knowledge necessary to perform each job.
18. Establishment of procedures and work practices for safe operating and maintenance activities.
19. Training for all employees to reach and maintain proficiency in safe work practices and the skills and knowledge necessary to perform their job.
20. Demonstrations and documentation of skill proficiency prior to assignment to independent work, and periodically thereafter.
21. Programs designed to assure that employees in safety critical jobs are fit for duty and are not compromised by external influences, including alcohol and drug abuse.
22. Provisions that contractors either have programs for their own employees consistent with applicable sections of this Code or be included in the member company's program, or some combination of the two.

Glossary

This Code uses key terms in a context that may be broader than their associated regulatory definitions. However, adherence to this Code does not relieve a company of the obligation to meet Federal, state and local regulatory requirements.

Process Safety - The application of management and engineering principles to prevent fires, explosions and accidental chemical releases at chemical process facilities.

Sound Engineering Practice - The application of mandatory codes and standards supplemented by the use of voluntary codes, standards and guidelines, tempered by professional judgment.

Safety Critical Jobs - Jobs, activities and tasks, if improperly performed, that have the potential to significantly increase the risk of a fire, explosion or accidental chemical release.

Accidental Chemical Release - Unplanned, sudden releases of chemicals from manufacturing, processing, handling and on-site storage facilities to the air, water or land. It does not include permitted or other releases.



RESPONSIBLE CARE®
A PUBLIC COMMITMENT

Distribution Code of Management Practices

Purpose:

The purpose of the Distribution Code of Management Practices is to reduce the risk of harm posed by the distribution of chemicals to the general public; to carrier, distributor, contractor and chemical industry employees; and to the environment. Adherence to the code will lead to continually safer chemical distribution and help member companies to:

- evaluate the risks associated with chemical distribution and methods to reduce those risks;
- meet or exceed all regulations and industry standards governing chemical distribution;
- provide emergency advice and/or assistance to people on the scene in the event of a chemical distribution emergency;
- develop new technologies and methods to improve chemical distribution safety.

The code will also promote improvements in:

- employee preparedness and awareness in preventing distribution emergencies;
- the safety performance of carriers and other providers of distribution services;
- the public's preparedness in responding to chemical distribution emergencies;
- the public's understanding of, and confidence in, industry efforts to improve chemical distribution safety.

The Distribution Code of Management Practices applies to all modes of transportation (highway, rail, marine, air and pipeline) and to the shipment of all chemicals, including chemical waste. The code also applies to distribution activities (storage, handling, transfer and repackaging) while chemicals are in transit between member companies and their suppliers and customers. The implementation of a number of practices of the code will vary according to the characteristics of the chemical being distributed, the mode of transportation and the type of distribution activity involved.

Relationship to Guiding Principles:

This code helps achieve several Responsible Care® Guiding Principles:

- To recognize and respond to community concerns about chemicals and our operations;
- To make health, safety and environmental considerations a priority in our planning for all existing and new products and processes;
- To counsel customers on the safe use, transportation, and disposal of chemicals;
- To operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public;
- To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment; and ???????
- To promote the principles and practices of Responsible Care® by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of chemicals.

Management Practices:

Each member company shall have an ongoing chemical distribution safety program that includes senior management commitment through policy, communications and resources to improvements in chemical distribution safety. The program should include the following elements:

1. **Risk Management**
 - 1.1 Regular evaluations of chemical distribution risks which consider the hazards of the material, the likelihood of accidents/incidents and the potential for human and environmental exposure from release of the material over the route of transport.
 - 1.2 Implementation of chemical distribution risk reduction measures that are appropriate to the risk level.

- 1.3 Internal reporting and investigation of chemical distribution accidents/incidents, and implementation of preventive measures.
- 2. Compliance Review and Training
 - 2.1 A process for monitoring changes and interpretations of new and existing regulations and industry standards for their applicability to the company's chemical distribution activities, and for implementing those regulations and standards.
 - 2.2 Training for all affected company employees in the proper implementation of applicable regulations and company requirements.
 - 2.3 A program for providing guidance and information to carriers, distributors and contractors who perform distribution activities for the company on the company's training and compliance requirements for the activities.
 - 2.4 Regular reviews of company employee, carrier, distributor and contractor compliance with applicable regulations and company requirements.
- 3. Carrier Safety
 - 3.1 A process for qualifying carriers of all modes and types (common, contract, private and customer controlled) that transport chemicals to and from company facilities that emphasizes carrier safety fitness and regulatory compliance, and includes regular reviews of their performance and compliance.
 - 3.2 Feedback to carriers on their safety performance and suggestions for improvement.
- 4. Handling and Storage
 - 4.1 Documented procedures for the selection and use of containers that are appropriate for the chemical being shipped, in compliance with testing and certification requirements, and free of leaks and visible defects.
 - 4.2 Documented procedures for loading chemicals at company facilities that will reduce emissions to the environment, protect personnel and provide securement of the lading during transit.
 - 4.3 Documented procedures for unloading chemicals at the company's facilities that will reduce emissions to the environment, protect personnel, and provide for safe unloading into proper storage facilities.
 - 4.4 Defined criteria for the cleaning and return of tank cars, tank trucks, marine vessels, and returnable/refillable bulk and semi-bulk containers, and for the proper disposal of cleaning residues.

- 4.5 A program for providing guidance and information to customers, distributors, and other receivers on proper procedures for unloading and storing the company's chemicals.
- 4.6 A process for selecting distributors and other facilities that store or handle the company's chemicals in transit that emphasizes safety fitness and regulatory compliance and includes regular reviews of their performance and compliance.
- 4.7 Feedback to distributors and operators of other facilities that store or handle chemicals in transit on their safety performance and suggestions for improvement.
- 5. Emergency Preparedness
 - 5.1 A process for responding to chemical distribution accident/incidents involving the company's chemicals.
 - 5.2 Documented procedures for making information about the company's chemicals in distribution available to response agencies.
 - 5.3 A program for making facilities and/or training materials available to emergency response agencies.
 - 5.4 Dialogue with state and local emergency planning organizations on the distribution and hazards of the company's chemicals to improve community preparedness to respond to chemical distribution emergencies.
 - 5.5 Dialogue with the public on their concerns about chemical distribution safety, actions taken by the industry and the company to improve the safety of chemical distribution, and the effectiveness of emergency preparedness and emergency response assistance.



RESPONSIBLE CARE®
A PUBLIC COMMITMENT

Employee Health and Safety Code of Management Practices

Purpose:

The goal of the Employee Health and Safety Code of Management Practices is to protect and promote the health and safety of people working at or visiting member company work sites.

To achieve this goal, the Code provides Management Practices designed to continuously improve work site health and safety. These practices provide a multidisciplinary means to identify and assess hazards, prevent unsafe acts and conditions, maintain and improve employee health, and foster communication on health and safety issues.

Implementation of the Employee Health and Safety Code, together with other Codes of Management Practices, can enable member companies to operate in a manner that further protects and promotes the health and safety of employees, contractors, and the public, and protects the environment.

Relationship to Guiding Principles:

Implementation of the Code helps achieve several of the Responsible Care® Guiding Principles:

To recognize and respond to community concerns about chemicals and our operations.

To make health, safety, and environmental considerations a priority in our planning for all existing and new products and processes.

To operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public.

To extend knowledge by conducting or supporting research on the health, safety, and environmental effects of our products, processes, and waste materials.

Management Practices:

Each member company shall have an ongoing occupational health and safety program that includes:

Program Management

1. Commitment by all levels of management to protecting and promoting the health and safety of people working at or visiting member company work sites, through: published policies; accountability for implementation; and provision of sufficient resources, including qualified health and safety personnel.
2. Opportunities for employees to participate in developing, implementing, and reviewing health and safety programs.
3. Provisions, including selection criteria, to confirm that on-site contractors' programs are consistent with applicable Management Practices of this Code.
4. Written, up-to-date health and safety programs and procedures appropriate to the facility.
5. Means to verify that health and safety programs and procedures are effective and that actual practices are consistent with these programs and procedures.
6. Systems for maintaining records and analyzing data to evaluate health and safety performance, determine trends, and identify areas for improvement.

Identification and Evaluation:

7. Methods to identify and evaluate potential health and safety hazards in planned or existing facilities, including facilities to be modified.
8. Exposure assessments and safety analyses to evaluate health and safety hazards to employees from processes; equipment; potentially hazardous chemical, physical, or biological agents; or other work site conditions.
9. Health assessments to determine employee medical fitness for specific job tasks.
10. Employee occupational medical surveillance programs tailored to work site hazards.

Prevention and Control:

11. Mechanisms for reviewing the design and modification of facilities and job tasks, taking into account the following hierarchy of controls: inherent safe design, material substitution, engineering controls, administrative controls, and personal protective equipment.
12. Systems to verify that health and safety equipment is properly selected, maintained, and used.
13. Preventive maintenance and housekeeping programs to maintain the safety of facilities, tools, and equipment.
14. Timely investigation of work site illnesses, injuries, and incidents; corrective actions to prevent recurrence; and evaluation of the effectiveness of corrective actions taken.
15. Security procedures and systems to control entry and exit of personnel and materials at the work site and restricted areas.
16. Provisions for emergency medical assistance for people at work sites.

Communications and Training:

17. Communication of health and safety information that is relevant to specific job tasks and the work site.
18. Health and safety training programs, including documentation of these programs, and methods to evaluate the effectiveness of both training and communications activities.

Trend Industry Data:

To identify industry trends, each company shall report to CMA, or its designated agent, occupational injuries and illnesses, as specified in CMA's Occupational Injury and Illness Reporting Program.

Relationship to Other Codes of Management Practices:

This Code complements, and should be implemented in conjunction with, current and future Codes of Management Practices, especially those elements of the CAER Code involving emergency response, the Process Safety Code involving training of employees in their job functions, and the Product Stewardship Code involving health, safety, and environmental information, and employee education and product use feedback.



RESPONSIBLE CARE®
A PUBLIC COMMITMENT

Product Stewardship Code of Management Practices

Purpose and Scope:

The purpose of the Product Stewardship Code of Management Practices is to make health, safety and environmental protection an integral part of designing, manufacturing, marketing, distributing, using, recycling and disposing of our products. The Code provides guidance as well as a means to measure continuous improvement in the practice of product stewardship.

The scope of the Code covers all stages of a product's life. Successful implementation is a shared responsibility. Everyone involved with the product has responsibilities to address society's interest in a healthy environment and in products that can be used safely. All employers are responsible for providing a safe workplace, and all who use and handle products must follow safe and environmentally sound practices.

The Code recognizes that each company must exercise independent judgment and discretion to successfully apply the Code to its products, customers and business.

Relationship to Guiding Principles:

Implementation of the Code promotes achievement of several of the Responsible Care® Guiding Principles:

To make health, safety and environmental considerations a priority in our planning for all existing and new products and processes;

To develop and produce chemicals that can be manufactured, transported, used and disposed of safely;

To extend knowledge by conducting or supporting research on the health, safety and environmental effects of our products, processes and waste materials;

To counsel customers on the safe use, transportation and disposal of chemical products;

To report promptly to officials, employees, customers and the public, information on chemical-related health or environmental hazards and to recommend protective measures;

To promote the principles and practices of Responsible Care® by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of chemicals.

Management Practices:

Each company shall have an ongoing product stewardship process that:

Management Leadership and Commitment:

1. **LEADERSHIP:** Demonstrates senior management leadership through written policy, active participation and communication.
2. **ACCOUNTABILITY and PERFORMANCE MEASUREMENT:** Establishes goals and responsibilities for implementing product stewardship throughout the organization. Measures performance against these goals.
3. **RESOURCES:** Commits resources necessary to implement and maintain product stewardship practices.

Information and Characterization:

4. **HEALTH, SAFETY and ENVIRONMENTAL INFORMATION:** Establishes and maintains information on health, safety, and environmental hazards and reasonably foreseeable exposures from new and existing products.
5. **PRODUCT RISK CHARACTERIZATION:** Characterizes new and existing products with respect to their risk using information about health, safety, and environmental hazards and reasonably foreseeable exposures. Establishes a system that initiates re-evaluation.

Risk Management:

6. **RISK-MANAGEMENT SYSTEM:** Establishes a system to identify, document, and implement health, safety and environmental risk-management actions appropriate to the product risk.
7. **PRODUCT and PROCESS DESIGN and IMPROVEMENT:** Establishes and maintains a system that makes health, safety and environmental impacts—including the use of energy and natural resources—key considerations in designing, developing and improving products and processes.

8. **EMPLOYEE EDUCATION and PRODUCT USE FEEDBACK:** Educates and trains employees, based on job function, on the proper handling, recycling, use, and disposal of products and known product uses. Implements a system that encourages employees to feed back information on new uses, identified misuses or adverse effects for use in product risk characterization.
9. **CONTRACT MANUFACTURERS:** Selects contract manufacturers who employ appropriate practices for health, safety and environmental protection for the operations under contract, or works with contract manufacturers to help them implement such practices. Provides information and guidance appropriate to the product and process risk to foster proper handling, use, recycling and disposal. Periodically reviews performance of contract manufacturers.
10. **SUPPLIERS:** Requires suppliers to provide appropriate health, safety and environmental information and guidance on their products. Factors adherence to sound health, safety, and environmental principles, such as those contained in Responsible Care®, into procurement decisions.
11. **DISTRIBUTORS:** Provides health, safety and environmental information to distributors. Commensurate with product risk, selects, works with and periodically reviews distributors to foster proper use, handling, recycling, disposal and transmittal of appropriate information to downstream users. When a company identifies improper practices involving a product, it will work with the distributor to improve those practices. If, in the company's independent judgment, improvement is not evident, then the company should take further measures -- up to and including termination of the business relationship. This Management Practice should be implemented in conjunction with the Distribution Code of Management Practices.
12. **CUSTOMERS AND OTHER DIRECT PRODUCT RECEIVERS:** Provides health, safety and environmental information to direct product receivers. Commensurate with product risk, works with them to foster proper use, handling, recycling, disposal, and transmittal of appropriate information to downstream users. When a company identifies improper practices involving a product, it will work with the product receiver to improve those practices. If, in the company's independent judgment, improvement is not evident, then the company should take further measures -- up to and including termination of product sale.

Relationship to Other Codes of Management Practices:

This code complements, and should be implemented in conjunction with, current and future Codes of Management Practices.

Environmental Safety and Health Guidelines

Monsanto

DSW 117549

Adams, L. - 1155	Cahoon, C. - 1580	Easterday, P. A. - A3NL
Allen, R. L. - 1580	Camacho, L. - 5300	Edwards, D. B. - G5NT
Anderson, C. P. - 1560	Campbell, W. J. - 02H	Edwards, R. J. - R3B
Anderson, J. D. - F2WA	Canaster, F. D. - 1880	Eley, B. W. - C2SB
Andren, I. - 5090	Carpenter, W. D. - 03E	Elias, J. - Medwy KentUK
Auxenfans, B. P. - G3SA	Caruthers, R. R. - 1087	Ellis, J. - Edmntn, AlbCAN
	Ceyanes, R. W. - 1200	Ellsworth, G. M. - 1775
Baier, M. E. - 1820/00-7	Chamberlain, D. - BrlngtnOntCan	Elmer, C. - A3NB
Balan, C. A. - 1500	Chan, S. - Hong Kong	Eltz, R. W. - GG3K
Barnett, A. G. - C2SB	Chandra, Dr. U. - BrazilCBE	English, H. B. - G5WA
Barnett, J. W. - A3ND	Chavez, A. - 5300	Ereaut, G. A. - 5020 (5)
Barrett, R. J. - 1260	Cheever, R. L. - 1060	Erndle, J. F. - G5EA
Beaver, E. R. - 1752	Choi, B. D. - 5280	ES&H Library - A3NH
Becker, R. P. - 1700	Clark, R. - Malvern PA	Evans, T. F. - A3NA
Begin, M. - CambridgeOntCA	Clarke, P. - 1260	
Belle, R. J. - G5NL	Clayton, R. A. - 5270	Farr, C. H. - A2NE
Benoit, J. P. - 5090	Clegg, G. S. - 5270	Farris, R. H. - 1870
Berendt, R. T. - E2NF	Colbert, W. F. - 1700	Fay, E. A. - 1290
Berger, R. - LaPorte, TX	Collier, C. B. - 1690	Felder, J. D. - G4WE
Bingham, J. B. - B2NA	Collier, J. R. - 1220	Ferguson, J. J. - 5000
Bisbee, J. - 1880	Condray, J. R. - A3NA	Fields, R. L. - C2NF
Bishop, D. R. - G4WA	Conner, P. R. - A3NB	Fiorelli, A. C. - 1870
Bishop, J. E. - 1900	Cook, C. W. - 5270	Fissmer, R. J. - G5EA
Blackerby, D. - 1835	Corbett, H. J. - D1D	Fitzgerald, A. F. - G4EH
Blank, T. L. - 1740	Corey, Jr. A. G. - 1775	Flynn, R. E. - 1729
Blase, W. A. - G4EM	Corley, T. L. - 1560	Folk, R. M. - EHL
Blaylock, M. E. - B3NA	Corser, M. L. - 1260	Foppe, D. R. - EHL
Board, W. J. - 1690	Crone Jr., R. F. - 1690	Ford, A. M. - U4E
Boesch, L. J. - G5NV	Crowe, W. R. - 5010	Foresman, M. R. - G4WT
Bohl, C. D. - A3NL	Curtis, H. W. - C2NK	Fort, G. E. - G4WD
Boland, R. F. - 1760	Cushing, R. J. - 1410	Franchetti, V. M. - 1870
Bourget, R. L. - 1870		Freeman, L. - 1060
Boyd, P. M. - A2NG	Dahlen, R. G. - G4EM	French, A. L. - 1729
Boyen, V. E. - A2NB	Dahlman, I. - 1580	Friedlander, B. R. - A3NA
Boyle, W. J. Jr. - 1740	Dayton, F. H. - G5WA	Fuhremann, T. W. - C2SE
Brackett, R. G. - 1825	Debus, E. E. - C2SF	Fukuchi, R. M. - 1525
Brandon, R. A. - B3NA	DeFer, W. L. - 1200	Fukier, G. B. - C2SC
Brasfield, E. N. - G5WA	Denner, D. K. - 1060	Funke, R. - Mansfield, OH
Braun, R. O. - 5090	DePagter, J. G. - 1410	
Brenner, H. R. - C2ND	Desroches, R. - 5090	Gaetan, J. - WoodstckOntCAN
Bresovec, P. - 1050	DeVet, G. - 1580	Gaffey, W. R. - A3NK
Bright, J. O. - F4WA	Dieterich, D. C. - 1150	Galloway, J. - Glen Burne MD
Brodsky, P. H. - 02A	DiGiovanni, M. P. - 1090	Ganatra, B. - 1585
Brooks, J. J. - BB2E	Di Luca, P. - 1410	Gaul, J. M. - 1560
Brouwers, J. - 5035	Dixon, W. D. - 03C	Geddes, R. - 1850
Brown, J. L. - 1060	Dowdy, S. E. - C3NK	Gibbs, M. E. - R4B
Brown, R. L. - 1850	Downes, J. E. - G4WR	Gilhousen, B. J. - E2NK
Bryant, F. J. - 1200	Driscoll, H. B. - G4NA	Gledhill, W. E. - U4G
Bucknell, R. W. - 02A	Dubleman, S. - BB5F	Graham, R. W. - Sweetwater
Burch, J. F. - 1440	Duesenberg, R. W. - D1P	Grattan, E. P. - A3SA
Burns, M. D. - B3SB	Dushney, J. P. - 1410	Gray, M. B. - 1200
Butler, D. - Paramount, CA	Dutra, G. A. - 03F	Griffin, G. H. - G4EK
Buzbee, T. D. - 1580		Grigg, R. G. - 1850
		Guarraia, L. J. - 03G

Guerra, J. - Toluca MEX	Joslin, R. H. - G4WS	Longin, P. - 5040 (2)
Guilliams, R. E. - 1200	Jurevic, E. J. - C2NJ	Lott, K. V. - 1850
		Love, J. R. - A2SJ
Hachey, G. A. - A3NL	Kaimin, J. J. - 1250	Mackie, E. J. - GSWA
Hacker, S. N. - 1690	Kayahara, Y. - 5265	MacMillan, K. A. - 5080
Haechrel, P. - 1740	Kearney, F. E. - G4WT	Madden, J. G. - 1410
Hagood, J. A. - 1200	Keffer, C. W. - C2SB	Magin, R. W. - 03C
Hammond, B. G. - B2SC	Keigler, W. - GlnBurneMD	Mahler, M. E. - 1670
Harbison, E. H. - D1T	Keliher, J. F. - G5NV	Mahoney, R. J. - D1V
Harness, R. L. - C2SB	Kennar, G. A. - 1870	Malfitano, D. M. - 1720
Hart, J. F. - 1418	Kennedy, K. H. - 1760	Malik, J. M. - BB5F
Hartlen, E. D. - 1087	Kerr, J.-Rchestr,KentENG	Malloch, C. D. - A3NA
Harvey, T. - B2SC	Kilby - J. L. - B3NA	Maniscalco, R.-BrlngtnNJ
Hathaway, C. E. - R3B	Kilkenny, J. E. - G5EK	Marchi, E. L. - 5000
Hauser, G. L.-RchsterKent	King, T. M. - 04C	Marquez, R. - 1200
Hawk, E. J. - B2NA	Klieve, J. R. - C2SB	Marschall, M. V. - 1870
Healy, C. E. - A3ND	Knight, J. E. - 1260	Martin, F. -CernayFR
Hebert, L. F. - 1670	Knoop, H. E. - 1918	Mason, R. J. - G4NO
Heininger, S. A. - D1R	Kocurkovic, J. V. - F1WG	Matteucci, V. T. - G5NR
Helms, L. T. - 1160	Koenst, J. W. - 1752	Matthews, F. B. - 1760
Helscher, T. M. - 1920	Koh, N. T. - Singapore	Matyus, D. M. - 1850
Hendrikse, E. E. -G4NC	Kraemer, C. B.-LeicesterUK	Matzner, E. A. - G5NV
Henshaw, J. L. - A3NL	Kramer, R. M. - 03A	Mauldin, G. A. - 1087
Herron, E. - GonzlaLA	Krawczyk, D. S. - 1700	McCarville, W. J. - A3NA
Higley, L. W. - E1NH	Kronenber, J. M. - C2SK	McComb, C. H. - 1090
Hill, B. J. - G4WR	Kucera, R. J. - 1260 (3)	McCombs, M. W. - 1740
Hiller, F. L. - 1080	Kulig, M. A. - 1870	McCullough, C. M. - 1850
Hirsch, J. C. - 5000	Kunes, W. R. - G5WB	McCune, L. C. - 1010
Hoard, R. S. - E2NA		McDannold, J. E. - B2SB
Hoegel, D. C. - 1290	Labanosky, J. A. - 1080	McGavock, M. - 1760
Hoogheem, T. J. - C2SD	Lafferre, T. H. - G4NU	McGrath, A. M. - B3SA
Huff, H. R. - G5WA	Lamkin, R.E.L. - G4NA	McGuire, J. N. - G4WM
Hume, J. C. - B3NA	Landholt, W. - 1087	McIntyre, E. - 1410
Hundley, C. - 1900	Lange, V. - 03A	McKee, G. L. - G4NC
Hunt, P. E. - A3NB	Lane, J. H. - 1020	McKenna, L. W. - G4NL
Hunt, W. M. - F3WA	Lange, V. J. - 03A	McMakin, J. E. - 1290
Hunter III, J. C. - G5NG	Lannert, K. P. - 04C	Meitner, P. R. - F1WE
Hwang, Y. C. 5280	LaPlante, G. L. - 5090	Mertens, M. - 1683
Hyland, J. P. - G4WT	Larsen, C. J. - 5040 (50 - No Covers)	Michalski, B. A. - 1793
	Lawton, R. P. Jr. - G5EB	Mickelson, D. D. - C2NA
Ingenthron, G. D. - C2SB	Lawyer, R. E. - 1260	Mieure, J. P. - G4WR
Irwin, G. H. - B3NA	Leach, J. - 1835	Miles, J. A. - B2ND
Iversen, T. G. - G5NV	Ledgely, L. J.-WdstckOntCAN	Miles, M. G. - C1ND
	Lemos, G. A. - 1870	Miller, K. S. - 1670
Jackson, J. B. - 5040	Lepriol, R. - Vichy, FRA	Miller, L. A. - B2SA
Jamro, E. S. - 1290	Levinskas, G. J. - A3NB	Miller, M. E. - G5NA
Janssen, E. P. - F2EA	Lewington, C. -SidneyAUS	Minarich, D. - 1815
Jansson, R. E. - G3NE	Light, D. M. - 1670	Molloy, J. W. - G4NJ
Jaworski, E. G. - AA4A	Lindemann, Jr. R. E. - C2NJ	Montague, M. J. - BB3B
Jeannot, P. M. - 1825	Lingam, S. K. - 5295	Moore, E. L. - F2WB
Jenkins, R. D. - 1250	Littlejohn, S. E. - B2ND	Morgan, F. W. - BB2E
Jervis, J. D. - 1690	Logie, I. -LeicesterUK	Morganthaler, W. H.-04B
Johannsen, F. R. - A3ND	Longfield, S. J. - 1720	Muhs, J. H. - 1010
Jones, R. N. - G5WA		
Jones, W. H. - 1700		

Mullins, M. L. - 1920
 Mullis, J. O. - 1690
 Munier, J. C. - VichyFR
 Murphy, M. J. - A3NL
 Murphy, R. J. - 1740
 Murrell, C. R. - 1155
 Musch, D. D. - 1918

Nair, R. S. - A3ND
 Navarrette, C. F. - 5050
 Nelson, K. N. - 1580
 Nisbet, J. H. - 5050
 Norlander, C. D. - G5NV
 Nurenberg, D. - 1820/0011-6

Occupational Medicine
 Director - A3NB
 Ochsner, J. - 1540
 O'Connor, G. E. - F1WF
 Oliver, T. B. - 1585
 Osborne, - G. A. - 1410

Paget, E. - 1820/007-I
 Panasiewicz, R. P. - 1500
 Paradis, L. P. - G4WS
 Parthasarathi, M - Bombay
 Patel, M. N. - 1418
 Paton, C. - 5510
 Paul, R. - Posen, IL
 Peirce, M. - 1900
 Perdue, W. S. - 1220
 Perica, K. M. - 1290
 Petersen, D. L. - 1683
 Peterson, G. L. - 1650
 Pfleiderer, R. L. - 5210
 Pier, R. G. - G5NL
 Pierle, M. A. - G4WT
 Plant Manager - 5330
 Plecia, F. H. - C2SB
 Plotnick, M. - 5090
 Politte, A. J. - 1720
 Potter, R. G. - G4NH
 Price, D. B. - G5NG
 Pridham, G. - ZEKSMalvrnPA
 Privott, W. J. - B2SA
 Proctor, S. I. - F2WK

Quick, A. J. - 1815

Rademaker, J. C. - 1050
 Ransaw, I. - 1560
 Rapko, J. N. - G5NS
 Rathmer, E. - AhausFRG
 Ratts, K. W. - 03C
 Reding, N. L. - C2NA

Redington, D. B. - A3NA
 Redmond, T. B. Jr. - 1775
 Reiners, S. D. - F3WA
 Reining, F. E. - G4NO
 Reynard, F. - AA3A
 Reynolds, R. W. - C3NA
 Rhoades, R. E. - 1630
 Rhodes, V. L. - G4WR
 Rhyne, R. H. - 1260
 Richey, W. S. - 1220
 Riek, R. F. - 1010
 Rivers, A. S. - F2EA
 Roarty, J. P. - 1290
 Robinson, E. C. - A3ND
 Robinson, S. J. - G5NA
 Rodriguez, F. - Madrid
 Rogers Jr., C. J. - 1440
 Rogers, P. E. - 03C
 Rohr, J. F. - 1150
 Rose, R. L. - LansngMI
 Roth, C. R. - A3SD
 Rozelle, G. D. - 1080
 Rusczech, R. A. - 1870
 Rutledge, L. R. - 1793
 Ryan, J. P. - G5NL

Sabet, A. S. - 1010
 Saito, S. - Tokyo JPN
 Sandberg, J. M. - 1670
 Sandfort, R. M. - 5425
 Sarwono, B. - 5325
 Saunders, L. V. J. - B3SF
 Schafbuch, J. S. - A2SF
 Schannon, M. L. - B2ND
 Schelcher, P. - CernayFRANCE
 Schneiderman, H. A. - D1W
 Schroeder, A. R. - 1900
 Schroeder, M. - 1740
 Schultz, R. G. - 04B
 Scott, M. A. - 1700
 Scott, R. M. - A2SK
 Sellev, R. F. - G5NV
 Senger, J. H. - A3NA
 Serdy, F. S. - C2SC
 Shayer, L. D. - F4EA
 Shelton, P. E. - 1630
 Sherman, Jr. H. C. - 1670
 Shimada, K. - 5270
 Short, R. D. - A3ND
 Silva, E. - 1200
 Sliney, D. L. - G4NJ
 Slocum, T. J. - B2ND
 Slowikowski, W. H. - G4NA
 Smid, M. J. - F2EC
 Smith, C. A. - 1793

Smith, P. - E2NK
 Smith, S. D. - 1740
 Solley, L. W. - 1580
 Son, M. - Incheon, Korea
 Spies, G. J. - A3NL
 Spiller, R. W. - G5NA
 S&PP - A2NB
 Starr, M. S. - 1870
 Stegen, D. W. - G4NA
 Stevens, M. W. - A3NG
 Stocker, D. C. - G5NG
 Stohr, R. A. - G5WB
 Storms, K. E. - A3NL
 Stout, L. D. - EHL
 Street, R. W. - C2SC
 Stroble, F. A. - D1F
 Stroup, M. A. - G4NO
 Suba, L. A. - C2SE
 Suk, D. - Columbia, SC
 Sumner, W. - 1580
 Sweerman, J. - Cernay, FR
 Sweets, C. A. - F4EA

Tatum, V. W. - 1585
 Tennison, S. - 5295
 Thake, D. - EHL
 Thorne, J. G. - 1729
 Thurman, C. H. - G5NT
 Tolloczko, A. W. - 5000
 Tominack, R. L. - A3NB
 Toy, H. D. - 1900
 Tuk, A. C. - 1670
 Tuley, J. L. - G5EA
 Uelner, A. F. - A3NF
 Uible, Jr., F. R. - F2EN
 Uihlein, Jr., J. J. - G5EC
 Unland, M. L. - 04B

Vaca, A. - 5300
 Vanderstall, H. - 1683
 Varnado, W. W. - G5WM
 Verfaillie, H. A. - C3SJ
 Vermeire, J. - 5280
 Vezzetti, D. M. - 1720

Waldbeser, J. H. - F2WJ
 Wallen, N. - 1835
 Walter, R. L. - A2SC
 Warborg, T. E. - 1020
 Ward, D. P. - C2SK
 Ward, P. K. - 1690
 Ward, T. J. - 1630
 Ward, W. - C. - 1630
 Wasson, R. L. - 04B

Watson, K. - MedwyKentUK
Weaver, G. K. - 1440
Weingartner, C. F. - GSEC
Weishaar, M. F. - G5WM
Welch, H. - Exac
Welter, J. P. - F3WG
Wesley, G. J. - C2SB
Wildsmith, G. - G5WB
Wiley, J. G. - 1690
Wilkens, M. P. - C3SE
Wilkinson, W. A. - R2B
Williams, A. E. - 5425
Williams, D. E. - F2EK
Williams, G. - Fisher
Williams, H. L. - G4NL
Williams, L. S. - 1825/A1E
Wilson, T. - BurlngtnOntCAN
Wind, D. R. - 1850
Winkelmann, J. R. - 1760
Withers, W. W. - C2SA
Wojick, R. B. - 1870
Wollenberger, J. B. - E1NG
Wong, C. Y. - Pasir Gudang
Woods, L. - 1250
Woods, R. L. - 1580

Yanne, E. - 1870
Young, D. A. - MelbourneAUS
Young, G. A. - G4WF

Zalba, J. - 5000
Zendejas, R. - TolucaMEX
Ziemann, T. E. - C3ND
Zurlinden, Jr., P. R. - 1010

DSW 117553

LIST 304

H.J. Corbett, D-1-D

May 22, 1989

Worldwide Environmental Guidelines

Distribution List

Following the practice of the past several years, Monsanto's six worldwide environmental guidelines have once again been revised and updated.

These guidelines have been approved by the Corporate Environmental, Safety and Health Committee and represent our "rules of the road" for environmental, safety and health programs across the corporation. While requirements vary across different units of the corporation and worldwide guidelines require some compromise to permit application to all operating units, compliance with the spirit of the guidelines is not optional. Modifications which achieve the spirit of the guideline and are more appropriate to a local condition are permitted, but not in any case where the level of protection, quality assurance or safety is less than the intent of the guideline.

As an additional aid to performance in environmental, safety and health issues -- we are including an environmental, safety and health vision for the corporation. This vision statement together with premises and indicators has been widely reviewed by operating units within and outside the U.S. It represents a vision of the company we would like to become and should be working toward. Actions taken by all employees of Monsanto should be consistent with the tone and direction of this vision. Further, where current performance does not measure up to the longer term expectations as described in the vision, the need for more aggressive improvement plans should be self-evident.

This vision statement is intended to complement the worldwide guidelines as we proceed toward achieving "great company" status in environmental, safety and health performance.

While elements of the vision and guidelines may be discussed with individuals outside the company as appropriate -- copies of the guidelines should be considered "company confidential".



H.J. Corbett

attachment

DSW 117554

MONSANTO'S VISION
ENVIRONMENTAL, SAFETY AND HEALTH PERSPECTIVE

- A company which develops and markets only products which benefit society without unacceptable risks to any group.
- A company where major environmental, safety, or health incidents do not occur.
- A company with recognized and demonstrated concern for our neighbors, our employees, and both local and worldwide environments.
- A company which is viewed by its publics, regulatory agencies, and stakeholders as responsible, open, and honest -- a constructive component of society and the communities in which we do business.
- A company which encourages outside peer review of its decision making processes and proposed actions in environmental, safety and health matters.
- A company which as a matter of policy, separates the issue of the "right thing to do" from the issue of cost or affordability.
- A company which monitors employee health on a continuing basis and investigates possible health issues affecting current and former employees.
- A company which knows first whether its products, processes, plants, or people may be causing potential problems.
- A company which maintains a continuing multimedia toxic waste minimization program emphasizing source reduction and recycle with an ultimate goal of achieving a de minimis emissions level.
- A company which achieves its ESH objectives at capital and operating costs which do not significantly impair growth and profitability.

DSW 117555

- A company which turns its exemplary practices into a competitive advantage.

PREMISES

- We will organize to achieve maximum effective results at the lowest cost.
- We will organize to assign primary execution responsibility to operating entities.
- We will organize to provide analysis, interpretation, strategic planning, oversight and quality assurance by groups which are independent of short term profit considerations.
- We will organize to provide state of the art scientific capability to ensure ESH results without the need for each entity to maintain fully proficient and complete professional skill bases.
- We will take a leadership role in a variety of industry and academic initiatives to influence public opinion, stay abreast of trends, and achieve our goal of public approval. This includes active participation with environmental groups, trade associations, professional groups and academic institutions which have goals compatible with Monsanto's objectives.

PREDICTORS AND INDICATORS OF SUCCESS IN ACHIEVING OUR VISION

- As a minimum, full compliance with all laws, regulations, and permits on a worldwide basis.
- Continuing reduction in injuries to employees and reduction of unexpected incidents and spills.
- Continuing reduction of overall waste production with emphasis on toxic and hazardous air emissions. Waste minimization at the source is preferred over waste treatment.
- Rapid approval of new products, at least equal to the best in our industry.
- Participation in the public debate on ESH issues via active membership in relevant organizations, trade associations, environmental groups, professional associations, etc.

DSW 117556

- Positive employee and community acceptance of our performance.
- Maintenance of strong relationships with Federal, State, and Regional institutions, in all countries in which we operate or do business.
- Maintenance of management skill and knowledge bases to achieve most effective legislation and regulations, interpretation and implementation of regulations.
- Maintenance of professional skill bases in toxicology, occupational medicine, epidemiology, industrial hygiene, safety and property protection, quality assurance, analytical capability, risk assessment, and others as required by future events.
- Rigid multi-discipline quality assurance review of new products, new processes, existing processes, products and facilities.

DSW 117557

EFFLUENT AND EMISSION CONTROL

Reduce pollutants in effluents and emissions from Monsanto operations to meet corporate targets, going beyond those levels either required for regulatory compliance or necessary to protect health and the environment.

PROGRAM

EFFLUENT CONTROL: Control options for both direct and indirect (i.e., to Publicly Owned Treatment Works - POTW) liquid discharges from Monsanto operations will be developed consistent with compliance dates in permits or other enforceable instruments and to meet internal Monsanto needs. Substances subject to such controls will include those listed pursuant to Section 307(a) of the U.S. Clean Water Act, those substances known to be present in proposed or promulgated effluent limitation guidelines, or other site-specific pollutants identified by the plant which appear to warrant consideration, including those reported via SARA Title III, Section 313. For ex-U.S. locations, use a site-specific list which is equivalent to the U.S. EPA lists.

For each location where any of these substances are used or produced, address the following:

1. **Regulatory compliance** — Develop specific information necessary to identify control options to ensure compliance with regulatory-driven limitations in permits or other enforceable instruments. Such information should include substance quantification profiles at reasonable levels of confidence and could include factors such as variations due to seasonal effects, product mix, hydraulic loading, production capacity, waste treatment variables, or other site-specific parameters. Timetables for this effort should be developed on a site-specific basis, consistent with needs to meet legally enforceable compliance.
2. **SARA Section 313 substances** — Conduct a site-specific substance-by-substance review of significantly reported SARA Section 313 releases (for both direct and indirect discharges) for those substances not addressed by limitations in permits or other enforceable instruments. Within the framework of the corporate waste minimization program, reduce the quantities of such releases.
3. **Water quality** — Conduct an aquatic safety assessment to determine the measurable impacts, if any, of Monsanto's effluents on receptor water quality. This should cover both direct and indirect discharges (if appropriate), with the latter impacts based on POTW effluent, where possible, including judging Monsanto's contribution to

the POTW's effluent. Details for this assessment and appropriate response actions should be developed based on individual site-specific needs.

Operating units will annually review, and adjust as necessary, the priorities and timetables for the above programs.

EMISSION CONTROL: Monsanto intends, by the end of 1992, to reduce air emissions, worldwide, by 90% for the chemicals reported on the SARA Section 313 reports for 1987. Beyond 1992, Monsanto will work toward an ultimate goal of zero emissions for these same chemicals. The baseline in the U.S. for this reduction will be the chemicals and quantities on the 1987 SARA Section 313 emissions report, with comparable programs being developed for the ex-U.S. operations. Operating units will establish and implement plans to achieve these reductions and will issue annual progress reports.

Conduct an assessment of potential human health impacts for selected routinely emitted air pollutants and develop appropriate control strategies to reduce identified potential unreasonable risk of harm to human health in surrounding communities. In addition to providing additional understanding of the potential human health impact from Monsanto plant operations, this information will facilitate Monsanto responses to regulatory proposals and future permit needs.

The list of air pollutants to be studied include: (a) those listed and regulated under Section 112 of the U.S. Clean Air Act; (b) those currently being reviewed as candidates for listing by EPA as Section 112 pollutants; (c) those for which EPA has established cancer unit risk values; (d) those contained on the International Agency for Research on Cancer (IARC) groups 1 and 2A lists; and (e) other site-specific pollutants identified by the plant which appear to warrant consideration (including those in significant quantities reportable via SARA Section 313). For ex-U.S. locations, use any local regulatory lists which are equivalent to the U.S. EPA lists.

Each Monsanto location will carry out the following program:

MONSANTO COMPANY

DSW 117558

SECTION I

EFFLUENT AND EMISSION CONTROL (continued)

1. Identify, for each air pollutant selected for review, all emission point sources (ongoing, continuous, and intermittent), as well as area and volume sources where the substances are released into the atmosphere.
2. Estimate for the selected air pollutants, their emission rates from each source.
3. Rank each of the selected air pollutants to determine their relative priorities for further evaluation using a chemical prioritization protocol established by the Monsanto Air Steering Committee which utilizes workplace exposure guides and estimated emission rates.
4. Develop work plans to complete the detailed assessment of priority 1 and major 2 pollutants by 7/1/89 (by date consistent with local needs for ex-U.S. locations). For remaining prioritized pollutants, work plans and further evaluation will be conducted within the confines of existing resources.
5. Estimate the potential maximum downwind concentration for each pollutant at receptors representative of the exposed population, utilizing appropriate dispersion modeling techniques incorporating refined quantification of emissions based upon relative priorities (i.e., ranging from point source measurements for priority 1 to best estimates for priority 4).
6. Assess the potential for human health impacts at community receptor points using the results of the dispersion analysis, and determine if there is, or is not, a potential for unreasonable risk of harm to human health.

7. Define appropriate, cost effective controls to reduce risks to acceptable levels where a potential human health concern exists and take actions to implement such reductions.

For U.S. locations, complete the first six steps above for priority 1 and major priority 2 pollutants by 7/1/89, complete step seven on a timetable consistent with local needs, and for the remaining prioritized pollutants by a date consistent with resource availabilities. For all ex-U.S. locations, complete the seven steps for all priorities by dates consistent with local needs.

GENERAL: The following program elements will be implemented as required.

1. Sample the significant emission and effluent release points of each new or modified process after startup to confirm that no pollutant, in an amount having potential to endanger health or the environment, exceeds those levels specified by the design and/or contained within any applicable permits.
2. Operating Companies will periodically report data on permit exceedances and reportable releases (including those reportable under CERCLA), with performance to be reviewed annually. During 1989, develop uniform corporate reporting criteria and obtain ESH Committee approval.

(Revised and Approved by Environmental, Safety & Health Committee April 25, 1989.)

WASTE MANAGEMENT

Design and operate facilities to minimize in waste streams the routine and accidental release of pollutants to the environment. Over the long term, work toward the ultimate goal of zero releases to all media. For wastes that remain, use waste disposal practices that achieve compliance with regulations and which achieve acceptable environmental impact, no health effects, minimum long-term liability and cost effectiveness. Continue waste management programs that establish Monsanto control of disposal and that favor alternatives to land disposal.

PROGRAM

Except as modified by item 5. below, this guideline applies to all worldwide Monsanto facilities.

1. Release Reduction

a) Routine Releases

Each operating unit will establish a program which targets multi-media reduction of releases in waste streams to the environment, establishing numerical reduction goals. Units will report progress annually.

In the selection of alternatives for pollutant release reduction from processes, the following order of preference will be used:

- Reduction of source generation through process design and modification.
- Reuse, recycle or co-product sale.
- Incineration or other treatment to reduce the volume or toxicity of pollutant streams.
- Responsible disposal of treatment residuals or wastes not amenable to the above.

The operating unit programs will integrate into release reduction plans a corporate goal to achieve a 90% reduction, worldwide, of 1987 SARA Section 313 reported air emissions by the end of 1992.

Releases to air, water or the land which continue in spite of reductions will be assessed as applicable through the programs outlined in Guideline #1 and in #2 (below) to assure no danger to health and the environment.

b) Accidental Releases

Accidental releases that are reportable to regulatory or response agencies, or that involve evacuation, significant community response or media coverage, will also be reported internally together with an action plan to prevent recurrence. The operating units will establish programs as necessary to eliminate such occurrences, working toward a goal of zero events. Progress against this goal will be reported annually through the Manufacturing Management Council to the ESH Committee.

c) Waste Databases

Operating units will develop and utilize multi-media databases on releases to the environment to enable reporting against operating unit goals and against the 90% SARA Section 313 air emission reduction target. A waste-stream based U.S. database will also be maintained to facilitate external reporting and as another internal measure of release reduction progress.

2. Waste Management

Landfill of "acutely hazardous" wastes¹ and "incinerables"² will not be practiced. Fixation of particularly mobile, persistent or bio-accumulative wastes will be accomplished wherever warranted and feasible, or where required by regulations.

Land disposed wastes which are not subjected to management as "hazardous" waste will be evaluated for present and future environmental risk and managed

¹As listed in 40 CFR 261.33(e), plus any mixtures containing greater than 5%.
²Wastes with a heat of combustion of greater than 6,000 BTU/lb.

2. *Waste Management (continued)*

in an appropriate manner which has been reviewed by the unit Director of Environmental Operations. (To be completed by 12/31/90.)

Waste contractors will be subject to contracting and assessment requirements (See Guideline #5). The number of off-site hazardous waste incinerators used will be minimized. In the U.S., off-site Class 1 landfills used will be approved by the ESH Committee and limited in number.

Medical wastes generated at Monsanto locations will be disposed of via incineration. Assurance of destruction will be obtained via manifest, or other equivalent approaches if manifest is not available. (For the purposes of Guideline #5, outside processors used will be considered Secondary Services.)

An evergreen record of both on-site and commercial waste treatment, storage and disposal sites will be maintained by each plant.

Monsanto will retain ownership of all property known to contain wastes with the potential to cause injury to health or the environment unless otherwise approved by the ESH committee. The use of company facilities to treat, store or dispose of non-Monsanto wastes is normally discouraged. Any such use or joint ventures for waste management must be reviewed and approved by the ESH Committee.

3. *Deepwell Injection Program*

Monsanto will continue to operate its deepwell disposal systems in a sound manner protective of public health and the environment. Each plant using on-site or off-site deepwell disposal will have and maintain contingency plans for exiting deepwells. There will be no new use of deepwells except as approved by the ESH Committee on an exception basis. All new project appropriation requests will be based on the economics of disposal technology other than deepwells.

4. *Corrective and Remedial Action*

When on-site abandoned waste or groundwater contamination is discovered, appropriate assessment and corrective action will be carried out. Any necessary projects will be scheduled to expedite remediation in a planned, orderly process.

When we become aware of possible involvement in "Superfund" sites, we will actively participate in generator group efforts to achieve settlement and

expedite cleanup. At sites where we are a/the major contributor, we will seek a leadership role when appropriate to facilitate resolution. The operating units will cooperate to establish responsibility for sites where several units contributed wastes. A goal of the corporation is to resolve as soon as reasonably possible our liability and remedial plans for sites where we have major responsibility.

We intend a lessened legalistic approach to site cleanup negotiations. Where our responsibility is fairly established, we will not delay cleanup unnecessarily by legal, yet negatively perceived litigious steps. We will pursue fair legislation and regulations on the general issues in the public arena, but minimizing legal risk will not be the determining factor in site-specific decisions.

5) *Ex-U.S. locations*

The above program elements and timing will be implemented at ex-U.S. locations, but with modifications as necessary to reflect local limitations, restraints to compliance, and the extent of Monsanto's operating control. Status and direction of local programs will be reviewed in planned environmental audits of these facilities.

(Revised and Approved by Environmental, Safety & Health Committee April 25, 1989.)

DSW 117561

JUN 11 1991

Monsanto

FROM (NAME, LOCATION, PHONE) N. L. Reding D1R 4-2106

DATE: May 30, 1991

cc: Env. Policy Committee

SUBJECT: Deep Wells

REFERENCE:

TO: ES&H Guidelines Manual Holders

*1) XC # J. Fields - get copy of manual
Done
7-1-91
DO
2) File*

Please place the attached, revised deep well policy statement in your manuals as an adjunct to Worldwide Guideline #2. The Guideline itself will be revised in the future to incorporate this initiative.

The revised policy reflects the deliberations of the Environmental Policy Committee and the Advisory Councils of MCC and MAC, and will guide the corporation's programs through the year 2000. It is supplementary to current operating unit waste elimination goals and, when implemented, will significantly improve the corporation's progress toward reaching the goal of zero effect on the environment.

Every individual affected by this policy can help the attainment of this goal by focusing technology on reducing the creation of these wastes and converting such actions into a competitive advantage for their business.

N. L. Reding
N. L. Reding

NLR/jm/A01MEMO.NLR

Attachment

DSW 117562

WATER_PCB-SD0000021399

APPROVED
DEEPWELL POLICY

June 1, 1991

STATEMENT

Project programs within the operating units will be coordinated to discontinue, by the end of 1999, the deepwell injection of waste streams except for clean brines or treated wastewaters which are best managed environmentally in deep injection wells.

By the end of 1995, the optimal technical strategy(ies) for total withdrawal from wells will be selected as a contingency for possible earlier mandatory action. At Luling, only, this action includes an ARDT estimate to achieve non-brine, treated surface discharge. Before 1995 and thereafter, the operating units will continue where possible to challenge the technical impediments to total withdrawal, based on surface discharge of non-brine treated wastewater.

New or expanded internal or external uses of deepwells are discouraged and will be considered by the EPC only on an exception basis and within the constraints of this policy; the economics of any project appropriation request for such use must be based on disposal technology other than deepwells.

OBJECTIVES

1. Substantially reduce SARA reported releases to deepwells by 87% by the end of 1995.
2. Achieve 70% reduction of Priority 1 pollutants (organics and toxic inorganics) to wells via Waste Elimination/Waste Minimization efforts, by the end of 1995.
3. Substantially eliminate SARA and Priority 1 releases to deepwells by the end of 1999.
4. Achieve surface discharge of treated effluent at Chocolate Bayou. At Luling, provide that only clean brine is injected, brine that is otherwise treated to meet Effluent Guidelines (CWA). At Pensacola, achieve treated effluent wastewater suitable for discharge under Effluent Guidelines but plan to continue injection due to regulatory issues.

OSW 117563

INDICATORS

The following indicators are identified for tracking of progress:

- Completion of targeted projects.
- End-of-1995 and end-of-1999 releases of SARA chemicals and Priority 1 substances to injection wells.
- 1995 completion of contingency project definition.

Approved by EPC
Committee, 4/16/91

a.hd3

DSW 117564

PROJECT TIMETABLES

Chocolate Bayou

<u>Project</u>	<u>YEAR On-Line</u>	<u>Capital \$M</u>	<u>Operating Expense, \$M</u>
<u>Spent Acid Recovery</u> (SAR servicing AN, MHBA, NTA. Includes limited in-battery wastewater treatment for <u>DSIDA</u>)	1995	75(1)	8
<u>New Biotreatment</u> unit and Sludge Handling Facility.	1999	30	7
TOTALS		<u>105</u>	<u>15</u>

(1) Includes capital for miscellaneous Waste Elimination projects in addition to SAR.

Pensacola

<u>Project</u>	<u>Year On-Line</u>	<u>Capital \$M</u>	<u>Operating Expense, \$M</u>
<u>Liquid Waste Incinerator</u> for concentrated organics, including HMD Ion Exchange	1995	10-25(1)	2-6(1)
<u>3-Stage Biotreatment</u> including Sludge Disposal and Tertiary Filter. Also provide <u>Spare ODW Evaporator</u> for KA and <u>Copper Ion Exchange</u> for Adipic.	1999	37-22	9-5
TOTALS		<u>47</u>	<u>11</u>

(1) Larger values assume some biological treatment installed early to achieve 1995 Waste Elimination goal.

Luling

<u>Project</u>	<u>Year On-Line</u>	<u>Capital \$M</u>	<u>Operating Expense, \$M</u>
<u>Catalytic Chemical Oxidation</u> Process for essentially complete organic removal, GI Wastewater. Achieve clean brine.	1995	35	13
<u>Organic Removal and Ammonia stripping</u> of ACL/CYA Wastewater. Achieve clean brine.	1995	8	2
TOTALS		<u>43</u>	<u>15</u>
TOTALS, ALL PLANTS		195	41

PROJECTION OF RELEASE REDUCTION

Waste Elimination/Waste Minimization Programs, Priority 1 Release to Injection Wells:

	<u>Base Year 1987</u>	<u>Actual 1989-</u>	<u>Projected End-of-1995</u>	<u>Projected End-of-1999</u>
<u>Luling</u> MCC & MAC Programs	4.0	17.3	2.6	Nil
<u>Pensacola</u>	70.7	86.7	37-20 ¹	4.3
<u>Chocolate Bayou</u> MCC & MAC Programs	47.8	59.8	9.7	None
TOTALS	122.5	163.8	49.3-32.3 ¹	4.3
<u>%Red'n vs. 1987</u>			60-74%	96%

¹Lower value assumes some biological treatment installed early to achieve 1995 Waste Elimination goal.

SARA 313 RELEASES TO DEEPWELLS, M LBS

<u>Plant</u>	<u>Chemical</u>	<u>1987</u>	<u>1989</u>	<u>Projected End '95</u>	<u>Projected End '99</u>
Luling	All	15	4	0.4	Nil
Pensacola	NH ₃ , NO ₃	22	23	4	Nil
	Other	<u>-</u>	<u>1</u>	<u>0.5</u>	Nil
		22	24	4.5	
Choc. Bayou	NH ₃ , SO ₄	171	196	20	0
	Other	<u>8</u>	<u>6</u>	<u>4</u>	<u>0</u>
		179	202	24	0
TOTAL SARA 313		216	230	29	Nil
<u>%RED'N VS. 1987</u>				87%	~100%

DSW 117566

PLANT ENVIRONMENTAL ASSESSMENTS

A program of environmental assessments and audits of all plant sites will be maintained in order to assure regulatory compliance and the protection of the surrounding environment.

PROGRAM

1. Environmental assessment documents (information such as local air and water quality, relationships with regulatory agencies, and the effects of our presence on the surrounding environment) will be prepared for each operating location. Documentation of subsequent changes or additions to assessment contents will be filed with assessments at the plant site so that an update can readily be prepared should the need arise. Executive summary sections reflecting long-range plans and highlighting key environmental issues will be updated annually and transmitted as information to Environmental Managers.
2. Compliance audits for large and environmentally sensitive sites will be conducted on a three-year maximum cycle with other sites to be audited at least every five years. Audit follow-up plans will be reviewed semi-annually.
3. Groundwater assessments will be maintained for all major locations and for lesser sites with known groundwater issues. The assessment status and plans will be updated in the second quarter of each year.
4. Each location shall maintain a groundwater protection plan to include inspection, testing and maintenance of facilities with the potential of contaminating groundwater (i.e., sewers, process lines, sumps, tanks, loading/unloading areas, etc.). The groundwater protection plans and designs shall be commensurate with the risk posed by the specific situation.
5. New, replacement or expansion facility designs (including sewers and lines) should consider aboveground and/or double containment, improved materials of construction and/or cathodic protection to provide improved assurance against groundwater contamination. New, replacement or expanded surface impoundments for wastewater treatment or storage will be approved by the ESH Committee on an exception basis.
6. New storage tanks for materials that could potentially cause contamination will be provided with impervious secondary containment (dikes, liners, vaults, double wall, etc.) unless a clear showing is made on a tank-by-tank basis during project reviews that vessel contents (e.g. dilute wastewaters) or setting (e.g. in-battery containment, other adequate containment systems) do not warrant such containment. Existing storage tanks will be addressed and reviewed through normal environmental audits.

(Revised and Approved by Environmental, Safety and Health Committee April 25, 1989.)

DSW 117567

EMPLOYEE AND COMMUNITY SAFETY AND HEALTH

Monsanto will provide a healthful and safe environment for its employees and community neighbors and will monitor and evaluate employee health status, determine and monitor workplace factors affecting employee safety and health, comply with Monsanto workplace exposure guidelines and with governmental safety and health regulations, review major capital projects to protect the health of people at work and in the community.

PROGRAM

1. Continue to perform periodic on-site surveys of worldwide operations to evaluate total safety, occupational health, and industrial hygiene status. Utilize observations and recommendations to achieve and maintain regulatory and code compliance, attain appropriate technological sophistication, reduce the probability of accidents of all types, and further employee safety and health education. Generally assist sites in attaining year-to-year reductions in employee injuries and property losses. Optimize health surveillance programs to identify and prevent occupational illnesses.
2. Achieve and maintain compliance with governmental regulations and Monsanto guidelines as they relate to facility design, safe work practices, workplace exposures, health surveillance, and community safety and health in each country in which a Monsanto facility is located. If regulatory guidelines are unavailable or inadequate to protect worker health, Monsanto will establish guidelines where appropriate.
3. Monitor and evaluate the effect of work exposures on employee health by providing health surveillance in all locations, with a goal of offering periodic examinations for all employees. Special emphasis must be given to implementing scheduled health surveillance examinations for those employees routinely exposed to hazardous chemicals in the workplace. These examinations will be conducted by Monsanto or contract health professionals in accordance with the Occupational Medicine Program defined by the Department of Medical and Health Sciences.
4. Collect and enter workplace materials, worker exposure, work history and employee health assessment data into the MEHL/MARS data base which will be used to perform epidemiological and other appropriate studies evaluating worker health to enhance worker protection.
5. Continue workplace surveillance to identify potential health risks, evaluate risks based on current toxicological information and initiate appropriate safeguards to protect the health of employees.
6. Establish guidelines for use in classifying and recording injuries and illnesses to monitor company-wide performance and adherence to federal regulations regarding recordkeeping. Issue monthly summaries of appropriate statistics, and various publications designed to improve awareness and to communicate relevant technologies to the workplace. Develop understanding of the causation of accidents and the techniques of accident prevention.
7. Provide corporate safety and industrial hygiene reviews on design, startup, and operational issues for major new installations and expansions.
8. Participate relative to safety and health through trade associations, other cooperative endeavors of the chemical and manufacturing industries and professional associations.
9. Provide employee training, orientation and education in safety and health.
10. Contract employees should receive any required surveillance and safety and industrial hygiene indoctrination in accordance with Monsanto's Contractor Health and Safety Guideline.

(Revised and Approved by Environmental, Safety & Health Committee April 25, 1989.)

DSW 117568

OUTSIDE PROCESSORS

Select companies for support of Monsanto operations — through product conversions, custom manufacture, formulating, by-product sales, waste management, and other services supporting Monsanto businesses — which will operate with concern for worker safety, regulatory compliance, community protection and protection of the environment.

PROGRAM

1. Monsanto will utilize only outside processors which have been selected and periodically assessed to assure:
 - (a) Their ability to adequately protect the public, employees and environment from any effect of Monsanto chemicals, products or wastes.
 - (b) Their compliance with all applicable laws and regulations.
 - (c) Their knowledge of potential hazards and any applicable manufacturing requirements associated with Monsanto materials handled.
 - (d) Their use of approved waste disposal methods and locations, with recordkeeping of all material use and waste disposal.
2. Selections and assessments shall be documented and approved by the Operating Unit Director of Environmental Operations and an appropriate contractual arrangement shall be established with each firm prior to startup of operations.
3. Outside "processors" include firms which provide services related to Monsanto chemicals, products or wastes. "Primary" firms will receive an on-site assessment, management approval, and a written contract.

Secondary firms should be assessed and be subject to approval and contracts when high hazard materials or Class B poisons are involved, or whenever the situation involves a significant risk.

Primary services include:

Conversions	Tank Car Cleaning ¹
Processing	Barge Cleaning ¹
Blending	Drum Cleaning/Reclaiming ¹
Formulations	Waste Material Sales
Material Recovery/ Reclaiming	Waste Hauling (including oil)
	Hazardous Waste Disposal

Material Purification	Waste Oil Disposal
Packing or Repacking	Waste Oil Reclaiming
Bulk Truck Cleaning ¹	Transformer Retrofill

¹Applicable to hazardous products or Monsanto owned or leased vehicles.

Secondary services include:

Bulk Terminals
Transloading
Fulfillment Houses
Packaged Goods Warehousing
Non-hazardous Waste Disposal
Vessel and Equipment Cleaning

Excepted are services performed by established major chemical firms (approved by the Unit Director of Environmental Operations), publicly owned treatment works, sales of wastes which are equivalent to virgin chemicals in commerce and transformer retrofill where wastes are retained under Monsanto control.

4. Assessments are to be performed prior to initial use and at a frequency recommended in the prior assessment (normally one to three years).
5. MCC Environmental Engineering maintains a corporate-wide database of all outside processors to avoid redundant assessments and contracts and to facilitate use of approved contractors.
6. The above program elements will be implemented at ex-U.S. locations, but with modifications as necessary to reflect local limitations, restraints to compliance, and the extent of Monsanto's operating control. Status and direction of the local program will be reviewed in planned environmental audits of these facilities.

(Reviewed and Approved without change by Environmental Safety & Health Committee April 25, 1989.)

MONSANTO

From

(Name-Location-Phone) M. A. Pierle - G4WT/J. D. Anderson - F2WA

Date:	March 22, 1990	cc:	E. N. Brasfield	G5WA
			R. G. Dahlen	G4EM
			A. F. Fitzgerald	G5NV
Subj:	Management of Outside		G. M. Francx	5040
	Processors		J. C. Hunter III	G4EA
Ref:			T. H. Laffere	G4NJ
			R. G. Potter	G4NH
To:	See Attached Distribution		D. B. Price Jr.	G5NG
			F. E. Reining	G4NR
			D. L. Sliney	G4NJ
			W. H. Slowikowski	G4NA
			C. A. Sweets	G4EA
			J. L. Tuley	G5EA
			H. L. Williams	G4NI
			M. W. Winkel	G5NA

In order to bring focus and strength to Monsanto's management of the use of outside processor services, we are making certain organizational changes within the MCC Operations group.

Monsanto environmental guidelines (attached) call for an effective program to assure that those providing outside services do so in a manner similar to that which Monsanto would employ if it chose to conduct the service itself.

To date, management of Monsanto's effort to assure compliance has been substantially decentralized with responsibility for conformance placed with the requestor of the service. Progress, when measured against the performance criteria within Monsanto's worldwide guideline, has not been at the desired level.

In light of the need to improve the overall results of the program, a total quality team was established in 1989 to determine ways of improving the system. All functions were represented. The group extended its analysis by conducting a Business Process Management review. Deficiencies were examined and recommendations were made. These recommendations have been reviewed and approved by MCC management.

To enable conformance with the guideline, three positions within MCC Operations will provide coordination and services in concert with all those requesting outside processor services.

DSW 117570

1. Manager, Toll Manufacturing (Ed Moore)

This on-going position is responsible for the selection of toll (custom) manufacturing suppliers and the negotiation, monitoring and maintenance of contracts associated with these toll manufacturing arrangements. Included in the responsibilities of this position and most pertinent to this summary is the "providing of environmental and safety audits" for all outside tolling arrangements.

2. Manager, Equipment Disposal and Waste Disposal Contracting (John Nolle)

This is not a new position, but rather an expansion of responsibilities of the prior position of manager, Equipment Disposal. This position will include the following responsibilities associated with waste disposal:

- a) Defines and negotiates national waste contracts with firms that provide such services, to reduce and minimize costs through corporate volume leverage to control Monsanto's off-site disposal costs. Primary areas include waste disposal services (incineration, landfill, medical, waste oil, etc.).
- b) Serves as functional manager and corporate focal point for all national environmental service contracts including day-to-day problem solving.
- c) Develops opportunities to reduce waste disposal costs through prudent contract management.
- d) Develops and negotiates master terms and conditions agreements with waste processing firms to insure Monsanto has appropriate contractual/legal protection.
- e) Maintains strong functional ties with outside processor auditing manager to ensure audits and reaudits of outside processors are current for all existing or proposed contract vendors.

3. Manager, Environmental Auditing (Gerald Rinaldi)

This is a new position in MCC Environmental Operations. The position will ensure that outside processors meet Monsanto requirements for financial responsibility, insurance, environmental compliance, industrial hygiene, and worker health and safety as defined in ESH #5 by coordinating the overall compliance system while relying predominantly on existing plant resources to conduct the actual audits.

DSW 117571

It should be obvious that these three managers, plus appropriate resources in environmental and manufacturing assignments, will need to work closely together for Monsanto to meet its obligations and responsibilities in these most important areas. Your cooperation will be most appreciated.



James D. Anderson
Director, Purchasing



Michael A. Pierle
Director, Environmental Operations

DSW 117572

DISTRIBUTION

S. Abdou-Sabet	1010	W. M. Hunt	M3G
L. Adams	1155	J. P. Hyland	G4WT
J. W. Adams	1690	T. G. Iversen	G5WA
C. A. Balan	1500	E. S. Jamro	1870
L. Beach	1260	G. L. Johnson	1440
R. J. Belle	G5NL	R. Jones	1060
H. W. Berry	1410	R. N. Jones	G5WA
J. E. Bishop	1900	R. H. Joslin	G4WS
W. J. Board	1690	D. M. Kalbfleisch	1740
L. J. Boesch	G5NV	M. J. Kausch	N2G
J. R. Bohrer	F2WA	C. K. Ketter	C2SB
W. J. Boyle	1740	J. F. Keliher	G5NV
P. Brezovec	1050	T. M. King	O4C
E. S. Brimer	1760	O. A. Klingler	F2WD
D. R. Caldwell	1418	H. E. Knoop	1918
R. W. Ceyanes	1200	J. V. Kocurkovic	F1WG
R. L. Cheever	1760	D. S. Krawczyk	1700
J. J. Christian	1760	M. A. Kulig	1870
P. Clarke	1260	J. A. Labanosky	1080
J. E. Crick	F2WA	R. E. L. Lamkin	G5NV
R. J. Cushing	1410	J. H. Lane	1020
N. L. Davis	F2WB	M. D. Lauman	1850
J. K. Davis	Fovil-Foley	R. E. Lawyer	1260
D. K. Denner	1060	M. C. Lewis	1870
D. C. Dieterich	1150	J. D. Leyerle	F2WA
M. P. DiGiovanni	1090	D. M. Light	1670
B. Dmuchovsky	F2WB	S. J. Longfield	1720
H. B. Driscoll	G4NA	K. J. Lott	1850
J. P. Dushney	1410	E. J. Mackie	G5WA
R. D. Ellis	1010	J. C. Marshall	1670
G. M. Ellsworth	1775	V. T. Matteucci	G5NR
H. B. English	G5WA	M. D. McClendon	1560
E. A. Fay	1290	M. W. McCombs	1740
R. L. Fields	C2NJ	C. M. McCullough	1850
R. J. Fissmer	G5EA	J. T. McKean	1670
M. R. Foresman	G4WT	G. L. McKee	G4NC
V. M. Franchetti	1870	T. R. McNeely	1060
W. L. Friehe	F2EE	N. B. Miller	1250
R. C. Gary	Fovil-Foley	E. L. Moore	F2WB
R. Geddes	1850	E. L. Moore	F2WB
W. H. Ghatti	1080	C. R. Murrell	1155
M. E. Gibbs	R4B	D. D. Musch	1918
R. W. Graham	Rock Springs	G. S. Narsh	1900
M. B. Gray	1200	R. J. Nichols	1630
C. M. Grice	1440	J. S. Noble	U4C
M. N. Hanson	1918	J. W. O'Brien	1260
T. S. Hardy	1050	G. E. O'Connor	F1WF
H. P. Harris	G4NA	J. C. Ochsner	1540
L. F. Hebert	1690	W. A. Ott	1020
B. D. Heckenberg	F1WE	R. P. Panasiewicz	1500
F. L. Hiller	1080	L. P. Paradis	G4WS
D. C. Hoegel	1290	W. W. Perdue	1220
S. A. Holmes	1090	K. M. Perica	1200
C. C. Holzwarth	1090	D. L. Petersen	1683
K. S. Hood	1793	R. G. Pier	G5NA
D. O. Hummel	1290	A. L. Pighin	1540

DSW 117573

A. J. Politte	1720
C. A. Pratte	F2WA
J. C. Rademaker	1050
D. C. Ranson	1020
J. M. Ray	F2WA
S. D. Reiners	M3G
W. S. Richey	1220
R. F. Riek	1010
G. M. Rinaldi	G4WT
A. Ristic	1500
S. J. Robinson	G5NA
C. J. Rogers	1440
J. F. Rohr	1150
L. R. Rutledge	1793
R. F. Sackett	1760
D. E. Schoeffel	F2WD
A. R. Schroeder	1900
J. E. Schweitzer	1720
M. A. Scott	1700
R. V. Sharp	1200
C. A. Smith	1793
J. D. Smith	1740
D. E. Snowbarger	1683
R. W. Spiller	G5NA
M. A. State	1900
D. W. Stegan	G4NA
D. C. Stocker	G5NG
D. H. Stockton	1220
R. H. Talbert	1700
P. Thigpen	1150
J. L. Thomas	1690
J. M. Tissue	1200
J. C. Trube	F2WA
A. C. Tuk	1670
C. Vance	1752
T. E. Warborg	1010
F. C. Weaver	1010
C. F. Weingartner	G5EC
G. Wildsmith	G5WA
J. G. Wiley	1690
D. Wood	G5NL

DSW 117574

PRODUCT STEWARDSHIP

Monsanto products and intermediates will not present an unreasonable risk of harm to human life or health, or to the environment when they are properly handled, transported, used or disposed. Stakeholders will be provided information regarding handling, storage, use and disposal of Monsanto products.

INTRODUCTION

Employees, customers and the community are all important stakeholders that are directly affected by Monsanto's product stewardship programs. Inherent in these programs is the responsibility for assessing, managing, and communicating the risks associated with the products and intermediates Monsanto manufactures or markets or plans to manufacture or market.

Product assessments are at the heart of this process and involve judgments by specialists about the level of risk borne by stakeholders as a result of manufacture, processing, distribution, use and disposal of a product. They integrate data on effects, (such as toxicology, epidemiology, and medical observations), with product composition and exposure information (such as industrial hygiene monitoring, and environmental fate). For each Monsanto product or intermediate, we need enough data or information to reach a supportable conclusion that under reasonably anticipated conditions of handling and use, the product does not pose an unreasonable risk to those who may be exposed or the environment. We must recognize that our stakeholders have a voice in this decision process. It is our responsibility to provide stakeholders with information such as labels and Material Safety Data Sheets, which will permit them to have knowledgeable input into the process. Our risk management actions must reflect stakeholder input.

PROGRAM

1. All new product candidates and new process intermediate candidates will be assessed and managed as detailed below. Note: in view of the unique characteristics of articles, they will be handled separately from this program.

- a) All local, national and international product regulatory requirements will be satisfied in a timely fashion during project development.

- b) R&D materials utilized in the laboratory will be handled according to Prudent Laboratory Practices (e.g., National Research Council Guidance, Monsanto Research Center Policies and Procedures, or similar).

- c) New R&D products and process intermediates, that are either;

- i) shipped to customers, non-laboratory facilities or laboratories covered by the OSHA Hazard Communications Standard or,
- ii) produced in significant quantities (e.g., U.S. regulations define significant quantities as "quantities in excess of 100Kg/year") or,
- iii) manufactured or handled in non-laboratory facilities,

will have a completed product safety review (i.e., one or more of the following: ER-200, EC-201, pilot plant safety audit or equivalent, Institutional Biosafety Committee Review) an appropriate label, and a Material Safety Data Sheet, or R&D equivalent.

- d) New products, new process intermediates, and significant new uses of existing products will have a product assessment (EC-202 or equivalent), a Material Safety Data Sheet and a shipping classification (TF-837 or equivalent) completed before commercialization.

- e) Material Safety Data Sheets for new products and process intermediates will be made available to all persons engaged in R&D commercialization of these materials.

2. All commercial products, process intermediates or product families comprised of these materials, will have ongoing product assessments, risk management and hazard and risk communications.

PROGRAM (continued)

- a) Material Safety Data Sheets or equivalent will be developed for all Monsanto products and process intermediates. Material Safety Data Sheets will be provided to employees and customers and made available to other stakeholders in an appropriate language. All issued Material Safety Data Sheets will be reviewed when significant new information affecting the product or intermediate becomes available. At a minimum, reviews will be performed every five years. Material Safety Data Sheets will be updated as appropriate as a result of these reviews. Records of Material Safety Data Sheet recipients will be maintained, where practical.
 - b) Product files for all products or product families will be maintained. The product file may include the following:
 - Appropriate Material Safety Data Sheets, references to relevant literature or internal reports, relevant information on composition, physical properties, manufacturing processes, principal by-products, protective measures and exposure information.
 - A critical review of health and environmental effects and exposure information, such as EC-201, EC-202, Monsanto Work-Place Permissible Exposure Guideline (MWPEG) Reviews, Health Effect Reviews and Toxicology Reviews.
 - c) Information contained in product files will be used for business decisions, government interactions, public communications and other product management activities.
3. Product Stewardship is the responsibility of the business units. Each operating company, free-standing division or world area will assign an individual(s) the responsibility for assuring that this Guideline program is met.

Guideline oversight is the responsibility of the Corporate Environmental Policy Staff.

Units of the corporate staff (Environmental Policy Staff, Safety and Environmental Health, and others) and business units are jointly responsible for developing information needed for product assessments. This includes regular periodic reevaluation of data available in light of new information relevant to the product.

(Revised and Approved by Environmental, Safety & Health Committee April 25, 1989)

DISTRIBUTION

R. E. Ackerman	U4C	K. T. Richardson	5040
I. Andrer	5040	G. M. Rinaldi	G4WT
R. M. Bannister	A3ND	E. C. Robinson	A3ND
J. W. Barnett	A3ND	R. D. Short	A3ND
D. Barrett	U4C	P. H. Smith	E2NK
N. C. Boggs II	E2NK	W. L. Smull	G4WM
E. J. Bollanas	5300	G. S. Spies	A3NL
D. P. Brown	F2EC	M. W. Stevens	A3NG
J. R. Condray	A3NA	C. Strang	A3NL
J. E. Downes	G4WR	R. L. Walter	A2NA
K. E. Storm	A3NL	M. F. Weishaar	G4WM
P. A. Easterday	A3NL	C. A. Wiltshire	5040
C. Elmer	A3NA	P. C. Wright	E2NK
T. F. Evans	A3NA		
J. D. Felder	G4WR		
J. J. Ferguson	5000		
M. R. Foresman	G4WT		
B. R. Friedlander	A3NA		
B. J. Gilhousen	E2NK		
J. S. Harding	5040		
R. L. Harness	C2SB		
A. D. Hatten	G4WR		
C. E. Healy	A3ND		
J. L. Henshaw	A3NL		
B. J. Hill	G4WR		
J. P. Hyland	G4WT		
J. R. Jackson	5040		
E. P. Jannsen	5270		
A. J. Janusz	U4C		
F. R. Johannsen	A3ND		
G. M. Johnson	A3NL		
R. H. Joslin	G4WS		
S. P. Krchma	E2NG		
C. J. Larsen	5040		
R. I. Lennox	A2NA		
G. J. Levinskas	A3ND		
C. D. Malloch	A3NA		
J. N. McGuire	G4WM		
D. E. McKinney	A3NG		
J. P. Miere	G4WR		
D. G. Montgomery	G4WR		
M. J. Murphy	A3NL		
R. S. Nair	A3ND		
J. H. Nisbet	5050		
J. S. Noble	U4C		
E. F. Ogu	A3NL		
L. P. Paradis	G4WS		
C. Paton/D. Abresch	5510		
C. O. Patterson	F2EA		
C. R. Perry	5040		
M. A. Pierle	G4WT		
M. Plotnick	5090		
D. J. Randall	A3NG		
D. B. Redington	A3NA		
M. D. Rhine-Jones	G4WR		
V. L. Rhodes	G4WR		

DSW 117577

Monsanto

OCT 18 1990

FROM
(NAME-LOCATION-PHONE) F. E. Kearney - St. Louis, G4WT - 4-3146

DATE: October 12, 1990 cc:
SUBJ: MCC NEW PRODUCT INTRODUCTIONS -
ENVIRONMENTAL AND RELATED FOLLOW-UPS
REF:
TO: See Distribution

Monsanto's policy is to sell only those products that do not represent an unreasonable risk of harm when properly handled, etc. (Attachment 1). The final authority for permitting sampling and/or sale of new products rests with the Department of Medicine and Environmental Health "DMHS"), whose procedures are described in DMHS "Health and Environmental Compatibility Assessment of Monsanto Products, A Guide to the Use of Department of Medicine & Environmental Health Data Sheets ER-200, EC-201 and EC-202". This policy and procedure apply to Monsanto products worldwide.

At each stage of the DMHS approval process (ER-200 limited to bench scale R&D sampling, EC-201 for any sampling, and EC-202 for commercialization), there are follow-up steps to be taken. The attached procedure (Attachment 2) is newly created for MCC use worldwide. Please insure that others in your organization who are involved in any aspect of new product introduction are also given copies. Your help in this as well as in insuring compliance are appreciated.

If you have any questions, please contact your assigned Manager, Product Safety.


F. E. Kearney

/pam
Attachments

DSW 117578

WATER_PCB-SD0000021415

PROGRAM (continued)

- a) Material Safety Data Sheets or equivalent will be developed for all Monsanto products and process intermediates. Material Safety Data Sheets will be provided to employees and customers and made available to other stakeholders in an appropriate language. All issued Material Safety Data Sheets will be reviewed when significant new information affecting the product or intermediate becomes available. At a minimum, reviews will be performed every five years. Material Safety Data Sheets will be updated as appropriate as a result of these reviews. Records of Material Safety Data Sheet recipients will be maintained, where practical.
 - b) Product files for all products or product families will be maintained. The product file may include the following:
 - Appropriate Material Safety Data Sheets, references to relevant literature or internal reports, relevant information on composition, physical properties, manufacturing processes, principal by-products, protective measures and exposure information.
 - A critical review of health and environmental effects and exposure information, such as EC-201, EC-202, Monsanto Work-Place Permissible Exposure Guideline (MWPEG) Reviews, Health Effect Reviews and Toxicology Reviews.
 - c) Information contained in product files will be used for business decisions, government interactions, public communications and other product management activities.
3. Product Stewardship is the responsibility of the business units. Each operating company, free-standing division or world area will assign an individual(s) the responsibility for assuring that this Guideline program is met.
- Guideline oversight is the responsibility of the Corporate Environmental Policy Staff.
- Units of the corporate staff (Environmental Policy Staff, Safety and Environmental Health, and others) and business units are jointly responsible for developing information needed for product assessments. This includes regular periodic reevaluation of data available in light of new information relevant to the product.

(Revised and Approved by Environmental, Safety & Health Committee April 25, 1989)

DSW 117580

- (3) has been submitted already to EPA under another mandatory reporting provision of 1) TSCA, or 2) some other authority that is administered by EPA.
- (4) is contained in a formal publication/report or a formal statement made available to the general public by another Federal agency.
- (5) is corroborative (in terms of, for example, route of exposure, dose, species, time to onset, severity, species, strain, etc.) of a well-established adverse effect.

It is important to note, however, that information that newly identifies a serious toxic effect at a lower dose level for example, or confirms a serious effect that was previously only suspected, is not considered by EPA to be corroborative and should be reported under Section 8(e) of TSCA.

- (6) is information for which the EPA Administrator has waived compliance with TSCA in general or Section 8(e) specifically upon a request and determination of the President of the United States that such a waiver is required in the interest of the national defense; Section 22 of TSCA outlines the procedures by which such waivers are to be requested/issued.

With regard to item (2) on the preceding page, EPA believes that for the purposes of Section 8(a) reporting, a subject person need not report information that is obtained from well-established/well-recognized scientific journals, such as those typically abstracted in a) major computerized abstract data bases, or 2) publications such as Current Contents published by the Institute for Scientific Information (ISI), Inc. (Philadelphia, Pennsylvania). Similarly, information that is obtained from major U.S. news publications (e.g., newspapers or news magazines with national circulation) or nationally broadcast U.S. radio and/or television news reports typically need not be submitted to EPA under Section 8(e) of TSCA. However, with regard to information obtained from lesser known scientific journals, or from other magazines, newspapers, radio or television reports, a subject person must have actual knowledge that EPA has been adequately informed about such information.

Specifically with regard to item (4), it cannot be automatically assumed that the Agency has been adequately informed about information in a report or study by another Federal or other governmental agency if the report or study has not been formally published or otherwise released to the general public. Therefore, if a person obtains (i.e., possesses or knows of), for example, certain unpublished Section 8(e)-reportable information from a study that is conducted by or for an agency of the U.S. Government (other than EPA), that person must consider the need to immediately submit those findings under Section 8(e). Since 1977, EPA has received a number of Section 8(e) notices filed by companies who had obtained unpublished results of studies conducted by or for other Federal or other governmental agencies. In most cases, such submissions are limited to 1-2 pages and the Agency immediately establishes direct contact with the responsible agency to minimize or eliminate the company's Section 8(e) reporting burden.

DSW 117622

ff.

DOES REPORTING TO ANOTHER AGENCY SATISFY SECTION 8(E) REQUIREMENTS?

Mandatory or other reporting of information to another agency does not satisfy a company's obligation to immediately inform EPA under Section 8(e) of TSCA.

WHEN MUST SECTION 8(E) INFORMATION BE REPORTED?

A person is considered to have discharged the TSCA Section 8(e) reporting obligation if the information is received at EPA Headquarters in writing within 15 working days after the person obtained the information. Relevant or significant supplemental data obtained after an initial Section 8(e) submission should also be reported in writing to EPA immediately (i.e., within 15 working days). The reader's attention is directed to WHAT DOES THE TERM "OBTAINS INFORMATION" MEAN? found on Page 6 of this reporting guide.

For an "Emergency Incident of Environmental Contamination" (EIEC), a telephone call to the appropriate EPA Regional Office must be placed immediately (i.e., as soon as reasonably possible); these phone numbers are given in the next section of this guide. A written follow-up report must also sent to EPA Headquarters within 15 working days of the date on which the telephone report was made.

HOW MUST SECTION 8(E) INFORMATION BE REPORTED?

Section 8(e) submissions must be transmitted to EPA in a manner that permits the Agency to verify receipt of the submission (e.g., certified or registered mail). In addition, the submission must state clearly that it is being provided under Section 8(e) of TSCA. Further, the submission must contain the name, title and telephone number of the person sending the information, the name and address of the establishment with which the reporting person is affiliated, the name(s) (including Chemical Abstract Service (CAS) Registry Number(s), if known) of the subject chemical(s); and a summary describing the nature of adverse effects or exposure being reported together with the source of any supporting technical data.

For an "Emergency Incident of Environmental Contamination" (EIEC), the initial telephone report must provide the time and location of the incident and as much of the above information as is known at the time. A written EIEC follow-up report to EPA Headquarters must contain the same types of information that are required in a non-EIEC initial Section 8(e) submission.

DSW 117623

OVERVIEW OF TSCA SECTION 8(e)

What is TSCA Section 8(e)?

TSCA Section 8(e) requires that:

"Any person who manufactures, processes, or distributes in commerce a chemical substance or mixture and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment shall immediately inform the Administrator of such information unless such person has actual knowledge that the Administrator has been adequately informed of such information."

NOTE: The term chemical substance does not include substances used exclusively as food, food additives, drugs or cosmetics if regulated by the FFDCA, pesticides if regulated by the FIFRA, and articles.

The meaning of virtually every word of this paragraph has evolved over the years, since passage of TSCA in 1976.

Unlike most other sections of TSCA, EPA has not issued regulations implementing §8(e), and therefore you won't find it in the Code of Federal Regulations.

Interpretative guidance was first issued by EPA on March 16, 1978 (43 Fed. Reg. 11110; hereinafter referred to as §8(e) Guidance), and supplemented over the years by:

- status reports of §8(e) submissions;
- enforcement cases; and,
- letters to individual companies.

In formulating the 8(e) provision, Congress responded to a concern that a number of companies had suppressed information about the cancer-causing nature of certain chemicals. Examples described during the hearings included vinyl chloride and bis-chloromethyl ether. §8(e) was designed to ensure that this type of information would receive prompt attention by the EPA. Current interpretations by EPA go far beyond these examples. (See below.)

Who Must Report?

"Persons" who manufacture, process, or distribute chemical substances or mixtures must report. Trade associations may provide a report for their members, although they are not required to do so under §8(e). Similarly, testing laboratories have no reporting obligations under §8(e), even if they are in possession of reportable information.

A company can relieve individual officers and employees of their obligation to report potential §8(e) information to the Agency by:

"Establishing, internally publishing, and affirmatively implementing procedures for employee submission and corporate processing of pertinent information."

OSW 117624

When Must Persons Report?

EPA must be "immediately informed" by telephone within hours of emergency incidents of environmental contamination, with a written follow-up sent within 15 working days after the incident. In its §8(e) Guidance, EPA stated that other §8(e) information must be submitted "not later than the 15th working day after the date the person obtained such information."

EPA §8(e) Guidance states that "a person obtains substantial risk information at the time he first comes into possession or knows of such information." Further, "an establishment obtains information at the time any officer or employee capable of appreciating the significance of such information obtains it" (emphasis added).

What Constitutes Substantial Risk?

A "substantial risk of injury to health or the environment" is a risk of considerable concern because of:

- (a) the seriousness of the effect; and
- (b) the fact or probability of its occurrence.

Examples of Human Health Effects:

The §8(e) Guidance provides the following examples:

- (1) Any instance of cancer, birth defects, mutagenicity, death or serious or prolonged incapacitation, including the loss of or inability to use a normal bodily function with a consequent relatively serious impairment of normal activities if one (or a few) chemical(s) is strongly implicated.
- (2) Any pattern of effects or evidence which reasonably supports the conclusion that the chemical substance or mixture can produce cancer, mutation, birth defects or toxic effects resulting in death, or serious or prolonged incapacitation.

Patterns or Indicators of Effects:

The Agency has also defined "substantial risk" in terms of serious or prolonged incapacitation. Animal toxicology reports are by far the most frequent §8(e) submissions. These, of course, provide the best indication of the toxic response of a test chemical in humans (short of actually testing the chemical in humans).

Normally, standard acute toxicology tests are not subject to §8(e) reporting, unless something very unusual and/or unexpected is observed. For example, a rat peroral LD₅₀ of 0.5 mg/kg for "Chemical X" would be unusual and unexpected if chemicals closely related to it had rat peroral LD₅₀'s in the 1 to 4 g/kg range. As a practical matter, any unusual or unexpected result should be given consideration for §8(e) reporting, and any results of a "serious" nature (as defined in the §8(e) Guideline) should also be considered for §8(e) reporting.

DSW 117625

The Agency guidance on §8(e) reportability has evolved over the years, as reflected in both its §8(e) "Status Reports" and other documents, including litigation papers and letters to various companies which address specific §8(e) issues. For example, the §8(e) reportability of developmental and neurotoxic effects was addressed in a 1988 letter to Monsanto.

Regarding the §8(e) reportability of mutagenicity results, the Agency's current position on in vitro tests (such as the Ames test) is:

"Although a positive in vitro genotoxicity finding, when considered alone, may not be sufficient to offer reasonable support for a conclusion of substantial risk...EPA does believe that a single positive genotoxicologic finding is of value in assessing the possible risk(s) posed by exposure to the tested chemical substance or mixture." (8EHQ-0687-0677)

However, when the exposure potential is very high (as, for example, with a copy machine toner), the Agency has accepted a positive Ames result as an indication of substantial risk (8 EHQ-0780-0351). Also, when combined with other information (in vitro tests, for example), a positive Ames result could be §8(e) reportable.

Exposure Considerations:

In a risk assessment context, "risk" is generally defined as a function of hazard and exposure. Thus, it would be logical to conclude that "substantial risk" (in the TSCA §8(e) context) would involve a function of hazard (such as a toxicology finding) and exposure (actual or potential). Such is not the case under TSCA §8(e).

The Agency has essentially eliminated the role of exposure in the determination of substantial risk (with few exceptions). Serious health effects far outweigh exposure considerations. Indeed, the §8(e) Guidance states that: "the mere fact the implicated chemical is in commerce constitutes sufficient evidence of exposure" ("commerce" has also become quite broad in its meaning, and includes R&D activities).

Sources of Information:

This is addressed in the §8(e) Guidance. Information can come from designed well-controlled studies, as well as from undesigned uncontrolled circumstances. The evidence does not have to be conclusive; it should, however, reliably ascribe the effect to the chemical.

Examples of Environmental Effects:

DSW 117626

The §8(e) Guidance provides the following examples:

- (1) Widespread and previously unsuspected distribution in environmental media, as indicated in studies (excluding materials contained within appropriate disposal facilities).
- (2) Pronounced bioaccumulation. Measurements and indicators of pronounced bioaccumulation heretofore unknown to the Administrator (including bioaccumulation in fish beyond 5,000 times water

concentration in a 30-day exposure or having an n-octanol/water partition coefficient >25,000) should be reported when coupled with potential for widespread exposure and any nontrivial adverse effect.

- (3) Any nontrivial adverse effect, heretofore unknown to the Administrator, associated with a chemical known to have bioaccumulated to a pronounced degree or to be widespread in environmental media.
- (4) Ecologically significant changes in species' interrelationships, that is, changes in population behavior, growth, survival, etc., that in turn affect other species' behavior, growth, or survival.

Examples include:

- (i) Excessive stimulation of primary producers (algae, macrophytes) in aquatic ecosystems, e.g., resulting in nutrient enrichment, or eutrophication, of aquatic ecosystems.
 - (ii) Interference with critical biogeochemical cycles, such as the nitrogen cycle.
- (5) Facile transformation or degradation to a chemical having an unacceptable risk as defined above.

There have not been many environmental §8(e) submissions to date. While EPA guidance in this area is very limited, it would appear that risk can be considered in determining reportability of environmental information. The "trigger words" to remember in this context are:

- widespread and previously unsuspected;
- pronounced bioaccumulation; and,
- unusual, unexpected, and nontrivial.

An example of a reportable study would be extensive data on TCDD ("dioxin") in river water sediments and fish, which was both widespread and unsuspected. A nonreportable study example would be a study which describes ambient and stack sampling results, with no indication of being widespread and unsuspected.

What is an Emergency Incident of Environmental Contamination?

DSW 117627

EPA §8(e) Guidance defines this as:

"Any environmental contamination by a chemical substance or mixture to which any of the above adverse effects (i.e., previously described environmental effects subject to §8(e)) has been ascribed and which because of the pattern, extent, and amount of contamination:

- (a) *Seriously threatens humans with cancer, birth defects, mutation, death, or serious or prolonged incapacitation; or,*
- (b) *Seriously threatens nonhuman organisms with large-scale or ecologically significant population destruction."*

What Information Does Not Need to Be Reported?

Information need not be reported if it:

- (a) Has been published by EPA in reports.
- (b) Has been submitted in writing to EPA pursuant to mandatory reporting requirements under TSCA or any other authority administered by EPA (including FIFRA §6(a)(2); see 8(e) Guidance). This also includes timely (within 15 days) submissions under §8(d), §4, and §5 (PMN, SNUR).
- (c) Has been published in the scientific literature and referenced by any one (1) of six (6) defined abstract services.
- (d) Is corroborative of well-established adverse effects already documented in the scientific literature, unless this information concerns emergency incidents of environmental contamination. [In its action against Union Carbide concerning an alleged 8(e) violation, EPA essentially rendered the definition of "corroborative" to mean replicative. As a practical matter rarely, if ever, would a new study "corroborate" a prior study because some parameter would almost always be different.]
- (e) Is contained in notification of spills or emergency releases under other Federal authority.
- (f) Applies to chemicals that are exclusively food, food additives, drug or cosmetic if regulated by FFDCA; pesticide (after EUP) if regulated by FIFRA; and article.

(8/20/90)

DSW 117628

TSCA 8(c) RECORDKEEPING: LITIGATION CLAIMS**DETAILED PROCEDURE:****Step 1**

Litigation complaints will be reviewed at the time of receipt by the law department for relevance to TSCA 8(c) recordkeeping. Criteria for this review include the following:

- a) Is the claim against a Monsanto product or process?
- b) Is the product(s) in question one that is covered by TSCA, i.e., other than pesticide, herbicide, food, food additive, or pharmaceutical?
- c) Is the claim a health or environmental claim?

If questions a, b and c are all yes, the claim will be sent to the DMHS occupational medicine group. Exceptions to this include: PCB claims which will be sent to the EPS/Product Safety Group for review and claims against MAP, Nutrition and Health Care Products which will be sent to these respective groups when the law department is unsure of the answer to question (b).

Step 2

The occupational medicine group of DMHS will review the litigation claims passed to them by the law department. The review will be based on EPA's definitions of "known human effect" and "significant adverse reactions." (40 CFR 717) For environmental effects, DMHS may need to contact the appropriate DEO for assistance. Claims that do not meet TSCA 8(c) criteria will be dropped from further TSCA review of this step. Those claims that meet TSCA 8(c) criteria will be forwarded to the DRM, Toxic Substances, for filing. PCB claims that meet the 8(c) criteria will also be forwarded for filing.

Step 3

Claims meeting the 8(c) criteria will be filed in the TSCA 8(c) file maintained by the DRM, Toxic Substances. This office will request a copy of the complaint "answer" from the law department.

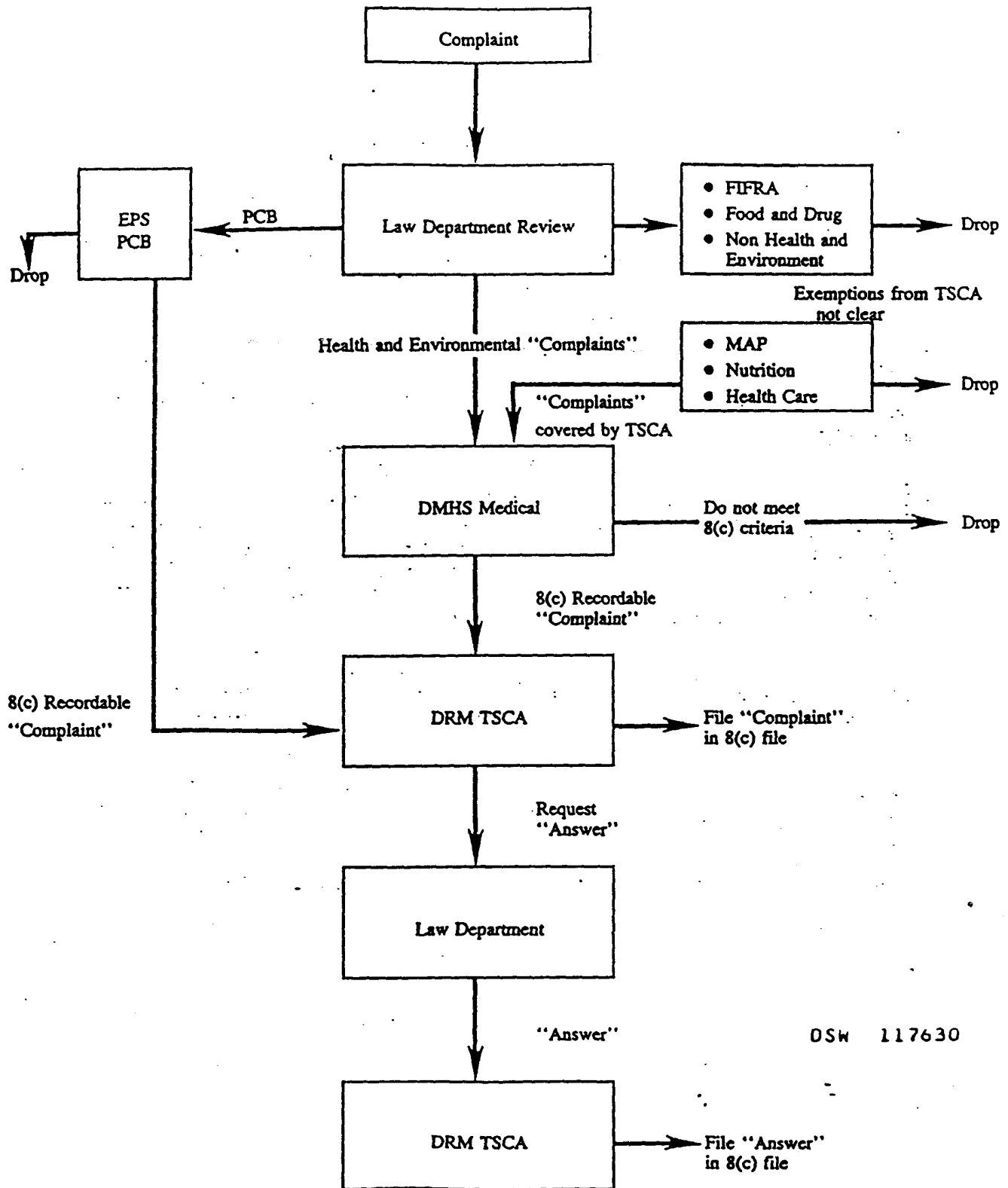
Step 4

The law department will forward a copy of the complaint "answer" to the DRM, Toxic Substances for filing in the TSCA 8(c) file, along with the "complaint." The "complaint" and "answer" will constitute the TSCA 8(c) recordable "allegation" and "follow-up" for all litigation filings.

A block flow diagram of the TSCA 8(c) process for litigation complaints appears on the reverse side of this page.

DSW 117629

TSCA 8(c) REVIEW PROCEDURE OF LITIGATION CLAIMS



OSW 117630

PR3-Appendix 3.2

RECORDING ALLEGATIONS OF SIGNIFICANT ADVERSE REACTIONS UNDER TSCA - U.S.

Monsanto procedure for handling the Recordkeeping Requirements of Final U.S. Environmental Protection Agency Rule Under Section 8(c) of the Toxic Substances Control Act (TSCA).

1. **Abstract of Rule** - Manufacturers and certain processors of chemical substances and mixtures must maintain records of significant adverse reactions to health or the environment alleged to have been caused by a substance, mixture, article, process, effluent or emission. These records are subject to EPA inspection.

Rule Reference - 40 CFR Part 717 (48 FR 38178 - August 22, 1983)

Note: The Rule does not apply to pesticides, food, food additives, drugs or cosmetics when manufactured, processed or distributed for these uses.

2. **Key Definitions** - (See Section 717.3 of the Rule for complete listing of definitions.)

- a. "Allegation" means a statement made without formal proof or regard for evidence, that a chemical substance or mixture has caused a significant adverse reaction to health or the environment.
- b. "Known human effect" means a commonly recognized human health effect of a particular substance or mixture described either in:
 - i. Scientific articles or publications abstracted in standard reference sources.
 - ii. The firms product labeling or material safety data sheets (MSDS).

However, an effect is not a "known human effect" if it:

- i. Was a significantly more severe toxic effect than previously described.
- ii. Was a manifestation of a toxic effect after a significantly shorter exposure level than described.
- iii. Was a manifestation of a toxic effect by an exposure route different from that described.

- c. "Significant adverse reactions" are reactions that may indicate a substantial impairment of normal activities, or long-lasting or irreversible damage to health or the environment.

3. **Exemptions from the Rule that relate to Monsanto**

- a. Activities involving solely mining or other solely extractive functions.
- b. Significant adverse reactions that are known human effects.
- c. Significant adverse reactions to the environment directly attributable to incidents of environmental contamination that have been reported to the federal government under any applicable authority.

4. **Who can receive an allegation?**

Allegations can come from a variety of sources including: employees, contractors, customers and neighbors.

As a result, Monsanto's receiving network must be broad. Initial receptors include: plant, laboratory and other Monsanto location supervision; plant and other Monsanto location managers, the Monsanto medical community at all locations, the offices of the Operating Company Directors of Environmental Operations, sales and marketing contacts, switchboard operators at all locations and environmental network contacts.

5. **Procedure for Handling Health or Environmental Allegations**

The Monsanto Toxic Substances Control Act (TSCA) Section 8(c) procedure consists of a four-step review and decision process. (Note: A separate procedure for litigation claims will be used see Appendix 3.1. A determination that an allegation is not recordable under the Rule can be made at any step in the process. The procedure is shown schematically on Appendix 3.2).

MONSANTO COMPANY

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Dept.	Phone #	
Fax #	Fax #	

DSW 117631

PR3-1

RECORDING ALLEGATIONS OF SIGNIFICANT ADVERSE REACTIONS UNDER TSCA - U.S. (continued)

5. Procedure for Handling Health or Environmental Allegations (continued)

- a. *Step One* - Each plant or other Monsanto-designated locations or laboratory will have at least one identified and trained TSCA Section 8(c) key contact. The Director of Environmental Operations (DEO) or designate from the appropriate operating companies, representatives of the WHSA (World Headquarters Site Administration), and Director, Regulatory Management (DRM), Toxic Substances will serve as the key contacts for the General Offices. The DEO's have responsibility under this procedure for free-standing divisions and subsidiaries of which Monsanto owns 50 percent or more of the voting stock or other equity rights, or for which Monsanto has the power to control the management and policies of that firm. At Step One, all initial receptors will automatically transfer persons making oral allegations to the key contact at their locations. Initial receptors will also transfer written allegation to the key contact at their location. (There are two exceptions with respect to oral allegations: If the initial receptors are either members of the Department of Medicine and Health Sciences Occupational Medicine (DMHS-OM) group (physicians) or the DEO's office, then these individuals can judge at Step One if an oral allegation is excluded.) Decision Criteria for Step One: pesticides, food, food additives, drugs, or cosmetics are excluded. If a decision is made that the allegation is excluded, the allegation, if written, will be discarded and, if oral, will not be acted on under the Rule.

If the allegation is oral and not excluded, the key contact will inform the allegor that such allegation may be recordable under the Rule and request that the allegor submit a written and signed allegation to the key contact. Monsanto Form 8(c)A, shown on Appendix 2, is available to be used for all employee related oral health allegations and can be used at the discretion of the DEO for external oral health allegations. All key contacts must note on a written allegation the date of its receipt.

- b. *Step Two* - The key contact at a Monsanto location or the appropriate DEO for the General Offices will provide Monsanto employees with Form 8(c)A for oral allegations of health effects. Written allegations will then be reviewed by the key contact, who will then make a Step Two decision. The key contact will determine if the written allegation is exempted from the Rule using the criteria in paragraph 3 above. If a decision is

made that an allegation is exempt from the Rule, the allegation will be discarded. Otherwise, the allegation will be sent to the appropriate DEO for review.

- c. *Step Three* - The appropriate DEO will serve as the coordinator for Step Three and Step Four activities. Allegations received from the location (plant, etc.) key contacts will be reviewed by the DEO and a Step Three decision made. A Step Three decision also will be made by the DEO or other General Offices key contact regarding allegations made to the General Offices receptors. If the Step Three decision is that the allegation is not recordable under the Rule, the allegation will be discarded. Otherwise the allegation will proceed to Step Four.
- d. *Step Four* - The DEO will form a committee to make decisions with respect to allegations that must be recorded under the Rule. The committee will be chaired by the DEO and consist of appropriate members of DMHS-OM for human effects, appropriate members of Environmental Sciences for environmental effects, Environmental Law and the DRM, Toxic Substances. If the decision is that the allegation is not recordable under the Rule, the allegation will be discarded. The DEO will provide feedback to the location key contact. If the Step Four decision is that the allegation is recordable under the Rule, then the DRM-Toxic Substances, will place the allegation and documents mandated by the Rule in the TSCA Section 8(c) file. The DEO will provide feedback to the location key contact.

6. Record keeping

The TSCA Section 8(c) file will be kept in the Office of the DRM Toxic Substances. The file structure will conform to requirements of Section 717.15 of the Rule. Files pertaining to adverse reactions to health of employees will be retained for 30 years. Files pertaining to other adverse reactions will be maintained for 5 years.

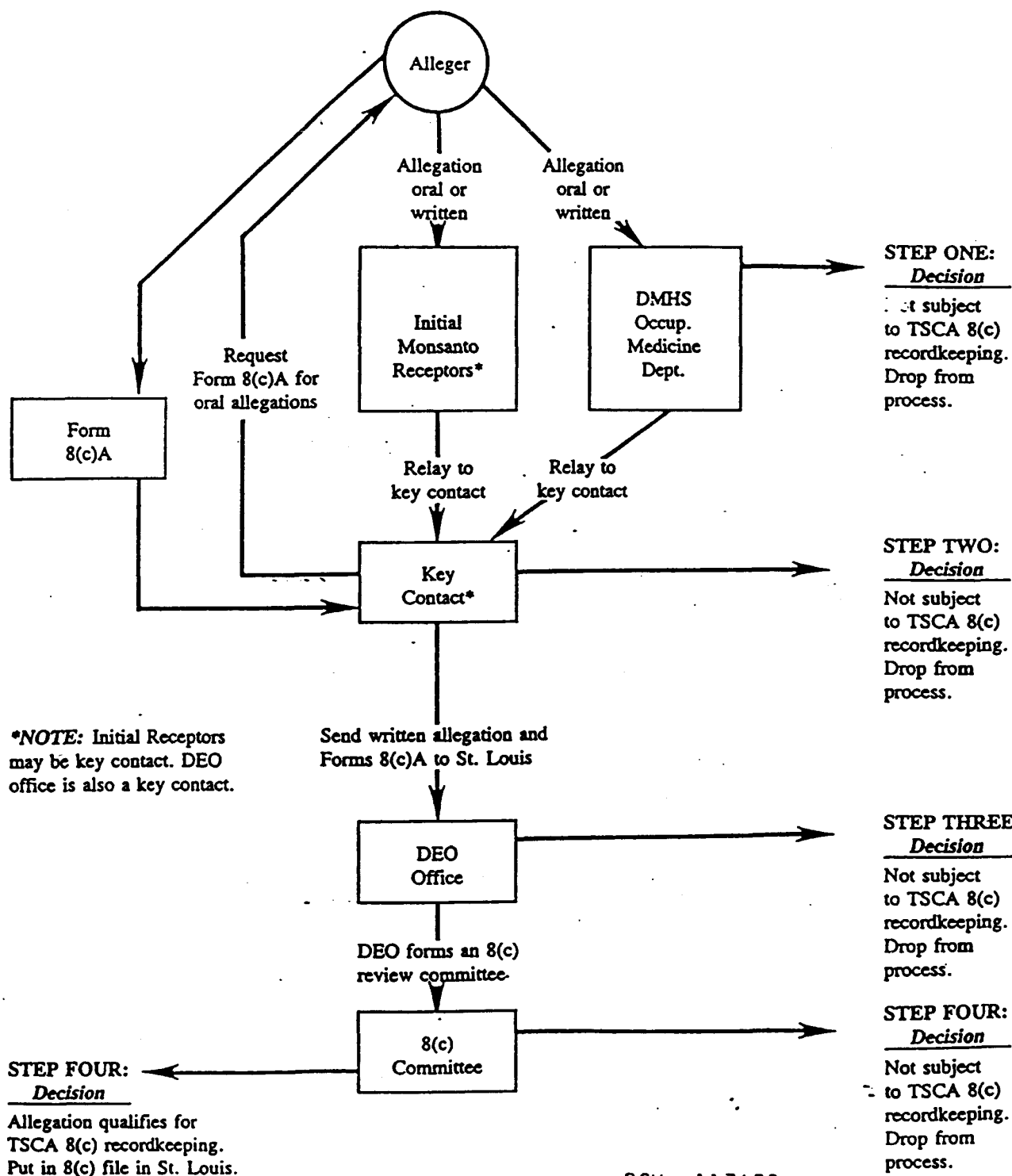
7. Communications

- a. Disposition of written allegations will be communicated back to the individual making the allegation. The key contact will facilitate the communication.
- b. A summary of the TSCA Section 8(c) procedure will be periodically communicated to all affected employees and updated, as appropriate.

(Reviewed and Approved: Environmental Safety and Health Committee, October 20, 1987.)

DSW 117632

**SIMPLIFIED FLOW DIAGRAM OF MONSANTO
PROCEDURE FOR HANDLING ALLEGATIONS SUBJECT TO TSCA 8(c)**



DSW 117633

MONSANTO COMPANY

PR3-Appendix 1

ESH

PROCEDURE

TO: SITE KEY CONTACT _____

Form 8(c)A
11/83

REPORTING FORM FOR
ALLEGATIONS OF SIGNIFICANT ADVERSE REACTION TO HEALTH
Toxic Substances Control Act, Section 8(c) 40 CFR Part 717

NAME OF ALLEGER: _____

DATE: ____ / ____ / ____
MO DAY YR

ADDRESS: (If not employee)

SITE LOCATION: _____

SITE ADDRESS: _____

SITE LOC. CODE: _____

(If health effect only): M ☐ F ☐

YR. OF BIRTH: _____

Employer (if other than Monsanto): _____

DESCRIPTION OF ALLEGED ADVERSE HEALTH EFFECT:

1. WHAT IS THE HEALTH EFFECT BEING CLAIMED? _____

2. HOW LONG DID IT LAST? _____

3. HOW OFTEN HAVE YOU EXPERIENCED EFFECT? _____

4. IN WHAT WAY DID IT AFFECT YOUR NORMAL ACTIVITIES? _____

5. HOW WERE YOU EXPOSED? _____

WHAT SUBSTANCE, MIXTURE, PROCESS OR OPERATION DO YOU THINK CAUSED THE EFFECT YOU DESCRIBED:

Signature

FOR COMPANY USE ONLY:

RECEIVED ON: _____ BY: _____

MONSANTO COMPANY

DSW 117634

PR3-Appendix 2

WATER_PCB-SD0000021429

PREMANUFACTURE NOTIFICATION TO EPA UNDER TSCA - U.S.

Monsanto procedure for development of premanufacture notification (PMN) as required under Section 5 of the Toxic Substances Control Act (TSCA).

1. **Abstract of Requirements** - A PMN is required to be submitted to EPA for all new chemical substances at least 90 days before the substance can be manufactured for commercial purposes. A number of substances are exempted from these requirements including, but not limited to: drugs, food and food additives, pesticides, R&D substances, nonisolated intermediates, and substances on the TSCA inventory.

Final Rules Reference - 40 CFR Part 720.

2. **Is a PMN required?**

At a very early stage of a new product development, including isolated intermediates and new imports, several checks should be made to determine if a PMN will be required for the product.

- a. Is the product (substance) exempt under TSCA?

Responsibility: Operating Company Director, Environmental Operations (DEO) or designate.

- Section 2(B) of TSCA exempts broad classes of substances such as pesticides, food, food additives, mixtures and others.
- Section 5(h) exempts small quantities for R&D purposes and has provisions to exempt substances for test marketing low volume manufacture, and polymer manufacture.
- Refer to TSCA law and regulations for details or contact Director, Regulatory Management (DRM), Toxic Substances.

- b. Is the substance "new" under TSCA? (Is it on the TSCA Inventory of Chemical in Commerce?)

Responsibility: Operating Company DEO or designate.

- Contact the Manager of Administrative Services in the Department of Safety and Environmental

Health Administration and have the TSCA non-confidential searched for the substance.

- If the substance is on the TSCA non-confidential inventory, it is not new under TSCA definition and a PMN is not required. If the substance in question is not on the nonconfidential inventory, the confidential inventory must be searched.
- To search the confidential inventory, a Bona Fide Intent to Manufacture (BIM) Notice must be submitted to EPA. A copy of the instructions for submitting a BIM can be found in 720.25 of 40 CFR 720. Send a copy of the BIM to the DRM, TSCA for corporate record-keeping purposes.
- If EPA reports that the substance is not on the confidential inventory, then the substance is a new substance under TSCA and a PMN is required unless the material is exempt under Section 1 (a) above.

3. **What information is required on a PMN submission?**

Final rules detailing the PMN requirements can be found in 40 CFR 720. All PMNs must be submitted on EPA Form 7710-25 (4/26/83). Copies of the form and instructions for its use are available from the DRM, TSCA. The required PMN information falls into either the category of General Information or Risk Assessment Data. EPA will accept additional data. In many cases, it is desirable to submit Risk Analysis or other information to assist EPA with their assessment. Since Monsanto performs a Risk Analysis on all new products via Corporate Environmental Protection Guidelines and the EC-201 and 202 procedures, the information is available for this purpose.

DSW 117635

MONSANTO COMPANY

PR4-1

PREMANUFACTURE NOTIFICATION TO EPA UNDER TSCA - U.S. (continued)

4. What are the details of the PMN procedure?

The PMN process should be integrated into the development scheme of a new project. In most cases, the PMN development will be initiated during the earliest phases of commercialization of a product. The PMN must be submitted to EPA at least 90 days before the product can be manufactured for commercial purposes, including test marketing.

a. How is a PMN initiated?

Responsibility: Operating Company DEO or designate.

- The Operating Company contact submits an ER-200 or EC-201 to the Department of Medicine and Health Science (DMHS) if one has not already been submitted (See Monsanto booklet G-2738 for ER-200 and EC-201-202 Procedures).
- The Operating Company contact drafts a PMN using the EPA form.
- The Operating Company contact calls a scoping meeting. Minimum participants at the meeting are Operating Company contact, Operating Company DEO or designate (if not serving as a contact), member of Corporate Environmental Sciences group or other qualified environmental effects expert (if appropriate), DMHS toxicologist and DRM-TSCA. Copies of PMN drafts, along with an approved ER-200 or EC-201 for the substance are supplied to participants.
- At the scoping meeting, decisions are made by the Operating Company contact, as to the scope and detail of optional information to supply. If optional risk analysis is required, assignments are made to DMHS toxicology, industrial hygiene, etc., to complete the necessary sections. A decision is also made as to whether an EC-202 is needed before a PMN submission. *Note:* It is appropriate at this stage of product development to initiate a Material Safety Data Sheet and a TF-837 for label and freight classification.

b. How are PMNs finalized?

Responsibility: Operating Company DEO or other designated Operating Company contact.

- The Operating Company contact prepares a final draft using input from the scoping meeting as well as follow-up input from DMHS.

- The Operating Company contact, together with the patent department reviews the final draft for confidential information and develops appropriate confidentiality claims with substantiation, where necessary.

- The final draft is circulated to the participants of the scoping meeting for final review.

- The Operating Company contact calls a meeting for final comments/approvals.

c. How are PMNs submitted?

Responsibility: DRM, TSCA

- After final review/approval, the Operating Company contact forwards the PMN to the DRM, TSCA (Authorized Official), for submission.
- The DRM, TSCA will submit the PMN (both confidential and non-confidential as appropriate), using applicable EPA submission requirements.

d. How is EPA follow-up on a PMN handled?

Each PMN will identify a technical contact in addition to an authorized official. The technical contact will typically be an Operating Company DEO, Commercial Development, or R&D contact.

Phone Contact

- All calls from the EPA on technical matters should be handled by the "Technical Contact."
- All verbal questions concerning non-confidential inquiries by the EPA may be discussed at the time of call or deferred to obtain an answer if unknown or if unsure as to EPA authority to ask for the information.
- Non-confidential oral responses may be followed up with a written response when deemed appropriate by the contact. In all cases the technical contact should write a note to file documenting the conversations, with a copy to the DRM, TSCA.
- Confidential inquiries previously discussed with the EPA or claimed confidential in the PMN may be discussed at the discretion of the technical contact.
- All other verbal confidential questions will be addressed by written response only.

PREMANUFACTURE NOTIFICATIONS TO EPA UNDER TSCA - U.S. (continued)

Phone Contact (continued)

- Uncertain areas of confidentiality will be deferred and handled according to item (5).
- Verbal response to EPA will be followed up, at the discretion of the technical contact, with a written letter documenting the conversation and clearly indicating areas of confidentiality.

EPA Actions

Responsibility: The Operating Company DEO or designate will have prime responsibility, with counsel of Environmental Law and the DRM, TSCA.

- EPA may extend the review period by an additional 90 days.
- EPA may ask for more information under Section 5(e). i.) An order may be issued by EPA. ii.) A consent order may be jointly agreed to. The consent order can include restriction on manufacture or use in lieu of information generation. (Note: As a rule, consent orders should be signed by line management).
- EPA may restrict manufacture or use under Section 5(f).

- e. How is Monsanto follow-up on the PMN submission handled? Responsibility: Operating Company DEO or designate.
- Monsanto may request EPA to stop the clock on PMN reviews at any time during the review period.
- After EPA's review period expires, manufacture can commence at any time, subject to any 5(e) or 5(f) restrictions. A Notice of Commence to Manufacture (NCM) must be submitted to EPA within 30 days of the first manufacture for commercial purposes. The information to be included in the notice are detailed in 40 CFR 720. Confidential claims must be made again at this time, as appropriate. Send a copy of the NCM to the DRM, TSCA for corporate recordkeeping purposes. Once a NCM is filed with EPA, the PMN substance is placed on the TSCA inventory.

(Approved: Operating Company Directors of Environmental Operations and the Director, Regulatory Management TSCA, October, 1983.)

(Reviewed and Approved: Environmental Safety and Health Committee, October 20, 1987.)

DSW 117637

MONSANTO COMPANY

OCCUPATIONAL FATAL ACCIDENT REPORTING

In case of a fatal accident, Monsanto's Law Department must be contacted in addition to government, operating company, and corporate reporting requirements.

OSHA regulations require that, within 48 hours after the occurrence of an employment accident which is fatal to one or more employees or which results in hospitalization of five or more employees, the employer of such employee(s) shall report the accident either orally or in writing to the nearest office of the OSHA Area Director. The reporting may be by telephone or telegraph. The report shall relate the circumstances of the accident, the number of fatalities, and the extent of any injuries.

In such instances the following Monsanto guidelines are considered necessary to protect the civil rights of company employees.

In addition to routine Operating Company and Corporate notifications in fatal accidents, either Mary M. Tonkin or Michael E. Gewin (for accidental deaths) or L. William Higley (for deaths from long-term chemical exposure), Monsanto's attorneys for OSHA matters, must be notified immediately.* They will provide prompt necessary legal guidance including, where necessary, sending an attorney to the site for on-the-spot counseling.

In the meantime, OSHA inspector(s) should be given access to the site of the accident when the inspector arrives on the premises, without requiring that the inspector secure a warrant for entry. However, neither members of location management nor any wage employee should discuss the accident with the OSHA inspector until advised to do so by the company attorney.

The location manager or his designee will greet the inspector and state that location employees have been asked not to discuss the accident until the company attorney advises them accordingly.

The inspector is to be told that we have been forced to take this posture as a result of the OSHA Procedure for Investigating Criminal/Willful Violations. The inspector will be permitted to inspect the plant, and, of course, should be advised of any chemical hazards and protective measures needed, related or not to the accident.

Location personnel will not allow the inspector to view any records or documents at this time, other than the lost-time injury log, OSHA Form 200 and Form 101 or its equivalent, until advised to do so by the company attorney.

If the location is requested to rope off the area of the accident, local discretion should be exercised. The inspector, however, is not authorized to keep plant management away from any part of the operation.

If local management believes entry by the inspector must be delayed for a few hours because of exposure, safety, confusion, etc., seek such a recommendation from Ms. Tonkin or Mr. Higley at the time of the initial call to St. Louis.

* Mary M. Tonkin, 314/694-2967 (office),
314/721-8209 (home).

Michael E. Gewin, 314/694-2849 (office),
314/352-2176 (home).

L. William Higley, 314/694-8503 (office);
314/862-1796 (home).

(Approved: Environmental Policy Committee, February 18, 1980.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

(Updated for key contacts, December 16, 1991)

MONSANTO COMPANY

DSW 117638

PR5-1
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TRANSMITTAL OF TOXICOLOGY AND HEALTH-RELATED DATA TO REGULATORY AGENCIES - U.S.

Health-related information should be submitted through the Department of Medicine and Health Sciences.

The various regulatory agencies are continually supplied information from toxicology and health-related tests on Monsanto products done by or for Monsanto. In order to provide consistency in the handling and review of such information, as well as to assure proper follow-through on commitments to these agencies, the transmittal of such test results will be carried out in accordance with the following guidelines:

1. All toxicology or health-related data will be reviewed with the Department of Medicine and Health Sciences (DMHS) prior to submission to any regulatory agency, except for routine submissions by Monsanto Agricultural Company of test data re-quired under FIFRA. In addition, DMHS will be informed of all such submissions at the time via the letter of transmittal.
2. Any such information transmitted must be recorded and the copy of the final submission retained both by DMHS and the involved operating company.
3. The letter of transmittal for any toxicology or health-related data must include a listing of the materials being transmitted including sufficient bibliographic information for subsequent retrieval of the original data.
4. If the submission includes data on human health effects, it is preferable that the information be submitted to the regulatory agency by the Director of the Department of Medicine and Health Sciences.
5. Agreements with a regulatory agency which commit Monsanto to the future transmittal of toxicology or health-related data must also be reviewed and approved in advance by DMHS; further, DMHS must concur with the feasibility of meeting commitment dates. Appropriate records of such commitments must be maintained both by the involved operating company and DMHS in order to assure future Monsanto compliance with such agreements.
6. Any exceptions to the above must be approved by the Director of DMHS.

(Approved: Environmental Policy Committee, January 17, 1984.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

DSW 117639

MONSANTO COMPANY

PR6.1

employees, representatives and agents, shall not be liable for and Contractor releases and discharges Monsanto, its subsidiaries, and their respective employees, representatives and agents, from any and all claims, liabilities, actions, suits, judgments, losses, illnesses, injuries, deaths, damages, costs and expenses arising out of, related to, or connected with Monsanto's providing to, or use by, Contractor, its employees, representatives or agents, of the above described items, services, tools, equipment or facilities, (2) Contractor assumes all risk and responsibility therefore, (3) Contractor shall indemnify and save harmless Monsanto, its subsidiaries, and their respective employees, representatives and agents from and against any and all such claims, liabilities, actions, suits, judgments, losses, illnesses, injuries, deaths, damages, costs and expenses and (4) the foregoing shall apply irrespective of any negligence or fault of Monsanto, its subsidiaries, or their respective employees, representatives or agents, whether such negligence or fault is joint, several, sole or otherwise.

The items, services, tools, equipment or facilities are provided by Monsanto on an AS IS, WHERE-IS BASIS. MONSANTO MAKES NO WARRANTY OR REPRESENTATION OF ANY KIND, EXPRESS OR IMPLIED, WITH RESPECT TO THE ITEMS, SERVICES, TOOLS, EQUIPMENT OR FACILITIES AND MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE.

Contractor agrees to return any items, tools, equipment or facilities in the same, good-working condition as received from Monsanto.

- 14.2 Should Contractor refuse to agree to the above, the Contractor is not to be permitted to use Monsanto tools, first aid/medical facilities, equipment, breathing air apparatus, or other services.

(Reviewed and Approved: Manufacturing Management Council, August 6, 1990; Environmental, Safety and Health Committee, September 19, 1990)

DSW 117600

MONSANTO COMPANY

OG-6.7

Monsanto

000 1 8 1990

OM (Name-Location-Phone) N. L. Reding - D1R - 4-2106

TO : November 27, 1990 cc:
SUBJECT : Environmental Safety and
Health Guidelines
REFERENCE :
: Distribution List

Attached is a revised issue of the Contractor Health and Safety Guideline/Procedure. This document is part of Monsanto's corporate Environmental, Safety and Health Guidelines and, as such, serves to communicate the intentions and expectations of the corporation. Monsanto has recognized for some time the need for the corporation to act uniformly on environmental, safety and health matters. Collectively, these guidelines serve that purpose.

The changes to the Contractor Safety and Health Guideline were primarily motivated by the corporation's desire for continuously improving performance. However, other concurrent developments prompted even broader Revisions, specifically CMA's Code of Management Practice for Process Safety and Monsanto's introduction of a substance abuse policy. Every effort has been made to not only accommodate these requirements but to retain the managerial flexibility present in the original version of the guideline.

The key changes require that the contractor:

- 1) Have a substance abuse program for employees involved in safety-sensitive work,
- 2) Include with the submission of the bid relevant information pertaining to their safety record, the training and experience of employees, safe work procedures used, and substance abuse program status, and
- 3) Hold a review with Monsanto representatives to discuss hazards identified with the job and the precautions to be taken.

Obviously, all Monsanto operations have yet to fully implement the substance abuse program and not all contractors will be in a position to meet these new requirements immediately. However, each site is expected to respond in a manner which brings their facility into compliance in the shortest reasonable time frame.

DSW 117601

Please remove the prior issue of this guideline/procedure from the "Other Guidelines" section of the Environmental, Safety and Health Guidelines book and insert this updated version.

N. L. Reding
N. L. Reding

attachment

DSW 117602

RESEARCH ANIMAL CARE

Monsanto Company recognizes that animals must be used in research both to determine the effects of various biologically active materials and the safety of all products. However, it is the stated purpose of the company that animals be utilized only when necessary and always in a humane and considerate fashion.

Monsanto encourages and supports efforts to develop safety testing procedures which do not involve animals and will encourage their use and official recognition as and when their scientific validity is established.

Research investigators shall abide by the terms of the Animal Welfare Act and shall at all times follow the Guide for the Care and Use of Laboratory Animals as issued by the National Research Council.

A designated officer of the company will each year appoint a committee to be known as the Monsanto Research Animal Committee. This committee will be composed of at least three members and will have at least one representative from each major user group within Monsanto and at least one veterinarian actively engaged in the care of research animals.

It shall be the responsibility of the committee and the Animal Resources Veterinarian to assure full compliance with existing laws and guidelines as they relate to the care and utilization of animals at Monsanto.

Responsibilities of this committee will include but not be limited to the following:

1. Provide for review and approval of all protocols which involve the use of live animals,

2. review and approve all facilities which house animals for research including new facilities in the planning phase and,

3. together with the Animal Resources Veterinarian, assure that corrective action is taken if deficiencies or violations occur. It shall further be the responsibility of this committee to file with the United States Department of Agriculture a report of animal usage at the end of each year.

It shall continually be the goal of Monsanto to give high consideration to the well-being of all animals used by this company.

(Policy approved by the Corporate Administrative Committee, October 6, 1980; revisions approved by the Environmental Policy Committee, March 20, 1984.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

DSW 1-17603

MONSANTO COMPANY

OG-7

EMPLOYEE HEALTH AND EXPOSURE COMMUNICATIONS

It is Monsanto's intent to identify hazards of chemical substances and physical agents in the workplace and to communicate such hazards to employees who may be exposed.

1. Responsibilities

Identification of health hazards of chemical substances, physical agents, and biological agents in the workplace is the joint responsibility of site management, the Directors - Environmental Operations (DEOs) and Corporate Environmental Safety and Health (ESH). Line management is responsible for the necessary communications to and education and training of employees on such hazards.

Europe/Africa Specific: The Director of DMHS Europe/Africa also assumes responsibility for the necessary communications within Europe/Africa. In Europe, the DEO is represented by the Director, Environmental and Regulatory Affairs. Other countries/regions may specify additional functions who share responsibility.

2. Employee Communication, Education and Training Concerning the Hazards of Substances in the Workplace

All employees whose work provides potential exposure to a hazardous chemical substance will have ready access to reference material, such as a Material Safety Data Sheet (MSDS), and will receive training in the nature of the hazards and appropriate work practices, protective measures and emergency procedures. Such training will be provided to employees when newly assigned to an area with potentially hazardous exposures and annually thereafter.

3. Employee Access to Medical and Exposure Records

Access to an employee's medical or exposure records (if generated) will be provided within 15 working days after Monsanto receives a request in person or in writing from that employee, or as required by law if more stringent.

In addition to individual medical and exposure records, an employee may have access to general exposure records (such as area samples) for his/her

work area and the individual exposure records (with all identifiers deleted) of other employees in the same work environment. Since much of the data requires interpretation or explanation, the most appropriate physician or nurse should be present during the review of medical records, and the industrial hygienist or industrial hygiene contact should be present during the review of exposure records to provide such interpretation and consultation.

Written requests for medical and exposure records will be kept at the location housing the records.

4. Other Communication of Exposure Information

Employees who participate in individual (personal) industrial hygiene monitoring will be informed of the sampling results.

All employees in an area where ambient air concentrations or physical agents are monitored should be informed of area concentrations, their relationship to relevant federal, state or local permissible exposure limits, Monsanto guidelines and intended corrective action where required.

U.S. Specific: For certain substances, OSHA regulations require written notification to the employee.

5. Communication of Physical Examination and Medical Test Data to the Employee

An employee will be informed about results of health evaluations and medical tests. Copies of medical information will be sent to private physicians upon the employee's request and only with written authorization.

U.S. Specific: The employee will be informed in writing about results of health evaluations performed for occupational surveillance.

DSW 117604

PR1-1

MONSANTO COMPANY

EMPLOYEE HEALTH AND EXPOSURE COMMUNICATIONS (continued)

6. *Employee Inquiries*

Any employee inquiry about work exposures must be addressed by site management. The location physician, industrial hygienist or other appropriate management representative(s) should meet with the employee and provide a specific response based on the factual information available. The appropriate DEO, Manager, Human Resources and Corporate Environmental, Safety and Health representative should be consulted in any non-routine situation.

Europe/Africa Specific: The Director of DMHS Europe/Africa should be consulted in any non-routine situation in Europe/Africa.

7. *Communication of Health Studies*

When employees have been involved in epidemiology or other health studies conducted by or on behalf of Monsanto, an executive summary of the study results prepared by ESH will be communicated in writing to the responsible DEO and site managers. Communications with the employees will be coordinated by the DEO. The DEO may ask ESH and/or Europe - Environmental and Regulatory Affairs (ERA) to develop a Communications Document and Dissemination Plan in consultation with plant personnel. A decision will be made at that time as to the total population to be included in the communication.

Other studies known to Monsanto which are scientifically sound and which present significant new information concerning the potential hazards of a material to workers should be communicated to employees who have potential exposure to the substance. Where possible, employees should learn of significant potential hazards of materials with which they work from Monsanto, not from outside sources. However, a multitude of epidemiological, animal and other health studies are conducted annually by Monsanto and by others. These studies vary widely in terms of new knowledge provided, scientific validity, conclusiveness of the findings, applicability to humans or the work environment, etc. Location management in consultation with the DEO and Corporate Environmental Safety and Health and DMHS Europe/Africa (for Europe/Africa sites) should communicate in writing any applicable, reliable study results.

In determining where the results of a study should

be communicated, factors such as the following should be evaluated:

- the scientific validity and conclusiveness of the study,
- whether the study produced new results of significance,
- the applicability of the study to employees,
- the significance of any potential hazard identified, and
- the plans for follow-up studies.

When there is a question of whether the results of a study are significant enough to be communicated to appropriate employees corporate-wide, the matter will be referred to the following by any member of concerned management: The Director of Medical and Health Sciences, Industrial Hygiene Director, Corporate Toxicology Director, Epidemiology Director, Medical Director, appropriate DEO and the Assistant General Counsel - Environmental. The appropriate Directors of Manufacturing, Human Resources and Public Affairs/Relations will also provide consultation. A draft Communication Document and Dissemination Plan will be developed upon request, initially within ESH, to ensure that the study results are properly interpreted and that the communicate will be properly reviewed and disseminated to all operating units and/or plants. The DEO, with support from Corporate Industrial Hygiene and DMHS Europe/Africa (when Europe/Africa sites are involved) will transmit draft statements, announcements and supporting data to the appropriate location management.

8. *Access to Employee Medical or Exposure Records by Designated Representatives*

A designated representative with the appropriate written authorization from the employee will be provided access to an employee's medical and exposure records within 15 working days of receipt of the authorization. A designated representative is any individual or organization to whom the employee has given written authorization to have access to the employee's medical or exposure records for a specific purpose on a specified occasion.

U.S. Specific: OSHA rules require that an employee's recognized or certified collective bargaining agent will be treated as a designated representative without regard to written employee

EMPLOYEE HEALTH AND EXPOSURE COMMUNICATIONS (continued)

8. *Access to Employee Medical or Exposure Records by Designated Representatives (continued)*

authorization with respect to access to employee exposure records (with all identifiers deleted) and analyses of group medical and exposure records only. Final reports of completed epidemiological studies of unionized employees will be provided to the union involved on specific written request. Information on the study results will be provided to all affected employees in a timely manner if this has not been done previously.

The appropriate managers, Human Resources and ESH representatives, (DMHS Europe/Africa when Europe/Africa sites are involved) and the Assistant General Counsel - Environmental should be advised of requests for access to records from a designated representative.

An OSHA inspector who presents a written access order approved by the Assistant Secretary of Labor for OSHA will be given immediate access to records specified by the order. No order is required for access to exposure records. Requests should be reported immediately to the Assistant General Counsel - Environmental. Requests by NIOSH have been supported by the courts but should be cleared by the Assistant General Counsel - Environmental before being granted. Reference should be made to 29 CFR Part 1910 Access to Employee Exposure and Medical Records, Final Rule 9-29-88.

9. *Notification to Employees of Right of Access*

Each location should make such notification of the existence, location and right of access to medical and exposure records a part of its new hire orientation program and should post or otherwise inform all employees of this information and right each year.

10. *Employee Health and Exposure Communications Plans*

Each manufacturing and laboratory location should have written Employee Health and Exposure

Communications Plans which address such things as:

the communication of and training on the hazards of chemical substances and physical agents in the workplace and proper handling methods, protective measures and emergency procedures,

the handling of employee inquiries and expressions of concern about exposures,

the handling of employee and designated representative requests for access to medical and exposure records,

the communication of abnormal physical exam/medical test findings,

the regular communication of the industrial hygiene program and of exposure levels vs. standards,

the identification of materials or other subjects needing special communications efforts and plans for development of such programs locally or with the help of DMHS or others, and

notification to employees of their right of access to their medical and exposure records.

11. *ESH Responsibility for Communication Programs*

When its specialized expertise and/or a general communications need makes it appropriate, ESH has a responsibility to develop a Communication Document and Dissemination Plan upon request for new health hazard information. The appropriate DEOs and management at representative plants will be consulted in the development of such plans to make them more suitable and effective for plant use.

Europe/Africa Specific: Europe Environmental and Regulatory Affairs will be responsible for developing a Communication Document and Dissemination Plan which is appropriate for the laws and customs governing handling of employee health and exposure information in those countries.

PR1-3

DSW 117606

MONSANTO COMPANY

EMPLOYEE HEALTH AND EXPOSURE COMMUNICATIONS (continued)

12. Definitions

Access to Records: Consists of an opportunity to review an employee's medical and exposure records on site, and if requested, receipt of or opportunity to make a copy of the records. Unless otherwise specified by law, trade secret information may be deleted from the records provided to an employee or designated representative, but they must be so informed that this was done.

Medical Records: Include reports of physical examinations, medical tests and other medical information on the employee in the Company's possession.

Exposure Records: Include records of an employee's work history and the level of exposure to potentially harmful or toxic substances or agents and analyses of such records.

Epidemiology Studies: Defined as scientific investigations of potential relationships between workplace exposures and health outcome of Monsanto employees or other occupational populations, as outlined in a study protocol.

(Approved by: Environmental Policy Committee, May 17, 1982.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

(Revised and Approved: DEO Liaison Meeting, August 12, 1991.)

DSW 1.17607

TRANSMITTAL TO EPA OF SUBSTANTIAL RISK INFORMATION UNDER TSCA - U.S.

Monsanto procedure for handling the reporting of information to EPA under the 8(e) substantial risk section of the Toxic Substances Control Act (TSCA).

1. *Abstract of Requirements* - TSCA Section 8(e) requires any person (Company) who manufactures, processes or distributes in commerce a chemical substance or mixture and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment shall immediately inform the EPA of such information.

2. *Who is responsible for reporting?*

The requirements of Section 8(e) of the Toxic Substances Control Act apply to "any person who manufactures, processes, or distributes in commerce." It is Monsanto's position that the "person" who engages in the commercial activity is only the business organization, whether a sole proprietorship, corporation, partnership, or association.

3. *How are 8(e) reporting decisions made?*

Monsanto organizations that might receive TSCA 8(e) information will have a designated individual to whom such information shall be communicated. At least annually, the Director of Regulatory Management (DRM) - Toxic Substances, will publish a list of the designated individuals.

Anyone obtaining information of the type given in the abstract of requirements and detailed by EPA in their policy statement on Interpretation and Enforcement of TSCA 8(e) (43FR 11110, March 16, 1978), should immediately submit such information to their supervisor. The supervisor shall immediately relay the information to the location or department manager, whichever is applicable, who, in turn, transmits it to the proper designated individual in the organization. The information is then transmitted directly to the Director of Medicine and Health Sciences.

It is imperative that the flow of information through this transmittal chain be rapid. In the event of nonavailability of a member of the communication network at the time information is first obtained, such member should be bypassed in the interest of speed.

All individuals involved in submission of substantial risk information to the Director of Medicine and Health Sciences should keep a record of date of receipt and pertinent identifying details.

The Director of Medicine and Health Sciences, Environmental Counsel, DRM - Toxic Substances, and the appropriate operating unit Director(s) of Environmental Operations will comprise the designated official 8(e) committee to make decisions with respect to information that must be reported to the EPA under Section 8(e) of the Toxic Substances Control Act.

Appropriate Senior Management will be informed of committee decisions.

In the event that a committee decision is not unanimous, the next appropriate level of management shall be consulted, and the matter will be resolved at the highest level, if necessary.

Employees who submit information through Company channels will be notified of action taken by the 8(e) committee together with reasons for such action.

In the event that, after Monsanto has evaluated information and has determined that the item is not reportable under Section 8(e), the Company becomes aware that an employee, as an individual, subsequently reported the item to the EPA, the Company should review the situation to determine what action, if any, it should take with the EPA.

MONSANTO COMPANY

DSW 117608

PR2-1
1

TRANSMITTAL TO EPA OF SUBSTANTIAL RISK INFORMATION UNDER TSCA - U.S. (continued)

4. *How are employees notified of 8(e) requirements?*

All exempt company employees and others so designated by their organizational unit (plant nurses, contract physicians, scientists and engineers, etc.), within organizations that might receive or have access to TSCA 8(e) information, shall be informed of the provisions of Section 8(e). Annual reminders of 8(e) requirements will be provided to said employees. Records documenting the information communication will be maintained by the DRM - Toxic Substances.

(Approved by Vice President, Environmental Policy Staff, April 11, 1986.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

(Revised and Approved by the DEOs and the Vice President, Environmental Policy Staff, May 16, 1991.)

NOV 9 - 1992

Monsanto

The Chemical Group
800 N. Lindbergh Boulevard
St. Louis, Missouri 63167
Phone: (314) 694-1000

October 27, 1992

Dear Monsanto Employee:

A Monsanto procedure is in place to receive and process any interaction that you feel could lead to a conclusion regarding substantial health or environmental risk. This procedure is designed to assist you with appropriate communication of any information of this type and to provide a compliance method for substantial risk reporting under Section 8(e) of the Toxic Substances Control Act (TSCA). A copy of the Monsanto procedure is attached along with a listing of designated individuals in each organization responsible for process implementation.

The kind of information that you should consider for submission into the Monsanto TSCA 8(e) procedure includes:

Human health effects or animal studies that suggest human health effects. Specific attention should be given to cancer, birth defects including reproduction effects, mutagenicity, death or serious or prolonged incapacitation.

Environmental effects such as widespread and previously unexpected distribution of chemicals in environmental media, pronounced bioaccumulation, and significant changes to species' interrelationships.

Emergency incidents of environmental contamination that seriously threaten humans or the environment and are not reported under other Federal reporting requirements.

A brief overview of TSCA 8(e) is enclosed. The overview also includes information regarding responsibilities for maintaining allegations, as required under TSCA 8(c). More details regarding the reporting requirements under TSCA 8(c) and 8(e) are available upon request. Please take a few minutes to read the overview.

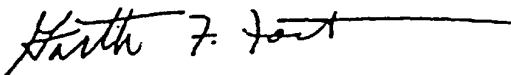
DSW 117610

A Unit of Monsanto Company

WATER_PCB-SD0000021445

If you have questions, don't hesitate to contact your site TSCA coordinator, your Product Safety Manager, Product Safety Director (J. P. Mieux), J. R. Condray of the Corporate Environmental, Safety and Health or myself.

Sincerely,



Garth F. Fort
Director, Environmental Operations

GFF/pam
Enclosures

DSW 117611

MONSANTO ESH PROCEDURE PR2-1
REPORTING OF SUBSTANTIAL RISK INFORMATION

DESIGNATED TSCA SECTION 8(e) INDIVIDUALS

ORGANIZATION

DESIGNATED INDIVIDUAL

DMHS

B. R. FRIEDLANDER

ESH - RM/EA

J. R. CONDRAY

CRL

M. J. MONTAGUE

THE AGRICULTURAL GROUP

R. L. HARNESS

THE CHEMICAL GROUP

G. F. FORT/J. P. MIEURE

S&EH

T. F. EVANS

BSSR

D. J. SCOTT

9/92

DSW 117612

TRANSMITTAL TO EPA OF SUBSTANTIAL RISK INFORMATION UNDER TSCA - U.S.

Monsanto procedure for handling the reporting of information to EPA under the 8(e) substantial risk section of the Toxic Substances Control Act (TSCA).

1. **Abstract of Requirements** - TSCA Section 8(e) requires any person (Company) who manufactures, processes or distributes in commerce a chemical substance or mixture and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment shall immediately inform the EPA of such information.

2. **Who is responsible for reporting?**

The requirements of Section 8(e) of the Toxic Substances Control Act apply to "any person who manufactures, processes, or distributes in commerce." It is Monsanto's position that the "person" who engages in the commercial activity is only the business organization, whether a sole proprietorship, corporation, partnership, or association.

3. **How are 8(e) reporting decisions made?**

Monsanto organizations that might receive TSCA 8(e) information will have a designated individual to whom such information shall be communicated. At least annually, the Director of Regulatory Management (DRM) - Toxic Substances, will publish a list of the designated individuals.

Anyone obtaining information of the type given in the abstract of requirements and detailed by EPA in their policy statement on Interpretation and Enforcement of TSCA 8(e) (43FR 11110, March 16, 1978), should immediately submit such information to their supervisor. The supervisor shall immediately relay the information to the location or department manager, whichever is applicable, who, in turn, transmits it to the proper designated individual in the organization. The information is then transmitted directly to the Director of Medicine and Health Sciences.

It is imperative that the flow of information through this transmittal chain be rapid. In the event of nonavailability of a member of the communication network at the time information is first obtained, such member should be bypassed in the interest of speed.

All individuals involved in submission of substantial risk information to the Director of Medicine and Health Sciences should keep a record of date of receipt and pertinent identifying details.

The Director of Medicine and Health Sciences, Environmental Counsel, DRM - Toxic Substances, and the appropriate operating unit Director(s) of Environmental Operations will comprise the designated official 8(e)-committee to make decisions with respect to information that must be reported to the EPA under Section 8(e) of the Toxic Substances Control Act.

Appropriate Senior Management will be informed of committee decisions.

In the event that a committee decision is not unanimous, the next appropriate level of management shall be consulted, and the matter will be resolved at the highest level, if necessary.

Employees who submit information through Company channels will be notified of action taken by the 8(e) committee together with reasons for such action.

In the event that, after Monsanto has evaluated information and has determined that the item is not reportable under Section 8(e), the Company becomes aware that an employee, as an individual, subsequently reported the item to the EPA, the Company should review the situation to determine what action, if any, it should take with the EPA.

DSW 117613

MONSANTO COMPANY

PR2-1

TSCA

SECTIONS 8(c) AND 8(e)

OVERVIEW

When Congress passed the Toxic Substances Control Act (TSCA) in 1976, it recognized that everyone, including employers, employees and the general public, has a role to play in protecting human health and the environment from the dangers of toxic or hazardous chemicals.

Congress therefore included two sections in TSCA- Sections 8(c) and 8(e) - that place specific obligations on employees of a company to report certain types of health and environmental information either to the company, or, in certain circumstances, directly to the Environmental Protection Agency. (EPA).

Monsanto has established internal procedures to enable our employees to fulfill these obligations and to simplify the reporting process. It is important that you understand and follow these procedures.

Section 8(c) - Allegations of Significant Adverse Health or Environmental Effects

Section 8(c) was designed to create a historical record that will help Monsanto and the EPA identify significant potential risks or environmental threats at an early stage so that they can be controlled before they become serious problems.

Under Monsanto's 8(c) procedure if an employee wishes to internally report any suspicion or allegation that a chemical may pose a health hazard or threat to the environment, the employee may report the matter to the site 8(c) coordinator, who will help document the allegation on a form. The Company then has the responsibility to determine if the allegation should be maintained as required under the law.

If you are told by someone else, such as a fellow employee or a customer, that he or she has been made ill; or even if a neighbor of yours complains that he or she thinks emissions from the plant are, for example, killing fish in the local river or giving him or her headaches, you must transfer the person immediately to the TSCA 8(c) coordinator who is required by law to request that individuals reduce their allegation to writing, sign it and send it to the Company. The Company will process these allegations and maintain them as required by the law. Follow-up actions will be taken by the Company if needed. If you submit an allegation, you will be informed regarding the outcome of the Company's review.

Section 8(e) - Substantial Risk

Section (e) requires employees to report factual information or data which supports a conclusion that substantial health or environmental risks may exist which the EPA does not already know.

DSW 117614

Unlike Section 8(c), which requires internal reporting and company record keeping of mere allegations or suspicions, Section 8(e) requires internal reporting and review of any factual information that suggests that a Monsanto product presents a "substantial risk" to human health or the environment. If the Company determines that the information reasonably supports a conclusion of a substantial risk, then a prompt submission of this information by the Company will be made to EPA.

Types of information that reasonably supports a conclusion of substantial risk include: a serious human health effect such as cancer, birth defects or death; or serious threats to plants, animals or the environment. Spills or releases of toxic substances which seriously threaten human health or the environment are also "substantial risks".

If you learn of new information that indicates that there could be a "substantial risk", you must immediately report this to your supervisor so that the investigation within Monsanto can be undertaken to determine if the information is reportable by the Company to the EPA.

Because the law requires the Company to report the discovery by its employee of new "substantial risk" information to EPA within 15 business days, it is critical that you promptly report such information to your supervisor. If he or she is not available, keep going up the line until you find someone who is available. Failure to meet these requirements can result in civil or criminal penalties for both you and the Company.

Don't Take Any Chances

Monsanto's sections 8(c) and 8(e) procedures require employees to report both allegations and information regarding significant hazards and substantial risk, whether or not it turns out later to be of any importance, or even reportable to the EPA. If in doubt about reporting a specific incident, discuss it with your supervisor. Remember, environmental safety is everyone's responsibility, both as employees and citizens. It's also the law.

DSW 117615



EXCERPTS FROM

TSCA Section 8(e) Reporting Guide

June 1991

NOTICE TO ADMINISTRATOR OF SUBSTANTIAL RISKS. Any person who manufactures, [imports,] processes, or distributes in commerce a chemical substance or mixture and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment shall immediately inform the [EPA] Administrator of such information unless such person has actual knowledge that the Administrator has been adequately informed of such information.

-- Section 8(e), Toxic Substances Control Act (1976)

Office of Toxic Substances
Office of Pesticides and Toxic Substances
U.S. Environmental Protection Agency
Washington, D.C. 20460

REPORTING UNDER SECTION 8(E) OF TSCA

WHY IS SECTION 8(E) REPORTING IMPORTANT?

In general, EPA considers Section 8(e) of TSCA to be a critically important information gathering tool that serves as an "early warning" mechanism for keeping the Agency and others apprised of new-found serious chemical hazards and/or exposures; Section 8(e) data are extremely valuable input for the hazard identification and risk assessment activities within and outside EPA.

WHAT IS "SUBSTANTIAL RISK" INFORMATION?

The term "substantial risk" information refers to that information which reasonably supports a conclusion that the subject chemical or mixture presents a substantial risk of injury to health or the environment; however, such information need not and most typically does not establish conclusively that a substantial risk exists.

In deciding whether information is "substantial risk" information, one must consider 1) the seriousness of the adverse effect, and 2) the fact or probability of the effect's occurrence. In determining TSCA Section 8(e)-applicability/reportability, these two criteria should be weighted differently depending upon the seriousness of the effect or the extent of the exposure, i.e., the more serious the effect, the less heavily one should weigh actual or potential exposure, and vice versa. For example, in cases where serious effects such as birth defects or cancer (as evidenced by benign and/or malignant tumors) are observed, the mere fact that the implicated chemical is in commerce (including chemicals at the research and development stage) constitutes sufficient evidence of exposure to submit the new-found toxicity data.

EPA has also received numerous Section 8(e) submissions alerting the Agency that chemical substances already known to be capable of causing serious health and/or environmental effects were detected in significant amounts in environmental media (e.g., soil, surface waters, groundwater, air (including workplace air)) or in products not known previously by the Agency to contain such chemicals. In such cases, the discovery of previously unknown and significant human and/or environmental exposure, when combined with knowledge that the subject chemical is already recognized or suspected as being capable of causing serious adverse health effects (e.g., cancer, birth defects, neurotoxicity) or serious environmental effects (e.g., non-trivial aquatic species toxicity), can provide a sufficient basis to report the new-found exposure data to EPA under Section 8(e) of TSCA.

DSW 117617

The decision-making process for Section 8(e)-reportability should focus primarily on whether the toxicity or exposure information offers reasonable support for a conclusion of substantial risk under the criteria described above, but should not focus at all on whether the information is conclusive regarding the risk. A

decision to report information to the Agency under Section 8(e) should not involve exhaustive health and/or environmental risk assessments of the subject chemical(s). Further, determining reasonable support for a conclusion of substantial risk should not include any evaluation of either the economic or social benefits of the use(s) of the subject chemical substance(s). Finally, determining whether reasonable support exists for "substantial risk" is not synonymous with the determination of an "unreasonable risk" as that term is used elsewhere in TSCA.

¹ "Substantial risk" information must be reported to EPA unless the subject person has actual knowledge that the Agency has been adequately informed of such information. A detailed discussion of the types of information about which EPA considers itself to be adequately informed is presented on Page 8 of this reporting guide under WHAT INFORMATION IS NOT REPORTABLE UNDER SECTION 8(E)?

WHO IS SUBJECT TO SECTION 8(E) REPORTING?

For the purposes of Section 8(e), the term "person" includes the following: any natural person, corporation, firm, company, sole-proprietorship, joint-venture, partnership, association, or any other business entity, any State or political subdivision of a State, any municipality, any interstate body, and any department or agency of the Federal Government.

Such "persons" are subject to TSCA Section 8(e) only to the extent they are engaged in commercial activities involving manufacture, importation, processing or distribution of chemical substances or mixtures under the jurisdiction of TSCA and therefore covered by Section 8(e) of TSCA.

Under Section 8(e), there are no exemptions for small businesses, small production or importation volumes, or commercial activities such as manufacture for export only or research and development. However, Section 8(e) does not require a subject person to submit information about a chemical substance or mixture that the person does not manufacture, import, process or distribute commercially. Further, a person who obtains substantial risk information about a chemical or mixture that the person did at one time, but does not any longer, manufacture, import, process or distribute in commerce, is not required to submit the information under Section 8(e).

WHAT CHEMICALS ARE SUBJECT TO SECTION 8(E) REPORTING?

Chemicals not under TSCA jurisdiction and therefore not covered by Section 8(e) are discussed in Section 3 of TSCA and include:

- (1) pesticides (as defined in the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)) when manufactured, processed, or distributed in commerce for use as a pesticide;
- (2) tobacco and tobacco products;
- (3) source materials, special nuclear materials and byproducts (as defined in the 1954 Atomic Energy Act (AEA) and regulations issued under the AEA);
- (4) foods, food additives, drugs, cosmetics, and devices (as defined in the Federal Food, Drug and Cosmetic Act (FFDCA)) when manufactured, processed or distributed in commerce as a food, food additive, drug, cosmetic or device.

Except for those chemicals specifically excluded by definition from TSCA jurisdiction, Section 8(e) of TSCA pertains to all chemical substances and mixtures including but not limited to the following:

- (1) research and development (R&D) chemicals (including those intended for use as pesticides prior to application for an Experimental Use Permit (EUP) or a registration under FIFRA);
- (2) laboratory reagents;
- (3) low volume chemicals;
- (4) polymers;
- (5) chemicals that are manufactured solely for export;
- (6) intermediates (including non-isolated intermediates as well as pesticide intermediates);
- (7) catalysts;
- (8) byproducts;
- (9) impurities;
- (10) TSCA-covered microorganisms and products therefrom.

Specifically with regard to "pesticides," a chemical substance that is manufactured, processed or distributed in commerce solely as a pesticide is excluded by Section 3 of TSCA from TSCA regulation. However, a chemical substance which is in the process of research and development (R&D) as a pesticide is subject to TSCA until such time as the manufacturer or importer demonstrates the intent to

produce a pesticide by submitting to the Agency an application for an "Experimental Use Permit" (EUP) or registration under FIFRA. For further information about this TSCA/FIFRA jurisdictional issue, the reader is directed to EPA's initial TSCA Chemical Substance Inventory reporting regulation (43 FR 64585; December 23, 1977; Appendix A Comment 37, 38 and 39) and the 1986 amendments to the TSCA Section 5 "Premanufacture Notification Rule" (51 FR 15098; April 22, 1986). Prior to the FIFRA EUP or registration stage, such R&D materials are chemical substances under the jurisdiction of TSCA including Section 8(e).

It is important to note also that while some rules promulgated by EPA under other sections of TSCA, or under other authorities which are administered by EPA, may exempt certain chemical substances and/or mixtures or certain types of commercial activities, such exemptions typically apply only to the rule issued by the Agency and not to TSCA in general or Section 8(e) of TSCA specifically.

WHAT DOES THE TERM "OBTAINS INFORMATION" MEAN?

Section 8(e) pertains to information that a person possesses or about which the person knows. The Section 8(e) policy statement explains that an establishment obtains information at the time any officer or employee who is capable of appreciating the significance of the information obtains that information. "Known" information includes that information about which a prudent person of similar training, job function, etc., could be reasonably expected to know. Although Section 8(e) of TSCA does not compel subject persons to actively search for reportable information or to undertake extraordinary efforts to retrieve reportable information, negligence or the intentional avoidance of information does not absolve a person of his/her individual Section 8(e) reporting obligations.

Specifically with regard to a public scientific conference/meeting, visually or verbally obtained information from such a meeting is subject to Section 8(e) reporting unless the obtained information is captured accurately/adequately in a meeting transcript, abstract or other such written record or document that is to be formally released to the public within a reasonable time frame. Information obtained from a private conference or meeting, however, should be considered for reporting under Section 8(e) within 15 working days.

WHAT ARE THE SOURCES OF SECTION 8(E)-REPORTABLE INFORMATION?

TSCA Section 8(e)-reportable information can come from a variety of sources including, but not limited to draft, interim or final written reports (including study reports, letters, telegrams, telex reports) or verbal reports (received at meetings or by phone) that involve observations (including preliminary observations) from, for example, controlled or uncontrolled:

- (1) human or animal studies/events (including but not limited to studies/events that involve high dose levels or non-routine routes of exposure); or
- (2) environmental events/studies (including but not limited to aquatic toxicity studies, bioaccumulation studies, chemical monitoring studies (supplemented if need be by information derived from computer modeling studies based on actual or reasonably anticipated chemical exposures and exposure-related parameters)). It is important to note, however, that modeling studies, including those based solely on theoretical exposure data (e.g., "worst-case" scenarios), are not considered by EPA to be sufficient in and of themselves to meet the Section 8(e) reporting requirements. Further, environmental or health risk assessments (including those using computer modeling) based on either 1) theoretical exposure data, or 2) actual exposure data submitted on a mandatory basis under an EPA-administered statute typically need not be reported under Section 8(e).

The evidence that offers reasonable support for a conclusion of substantial risk need not be complete nor definitive but should provide a plausible link between 1) an observed serious effect and one or few chemicals (e.g., in a discrete process/operation), or 2) a specific product/activity and a previously unrecognized exposure to a chemical that is known or reasonably anticipated to cause serious adverse health or environmental effects.

EPA's March 16, 1978 Section 8(e) policy statement ("Statement of Interpretation and Enforcement Policy; Notification of Substantial Risk" 43 FR 11110) also requires immediate reporting of "Emergency Incidents of Environmental Contamination" (EIEC). An EIEC is an environmental contamination (accidental or intentional in nature) involving a chemical known to be a serious human or environmental toxicant and which because of the extent, pattern and amount of the contamination (1) seriously threatens humans with cancer, birth defects, mutation, death or serious or prolonged incapacitation (e.g., neurotoxicologic effects, serious reproductive system effects), or (2) seriously threatens non-human organisms with large-scale or ecologically significant population destruction.

WHAT INFORMATION IS NOT REPORTABLE UNDER SECTION 8(E)?

There are several kinds of information about which the Agency considers itself to be adequately informed already for the purposes of Section 8(e) of TSCA. For example, information that otherwise meets the criteria for Section 8(e) reporting need not be submitted if the information meets one or more of the following criteria:

- (1) is contained in an EPA study or report.
- (2) is published in the open scientific literature.

MONSANTO CHEMICAL COMPANY Rev. 3
ER-200/EC-201/EC-202 IMPLEMENTATION PROCEDURE 07/06/90

Purpose: To describe the actions, including responsibility and timing, to be taken upon approval of EC-201 and EC-202 documents for Monsanto Chemical Company products. Actions to be taken upon approval of ER-200 forms are covered summarily.

Scope: This procedure governs actions for MCC worldwide. In so doing, it addresses MCC coordination with other parts of Monsanto Company that are involved in health, safety, and environmental protection issues (e.g., the Department of Medicine and Health Sciences, Industrial Hygiene, etc.).

References:

1. Health and Environmental Compatibility Assessment of Monsanto Products. A Guide to the Use of Department of Medicine and Health Sciences Data Sheet ER-200, EC-201, and EC-202, (G-2738, Rev. 8/85).
2. Memo, subj "EC-201/202 Procedure: Europe", B.R. Friedlander, M.D. to R.L. Harness and M.A. Pierle, December 27, 1989
3. Material Safety Data Sheet (MSDS) System, A Guideline for Format, Content and Preparation, Monsanto Company, July 1989.
4. American National Standards Institute ("ANSI") Standard Z129.1 - 1988

Procedure:

ER-200

1.0. Approval of Form ER-200 allows limited (i.e., laboratory scale) sampling for research and development purposes only. As a consequence, only the following actions will be taken by the MCC Manager of Product Safety upon receipt of DMHS approval.

1.1 Notification by the Manager of Product Safety to the submitter (typically, a researcher) of the ER-200 approval (See example memo at Enclosure 1.). This notification shall include any restrictions imposed by DMHS. The Manager of Product Safety shall also provide guidance where applicable as to the next steps being recommended in the product approval process. This may include comments as to timing of submittal of Forms EC-201 and/or EC-202, testing requirements, and Premanufacture Notice considerations.

Resp: Manager, Product Safety

1.2 Notification by the Manager of Product Safety to the site health and safety coordinator (Note: This term is not otherwise defined. It may be that a TSCA Coordinator serves this function. In the event, the intent is to provide notice to that individual

DSW 117581

at a manufacturing or research site with responsibility for insuring that proper health and safety practices for research samples are followed.) of the approval of Form ER-200, including appropriate safety guidelines as included in the DMHS approval.
Resp: Manager, Product Safety

1.3 Notification by the Manager of Product Safety to the Material Safety Data Sheet Coordinator, allowing issue of a MSDS for Research and Development Purposes. This notification shall include any recommended cautionary language included in the DMHS approval document. Disagreements concerning such language shall be resolved in accordance with procedures established elsewhere for that purpose (Ref. 3).
Resp: Manager, Product Safety

1.4 Forwarding by the MSDS Coordinator of the MSDS for Research and Development Purposes to the submitter, the site industrial hygiene contact, and, if different from the former, the health and safety, contact. This shall be done within one week of notification in 1.3 above.
Resp: MSDS Coordinator

1.5 Assessment by the site industrial hygiene contact of industrial hygiene protective measures required.
Resp: Site IH Contact

1.6 Communication of hazards and required personal protective measures by the site industrial hygiene contact to employees who may reasonably be expected to be occupationally exposed to the material.
Resp: Site IH Contact

1.7 Implementation by the researcher, in coordination with the site industrial hygiene contact, of any industrial hygiene protective measures required. Follow-up responsibilities shall be in accordance with existing site procedures.
Resp: Researcher and Site IH Contact

1.8 Recordkeeping, hazard assessment, hazard communication, etc. required to comply with U.S. TSCA or similar ex-U.S. laws shall be the responsibility of the researcher and site TSCA coordinator with assistance from DMHS, Marketing Technical Services ("MTS"), R&D, and Product Safety, respectively.
Resp: Researcher and Site TSCA Coordinator

EC-201

2.0 Approval of a Form EC-201 allows unlimited sampling. Since this may involve significantly increased exposure to humans and the environment and may be viewed as commercialization in the context of a Premanufacture or Premarketing Notification, the following requirements must be met.

2.1 Notification by the Manager of Product Safety to the

DSW 117582

submitter (again, typically a researcher) of the approval (See example memo at Enclosure 2.) as well as of any conditions attached to that approval. The Manager of Product Safety should also include recommendations as to the next step of the approval process. The Manager of Product Safety shall discuss alternate test protocols, as appropriate, with DMHS. For products requiring Premanufacture or Premarketing Notification, this will include DMHS's prediction of "most likely" and "most probable worst case" testing demands by the competent authorities (e.g., the U.S. Environmental Protection Agency, Health and Environment Canada, the EEC). The Manager of Product Safety will in cases where such Notification is required also advise other members of the responsible business management unit (e.g., Product Manager, R&D Manager, etc.), presenting a range of test options and recommendations.

Resp: Manager, Product Safety

2.2 Notification by the Manager of Product Safety to the site health and safety coordinator of the approval of Form EC-201 and of any conditions pertaining to that approval.

Resp: Manager, Product Safety

2.3 Notification by the Manager of Product Safety to the Material Safety Data Sheet Coordinator, allowing initial issue (if no Form ER-200 has been submitted and approved) or revision if necessary of a MSDS for Research and Development Purposes. This notification shall include any recommended cautionary language included in the DMHS approval document. Disagreements concerning such language shall be resolved in accordance with procedures established elsewhere for that purpose (Ref. 3).

Resp: Manager, Product Safety

2.4 Forwarding by the MSDS Coordinator of the MSDS for Research and Development Purposes to the site industrial hygiene contact within one week of 2.3 above.

Resp: MSDS Coordinator

2.5 Assessment by the site industrial hygiene contact of industrial hygiene protective measures required.

Resp: Site IH Contact

2.6 Communication of hazards by the site industrial hygiene contact to employees who may reasonably be expected to be occupationally exposed to the material.

Resp: Site IH Contact

2.7 Implementation by the researcher, in coordination with the site industrial hygiene contact, of any industrial hygiene protective measures required. Follow-up responsibilities shall be in accordance with existing site procedures.

Resp: Researcher and Site IH Contact

-DSW 117583

2.8 Communication of environmental concerns by the Manager of Product Safety to the researcher, the appropriate business unit

personnel, and the Manager of Environmental Protection. The Manager of Product Safety shall communicate environmental testing requirements and recommendations at this time.
Resp: Manager, Product Safety

2.9 Development of plant environmental compliance recommendations by the plant environmental contact and Manager of Environmental Protection in conjunction with appropriate business unit personnel. Follow-up responsibilities shall be in accordance with existing site procedures.
Resp: Manager, Environmental Protection and Site Environmental Contact

2.10 Reaching agreement upon the content and timing of testing programs by the Manager of Product Safety, Manager of Environmental Protection, DMHS, and appropriate business unit personnel.
Resp: Manager, Product Safety

2.11 Implementation of testing programs by the Manager of Product Safety and DMHS (In this context as well as throughout, Environmental Sciences Group is included in DMHS.).
Resp: Manager, Product Safety

2.12 Communication of the results of testing by DMHS to Tox. Data (formerly Tox. Projects) and the Manager of Product Safety. Evaluation of impact on MSDSs by Tox. Data shall be in accordance with procedures established elsewhere (See Ref. 3).
Resp: Manager, Product Safety and Staff Toxicologist

2.13 Communication of the results of testing by the Manager of Product Safety to the MSDS Coordinator for consideration for inclusion in the MSDS for Research and Development Purposes.
Resp: Manager, Product Safety

2.14 Consideration of inclusion of the results of testing by the MSDS Coordinator in consultation with Tox. Data (See 2.12 above.).
Resp: MSDS Coordinator

2.15 Communication of the results of environmental testing by the Manager of Product Safety to the Manager of Environmental Protection. Resulting action, if any is required, shall be in accordance with 2.9 above.
Resp: Manager, Product Safety

2.16 Communication of any potential commercial or legal concerns by the Manager of Product Safety to the appropriate business unit personnel and Law. Resolution of these concerns shall be in accordance with the customary practices of that business unit. However, the Manager of Product Safety is responsible for notifying the Director of Environmental Operations in the event that he or she is unsatisfied with the resolution.
Resp: Manager, Product Safety

DSW 117584

2.17 Development of the Premanufacture Notice by the Manager of Product Safety

2.17.1 Development of Canadian Notices shall be by the MoCan Product Safety Coordinator for products solely manufactured and sold in Canada. If there is U.S. or MESA manufacture or sale, the appropriate Manager of Product Safety, U.S., MESA, or both, shall be jointly responsible.

2.17.2 Similarly, Premarketing Notices for products made solely by and sold solely by MESA shall be the responsibility of the MESA Manager of Product Safety. If there is U.S. or MoCan manufacture or sale, the appropriate Product Safety personnel for the U.S. and/or MoCan shall be jointly responsible.

2.17.3 In the event of joint responsibility, one of the involved personnel shall serve as lead. If the involved personnel cannot reach agreement on that issue, the issue shall be brought to the attention of U.S., MoCan, and/or MESA management for resolution.

2.17.4 The responsible Product Safety personnel shall have the assistance of R&D, Manufacturing, DMHS, and others as required.
Resp: Manager, Product Safety

2.18 Recordkeeping, hazard assessment, hazard communication, etc. required to comply with U.S. TSCA or similar ex-U.S. laws shall be the responsibility of the researcher and site TSCA coordinator with assistance from DMHS, Marketing Technical Services ("MTS"), R&D, and Product Safety; and DMHS, Product Safety, R&D, and MTS, respectively. The site TSCA contact shall have primary responsibility in this for recordkeeping and hazard communication. Product Safety and DMHS shall have primary responsibility for hazard assessment.

Resp: As described

EC-202

3.0 Approval of a Form EC-202 allows full commercialization. Since this will involve significantly increased exposure to humans and the environment and will be viewed as commercialization in the context of a Premanufacture or Premarketing Notification, the following requirements must be met.

3.1 Notification by the Manager of Product Safety to the submitter (again, typically a researcher) of the approval (See example memo at Enclosure 3.) as well as of any conditions attached to that approval. For products which require Premanufacture or Premarketing Notification, this will include notification of the need for filing of Notice of Commencement of Manufacture in the U.S. and Canadian or EEC equivalent, as appropriate.

Resp: Manager, Product Safety

DSW 117585

3.2 Notification by the Manager of Product Safety to the site health and safety coordinator of the approval of Form EC-202 and

of any conditions pertaining to that approval.

Resp: Manager, Product Safety

3.3 Notification by the Manager of Product Safety to the Material Safety Data Sheet Coordinator, stating the need for a commercial MSDS. Processing of the commercial MSDS shall be in accordance with procedures established elsewhere (See Ref. 3). This notification shall include any new recommended cautionary language included in the DMHS approval document. Disagreements concerning such language shall be resolved in accordance with procedures established elsewhere for that purpose (Ref. 3).

Resp: Manager, Product Safety

3.4 Forwarding by the MSDS Coordinator of the MSDS within one month of 3.3 above in accordance with previously established distribution schedules. Note that the MSDS Coordinator has prior notice in the form of a copy of the memo transmitting the Form EC-202 to DMHS for review (Enclosure 4).

Resp: MSDS Coordinator

3.5 Development of a commercial label by MCC Distribution. Conflicts as to label language shall be resolved in accordance with procedures established elsewhere.

Resp: MCC Labelling

3.6 Communication of any newly noted hazards, either human or environmental, development of compliance and communication programs, etc. shall proceed in accordance with the responsibilities outlined for such hazards in 2.1 through 2.18 above.

Resp: As described

3.7 Follow-up actions subsequent to EC-202 approval shall be in accordance with established existing practices and procedures (e.g., TSCA Sections 8(c) and 8(e); environmental, industrial hygiene, and safety audits, etc.).

Resp: As described

Signed:

M.A. Pierle

M.A. Pierle

Director, Environmental Operations
Monsanto Chemical Company

September 18, 1990

Date

DSW 117586

ENVIRONMENTAL, SAFETY AND HEALTH REVIEWS OF CAPITAL PROJECTS

Completed Monsanto capital projects will meet Corporate Worldwide Environmental Protection Guidelines, Corporate Social Responsibility Policies, and will be in compliance with existing and anticipated government regulatory requirements. Monsanto will, at all levels of the corporation, review capital projects for environmental safety and health impact prior to, and as a condition of, project funding approval.

The Senior Vice President, ESH, or his delegate will review those projects requiring approval by the Chief Operating Officer, the Chief Executive Officer or the Board of Directors. A system for reviewing other projects will be administered by the Directors, Environmental Operations, of the operating companies.

The personnel assigned to evaluate a new site for the location of a Monsanto operation will prepare an internal Monsanto Environmental Impact Assessment which addresses potential environmental limitations at the site as a result of the existing socioeconomic and biophysical

conditions. The effects of existing and future government environmental regulations which may apply are also to be considered.

Any exceptions to this guideline must be approved by the Environmental Safety & Health Committee.

(Approved: Environmental Policy Committee, April 21, 1980.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

OSW 117587

MONSANTO COMPANY

OG-1

WATER_PCB-SD0000021463

**ENVIRONMENTAL, SAFETY AND HEALTH REVIEW OF
DIVESTITURES OR ACQUISITIONS OF
PROPERTY AND/OR BUSINESS**

Negotiating the acquisition or divestiture of U.S. and ex-U.S. property or business units and the securing of final corporate approval are the primary responsibility of the involved operating company unit. However, corporate staff review of environmental, health and safety factors — and any attendant liability issues — are required during the course of such transactions. This review should be arranged through the office of the operating company Director of Environmental Operations, who will, in turn, involve appropriate Environment, Health and Safety staff and Environmental Law personnel and arrange for review by the Vice President, Environmental Policy Staff, and/or the Senior Vice President, Environment, Safety and Health.

(Approved: Environmental, Safety and Health Committee, August 29, 1986.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

DSW 117588

MONSANTO COMPANY

OG-2

ENVIRONMENTAL, SAFETY AND HEALTH PROTECTION FOR INVESTMENTS IN WHICH MONSANTO DOES NOT HAVE OPERATING CONTROL

Monsanto's six major Worldwide Guidelines apply at all manufacturing sites in the U.S. and ex-U.S. where Monsanto has operating control. For those investments in which Monsanto does *not* have operating control, we will require, at a minimum, compliance with applicable local laws, regulations and practices.

If such applicable rules and practices do not provide safety, health or environmental protection which would be acceptable for Monsanto controlled sites, the company will initiate action to bring about the necessary upgrading.

(Approved: Corporate Administrative Committee, October 6, 1980.)

(Revision Approved: Environmental Policy Committee, June, 1985.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

DSW 117589

MONSANTO COMPANY

OG-3

ANNOUNCEMENT

Monsanto

TO: All ESH Worldwide Guideline recipients

On March 20, 1991, the U.S. Supreme Court ruled that the FETAL PROTECTION POLICY of the Johnson Controls Company is a form of illegal sex discrimination. The effect of the Supreme Court decision is to make female employees responsible for deciding whether they should take jobs that may involve risks to fetal or reproductive health.

Therefore, the MONSANTO guideline, WOMEN EMPLOYED IN AREAS WHICH POSE AN UNACCEPTABLE HAZARD TO THE HUMAN FETUS, is rescinded for all U.S. locations. Monsanto's fetal- and reproductive-protection policy has covered several substances, but has affected only a small percentage of job functions at various Monsanto locations. Monsanto will continue to minimize exposures that may be harmful to employees and visitors in all locations - both in the United States and ex-U.S.

Our principal concern continues to be protecting the health of all Monsanto employees and visitors to our work sites. To this end, a committee chaired by Dr. Jack Baker of Occupational Medicine is evaluating current exposure limits for substances previously associated with the fetal and reproductive protection policy. This committee is made up of representatives from occupational medicine, toxicology, industrial hygiene and related disciplines. Working with Dr. Baker's team are representatives from each operating unit who will work on specific issues and concerns created by the rescission of the fetal protection guideline.

Findings from the committee's substance evaluation will be reported to the appropriate work sites within three months. X
Risk-related information will also be communicated at that time.

Nicholas L. Reding
Corporate Executive Vice President
Environment, Safety, Health & Manufacturing

May 3, 1991

DSW 117590

RD0509-M

WATER_PCB-SD0000021466

WOMEN EMPLOYED IN AREAS WHICH POSE AN UNACCEPTABLE HAZARD TO THE HUMAN FETUS

Women employees of childbearing potential or who are pregnant will not be exposed to work situations which are judged to pose an unacceptable hazard to the human fetus.

The Department of Medicine and Health Sciences will:

Conduct appropriate toxicological tests of Monsanto raw materials, products, intermediates and byproducts.

Review current literature for information on the hazards of chemicals and physical agents used or produced by Monsanto.

Assess safety and health implications and the potential risks posed by these chemicals and physical agents.

Make recommendations to senior management and maintain a record as to work situations which in their judgment pose an unacceptable hazard to the human fetus.

Management of the site(s) involved will take action so that women employees of childbearing potential or who are pregnant will not be hired into, be allowed to bid into, or continue in job situations which have physical agents or chemical exposure levels that have been identified by DMHS as posing an unacceptable hazard to the human fetus.

Where rearrangement of the job situation to avoid exposure to the identified hazard cannot be achieved, and an employee has to be transferred out of a job assignment, every effort will be made to protect her job grade level and her seniority.

In instances where the displacement or exclusion of women of childbearing potential adversely affects our EEO goals, efforts will be made to hire or place an equivalent number of women in other departments or areas which do not pose unacceptable hazards to the human fetus.

(Approved: Corporate Administrative Committee, August 7, 1978.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

DSW - 117591

MONSANTO COMPANY

OG-4

SAFE HANDLING OF CARCINOGENS

We will provide safe and healthful working conditions for our employees.

We will comply with all government regulations concerned with exposure to carcinogens.

Where there is any data which suggest that a chemical to which our employees are exposed is a carcinogen, and such chemical is not subject to government regulations, we will evaluate that data, and based on that evaluation, take the following action:

Where such data establishes the chemical as a human carcinogen, we will take appropriate action to reduce exposure to the lowest reasonable level, unless exposure is already at such a level.

Where such data establishes the chemical as an experimental or suspect carcinogen, we will (individually or jointly with others) initiate study to confirm or

disprove such designation. During such study, exposure will be reduced to and/or minimized at the lowest reasonable level.

If it is concluded that a material cannot be produced or used without jeopardizing the health of employees, its manufacture or use will be discontinued.

(Revised and Approved: Corporate Administrative Committee, October 6, 1980.)

(Reviewed and Approved: Environmental Safety and Health Committee, October 20, 1987.)

DSW 117592

MONSANTO COMPANY

OG-5

NONCOMPANY PERSONNEL ON COMPANY SITES

Proper concern for employee health and safety will be required in the execution of contract work performed for Monsanto.

Monsanto personnel arranging for contract work should observe the following practices.

- Work should not begin until a mutually agreeable method of operation has been established.
- Noncompany personnel should conduct themselves so they do not constitute a hazard to Monsanto employees or property.
- Apparent violations of the U. S. Occupational Safety and Health Act, other applicable federal, state, and local regulations or accepted industry safe work practices (CMA, ANSI, NESC, CIA, etc.,) by noncompany personnel should be brought to the attention of their supervisor.
- Noncompany personnel must be warned of hazards of Company operations or environments they may encounter so that appropriate precautions can be taken.
- Noncompany personnel with special expertise (i.e., those who provide equipment or personnel with particular abilities not readily available on site) may determine their own safety practices and procedures for performing tasks within their area of expertise commensurate with other Monsanto policies and guidelines. Any such safety practices or procedures which deviate from Monsanto practice or procedure are to be reviewed by the Monsanto contract administrator before implementation.
- Entry of Company personnel into the work area of noncompany employees should be minimized and limited to those who need to be involved.

(Approved: Manufacturing Coordination Department, July 1979.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

DSW 117593

MONSANTO COMPANY

OG-6

CONTRACTOR HEALTH AND SAFETY

Proper concern for employee health and safety will be required in the execution of contract work performed for Monsanto.

SCOPE

This Contractor Health and Safety Guideline sets forth safety and occupational health guidelines applicable to Contractors performing services on Monsanto Company property where, in the judgment of Monsanto site management, there may exist the potential for personal injury or property damage or for significant safety or health issues to arise. Services administered either by individual sites or by Monsanto Engineering groups are covered. Recognizing that these guidelines may not be appropriate in all cases, judgments may be required by the individual sites as to implementation and application. These judgments are to be made taking into account the objective of this guideline that proper concern be given to Monsanto and contractor employee health and safety in the execution of contract work performed for Monsanto. Substantial departure from these guidelines should be approved in advance by the appropriate manufacturing director and, as appropriate, the Department of Medicine and Health Sciences (DMHS). This guideline applies to Monsanto U.S. sites.

OBJECTIVE

All services performed by Contractors on Monsanto sites are to be covered by written contracts. Normally the Contractor is to be made aware of the requirements of this guideline before bidding, the costs agreed upon before contracting the work, and the appropriate requirements incorporated into the written contract or otherwise appropriately documented in consultation with the Purchasing and Law Departments.

In accordance with the objective of providing for Monsanto and Contractor employee safety and health in the execution of contract work, Monsanto will utilize Contractors who: have demonstrated a high degree of compliance with workplace laws/standards, policies and practices; have a history of good health and safety performance; maintain adequate insurance coverage; and, if involved in safety sensitive work, have a substance abuse program reasonably equivalent to Monsanto's. Monsanto will take into account the nature of the services, the availability of Contractors, and other relevant considerations.

DEFINITIONS

Contractor A person (other than employee of Monsanto), firm or corporation engaged by Monsanto to provide a service on a Monsanto site.

Contract The writing which contains the agreement of Monsanto and the Contractor with the agreed upon terms and conditions and which serves as proof of their respective obligations. Contracts are to be signed by authorized representatives of Contractor and Monsanto. Contracts are to be on forms previously approved by the Purchasing and Law Departments for that use (e.g., Master Maintenance Agreement [Form G-2536], Short Form Contract [G-615], etc.). Plant purchase order forms may not be utilized for contracts which require on-site Contractor employees unless approved by the Law Department. When approved existing contract forms are not appropriate, the Purchasing and/or Law Departments are to be contacted for assistance.

Monsanto Representative The employee designated by site management to represent Monsanto with respect to the services being performed pursuant to the particular Contract. For Engineering awarded Contracts, this will normally be a site construction superintendent/supervisor.

RESPONSIBILITIES

While contractors are responsible for assuring healthful and safe operations, work on a Monsanto site may involve unique or site specific health and safety issues as to which this guideline is directed. The manager of each site is responsible for the implementation of this guideline.

CONSIDERATIONS

In furtherance of the objective that Contractors provide a healthful and safe operation at Monsanto locations, the following is to be considered and implemented, when deemed applicable to the service being provided.

DSW 117594

OG-6.1

MONSANTO COMPANY

1.0 COORDINATION

The Monsanto Representative is to:

- 1.1 Coordinate Contractor activity on the site.
- 1.2 Be familiar with the Contracts and obtain Purchasing and Law Department review and approval as appropriate.
- 1.3 In the letting of bids, assure those jobs requiring a functioning substance abuse program are so identified.
- 1.4 Where appropriate, assure that the submission of bids from potential contractors is accompanied by:
 - The OSHA 200 log summary form for at least the three most recent years.
 - An evaluation of skill requirements for the job bid.
 - A tentative listing of the contractor's employees likely to be assigned to the job together with their training (including apprentice programs), work history and any other special qualifications.
 - A listing of written contractor safe work practices/procedures including the substance abuse program.
 - For those contractor employees who will be designated as performing safety critical jobs, the latest date of drug screening and confirmation of acceptable test results.
- 1.5 Review with the contractor his planned approach to the job including those risks he has identified, precautions to be taken, and areas of intended use of his as well as Monsanto procedures.
- 1.6 Explain to Contractors any unique or site specific safety or health hazards and precautionary measures associated with the services (Orientation).
- 1.7 Apprise Contractor of its responsibilities and restrictions while on site to include a mutual exchange of health and safety information, for example Material Safety Data Sheets (MSDSs), as required under the OSHA Hazard Communication Standard.
- 1.8 Follow contract services with the objective of having the Contractor minimize potential hazards to both Monsanto and Contractor employees, and to property, which may arise during Contractor services.

- 1.9 Conduct in consultation with health and safety professionals a final health and safety evaluation before the job is accepted as completed.

2.0 PRACTICES AND PROCEDURES

- 2.1 Unique or site specific work hazards involved with the services (of which Monsanto is aware but with which the Contractor may not be familiar) and expected performance relating to such hazards are to be communicated to and reviewed with the prospective Contractor(s) prior to submission of bids. The following items are to be considered and addressed when applicable:
 - Contractor Safety/Health Orientation
 - Respiratory Protection
 - Hazard Communication
 - Hearing Protection
 - Personal Protective Equipment and Clothing
 - Supervision of Contractor Employees
 - Substance Abuse Policy
 - Hygiene Facilities and Practices
 - Exposure Monitoring
 - Medical Services
 - Biological Health Monitoring
 - Injury Reporting
 - Use of Plant Permit Systems
 - Site Work Practices
 - Emergency Response and Plant Evacuation
 - Tie-in to Monsanto Equipment
 - Environmental Control Procedures
 - Waste Disposal
- 2.2 Contractors, at a minimum, are to be made aware of and required to comply with proper plant procedures for securing permits involving hot work, tank or other enclosed space entry, breaking into pipelines, lock-out, etc. Permits are to be coordinated through the Monsanto Representative.
- 2.3 For confined space entry permits, Monsanto will execute the permit and provide required testing prior to the beginning of contracted work. In case of hot work permits, Monsanto will execute the permit, inspect the area and provide required testing. Agreement on whose responsibility it is to provide a qualified fire watch must be made in writing prior to the beginning of contracted work.

DSW 117595

3.0 ORIENTATION - TRAINING

- 3.1 Each location is to maintain a general Contractor health and safety orientation program to convey Monsanto's commitment to health and safety, Contractor general obligations, and plant rules/procedures. The following topics are to be included and addressed when applicable:

- General Plant Policies
- Hazard Communication
- Hearing Protection
- Site Safety and Housekeeping Practices
- Basic Protective Equipment Usage
- Personal Hygiene Practices
- Site Emergency Plan
- Respiratory Protection

- 3.2 All Contractor employees whose work may involve unique or site specific health or safety hazards will upon first entry to the site and prior to beginning work in the field be presented supplemental information pertaining to:

- Material Safety Data Sheets (MSDSs) for Monsanto hazardous chemicals to which Contractor employees may be potentially exposed;
- Known safety and health hazards unique or specific to operating areas in which Contractor personnel will work;
- Requirements for any special protective clothing, equipment, or other measures specific to the chemicals involved; and
- Other basic orientation information, as appropriate, to operating areas in which contractor employees will work.

- 3.3 The Monsanto Representative, working with the Contractor, Engineering Construction Manager (as appropriate) and site health and safety staff, shall coordinate the orientation sessions. A record of the date, information presented, who conducted the training, and a signed list of attendees will be retained in permanent files maintained by the site.

4.0 SUPERVISION

- 4.1 In all Contractor services on a Monsanto site, the Contractor is responsible for providing safe

operations, and for the health and safety of its employees.

- 4.2 Monsanto will not usually undertake direct supervision of Contractor employees. The Monsanto representative will relate to the Contractor and its employees through the Contractor supervisor in charge at the site. Contractors are to have a competent, responsible supervisor in charge at the site at all times during which its employees or those of its subcontractors are present. However, it is recognized that there may be situations in which it would be impractical for the Contractor to provide full-time, on-site supervision. Exceptions to the foregoing are to be first approved by the Site Manager or his designee.
- 4.3 In some instances, a single individual (e.g., a specialized service repair person) who is employed by an outside agency may come onto a site to perform expert service. The Monsanto Representative is to determine that this individual is generally competent to perform the work without supervision.
- 4.4 In those instances where a Contractor employee has no on-site Contractor supervision, the Monsanto Representative is to provide for appropriate implementation of this guideline. In all other cases, the Contractor is to provide for implementation of this guideline as incorporated in the Contract or otherwise communicated to the Contractor.

5.0 OVERSIGHT

- 5.1 Contractor operations are to be periodically reviewed by the Monsanto Representative in consultation with health and safety professionals as a further check that the Contractor is complying with applicable health and safety laws, rules and regulations and with contractual requirements and is not endangering personnel and property.
- 5.2 If significant non-compliance is observed, the related work is to be immediately suspended and resumed only when compliance with requirements is assured. Contractors are to be advised of all non-compliance matters observed

by the Monsanto Representative and is to be required to bring its operations into compliance promptly.

6.0 PERSONAL PROTECTIVE EQUIPMENT

- 6.1 The Contractor is to be notified prior to beginning work of the minimum requirements for personal protective equipment such as special work clothing, goggles, gloves, or full body protection.
- 6.2 The Contractor is to furnish and require the use and wearing of proper personal protective equipment by its employees.
- 6.3 If a Contractor does not have the specified equipment, the task is to be delayed until such equipment is provided by Contractor.
- 6.4 Personal protective equipment, including special clothing, are not to be supplied by Monsanto unless dictated by an emergency. (See Section 14.0 for indemnification requirements.)

7.0 RESPIRATORY PROTECTIVE DEVICES

- 7.1 Use of respiratory protective devices requires a program for proper selection, fitting, training, cleaning and disinfection, storage, inspection and repair, surveillance, periodic evaluation, medical approval, and the use of National Institute of Occupational Safety and Health (NIOSH) approved equipment.
- 7.2 Contractors are to require each of their employees who will be expected to wear a respirator as part of his/her job to be medically evaluated for approval, properly fitted, and trained in its use prior to beginning work.
- 7.3 Documentation of the medical approval to wear a respirator is to be provided by the Contractor to Monsanto for review by the location Medical Services. Where location Medical Services do not exist, documentation of medical approval is to be submitted to DMHS for review.

Positive pressure self-contained respiratory protective devices designed and used for the sole purpose of emergency escape do not require medical approval and fitting. These respirators do, however, require training in their application and use.
- 7.4 Contractors are to be responsible for properly fitting and training its employees. In extenuating

circumstances, if the Contractor is not able to properly fit and train its employees, Monsanto may, upon written request, consider assisting the Contractor in providing such services. (See Section 14.0 for indemnification requirements.)

- 7.5 Contractors are to furnish the proper respiratory protective devices to its employees and to assure that such devices are used in conformity with applicable laws and regulations.
- 7.6 In the event that Contractor's employees have not been fit-tested and respiratory protection is necessary, only positive pressure, supplied air equipment is to be used.
- 7.7 Contractors are to adhere to the location policy regarding facial hair in the sealing area of respirators.
- 7.8 Supplied breathing air for respirator usage is to be provided by the Contractor unless dictated by an emergency. Monsanto may, upon written request, consider furnishing breathing air. (See Section 14.0 for indemnification requirements.)
- 7.9 The Contractor is to test all breathing air sources for oxygen content, and insure that the breathing air is certified as meeting the specifications for Grade D air as described in the Compressed Gas Association Commodity Specification G-7.1-1973 prior to use, whether Monsanto or Contractor supplied.
- 7.10 Monsanto is to retain the right to test at its discretion all supplied breathing air provided by Contractor.

8.0 MEDICAL SERVICES

The listing below includes chemical/physical agents and situations for which occupational health surveillance is presently required. This listing could be changed periodically as appropriate by DMHS. This surveillance may be required by regulation and therefore legally mandated. In addition, there are exposures for which no legally enacted standard mandates surveillance, but for which Monsanto requires periodic health evaluation. Occupational health surveillance is targeted to specific at-risk groups as defined by workplace assignment, known exposure history, and/or workplace monitoring data and conducted by performing certain specific health examinations to include the following:

ACRYLONITRILE	FORMALDEHYDE	METHEMOGLOBIN FORMERS
ASBESTOS	HAZARDOUS SUBSTANCE EMERGENCY RESPONSE	PAB
BENZENE	HEARING PROTECTION REQUIRED	PHOSPHORUS
CADMIUM		RADIATION
DMAC	LEAD	RESPIRATORY PROTECTION REQUIRED
DHF	MERCURY	

Pre-placement health examinations are to be provided for Contractor employees who are employed in jobs for which Monsanto required/legally mandated health examinations would be performed for its full-time employees (if they were to perform the job) and who:

- Are or may be potentially exposed at or above the action level (i.e., one-half the 8-hour time-weighted average permissible exposure limit or Monsanto workplace exposure guideline) to a chemical/physical agent and situations as identified above;

AND

- Are anticipated to work in a designated exposure area(s) for 30 or more consecutive work days or where non-consecutive work periods may result in sufficient cumulative work exposure to warrant evaluation. Such work evaluations will be conducted by Monsanto Industrial Hygiene in consultation with Occupational Medicine (DMHS) as to what constitutes sufficient cumulative work exposure;

OR

Regardless of work duration, are assigned to a job for which Industrial Hygiene, in consultation with Occupational Medicine, determines sufficient potential exposure to require health examinations.

When there is any question as to whether or not the job assignment requires special health surveillance or any question as to the specifics of the health examination, Occupational Medicine, DMHS is to be consulted and is the final authority.

Section 8.0 will not normally apply to Construction Contractors unless the service performed is directly associated with an active chemical processing area.

Section 8.0 is not intended to apply to potential exposures which might result from possible catastrophic events not reasonably foreseeable.

- 8.1 Specifications for health examinations and provisions for medical services are to be designated in the contract with the providing Contractor or otherwise appropriately communicated to the Contractor.
- 8.2 Where "baseline" medical data on Contractor employees are required prior to working in an area, sufficient lead time for collection and analysis of samples is to be required in scheduling work.
- 8.3 The examinations are to be performed by qualified medical professionals. Examinations may be performed by an outside physician(s), identified by the Contractor, who meets the approval of Monsanto.
- 8.4 Surveillance health examinations for Contractor employees are to follow as closely as possible the examinations as defined for Monsanto employees.
- 8.5 In the event a specific health examination procedure has not been established, Occupational Medicine (DMHS) is to be consulted.
- 8.6 Periodic and termination physicals for Contractor employees are to be in accordance with the same frequency/timing practices provided for Monsanto employees similarly situated.
- 8.7 Maintenance and storage of medical record information on Contractor employees will be at the discretion of the location and will follow the same policies regarding confidentiality and retention as for Monsanto employees. In all cases whether the examination is performed on or off site, a copy is to be accessible to Monsanto medical personnel or be maintained by Monsanto in the same area as the medical records for that site are maintained. Where feasible, Monsanto forms are to be used.
- 8.8 Contractors are to assure that medical services are available for contract employees in the event of injury/illness. Where the severity of the injury dictates immediate attention on-site, Monsanto may provide first aid treatment to the extent necessary to stabilize the condition of

Monsanto

MICHAEL A. PIERLE
Vice President

Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63167
Phone: (314) 694-1000

November 11, 1992

To Our Employees:

Monsanto Company is dedicated to ensuring the safety of our employees, customers, communities and the environment. This is the commitment of the Monsanto Pledge, which serves as the umbrella for our overall environmental, safety and health program.

In support of this commitment, we have developed the "Monsanto Pledge Guidelines." These new guidelines replace our Environmental, Safety and Health Guidelines. They set forth the management expectations for environmental, safety and health performance, and they describe key results against which progress will be measured.

The Monsanto Pledge Guidelines update our Environmental, Safety and Health Guidelines, and incorporate Responsible Care, the continuous improvement initiative created by the chemical industry worldwide.

~~The new guidelines have been approved by the Environmental Policy Committee. Conformance with the spirit of the guidelines is not optional, although considerable latitude and innovation is expected in tailoring the guidelines for specific operating units.~~

Please incorporate your existing plans and programs as appropriate to meet the Pledge Guidelines and add any specific programs or requirements that reflect special needs of your business.

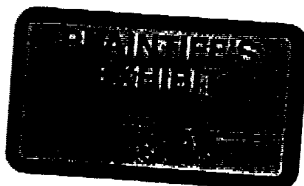
To fulfill the Monsanto Pledge, we must engineer change and add value to our businesses. In this way, we can build a competitive advantage to sustain our leadership position in environmental, safety and health improvements.

This Monsanto Pledge Guidelines book should be treated as "company confidential." The section entitled "Introduction," pages i - iii, contains a summary of the Pledge Guidelines and can be used in external discussions.

Sincerely,



Michael A. Pierle



DSW 107930

TABLE OF CONTENTS

I. INTRODUCTION

II. THE MONSANTO PLEDGE

III. MONSANTO PLEDGE GUIDELINES

1. Pollution Prevention
2. Employee And Community Safety And Health
3. Process Safety And Emergency Response
4. Product Stewardship
5. Chemical Distribution
6. Groundwater And Soil Quality
7. Outside Processors
8. Community Awareness At Manufacturing Sites

IV. OTHER GUIDELINES

1. Environmental, Safety And Health Reviews Of Capital Projects
2. Environmental, Safety And Health Reviews Of Divestitures Or Acquisitions Of Property And/Or Businesses
3. Environmental, Safety And Health Protection For Investments Over Which The Company Does *Not* Have Operating Control
4. Reproductive Hazards In The Workplace
5. Safe Handling Of Carcinogens
6. Contractor/Guest Environmental, Safety And Health
7. Use Of Animals In Research Facilities
8. Ozone-Depleting Chemicals (CFCs)
9. Environmental, Safety And Health Compliance Auditing

V. PROCEDURES

1. Employee Health And Exposure Communications
2. Transmittal To The United States Environmental Protection Agency Of Substantial Risk Information Under The Toxic Substances Control Act
3. Recording Allegations Of Significant Adverse Reactions Under The Toxic Substances Control Act
4. Premanufacture Notification To The United States Environmental Protection Agency Under The Toxic Substances Control Act
5. Occupational Fatal Accident Reporting
6. Transmittal Of Toxicology And Health-Related Data To United States Regulatory Agencies

VI. REFERENCES

Appropriate Responsible Care Program Or Industry Initiative

DSW 107931

INTRODUCTION

Monsanto's Environmental, Safety and Health Program – The Monsanto Pledge

Monsanto Company is dedicated to ensuring the safety of our employees, customers, communities and the environment. Through the Monsanto Pledge, we have committed publicly to pursue a course of environmental stewardship -- one that goes beyond what is required by the law.

I. THE MONSANTO PLEDGE

Each of the company's environmental programs and commitments is embodied by the seven-point Monsanto Pledge. Announced in 1990 by Monsanto's chairman, Richard J. Mahoney, the Pledge represents Monsanto's environmental commitment to sustainable development.

The Monsanto Pledge

It is our pledge to:

- reduce all toxic and hazardous releases and emissions, working toward an ultimate goal of zero effect;
- ensure no Monsanto operation poses any undue risk to our employees and our communities;
- work to achieve sustainable agriculture through new technology and practices;
- ensure groundwater safety;
- keep our plants open to our communities and involve the community in plant operations;
- manage all corporate real estate, including plant sites, to benefit nature; and
- search worldwide for technology to reduce and eliminate waste from our operations, with the top priority being not making waste in the first place.

At the core of the Pledge is our belief that the public grants us the right to operate every day – and every day, we must work to earn that right. The Pledge recognizes that outstanding environmental, safety and health performance isn't a cost of doing business, but is integral to our business success. It assumes that compliance with the law and our internal guidelines is basic, wherever we do business. But the environmentalism embodied in the Pledge is far more than compliance.

The Monsanto Pledge sets the overall direction of the company's environmental, safety and health program. Specific guidelines detail our efforts to achieve the Pledge.

DSW 107932

II. MONSANTO PLEDGE GUIDELINES

All of Monsanto's operations worldwide observe eight Monsanto Pledge Guidelines that help ensure that our products and operations fully protect human health, safety and the environment -- while meeting or exceeding existing regulations.

1. **Pollution Prevention** -- The company will work toward the ultimate goal of ensuring zero effect attributable to waste in all media. It will research, design and operate its facilities to minimize the generation of process and nonprocess waste and the potential effect of chemical releases to the environment. For waste and releases that remain, the company will comply with regulations, while minimizing environmental threat and long-term liability.

2. **Employee and Community Safety and Health** -- The company will provide a healthful and safe environment for its employees, site visitors, contractors and neighbors. It will evaluate employee health status, determine and monitor workplace factors affecting employee safety and health, and comply with both the company's workplace exposure guidelines and governmental safety and health regulations. It will review major capital projects to protect the health of its people at work and that of people in the community.

3. **Process Safety and Emergency Response** -- The company will research, develop, design and operate processes in a manner that protects the health and safety of employees, site visitors, contractors and neighbors. Beyond compliance with appropriate governmental regulations, the company will apply such standards and programs as necessary to manage operational risks at a level that ensures its continuing right to operate. All company sites will complement this effort with strategies to mitigate risk in the event of an incident, including site emergency response and support of comparable efforts within the community.

4. **Product Stewardship** -- The company will research, develop, design, assess, manufacture, market and dispose of its products so that they meet societal needs and do not pose undue risk to human health or to the environment during all stages of their life cycles. The company will work with product stake holders (suppliers, employees, distributors, customers, consumers and disposers) to understand and reduce risks associated with the life cycle of the company's products.

~~5. **Chemical Distribution** -- The company will reduce potential risk to its employees, the public, carriers, distributors, contractors, customers' employees, and the environment in the distribution of chemicals.~~

6. **Groundwater and Soil Quality** -- The company will design and operate facilities to protect groundwater and soil quality. The company will assess groundwater and soil quality at its facilities and pursue remedies for releases that threaten health or the environment. The company will address on-site and off-site contamination of groundwater and soil attributable to its operating and waste practices to ensure protection of health and the environment.

7. **Outside Processors** -- To support its operations, the company will select outside processors that will operate with concern for worker safety, regulatory compliance, community protection and protection of the environment.

8. **Community Awareness at Manufacturing Sites** -- The company will foster its employees' and the public's right-to-know through a commitment to openness, involvement and community dialogue. The company will be responsive to questions and concerns about human safety, health and the environment at its manufacturing sites.

Included in these guidelines are Monsanto's voluntary programs to prevent pollution and improve safety performance. Also included are specific elements of the Responsible Care initiative.

DSW 107933

ii

III. RESPONSIBLE CARE

Monsanto actively participates in the chemical industry's Responsible Care initiative, the most ambitious initiative on environmental, safety and health issues ever undertaken by a manufacturing industry. Responsible Care is woven into the very fabric of Monsanto's commitment to environmental, safety and health protection worldwide. It is an important tool to help the company fulfill the Monsanto Pledge.

Six Responsible Care codes of management practice are included in the Monsanto Pledge Guidelines:

1. **Community Awareness and Emergency Response** -- to bring company operations and local communities together through communication and cooperative emergency planning.
2. **Distribution** -- to make the transportation of chemicals safer, regardless of the carrier or mode of shipment.
3. **Pollution Prevention** -- to decrease the amount of pollution and hazardous waste generated by manufacturing operations.
4. **Process Safety** -- to prevent fires, explosions or chemical releases from manufacturing plants and processes.
5. **Employee Health and Safety** -- to improve continuously the protection of employees, contract workers and visitors at company sites.
6. **Product Stewardship** -- to reduce the risks to health, safety and environment at every stage of the company's products, from proposal to disposal.

Responsible Care is an important part of the operation of every Monsanto facility. It is a vital part of our effort to earn the public's trust and the privilege of continued operation.

By weaving Responsible Care elements into its environmental, safety and health initiatives, Monsanto is forming the solid foundation it needs to ensure the welfare of its employees, customers, communities and the environment.

Note: Responsible Care is a registered service mark of the Canadian Chemical Producers Association and the U.S. Chemical Manufacturers Association, and is an initiative that is being adopted increasingly in countries around the world.

DSW 107934

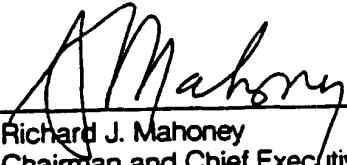
iii

The Monsanto Pledge

It is our pledge to:

- ◆ reduce all toxic and hazardous releases and emissions, working toward an ultimate goal of zero effect;
- ◆ ensure no Monsanto operation poses any undue risk to our employees and our communities;
- ◆ work to achieve sustainable agriculture through new technology and practices;
- ◆ ensure groundwater safety;
- ◆ keep our plants open to our communities and involve the community in plant operations;
- ◆ ~~manage all corporate real estate, including plant sites,~~ to benefit nature; and
- ◆ search worldwide for technology to reduce and eliminate waste from our operations, with the top priority being not making it in the first place.

Monsanto
January 1990


Richard J. Mahoney
Chairman and Chief Executive Officer
Monsanto Company

OSW 107935



MONSANTO PLEDGE GUIDELINE

#1

POLLUTION PREVENTION

The company will work toward the ultimate goal of ensuring zero effect attributable to waste in all media. It will research, design and operate its facilities to minimize the generation of process and nonprocess waste and the potential effect of chemical releases to the environment. For waste and releases that remain, the company will comply with regulations, while minimizing environmental threat and long-term liability.

KEY RESULTS

- Reduce by 90 percent the company's 1987 level of worldwide air emissions of chemicals named by the United States Environmental Protection Agency (USEPA) under Title III of the Superfund Amendments and Reauthorization Act (SARA Section 313) and chemicals of local concern outside the United States by the end of 1992.
- Reduce by 70 percent the company's worldwide SARA Section 313, European Community Priority Pollutant List (EC 129) and carbon monoxide ~~chemical releases to all media and off-site transfers by the end of 1995.~~
- Discontinue the deep-well injection of Resource Conservation and Recovery Act (RCRA) hazardous waste streams and SARA Section 313 toxic chemicals by the end of 1999.

The development and use of technologies that improve competitive positions will be emphasized.

The operating units will integrate into their release-reduction plans the following corporate goals:

Reduce by 90 percent the company's 1987 level of worldwide air emissions of SARA Section 313 chemicals and chemicals of local concern outside the United States by the end of 1992.

Reduce by 70 percent the company's worldwide ~~SARA Section 313, EC 129 and carbon monoxide chemical releases to all media and off-site transfers by end of 1995.~~ The January 1990 SARA 313 and EC 129 lists plus carbon monoxide apply through the end of the multimedia release reduction program.

An effect-based release reduction target will be established every five years beginning in 1995, working toward an ultimate goal of zero effect. By the end of 1993, a method and process for an effect-based reduction program for toxic chemicals will be developed.

PROGRAM

1.1 Process Waste

The operating units will integrate into their release reduction plans the corporate goal of reducing all toxic and hazardous releases and emission to all media, working toward an ultimate goal of zero effect. For reducing releases from processes, the order of preference is source reduction, followed by reuse, recycling or co-product sale, and finally by incineration or other treatment to reduce the volume and/or toxicity of pollutant streams.

1.2 Nonprocess Waste

Each facility will maintain an inventory of all nonprocess sources of waste generation, including power generation, office and maintenance operations, general warehouse trash, packaging/shipping materials and similar sources.

1.3 Underground Well (Deep-well) Injection

MONSANTO COMPANY

DSW 107936

MPG 1. Page 1 of 3
Company Confidential

The company will discontinue deep-well injection of RCRA hazardous waste streams by the end of 1999. It will also apply best feasible technology to virtually eliminate the deep-well injection of SARA 313 chemicals. The company's name will not appear on the list of companies making significant use of injection wells for disposal of SARA chemicals for the reporting year 2000 and beyond. The company will demonstrate progress by achieving in 1996 an 80 percent reduction of injected SARA chemicals against the 1990 base reporting year.

To be prepared for the possibility of mandatory regulations, the company intends to select by the end of 1995 optimal technical strategies for total withdrawal from deep wells. This preparation will include study-grade estimates to achieve non-brine, treated surface discharge. All operating units will continue where possible to challenge the technical impediments to total withdrawal from deep wells.

No new uses of deep wells for hazardous or toxic materials are permitted. A "new" use of deep wells is defined as injection of streams from new products or the addition of substances not previously injected at that site. New internal or external uses of deep wells for non-hazardous wastes and nontoxic chemicals will be considered by the Environmental Policy Committee (EPC) only on an exception basis and within the constraints of these guidelines. The economics of any project appropriation request for such use must be based on disposal technology other than the use of deep wells.

1.4 Polychlorinated Biphenyls - "PCB-Free"

All company-owned sites (e.g., warehouses, plants, offices) located in the United States will minimize the potential for releases of polychlorinated biphenyls (PCB) by becoming "PCB-free" of Toxic Substances Control Act (TSCA)-contaminated articles by the end of 1994.

1.5 Land Disposal

Landfill of "acutely hazardous" wastes¹ and "incinerables"² will not be practiced. For hazardous wastes and wastes managed as hazardous, fixation of particularly mobile, persistent or bioaccumulative wastes will be accomplished whenever warranted and feasible. In making the decision to manage wastes as

hazardous, the company will take into account public expectations, emerging trends and worldwide company practice regarding the same or similar wastes.

Contractors hired for land disposal of wastes will be subject to contracting and assessment requirements (see *Pledge Guideline No. 7, Outside Processors*). In the United States, the use of off-site hazardous waste landfills will be approved by the Environmental Policy Committee and will be limited in number.

Medical wastes generated at the company's locations will be incinerated prior to land disposal of residues. Assurance of incineration will be obtained via manifests or equivalent documents if manifests are not available.

Each company location will maintain a record of both the on-site and the commercial waste treatment, storage and disposal sites it uses.

1.6 Air Emission and Water Release Assessments

The company will conduct and maintain an ongoing assessment of potential human health impacts for selected, routinely emitted air pollutants. It will develop appropriate control strategies to reduce identified, potentially unreasonable risk of harm to human health in surrounding communities. The list of air pollutants to be studied include: a) those listed under Section 112(b) of the U.S. Clean Air Act; b) those for which the USEPA has established cancer unit risk values; c) those contained on the International Agency for Research on Cancer (IARC) group 1 and 2A lists; d) other site-

specific pollutants identified by the plant that appear to warrant consideration (including those in significant quantities reportable via SARA Section 313). Plants outside the United States will use the above-given pollutant list plus any additional air pollutants on any local regulatory list that the plant manager deems important.

Each plant will maintain a list of all such air pollutants, ranked by established and approved protocols. Depending upon the pollutant's relative ranking and if required by the protocols, the plant will use appropriate dispersion modeling techniques to determine potential maximum downwind concentrations for each such pollutant at specified receptors representative of the exposed population utilizing appropriate dispersion

¹ As listed in 40 CFR 261.33(e), plus any mixtures containing greater than 5 percent.

² Hazardous wastes, or wastes managed as hazardous, with a heat of combustion greater than 6000 BTU/lb.

modeling techniques. Appropriate assessments of potential human health impacts at the community receptor points will then be analyzed according to protocols established by the company's Environmental, Safety and Health staff. Any potentially unreasonable risk to human health that is identified will be expeditiously reduced to acceptable levels through appropriate actions.

The company will conduct aquatic safety assessments to determine the measurable impacts, if any, of its effluents on receptor water quality. The assessments should include both direct and indirect discharges (if applicable) with the mitigating impacts of the publicly owned treatment works (POTW) taken into account for the indirect discharge assessments. Any potentially unacceptable impacts to the aquatic environment identified will be mitigated in a timely manner. A reconfirming assessment will be conducted to verify that the impacts have been reduced to acceptable levels.

All initial air emission and surface water release assessments required should be conducted for each of the company's worldwide manufacturing sites within two years of the EPC's approval of this guideline. Operating units will review the status of the assessments annually, and if any significant changes have occurred at a plant site, determine whether the assessment should be repeated. Any such reassessments will be completed within 12 months.

hazardous waste streams and toxic SARA Section 313 chemicals.

1.7.5 AIR EMISSIONS AND WATER RELEASE ASSESSMENTS

The company's air and water steering committees will be responsible for tracking the air emission and water release environmental assessments conducted at each site and maintaining an ongoing list of the assessments' current status. In addition, each plant's environmental compliance audit will check the current status of these assessments and report on progress as part of the audit's findings.

1.8 Coordinators

Where clarification is required, the following coordinators should be contacted:

WASTE MANAGEMENT

D. B. Redington, ESH, Corporate, A3NA
(314) 694-6503.

ASSESSMENT

C. D. Malloch, ESH, Corporate, A3NA
(314) 694-8889.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

1.7 Measurement

The following indicators will be used to measure progress against this guideline:

- 1.7.1 Annual progress toward achievement of 90 percent SARA Section 313 air emissions reduction goal.
- 1.7.2 Annual progress toward achievement of 70 percent worldwide SARA Section 313 chemical releases and off-site transfer reduction goal.
- 1.7.3 Achievement of contingency planning for reduction of use of deep-well injection.
- 1.7.4 Annual progress toward goals involving discontinued deep-well injection of RCRA

DSW 107938

MPG 1. Page 3 of 3
Company Confidential



MONSANTO PLEDGE GUIDELINE

#2

EMPLOYEE AND COMMUNITY SAFETY AND HEALTH

The company will provide a healthful and safe environment for its employees, site visitors, contractors and neighbors. It will evaluate employee health status, determine and monitor workplace factors affecting employee safety and health, and comply with both the company's workplace exposure guidelines and governmental safety and health regulations. It will review major capital projects to protect the health of its people at work and that of people in the community.

KEY RESULTS

- Approach zero adverse health effects for the company's employees, site visitors and site contractors, including zero occupational injury and illness.
- Certify into the United States Occupational Safety and Health Administrative's (OSHA) Voluntary Protection Program (VPP) or equivalent at all facilities where appropriate by the end of 1997.
- Reduce by 50 percent the company's 1991 level of accidental releases of hazardous materials from production operations by the end of 1996.

PROGRAM

2.1 Health Surveillance and Assessment

The company will monitor and evaluate the effect of work exposures on employee health by providing occupational health surveillance in all locations. The goal is to offer periodic assessments for all employees. Health surveillance and periodic health assessments will be conducted by the company or by contract health professionals in accordance with the Occupational Medicine Program as defined in the company's *Occupational Medicine Program Manual*.

2.2 Workplace Surveillance

The company will conduct workplace surveillance to identify potential health risks, evaluate hazards based on current toxicological and epidemiological information and initiate appropriate safeguards to protect employee health.

2.3 Audits and Reviews

The company will perform periodic on-site audits and reviews of worldwide operations to evaluate status of safety, occupational health and industrial hygiene programs. It will utilize observations and recommendations to achieve and maintain regulatory and code compliance, attain appropriate technological sophistication, reduce the probability of illnesses and injuries, and support employee safety and health education.

2.4 Regulations and Guidelines

The company will achieve and maintain compliance with its guidelines and governmental regulations for facility design, safe work and operational practices, injury and illness recordkeeping, workplace exposures, health surveillance, and community safety and health. If regulatory guidelines are unavailable or inadequate to protect worker health, the company will establish guidelines where appropriate.

2.5 Data Management

The company will collect and enter workplace materials, worker exposure, work history and employee health assessment data into the *Monsanto Environmental Health Information Analysis & Reporting System (MARS)* data base, which will be used to perform epidemiological and other appropriate studies to evaluate worker health and enhance worker protection.

MONSANTO COMPANY

DSW 107939

MPG 2. Page 1 of 2
Company Confidential

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The company will establish guidelines for classifying and recording injuries and illnesses and monitor company-wide performance and adherence to federal and local regulations on recordkeeping. It will issue monthly summaries of appropriate statistics and will produce other publications designed to improve awareness and to communicate relevant technologies to the workplace. The company will develop ways to understand the causation of injuries and exposures as well as techniques for prevention.

2.6 Loss Prevention Reviews

The company will conduct safety and industrial hygiene reviews on design, start-up and operational issues for major new installations and expansions.

2.7 Professional Activities

The company will advance occupational health and safety consciousness through employee participation in trade and professional associations and other cooperative endeavors.

2.8 Employee Education

The company will provide employee training, orientation and education in safety and health.

2.9 Contract Employees

The company will provide contract employees with any required occupational health surveillance, safety and industrial hygiene indoctrination in accordance with *Other Guideline No. 6, Contractor/Guest Environmental Health and Safety*. Sites located in the United States will meet the requirements of the contractor environmental, health and safety guideline.

2.10 Security

The company will establish security procedures and systems to control entry and exit of personnel and materials at its sites.

2.11 Measurement

The following indicators will be used to measure progress against this guideline:

- Annual progress toward operating unit's goals for the Total Recordable Rate (TRR).
- Annual progress toward entry of 100 percent United States manufacturing and service locations into VPP by end of 1997.
- Releases as reported per the company's worldwide system.
- Systematic review of employee health and industrial hygiene data.

2.12 Coordinators

Where clarification is required, the following coordinators should be contacted:

V. E. Boyen, Director, Safety & Personal Protection,
A2NG, (314) 694-6007

P. A. Easterday, Director, Industrial Hygiene,
A3NL, (314) 694-8836

J. H. Baker, Director, Occupational Medicine,
A3NB, (314) 694-8806

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107940



MONSANTO PLEDGE GUIDELINE

#3

PROCESS SAFETY AND EMERGENCY RESPONSE

The company will research, develop, design and operate processes in a manner that protects the health and safety of employees, site visitors, contractors and neighbors. Beyond compliance with appropriate governmental regulations, the company will apply such standards and programs as necessary to manage operational risks at a level that ensures its continuing right to operate. All company sites will complement this effort with strategies to mitigate risk in the event of an incident, including site emergency response and support of comparable efforts within the community.

KEY RESULTS

- Sustain no major losses from catastrophic incidents.
- Retain the company's preferred risk status with insurers.
- Reduce by 50 percent the company's 1991 level of accidental releases of hazardous materials from production operations by the end of 1996.
- Incur no major injuries to employees or neighbors from a plant process incident.

designs. Designs should incorporate relevant consensus standards as appropriate. Additionally, the Safety and Property Protection (S&PP) staff shall provide supplemental guidance through Design Guides, Tecfacts and related documents (e.g., *Guidance Notes* as published by S&PP, Europe/Africa).

3.3 Project Reviews

All projects (new processes, products or facilities) will undergo safety reviews to ensure adherence to applicable internal and external standards as well as to examine the design for potential hazards. Major projects will undergo both a pre-project and a design stage review; new processes will undergo a research stage review. Appropriate participation from the Environmental, Health and Safety (ESH) staff is required for projects managed by an operating unit's engineering organization. All major projects should also have a pre-startup review to confirm that all recommendations from prior reviews and hazard analyses (if performed) have been addressed.

PROGRAM

3.1 Process Development and Design

Every new process will be characterized in a document (e.g., *Tentative Process, Red Book, Process for Engineering Design*) that describes all materials, equipment and processing conditions, including known safe limits. Design and engineering will be based on such documentation for a new process and on existing operations if there is already an established process. The basis for design of all major operating components and critical safety systems will be recorded in a design manual. Any new or expanded facility will be reviewed for its safety impact on the community.

3.2 Technical and Engineering Standards

The engineering organizations will maintain such standards as necessary to allow safe and effective

3.4 High Hazardous Materials (HHM) Program

High Hazardous Materials (HHM) are those materials, that if accidentally released would pose the greatest threat to neighbors and employees. A higher level of controls and operating standards are applied to these materials. The major elements of the HHM program include the use of Hazard and Operational Study (HAZOPs), the preparation of a guideline document for each HHM, and audits once every two years.

MONSANTO COMPANY

DSW 107941

MPG 3. Page 1 of 3
Company Confidential

3.5 Operational Safety Management

Safe process operations on a continuing basis are maintained by each site by the company's commitment to a series of fundamental practices. Included are the following:

3.5.1 OPERATING PROCEDURES

Written procedures are kept current for all processes. They cover necessary operating instructions, safe handling of materials, safe operating limits, and responses to deviations, including emergency steps.

3.5.2 OPERATOR TRAINING

All production and maintenance operators must undergo training to acquire the necessary skills and knowledge for safe execution of their responsibilities. Operators must adequately demonstrate their competence before they assume their positions; training must be periodically reinforced.

3.5.3 CONTRACTOR SAFETY

The company will provide contract employees with any required occupational health surveillance, and safety and industrial hygiene indoctrination in accordance with *Other Guideline No. 6, Contractor/ Guest Environmental, Health and Safety Guideline*. Sites will meet the requirements of the contractor environmental, health and safety guideline.

3.5.4 MANAGEMENT OF CHANGE

~~Any change in equipment, process or procedures that goes beyond what is~~ recognized as the safe operating regime shall be governed by a "management-of-change" protocol to ensure proper safety review, authorization, training and implementation. This protocol also will apply to capital projects on all changes made subsequent to the previous safety review. A separate protocol will apply to changes in the line organization.

3.5.5 CRITICAL SYSTEM INSPECTIONS

A program involving inspection, replacement and/or testing of critical equipment or safety systems must be maintained in order to ensure reliable operations and system integrity.

3.5.6 IN-DEPTH PROCESS AUDITS

At intervals not to exceed three years, all operations shall undergo intensive audits to examine areas of change, non-routine occurrences, new information and other

unusual factors to ensure that no new hazards have been introduced and that appropriate safety margins have been maintained.

3.5.7 INCIDENT INVESTIGATIONS

All significant incidents that threatened or could have threatened process integrity or the well-being of involved personnel will be investigated by a specially appointed team who will establish causes and make recommendations to prevent recurrence.

3.6 Emergency Response

Effective emergency response includes not only those actions to mitigate and control the incident within the fence line but also includes actions that address the potential impact on the community. Consequently, a site emergency response program should include the following elements:

3.6.1 EMERGENCY PROCEDURES

Written emergency procedures will be available and kept current for each process, as well as for the total site. They will cover actions at each stage of the emergency including shutdown and evacuation. All employees must be trained in these procedures.

Emergency Drills:

Site managers will test and audit their emergency plan annually and revise it as necessary. At intervals determined by the site, the emergency drill will include the active involvement of community resources associated with emergency management.

3.6.2 COMMUNITY PREPAREDNESS

The site managers will review with appropriate community officials the nature and extent of potential incidents from the site and provide the community with assistance in emergency planning if requested.

3.7 Measurements

The following indicators will be used to measure progress against this guideline:

- Annual progress reports on S&PP Compliance Audits, the HHM Report of the Monsanto Manufacturing Council (MMC) once every two years and site In-Depth Process Safety Audit Reports.

- Annual cost of property and business interruption insurance.
- Monthly reports on SARA Title III, Section 304, reportable releases against goals.
- S&PP quarterly property-loss reports.

3.8 Coordinator

Where clarification is required, the following coordinator should be contacted:

V. E. Boyen, Director, Safety & Personal Protection,
A2NG, (314) 694-6007

3.9 Definitions

ESH: Environment, Safety and Health.

HAZOP: Hazard and Operability Study, a hazard identification technique.

HHM: Highly hazardous material (a Monsanto designation for substances posing an acute risk).

MMC: Manufacturing Management Council.

SARA: Superfund Amendments and Reauthorization Act.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107943

MPG 3. Page 3 of 3
Company Confidential



MONSANTO PLEDGE GUIDELINE

#4

PRODUCT STEWARDSHIP

The company will research, develop, design, assess, manufacture, market and dispose of its products so that they meet societal needs and do not pose undue risk to human health or to the environment during all stages of their life cycles. The company will work with product stake holders (suppliers, employees, distributors, customers, consumers and disposers) to understand and reduce risks associated with the life cycle of the company's products.

KEY RESULTS

- Practice the principles and key elements of Product Stewardship, as specified in appropriate programs around the world, at all the company's global operations.
- Provide appropriate safety and handling information, including Material Safety Data Sheets (MSDSs)¹, to potentially exposed employees, including contract employees and product receivers.
- Work toward the goal of no undue risk through systematic risk reduction throughout a product's life cycle
- Gain a competitive advantage by applying product stewardship principles that add value to the company's product offerings.

R&D and prior to off-site shipment. A product-risk characterization (including an EC-202 or equivalent, a final MSDS and a shipping classification) will be completed before new product commercialization.

- 4.1.2 The company's process for generating and maintaining an MSDS is comprehensive and, when coupled with human experience and professional judgment, will fulfill the requirement for a product-risk characterization. Whenever significant new information becomes available, it will be reviewed as part of the MSDS program to satisfy regulatory and product-risk characterization requirements. An MSDS review/product-risk characterization will be periodically performed commensurate with product risk, with revisions performed at a minimum, every five years.

PROGRAM

4.1 Environmental, Safety and Health Information and Risk Characterization

- 4.1.1 New chemical products, new isolated process intermediates, and significant new uses for existing chemical products will be accompanied by adequate environmental, safety and health exposure information to support a preliminary product-risk characterization (ER-200 or EC-201, and an R&D MSDS) at the earliest practical stage of

- 4.1.3 Product files or information systems will be maintained for all products or product families. The product files or information systems will contain the data necessary to fulfill regulatory requirements and perform product-risk characterizations and assessments as appropriate, including:

- Material Safety Data Sheets;
- References to relevant literature or internal reports dealing with health and

¹Material Safety Data Sheets (MSDSs) and Safety Data Sheets (SDSs) are interchangeable terms, and refer to the similar requirements in different countries.

safety (toxicology, epidemiology, industrial hygiene, flammability, reactivity, etc.), relevant information on composition, physical properties, raw materials, manufacturing processes, principal by-products, protective measures, exposure information, energy requirements, wastes and disposal practices;

- Information on use, including handling, transport, packaging and storage, which will either be estimated (typically for new products), or obtained by visits or reviews of customer, distributor and consumer practices;
- A critical review of health and environmental effects and exposure information, such as EC-201, EC-202, *Monsanto Work-Place Permissible Exposure Guideline (MWPEG) Reviews*, Health Effect Reviews and Toxicology Reviews;
- Technology Risk Reviews;
- Health concerns of customers, employees or the public.

4.2 Risk Management System

4.2.1 A systematic approach to risk management will be implemented and maintained for new products. Existing products will be managed on a case-by-case basis.

4.2.2 Risk management options, where needed, will be an integral part of the follow-up to each phase of a product-risk characterization (as detailed in Section 4.1).

4.2.3 All products will be appropriately labeled for hazard or risk, and will conform at a minimum to governmental requirements and appropriate consensus standards (e.g., ANSI, ISO, etc.).

4.2.4 Document risk-management actions will be recorded in product files (examples of specific risk-management actions are detailed in Sections 4.3 through 4.7).

4.3 Product and Process Design and Improvement

4.3.1 R&D materials used in the laboratory will be handled under Prudent Laboratory Practices or equivalent guidelines.

4.3.2 Pollution prevention principles (*Pledge Guideline No. 1, Pollution Prevention*) will be included as review criteria in technology-risk reviews for new and existing chemicals, and will be incorporated into the EC-201/202 (or equivalent) assessments.

4.4 Employee Education and Product Use Feedback

4.4.1 Employee education in the safe handling and use of chemicals is addressed in *Pledge Guideline No. 2, Employee And Community Safety And Health*. Employees with significant customer interaction will be trained to recognize and feed back information about product use and misuse to the company's environmental network.

4.4.2 Feedback systems to listen to stake holders, including commercial and technical service liaisons with customers, product hotlines, poison control center relationships, etc., will be nurtured and expanded as appropriate.

4.5 Contract Manufacturers

See *Pledge Guideline No. 7, Outside Processors*.

In addition, the company will provide guidance and information to contractor personnel on the safe handling and transportation of company products.

4.6 Suppliers

4.6.1 Up-to-date and high-quality product information, including, as appropriate, composition data and MSDSs, will be obtained from suppliers for all raw materials.

4.6.2 Suppliers will be actively engaged as appropriate, commensurate with raw-material risks.

4.7 Distributors, Customers and Other Direct Product Receivers

4.7.1 The company will ensure that MSDSs and other appropriate safety documents are provided to all direct product receivers.

4.7.2 As appropriate, the company will actively involve product receivers in dialogue and outreach regarding appropriate risk characterization, risk management and risk reduction. Where applicable, the company will assist in conducting audits. If improper practices involving company products are

identified, the company will work with the product receiver to improve the practices. If adequate improvement is not evident, the company will take appropriate action, including termination of sale if necessary.

- 4.7.3 The company will actively seek product-receiver involvement in the continuous improvement of company products and as a means of differentiating those products in the marketplace on the basis of environmental, safety and health stewardship.

4.8 Responsibilities

- 4.8.1 Product stewardship is the responsibility of the business units. Each operating company, free-standing division or world area will assign certain employees the responsibility for ensuring that this program guideline is met.
- 4.8.2 Guideline oversight is the responsibility of the corporate Environmental, Safety and Health staff.
- 4.8.3 The corporate staff and business units are jointly responsible for developing information needed for product evaluations. This includes periodic re-evaluation of new information relevant to the product on a regular basis.

4.9 Measurement

The following indicators will be used to measure progress against this guideline:

- 4.9.1 Progress in meeting internal and external requirements for all new product introductions (i.e., EC 201/202 approvals and governmental approvals).
- 4.9.2 Progress in determining product hazards.
- 4.9.3 The growth of knowledge about how company products are used and the resultant exposures to people and the environment.

- 4.9.4 The availability of adequate environmental, safety and health data to the ultimate product receiver.
- 4.9.5 Increased understanding and diminution of the risks and environmental impacts associated with a product throughout its life cycle.
- 4.9.6 Differentiation of company products in the marketplace.

4.10 Definitions

Product Receiver: An entity (not an individual) to whom the company transfers product. This definition includes product receivers such as brokers or transporters who may not fall into the traditional customer category.

Product: Chemical substances and mixtures, materials and equipment, articles, licensed technology and services related to product use that are sold, distributed in commerce, or otherwise provided.

4.11 Coordinator

Where clarification is required, the following coordinator should be contacted:

J. R. Condray, ESH, Corporate, A3NA
(314) 694-8883.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107946



MONSANTO PLEDGE GUIDELINE

#5

CHEMICAL DISTRIBUTION

The company will reduce potential risk to its employees, the public, carriers, distributors, contractors, customers' employees, and the environment in the distribution of chemicals.

KEY RESULTS

- Work toward incident-free performance in the distribution of chemicals, including raw materials, intermediates, finished products, byproducts and wastes.

PROGRAM

5.1 Chemical Distribution Incident Reduction

5.1.1 The company will continue to improve chemical distribution in order to effect incident-free performance. An "incident" is defined as any undesirable event occurring during a chemical distribution process over which the company has ~~direct control or influence that results in an injury, a release of a chemical, and/or damage to property or the environment.~~

5.1.1.1 The company will improve the carrier selection process so as to identify and contract transportation services with those carriers who consistently demonstrate safe performance in the movement of the company's chemical products.

5.1.1.2 The safety of chemical transportation practices will be continually improved through application of Total Quality/Total Partnership concepts and tools to achieve the company's goal of incident-free performance.

5.1.1.3 The company will continue to support The Agricultural Group's Bulk No-Spill Delivery Program.

5.1.1.4 The company will develop and apply technological advancements to improve chemical distribution safety and will share these with the industry as appropriate.

5.1.1.5 Through its emergency response system, the company will provide technical advice and assistance in a responsible and timely manner for "outside plant gate" incidents involving its chemical products. The company will measure and continuously improve its response capabilities. Trained personnel will be physically present, in an expeditious manner, at the emergency site upon request of the local emergency responder or public official, or when the company feels a ~~qualified emergency team can lessen the severity of an incident or ease a community's concerns about the company's products.~~

5.1.2 PROGRAM EMPHASIS AREAS

5.1.2.1 Each shipping location will have a current plan for responding to chemical transportation emergencies involving products/materials within its scope. The plants' emergency responders will receive regular training that meets or exceeds regulatory or industry standards.

5.1.2.2 Training history for all emergency response personnel will be documented.

MONSANTO COMPANY

DSW 107942

MPG 5, Page 1 of 3
Company Confidential

5.1.2.3 The company will discuss with emergency responders and the public their concerns about chemical distribution. The company will encourage partnerships with local communities and local emergency responders along chemical transportation routes, as well as in those communities where its chemical plants are located.

5.1.2.4 The total emergency response plan will be continuously monitored and improved. Detailed post-incident reports and preventive action plans will be provided as training aids to all emergency responders.

5.1.2.5 Distribution accidents/incidents and any resulting loss of containment will be reduced according to a documented distribution risk-management methodology. An initial qualitative risk-assessment methodology will be made available for use. Quantitative risk assessment models will be evaluated for especially sensitive materials.

5.1.2.6 Regulatory changes that affect the distribution of the company's products will be monitored and changes will be communicated to shipping locations. Compliance audits and training will be conducted at all company shipping locations as appropriate and reported on annually.

5.1.2.7 The company will support community outreach programs by offering plant facilities and mutual training to those emergency responders in communities neighboring the company's distribution network.

5.1.2.8 The company will, as appropriate, through routine communications with the public, emphasize continuous improvement in safe chemical distribution and will be responsive to public concerns.

5.1.2.9 As appropriate, trained plant employees will be the company's "ambassadors" to the community to convey the company's progress and its commitment to improving the safety of chemical distribution and effectiveness of its emergency preparedness and response.

5.1.2.10 The company will recognize, as appropriate, the potential for adding value to its products.

5.2 Chemical Distribution Safety for Warehouses and Terminals

5.2.1 A seamless policy of operating safety results will be extended to warehouses and terminals that receive the company's products. This policy will incorporate standards comparable to the company's.

5.2.1.1 The company will use precontracting guidelines in the selection process to assess firms that can handle company products in a manner that is safe for its employees, the public and the environment.

5.2.1.2 The company will provide information on its policies, procedures and requirements on the safe handling and transportation of chemicals to warehouse and terminal personnel.

5.2.1.3 The company will apply Total Quality Management concepts and tools to all aspects of contract management for continuous improvement in safety and reliability of provided services.

5.2.1.4 The company will use agreed-upon performance measurements and periodic reviews as indicators of progress toward zero-incident status.

5.2.1.5 The company will extend its recognition of public concerns about emergency preparedness and safe distribution practices to all its distribution locations.

5.2.2 PROGRAM EMPHASIS AREAS

5.2.2.1 Documented selection criteria that include appropriate safety measures for each product will be maintained.

5.2.2.2 The company will maintain defined flows of information concerning its policies, guidelines and requirements on the safe handling of its products.

5.2.2.3 The company will conduct reviews of performance against its requirements on a specified review cycle.

5.2.2.4 The company will support risk management activities and emergency preparedness at all of its distribution locations.

5.3 Measurement

Appropriate measurement systems will ensure continuous improvement toward stated goals and objectives.

5.4 Coordinator

Where clarification is required, the following coordinator should be contacted:

D. E. Williams, Chemical, Purchasing/Distribution,
BRSS, F2EA, (314) 694-8644.

*(Revised and approved by the Environmental Policy
Committee, October 22, 1992.)*

DSW 107949

MPG 5, Page 3 of 3
Company Confidential



MONSANTO PLEDGE GUIDELINE

#6

GROUNDWATER AND SOIL QUALITY

The company will design and operate facilities to protect groundwater and soil quality. The company will assess groundwater and soil quality at its facilities and pursue remedies for releases that threaten health or the environment. The company will address on-site and off-site contamination of groundwater and soil attributable to its operating and waste practices to ensure protection of health and the environment.

KEY RESULTS

- Establish an active groundwater assessment program at the company's facilities.
- Ensure that there are no adverse public health impacts attributable to the company's wastes.
- Minimize the financial impact of remedial action and third-party liability attendant to waste sites.

PROGRAM

6.1 Assessment

Programs for assessment and tracking of groundwater quality will be organized at all major locations, and at lesser sites that have known groundwater issues. Follow-up plans will address priority concerns. The assessment status and plans will be updated in a summary report during the second quarter of each year.

Any newly purchased, existing operation will be subjected to the seven-point protocol for assessment of possible groundwater contamination. The coordinator of this guideline (see 6.6 herein) will supply a copy of the assessment protocol upon request.

6.2 Protection

6.2.1 GROUNDWATER PROTECTION PLANS

Each location will maintain a groundwater protection plan that includes inspection, testing and maintenance of facilities that

could contaminate groundwater (e.g., sewers, process lines, sumps, tanks, loading/unloading areas). The groundwater protection plans and designs will be commensurable with the risk posed by the specific situations.

6.2.2 FACILITY DESIGN

New, replacement or expansion facility designs (including sewers and lines) will consider such options as aboveground and/or double containment, improved materials of construction, and/or cathodic protection to provide improved assurance against groundwater contamination.

New, replacement or expanded surface impoundments for wastewater treatment or storage must be approved by the Environmental Policy Committee on an exception basis.

New storage tanks for materials that could cause contamination will be provided with impervious secondary containment (e.g., dikes, liners, vaults, double wall) unless a clear showing is made on a tank-by-tank basis during project reviews that vessel contents (e.g., dilute wastewaters) or setting (e.g., in-battery containment, other adequate containment systems) do not warrant such containment. Existing storage tanks will be reviewed in normal environmental audits.

MONSANTO COMPANY

DSW 107950

MPG 6, Page 1 of 2
Company Confidential

6.3 Abandoned Waste or Groundwater Contamination

When on-site abandoned waste or groundwater contamination is discovered, appropriate assessment of impacts on human health and the environment will be carried out. Corrective action will be taken, as necessary, in a planned, orderly process to remediate soil and groundwater impacts that threaten human health and the environment.

6.4 Superfund

The company will act to ensure that there are no public health impacts attributable to its wastes at "Superfund" sites.

When the company becomes aware of involvement in "Superfund" sites, it will actively participate in potentially responsible parties' efforts to achieve settlement. The company will seek a leadership role, when appropriate, to facilitate resolution. The operating units will cooperate to establish responsibility for sites where several units contributed wastes, and will undertake an oversight role for sites funded at the corporate level when no current operating unit has responsibility. A goal of the company is to resolve as soon as reasonably possible its share of liability and remedial plans for sites where it has a responsibility, while securing timely and cost-effective resolution.

The company intends a lessened legalistic approach to site cleanup negotiations. Where company responsibility is fairly established, the company will not delay cleanup unnecessarily by legal, yet negatively perceived litigious steps. The company will pursue fair legislation and regulations on the general issues in the public arena, but minimizing legal risk will not be the determining factor in the site-specific decisions.

6.5 Measurement

The following indicators will be used to measure progress against this guideline:

6.5.1 Submission of annual groundwater assessment summary reports by each plant subject to reporting.

6.6 Coordinator

Where clarification is required, the following coordinator should be contacted:

D. B. Redington, ESH, Corporate, A3NA,
(314) 694-6503.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107951



MONSANTO PLEDGE GUIDELINE

#7

OUTSIDE PROCESSORS

To support its operations, the company will select outside processors that will operate with concern for worker safety, regulatory compliance, community protection and protection of the environment.

KEY RESULTS

- Manage the company's exposure to present and future liabilities associated with the use of outside processors by maintaining current assessments and written contracts for each outside processor used.

PROGRAM

7.1 Outside Processor Selection

The company will use only outside processors that have been selected and periodically assessed to ensure the following:

- a. their ability to protect the public, employees and the environment adequately from any adverse effect of the company's chemicals, products or wastes;
- b. their compliance with all applicable laws and regulations;
- c. their knowledge of potential hazards and any applicable manufacturing requirements associated with the handling of company materials; and
- d. their use of waste disposal methods and locations as specified in contracts, with recordkeeping of all material use and waste disposal.

Before they are used by the company, outside processors will be subject to contracts and on-site assessments and approval by the appropriate operating unit or subsidiary director of environmental operations and its manufacturing director or world area designee. Periodic reassessments will be conducted for continuing use.

Procedures will be maintained to define the types of outside processors subject to this program, the assessment protocols and frequency, the conditions for waiver of one or more of the above requirements, and other standards.

For toll manufacturing, bulk terminals and transloading, the outside processors will take title to, adopt and own the wastes and manage them as their own under manifests and contracts. For other outside processor categories (waste management, cleaning services, etc.), a processor's waste management practices will be reviewed as part of the on-site assessments.

Outside processors used by all operating units, subsidiaries and world areas will be recorded in one or more data bases to avoid redundant assessments and contracts and to facilitate use of approved processors.

The above elements will be implemented worldwide, but with modifications to reflect local limitations, restraints to compliance with this program, and the extent of the company's operating control. Status and direction of the local program will be reviewed in planned environmental audits of the company's facilities outside the United States.

7.2 Measurement

Each operating unit, subsidiary and world area will maintain records that document the number of outside processors used, the number of outside processors for which assessments are current, and the number of outside processors with contracts in place.

MONSANTO COMPANY

DSW 107952

MPG 7, Page 1 of 2
Company Confidential

7.3 Coordinator

Where clarification is required, the following coordinator should be contacted:

D. B. Redington, ESH, Corporate, A3NA,
(314) 694-6503.

*(Revised and approved by the Environmental Policy
Committee, October 22, 1992.)*

DSW 107953



MONSANTO PLEDGE GUIDELINE

#8

COMMUNITY AWARENESS AT MANUFACTURING SITES

The company will foster its employees' and the public's right-to-know through a commitment to openness, involvement and community dialogue. The company will be responsive to questions and concerns about human safety, health and the environment at its manufacturing sites.

KEY RESULTS

- Establish active community advisory panels, as appropriate, at manufacturing sites.

PROGRAM

8.1 Community Involvement and Dialogue

Each manufacturing site will implement a policy of openness that provides convenient ways for interested individuals to become familiar with the facility, its operations, its products and its efforts to protect human safety, health and the environment. Community advisory panels, open houses, plant tours, environmental awareness days and other activities to involve the community in plant operations may be used.

Community outreach programs will be implemented at each manufacturing plant to inform key audiences (emergency responders, government officials, the media, employees, other businesses and the community) about the facility's emergency response program, chemical inventory, impact evaluation, and potential risks to the community associated with the facility. The information provided will include details on such topics as waste minimization, emissions reduction, health effects of chemicals, and efforts to ensure safe transport of chemicals.

Further, all information will include planned improvements in each of these critical areas as well as expansion activity and other projects of general interest to the community.

An ongoing dialogue with employees and members of the community will be used to assess and respond to their questions and concerns about environmental, safety and health issues, and to involve them in the community outreach effort. Each manufacturing site will conduct an ongoing assessment of employee and community questions and concerns about the site. The effectiveness of the ongoing community communications effort will be evaluated regularly by the site.

Communications training will be provided for key site and company personnel who communicate with employees and the public concerning human safety, health and the environment.

8.2 Information on Chemical Releases/Incidents

Each operating location will make available timely information about routine or accidental releases of toxic chemicals and other chemicals of local concern. Appropriate audiences may include neighbors in the community, employees and the news media. Information will also include progress in achieving the company's stated emissions reduction and pollution prevention goals and future plans. When possible, the information on chemical releases should be at a personal, face-to-face level, and should emphasize listening to others and discussing their concerns and ideas.

The company will publish and distribute annually an *Environmental Annual Review* that articulates the company's environmental, safety and health policies and its progress toward achieving stated environmental, safety and health goals.

MONSANTO COMPANY

DSW 107954

MPG 8. Page 1 of 2
Company Confidential

8.3 Measurement

The following indicators will be used to measure progress against this guideline:

- Annual progress toward establishing community advisory panels, as appropriate, at each manufacturing site.
- Annual dissemination of data on toxic chemicals and other chemicals of local concern at each manufacturing site, as appropriate.
- Annual report of the company's status against stated environmental, safety and health goals through wide distribution of the *Environmental Annual Review*.
- Progress, as appropriate, toward developing routine and convenient ways for interested parties to become familiar with the company's manufacturing sites, its operations, its products, and its efforts to protect human safety and health and the environment.

8.4 Coordinator

Where clarification is required, the following coordinator should be contacted:

G. F. Barton, Corporate Communications, A2SP
(314) 694-7233.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)



OTHER GUIDELINE

#1

ENVIRONMENTAL, SAFETY AND HEALTH REVIEWS OF CAPITAL PROJECTS

The company's capital projects will meet the Monsanto Pledge Guidelines, and will be in compliance with existing and anticipated governmental regulatory requirements. The company will review at all levels capital projects for environmental, safety and health impact before, and as a condition of, project funding.

The vice president of Environmental, Safety and Health or his designee will review those projects requiring approval by the chief operating officer, the chief executive officer or the board of directors. A formal premise review will be held for such projects or other projects with major technology changes as determined by the operating unit, technology and engineering directors. A system for reviewing other projects will be administered by the directors, environmental operations, of the operating units.

Any exceptions to this guideline must be approved by the Environmental Policy Committee.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

Employees assigned to evaluate a new location for operation will prepare an internal environmental impact assessment addressing potential environmental limitations at the site as a result of the existing socioeconomic and biophysical conditions. The effects of the public climate of opinion and of existing and future governmental, environmental regulations that may apply also are to be considered.

MONSANTO COMPANY

DSW 107956

OG 1. Page 1 of 1
Company Confidential

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OTHER GUIDELINE

#2

ENVIRONMENTAL, SAFETY AND HEALTH REVIEWS OF DIVESTITURES OR ACQUISITIONS OF PROPERTY AND/OR BUSINESSES

Negotiations for acquisition or divestiture of property or business units and the securing of final corporate approval are the primary responsibilities of the involved operating unit. However, corporate staff review of environmental, safety and health factors and any attendant liability issues is required during the course of such transactions. This review should be arranged through the office of the operating unit's director of environmental operations, who will, in turn, involve appropriate Environment, Safety and Health staff and Environmental Law personnel and arrange for review by the vice president of Environmental, Safety and Health, and/or the executive vice president of Environmental, Safety, Health and Manufacturing. The review should be completed *prior* to seeking board of directors approval of the acquisition or divestiture.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107957

MONSANTO COMPANY

OG 2. Page 1 of 1
Company Confidential

WATER_PCB-SD0000021503



OTHER GUIDELINE

#3

ENVIRONMENTAL, SAFETY AND HEALTH PROTECTION FOR INVESTMENTS OVER WHICH THE COMPANY DOES *NOT* HAVE OPERATING CONTROL

The *Monsanto Pledge Guidelines* apply at all sites worldwide where the company has operating control. For those investments over which the company does *not* have operating control, at a minimum, compliance with applicable local laws, regulations and practices will be required.

If such applicable rules and practices do *not* provide environmental, safety and health protection that would be acceptable for company-controlled sites, the company will initiate action to bring about the necessary upgrading.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

MONSANTO COMPANY

DSW 107958

OG 3, Page 1 of 1
Company Confidential

WATER_PCB-SD0000021504



OTHER GUIDELINE

#4

REPRODUCTIVE HAZARDS IN THE WORKPLACE

The company will use all appropriate information to ensure avoidance of reproductive effects in workers of both sexes and in offspring of workers.

Through the departments of Medical and Health Sciences and Safety and Environmental Health, the company will do the following:

The company will conduct appropriate toxicological tests of its raw materials, products, intermediates and byproducts.

The company will review current literature for information on the hazards of chemicals and physical agents that the company uses or produces.

The company will assess safety and health implications and the potential reproductive hazards posed by these chemicals and physical agents.

The company will minimize exposure to potentially harmful materials or activities by substitution with less risky chemicals or processes when feasible, through the use of engineering, work practices, and reliable protective equipment.

The company will provide the most accurate information currently available on materials or work practices thought to have reproductive health effects.

The company will offer counseling by qualified health professionals to employees about workplace reproductive concerns.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107959

MONSANTO COMPANY

OG 4. Page 1 of 1
Company Confidential

WATER_PCB-SD0000021505



OTHER GUIDELINE

#5

SAFE HANDLING OF CARCINOGENS

The company will provide safe and healthful working conditions for its employees. It will comply with all governmental regulations concerning exposure to carcinogens.

The company will do the following to ensure the safe handling of carcinogens:

If any data suggest that a chemical to which its employees are exposed is a carcinogen, and such chemical is *not* subject to governmental regulations, the company will evaluate those data and then take appropriate action.

If the data establish the chemical as a human carcinogen, the company will take appropriate action to reduce exposure to the lowest reasonable level, unless exposure is already at such a level.

If the data establish the chemical as an *experimental* or *suspect* carcinogen, the company will (individually or with others) initiate a study to confirm or disprove such designation. During each study, exposure will be reduced to and/or minimized at the lowest reasonable level.

If it is concluded that a material cannot be produced or used without jeopardizing employee health, its manufacture or use will be discontinued.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107960

MONSANTO COMPANY

OG 5. Page 1 of 1
Company Confidential

WATER_PCB-SD0000021506



OTHER GUIDELINE

#6

CONTRACTOR/GUEST ENVIRONMENTAL, SAFETY AND HEALTH

Continuous improvement in contractor/guest environmental, safety and health performance is necessary to create an injury-free and incident-free environment at all company sites for employees and their guests.

6.1 Scope

This guideline sets forth environmental, safety and occupational health (ESH) guidelines applicable to contractors and guests who perform services on or visit company property. All services administered by individual sites or by company engineering groups are covered. Deviations from the contractor/guest ESH process and requirements will be thoroughly documented and approved by the location manager or as described in the *Contractor/Guest ESH Guideline Manual*. No deviation from regulatory requirements will be permitted.

This guideline applies initially to all company locations in the United States. The intent is to work toward worldwide implementation.

6.2 Definitions

Contractor: Any non-company person performing physical work at a site under a company purchase order or contract.

Guest: Any person visiting, performing work or providing a service at a company-managed site, including company employees who are *not* permanently assigned to that location.

Certified Monsanto Representatives: Employees designated by the location management to administer the *Contractor/Guest ESH Guideline*.

Master Monsanto Representative: The location administrator/facilitator responsible for ensuring effective implementation of the Contractor/Guest ESH process at the location, including training and certification for other Certified Monsanto Representatives.

Contract: The document that contains terms and conditions of the agreement between company and the contractor and which serves as proof of their respective obligations. Contracts are to be signed by authorized representatives of the contractor and company, in a form previously approved by the Purchasing and Law departments.

6.3 Objective

The process described in this guideline was developed to define requirements for all company locations to ensure continuous improvement toward incident-free and injury-free performance for employees and all contractors and guests.

Through this process, it is intended that all services performed by contractors on company sites will be covered by written contracts. Furthermore, the contractor is to be made aware of the requirements of this guideline before bidding, and the appropriate requirements are to be incorporated into the written contract.

In accordance with the objective of providing for employee and guest safety in the execution of contract work, the company will utilize contractors who have demonstrated a high degree of compliance with workplace laws/standards, policies and practices; have a history of good health and safety performance; maintain adequate insurance coverage; and, if involved in safety sensitive work, have a substance-abuse treatment program reasonably equivalent to that of the company.

MONSANTO COMPANY

DSW 107961

OG 6, Page 1 of 4
Company Confidential

WATER_PCB-SD0000021507

This process is designed to help ensure that the company will go beyond current regulations, take an industry leadership position in contractor/guest safety and ensure continuous improvement toward incident-free and injury-free performance.

6.4 Responsibilities

The location manager is responsible for ensuring implementation of this guideline. Each site will have a minimum of one company master-certified representative with responsibility for administering and facilitating the *Contractor/Guest ESH Guidelines*.

6.5 Supporting Documentation

This guideline is supported by *Contractor/Guest ESH Guideline Manual* that incorporates the following requirements:

- Contractor Management Systems
- Working in an Operating Facility
- Housekeeping
- Fire Protection and Prevention
- Hazardous Work Permits
- Occupational Health/Workplace Exposure Monitoring
- Vehicle Safety
- Waste Management
- Occupational Medicine
- Management of Change

6.6 Practices and Procedures

6.6.1 The company's contractor/guest environmental, safety and health process defines a fully integrated approach to the management of all contractors and guests within company facilities. The process is *not* intended to restrict management prerogatives, but rather to provide the consistency to help ensure that the Monsanto Pledge is fulfilled and the highest organizational priority is placed on the health and safety of company employees, guests and the communities in which the company operates.

6.6.2 Contractor/Guest Environmental, Health and Safety Process (see Appendix 6.1)

- *Contractor Representative Training and Certification* -- provides for the identification and consistent training of all individuals with responsibilities for selection and management of contractors and guests working at and visiting within company facilities.
- *Guest and Delivery Site Visit Process* -- provides a consistent approach to the orientation and control of all guests, visitors and delivery people who enter company facilities, even those *not* under contract.
- *Pre-Qualification Process* -- provides a consistent approach to identifying and selecting contractors, vendors and service providers who practice effective safety programs with demonstrated leadership and performance in their industry.
- *Selection and Approval Process* -- provides a framework for the contracting of services, which includes the identification of all ESH requirements based on the task and the pre-identified risk. The process stresses clear communication of the company's performance expectations before the contract is finalized.
- *Pre-Job Activities and Compliance Review Process* -- defines a systematic approach for verifying that the contractor and all of the contractor's employees meet the contractual requirements, including orientation, training, medical testing and substance-abuse screening. Plant, operating unit and job-specific expectations are emphasized.
- *Work-in-Progress Process* -- provides a process for the management and audit of the contractor's activities to the ongoing compliance with the company's policies, procedures and requirements. The process focuses on the cooperation between the company's certified representative and the contractor's management to achieve successful and injury-free completion of work.

- *Performance Evaluation Process* -- provides a defined process for the evaluation of and feedback on a contractor's performance, whether the contracted work is for a defined task or ongoing services. Performance evaluations are fed into the contractor pre-qualification process and after evaluation contractors either remain on the pre-qualification list or are stricken from it.

- 6.7.2 Visitors and all delivery personnel entering the location are to be made knowledgeable of site rules and regulations.
- 6.7.3 All contractors and guests must communicate in English at a level of proficiency that ensures their safety and the safety of others. Exceptions to the English communication requirement may be granted only by the location manager.

6.7 Contractor/Guest Responsibilities

- 6.7.1 The contractor/guest is responsible for compliance with this guideline as incorporated into the contract or otherwise communicated to the contractor in order to ensure safe operations. Contractors will have a competent, well-trained supervisor in charge at the site at all times when its employees or those of its subcontractors are present. The company will *not* undertake direct supervision of contractor employees. However, when a contractor employee has no on-site supervision, the contractor should work with the company's certified representative to provide for appropriate implementation of this guideline.

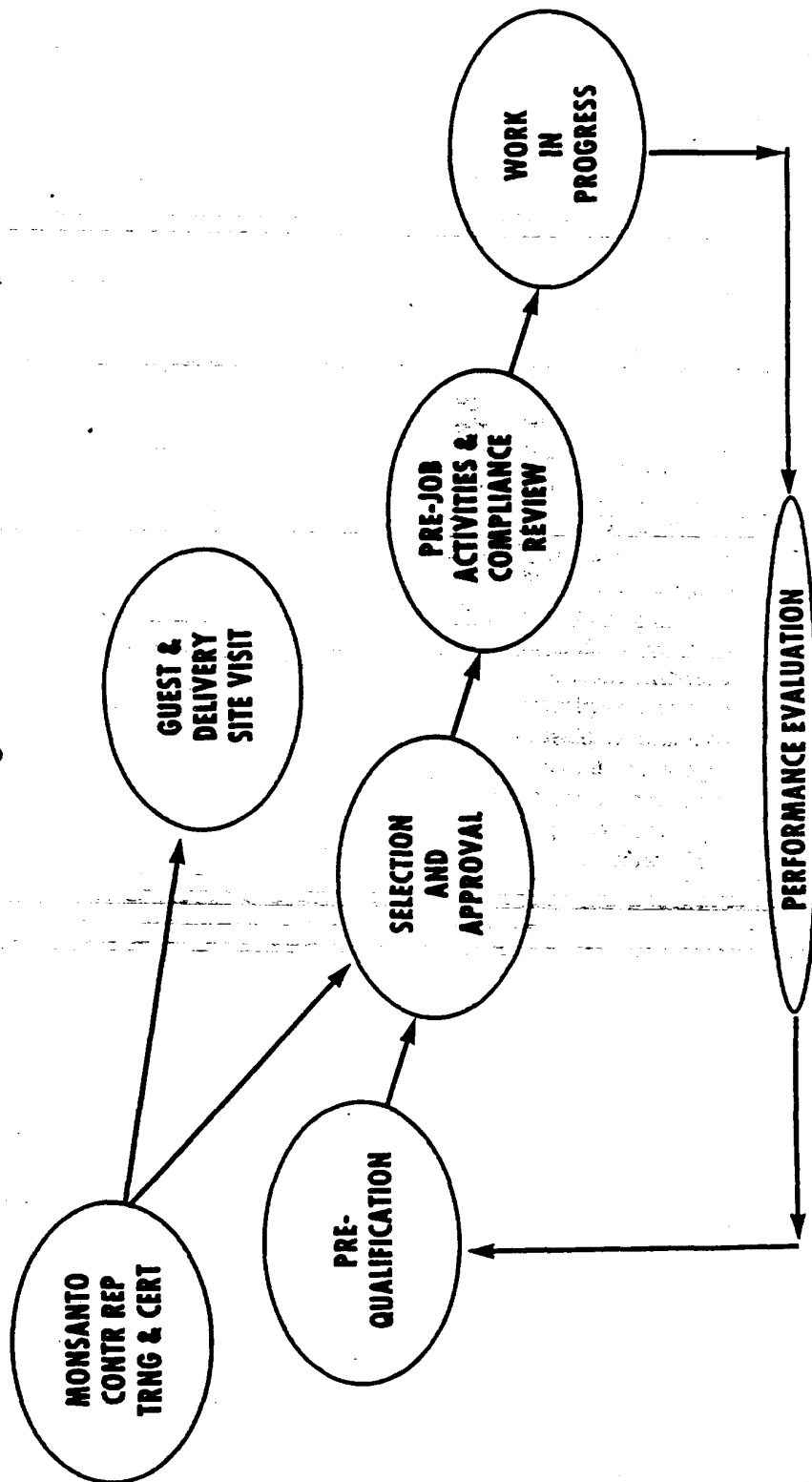
(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107963

OG 6. Page 3 of 4
Company Confidential

MONSANTO CONTRACTOR/GUEST ENVIRONMENTAL, SAFETY & HEALTH GUIDELINE

Management Process



DSW 107964



OTHER GUIDELINE

#7

USE OF ANIMALS IN RESEARCH FACILITIES

The company will ensure that all animals used in its research programs are involved in projects of importance to society and that the animals receive humane and professionally competent care and treatment.

7.1 Preamble

The company develops pharmaceuticals, consumer goods, agricultural and industrial products that are used to treat diseases, to grow food, and to better the quality of human life throughout the world. The company works to ensure that these products provide valuable benefits to society and are safe to use.

In conducting research to ensure product efficacy and safety, company scientists use a variety of new technologies such as computer models, cell culture systems and other processes to identify effective products early on and to detect potential health problems or undesirable side effects. However, these systems are limited because they do not fully represent the complex processes of the human body. For that reason, product research and evaluation requires the use of laboratory animals.

7.2 Animal Research

The company requires all scientists, technicians and managers associated with animal research programs to be fully cognizant and supportive of the specifics and spirit of this guideline.

The facilities and management programs established to support company animal research are directed and monitored by an attending doctor of veterinary medicine. The company's programs are fully accredited by the American Association for the Accreditation of Laboratory Animal Care (AAALAC).

All company research with animals is conducted under the review and supervision of Animal Care and Use Committees (ACUC) appointed by senior management. Each ACUC consists of scientists, veterinarians, at least one non-scientist, and at least one person not affiliated with the company. The committees regularly report their findings to senior management and appropriate governmental regulatory officials.

The vast majority of animals used by company researchers are rabbits, rats and mice. Rodents account for over 90 percent of all research subjects. The remainder includes dogs, pigs, sheep, cattle, goats and occasionally monkeys. Laboratory animals are purchased from companies that raise animals specifically for research. Livestock are purchased from commercial farms. The company does *not* buy animals from pounds or shelters.

7.3 Procedures

All company research animals are assigned to a specific protocol under the direction of a principal investigator. Before research can commence, each protocol is reviewed according to procedures prescribed by governmental regulations and adhered to by the ACUC. Each protocol is then reviewed and approved by an attending veterinarian and the ACUC. Records of research use and routine care are maintained for each animal. The company's goal is to give the highest consideration to the well-being of all animals used in research.

MONSANTO COMPANY

DSW 107965

OG 7, Page 1 of 2
Company Confidential

WATER_PCB-SD0000021511

7.4 Facilities

The company conducts all animal research in modern, well-maintained facilities that meet or exceed all regulatory standards. The company's animal facilities are considered to be among the best in the industry. Housing spaces include special facilities to quarantine newly arrived animals, isolation facilities, and conventional holding rooms to care for required animals. Room temperature, humidity, ventilation, lighting and other environmental conditions are carefully monitored and controlled.

7.5 Regulatory Review

The company is registered with the United States Department of Agriculture as a research facility. Under the provisions of the Animal Welfare Act, the company's facilities are regularly inspected, and the company files an annual report.

7.6 Information Requests

General information on the company's policy and procedures regarding animals used in research may be requested from Monsanto Corporate Communications, 800 N. Lindbergh Blvd., St. Louis, Missouri 63167. The phone number is (314) 694-7233. In general, the company's animal research facilities are not open to the public. However, visits and tours can be arranged by contacting the above address. Because of the nature of the research work under way, the company may restrict access to certain areas to ensure the health and safety of the animals. Recordings, filming, taping, photography and related activities are prohibited except as specifically approved.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107966



OTHER GUIDELINE

#8

OZONE-DEPLETING CHEMICALS (CFC'S)

The company will initiate actions at all of its worldwide sites to minimize the uses and environmental releases of the chemicals subject to this guideline. It will seek out acceptable substitute chemicals, when possible, on or before applicable compliance dates set by the site's local country laws and regulations.

8.1 Scope

The following chemicals are those listed in the Montreal Protocol and are the minimum number subject to this guideline. Each company site should add to the list any other chemicals of local country concern and treat them according to this guideline in conformance with local country laws and regulations.

CFC-11	CFC-112
CFC-12	CFC-211
CFC-113	CFC-212
CFC-114	CFC-213
CFC-115	CFC-214
Halon-1211	CFC-215
Halon-1301	CFC-216
Halon-2402	CFC-217
CFC-13	Carbon tetrachloride
CFC-111	Methyl chloroform

Company sites subject to this guideline include plants, offices, R&D facilities, sales offices, warehouses and farms, when the company owns or operates facilities or equipment that use or contain one of the chemicals subject to the guideline. This coverage includes any subsidiary in which the company is a greater than 50 percent owner.

8.2 Program

The management of each worldwide site will do the following, where applicable:

8.2.1 Develop an inventory of uses and/or equipment containing any of the chemicals subject to this guideline.

8.2.2 Establish for compliance with this guideline a plan that contains the following minimum elements:

- For refrigeration equipment, replace the refrigerant with an acceptable substitute when the equipment needs to be replaced or the original refrigerant is no longer available.
- For explosion suppression and fire extinguishing equipment, replace the suppression or extinguishing chemicals subject to this guideline with an acceptable substitute when the equipment needs to be replaced or the original such chemical is no longer available. Provisions should also exist to provide for such chemical replacement after a system discharge, where practical.
- After Jan. 1, 1994, no new refrigeration, explosion suppression, or fire extinguishing equipment will be purchased that contains any chemical subject to this guideline, if substitute chemicals are reasonably available.

MONSANTO COMPANY

DSW 107962

OG 8. Page 1 of 2
Company Confidential

- For process and other uses of chemicals subject to this guideline, the company will expeditiously develop plans to cease using such chemicals by Jan. 1, 1996.
- In advance of any applicable laws and regulations, all sites will institute best management practices to minimize the uses and environmental releases of any chemicals subject to this guideline and seek opportunities for the use of acceptable substitute chemicals, where possible, consistent with good business practices and employee safety/health considerations.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

OSW 107968



OTHER GUIDELINE

#9

ENVIRONMENTAL, SAFETY AND HEALTH COMPLIANCE AUDITING

The company will conduct environmental, safety and health compliance audits to confirm that site management systems are in place to ensure continuous improvement and compliance with both governmental regulations and corporate, operating unit, and subsidiary policies and procedures.

9.1 Scope

Environmental, safety and health (ESH) compliance auditing will be conducted at all worldwide manufacturing and research sites.

9.2 Criteria

Each operating company and subsidiary will be responsible for ensuring that audits are conducted in accordance with the following criteria:

9.2.1 ESH compliance auditing programs will be consistent with the five-step auditing approach as outlined by the outside consulting firm of Arthur D. Little and follow protocols approved by the corporate ESH staff.

9.2.2 ESH compliance auditors will be appropriately trained, knowledgeable of the subject they audit, and skilled as compliance auditors.

9.2.3 ESH compliance auditors will be independent of the location/site they audit.

9.2.4 ESH compliance audits will be performed on a three-to-five year maximum cycle. The frequency for each site will depend upon the results of the last audit, the degree of risk, complexity, and compliance issues at the site. The audit frequency for each site will be reviewed by the Environmental Policy Committee.

9.2.5 Reports of the actual audit findings and/or recommendations will be reviewed by appropriate legal staff and distributed, at a minimum, to site managers, directors of manufacturing (or equivalent for non-manufacturing locations), legal and the corporate Quality and Compliance Assurance staff.

9.2.6 Follow-up on audit findings/recommendations will be the responsibility of each operating company and subsidiary. The corporate Quality and Compliance Assurance staff will request periodic status reports of auditing and follow-up corrective actions for communication to upper management.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107969

MONSANTO COMPANY

OG 9, Page 1 of 1
Company Confidential

WATER_PCB-SD0000021515



PROCEDURE

#1

EMPLOYEE HEALTH AND EXPOSURE COMMUNICATIONS

It is the company's intent to identify hazards of chemical substances and physical agents in the workplace and to communicate such hazards to employees who may be exposed.

1.1 Responsibilities

Identification of health hazards of chemical substances, physical agents, and biological agents in the workplace is the joint responsibility of site management, the directors of Environmental Operations (DEOs) and corporate Environmental, Safety and Health (ESH). Line management is responsible for the necessary communications to and education and training of employees on such hazards.

Europe/Africa Specific: The director of the Department of Medical Health and Safety (DMHS) Europe/Africa also assumes responsibility for the necessary communications within Europe/Africa. In Europe, the DEO is represented by the director, Environmental and Regulatory Affairs. Other countries/regions may specify additional functions who share responsibility.

1.2 Employee Communication, Education and Training Concerning the Hazards of Substances in the Workplace

All employees whose work provides potential exposure to a hazardous chemical substance will have ready access to reference material, such as a Material Safety Data Sheet (MSDS), and will receive training in the nature of the hazards and appropriate work practices, protective measures and emergency procedures. Such training will be provided to employees when newly assigned to an area with potentially hazardous exposures and annually thereafter.

1.3 Employee Access to Medical and Exposure Records

Access to an employee's medical or exposure records (if generated) will be provided within 15 working days after the company receives a request in person or in writing from that employee, or as required by law if more stringent.

In addition to individual medical and exposure records, an employee may have access to general exposure records (such as area samples) for his/her work area and the individual exposure records (with all identifiers deleted) of other employees in the same work environment. Since much of the data requires interpretation or explanation, the most appropriate physician or nurse should be present during the review of medical records, and the industrial hygienist or industrial hygiene contact should be present during the review of exposure records to provide such interpretation and consultation.

Written requests for medical and exposure records will be kept at the location housing the records.

1.4 Other Communication of Exposure Information

Employees who participate in individual (personal) industrial hygiene monitoring will be informed of the sampling results.

All employees in an area where ambient air concentrations or physical agents are monitored should be informed of area concentrations, their relationship to relevant federal, state or local permissible exposure limits, the company's guidelines, and intended corrective action where required.

United States Specific: For certain substances, OSHA regulations require written notification to the employee.

MONSANTO COMPANY

DSW 107970

PR1. Page 1 of 4
Company Confidential

WATER_PCB-SD0000021516

1.5 Communication of Physical Examination and Medical Test Data to the Employee

An employee will be informed about results of health evaluations and medical tests.

Copies of medical information will be sent to private physicians upon the employee's request and only with written authorization.

United States Specific: The employee will be informed in writing about results of health evaluation performed for occupational surveillance.

1.6 Employee Inquiries

Any employee inquiry about work exposures must be addressed by site management. The location physician, industrial hygienist or other appropriate management representative(s) should meet with the employee and provide a specific response based on the factual information available. The appropriate DEO, manager, Human Resources, and corporate ESH representative should be consulted in any non-routine situation.

Europe/Africa Specific: The director of DMHS Europe/Africa should be consulted in any non-routine situation in Europe/Africa.

1.7 Communication of Health Studies

When employees have been involved in epidemiology or other health studies conducted by or on behalf of the company, an executive summary of the study results prepared by corporate ESH will be communicated in writing to the responsible DEO and site managers. Communications with the employees will be coordinated by the corporate DEO. The DEO may ask ESH and/or Europe Environmental and Regulatory Affairs (ERA) staff to develop a *Communications Document and Dissemination Plan* in consultation with plant personnel. A decision will be made at that time as to the total population to be included in the communication.

Other studies known to the company which are scientifically sound and which present significant new information concerning the potential hazards of a material to workers should be communicated to employees who have potential exposure to the substance. Where possible, employees should learn about significant potential hazards of materials with which they work from the company, and not from outside sources. However, a multitude of

epidemiological, animal and other health studies are conducted annually by the company and by others. These studies vary widely in terms of new knowledge provided, scientific validity, conclusiveness of the findings, applicability to humans or the work environment, etc. Location management in consultation with the DEO and corporate ESH and DMHS Europe/Africa (for Europe/Africa sites) should communicate in writing any applicable, reliable study results.

In determining where the results of a study should be communicated, factors such as the following should be evaluated:

- the scientific validity and conclusiveness of the study;
- whether the study produced new results of significance;
- the applicability of the study to employees;
- the significance of any potential hazard identified; and
- the plans for follow-up studies.

When there is a question of whether the results of a study are significant enough to be communicated to appropriate employees corporate-wide, the matter will be referred to the following administration by any member of concerned management: The director of Medical and Health Sciences, Industrial Hygiene director, Corporate Toxicology director, Epidemiology director, Medical director, appropriate DEO and the assistant general counsel, Environmental Law. The appropriate Directors of Manufacturing, Human Resources and Public Affairs/Relations will also provide consultation. A draft *Communication Document and Dissemination Plan* will be developed upon request, initially within ESH, to ensure that the study results are properly interpreted and that the communicate will be properly reviewed and disseminated to all operating units and/or plants. The DEO, with support from corporate Industrial Hygiene and DMHS Europe/Africa (when Europe/Africa sites are involved) will transmit draft statements, announcements and supporting data to the appropriate location management.

1.8 Access to Employee Medical or Exposure Records by Designated Representatives

A designated representative with the appropriate written authorization from the employee will be provided access to an employee's medical and exposure records within 15 working days of receipt of the authorization. A

designated representative is any individual or organization to whom the employee has given written authorization to have access to the employee's medical or exposure records for a specific purpose on a specified occasion.

United States Specific: OSHA rules require that an employee's recognized or certified collective bargaining agent will be treated as a designated representative without regard to written employee authorization with respect to access to employee exposure records (with all identifiers deleted) and analyses of group medical and exposure records only. Final reports of completed epidemiological studies of unionized employees will be provided to the union involved on specific written request. Information on the study results will be provided to all affected employees in a timely manner if this has not been done previously.

The appropriate managers, Human Resources and ESH representatives (DMHS Europe/Africa when Europe/Africa sites are involved) and the assistant general counsel, Environmental Law, should be advised of requests for access to records from a designated representative.

An OSHA inspector who presents a written access order approved by the Assistant Secretary of Labor for OSHA will be given immediate access to records specified by the order. No order is required for access to exposure records. Requests should be reported immediately to the assistant general counsel, Environmental Law. Requests by NIOSH have been supported by the courts but should be cleared by the assistant general counsel, Environmental Law, before being granted. Reference should be made to 29 CFR Part 1910 Access to Employee Exposure and Medical Records, Final Rule 9-29-88.

1.9 Notification to Employees of Right of Access

Each location should make such notification of the existence, location and right of access to medical and exposure records a part of its new hire orientation program and should post or otherwise inform all employees of this information and right each year.

1.10 Employee Health and Exposure Communications Plans

Each manufacturing and laboratory location should have written *Employee Health and Exposure Communications Plans* which address such things as those as follows:

- the communication of and training on the hazards of chemical substances and physical agents in the workplace and proper handling methods, protective measures and emergency procedures;
- the handling of employee inquiries and expressions of concern about exposures;
- the handling of employee and designated representative requests for access to medical and exposure records;
- the communication of abnormal physical exam/medical test findings;
- the regular communication of the industrial hygiene program and of exposure levels vs. standards;
- the identification of materials or other subjects needing special communications efforts and plans for development of such programs locally or with the help of DMHS or others; and
- notification to employees of their right of access to their medical and exposure records.

1.11 ESH Responsibility for Communication Programs

When its specialized expertise and/or a general communications need deem it appropriate, corporate ESH has a responsibility to develop a *Communication Document and Dissemination Plan* upon request for new health hazard information. The appropriate DEOs and management at representative plants will be consulted in the development of such plans to make them more suitable and effective for plant use.

Europe/Africa Specific: Europe Environmental and Regulatory Affairs will be responsible for developing a *Communication Document and Dissemination Plan* which is appropriate for the laws and customs governing handling of employee health and exposure information in those countries.

1.12 Definitions

Access to Records: Consists of an opportunity to review an employee's medical and exposure records on site, and if requested, receipt of or opportunity to make a copy of the records. Unless otherwise specified by law, trade secret information may be deleted from the records provided to an employee or designated representative but they must be so informed that this was done.

Medical Records: Include reports of physical examinations, medical tests and other medical information on the employee in the company's possession.

Exposure Records: Include records of an employee's work history and the level of exposure to potentially harmful or toxic substances or agents and analyses of such records.

Epidemiology Studies: Defined as scientific investigations of potential relationships between workplace exposures and health outcome of company employees or other occupational populations, as outlined in a study protocol.

(Revised and Approved: Vice President, Environmental, Safety and Health, October 22, 1992.)

DSW 107973



PROCEDURE

#2

TRANSMITTAL TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY OF SUBSTANTIAL RISK INFORMATION UNDER THE TOXIC SUBSTANCES CONTROL ACT

The company's procedure for handling the reporting of information to the United States Environmental Protection Agency (USEPA) under the 8(e) substantial risk section of the Toxic Substances Control Act (TSCA) as follows:

2.1 Abstract of Requirements

TSCA Section 8(e) requires any person (company) who manufactures, processes or distributes in commerce a chemical substance or mixture and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment shall immediately inform the EPA of such information.

2.2 Who is responsible for reporting?

The requirements of Section 8(e) of the TSCA apply to "any person who manufactures, processes, or distributes in commerce." It is the company's position that the "person" who engages in the commercial activity is only the business organization, whether a sole proprietorship, corporation, partnership or association.

2.3 How are 8(e) reporting decisions made?

Company organizations that might receive TSCA 8(e) information will have a designated individual to whom such information shall be communicated. At least annually, the director of regulatory management (DRM), Toxic Substances, will publish a list of the designated individuals.

Anyone obtaining information of the type given in the abstract of requirements and detailed by EPA in their *TSCA Section 8(e) Reporting Guide*, dated June, 1991, should immediately submit such information to their supervisor. The supervisor shall immediately relay the information to the location or department manager, whichever is applicable, who, in turn, transmits it to the

proper designated individual in the organization. The information is then transmitted directly to the director of Medicine and Health Sciences.

It is imperative that the flow of information through this transmittal chain be rapid. In the event of nonavailability of a member of the communication network at the time information is first obtained, such member should be bypassed in the interest of speed.

All individuals involved in submission of substantial risk information to the director of Medicine and Health Sciences should keep a record of date of receipt and pertinent identifying details.

The director of Medicine and Health Sciences; environmental counsel; DRM, Toxic Substances; and the appropriate operating unit director(s) of environmental operations will comprise the designated official 8(e) committee to make decisions with respect to information that must be reported to the EPA under Section 8(e) of the TSCA.

Appropriate senior management will be informed of committee decisions.

In the event that a committee decision is not unanimous, the next appropriate level of management shall be consulted, and the matter will be resolved at the highest level, if necessary.

Employees who submit information through company channels will be notified of action taken by the 8(e) committee together with reasons for such action.

MONSANTO COMPANY

DSW 107974

PR2. Page 1 of 2
Company Confidential

WATER_PCB-SD0000021520

In the event that, after the company has evaluated information and has determined that the item is not reportable under Section 8(e), the company becomes aware that an employee, as an individual, subsequently reported the item to the EPA, the company should review the situation to determine what action, if any, it should take with the EPA.

2.4 How are employees notified of 8(e) requirements?

All exempt company employees and others so designated by their organizational unit (plant nurses, contract physicians, scientists and engineers, etc.) within organizations that might receive or have access to TSCA 8(e) information, shall be informed of the provisions of Section 8(e). Annual reminders of 8(e) requirements will be provided to said employees. Records documenting the information communication will be maintained by the DRM, Toxic Substances.

(Revised and Approved: Vice President, Environmental, Safety and Health, October 22, 1992.)



PROCEDURE

#3

RECORDING ALLEGATIONS OF SIGNIFICANT ADVERSE REACTIONS UNDER THE TOXIC SUBSTANCES CONTROL ACT

The company's procedure for handling the Recordkeeping Requirements of the United States Environmental Protection Agency's (USEPA) Final Rule Under Section 8(c) of the Toxic Substances Control Act (TSCA) is as follows:

3.1 Abstract of Rule

Manufacturers and certain processors of chemical substances and mixtures must maintain records of significant adverse reactions to health or the environment alleged to have been caused by a substance, mixture, article, process, effluent or emission. These records are subject to USEPA inspection.

Rule Reference - 40 CFR Part 717 (48 FR 38178 - August 22, 1983)

Note: The Rule does not apply to pesticides, food, food additives, drugs or cosmetics when manufactured, processed or distributed for these uses.

3.2 Key Definitions

(See Section 717.3 of the Rule for complete listing of definitions.)

- a. "Allegation" means a statement made without formal proof or regard for evidence, that a chemical substance or mixture has caused a significant adverse reaction to health or the environment.
- b. "Known human effect" means a commonly recognized human health effect of a particular substance or mixture described in:
 - i. Scientific articles or publications abstracted in standard reference sources.
 - ii. The firm's product labeling or material safety data sheets (MSDS).

However, an effect is not a "known human effect" if it:

- i. Was a significantly more severe toxic effect than previously described.

- ii. Was a manifestation of a toxic effect after a significantly shorter exposure level than described.

- iii. Was a manifestation of a toxic effect by an exposure route different from that described.

- c. "Significant adverse reactions" are reactions that may indicate a substantial impairment of normal activities, or long-lasting or irreversible damage to health or the environment.

3.3 Exemptions from the Rule that Relate to the Company

- a. Activities involving solely mining or other solely extractive functions.
- b. Significant adverse reactions that are known human effects.
- c. Significant adverse reactions to the environment directly attributable to incidents of environmental contamination that have been reported to the United States federal government under any applicable authority.

3.4 Who Can Receive an Allegation?

Allegations can come from a variety of sources including employees, contractors, customers and neighbors.

As a result, the company's receiving network must be broad. Initial receptors include plant, laboratory and other company location supervision, plant and other company location managers, the company's medical community at all locations, the offices of the operating company directors of Environmental Operations, sales and marketing contacts, switchboard operators at all locations, and environmental network contacts.

MONSANTO COMPANY

DSW 107976

PR3, Page 1 of 8
Company Confidential

WATER_PCB-SD0000021522

3.5 Procedure for Handling Health or Environmental Allegations

The company's Toxic Substances Control Act (TSCA) Section 8(c) procedure consists of a four-step review and decision process. A determination that an allegation is not recordable under the Rule can be made at any step in the process. The procedure is shown schematically on Appendix 3.3.2.¹

- a. *Step One* - Each plant or other company-designated locations or laboratory will have at least one identified and trained TSCA Section 8(c) key contact. The director of Environmental Operations (DEO) or designee from the appropriate operating companies, representatives of the Business and Research Support Services (BRSS), and director, regulatory management (DRM), Toxic Substances, will serve as the key contacts for the *General Office*. The DEOs have responsibility under this procedure for free-standing divisions and subsidiaries of which the company owns 50 percent or more of the voting stock or other equity rights, or for which the company has the power to control the management and policies of that firm. At Step One, all initial receptors will automatically transfer persons making oral allegations to the key contact at their locations. Initial receptors will also transfer written allegation to the key contact at their location. There are two exceptions with respect to oral allegations: If the initial receptors are either members of the department of Medicine and Health Sciences Occupational Medicine (DMHS-OM) group (physicians) or the DEO's office, then these individuals may judge at Step One if an oral allegation is excluded. Decision criteria for Step One: pesticides, food, food additives, drugs, or cosmetics are excluded. If a decision is made that the allegation is excluded, the allegation, if written, will be discarded and, if oral, will not be acted on under this procedure.

If the allegation is oral and not excluded, the key contact will inform the allegor that such allegation may be recordable under the Rule and request that the allegor submit a written and signed allegation to the key contact. *Monsanto Form 8(c)A*, shown on Appendix 3.2, is available to be used for all employee related oral health allegations and can be used at the discretion of the DEO for external oral health allegations. All key contacts must note on a written allegation the date of its receipt.

- b. *Step Two* - The key contact at a company location or the appropriate DEO for the *General Office* will provide company employees with Form 8(c)A for oral allegations of health effects. Written allegations will then be reviewed by the key contact, who will then make a Step Two decision. The key contact will determine if the written allegation is exempted from the Rule using the criteria in Step One. If a decision is made that an allegation is exempt from the Rule, the allegation will be discarded. Otherwise, the allegation will be sent to the appropriate DEO for review.

- c. *Step Three* - The appropriate DEO will serve as the coordinator for Step Three and Step Four activities. Allegations received from the location (e.g. plant, etc.) key contacts will be reviewed by the DEO and a Step Three decision made. A Step Three decision will also be made by the DEO or other *General Office* key contact regarding allegations made to the *General Office* receptors. If the Step Three decision is that the allegation is not recordable under the Rule, the allegation will be discarded. Otherwise the allegation will proceed to Step Four.

- d. *Step Four* - The DEO will form a committee to make decisions with respect to allegations that must be recorded under the Rule. The committee will be chaired by the DEO and consist of the appropriate members of DMHS-OM for human effects, appropriate members of Environmental Sciences staff for environmental effects, Environmental Law staff, and the DRM, Toxic Substances. If the decision is that the allegation is not recordable under the Rule, the allegation will be discarded. The DEO will provide feedback to the location key contact. If the Step Four decision is that the allegation is recordable under the Rule, then the DRM, Toxic Substances, will place the allegation and documents mandated by the Rule in the TSCA Section 8(c) file. The DEO will provide feedback to the location key contact.

3.6 Recordkeeping

The TSCA Section 8(c) file will be kept in the Office of the DRM, Toxic Substances. The file structure will conform to requirements of Section 717.15 of the Rule. Files pertaining to adverse reactions to health of employees will be retained for 30 years. Files pertaining to other adverse reactions will be maintained for five years.

¹A separate procedure for litigation claims (Appendix 3.3.1) and the company's Wear-Dated • Hotline (Appendix 3.3.3) will be used.

3.7 Communications

- a. Disposition of written allegations will be communicated back to the individual making the allegation. The key contact will facilitate the communication.
- b. A summary of the TSCA Section 8(c) procedure will be periodically communicated to all affected employees and updated, as appropriate.

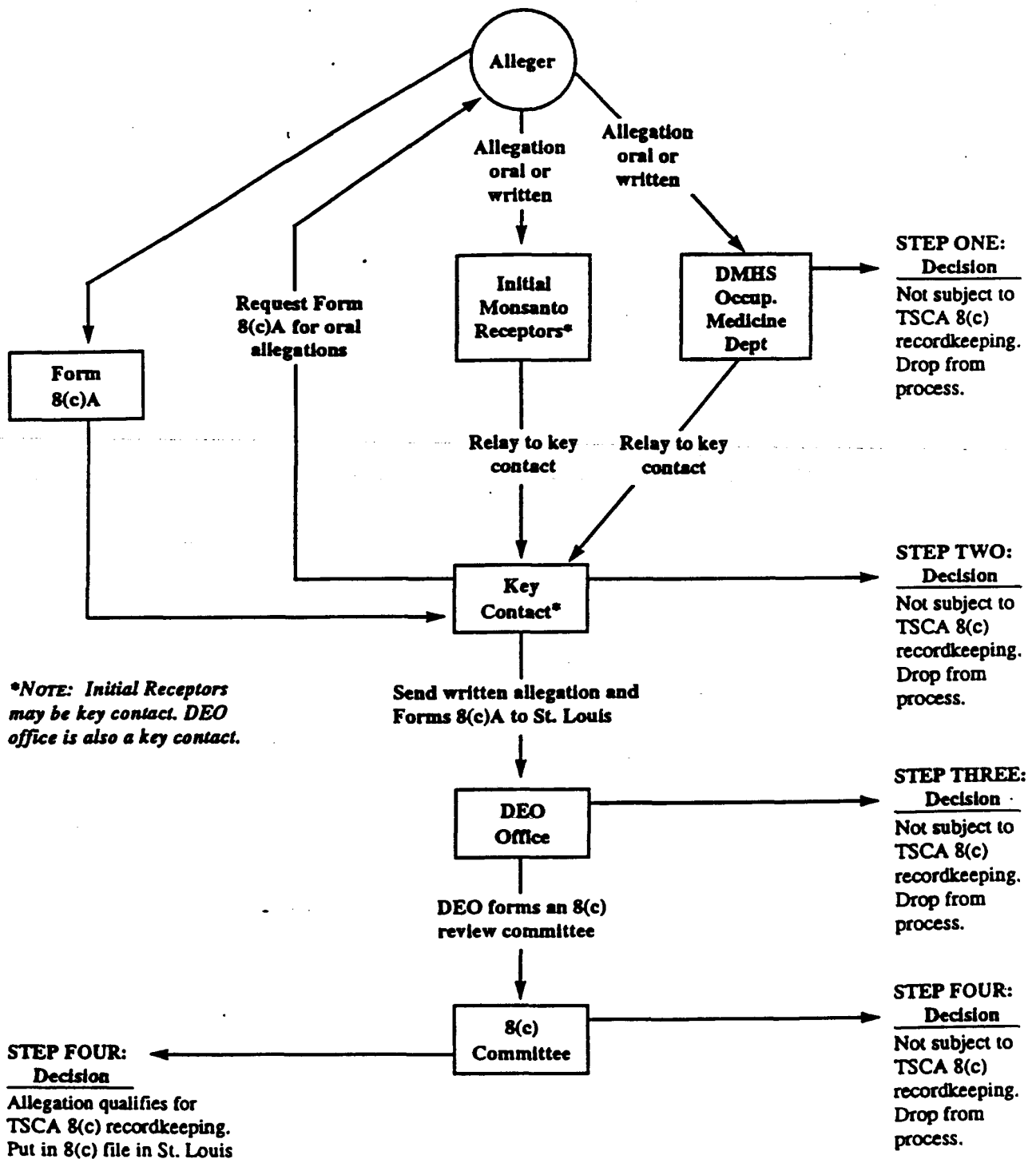
(Revised and Approved: Vice President, Environmental, Safety and Health, October 22, 1992.)

DSW 107978

PR3. Page 3 of 8
Company Confidential

WATER_PCB-SD0000021524

SIMPLIFIED FLOW DIAGRAM OF MONSANTO PROCEDURE FOR HANDLING ALLEGATIONS SUBJECT TO TSCA 8(c)



OSW 107979

TO: SITE KEY CONTACT _____

Form 8(c)A
11/92

Appendix 3.2
REPORTING FORM FOR
ALLEGATIONS OF SIGNIFICANT ADVERSE REACTION TO HEALTH
Toxic Substances Control Act, Section 8(c) 40 CFR Part 717

NAME OF ALLEGER: _____

DATE: ____/____/____
MO DAY YR

ADDRESS: (If not employee) _____

SITE LOCATION: _____

SITE LOC. CODE: _____

YR. OF BIRTH: _____

(If health effect only): M ☐ F ☐

Employer (if other than Monsanto): _____

DESCRIPTION OF ALLEGED ADVERSE HEALTH EFFECT:

1. WHAT IS THE HEALTH EFFECT BEING CLAIMED? _____

2. HOW LONG DID IT LAST? _____

3. HOW OFTEN HAVE YOU EXPERIENCED EFFECT? _____

4. IN WHAT WAY DID IT AFFECT YOUR NORMAL ACTIVITIES? _____

5. HOW WERE YOU EXPOSED? _____

WHAT SUBSTANCE, MIXTURE, PROCESS OR OPERATION DO YOU THINK CAUSED THE EFFECT YOU DESCRIBED:

Signature

FOR COMPANY USE ONLY:

RECEIVED ON: _____ BY: _____

DSW 107980

PR3, Page 5 of 8
Company Confidential

WATER_PCB-SD0000021526

Appendix 3.3.1

TSCA 8(c) RECORDKEEPING: LITIGATION CLAIMS

Detailed Procedure:

Step 1

Litigation complaints will be reviewed at the time of receipt by the law department for relevance to TSCA 8(c) recordkeeping. Criteria for this review include the following:

- a) Is the claim against a Monsanto product or process?
- b) Is the product(s) in question one that is covered by TSCA, i.e., other than pesticide, herbicide, food, food additive or pharmaceutical?
- c) Is the claim a health or environmental claim?

If all criteria is met, the claim will be sent to the DMHS occupational medicine group. Exceptions to this include claims against the Agricultural Group, Nutrition and Health Care Products that will be sent to these respective groups when the law department is unsure of the answer to question (b).

Step 2

The occupational medicine group of DMHS will review the litigation claims passed to them by the law department. The review will be based on EPA's definitions of "known human effect" and "significant adverse reactions" (40 CFR 717). For environmental effects, DMHS may need to contact the appropriate DEO for assistance. Claims that do not meet TSCA 8(c) criteria will be dropped from further TSCA review of this step. Those claims that meet TSCA 8(c) criteria will be forwarded to the DRM, Toxic Substances, for filing.

Step 3

Claims meeting the 8(c) criteria will be filed in the TSCA 8(c) file maintained by the DRM, Toxic Substances. This office will request a copy of the complaint, abstract, and "answer" from the law department.

Step 4

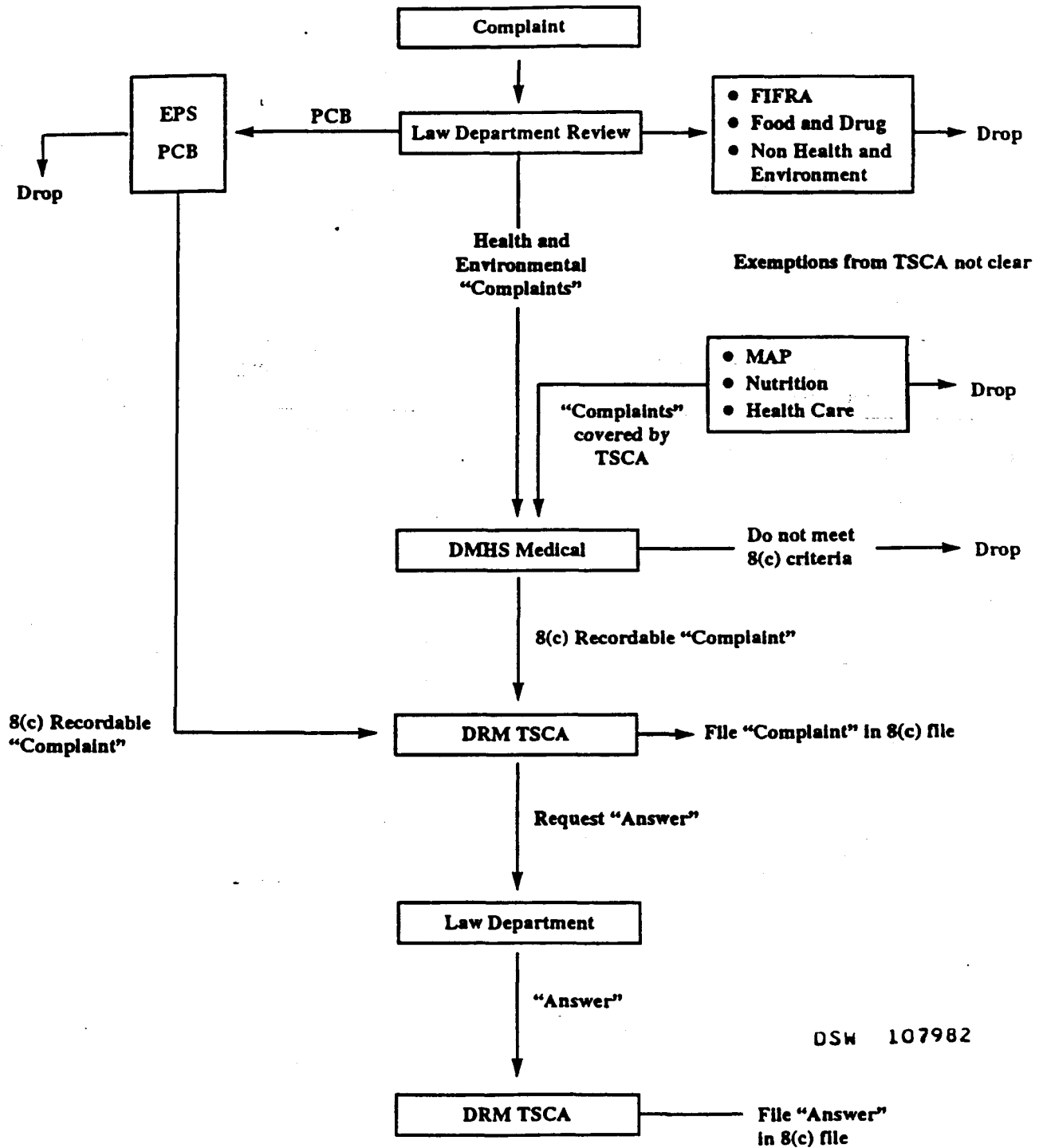
The law department will forward a copy of the complaint, abstract, and "answer" to the DRM, Toxic Substances, for filing in the TSCA 8(c) file, along with the "complaint." The "complaint," abstract and "answer" will constitute the TSCA 8(c) recordable "allegation" and "follow-up" for all litigation filings.

A block flow diagram of the TSCA 8(c) process for litigation complaints appears on the reverse side of this page.

(Revised 10/22/92)

Appendix 3.3.2

TSCA 8(c) REVIEW PROCEDURE OF LITIGATION CLAIMS



DSW 107982

Appendix 3.3.3

TSCA 8(c) RECORDKEEPING: WEAR-DATED® HOTLINE

Detailed Procedure:

Step 1

All health and environmental effect allegations received by the Wear-Dated® hotline will be documented by the phone operator on a standard form.

Step 2

The documented health and environmental effect hotline call will be reviewed by the Chemical Group Product Safety department for TSCA 8(c) relevance.

Step 3

The hotline allegations that are judged by the Chemical Group Product Safety department as meeting TSCA 8(c) recordkeeping requirements will be forwarded to the DRM, Toxic Substances, for filing.

OSW 107983



PROCEDURE

#4

PREMANUFACTURE NOTIFICATION TO UNITED STATES ENVIRONMENTAL PROTECTION AGENCY UNDER THE TOXIC SUBSTANCES CONTROL ACT

The company's procedure for development of premanufacture notification (PMN) to the United States Environmental Protection Agency (USEPA) as required under Section 5 of the Toxic Substances Control Act (TSCA) is as follows:

4.1 Abstract of Requirements

A PMN is required to be submitted to USEPA for all new chemical substances at least 90 day before the substance can be manufactured for commercial purposes. A number of substances are exempted from these requirements, including, but not limited to drugs, food and food additives, pesticides, R&D substances, nonisolated intermediates, and substances on the TSCA inventory.

Final Rules Reference - 40 CFR Part 720.

4.2 Is a PMN Required?

At a very early stage of new product development, including isolated intermediates and new imports, several checks should be made to determine if a PMN will be required for the product.

4.2.1 Is the Product (Substance) Exempt under TSCA?

Responsibility: Operating unit director,
Environmental Operations
(DEO) or designee.

- Section 2(B) of TSCA exempts broad classes of substances such as pesticides, food, food additives, mixtures and others.
- The PMN rule exempts small quantities for R&D purposes and has provisions to exempt substances for test marketing low volume manufacture and for polymer manufacture.

- The rule also exempts impurities, some by-products, articles and nonisolated intermediates.
- Refer to TSCA law and regulations or the company's PMN manual for details or contact operating unit DEO or designee or director, regulatory management (DRM), Toxic Substances (TSCA).

4.2.2 Is the Substance "New" under TSCA? (Is It on the TSCA Inventory of Chemical in Commerce?)

Responsibility: Operating Unit DEO or designee.

- Contact the operating unit DEO or designee and have the TSCA non-confidential inventory searched for the substance.
- If the substance is on the TSCA non-confidential inventory, it is not new under TSCA definition and a PMN is not required. If the substance in question is not on the nonconfidential inventory, the confidential inventory must be searched.
- To search the confidential inventory, a *Bona Fide Intent to Manufacture* (BIM) notice must be submitted to USEPA. A copy of the instruction for submitting a BIM can be found in 720.25 of 40 CFR 720. Send a copy of the BIM to the DRM, TSCA, for corporate recordkeeping purposes.

MONSANTO COMPANY

DSW 107984

PR4, Page 1 of 3
Company Confidential

WATER_PCB-SD0000021530

- If USEPA reports that the substance is not on the confidential inventory, then the substance is a new substance under TSCA and a PMN is required unless the material is exempt under Section 2 (a) above.

4.3 What Information Is Required on a PMN Submission?

Final rules detailing the PMN requirements can be found in 40 CFR 720. All PMNs must be submitted on USEPA Form 7710-25 (1/91). Copies of the form and instructions for its use are available from the DRM, TSCA. The required PMN information falls into either the category of General Information or Risk Assessment Data. USEPA will accept additional data. In many cases, it is desirable to submit Risk Analysis, pollution prevention data or other information to assist USEPA with their assessment. Since the company performs a Risk Analysis on all new products via the *Pledge Guidelines* and the EC-201/202 procedures, the information is available for this purpose.

4.4 What Are the Details of the PMN Procedure?

The PMN process should be integrated into the development scheme of a new project. In most cases, the PMN development will be initiated during the earliest phases of commercialization of a product. The PMN must be submitted to USEPA at least 90 days before the product can be manufactured for commercial purposes, including test marketing.

4.5 How Is a PMN Initiated?

Responsibility: Operating unit DEO or designee.

- The operating unit contact submits an ER-200 or EC-201 to the Department of Medicine and Health Science (DMHS) if one has not already been submitted (See company booklet G-2738 for ER-200 and EC-201/202 Procedures).
- The operating unit contact drafts a PMN using the USEPA form.
- The operating unit contact calls a scoping meeting. Minimum participants at the meeting are operating unit contact, operating unit DEO or designee (if not serving as a contact), member of corporate Environmental Sciences center or other qualified environmental effects expert (if appropriate), DMHS toxicologist and DRM, TSCA. Copies of PMN drafts, along with an

approved ER-200 or EC-201 for the substance are supplied to participants in advance. *Note: The scoping meeting can be bypassed at the discretion of the operating unit DEO.*

- At the scoping meeting, decisions are made by the operating unit contact, as to the scope and detail of optional information to supply. If optional risk analysis is desired, assignments are made to DMHS toxicology, industrial hygiene, etc., to complete the necessary sections. A decision is also made as to whether an EC-202 is needed before a PMN submission. *Note: It is appropriate at this stage of product development to initiate a Material Safety Data Sheet (MSDS) and a TF-837 for label and freight classification.*

4.6 How Are PMNs Finalized?

Responsibility: Operating unit DEO or other designated operating unit contact.

- The operating unit contact prepares a final draft using input from the scoping meeting as well as follow-up input from DMHS.
- The operating unit contact, together with the patent department, reviews the final draft for confidential information and develops appropriate confidentiality claims with substantiation, where necessary.
- The final draft is circulated to the participants of the scoping meeting for final review.
- The operating unit contact calls a meeting for final comments/approvals if needed.

4.7 How Are PMNs Submitted?

Responsibility: DRM, TSCA

- After final review/approval, the operating unit contact forwards the PMN to the DRM, TSCA (authorized official), for submission.
- The DRM, TSCA, will submit the PMN (both confidential and non-confidential as appropriate), using applicable USEPA submission requirements.

4.8 How Is USEPA Follow-up on a PMN Handled?

Each PMN will identify a technical contact in addition to an authorized official. The technical contact will typically be operating unit DEO, Commercial Development, or R&D contact.

4.8.1 PMN Fees

- A \$2,500 fee is required for all PMNs, except intermediates filed at the same time as final product (\$1,000) or exemptions (zero cost).
- A unique six-digit TS-user fee identification must be assigned to each PMN and must also appear on the check.
- The fee is sent to a separate USEPA office from the PMN.

4.8.2 Phone Contact

- All calls from the USEPA on technical matters should be handled by the "Technical Contact."
- All verbal questions concerning non-confidential inquiries by the USEPA may be discussed at the time of call or deferred to obtain an answer if unknown or if unsure as to USEPA authority to ask for the information.
- Non-confidential oral responses may be followed up with a written response when deemed appropriate by the contact. In all cases the technical contact should write a note to file documenting the conversations, with a copy to the DRM, TSCA.
- Confidential inquiries previously discussed with the USEPA or claimed confidential in the PMN may be discussed at the discretion of the technical contact.
- All other verbal confidential questions will be addressed by written response only.
- Verbal response to USEPA will be followed up, at the discretion of the technical contact, with a written letter documenting the conversation and clearly indicating areas of confidentiality, with a copy to the DRM, TSCA.

4.8.3 EPA Actions

Responsibility: The operating unit DEO or designee will have prime responsibility, with counsel of Environmental Law and the DRM, TSCA.

- USEPA may extend the review period by an additional 90 days.
- USEPA may ask for more information under Section 5(e).
 - i. An order may be issued by USEPA.
 - ii. A consent order may be jointly agreed upon. The consent order can include restriction on manufacture or use in lieu of information generation.
- USEPA may restrict manufacture or use under Section 5(f).

4.9. How Is the Company Follow-up on the PMN Submission Handled?

Responsibility: Operating unit DEO or designee.

- The company may request USEPA to stop the clock on PMN reviews at any time during the review period.
- After USEPA's review period expires, manufacture can commence at any time, subject to any 5(e) or 5(f) restrictions. A *Notice of Commence to Manufacture* (NCM) must be submitted to USEPA within 30 days of the first manufacture for commercial purposes. The information to be included in the notice are detailed in 40 CFR 720. Confidential claims must be made again at this time, as appropriate. Send a copy of the NCM to the DRM, TSCA for corporate recordkeeping purposes. Once a NCM is filed with USEPA, the PMN substance is placed on the TSCA inventory.

(Revised and Approved: Vice President, Environmental, Safety and Health, October 22, 1992.)



PROCEDURE

#5

OCCUPATIONAL FATAL ACCIDENT REPORTING

In case of a fatal accident, the company's Law Department must be contacted in addition to following government, operating company, and corporate-reporting requirements.

OSHA regulations require that, within 48 hours after the occurrence of an employment accident which is fatal to one or more employees or which results in hospitalization of five or more employees, the employer of such employee(s) shall report the accident either orally or in writing to the nearest office of the OSHA Area Director. The reporting may be by telephone or telegraph. The report shall relate the circumstances of the accident, the number of fatalities, and the extent of any injuries.

In such instances the following guidelines are considered necessary to protect the civil rights of company employees.

In addition to routine operating company and corporate notifications in fatal accidents, either Mary M. Tonkin or Michael E. Gewin (for accidental deaths) or L. William Higley (for deaths for long-term chemical exposure), the company's attorneys for OSHA matters, must be notified immediately. The telephone numbers are listed below. They will provide prompt necessary legal guidance including, where necessary, sending an attorney to the site for on-the-spot counseling.

In the meantime, OSHA inspector(s) should be given access to the site of the accident when the inspector arrives on the premises, without requiring that the inspector secure a warrant for entry. However, neither members of location management nor any wage employee should discuss the accident with the OSHA inspector until advised to do so by the company attorney.

The location manager or his designee will greet the inspector and state that location employees have been asked not to discuss the accident until the company attorney advises them accordingly.

The inspector is to be told that we have been forced to take this posture as a result of the *OSHA Procedure for Investigating Criminal/Willful Violations*. The inspector will be permitted to inspect the plant, and, of course, should be advised of any chemical hazards and protective measures needed, related or not to the accident.

Location personnel will not allow the inspector to view any records or documents at this time, other than the lost-time injury log, *OSHA Form 200 and Form 101* or its equivalent, until advised to do so by the company attorney.

If the location is requested to rope off the area of the accident, local discretion should be exercised. The inspector, however, is not authorized to keep plant management away from any part of the operation.

If local management believes entry by the inspector must be delayed for a few hours because of exposure, safety, confusion, etc., management will seek such a recommendation from Ms. Tonkin or Mr. Higley at the time of the initial call to St. Louis.

Contacts

Mary M. Tonkin, 314/694-2967 (office),
(314) 721-8209 (home).

Michael E. Gewin, 314/694-2849 (office),
(314) 352-2176 (home).

L. William Higley, 314/694-8503 (office);
(314) 862-1796 (home).

(Revised and Approved: Vice President, Environmental, Safety and Health, October 22, 1992.)

MONSANTO COMPANY

DSW L07982

PR5. Page 1 of 1
Company Confidential

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PROCEDURE

#6

TRANSMITTAL OF TOXICOLOGY AND HEALTH-RELATED DATA TO UNITED STATES REGULATORY AGENCIES

Health-related information should be submitted through the Department of Medicine and Health Sciences.

The various regulatory agencies are continually supplied information from toxicology and health-related tests on the company's products done by or for the company. In order to provide consistency in the handling and review of such information, as well as to assure proper follow-through on commitments to these agencies, the transmittal of such test results will be carried out in accordance with the following guidelines:

6.1 All toxicology or health-related data will be reviewed with the department of Medicine and Health Sciences (DMHS) prior to submission to any regulatory agency, except for routine submissions by the company's Agricultural Group of test data required under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). In addition, DMHS will be informed of all such submissions at the time via the letter of transmittal.

6.2 Any such information transmitted must be recorded and the copy of the final submission retained both by DMHS and the involved operating company.

6.3 The letter of transmittal for any toxicology or health-related data must include a listing of the materials being transmitted including sufficient bibliographic information for subsequent retrieval of the original data.

6.4 If the submission includes data on human health effects, it is preferable that the information be submitted to the regulatory agency by the director of the department of Medicine and Health Sciences.

6.5 Agreements with a regulatory agency that commit the company to the future transmittal of toxicology or health-related data must also be reviewed and approved in advance by DMHS; further, DMHS must concur with the feasibility of meeting commitment dates.

Appropriate records of such commitments must be maintained both by the involved operating company and DMHS in order to ensure future compliance with such agreements.

6.6 Any exceptions to the above must be approved by the director of DMHS.

(Revised and Approved: Vice President, Environmental, Safety and Health, October 22, 1992.)

MONSANTO COMPANY

OSW 107988

PR6. Page 1 of 1
Company Confidential

WATER_PCB-SD0000021534

**REFERENCE: Cross Reference ESH Worldwide Guidelines,
Pledge Guidelines, and Responsible Care**

ESH Worldwide Guideline	Pledge Guideline	Responsible Care
● Effluent and Emission Control ● Waste Management ● Plant Environmental Assessments	● Pollution Prevention	● Code on Pollution Prevention Practices No. 1 through No. 11, except No. 4 and No. 8
● Employee and Community Safety and Health	● Employee And Community Safety and Health	● Code on Process Safety, Employee Safety and Health and Community Awareness and Emergency Response
● None ● (Internal Process Safety and Emergency Response Policy Elements)	● Process Safety and Emergency Response	● Code on Process Safety ● Code on Community Awareness and Emergency Response
● Product Stewardship	● Product Stewardship	● Code on Product Stewardship
● None ● (Internal Distribution Policy Elements)	● Chemical Distribution	● Code on Distribution
● Waste Management - Corrective and Remedial Action ● Plant Environmental Assessments	● Groundwater and Soil Quality	● Code on Pollution Prevention, Practices No. 13 and No. 14 ● Code on Pollution Prevention, Practices No. 12
● Outside Processors	● Outside Processors	● Code on Pollution Prevention, Practices No. 12
● None ● (Internal Policy Elements on Public Participation and Involvement)	● Community Awareness at Manufacturing Sites	● Code on Community Awareness and Emergency Response, Practices No. A1 - No. A9 ● Code on Pollution Prevention Practices No. 4 and No. 8

DSW 107989

REFERENCE
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Responsible Care:[®]
A Public Commitment

GUIDING PRINCIPLES

Member companies of the Chemical Manufacturers Association are committed to support a continuing effort to improve the industry's responsible management of chemicals. They pledge to manage their businesses according to these principles:

- To recognize and respond to community concerns about chemicals and our operations.
- To develop and produce chemicals that can be manufactured, transported, used, and disposed of safely.
- To make health, safety and environment considerations a priority in our planning for all existing and new products and processes.
- To report promptly to officials, employees, customers and the public, information on chemical-related health or environmental hazards and to recommend protective measures.
- To counsel customers on the safe use, transportation and disposal of chemical products.
- To operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public.
- To extend knowledge by conducting or supporting research on the health, safety and environmental effects of our products, processes and waste materials.
- To work with others to resolve problems created by past handling and disposal of hazardous substances.
- To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.
- To promote the principles and practices of Responsible Care[®] by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of chemicals.

DSW 107990

OSW 107991



SUMMARY DESCRIPTION RESPONSIBLE CARE[®] PROGRAM ELEMENTS

The statement of **Guiding Principles** for Responsible Care[®] is a commitment by each member company to fully support a continuous effort to improve the industry's responsible management of chemicals. Each member company has pledged to operate according to the Guiding Principles and has signed to that effect. The signed statement is considered an obligation of membership in the Chemical Manufacturers' Association (CMA). The Guiding Principles are based on CMA's 1983 policy statement on health, safety and the environment and on the Canadian Responsible Care[®] principles. They also incorporate guidance received from member company executive contacts.

Following association adoption of the Guiding Principles, various CMA committees began developing **Codes of Management Practices** in January 1989. Each Code of Management Practices addresses several public concerns. Impetus for developing a specific Code comes from either a substantial public concern(s) identified by the Public Advisory Panel or the industry, a substantive need to take voluntary action, or both. Codes in development address community awareness and emergency response, distribution, pollution prevention, process safety, employee health and safety, and product stewardship. The Codes of Management Practices identify expected management practices as objectives rather than prescribing absolute or quantitative standards. Since the Codes are intended to serve as objectives, they complement existing member company programs or practices that achieve the same goals. Responsible Care[®], therefore, becomes an integral part of existing company programs and will cause each company to stretch to continually improve performance.

Another important element in the Responsible Care[®] initiative is the **Public Advisory Panel** which is composed of a group of environmental, health and safety thought leaders. The panel is an industry (CMA) effort, not a company responsibility. It was assembled and is moderated by an experienced facilitator working at the association's direction. It serves to assist the industry in identifying and developing programs and actions that are responsive, and are viewed as responsive, to public concerns. Meeting several times a year, the panel reviews issues on which CMA requires comment and advice. Panel members also identify areas they believe require industry response, critique all proposed Codes of Management Practices and provide early definition of public concerns involving the chemical industry. Community Advisory Panels at the local or regional level can serve companies and the industry in a similar manner. CMA has developed guidance to facilitate companies' formation and operation of local panels.

Effective performance evaluation is a critical element of Responsible Care[®]. Therefore each Code of Management Practices includes a **Self-Evaluation Form** that measures a company's improved use of the management practices that the Code defines. Member companies will conduct self-evaluations

for each Code annually. CMA will compile the results and periodically report industry's collective implementation progress to the public.

To document progress in ways that are meaningful to the public, CMA also will monitor statistical trend data where available, on industry performance. For example, Superfund Section 313 emissions reporting and Department of Transportation hazardous materials incident statistics will be a component of public reporting for the Pollution Prevention Code and the Distribution Code.

Due to their varying size and operations, member companies will not be expected to be at the same level of performance for each Code of Management Practices at the same time. However, it is expected that each member company report continued progress.

To facilitate and support each member company's continual improvement in the responsible management of chemicals, **Executive Leadership Groups (ELGs)** have formed. ELGs provide an opportunity for corporate leaders to discuss progress and share experiences with implementing elements of Responsible Care[®]. These regional groups of ten to twenty executive contacts will meet at least once a year to review Codes of Management Practices under development, discuss members' progress with implementing existing Codes, identify areas where individual companies need assistance from CMA or other companies, and to address other priority industry issues.

Endorsement of the Responsible Care[®] initiative is an **Obligation of Membership** in the association. A member company's obligation to Responsible Care[®] applies to all of its chemical business. Each member company is expected to make a commitment to Responsible Care[®] by:

- a) signing the Guiding Principles of Responsible Care[®];
- b) communicating the commitment to Responsible Care[®] to employees;
- c) making good-faith efforts to implement the Codes of Management Practices, participate in the self-evaluation process, and meet the expectations of the Responsible Care[®] initiative; and
- d) using the Responsible Care[®] name and logo according to CMA's guidelines.

Member companies are also expected to participate in the development of the Codes and programs.

In an extreme case, where a member company has consistently not conducted its operations in accordance with the Guiding Principles and program elements of Responsible Care[®], association representatives will meet with the member company's executive contact to seek the company's positive involvement in the program. If this fails to produce a commitment to pursue the objectives of Responsible Care[®], appropriate actions will be taken including the disassociation of the company from membership.

DSW 107993



QUESTIONS AND ANSWERS ABOUT RESPONSIBLE CARE³

Q Who had the idea for the Responsible Care¹ initiative?

A. Executives of the Canadian Chemical Producers Association (CCPA) began developing the concept in 1984. Executives of Chemical Manufacturers Association (CMA) member companies that have Canadian operations brought Responsible Care² to CMA's attention. CMA considered a variety of options and adopted the performance-based Responsible Care³ initiative in 1988.

Q How is Responsible Care¹ different from what the chemical industry has been doing?

A. Many chemical companies have programs that are designed to improve performance. However, Responsible Care² is a broad chemical industry commitment to improve performance through a process that ensures responsiveness to the public's concerns. Two aspects make Responsible Care³ unique. First, bylaws obligate CMA member companies, representing 90% of basic industrial production capacity in the United States, to participate in the initiative. And second, through a Public Advisory Panel, the public is directly involved in developing program elements.

Current CMA programs such as Community Awareness and Emergency Response (CAER), Air Quality, Waste Minimization, and National Chemical Response and Information Center (NCRIC) are vital parts of the initiative. Through Responsible Care³'s self-evaluation process and Public Advisory Panel, CMA will identify areas where additional resources need to be developed to help member companies achieve the goals of the initiative. Responsible Care³ also encourages member companies to help each other improve performance by sharing experiences and resources in specific areas of chemical operations.

Q Why does the chemical industry need to do anything?

A. Because in spite of past efforts there still are too many incidents involving chemical operations. Politicians and government regulators will respond to the public's concerns about chemicals and our industry if the chemical industry does not respond first. Therefore, it is important for the industry to take continuing positive action to address public concerns.

Q Isn't there some other way? The chemical industry is already doing a lot; can't it just communicate this?

A. The CMA membership concluded that the chemical industry doesn't just have a public relations problem; it has a performance problem. The chemical industry has to respond effectively to public concerns through improved performance. It is clear that the public's expectations are not being met on a

performance basis. Until the chemical industry truly understands public concerns and addresses them from a performance standpoint, CMA member companies can't possibly improve the public perception of their industry.

Q Who prepared the Guiding Principles and what are they based on?

A. The guiding Principles are based on CMA's 1983 board-approved policy on "Health, Safety and the Environment" and the Canadian Responsible Care² principles. They are consistent with both. They were prepared by representatives of CMA member companies and approved by the CMA Board of Directors.

Q Why does CMA's Board think Responsible Care¹ will work?

A. Since Responsible Care² is based on concepts proven in both the Canadian experience and CMA's voluntary programs such as CAER, the CMA membership has confidence that it can achieve improved industry performance. Most important, by signing the Guiding Principles, CMA member companies have demonstrated their commitment to make Responsible Care³ work.

Q How much will Responsible Care² cost CMA member companies to implement?

A. Significant resources are needed from member companies, both in terms of the "sweat equity" of participants in the development and support of the program, and in the people and dollars necessary to make the initiative "live" in each company.

These costs have not been quantified because they will be different for each company. However, overall industry costs for Responsible Care³ implementation will undoubtedly add to the billions of dollars already being spent by industry to manage health, safety, and environmental issues.

Q Why should a commitment to Responsible Care² be an obligation of membership?

A. Public concerns about chemicals and the industry are the result of collective experience with the entire industry. If the chemical industry is to respond to public concerns effectively, it must act as a total industry. Responsible Care³ must be visibly working throughout the industry and, therefore, must be both a commitment and a membership obligation of every company in the association. It is critical to achieve the cultural change needed for the industry to improve performance in a responsive manner. The public must be convinced that the chemical industry is living up to its commitment.

Q Why have a Public Advisory Panel?

A. Responding to public concerns is what Responsible Care[®] is all about. Therefore, a key component of the initiative is the Public Advisory Panel. The panel helps the industry identify and develop programs and actions that are responsive to public concerns about specific performance problems.

CMA has also developed a guidebook for companies which wish to establish community advisory panels at operating locations.

Q Who is on the Public Advisory Panel? Who sets it up? Can panel members be replaced?

A. The Public Advisory Panel acts as a sounding board for public concerns and as a specially qualified focus group that directly impacts industry policies and programs under Responsible Care[®]. Meeting five times a year, panel members help CMA identify public concerns and suggest ways to respond to those concerns. Panel members also review proposed Codes of Management Practices and evaluate other features of the initiative. Each meeting is managed by an outside facilitator experienced with panel management. Industry representation is kept to a minimum to encourage an open exchange of views and ideas.

Currently, the panel is a 15-member group composed of individuals from both public and private sectors. To ensure that a wide range of public opinion is expressed, the composition of the panel is diverse. Occupations and interests of members range from business and local government officials to environmental, academic, and consumer activists, a farmer, and an expert in business ethics.

Panel members were selected by the facilitator. Panel membership will periodically change in response to panel members' availability and/or the changing needs of panel expertise. The facilitator will handle such changes.

Q Who will develop the Codes of Management Practices? Will the public have input?

A. The development of Codes of Management Practices begins with the identification of public concerns by a number of sources, including the Public Advisory Panel and CMA's Board of Directors. CMA reviews these concerns and recommends priorities for Code development. If a public concern cuts across a range of company operations or activities, it may be addressed by more than one Code.

CMA member company experts develop each Code. Every member company has opportunities to comment on the Codes through open meetings and workshops. Public input to the codes is achieved through the Public Advisory Panel. All codes, once approved by CMA's Board of Directors, are made available to others. Use of the Responsible Care[®] service mark, however, must follow CMA's guidelines and can be used only with CMA approval.

Q Will Responsible Care[®] Codes of Management Practices become the basis for future legislation and regulation?

A. A very positive result of Responsible Care[®] should be for its meaningful and workable practices to be reflected in legislation or regulation that the public endorses through government action.

Q How will performance against the practice Codes be measured? Who does the measuring and how are the results reported?

A. Individual company management will evaluate their own performance against the Codes of Management Practices annually by filling out a self-evaluation form for each Code. Companies will feed this information back to CMA. Primary use of such feedback would be to direct the association's support work to areas of the greatest need and highest potential. Over the longer term, these aggregate reports should establish a record of improvement that will enable CMA to communicate industry's performance progress to the public.

Q What will CMA do to help companies address the Codes of Management Practices?

A. CMA will develop support programs to help companies implement the practices defined in the Codes. In general, programs and aids (videotapes, guide-books, educational meetings, etc.) will be similar to the support provided for Title III and CAER. A unique element of Responsible Care[®] is that member companies will help each other by sharing resources and methods they develop to implement the Codes of Management Practices.

Q Given the kind of data we are reporting under Title III, will the public accept the Responsible Care[®] initiative now?

A. Disclosures under Title III raise the level of public concern significantly in some cases. But their only effective response is to deal with the concerns through company and industry-wide improvements. This is the essence of Responsible Care[®]. The experience in Canada and in the United States suggests it can work.

Q Will chemical companies apply the initiative outside the United States?

A. CMA represents North American manufacturers and can best assist its members in implementing Responsible Care[®] here. However, the initiative is already international in scope. CMA learned from a two-year old Canadian effort. Other countries that have officially adopted Responsible Care[®] initiatives include Australia, New Zealand, England, Germany, The Netherlands, and France.

CMA's experience with CAER suggests that good initiatives spread rapidly. The United Nations, with U.S. chemical industry assistance, has already developed an international emergency response program modeled on CAER.

CMA has shared Responsible Care[®] materials with counterpart organizations in Europe, Japan, Australia, and Taiwan.

DSW 107995



Responsible Care®: A Public Commitment

COMMUNITY AWARENESS AND EMERGENCY RESPONSE CODE OF MANAGEMENT PRACTICES

Purpose:

The goal of the Community Awareness and Emergency Response (CAER) Code of Management Practices is to assure emergency preparedness and to foster community right-to-know. It demands a commitment to openness and community dialogue. The code has two major components: first, to assure that member facilities that manufacture, process, use, distribute or store hazardous materials initiate and maintain a community outreach program to openly communicate relevant, useful information responsive to the public's questions and concerns about safety, health, and the environment; and second, to help protect employees and communities by assuring that each facility has an emergency response program to respond rapidly and effectively to emergencies.

The community outreach component will communicate program activities and performance under all codes of management practices and will promote an open, ongoing dialogue with employees and the community. Information should be provided about such activities as waste minimization, emission reduction, health effects of chemicals, and efforts to ensure the safe transport of chemicals.

The CAER Code of Management Practices is supported by, and will build on, CMA's CAER process. CAER supports the community's right to know about chemical industry operations and their effect on safety, health, and the environment. CAER originally was a voluntary initiative focused on emergency response issues. The new CAER Code of Management Practices broadens the facility-community dialogue to cover the full range of safety, health and environmental issues.

Relationship to Guiding Principles:

The Code helps achieve several of the Responsible Care® Guiding Principles:

- ☐ To recognize and respond to community concerns about chemicals and our operations.
- ☐ To report promptly to officials, employees, customers, and the public, information on chemical-related health or environmental hazards and recommend protective measures.
- ☐ To participate with government and others in creating responsible laws, regulations, and standards to safeguard the community, workplace and environment.
- ☐ To promote the principles and practices of Responsible Care® by sharing experiences and offering assistance to others who produce, handle, use, transport, or dispose of chemicals.

DSW 107996

R, Page 7 of 98

Management Practices:

A. Community Awareness and Outreach

Member facilities that manufacture, process, use, distribute or store hazardous materials shall have a community outreach program that includes:

For Employees:

1. An ongoing assessment of employee questions and concerns about the facility.
2. Communications training for key facility and company personnel who communicate with employees and the public concerning safety, health, and environmental issues.
3. Education of employees about the facility's emergency response plan and safety, health, and environmental programs.
4. An ongoing dialogue with employees to respond to their questions and concerns and involve them in community outreach efforts.
5. A regular evaluation of the effectiveness of the ongoing employee communications efforts.

For Community:

6. An ongoing assessment of community questions and concerns about the facility.
7. An outreach program to educate responders, government officials, the media, other businesses and the community about the facility's emergency response program and risks to the community associated with the facility.
8. A continuing dialogue with local citizens to respond to questions and concerns about safety, health, and the environment, and to address other issues of interest to the community.
9. A policy of openness that provides convenient ways for interested persons to become familiar with the facility, its operations, and products, and its efforts to protect safety, health, and the environment.
10. A regular evaluation of the effectiveness of the ongoing community communications efforts.

B. Emergency Response and Preparedness

Member facilities that manufacture, process, use, distribute or store hazardous materials shall have an emergency response program that includes:

1. An ongoing assessment of potential risks to employees and local communities resulting from accidents or other emergencies.
2. A current, written facility emergency response plan which address, among other things, communications and the recovery needs of the community after an emergency.

DSW 107997

3. An ongoing training program for those employees who have response or communications responsibilities in the event of an emergency.
 4. Emergency exercises, at least annually, to test operability of the written emergency response plan.
 5. Communication of relevant and useful emergency response planning information to the Local Emergency Planning Committee.
-
6. Facility tours for emergency responders to promote emergency preparedness and to provide current knowledge of facility operations.
 7. Coordination of the written facility emergency response plan with the comprehensive community emergency response plan and other facilities. If no plan exists, the facility should initiate community efforts to create a plan.
 8. Participation in the community emergency response planning process to develop and periodically test the comprehensive community emergency response plan developed by the Local Emergency Planning Committee.
 9. Sharing of information and experience relating to emergency response planning, exercises, and the handling of incidents with other facilities in the community.

MEMBER SELF-EVALUATION

Each member company shall report annually to CMA, or its designated agent, the stage of implementation of each Management Practice in this Code. The reports shall be on the member self-evaluation form attached as Exhibit A.

DSW 107997.01

OSW 107998



Responsible Care®:
A Public Commitment

SAMPLE

CHEMICAL MANUFACTURERS ASSOCIATION

MEMBER SELF-EVALUATION FORM

**COMMUNITY AWARENESS AND EMERGENCY RESPONSE
CODE OF MANAGEMENT PRACTICES**

Member Company

Name: _____

Responsible Care® Coordinator

Name: _____

Address: _____

Telephone () _____

Number of facilities subject to code _____

DSW 107999

R, Page 11 of 98

COMMUNITY AWARENESS AND EMERGENCY RESPONSE CODE OF MANAGEMENT PRACTICES

SAMPLE

Instructions:

1. Under the Responsible Care® Initiative, each member company will submit a Self-Evaluation form annually to CMA. To establish the industry baseline, each member company should complete this Self-Evaluation form.
2. Indicate on the cover page the number of member company facilities subject to the Code. Each company must report the implementation category for all facilities subject to the Code on this form.
3. For each Management Practice on the following four pages, indicate the number of facilities that have attained each implementation category. Each facility should appear in only one milestone category per Management Practice. The total number of facilities subject to the Code should equal the number of facilities across all six implementation categories for each Management Practice.
4. Only subject facilities owned or operated as of the reporting date should be included.
5. The implementation categories are:
 - Category NA - No action. If no action taken because the management practice is not applicable, please explain.
 - Category EV - Evaluating existing company practices against the Management Practice.
 - Category DP - Developing plan to implement Management Practice.
 - Category IA - Implementing action plan
 - Category PP - Management Practice in place.
 - Category RI - Reassessing Management Practice implementation.

DSW 107999.01

Management Practices

Categories

Community Awareness

NA EV DP IA PP RI

1. An ongoing assessment of employee concerns and questions about the facility.						
Comments on Category NA: _____ _____ _____						
2. Communications training for key facility and company personnel who will communicate with employees and the public concerning safety, health and environmental issues.						
Comments on Category NA: _____ _____ _____						
3. Education of employees about the facility's emergency response plan and safety, health, and environmental programs.						
Comments on Category NA: _____ _____ _____						
4. An ongoing dialogue with employees to respond to their questions and concerns and to involve them in community outreach efforts.						
Comments on Category NA: _____ _____ _____						
5. A regular evaluation of the effectiveness of the ongoing employee communications efforts.						
Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category IA - Implementing action plan
- Category PP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

OSW 108000

		Categories					
		NA	EV	DP	IA	PP	RI
6.	An ongoing assessment of community questions and concerns about the facility. Comments on Category NA: _____ _____ _____						
7.	An outreach program to educate responders, government officials, the media, other business, and the community about the facility's emergency response program and risks to the community associated with the facility. Comments on Category NA: _____ _____ _____						
8.	A continuing dialogue with local citizens to respond to questions and concerns about safety, health, and the environment, and to address other issues of interest to the community. Comments on Category NA: _____ _____ _____						
9.	A policy of openness that provides convenient ways for interested persons to become familiar with the facility, its operations, and products, and its efforts to protect safety, health, and the environment. Comments on Category NA: _____ _____ _____						
10.	A regular evaluation of the effectiveness of the ongoing community communications efforts. Comments on Category NA: _____ _____ _____						

Category NA - No action. If no action taken because the management practice is not applicable, please explain.
 Category EV - Evaluating existing company practices against the Management Practice.
 Category DP - Developing plan to implement Management Practice.
 Category IA - Implementing action plan
 Category PP - Management Practice in place.
 Category RI - Reassessing Management Practice implementation.

DSW 108001

		Categories					
Emergency Response		NA	EV	DP	IA	PP	RI
1.	An ongoing assessment of potential risks to employees and local communities resulting from accidents or other emergencies. Comments on Category NA: _____ _____ _____						
2.	A current, written facility emergency response plan which address, among other things, communications and the recovery needs of the community after an emergency. Comments on Category NA: _____ _____ _____						
3.	An ongoing training program for those employees who have response or communications responsibilities in the event of an emergency. Comments on Category NA: _____ _____ _____						
4.	Emergency exercises, at least annually, to test operability of the written emergency response plan.. Comments on Category NA: _____ _____ _____						
5.	Communication of relevant and useful emergency planning information to the Local Emergency Planning Committee. Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
 Category EV - Evaluating existing company practices against the Management Practice.
 Category DP - Developing plan to implement Management Practice.
 Category IA - Implementing action plan
 Category PP - Management Practice in place.
 Category RI - Reassessing Management Practice implementation.

DSW 108002

		Categories					
		NA	EV	DP	IA	PP	RI
6.	Facility tours for emergency responders to promote emergency preparedness and to provide current knowledge of facility operations.						
Comments on Category NA: _____ _____ _____							
7.	Coordination of the written facility emergency response plan with the comprehensive community emergency response plan and other facilities. If no plan exists, the facility should initiate community efforts to create a plan.						
Comments on Category NA: _____ _____ _____							
8.	Participation in the community emergency response planning process to develop and periodically test the comprehensive community emergency response plan developed by the Local Emergency Planning Committee.						
Comments on Category NA: _____ _____ _____							
9.	Sharing of information and experience related to emergency response planning, exercises, and the handling of incidents with other facilities in the community.						
Comments on Category NA: _____ _____ _____							
Notes: Please identify any specific problems and/or resources.							

Category NA - No action. If no action taken because the management practice is not applicable, please explain.
 Category EV - Evaluating existing company practices against the Management Practice.
 Category DP - Developing plan to implement Management Practice.
 Category IA - Implementing action plan
 Category PP - Management Practice in place.
 Category RI - Reassessing Management Practice implementation.

DSW 108003



Responsible Care:® A Public Commitment

DISTRIBUTION CODE OF MANAGEMENT PRACTICES

Purpose

The purpose of the Distribution Code of Management Practices is to reduce the risk of harm posed by the distribution of chemicals to the general public; to carrier, distributor, contractor and chemical industry employees; and to the environment. Adherence to the code will lead to continually safer chemical distribution and help member companies to:

- ☐ evaluate the risks associated with chemical distribution and methods to reduce those risks;
- ☐ meet or exceed all regulations and industry standards governing chemical distribution;
- ☐ provide emergency advice and/or assistance to people on the scene in the event of a chemical distribution emergency;
- ☐ develop new technologies and methods to improve chemical distribution safety.

The code will also promote improvements in:

- ☐ employee preparedness and awareness in preventing distribution emergencies;
- ☐ the safety performance of carriers and other providers of distribution services;
- ☐ the public's preparedness in responding to chemical distribution emergencies;

OSW 108004

- ☐ the public's understanding of, and confidence in, industry efforts to improve chemical distribution safety.

The Distribution Code of Management Practices applies to all modes of transportation (highway, rail, marine, air and pipeline) and to the shipment of all chemicals, including chemical waste. The code also applies to distribution activities (storage, handling, transfer and repackaging) while chemicals are in transit between member companies and their suppliers and customers. The implementation of a number of practices of the code will vary according to the characteristics of the chemical being distributed, the mode of transportation and the type of distribution activity involved.

Relationship to Responsible Care Guiding Principles

This code helps achieve several Responsible Care Guiding Principles:

- ☐ to recognize and respond to community concerns about chemicals and our operations;
- ☐ to make health, safety and environmental considerations a priority in our planning for all existing and new products and processes;
- ☐ to counsel customers on the safe use, transportation, and disposal of chemicals;
- ☐ to operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public;
- ☐ to participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment; and
- ☐ to promote the principles and practices of Responsible Care by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of chemicals.

Management Practices

Each member company shall have an ongoing chemical distribution safety program that includes senior management commitment through policy, communications and resources to improvements in chemical distribution safety. The program should include the following elements:

1. Risk Management

- 1.1 Regular evaluations of chemical distribution risks which consider the hazards of the material, the likelihood of accidents/incidents and the potential for human and environmental exposure from release of the material over the route of transport.
- 1.2 Implementation of chemical distribution risk reduction measures that are appropriate to the risk level.

- 1.3 Internal reporting and investigation of chemical distribution accidents/incidents, and implementation of preventive measures.

2. Compliance Review and Training

- 2.1 A process for monitoring changes and interpretations of new and existing regulations and industry standards for their applicability to the company's chemical distribution activities, and for implementing those regulations and standards.
- 2.2 Training for all affected company employees in the proper implementation of applicable regulations and company requirements.
- 2.3 A program for providing guidance and information to carriers, distributors and contractors who perform distribution activities for the company on the company's training and compliance requirements for the activities.
- 2.4 Regular reviews of company employee, carrier, distributor and contractor compliance with applicable regulations and company requirements.

3. Carrier Safety

- 3.1 A process for qualifying carriers of all modes and types (common, contract, private and customer controlled) that transport chemicals to and from company facilities that emphasizes carrier safety fitness and regulatory compliance, and includes regular reviews of their performance and compliance.
- 3.2 Feedback to carriers on their safety performance and suggestions for improvement.

4. Handling and Storage

- 4.1 Documented procedures for the selection and use of containers that are appropriate for the chemical being shipped, in compliance with testing and certification requirements, and free of leaks and visible defects.
- 4.2 Documented procedures for loading chemicals at company facilities that will reduce emissions to the environment, protect personnel and provide securement of the lading during transit.
- 4.3 Documented procedures for unloading chemicals at the company's facilities that will reduce emissions to the environment, protect personnel, and provide for safe unloading into proper storage facilities.
- 4.4 Defined criteria for the cleaning and return of tank cars, tank trucks, marine vessels, and returnable/refillable bulk and semi-bulk containers, and for the proper disposal of cleaning residues.

DSW 108006

- 4.5 A program for providing guidance and information to customers, distributors, and other receivers on proper procedures for unloading and storing the company's chemicals.
 - 4.6 A process for selecting distributors and other facilities that store or handle the company's chemicals in transit that emphasizes safety fitness and regulatory compliance and includes regular reviews of their performance and compliance.
 - 4.7 Feedback to distributors and operators of other facilities that store or handle chemicals in transit on their safety performance and suggestions for improvement.
5. Emergency Preparedness
- 5.1 A process for responding to chemical distribution accident/incidents involving the company's chemicals.
 - 5.2 Documented procedures for making information about the company's chemicals in distribution available to response agencies.
 - 5.3 A program for making facilities and/or training materials available to emergency response agencies.
 - 5.4 Dialogue with state and local emergency planning organizations on the distribution and hazards of the company's chemicals to improve community preparedness to respond to chemical distribution emergencies.
 - 5.5 Dialogue with the public on their concerns about chemical distribution safety, actions taken by the industry and the company to improve the safety of chemical distribution, and the effectiveness of emergency preparedness and emergency response assistance.

Member Self Evaluation

Member companies shall report annually the stage of implementation of each management practice in this code to an agent designated by the Chemical Manufacturers Association.

Relationship to Other Codes of Management Practice

This Code complements, and should be implemented in conjunction with, current and future Codes of Management Practices.

DSW 108007

SAMPLE



Responsible Care:®
A Public Commitment

CHEMICAL MANUFACTURERS ASSOCIATION
MEMBER SELF-EVALUATION FORM

DISTRIBUTION CODE
OF MANAGEMENT PRACTICES

Member Company

Name: _____

Responsible Care Coordinator

Name: _____

Address: _____

Telephone () _____

DSW 108008

DSW 108009

SAMPLE

**Member Self-Evaluation
Distribution Code of Management Practices**

1. Under the Responsible Care initiative, each member company must submit a Self-Evaluation Form annually to CMA or its designated representative. The annual self-reporting has three purposes:
 - ☐ to establish an industry baseline from which to demonstrate continual progress in implementation of the Code.
 - ☐ to assist individual member companies in establishing a base line from which to set priorities for future development; and
 - ☐ to assist the industry (CMA) in designing programs to assist the member companies in achieving the goals of the Responsible Care initiative.
2. **TO ESTABLISH THE INDUSTRY BASELINE, EACH MEMBER COMPANY SHOULD COMPLETE THIS SELF-EVALUATION FORM AND SEND IT BY C.O.B., MAY 23, 1991**
3. The Distribution Code is unique in the sense that it deals with both products and facilities, but more importantly it deals with a broad range of third party providers of services and many external organizations and communities. This is considerably different than the CAER, WARR and Process Safety Codes, which deal primarily with fixed facilities and, as a result, have a more common base for self-evaluation. In contrast, different self-evaluation bases for each element of the Distribution Code will likely be more helpful and appropriate.
4. Self-evaluations for the Distribution Code should be expressed as percentages since the different bases for Code elements may not always be countable units. Therefore, the evaluation of each of the 21 separate elements of the Distribution Code of Management Practices should show what percentage of the company's distribution process is at each of the six implementation stages. For example, for a specific Code element, a company could report that 10% of their distribution process is at stage I, 50% at stage II, 30% at stage III, 10% at stage IV and 0% at stages V and VI. Judgment will be required on how to develop these percentages, both in terms of what base to use for the calculation, and how to reflect centralized and/or decentralized distribution activities. Most importantly, each company will need to establish a methodology that will remain constant over the years in order to measure annual progress. The suggestions under Item 4 below are meant to assist you in developing your self-evaluation methodology.
5. The following bases for evaluation can be applied to a number of specific code elements:
 - ☐ Corporate programs, such as a corporate emergency response process, may be viewed as applying across the company for purposes of completing the Self-Evaluation Form. The percentage implementation would result from judgment of

DSW 108011

the existence and implementation of that process, or progress upon your own implementation action plan.

- ☐ Alternatively, decentralized programs, such as site or division specific emergency response processes, should be judged as separate processes. A large multi-division company may have multiple emergency response processes to consider in establishing a percentage of implementation.
 - ☐ Risk management activities are often undertaken on a product specific basis. Each company deals with a very large number of products which are hazardous or non-hazardous, and must select a basis from which to evaluate and report future progress in implementing the Code. Judgment is required to make sure that a large number of non-hazardous products which the company produces or distributes do not distort the evaluation. They should also not decrease the validity of the base for future evaluations.
 - ☐ Carrier safety reviews should be based on the number of carriers that fall under the code. Judgment must also be used where data is not readily available on all carriers. The time spent on determining this basis will provide good information for progressing toward full implementation.
 - ☐ The number of third party providers of services to your company can serve as the basis for determining percentages of implementation in each stage.
 - ☐ Customer related elements should be evaluated on the basis of the number of customers, the hazardous nature of the products, and/or by the company divisional or business unit programs.
 - ☐ There are some elements, such as loading and unloading procedures, that are site specific and should be evaluated on that basis.
6. It is recognized that self-evaluation methodologies will vary from company to company. Because of this, flexibility has been built into the evaluation process. The basis for evaluating a company's distribution process should be established, documented and applied consistently for each annual self-evaluation exercise.
7. The six implementation stages are:

Stage I - No action
Stage II - Evaluating company practices against Code practices
Stage III - Developing action plan to implement Code practice
Stage IV - Implementing action plan
Stage V - Code management practice in place
Stage VI - Implementation reviewed and reaffirmed this year

Risk Management Practices	I	II	III	IV	V	VI
1.1 Regular evaluations of chemical distribution risks which consider the hazards of the material, the likelihood of accidents/incidents and the potential for human and environmental exposure from release of the material over the route of transport.						
1.2 Implementation of chemical distribution risk reduction measures that are appropriate to the risk level.						
1.3 Internal reporting and investigation of chemical distribution accidents/incidents, and implementation of preventive measures.	SAMPLE					
Compliance Review and Training						
2.1 A process for monitoring changes and interpretations of new and existing regulations and industry standards for their applicability to the company's chemical distribution activities, and for implementing those regulations and standards.						
2.2 Training for all affected company employees in the proper implementation of applicable regulations and company requirements.						
2.3 A program for providing guidance and information to carriers, distributors and contractors who perform distribution activities for the company on the company's training and compliance requirements for the activities.						
2.4 Regular reviews of company employee, carrier, distributor and contractor compliance with applicable regulations and company requirements.						

Carrier Safety	I	II	III	IV	V	VI
3.1 A process for qualifying carriers of all modes and types (common, contract, private and customer controlled) that transport chemicals to and from company facilities that emphasizes carrier safety fitness and regulatory compliance, and includes regular reviews of their performance and compliance.						
3.2 Feedback to carriers on their safety performance and suggestions for improvement.						
Handling and Storage						
4.1 Documented procedures for the selection and use of containers that are appropriate for the chemical being shipped, in compliance with testing and certification requirements, and free of leaks and visible defects.						
4.2 Documented procedures for loading chemicals at company facilities that will reduce emissions to the environment, protect personnel and provide securement of the lading during transit.						
4.3 Documented procedures for unloading chemicals at company facilities that will reduce emissions to the environment, protect personnel, and provide for safe unloading into proper storage facilities.						
4.4 Defined criteria for the cleaning and return of tank cars, tank trucks, marine vessels, and returnable/refillable bulk and semi-bulk containers, and for the proper disposal of cleaning residues.						
1.5 A program for providing guidance and information to customers, distributors, and other receivers on proper						

SAMPLE

SAMPLE

Handling and Storage

I II III IV V VI

procedures for unloading and storing the company's chemicals.						
4.6 A process for selecting distributors and other facilities that store or handle the company's chemicals in transit that emphasizes safety fitness and regulatory compliance, and includes regular reviews of their performance and compliance.						
4.7 Feedback to distributors and operators of other facilities that store or handle chemicals in transit on their safety performance and suggestions for improvement.						
Emergency Preparedness						
5.1 A process for responding to chemical distribution accidents/incidents involving the company's chemicals.						
5.2 Documented procedures for making information about the company's chemicals in distribution available to response agencies.						
5.3 A program for making facilities and/or training materials available to emergency response agencies.						
5.4 Dialogue with state and local emergency planning organizations on the distribution and hazards of the company's chemicals to improve community preparedness to respond to chemical distribution emergencies.						
5.5 Dialogue with the public on their concerns about chemical distribution safety, actions taken by the industry and the company to improve the safety of chemical distribution, and the effectiveness of emergency preparedness and emergency response assistance.						

Distribution Code of Practices

Questions and Answers

SAMPLE

1. What is the distinction between a distribution emergency and a distribution accident/incident?

Answer:

An accident/incident is a definite and distinct occurrence of an undesirable event. It may involve an accident (traffic, derailment, collision, mishandling) or near miss, or be a result of a non-accidental container or operational failure. The undesirable effect can range from a small release of product (but major media coverage) to a major release with subsequent loss of property or personal injury.

An emergency is simply an accident/incident that requires immediate action.

In the context of the code, we distinguish between the two because we have direct control or influence over the causes of accidents and incidents. Many circumstances that dictate the emergency nature of the situation are most often outside of our sphere of control and influence.

2. The words process, program, documented procedures and defined criteria are used throughout the code. What do they mean?

Answer:

A program is meant to mean an organized list of processes and procedures. In developing a comprehensive distribution safety program the management practices of Responsible Care should be included in the list of processes and procedures. In a hierarchy of terms, a program lies below a policy (a general statement of commitment or philosophy) and somewhere above a process or procedure. A program must address management needs, as expressed by policy, and contain feedback and measurement steps to determine if the needs are being met.

A process is a series of related activities or actions that will lead to the desired end result. In the context of the code we have used process when it is clear the process can take many different forms, yet still provide the desired results.

Documented procedures are specific instructions or steps required to complete a task successfully. They may be written procedures or videotaped procedures, for example, that are to be explicitly followed and are not left open to interpretation. They are the most detailed step in the hierarchy, below policies, programs and processes.

Defined criteria are the ground rules around which a process or a procedure must be developed. In the code, the term is used to provide criteria to a third party that would enable that party to develop a process or procedure to lead to the desired end.

3. Reference is made in the code to adherence to industry standards. What is meant by this?

Answer:

The term industry standards, means those agreements, developed and complied with voluntarily, by a wide range of co-producers, interindustry groups and trade associations. Many of these agreements, in time, result in regulations or rulemaking procedures. It may also apply to a company's own internal standards of operation or practice.

4. The term, regular reviews, is used when referring to carrier safety performance, contractor and distributor performance and regulatory compliance. What is meant by the term, regular review?

Answer:

Regular reviews is a term used to measure or test whether our expectations are being met. They are crucial for managing the whole distribution safety process. By regular, we allow room for periodic or random reviews and allow the company to determine its own frequency of review for each element of the code, where it is appropriate. Reviews can take many forms, ranging from on-site and detailed audits, to presentations of progress with charts and graphs. This also allows incorporation of many of the safety performance reviews into quality and service review initiatives.

5. The code refers to cleaning and return of returnable/refillable containers. What is meant by returnable/refillable?

Answer:

Returnable containers are those containers specifically designed for return to the company for reuse without reconditioning or reworking the container. Generally, this typically only applies to containers of 55 gallons and above. The EPA is developing regulations regarding refillable containers that would drop below 55 gallons. Tank trucks, tank cars and marine vessels may or may not normally return to the company. Often, they are cleaned and placed back in general service.

All of the containers listed above are examples of returnable/refillable containers. For the purpose of the Distribution Code we must define criteria aimed at developing proper cleaning and residue disposal of these containers. Non-refillable, non-returnable containers are not covered under this code.

6. What is meant by regular evaluations of chemical distribution risks?

Answer:

How often distribution risk studies should be conducted will depend significantly on the chemical involved and the dynamics of the distribution. Evaluations should be regular in the sense they become a normal and routine part of distribution activities and are conducted often enough to respond to technology changes and operating experience.

DSW 108016.01

7. The code requires dialogue with state and local planning organizations and the general public. What do we mean by dialogue?

Answer:

Dialogue is simply two-way conversation. It implies that both parties listen and respond to each other in a constructive way. With state and local planning organizations, the dialogue will naturally focus on the more technical and factual aspects of chemical distribution. Dialogue with the public will involve more educational types of interchange for both parties.

DSW 108017

DSW 108018



Responsible Care:® A Public Commitment

POLLUTION PREVENTION CODE OF MANAGEMENT PRACTICES

Purpose.

This Code is designed to achieve ongoing reductions in the amount of all contaminants and pollutants released to the air, water, and land from member company facilities. These reductions are intended to respond to public concerns with the existence of such releases, and to further increase the margin of safety for public health and the environment.

The Code is also designed to achieve ongoing reductions in the amount of wastes generated at facilities. These reductions are intended to help relieve the burden on industry and society of managing such wastes in future years.

In implementing the Code, each company should strive for annual reductions, recognizing that production rates, new operations, and other factors may result in increases. Despite these fluctuations, however, the goal is to establish a long-term, substantial downward trend in the amount of wastes generated and contaminants and pollutants released. Quantitative reduction goals will be established for giving priority to those pollutants, contaminants and wastes of highest health and environmental concern.

This code also includes practices that address the broader waste management issues beyond source reduction and other waste and release reduction efforts. Each member company must manage remaining wastes and releases in a manner that protects the environment and the health and safety of employees and the public.

This Code complements, and should be implemented in conjunction with current and future Codes of Management Practices. Key terms are defined in the Glossary, which should be consulted for assistance in interpreting the provisions of this Code.

DSW 108019

Relationship to Guiding Principles

Implementation of this Code helps achieve the following Guiding Principles:

- o To recognize and respond to community concerns about chemicals and our operations;
- o To develop and produce chemicals that can be manufactured, transported, used and disposed of safely.
- o To make health, safety, and environmental considerations a priority in our planning for all existing and new products and processes;
- o To report promptly to officials, employees, customers and the public, information on chemical-related health or environmental hazards and to recommend protective measures.
- o To operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public;
- o To extend knowledge by conducting or supporting research on the health, safety, and environmental effects of our products, processes, and waste materials.
- o To promote the principles and practices of Responsible Care by sharing experiences and offering assistance to others who produce, handle, use, transport, or dispose of chemicals.
- o To work with others to resolve problems created by past handling and disposal of hazardous substances.
- o To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.
- o To promote the principles and practices of Responsible Care by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of chemicals.

OSW 108020

Management Practices.

Each member company shall have a pollution prevention program which shall include:

1. A clear commitment by senior management through policy, communications, and resources, to ongoing reductions at each of the company's facilities, in releases to the air, water, and land and in the generation of wastes.
2. A quantitative inventory at each facility of wastes generated and releases to the air, water, and land, measured or estimated at the point of generation or release.
3. Evaluation, sufficient to assist in establishing reduction priorities, of the potential impact of releases on the environment and the health and safety of employees and the public.
4. Education of, and dialogue with, employees and members of the public about the inventory, impact evaluation, and risks to the community.
5. Establishment of priorities, goals and plans for waste and release reduction, taking into account both community concerns and the potential health, safety, and environmental impacts as determined under Practices 3 and 4.
6. Ongoing reduction of wastes and releases, giving preference first to source reduction, second to recycle/reuse, and third to treatment. These techniques may be used separately or in combination with one another.
7. Measurement of progress at each facility in reducing the generation of wastes and in reducing releases to the air, water, and land, by updating the quantitative inventory at least annually.
8. Ongoing dialogue with employees and members of the public regarding waste and release information, progress in achieving reductions, and future plans. This dialogue should be at a personal, face-to-face level, where possible, and should emphasize listening to others and discussing their concerns and ideas.
9. Inclusion of waste and release prevention objectives in research and in design of new or modified facilities, processes, and products.

DSW 108021

10. An ongoing program for promotion and support of waste and release reduction by others, which may, for example, include:
 - a. Sharing of technical information and experience with customers and suppliers;
 - b. Support of efforts to develop improved waste and release reduction techniques;
 - c. Assisting in establishment of regional air monitoring networks;
 - d. Participation in efforts to develop consensus approaches to the evaluation of environmental, health, and safety impacts of releases;
 - e. Providing educational workshops and training materials;
 - f. Assisting local governments and others in establishment of waste reduction programs benefitting the general public.
11. Periodic evaluation of waste management practices associated with operations and equipment at each member company facility, taking into account community concerns and health, safety, and environmental impacts and implementation of ongoing improvements.
12. Implementation of a process for selecting, retaining, and reviewing contractors and toll manufacturers taking into account sound waste management practices that protect the environment and the health and safety of employees and the public.
13. Implementation of engineering and operating controls at each member company facility to improve prevention of and early detection of releases that may contaminate groundwater.
14. Implementation of an ongoing program for addressing past operating and waste management practices and for working with others to resolve identified problems at each active or inactive facility owned by a member company taking into account community concerns and health, safety, and environmental impacts.

DSW 108022

Industry Trend Data

To develop and maintain statistical industry trends, CMA will collect currently available data. Each company shall report annually to CMA, or its designated agent, for each facility:

- o Releases of substances as reported under SARA Section 313; and
- o Wastes generated, as defined and reported in CMA's annual waste survey.

Member Self-Evaluation.

Each member company shall report annually to CMA, or its designated agent, the stage of implementation of each management practice in this Code. The reports shall be on the member self-evaluation form attached as Attachment A.

OSW 108023

Glossary of Terms

As used in this Code, key terms are defined as set forth below. Note that these definitions may be broader than regulatory definitions, and that adherence to this Code does not relieve a company of the obligation to meet Federal, state and local regulatory requirements.

Facility - A site used for chemical manufacturing, processing, refining, packaging, R&D, distribution or related commercial activity.

Recycle - A practice which regenerates or processes a material from a process to recover a useable product or material for reuse.

Release - Any emission, effluent, spill, discharge or disposal to the air, land, or water, of any pollutant or contaminant, whether routine or accidental, at or from a facility. The term does not include shipment or distribution of chemical product, nor release to the environment as part of normal and intended use of a product by the consumer.

Reuse - A practice that reemploys a material from a process either as an ingredient in a process to make a product, or as an effective substitute for a commercial product in a particular function or application.

Source Reduction - A practice that reduces the amount of any release or waste generated at the source, including closed loop recycle and reuse before exit from a process. The term includes, among other practices, equipment and technology modifications, process and procedures modifications, reformulation and redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training and inventory control.

Treatment - A practice, other than recycle or reuse, that alters the physical, chemical, or biological characteristics or the volume of a waste through a process or activity separate from the production of a commercial product or the provision of a service.

Waste - Any gas, liquid, or solid residual material at a facility, whether hazardous or non hazardous, that is not used further in the production of a commercial product or provision of a service and which itself is not a commercial product.

DSW 108024

POLLUTION PREVENTION CODE

REPORT 1: MEMBER SELF-EVALUATION FORM FOR THE 1991 REPORTING YEAR

SAMPLE

Instructions for the Company Responsible Care® Coordinator:

1. This form is to be submitted annually to CMA by each member company. This year the due date is XXX 31, 1992. Please submit directly to:
2. Indicate on page 1 the number of your member company's facilities that are subject to the Code. Each company's Responsible Care® Coordinator must report the implementation stage for all facilities subject to the Pollution Prevention Code on this form.
3. The Self Evaluation form for the 1991 reporting year covers fourteen management practices. **DO NOT COMPLETE THIS FORM.** [CMA will send the Self Evaluation Form for the 1991 reporting year in April/May 1992.]
4. For Management Practices 1-11 and 13 on the following pages, indicate the number of facilities that have attained each implementation category. Identify the current implementation category for each of your facilities at the time you complete the form. For management practices 12 & 14, indicate the company-wide reporting using a percentage (following instructions on page 5).
5. For the Industry Trend Data, show the total number of facilities in each appropriate box. The total number of facilities for each type of Trend Data should equal the total number of facilities subject to the Code.
6. Only subject facilities owned or operated as of the reporting date should be included.
7. The implementation categories are:
 - Category NA - No action. If no action taken because the management practice is not applicable, please explain.
 - Category EV - Evaluating existing company practices against the Management Practice.
 - Category DP - Developing plan to implement Management Practice.
 - Category IA - Implementing action plan
 - Category PP - Management Practice in place.
 - Category RI - Reassessing Management Practice implementation.
8. If any facilities are shown in Category NA, please add any pertinent remarks to the space marked "comments."

DSW 108025

POLLUTION PREVENTION CODE OF MANAGEMENT PRACTICES

REPORT 1: MEMBER SELF-EVALUATION FORM FOR THE 1991 REPORTING YEAR

Member Company

Name: _____

Responsible Care® Coordinator

Name: _____

Address: _____

Telephone: () _____

Number of facilities subject to the Pollution Prevention Code _____

SAMPLE

DSW 108026

POLLUTION PREVENTION CODE

SAMPLE

Industry Trend Data

Report annually to CMA or its designated agent, the number of facilities for which annual report to CMA has or has not been submitted:

Member Company Name: _____

	Annual Report Submitted*		Annual Report Not Submitted*	Total Facilities
T-1. Release of substances as reported under SARA Section 313; and	<u>Form R</u>	<u>Form NR</u>		
T-2 Wastes generated, as defined and reported in CMA's annual waste survey.				

*Enter the number of facilities.

NOTES:

1. CMA expects to receive release data only from those facilities that are required to complete the Form R following the requirements in the Superfund Amendment and Reauthorization Act (SARA) Section 313 and EPA's clarifying regulations and instructions.
2. Instruction: Under Form R, enter the number of facilities that are submitting TRI data to CMA.

Line T-1:

- ☐ These facilities should submit the same data as EPA requires. The 313 Form R release data are due to EPA on July 1, 1992 and to CMA on July 31, 1992.
- ☐ Under Form NR, enter the number of facilities that are not subject to the EPA reporting requirements. These facilities should complete Form NR. Companies, not required to report 313 release data to EPA, may volunteer to send release data to CMA. These facilities are not required to submit TRI release data to CMA as an obligation of membership.

Line T-2:

- ☐ The 1991 Reporting year is the first year that facilities must complete CMA's annual Waste Survey as an obligation of membership under the Pollution Prevention Code.

OSW 108027

R, Page 41 of 91

POLLUTION PREVENTION CODE OF MANAGEMENT PRACTICES

SAMPLE

Management Practices

Categories

NA EV DP IA PP RE

1. A clear commitment by senior management through policy, communications, and resources, to ongoing reductions, at each of the company's facilities, in releases to the air, water, and land and in the generation of wastes. Comments on Category NA: _____ _____ _____						
2. A quantitative inventory at each facility of wastes generated and releases to the air, water and land, measured or estimated at the point of generation or release. Comments on Category NA: _____ _____ _____						
3. Evaluation, sufficient to assist in establishing reduction priorities, of the potential impact of releases on the environment and the health and safety of employees and the public. Comments on Category NA: _____ _____ _____						
4. Education of, and dialogue with, employees and members of the public about the inventory, impact evaluation, risks to the community. Comments on Category NA: _____ _____ _____						

- Category NA • No action. If no action taken because the management practice is not applicable, please explain.
- Category EV • Evaluating existing company practices against the Management Practice.
- Category DP • Developing plan to implement Management Practice.
- Category IA • Implementing action plan
- Category PP • Management Practice in place.
- Category RE • Reassessing Management Practice implementation.

DSW 108028

SAMPLE

	Categories					
	NA	EV	DP	IA	PP	RI
5. Establishment of priorities, goals and plans for waste and release reduction, taking into account both community concerns and the potential health, safety, and environmental impacts as determined under Practices 3 and 4. Comments on Category NA: _____ _____ _____						
6. Ongoing reduction of wastes and releases, giving preference first to source reduction, second to recycle/reuse, and third to treatment. These techniques may be used separately or in combination with one another. Comments on Category NA: _____ _____ _____						
7. Measurement of progress at each facility in reducing the generation of wastes and in reducing releases to the air, water, and land, by updating the quantitative inventory at least annually. Comments on Category NA: _____ _____ _____						
8. Ongoing dialogue with employees and members of the public regarding waste and release information, progress in achieving reductions and future plans. This dialogue should be at a personal, face-to-face level, where possible, and should emphasize listening to others and discussing their concerns and ideas. Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category IA - Implementing action plan.
- Category PP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

DSW 108029

		Categories					
		NA	EV	DP	LA	PP	RI
9. Inclusion of waste and release prevention objectives in research, and in design of new or modified facilities, processes, and products. Comments on Category NA: _____ _____ _____							
10. An ongoing program for promotion and support of waste and release reduction by others, which may, for example, include: a. Sharing of technical information and experience with customers and suppliers; b. Support of efforts to develop improved waste and release reduction techniques; c. Assisting in establishment of regional air monitoring networks. d. Participation in efforts to develop consensus approaches to the evaluation for environmental, health, and safety impacts of releases; e. Providing educational workshops and training materials; f. Assisting local governments and others in establishment of waste reduction programs benefiting the general public. Comments on Category NA: _____ _____ _____							
11. Periodic evaluation of waste management practices associated with operations and equipment at each member company facility, taking into account community concerns and health, safety, and environmental impacts and implementation of ongoing improvements. Comments on Category NA: _____ _____ _____							

SAMPLE

- Category NA • No action. If no action taken because the management practice is not applicable, please explain.
- Category EV • Evaluating existing company practices against the Management Practice.
- Category DP • Developing plan to implement Management Practice.
- Category LA • Implementing action plan
- Category PP • Management Practice in place.
- Category RI • Reassessing Management Practice implementation.

DSW 108030

	Categories					
	NA	EV	DP	IA	PP	RI
12. See Instructions below.						
13. Implementation of engineering and operating controls at each member company facility to improve prevention and early detection of releases that may contaminate groundwater.						
Comments on Category NA: _____						

Instructions for Practices 12, Contractor Review, and 14, Past Sites:

CMA recognizes that companies may implement Practices 12 and 14 on a company-wide or even corporation-wide basis rather than on a facility basis. Therefore, CMA asks companies to complete the Self-Evaluation Form using percentages that represent company-wide implementation for these two practices. In adding up the total percentages across all of the six categories, the number must equal 100%. Also, please use only whole numbers. For these two management practices the number of facilities used to calculate the percentage may exceed the number of facilities shown on page 1.

Companies may use any appropriate method to calculate these percentages. One caution, companies will want to carefully consider how this calculation is performed and use it on a yearly basis so that the data from year to year can be compared meaningfully.

	Categories					
	NA	EV	DP	IA	PP	RI
12. Implementation of a process for selecting, retaining, and reviewing contractors and toll manufacturers taking into account sound waste management practices that protect the environment and the health and safety of employees and the public.						
Comments on Category NA: _____						

14. Implementation of an ongoing program for addressing past operating and waste management practices and for working with others to resolve identified problems at each active or inactive facility owned by a member company, taking into account community concerns and health, safety, and environmental impacts.						
Comments on Category NA: _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category IA - Implementing action plan.
- Category PP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

DSW 108031

ATTACHMENT C

WASTE AND RELEASE REDUCTION
CODE OF MANAGEMENT PRACTICES
QUESTIONS AND ANSWERS

SAMPLE

1. Is this a voluntary or mandatory policy?

Answer: The Waste and Release Reduction Code of Management Practices has been developed under CMA's Responsible Care program. Adherence to the Responsible Care guiding principles is an obligation of membership in CMA.

2. Must the Management Practices be completed in the specific order listed?

Answer: The Management Practices are laid out in a logically sequential pattern to complete a reduction project. The sequence should be generally adhered to although slight re-arrangement under specific circumstances may be warranted.

3. Since the scope of this policy covers all hazardous and non-hazardous wastes and releases, doesn't the Code require too much too fast or dilute the focus from hazardous pollutants?

Answer: The public is not seeing or making a distinction between hazardous and non-hazardous releases and wastes. Public opinion research shows that the public wants releases lowered and performance improved. This research indicates that the public is concerned about both chemicals and trash generated by industry.

The definition of "hazardous" is not uniform throughout the United States, since many states have their own definitions that are more restrictive than the federal EPA's. Furthermore, these definitions of "hazardous" keep changing over time.

Each company is starting from differing points. Each company must identify its own reduction opportunities, identify the concerns of its own public, determine the reduction priorities and goals, and develop and implement its own reduction plan. The goal of this Code is continued performance improvement by a long term commitment to the reduction of wastes and releases.

DSW 108032

4. Why does this Code appear to endorse reductions for reductions sake? Why should wastes and releases be reduced below health-based standards? Why should wastes and releases be reduced below levels allowed by statute, regulation, or permit?

Answer: The public does not endorse the concept of "permitted" generation of wastes or releases to the environment. The public desires an increased margin of safety and environmental protection as a goal. If the policy is to address the concerns of the public, it must require sustained reductions.

5. Is this Code a never-ending spiral of reduction?

Answer: The policy is flexible so that each company can assess the viability of further reductions. Certainly, reductions will be sustained under the Code as long as they are technically and economically viable. To the extent reduction options remain viable, the goal is to establish a long-term, substantial downward trend in wastes generated and releases to the environment.

6. Will this Code cause member to accomplish substantive reduction?

Answer: To achieve the goal of earning the public's trust through improved performance, real reductions must occur. Therefore, this Code has measurable implementation stages and industry trends data submission requirements.

7. Does this Code apply to both large and small companies and facilities? Is there a threshold below which this Code does not apply?

Answer: The Code applies to all members of CMA. Even a small company or facility can generate wastes and releases to the environment. There is no threshold for volume of wastes generated, releases to the environment, or size of facility below which this Code does not apply. Each company/facility will establish its own priorities. The Code envisions progress by all of industry in reducing wastes and releases.

8. Does this Code apply to domestic or world-wide operations?

Answer: The principles behind the Code are universal in concept. The reduction of wastes and releases is good business and good citizenship. However, for purposes of CMA eligibility requirements, the Code applies to that portion of a corporation or company that is used to determine CMA dues.

9. What about multi-divisional companies? Does this Code apply to mining operations? Service stations? Warehouses?

Answers: Adherence to the Code of Management Practices is a Guiding Principle of the Responsible Care program. The Responsible Care program is a membership requirement for those portions of a company that determine the CMA dues structure. The principle of reducing wastes and releases is responsible corporate behavior and should be encouraged throughout an organization.

The Waste and Release Reduction Code of Management Practice is designed for flexible implementation by companies and facilities. Each company/facility must determine the reduction opportunities, priorities, baseline, and implement the reduction plan in accordance with these company/facility-derived goals. Inherent in this Code is the need to communicate with the public when determining reduction opportunities and priorities. Therefore, while the scope of this policy is broad, each company must identify the sources that are included in its implementation activities as well as the priority and timing for these reduction activities.

10. If all of the chemical industry is to be affected, how do we ensure fair and equitable reductions? How do we prevent competitive disadvantages among CMA member companies?

Answer: The Waste and Release Reduction Code is predicated on making reductions that are economically and technically sound. The Code does not envision enforcing competitive disadvantages on member companies by usurping their decision-making processes. Each company must evaluate its own reduction opportunities and develop its own reduction plan to meet company/facility priorities.

11. If all of the chemical industry is to be affected, how do we ensure fair and equitable reductions? How do we prevent competitive disadvantages with other industry segments?

Answer: This Code will actually make our industry more competitive than those that do not embrace its concepts. Waste and release reductions will result in less wastes, improved efficiency, and make the industry a superior competitor.

12. Is this a non-growth Code? How can this Code be reconciled with the need for expansions? How are opportunities for emission offsets (needed for air permitting) to be preserved?

Answer: This Code envisions a long-term, substantial downward trend in total releases to the environment and waste generation. However, the method of achieving reductions is left to the needs and priority determinations of the individual member companies.

The policy is not a no-growth policy; rather, it is a policy of balancing future expansions with future waste and release reductions.

Voluntary waste and release reductions may be eligible to be banked with appropriate governmental agencies. Any plan for waste and release reductions must also plan to accommodate expansions. Public perceptions may ultimately require a waste and release reduction type program just as a condition to be able to construct or expand. Several states already have proposed such regulations.

13. Won't this Code have enormous economic consequences?

Answer: Waste and release reductions may or may not have a huge price tag. Some reduction projects, like fugitive emission abatement, tend to pay for themselves in recovered product(s); other projects may increase the price of doing business. Industry must be willing to invest in plants that will lead to a future with less wastes and fewer releases to the environment. The goal of Responsible Care is that the chemical industry will improve the performance of its operations constantly.

In making reduction progress, each company must look at all the reduction opportunities and set their own priorities. Each company can set the scope of these priorities broadly or narrowly and implement actions at their own pace.

Each company must identify its own reduction priorities and implement a reduction plan to meet company/facility-set goals.

14. Does the hierarchy of reduction methodologies mean that all projects must use source reduction unless it is technically infeasible?

Answer: Each waste and release source must be evaluated for its reduction potential. The hierarchy requires that reduction projects for source reduction be evaluated before recycle/reuse or treatment. However, the project to be implemented will depend on the evaluation.

Technical infeasibility is only one of several facility and/or waste specific criteria that can lead to selection of a reduction project involving recycle/reuse or treatment. When developing their reduction priorities, companies may choose to consider other criteria including risk/benefit mechanisms, public concern, size of the facility, economics, and other factors such as conservation of resources.

DSW 108035

R. Page 49 of 98

15. This Code, as well as other codes under the Responsible Care program, require ongoing dialogues with employees and members of the public. Does each such Management Practices require a separate meeting?

Answer: No. Meetings with employees or the public can have multiple agenda items. If several Management Practices items are to be covered in a single meeting, all that is required is that the agenda and presentation clearly address each topic, rather than have a general "discussion of topics."

Under the Responsible Care Program, the process to communicate with the public and employees is established under the Community Awareness and Emergency Response (CAER) Code of Management Practice. Companies are encouraged to use the mechanisms set up under other codes to enhance effective implementation of the Responsible Care Program and to better use and conserve company resources.

16. Is dialogue with the public required for all facilities?

Answer: Meaningful dialogue is essential to better understanding public concern, improving the public's understanding of our operations, and building trust. Some facilities, due to size and location, may have limited opportunity for such dialogue. Where the opportunity for dialogue exists, even on a limited basis, it should be actively pursued individually or jointly with other neighboring companies/facilities.

17. Should individual companies and/or facilities submit to CMA the rationale behind the annual Industry Trend data submissions?

Answer: No. The data submitted for the Industry Trend Data reports need not have supporting documentation submitted to CMA. However, when discussing these data with the local public, it is assumed that general methods and assumptions will be discussed as part of the public education and dialogue process.

18. When completing the Self-Evaluation Form, must every facility attempt to progress through all the implementation stages, or can some facilities "mature" their progress in code implementation at less than full implementation?

Answer: All participating facilities should work to achieve full implementation of each Code and embrace the concepts of this Code in the spirit of the Responsible Care Guiding Principles. Depending on the size of particular facility or the activities carried on by that facility, a company may decide that different implementation methods are appropriate. For example, a large facility may use formal procedures such as written policies and

manuals and conduct formal employee meetings. Whereas, a smaller facility can accomplish the same implementation using less formal methods.

CSW 108037

R. Page 51 of 98

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Attachment B

QUESTION AND ANSWERS FOR
PRACTICES 11-14

These questions address issues in the four practices added to the Pollution Prevention Code of Management Practices. As companies implement Practices 1-10, they should examine their implementation actions and modify them to include waste management.

QUESTIONS:

IN PRACTICE 11, WHAT ARE THE WASTE MANAGEMENT
PRACTICES ASSOCIATED WITH ALL OPERATIONS
AND EQUIPMENT?

The Code envisions companies reviewing all waste management practices at each step of the operation(s) where wastes are generated or released within each facility. This review is within the operating processes not just at the "end of the pipe."

WHAT DO YOU MEAN BY A CONTRACTOR
AND TOLL MANUFACTURER?

Contractors are any entity a member company uses to handle its secondary materials and wastes. This includes, for example, waste treatment facilities, disposal facilities, tank cleaners, reclaimers, recyclers, and the like. "Contractors" does not include publicly owned treatment works.

Responsible Care® covers toll manufacturers' operations under two Codes. This code covers the wastes generated by relevant operations of toll manufacturers. For the purpose of this code, toll manufacturers are independent parties who: perform a manufacturing step for a member company in which the member company owns the work in process; use the member company's feed stock; and generate waste from the manufacturing step.

DSW 108038

WHAT DOES "IMPLEMENTATION OF A PROCESS. . ." MEAN?

The requirement for the "Implementation of a process. . ." is designed to encourage member companies to do business with those contractors and toll manufacturers that, after reasonable inquiry, are believed to engage in sound waste management practices.

As part of the contracting procedure, member companies should consider including language requiring the contractor to use proper health, safety, and environmental practices and stating that the member company has a right to inspect for that purpose.

HOW DO YOU REVIEW THAT A CONTRACTOR OR TOLL MANUFACTURER USES SOUND WASTE MANAGEMENT PRACTICES?

A process for "reviewing" includes reasonable reviews of the relevant practices of contractors and toll manufacturers. Because of the variety of commercial relationships and circumstances, member companies are to exercise their own judgement as to how to conduct "reviews" and precisely what to do with the information obtained.

CHA members are not expected to control the operations of their contractors and toll manufacturers. CHA member companies should consider performing a site visit and visual inspection of waste management practices by a company representative. The member company may determine that a more rigorous inspection is appropriate based on initial findings.

HOW OFTEN SHOULD YOU REVIEW CONTRACTORS AND TOLL MANUFACTURERS?

A review or evaluation should be done on some repeat basis. Companies should determine the timing by an evaluation of the results of previous reviews, potential impacts, potential liability, etc.

WHAT DO WE MEAN BY "IMPROVE THE PREVENTION OF RELEASES TO GROUNDWATER?"

The goal is to prevent releases to the ground and to protect existing groundwater quality. While it is envisioned that a company will have an SPCC (Spill Prevention Control and Countermeasures) plan for certain materials, companies should review the chemicals at the facility and extend the SPCC concepts to other materials. To improve efforts to prevent releases, member companies should review the chemicals and operations at a facility; develop plans to prevent, detect, and contain releases or potential releases; and implement these plans to protect groundwater from contamination.

DSW 108039

**IN PRACTICE 14 WHAT IS MEANT BY IMPLEMENTATION OF
AN ONGOING PROGRAM TO RESOLVE IDENTIFIED PROBLEMS?**

"Implementation of an ongoing program..." means developing processes for evaluating the health, safety, and environmental impacts of identified problems arising from past operating and waste management practices and for setting priorities for addressing those problems. The Code recognizes that not every identified problem poses adverse impacts. Resolving identified problems should consider factors such as, regulatory, technical, and economic considerations.

**WHAT IS MEANT BY "PAST OPERATING AND
WASTE MANAGEMENT PRACTICES?"**

Past operating practices and waste management practices that companies should consider may include operating practices such as: manufacturing operations, loading and unloading areas, storage, areas of spill containment, and recycling and reuse processes; and waste management practices such as: surface impoundments, waste treatment, land disposal, land treatment and farming, and deepwell injection.

**WHAT IS MEANT BY "WORKING WITH OTHERS TO
RESOLVE IDENTIFIED PROBLEMS?"**

Each member company's program should include a process to cooperate, to the extent appropriate, with governmental agencies, past owners, operators, insurance carriers, the community, and others to resolve the potential health, safety, and environmental impacts, and community concerns associated with identified problems.

**WHICH MEMBER COMPANY FACILITIES, ACTIVE OR
INACTIVE, ARE INCLUDED IN PRACTICE 14?**

This practice applies to facilities currently owned by a member company. This includes properties that are still owned, but no longer have ongoing operations. Inactive sites that are not owned by a member company, but where the company has potential involvement, should be addressed to the extent the member company determines feasible.

DSW 108040

**WHAT IS MEANT BY "TAKING INTO ACCOUNT
COMMUNITY CONCERNS AND HEALTH, SAFETY,
AND ENVIRONMENTAL IMPACTS?"**

When CMA member companies implement the employee and public outreach of the Code (Practices 4 and 8), companies should present information about their current and past waste management practices with the goal of identifying the community concerns. Companies should consider this input when developing plans and setting priorities for waste management and remediation activities.

DSW 108041

R. Page 55 of 98

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DSW 108042



Responsible Care®: A Public Commitment

PROCESS SAFETY CODE OF MANAGEMENT PRACTICES

Purpose

The Process Safety Code is designed to prevent fires, explosions and accidental chemical releases. The Code is comprised of a series of management practices that reflect this goal, with the expectation of continuous performance improvement for each management practice. The practices are based on the principle that facilities will be safe if they are designed according to sound engineering practices, built, operated and maintained properly and periodically reviewed for conformance.

Process safety is an interdisciplinary effort. Consequently, the Code is divided into the following four elements: management leadership, technology, facilities and personnel. Each element is composed of Management Practices. Individually, each Practice describes an activity or approach important to preventing fires, explosions and accidental chemical releases. Collectively, the Practices encompass process safety from the design stage through operation, maintenance and training. The scope of this Code includes manufacturing, processing, handling and on-site storage of chemicals. This Code must be implemented with full recognition of the community's interest, expectations and participation in achieving safe operations.

The process safety management program in each facility is complemented by workplace health and safety programs, as well as waste and release reduction programs which address and minimize releases and waste generation. These three programs, and others, will help assure that CMA member facilities are operated in a manner that protects the environment and the health and safety of personnel and the public.

Relationship to Guiding Principles

The Code helps achieve several of the Responsible Care® Guiding Principles:

- ☐ To recognize and respond to community concerns about chemicals and our operations,
- ☐ To make health, safety and environmental considerations a priority in our planning for all existing and new plants and processes.
- ☐ To operate our plants and processes in a manner that protects the environment and the health and safety of our employees and the public.

Management Practices

Each member company shall have an ongoing process safety program that includes:

Management Leadership

1. Leadership by senior management through policy, participation, communications and resource commitments in achieving continuous improvement of performance.
2. Clear accountability for performance against specific goals for continuous improvement.
3. Measurement of performance, audits for compliance and implementation of corrective actions.
4. Investigation, reporting, appropriate corrective action and follow-up of each incident that results or could have resulted in a fire, explosion or accidental chemical release.
5. Sharing of relevant safety knowledge and lessons learned from such incidents with industry, government and the community.
6. Use of the Community Awareness and Emergency Response (CAER) process to assure public comments and concerns are considered in design and implementation of the facility's process safety systems.

Technology

7. Current, complete documentation of process design and operating parameters and procedures.
8. Current, complete documentation of information relating to the hazards of materials and process technology.
9. Periodic assessment and documentation of process hazards, and implementation of actions to minimize risks associated with chemical operations, including the possibility of human error.
10. Management of changes to chemical operations to maintain or enhance the safety originally designed into the facility.

Facilities

11. Consideration and mitigation of the potential safety effects of expansions, modifications and new sites on the community, environment, and employees.
12. Facility design, construction and maintenance using sound engineering practices consistent with recognized codes and standards.
13. Safety reviews on all new and modified facilities during design and prior to start-up.
14. Documented maintenance and inspection programs that ensure facility integrity.

OSW 108044

15. Sufficient layers of protection through technology, facilities and employees to prevent escalation from a single failure to a catastrophic event.
16. Provision for control of processes and equipment during emergencies resulting from natural events, utility disruptions and other external conditions.

Personnel

17. Identification of the skills and knowledge necessary to perform each job.
18. Establishment of procedures and work practices for safe operating and maintenance activities.
19. Training for all employees to reach and maintain proficiency in safe work practices and the skills and knowledge necessary to perform their job.
20. Demonstrations and documentation of skill proficiency prior to assignment to independent work, and periodically thereafter.
21. Programs designed to assure that employees in safety critical jobs are fit for duty and are not compromised by external influences, including alcohol and drug abuse.
22. Provisions that contractors either have programs for their own employees consistent with applicable sections of this Code or be included in the member company's program, or some combination of the two.

Glossary

This Code uses key terms in a context that may be broader than their associated regulatory definitions. However, adherence to this Code does not relieve a company of the obligation to meet Federal, state and local regulatory requirements.

Process Safety - The application of management and engineering principles to prevent fires, explosions and accidental chemical releases at chemical process facilities.

Sound Engineering Practice - The application of mandatory codes and standards supplemented by the use of voluntary codes, standards and guidelines, tempered by professional judgement.

Safety Critical Jobs - Jobs, activities and tasks, if improperly performed, that have the potential to significantly increase the risk of a fire, explosion or accidental chemical release.

Accidental Chemical Release - Unplanned, sudden releases of chemicals from manufacturing, processing, handling and on-site storage facilities to the air, water or land. It does not include permitted or other releases.

DSW 108045

DSW 108046

SAMPLE



**Responsible Care®:
A Public Commitment**

CHEMICAL MANUFACTURERS ASSOCIATION

MEMBER SELF-EVALUATION FORM

**PROCESS SAFETY CODE
OF MANAGEMENT PRACTICES**

Member Company

Name: _____

Responsible Care® Coordinator

Name: _____

Address: _____

Telephone () _____

Number of facilities subject to code _____

DSW 108047

DSW 108048

PROCESS SAFETY CODE OF MANAGEMENT PRACTICES

Instructions:

1. Under the Responsible Care® Initiative, each member company will submit a Self-Evaluation form annually to CMA.
2. Indicate on the cover page the number of member company facilities subject to the Code. Each company must report the implementation category for all facilities subject to the Code on this form.
3. For each Management Practice on the following four pages, indicate the number of facilities that have attained each implementation category. Each facility should appear in only one milestone category per Management Practice. The total number of facilities subject to the Code should equal the number of facilities across all six implementation categories for each Management Practice.
4. Only subject facilities owned or operated as of the reporting date should be included.
5. The implementation categories are:
 - Category NA - No action. If no action taken because the management practice is not applicable, please explain.
 - Category EV - Evaluating existing company practices against the Management Practice.
 - Category DP - Developing plan to implement Management Practice.
 - Category IA - Implementing action plan
 - Category PP - Management Practice in place.
 - Category RI - Reassessing Management Practice implementation.

CSW 108049

DSW 108050

SAMPLE

Management Practices

Categories

Management Leadership

NA EV DP LA PP RI

1. Leadership by senior management through policy, participation, communications and resource commitments in achieving continuous improvement of performance. Comments on Category NA: _____ _____ _____						
2. Clear accountability for performance against specific goals for continuous improvement. Comments on Category NA: _____ _____ _____						
3. Measurement of performance, audits for compliance and implementation of corrective actions. Comments on Category NA: _____ _____ _____						
4. Investigation, reporting, appropriate corrective action and follow-up of each incident that results or could have resulted in a fire, explosion or accidental chemical release. Comments on Category NA: _____ _____ _____						
5. Sharing of relevant safety knowledge and lessons learned from such incidents with industry, government and the community. Comments on Category NA: _____ _____ _____						

- Category NA • No action. If no action taken because the management practice is not applicable, please explain.
- Category EV • Evaluating existing company practices against the Management Practice.
- Category DP • Developing plan to implement Management Practice.
- Category LA • Implementing action plan
- Category PP • Management Practice in place.
- Category RI • Reassessing Management Practice implementation.

DSW 108051

SAMPLE

Categories

NA EV DP IA PP RI

6. Use of the Community Awareness and Emergency Response (CAER) process to assure public comments and concerns are considered in design and implementation of the facility's process safety systems. Comments on Category NA: _____ _____ _____						
Technology 7. Current, complete documentation of process design and operating parameters and procedures. Comments on Category NA: _____ _____ _____						
8. Current, complete documentation of information relating to the hazards of materials and process technology. Comments on Category NA: _____ _____ _____						
9. Periodic assessment and documentation of process hazards, and implementation of actions to minimize risks associated with chemical operations, including the possibility of human error. Comments on Category NA: _____ _____ _____						
10. Management of changes to chemical operations to maintain or enhance the safety originally designed into the facility. Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category IA - Implementing action plan.
- Category PP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

DSW 108052

SAMPLE

Categories

Facilities

NA EV DP LA PP RI

11. Consideration and mitigation of the potential safety effects of expansions, modifications and new sites on the community, environment, and employees. Comments on Category NA: _____ _____ _____						
12. Facility design, construction and maintenance using sound engineering practices consistent with recognized codes and standards. Comments on Category NA: _____ _____ _____						
13. Safety reviews on all new and modified facilities during design and prior to start-up. Comments on Category NA: _____ _____ _____						
14. Documented maintenance and inspection programs that ensure facility integrity. Comments on Category NA: _____ _____ _____						
15. Sufficient layers of protection through technology, facilities and employees to prevent escalation from a single failure to a catastrophic event. Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category LA - Implementing action plan.
- Category PP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

DSW 108053

SAMPLE

Categories

NA EV DP IA PP RI

16. Provision for control of processes and equipment during emergencies resulting from natural events, utility disruptions and other external conditions. Comments on Category NA: _____ _____ _____						
Personnel 17. Identification of the skills and knowledge necessary to perform each job. Comments on Category NA: _____ _____ _____						
18. Establishment of procedures and work practices for safe operating and maintenance activities. Comments on Category NA: _____ _____ _____						
19. Training for all employees to reach and maintain proficiency in safe work practices and the skills and knowledge necessary to perform their job. Comments on Category NA: _____ _____ _____						
20. Demonstrations and documentation of skill proficiency prior to assignment to independent work, and periodically thereafter. Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category IA - Implementing action plan.
- Category PP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

DSW 108054

SAMPLE

Categories

NA EV DP IA PP RI

21. Programs designed to assure that employees in safety critical jobs are fit for duty and are not compromised by external influences, including alcohol and drug abuse. Comments on Category NA: _____ _____ _____						
22. Provisions that contractors either have programs for their own employees consistent with applicable sections of this Code or be included in the member company's program, or some combination of the two. Comments on Category NA: _____ _____ _____						

- Category NA • No action. If no action taken because the management practice is not applicable, please explain.
- Category EV • Evaluating existing company practices against the Management Practice.
- Category DP • Developing plan to implement Management Practice.
- Category IA • Implementing action plan
- Category PP • Management Practice in place.
- Category RI • Reassessing Management Practice implementation.

DSW 108055

DSW 108056

Process Safety Code of Management Practices

Questions and Answers

Management Leadership

1. Q: How does one define senior management?

A: Senior management is that level that has the authority to establish policies and authorize expenditures to implement them. As used in this Code, this probably includes plant managers and above.

2. Q: What is meant by participation by senior management?

A: Participation in this context refers to activities which convey and reinforce commitment and leadership as well as support the implementation of policies and procedures.

3. Q: Is it necessary to have a written process safety policy?

A: Yes.

4. Q: What parameters can be used to measure process safety performance?

A: Each company should establish its own methods of measurement. Counts of unwanted incidents, frequency rates, property loss statistics, audit violations, permit violations, risk reviews and completion of training are a few examples.

5. Q: How should one define the type of incident that should be investigated?

A: There is no single standard which defines the type of incident or near-miss to investigate. Management should establish a formal procedure to investigate those uncontrolled events which have potentially serious consequences.

6. Q: What should be done after each incident or near-miss investigation?

A: Corrective actions or follow-up should be identified, carried out and communicated as appropriate within the company.

7. Q: What kind of knowledge and lessons should be shared?

A: Knowledge and lessons which can benefit others because of their general applicability or novelty or unusualness. Member companies may establish procedures to promote sharing consistent with proprietary and legal considerations.

8. Q: How much input do you envision our industry receiving from the public sector?

A: The CMA fully supports the concepts of working with local communities to listen to their views and concerns and to consider them in plant safety systems. The intent is to discuss major process additions and new grass-roots construction as opposed to minor plant changes. Individual companies are responsible for the safe design and operation of facilities; that responsibility cannot be shared with the public. It is intended that public concerns be considered in design and operations of the facility. The CAER network provides a useful vehicle to accomplish this.

Technology

9. Q: What type of documentation of process design and operating parameters should exist?

A: Each operating unit should have up-to-date safety related information that contains the design basis and procedures, (e.g., process flowsheets, piping and instrument diagrams or engineering flow diagrams, vessel drawings, electrical area classifications, safety valve capacity information and operating manuals). The documents will serve as the back bone for employee training, hazard evaluation and process modifications.

10. Q: What is meant by operating parameters?

A: Operating parameters are the ranges of conditions (eg. temperature, pressure and flow composition) within which a unit is designed to operate. Within that range, a unit is expected to operate without any problems. For example, the safe operating parameter for a reactor temperature during exotherm might be 70 degrees minimum to 130 degrees maximum. Operating outside the range could cause instability in the reaction — runaway temperature if above, potential brittle fracture if below.

11. Q: What are some of the types of information needed to define the chemistry?

A: Each reactant and product should have a material safety data sheet (MSDS). Chemical reaction kinetics and acute toxicity should be known and understood. Reactive chemical performance upon mixing various chemicals in different proportions should be documented. Waste streams should be included as well as reactants and products.

12.Q: What type of procedures should be maintained?

A: Generally, all routine jobs or tasks with process safety implications should have written step-by-step instructions. These procedures should capture the experience base of the knowledgeable experts. The protective equipment and employee concerns should be incorporated in the procedures. Also, emergency procedures must be clear and unequivocal.

13. Q: What is the difference between documentation covered in practice 7 versus that included in practice 8?

A: Number 7 refers mainly to design and operating information, while number 8 specifically addresses the hazards associated with the unit being evaluated.

14. Q: Does the reference in the Code to risk imply that we will be required to perform quantitative risk assessments on all our plants?
- A: No. Qualitative analysis alone should be sufficient to satisfy process safety analysis objectives in most cases. In any case, qualitative analysis should be considered prior to performing numerical frequency or consequence calculations.
15. Q: What does periodic assessment of process hazards mean in the technology element?
- A: Each member company should establish its own review frequency based on inherent hazards, operating experience, rate of technology change and other factors. Typical review frequencies range from three to seven years. Under very special circumstances, review frequency may be as short as one year.
16. Q: What is meant by "management of change"?
- A: "Management of change" means having management systems in place that ensure the original safe design of the unit is maintained and all changes, including minor modifications, are properly reviewed, recorded and communicated.
17. Q: What changes should be covered?
- A: All changes except like for like substitutions. Examples include hardware, procedures, raw materials, operating conditions, throughput, employee, software and control mode.
18. Q: There does not seem to be a clear distinction between Technology and Facilities - shouldn't these two sections be combined?
- A: While it is true that the two sections are closely related and interdependent, Technology (i.e., chemistry and know-how) and Facilities (i.e., equipment and hardware) each deserve an independent focus as related to process safety.

Facilities

19. Q: Should the community be consulted when considering potential effects of a new site or new installation?
- A: Yes, using principles of the CAER process.
20. Q: Does this mean the community has approval or rejection authority over our projects?
- A: No: It means that we should identify and respond to community concerns.

21.Q: Choosing a new plant site involves many complex considerations. Can we realistically expect to completely satisfy all interests?

A: Possibly not, but the Responsible Care® Guiding Principles require health, safety and the environment to be priority considerations and such issues must be adequately resolved.

22.Q: Does the Code cover concerns about sabotage or terrorism?

A: Such issues are not intended to be within the scope of the Code. However, good practice in site selection and planning will consider such general security issues as buffer zones, fencing, lighting, entrance gates and security surveillance. Also, mitigation and emergency response measures can help minimize consequences of hostile acts.

23. Q: Does "sound engineering practice" extend beyond mandatory codes and regulations?

A: In many cases, yes. While government codes and regulations may establish minimum legal requirements for plant design, operation and maintenance, member companies are expected to use qualified professionals to identify and apply other engineering practices (such as contained in many non-mandatory or consensus standards or codes) as may be necessary to fulfill our safety commitment to employees and the community.

24. Q: Are "Safety Reviews" as prescribed in practice 13 different from "Process Hazard Assessments" as prescribed in practice 9?

A: Yes. "Process Hazard Assessment" is done during the process design stage and periodically thereafter. It focuses on the hazards inherent to the process and measures to control these hazards. "Safety Reviews" use "Process Hazard Assessment" as a starting point and focus on the physical installation to assure that it is in accordance with design and is safe to start-up and operate.

25. Q: Shouldn't Safety Reviews go beyond simple field inspection?

A: Yes. Safety Reviews may include such things as testing equipment, controls, control logic, interlocks, "water runs" etc., prior to operation with hazardous materials. In addition, such reviews should also confirm that process documentation and procedures are in place and that operators have been trained.

26. Q: Doesn't a "Preventive Maintenance Program" meet the requirement of practice 14?

A: To meet the intent of this code practice, the preventive maintenance (PM) program must go beyond operating reliability and economic considerations and address all potential failures which, while possibly extremely unlikely, could impact process safety. A program to "ensure facility integrity" must search out hidden deterioration and flaws that can result in sudden and unexpected failure that can impact process safety.

DSW 108060

27. Q: What are some examples that could be included in a PM program to satisfy practice 14?

A: Metallurgical examinations for stress corrosion cracking, nondestructive acoustic testing, compressor vibration monitoring, thickness measuring for erosion or corrosion on key parts of pressure vessels and pipelines, verification of bolt and clamp material of construction and quality, reliability of critical instruments and operation of safety valves are examples.

28. Q: Shouldn't a hierarchy be considered in applying "layers of protection"?

A: Normally technology should be applied first, choosing an inherently safe or less hazardous process whenever possible. Then hardware, safety factors, redundant controls, failure detection systems, etc., should be applied. Finally, emergency procedures and employee training should complement the process and hardware design.

29. Q: How many layers constitute "sufficient layers of protection"?

A: There is no absolute answer to this question. The number of levels needed depends on the likelihood of an initial failure, the nature of the consequences and whether additional levels of protection will materially improve safety. Layers of protection include more than redundant equipment. They may include process techniques, instrumentation and hardware, operating procedures and operator training.

30. Q: What is meant by "external conditions"?

A: By external conditions we mean anything that is beyond the direct and immediate control of the process operator. An example might be an evacuation order for your plant caused by a fire or toxic release from a neighboring plant as well as an upset or incident in an adjoining process unit.

Personnel

31. Q: We train our employees thoroughly; why is it necessary to also demonstrate their proficiency?

A: Even with the best employee training programs, people learn at different rates and comprehension. An actual demonstration is the only way of being sure that each individual has grasped essential concepts or skills. Demonstrations can involve written tests and/or having the trainee show a qualified observer how they would do a job.

32. Q: Do procedures and work practices have to be documented?

A: Generally, yes. Procedures typically require proper execution of several stages. Documented procedures help assure that a critical action is not overlooked and that the procedure is carried out consistently by everyone.

33. Q: Does the code require that employees be screened for alcohol and drug abuse?

A: No. The Code requires programs designed to assure fitness for duty.

.DSW 108061

R. Page 75 of 98

34. Q: What kinds of jobs are safety-critical?

A: A position is safety-critical when it involves tasks which, if not performed properly, can significantly increase the likelihood of a fire, explosion, or accidental chemical release.

35. Q: What is meant by "external influence"?

A: External influences include abuse of alcohol or drugs, but the terms also refers to any factor which might impair judgement, attention or general capacity to perform a job safely. Examples include physical impairment, emotional stress, and stress from too much overtime work.

DSW 108062



Responsible Care®: A Public Commitment

EMPLOYEE HEALTH AND SAFETY CODE OF MANAGEMENT PRACTICES

PURPOSE

The goal of the Employee Health and Safety Code of Management Practices is to protect and promote the health and safety of people working at or visiting member company work sites.

To achieve this goal, the Code provides Management Practices designed to continuously improve work site health and safety. These practices provide a multidisciplinary means to identify and assess hazards, prevent unsafe acts and conditions, maintain and improve employee health, and foster communication on health and safety issues.

Implementation of the Employee Health and Safety Code, together with other Codes of Management Practices, can enable member companies to operate in a manner that further protects and promotes the health and safety of employees, contractors, and the public, and protects the environment.

RELATIONSHIP TO GUIDING PRINCIPLES

Implementation of the Code helps achieve several of the Responsible Care® Guiding Principles:

- To recognize and respond to community concerns about chemicals and our operations.
- To make health, safety, and environmental considerations a priority in our planning for all existing and new products and processes.
- To operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public.
- To extend knowledge by conducting or supporting research on the health, safety, and environmental effects of our products, processes, and waste materials.

DSW 108063

MANAGEMENT PRACTICES

Each member company shall have an ongoing occupational health and safety program that includes:

Program Management

1. Commitment by all levels of management to protecting and promoting the health and safety of people working at or visiting member company work sites through published policies; accountability for implementation; and provision of sufficient resources, including qualified health and safety personnel.
2. Opportunities for employees to participate in developing, implementing, and reviewing health and safety programs.
3. Provisions, including selection criteria, to confirm that on-site contractors' programs are consistent with applicable Management Practices of this Code.
4. Written, up-to-date health and safety programs and procedures appropriate to the facility.
5. Means to verify that health and safety programs and procedures are effective and that actual practices are consistent with these programs and procedures.
6. Systems for maintaining records and analyzing data to evaluate health and safety performance, determine trends, and identify areas for improvement.

Identification and Evaluation

7. Methods to identify and evaluate potential health and safety hazards in planned or existing facilities, including facilities to be modified.
8. Exposure assessments and safety analyses to evaluate health and safety hazards to employees from processes; equipment; potentially hazardous chemical, physical, or biological agents; or other work site conditions.
9. Health assessments to determine employee medical fitness for specific job tasks.
10. Employee occupational medical surveillance programs tailored to work site hazards.

Prevention and Control

11. Mechanisms for reviewing the design and modification of facilities and job tasks, taking into account the following hierarchy of controls: inherent safe design, material substitution, engineering controls, administrative controls, and personal protective equipment.
12. Systems to verify that health and safety equipment is properly selected, maintained, and used.

DSW 108064

13. Preventive maintenance and housekeeping programs to maintain the safety of facilities, tools, and equipment.
14. Timely investigation of work site illnesses, injuries, and accidents; corrective actions to prevent recurrence; and evaluation of the effectiveness of corrective actions taken.
15. Security procedures and systems to control entry and exit of personnel and materials at the work site and restricted areas.
16. Provisions for emergency medical assistance for people at work sites.

Communications and Training

17. Communication of health and safety information that is relevant to specific job tasks and the work site.
18. Health and safety training programs, including documentation of these programs, and methods to evaluate the effectiveness of both training and communications activities.

INDUSTRY TREND DATA

To identify industry trends, each company shall report to CMA, or its designated agent, occupational injuries and illnesses, as specified in CMA's Occupational Injury and Illness Reporting Program.

RELATIONSHIP TO OTHER CODES OF MANAGEMENT PRACTICES

This Code complements, and should be implemented in conjunction with, current and future Codes of Management Practices, especially those elements of the CAER Code involving emergency response, the Process Safety Code involving training of employees in their job functions, and the Product Stewardship Code involving health, safety, and environmental information, and employee education and product use feedback.

MEMBER SELF-EVALUATION

Each member company shall report annually to CMA, or its designated agent, the implementation category attained for each Management Practice in this Code. The reports should be submitted on the member self-evaluation form provided.

RESOURCE GUIDE

A separate resource guide is available to assist member companies in implementing the Code.

The Responsible Care® Employee Health & Safety Code of Management Practices was approved by CMA's Board of Directors on January 14, 1992

DSW 108065

R. Page 79 of 98

DSW 108066



Responsible Care®:
A Public Commitment

SAMPLE

**EMPLOYEE HEALTH AND SAFETY
CODE OF MANAGEMENT PRACTICES**

MEMBER SELF-EVALUATION FORM

Member Company

Name: _____

Responsible Care® Coordinator

Name: _____

Address: _____

Telephone: () _____

**Number of facilities subject to
the Employee Health and Safety Code:** _____

DSW 108067

R, Page 81 of 98

DSW 108068

EMPLOYEE HEALTH AND SAFETY CODE

MEMBER SELF-EVALUATION FORM

SAMPLE

Instructions for the Company Responsible Care® Coordinator

1. This form is to be submitted annually to CMA by each member company.
2. Indicate on page 1 the number of your member company's facilities that are subject to the Code. Each company must report the implementation stage for all facilities subject to the Employee Health and Safety Code on this form.
3. For each Management Practice on the following pages, indicate the number of facilities that have attained each implementation category. Each facility should appear in only one implementation category per Management Practice. Identify the current implementation category for each of your facilities at the time you complete the form.
4. For the Industry Trend Data, report the previous calendar year's cumulative occupational injuries and illnesses. Occupational injuries and illnesses should be reported on a company wide basis as specified by CMA's Occupational Injury and Illness Reporting (OIIR) Program.
5. Only subject facilities owned or operated as of the reporting date should be included.
6. The implementation categories are:
 - Category NA - No action. If no action taken because the Management Practice is not applicable, please explain in space marked "comments."*
 - Category EV - Evaluating existing company practices against the Management Practice.*
 - Category DP - Developing plan to implement Management Practice.*
 - Category IA - Implementing action plan.*
 - Category PP - Management Practice in place.*
 - Category RI - Reassessing Management Practice implementation.*

DSW 108069

R, Page 83 of 98

WATER_PCB-SD0000021618

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DSW 108070

EMPLOYEE HEALTH AND SAFETY CODE OF MANAGEMENT PRACTICES

SAMPLE

Management Practices

Categories

	NA	EV	DP	IA	PP	RI
1. Commitment by all levels of management to protecting and promoting the health and safety of people working at or visiting member company sites, through: published policies; accountability for implementation; and provision of sufficient resources, including qualified health and safety personnel. Comments on Category NA: _____ _____ _____						
2. Opportunities for employees to participate in developing, implementing, and reviewing health and safety programs. Comments on Category NA: _____ _____ _____						
3. Provisions, including selection criteria, to confirm that on-site contractors' programs are consistent with applicable Management Practices of this Code. Comments on Category NA: _____ _____ _____						
4. Written, up-to-date health and safety programs and procedures appropriate to the facility. Comments on Category NA: _____ _____ _____						

Category NA - No action. If no action taken because the Management Practice is not applicable, please explain.
 Category EV - Evaluating existing company practices against the Management Practice.
 Category DP - Developing plan to implement Management Practice.
 Category IA - Implementing action plan.
 Category PP - Management Practice in place.
 Category RI - Reassessing Management Practice implementation.

DSW 10807.1

Management PracticesCategories

NA EV DP IA PP RI

5. Means to verify that health and safety programs and procedures are effective and that actual practices are consistent with these programs and procedures.

Comments on Category NA: _____

6. Systems for maintaining records and analyzing data to evaluate health and safety performance, determine trends, and identify areas for improvement.

Comments on Category NA: _____

7. Methods to identify and evaluate potential health and safety hazards in planned or existing facilities, including facilities to be modified.

Comments on Category NA: _____

8. Exposure assessments and safety analyses to evaluate health and safety hazards to employees from processes; equipment; potentially hazardous chemical, physical, or biological agents; or other work site conditions.

Comments on Category NA: _____

9. Health assessments to determine employee medical fitness for specific job tasks.

Comments on Category NA: _____

Category NA - No action. If no action taken because the Management Practice is not applicable, please explain.
Category EV - Evaluating existing company practices against the Management Practice.
Category DP - Developing plan to implement Management Practice.
Category IA - Implementing action plan.
Category PP - Management Practice in place.
Category RI - Resourcing Management Practice implementation.

DSW 108072

Management PracticesCategories

	NA	EV	DP	IA	PP	RI
10. Employee occupational medical surveillance programs tailored to work site hazards. Comments on Category NA: _____ _____ _____						
11. Mechanisms for reviewing the design and modification of facilities and job tasks, taking into account the following hierarchy of controls: inherent safe design, material substitution, engineering controls, administrative controls, and personal protective equipment. Comments on Category NA: _____ _____ _____						
12. Systems to verify that health and safety equipment is properly selected, maintained, and used. Comments on Category NA: _____ _____ _____						
13. Preventive maintenance and housekeeping programs to maintain the safety of facilities, tools, and equipment. Comments on Category NA: _____ _____ _____						
14. Timely investigation of work site illnesses, injuries, and incidents; corrective actions to prevent recurrence; and evaluation of the effectiveness of corrective actions taken. Comments on Category NA: _____ _____ _____						

Category NA - No action. If no action taken because the Management Practice is not applicable, please explain.
Category EV - Evaluating existing company practices against the Management Practice.
Category DP - Developing plan to implement Management Practice.
Category IA - Implementing action plan.
Category PP - Management Practice in place.
Category RI - Resourcing Management Practice implementation.

DSW 108073

Management PracticesCategories

NA EV DP IA PP RI

15. Security procedures and systems to control entry and exit of personnel and materials at the work site and restricted areas.

Comments on Category NA: _____

16. Provisions for emergency medical assistance for people at work sites.

Comments on Category NA: _____

17. Communication of health and safety information that is relevant to specific job tasks and the work site.

Comments on Category NA: _____

18. Health and safety training programs, including documentation of these programs, and methods to evaluate the effectiveness of both training and communications activities.

Comments on Category NA: _____

SAMPLE

INDUSTRY TREND DATA

Occupational injuries and illnesses for the previous calendar year were reported as specified in CMA's Occupational Injury and Illness Reporting Program.

Yes _____ No _____

If no, please explain: _____

Category NA - No action. If no action taken because the Management Practice is not applicable, please explain.
Category EV - Evaluating existing company practices against the Management Practice.
Category DP - Developing plan to implement Management Practice.
Category IA - Implementing action plan.
Category PP - Management Practice in place.
Category RI - Reassessing Management Practice implementation.

DSW 108074

QUESTIONS AND ANSWERS

EMPLOYEE HEALTH AND SAFETY CODE OF MANAGEMENT PRACTICES

Throughout its development, the Employee Health and Safety (EHS) Code was reviewed regularly by CMA's Health and Safety Committee, Engineering and Operations Committee, and Responsible Care® Coordinating Group. An early draft of the EHS Code was reviewed by member companies through written comments and an open meeting, and member companies conducted a second review of the draft EHS Code with their employees. In addition, the draft EHS Code was reviewed periodically by the Responsible Care® Public Advisory Panel.

During these reviews, the following questions were frequently asked about the EHS Code of Management Practices:

1. Does the EHS Code cover all aspects of an employee's health and safety?

Answer: The EHS Code is restricted to those aspects of an employee's health and safety that are affected by his or her employment in the chemical industry. The EHS Code addresses occupational health and safety and does not address employee wellness or off-the-job safety.

2. Does the EHS Code include visitors and all contractor operations?

Answer: The EHS Code covers all visitors and contractor employees who enter a member company's work site. Visitors should be protected from hazards they may encounter while on the work site. All contractors should have health and safety programs for their employees that are appropriate for the hazards encountered in their contracted job tasks and that are consistent with applicable management practices of the EHS Code. Contract manufacturers, or tollers, are addressed in the Product Stewardship Code.

3. Does the EHS Code require employee participation at work sites at which employees are represented by a union?

Answer: The objective of the EHS Code is to encourage member companies to fully involve employees in safety and health activities. However, at facilities at which employees are represented by a union, negotiations concerning such employee participation may be required. In the contract negotiation process, member companies should make a good-faith effort to address opportunities for employee participation.

DSW 108075

4. **What is CMA's Occupational Injury and Illness Reporting (OIIR) Program?**

Answer: CMA's OIIR Program serves as a basis for awarding the annual Lamont Du Pont Safety Awards recognizing sustained achievement by CMA member companies in reducing workplace injury and illness rates. Each participating company submits its injury and illness data, as reported on the OSHA Form 200, based on guidelines issued by the U.S. Bureau of Labor Statistics (BLS).

5. **Are contractor employees included in the OIIR Program?**

Answer: At this time, contractor employees are not included in the CMA OIIR Program, unless the company directly supervises their day-to-day activities. Current BLS guidelines require reporting of occupational injuries and illnesses by individual employers based on Standard Industrial Classification (SIC) codes. Both CMA and OSHA are considering revisions to the reporting guidelines that would consolidate the reporting of occupational injuries and illnesses for a single work site, without regard to the SIC code of the employer.

6. **Does the EHS Code address substance abuse in the workplace as part of assessing medical fitness for specific job tasks?**

Answer: Substance abuse is addressed by the Process Safety Code in Management Practice 21: "Programs designed to assure that employees in safety-critical jobs are fit for duty and are not compromised by external influences, including alcohol and drug abuse."

7. **Does the EHS Code require job tasks to be evaluated for physical requirements?**

Answer: Job tasks should be evaluated to determine the specific physical abilities associated with a task. An employee's abilities should be evaluated using medical criteria before being assigned to a job task with specific physical requirements. For example, employees should be medically evaluated to determine their ability to wear a respirator before being assigned to job tasks requiring the use of a respirator.

8. **Does the EHS Code require member companies to provide annual medical examinations to all employees as part of an occupational medical surveillance program?**

Answer: No. Occupational medical surveillance programs should provide appropriate, targeted medical assessments to those employees exposed to specific hazards. For example, regular spirometry examinations to assess lung function should be offered to employees exposed to an agent known to affect lung function.

9. **Does the EHS Code require member companies to assess the effect of exposures to chronic hazards on the health of employees?**

Answer: As a part of maintaining records and analyzing data for trends, member companies should assess the long-term health experience of their employees in relationship to exposures to chronic hazards. Chronic hazards include, for example, long-term exposures to carcinogens.

Product Stewardship Booklet for the Code of Management Practices

The code's management practices are grouped into three categories, described as follows:

Management Leadership and Commitment contains Management Practices 1-3. These practices serve to give direction, provide resources, set priorities, and establish responsibilities within your company that provide an appropriate atmosphere and foundation for successfully implementing product stewardship.

Information and Characterization includes Management Practices 4 and 5. These address the need to continually increase the body of knowledge surrounding chemical products in order to improve hazard identification and risk characterization at every stage in a product's life.

As the cornerstone of product stewardship, Management Practices 6-12 are categorized as **Risk Management** practices, which work together to manage risks at every stage of a product's life. Some of these management practices are the most challenging in the Code because they extend the risk management process beyond traditional boundaries to consider risks beyond the point of sale.

Management practices in the first two categories provide the foundation for conducting the risk management practices in the third category. The ability to implement each management practice, therefore, relies upon the successful implementation of previous practices, with the successful development and implementation of product stewardship progressing from a planning and resource allocation to an information collection phase, and finally to action-oriented, risk management activities.

Purpose and Scope

The purpose of the Product Stewardship Code of Management Practices is to make health, safety and environmental protection an integral part of designing, manufacturing, marketing, distributing, using, recycling and disposing of our products. The code provides guidance as well as a means to measure continuous improvement in the practice of product stewardship.

The scope of the code covers all stages of a product's life. Successful implementation is a shared responsibility. Everyone involved with the product has responsibilities to address society's interest in a healthy environment and in products that can be used safely. All employers are responsible for providing a safe workplace, and all who use and handle products must follow safe and environmentally sound practices.

The code recognizes that each company must exercise independent judgment and discretion to successfully apply the code to its products, customers and business.

DSW 108077

Relationship to Responsible Care® and Guiding Principles

Implementation of the code promotes the achievement of several of the Responsible Care® Guiding Principles:

- to make health, safety and environmental considerations a priority in our planning for all existing and new products and processes;
- to develop and produce chemicals that can be manufactured, transported, used and disposed of safely;
- to extend knowledge by conducting or supporting research on the health, safety and environmental effects of our products, processes and waste materials;
- to counsel customers on the safe use, transportation and disposal of chemical products;
- to report promptly to officials, employees, customers and the public, information on chemical-related health or environmental hazards and to recommend protective measures;
- to promote the principles and practices of Responsible Care® by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of chemicals.

This code complements, and should be implemented in conjunction with, current and future Codes of Management Practices. Chapter 3 discusses the Product Stewardship Code's relationship to the other existing codes.

Management Practices

Management Practice 1

LEADERSHIP: Demonstrates senior management leadership through written policy, active participation and communication.

The objective of this management practice is to set the driving force for the Product Stewardship Code. To this end, senior management must first adopt a policy that reflects the company's vision of product stewardship. This policy should state clearly how senior management expects product stewardship to be managed within the company.

To be effective, the policy should emphasize that product stewardship, like quality and safety, must be woven into the company's culture. It also should be clear that the commitment is an ongoing, long-term part of the company's operations and business.

Finally, if the new policy represents a change in the way of doing business, it should be clear that a change in behavior is expected. In some companies, a separate written product stewardship policy may be effective. In others, a broader health, safety and environmental (H,S&E) policy that incorporates the principles of product stewardship may be more appropriate.

However, a policy alone is not enough. The words of a policy must be reinforced by actions and behaviors that continuously reaffirm the goals senior management has set. Senior management is responsible for conveying throughout the organization its involvement with, and support of, product stewardship—especially to the next level of manage-

ment and encouraging it to do the same. (Management Practices 2 and 3 focus on some of the visible signals -- for example, goals, performance measurement and resource allocation).

Management Practice 2

ACCOUNTABILITY and PERFORMANCE MEASUREMENT: *Establishes goals and responsibilities for implementing product stewardship throughout the organization. Measures performance against these goals.*

One of the key ways senior management can convey the importance of product stewardship is by establishing it as a priority in business planning and individual performance planning. The objective is to develop a process that will result in continuous improvement through goals that are well-defined, achievable and measurable. Similarly, individual responsibilities should be clear and consistent.

Management Practice 3

RESOURCES: *Commits resources necessary to implement and maintain product stewardship practices.*

The commitment of resources, both human and financial, is a critical signal that management can send to show its commitment to product stewardship practices and is a vital component for some implementation activities. Undoubtedly, resources will vary from company to company. However, in all cases, the commitment of resources should be consistent with product stewardship implementation plans and sufficient to support continuous improvement.

Management Practice 4

HEALTH, SAFETY and ENVIRONMENTAL INFORMATION: *Establishes and maintains information on health, safety and environmental hazards and reasonably foreseeable exposures from new and existing products.*

Just as Management Practice 1 is the driving force for the Product Stewardship Code, Management Practice 4 is the foundation. The objective of Management Practice 4 is to establish a knowledge base of human and environmental hazards and reasonably foreseeable exposures and, once established, to maintain it. Under this practice, companies gather information to support the system that characterizes a product's risk (Management Practice 5) and, ultimately, the system that develops the methods to manage that risk (Management Practice 6).

Initially, some companies may establish their knowledge base by developing information; others may do so by collecting and compiling available information. However, all companies should have a process to continuously gather relevant product information and to review existing information to determine if it is accurate, current and complete.

Sources of information may include published, unpublished and/or internally generated scientific reports on health, safety and environmental effects and exposures. Generally, the types of information could cover animal or human toxicity, ecotoxicity and chemical and physical properties that affect exposure or the environmental impact. In many cases, exposure information is not directly available but may be estimated with product use information.

Information on a product's handling, use and reasonably foreseeable exposures in research, development, manufacturing, transport, storage, packaging and disposal may

be obtained by a number of means. These could include surveys of customers and other product receivers, technical reviews or visits to customers, and/or observations reported by sales and marketing personnel.

Management Practice 5

PRODUCT RISK CHARACTERIZATION: *Characterizes new and existing products with respect to their risk using information about health, safety and environmental hazards and reasonably foreseeable exposures. Establishes a system that initiates re-evaluation.*

This practice has two objectives. The first is to use the information gathered in Management Practice 4 to develop a thorough understanding of the product's risk. This characterization may be either quantitative or qualitative. The second objective is to establish a system that triggers re-evaluation, whether upon receipt of new information or upon periodic, scheduled review.

A product may be characterized as a single entity or it may be characterized in a group of products based on similar uses, compositions or physical properties. Product risks may vary with different uses or exposures.

The time frame for re-evaluation may vary from product to product. Triggers for such re-evaluations might include significant new hazard or exposure data, significant new use or misuse information as it becomes known or a substantial increase in sales volume, suggesting new uses or markets.

Management Practice 6

RISK-MANAGEMENT SYSTEM: *Establishes a system to identify, document and implement health, safety and environmental risk-management actions appropriate to the product risk.*

The objective of Management Practice 6 is to establish a system for identifying and implementing risk-management actions. Risks involved in the production and use of chemicals can be managed and controlled if each company takes the basic information on a product's risk (Management Practice 4), characterizes it (Management Practice 5) and then implements a series of risk management actions (Management Practice 7 through 12). These risk management actions are a result of a conscious weighing of technical, ethical, societal and business issues surrounding a product. Actions taken as a result can range from no action, to providing MSDSs and labels, to product reformulation or repackaging, to removal of the product from a market.

The management practices that follow, Management Practices 7 through 12, are specific areas of company operations that warrant discussion and special emphasis.

Management Practice 7

PRODUCT and PROCESS DESIGN and IMPROVEMENT: *Establishes and maintains a system that makes health, safety and environmental impacts—including the use of energy and natural resources—key considerations in designing, developing and improving products and processes.*

Designing products and processes (or redesigning existing products and processes) with a system to identify health, safety and environmental impacts throughout the product lifecycle is one of the most effective ways of managing the product risks identified in Management Practice #5. One objective of this Practice is attainment of the preferred

environmental hierarchy: source reduction; reuse; recycling; and disposal. Source reduction includes equipment or technology modifications, process or procedure changes, product reformulation or design, substitution of raw materials, and improvements in housekeeping, maintenance, training or inventory control.

This Practice also addresses the need for proper energy and natural resource utilization--important considerations for reducing potential adverse environmental impacts and achieving sustainable development.

The health, safety and environmental attributes of the product throughout its entire life-cycle should be addressed at the beginning, during the concept and design (or redesign) phases. Re-evaluation should occur on a periodic basis or whenever changes to the product or process are contemplated.

Insights and contributions from employees in all functional areas that may affect health, safety and the environment should be incorporated into the review. These functional areas include research and development, manufacturing, distribution, sales and marketing and regulatory personnel.

Management Practice 8

EMPLOYEE EDUCATION and PRODUCT USE FEEDBACK: Educates and trains employees, based on job function, on the proper handling, recycling, use and disposal of products and known product uses. Implements a system that encourages employees to feed back information on new uses, identified misuses or adverse effects for use in product risk characterization.

This practice has two parts. The first is to ensure that all employees who are involved with products have the training and education necessary to understand product (and packaging) hazards, proper use, handling, reuse, recycling and disposal procedures. The second is to help ensure that any new information that may alter the way risk is being managed is factored into the risk characterization process on a timely basis (Management Practice 5).

The training and education of employees should be tailored to specific job functions. For example, marketing and sales personnel are in a unique position to know how customers are using products and must be aware of product hazards, reasonably foreseeable exposures, appropriate uses and proper handling procedures. They should be able to identify product deviations and to recognize adverse health or environmental effects. These personnel should be alert to the customer's and the public's comments or perceptions.

It is essential that there be timely feedback of this safety, health or environmental information or concerns into the risk characterization process (Management Practices 4 and 5). This feedback may change the risk management actions (Management Practice 6).

Management Practice 9

CONTRACT MANUFACTURERS: Selects contract manufacturers who employ appropriate practices for health, safety and environmental protection for the operations under contract, or works with contract manufacturers to help them implement such practices. Provides information and guidance appropriate to the product and process risk to foster proper handling, use, recycling and disposal. Periodically reviews performance of contract manufacturers.

The objective of this Management Practice is to encourage the use of contract manufacturers who have sound health, safety and environmental practices for the specific operations under contract.

The level of involvement will vary according to the product's risk. Activities could include reinforcement of previously provided health, safety and environmental information, additional training, etc. At a minimum, both parties should share any accumulated knowledge that would enhance health, safety and environmental protection.

The "transmittal of appropriate information" acknowledges that while we want customers to pass along H,S&E information, product changes made by the customer may mean that the information originally supplied with the product no longer applies. In these cases, the customer needs to issue information that reflects the current H,S&E information.

Along with Management Practices 9, 10 and 11, this management practice constitutes an important outreach component of the Product Stewardship Code. The long-term result of implementing this practice, like the other outreach management practices, should result in improved health, safety and environmental performance – not just for CMA member companies but the entire chemical industry.

As with distributors and suppliers, reviews of customers will be commensurate with product risk. However, it is appropriate to expect companies to extend the principles of product stewardship beyond the CMA membership and Responsible Care® partners.



MONSANTO PLEDGE GUIDELINE

#1

POLLUTION PREVENTION

The company will work toward the ultimate goal of ensuring zero effect attributable to waste in all media. It will research, design and operate its facilities to minimize the generation of process and nonprocess waste and the potential effect of chemical releases to the environment. For waste and releases that remain, the company will comply with regulations, while minimizing environmental threat and long-term liability.

KEY RESULTS

- Reduce by 90 percent the company's 1987 level of worldwide air emissions of chemicals named by the United States Environmental Protection Agency (USEPA) under Title III of the Superfund Amendments and Reauthorization Act (SARA Section 313) and chemicals of local concern outside the United States by the end of 1992.
- Reduce by 70 percent the company's worldwide SARA Section 313, European Community Priority Pollutant List (EC 129) and carbon monoxide chemical releases to all media and off-site transfers by the end of 1995.
- Discontinue the deep-well injection of Resource Conservation and Recovery Act (RCRA) hazardous waste streams and SARA Section 313 toxic chemicals by the end of 1999.

PROGRAM

1.1 Process Waste

The operating units will integrate into their release reduction plans the corporate goal of reducing all toxic and hazardous releases and emission to all media, working toward an ultimate goal of zero effect. For reducing releases from processes, the order of preference is source reduction, followed by reuse, recycling or co-product sale, and finally by incineration or other treatment to reduce the volume and/or toxicity of pollutant streams.

The development and use of technologies that improve competitive positions will be emphasized.

The operating units will integrate into their release-reduction plans the following corporate goals:

Reduce by 90 percent the company's 1987 level of worldwide air emissions of SARA Section 313 chemicals and chemicals of local concern outside the United States by the end of 1992.

Reduce by 70 percent the company's worldwide SARA Section 313, EC 129 and carbon monoxide chemical releases to all media and off-site transfers by end of 1995. The January 1990 SARA 313 and EC 129 lists plus carbon monoxide apply through the end of the multimedia release reduction program.

An effect-based release reduction target will be established every five years beginning in 1995, working toward an ultimate goal of zero effect. By the end of 1993, a method and process for an effect-based reduction program for toxic chemicals will be developed.

1.2 Nonprocess Waste

Each facility will maintain an inventory of all nonprocess sources of waste generation, including power generation, office and maintenance operations, general warehouse trash, packaging/shipping materials and similar sources.

MONSANTO COMPANY

DSW 108085

MPG 1, Page 1 of 1
Company Confidential

1.3 Underground Well (Deep-well) Injection

The company will discontinue deep-well injection of RCRA hazardous waste streams by the end of 1999. It will also apply best feasible technology to virtually eliminate the deep-well injection of SARA 313 chemicals. The company's name will not appear on the list of companies making significant use of injection wells for disposal of SARA chemicals for the reporting year 2000 and beyond. The company will demonstrate progress by achieving in 1996 an 80 percent reduction of injected SARA chemicals against the 1990 base reporting year.

To be prepared for the possibility of mandatory regulations, the company intends to select by the end of 1995 optimal technical strategies for total withdrawal from deep wells. This preparation will include study-grade estimates to achieve non-brine, treated surface discharge. All operating units will continue where possible to challenge the technical impediments to total withdrawal from deep wells.

No new uses of deep wells for hazardous or toxic materials are permitted. A "new" use of deep wells is defined as injection of streams from new products or the addition of substances not previously injected at that site. New internal or external uses of deep wells for non-hazardous wastes and nontoxic chemicals will be considered by the Environmental Policy Committee (EPC) only on an exception basis and within the constraints of these guidelines. The economics of any project appropriation request for such use must be based on disposal technology other than the use of deep wells.

1.4 Polychlorinated Biphenyls - "PCB-Free"

All company-owned sites (e.g., warehouses, plants, offices) located in the United States will minimize the potential for releases of polychlorinated biphenyls (PCB) by becoming "PCB-free" of Toxic Substances Control Act (TSCA)-contaminated articles by the end of 1994.

1.5 Land Disposal

Landfill of "acutely hazardous" wastes¹ and "incinerables"² will not be practiced. For hazardous wastes and wastes managed as hazardous, fixation of particularly mobile, persistent or bioaccumulative wastes will be accomplished whenever warranted and

feasible. In making the decision to manage wastes as hazardous, the company will take into account public expectations, emerging trends and worldwide company practice regarding the same or similar wastes.

Contractors hired for land disposal of process wastes will be subject to contracting and assessment requirements (see *Pledge Guideline No. 7, Outside Processors*). In the United States, the use of off-site hazardous waste landfills will be approved by the Environmental Policy Committee and will be limited in number.

Medical wastes generated at the company's locations will be incinerated prior to land disposal of residues. Assurance of incineration will be obtained via manifests or equivalent documents if manifests are not available.

The use of Monsanto facilities to commercially treat, store or dispose of non-Monsanto wastes is normally discouraged. Any such use or joint ventures (other than in site guest/host relationships) for waste management must be reviewed and approved by the Environmental Policy Committee.

Proposals for land application of process by-products and residues, for beneficial use or disposal, should be guided by the "Monsanto Guidance Document: Land Application of Process By-Products and Residues." The ESHA (formerly EC-201/202) discipline will be followed for such proposals, including 5-year reviews. New applications must be approved by the appropriate Directors of Manufacturing and Environmental operations; the Environmental Policy Committee must approve if beneficial use is not included.

Each company location will maintain a record of both the on-site and the commercial waste treatment, storage and disposal sites it uses.

1.6 Air Emission and Water Release Assessments

The company will conduct and maintain an ongoing assessment of potential human health impacts for selected, routinely emitted air pollutants. It will develop appropriate control strategies to reduce identified, potentially unreasonable risk of harm to human health in surrounding communities. The list of air pollutants to be studied include: a) those listed under Section 112(b) of the U.S. Clean Air Act; b) those for which the

¹ As listed in 40 CFR 261.33(e), plus any mixtures containing greater than 5 percent.

² Hazardous wastes, or wastes managed as hazardous, with a heat of combustion greater than 6000 BTU/lb.

USEPA has established cancer unit risk values; c) those contained on the International Agency for Research on Cancer (IARC) group 1 and 2A lists; d) other site-specific pollutants identified by the plant that appear to warrant consideration (including those in significant quantities reportable via SARA Section 313). Plants outside the United States will use the above-given pollutant list plus any additional air pollutants on any local regulatory list that the plant manager deems important.

Each plant will maintain a list of all such air pollutants, ranked by established and approved protocols. Depending upon the pollutant's relative ranking and if required by the protocols, the plant will use appropriate dispersion modeling techniques to determine potential maximum downwind concentrations for each such pollutant at specified receptors representative of the exposed population utilizing appropriate dispersion modeling techniques. Appropriate assessments of potential human health impacts at the community receptor points will then be analyzed according to protocols established by the company's Environmental, Safety and Health staff. Any potentially unreasonable risk to human health that is identified will be expeditiously reduced to acceptable levels through appropriate actions.

The company will conduct aquatic safety assessments to determine the measurable impacts, if any, of its effluents on receptor water quality. The assessments should include both direct and indirect discharges (if applicable) with the mitigating impacts of the publicly owned treatment works (POTW) taken into account for the indirect discharge assessments. Any potentially unacceptable impacts to the aquatic environment identified will be mitigated in a timely manner. A reconfirming assessment will be conducted to verify that the impacts have been reduced to acceptable levels.

All initial air emission and surface water release assessments required should be conducted for each of the company's worldwide manufacturing sites within two years of the EPC's approval of this guideline. Operating units will review the status of the assessments annually, and if any significant changes have occurred at a plant site, determine whether the assessment should be repeated. Any such reassessments will be completed within 12 months.

1.7 Measurement

The following indicators will be used to measure progress against this guideline:

- 1.7.1 Annual progress toward achievement of 90 percent SARA Section 313 air emissions reduction goal.
- 1.7.2 Annual progress toward achievement of 70 percent worldwide SARA Section 313 chemical releases and off-site transfer reduction goal.
- 1.7.3 Achievement of contingency planning for reduction of use of deep-well injection.
- 1.7.4 Annual progress toward goals involving discontinued deep-well injection of RCRA hazardous waste streams and toxic SARA Section 313 chemicals.

1.7.5 AIR EMISSIONS AND WATER RELEASE ASSESSMENTS

The company's air and water steering committees will be responsible for tracking the air emission and water release environmental assessments conducted at each site and maintaining an ongoing list of the assessments' current status. In addition, each plant's environmental compliance audit will check the current status of these assessments and report on progress as part of the audit's findings.

1.8 Coordinators

Where clarification is required, the following coordinators should be contacted:

WASTE MANAGEMENT

D. B. Redington, ESH, Corporate, A3NA
(314) 694-6503.

ASSESSMENT

C. D. Malloch, ESH, Corporate, A3NA
(314) 694-8889.

(Revised and approved by the Environmental Policy Committee, February 18, 1994.)

DSW 108087

MPG 1, Page 3
Company Confiden

Monsanto

MICHAEL A. PIERLE
Vice President

Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63167
Phone: (314) 694-1000

November 11, 1992

To Our Employees:

Monsanto Company is dedicated to ensuring the safety of our employees, customers, communities and the environment. This is the commitment of the Monsanto Pledge, which serves as the umbrella for our overall environmental, safety and health program.

In support of this commitment, we have developed the "Monsanto Pledge Guidelines." These new guidelines replace our Environmental, Safety and Health Guidelines. They set forth the management expectations for environmental, safety and health performance, and they describe key results against which progress will be measured.

The Monsanto Pledge Guidelines update our Environmental, Safety and Health Guidelines, and incorporate Responsible Care, the continuous improvement initiative created by the chemical industry worldwide.

~~The new guidelines have been approved by the Environmental Policy Committee. Conformance with the spirit of the guidelines is not optional, although considerable latitude and innovation is expected in tailoring the guidelines for specific operating units.~~

Please incorporate your existing plans and programs as appropriate to meet the Pledge Guidelines and add any specific programs or requirements that reflect special needs of your business.

To fulfill the Monsanto Pledge, we must engineer change and add value to our businesses. In this way, we can build a competitive advantage to sustain our leadership position in environmental, safety and health improvements.

This Monsanto Pledge Guidelines book should be treated as "company confidential." The section entitled "Introduction," pages i - iii, contains a summary of the Pledge Guidelines and can be used in external discussions.

Sincerely,


Michael A. Pierle



DSW 107930

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TABLE OF CONTENTS

I. INTRODUCTION

II. THE MONSANTO PLEDGE

III. MONSANTO PLEDGE GUIDELINES

1. Pollution Prevention
2. Employee And Community Safety And Health
3. Process Safety And Emergency Response
4. Product Stewardship
5. Chemical Distribution
6. Groundwater And Soil Quality
7. Outside Processors
8. Community Awareness At Manufacturing Sites

IV. OTHER GUIDELINES

1. Environmental, Safety And Health Reviews Of Capital Projects
2. Environmental, Safety And Health Reviews Of Divestitures Or Acquisitions Of Property And/Or Businesses
3. Environmental, Safety And Health Protection For Investments Over Which The Company Does *Not* Have Operating Control
4. Reproductive Hazards In The Workplace
5. Safe Handling Of Carcinogens
6. Contractor/Guest Environmental, Safety And Health
7. Use Of Animals In Research Facilities
8. Ozone-Depleting Chemicals (CFCs)
9. Environmental, Safety And Health Compliance Auditing

V. PROCEDURES

1. Employee Health And Exposure Communications
2. Transmittal To The United States Environmental Protection Agency Of Substantial Risk Information Under The Toxic Substances Control Act
3. Recording Allegations Of Significant Adverse Reactions Under The Toxic Substances Control Act
4. Premanufacture Notification To The United States Environmental Protection Agency Under The Toxic Substances Control Act
5. Occupational Fatal Accident Reporting
6. Transmittal Of Toxicology And Health-Related Data To United States Regulatory Agencies

VI. REFERENCES

Appropriate Responsible Care Program Or Industry Initiative

DSW 107931

INTRODUCTION

Monsanto's Environmental, Safety and Health Program – The Monsanto Pledge

Monsanto Company is dedicated to ensuring the safety of our employees, customers, communities and the environment. Through the Monsanto Pledge, we have committed publicly to pursue a course of environmental stewardship -- one that goes beyond what is required by the law.

I. THE MONSANTO PLEDGE

Each of the company's environmental programs and commitments is embodied by the seven-point Monsanto Pledge. Announced in 1990 by Monsanto's chairman, Richard J. Mahoney, the Pledge represents Monsanto's environmental commitment to sustainable development.

The Monsanto Pledge

It is our pledge to:

- reduce all toxic and hazardous releases and emissions, working toward an ultimate goal of zero effect;
- ensure no Monsanto operation poses any undue risk to our employees and our communities;
- work to achieve sustainable agriculture through new technology and practices;
- ensure groundwater safety;
- keep our plants open to our communities and involve the community in plant operations;
- manage all corporate real estate, including plant sites, to benefit nature; and
- search worldwide for technology to reduce and eliminate waste from our operations, with the top priority being not making waste in the first place.

At the core of the Pledge is our belief that the public grants us the right to operate every day – and every day, we must work to earn that right. The Pledge recognizes that outstanding environmental, safety and health performance isn't a cost of doing business, but is integral to our business success. It assumes that compliance with the law and our internal guidelines is basic, wherever we do business. But the environmentalism embodied in the Pledge is far more than compliance.

The Monsanto Pledge sets the overall direction of the company's environmental, safety and health program. Specific guidelines detail our efforts to achieve the Pledge.

DSW 107932

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II. MONSANTO PLEDGE GUIDELINES

All of Monsanto's operations worldwide observe eight Monsanto Pledge Guidelines that help ensure that our products and operations fully protect human health, safety and the environment -- while meeting or exceeding existing regulations.

1. **Pollution Prevention** -- The company will work toward the ultimate goal of ensuring zero effect attributable to waste in all media. It will research, design and operate its facilities to minimize the generation of process and nonprocess waste and the potential effect of chemical releases to the environment. For waste and releases that remain, the company will comply with regulations, while minimizing environmental threat and long-term liability.

2. **Employee and Community Safety and Health** -- The company will provide a healthful and safe environment for its employees, site visitors, contractors and neighbors. It will evaluate employee health status, determine and monitor workplace factors affecting employee safety and health, and comply with both the company's workplace exposure guidelines and governmental safety and health regulations. It will review major capital projects to protect the health of its people at work and that of people in the community.

3. **Process Safety and Emergency Response** -- The company will research, develop, design and operate processes in a manner that protects the health and safety of employees, site visitors, contractors and neighbors. Beyond compliance with appropriate governmental regulations, the company will apply such standards and programs as necessary to manage operational risks at a level that ensures its continuing right to operate. All company sites will complement this effort with strategies to mitigate risk in the event of an incident, including site emergency response and support of comparable efforts within the community.

4. **Product Stewardship** -- The company will research, develop, design, assess, manufacture, market and dispose of its products so that they meet societal needs and do not pose undue risk to human health or to the environment during all stages of their life cycles. The company will work with product stake holders (suppliers, employees, distributors, customers, consumers and disposers) to understand and reduce risks associated with the life cycle of the company's products.

~~5. **Chemical Distribution** -- The company will reduce potential risk to its employees, the public, carriers, distributors, contractors, customers' employees, and the environment in the distribution of chemicals.~~

6. **Groundwater and Soil Quality** -- The company will design and operate facilities to protect groundwater and soil quality. The company will assess groundwater and soil quality at its facilities and pursue remedies for releases that threaten health or the environment. The company will address on-site and off-site contamination of groundwater and soil attributable to its operating and waste practices to ensure protection of health and the environment.

7. **Outside Processors** -- To support its operations, the company will select outside processors that will operate with concern for worker safety, regulatory compliance, community protection and protection of the environment.

8. **Community Awareness at Manufacturing Sites** -- The company will foster its employees' and the public's right-to-know through a commitment to openness, involvement and community dialogue. The company will be responsive to questions and concerns about human safety, health and the environment at its manufacturing sites.

Included in these guidelines are Monsanto's voluntary programs to prevent pollution and improve safety performance. Also included are specific elements of the Responsible Care initiative.

III. RESPONSIBLE CARE

Monsanto actively participates in the chemical industry's Responsible Care initiative, the most ambitious initiative on environmental, safety and health issues ever undertaken by a manufacturing industry. Responsible Care is woven into the very fabric of Monsanto's commitment to environmental, safety and health protection worldwide. It is an important tool to help the company fulfill the Monsanto Pledge.

Six Responsible Care codes of management practice are included in the Monsanto Pledge Guidelines:

1. **Community Awareness and Emergency Response** -- to bring company operations and local communities together through communication and cooperative emergency planning.
2. **Distribution** -- to make the transportation of chemicals safer, regardless of the carrier or mode of shipment.
3. **Pollution Prevention** -- to decrease the amount of pollution and hazardous waste generated by manufacturing operations.
4. **Process Safety** -- to prevent fires, explosions or chemical releases from manufacturing plants and processes.
5. **Employee Health and Safety** -- to improve continuously the protection of employees, contract workers and visitors at company sites.
6. **Product Stewardship** -- to reduce the risks to health, safety and environment at every stage of the company's products, from proposal to disposal.

Responsible Care is an important part of the operation of every Monsanto facility. It is a vital part of our effort to earn the public's trust and the privilege of continued operation.

By weaving Responsible Care elements into its environmental, safety and health initiatives, Monsanto is forming the solid foundation it needs to ensure the welfare of its employees, customers, communities and the environment.

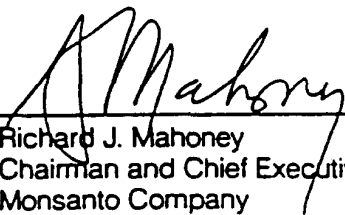
Note: Responsible Care is a registered service mark of the Canadian Chemical Producers Association and the U.S. Chemical Manufacturers Association, and is an initiative that is being adopted increasingly in countries around the world.

The Monsanto Pledge

It is our pledge to:

- ◆ reduce all toxic and hazardous releases and emissions, working toward an ultimate goal of zero effect;
- ◆ ensure no Monsanto operation poses any undue risk to our employees and our communities;
- ◆ work to achieve sustainable agriculture through new technology and practices;
- ◆ ensure groundwater safety;
- ◆ keep our plants open to our communities and involve the community in plant operations;
- ◆ ~~manage all corporate real estate, including plant sites,~~ to benefit nature; and
- ◆ search worldwide for technology to reduce and eliminate waste from our operations, with the top priority being not making it in the first place.

Monsanto
January 1990


Richard J. Mahoney
Chairman and Chief Executive Officer
Monsanto Company

DSW 107935



MONSANTO PLEDGE GUIDELINE

#1

POLLUTION PREVENTION

The company will work toward the ultimate goal of ensuring zero effect attributable to waste in all media. It will research, design and operate its facilities to minimize the generation of process and nonprocess waste and the potential effect of chemical releases to the environment. For waste and releases that remain, the company will comply with regulations, while minimizing environmental threat and long-term liability.

KEY RESULTS

- Reduce by 90 percent the company's 1987 level of worldwide air emissions of chemicals named by the United States Environmental Protection Agency (USEPA) under Title III of the Superfund Amendments and Reauthorization Act (SARA Section 313) and chemicals of local concern outside the United States by the end of 1992.
- Reduce by 70 percent the company's worldwide SARA Section 313, European Community Priority Pollutant List (EC 129) and carbon monoxide ~~chemical releases to all media and off-site transfers by the end of 1995.~~
- Discontinue the deep-well injection of Resource Conservation and Recovery Act (RCRA) hazardous waste streams and SARA Section 313 toxic chemicals by the end of 1999.

The development and use of technologies that improve competitive positions will be emphasized.

The operating units will integrate into their release-reduction plans the following corporate goals:

Reduce by 90 percent the company's 1987 level of worldwide air emissions of SARA Section 313 chemicals and chemicals of local concern outside the United States by the end of 1992.

Reduce by 70 percent the company's worldwide ~~SARA Section 313, EC 129 and carbon monoxide chemical releases to all media and off-site transfers by end of 1995.~~ The January 1990 SARA 313 and EC 129 lists plus carbon monoxide apply through the end of the multimedia release reduction program.

An effect-based release reduction target will be established every five years beginning in 1995, working toward an ultimate goal of zero effect. By the end of 1993, a method and process for an effect-based reduction program for toxic chemicals will be developed.

PROGRAM

1.1 Process Waste

The operating units will integrate into their release reduction plans the corporate goal of reducing all toxic and hazardous releases and emission to all media, working toward an ultimate goal of zero effect. For reducing releases from processes, the order of preference is source reduction, followed by reuse, recycling or co-product sale, and finally by incineration or other treatment to reduce the volume and/or toxicity of pollutant streams.

1.2 Nonprocess Waste

Each facility will maintain an inventory of all nonprocess sources of waste generation, including power generation, office and maintenance operations, general warehouse trash, packaging/shipping materials and similar sources.

1.3 Underground Well (Deep-well) Injection

The company will discontinue deep-well injection of RCRA hazardous waste streams by the end of 1999. It will also apply best feasible technology to virtually eliminate the deep-well injection of SARA 313 chemicals. The company's name will not appear on the list of companies making significant use of injection wells for disposal of SARA chemicals for the reporting year 2000 and beyond. The company will demonstrate progress by achieving in 1996 an 80 percent reduction of injected SARA chemicals against the 1990 base reporting year.

To be prepared for the possibility of mandatory regulations, the company intends to select by the end of 1995 optimal technical strategies for total withdrawal from deep wells. This preparation will include study-grade estimates to achieve non-brine, treated surface discharge. All operating units will continue where possible to challenge the technical impediments to total withdrawal from deep wells.

No new uses of deep wells for hazardous or toxic materials are permitted. A "new" use of deep wells is defined as injection of streams from new products or the addition of substances not previously injected at that site. New internal or external uses of deep wells for non-hazardous wastes and nontoxic chemicals will be considered by the Environmental Policy Committee (EPC) only on an exception basis and within the constraints of these guidelines. The economics of any project appropriation request for such use must be based on disposal technology other than the use of deep wells.

1.4 Polychlorinated Biphenyls - "PCB-Free"

All company-owned sites (e.g., warehouses, plants, offices) located in the United States will minimize the potential for releases of polychlorinated biphenyls (PCB) by becoming "PCB-free" of Toxic Substances Control Act (TSCA)-contaminated articles by the end of 1994.

1.5 Land Disposal

Landfill of "acutely hazardous" wastes¹ and "incinerables"² will not be practiced. For hazardous wastes and wastes managed as hazardous, fixation of particularly mobile, persistent or bioaccumulative wastes will be accomplished whenever warranted and feasible. In making the decision to manage wastes as

hazardous, the company will take into account public expectations, emerging trends and worldwide company practice regarding the same or similar wastes.

Contractors hired for land disposal of wastes will be subject to contracting and assessment requirements (see *Pledge Guideline No. 7, Outside Processors*). In the United States, the use of off-site hazardous waste landfills will be approved by the Environmental Policy Committee and will be limited in number.

Medical wastes generated at the company's locations will be incinerated prior to land disposal of residues. Assurance of incineration will be obtained via manifests or equivalent documents if manifests are not available.

Each company location will maintain a record of both the on-site and the commercial waste treatment, storage and disposal sites it uses.

1.6 Air Emission and Water Release Assessments

The company will conduct and maintain an ongoing assessment of potential human health impacts for selected, routinely emitted air pollutants. It will develop appropriate control strategies to reduce identified, potentially unreasonable risk of harm to human health in surrounding communities. The list of air pollutants to be studied include: a) those listed under Section 112(b) of the U.S. Clean Air Act; b) those for which the USEPA has established cancer unit risk values; c) those contained on the International Agency for Research on Cancer (IARC) group 1 and 2A lists; d) other site-specific pollutants identified by the plant that appear to warrant consideration (including those in significant quantities reportable via SARA Section 313). Plants outside the United States will use the above-given pollutant list plus any additional air pollutants on any local regulatory list that the plant manager deems important.

Each plant will maintain a list of all such air pollutants, ranked by established and approved protocols. Depending upon the pollutant's relative ranking and if required by the protocols, the plant will use appropriate dispersion modeling techniques to determine potential maximum downwind concentrations for each such pollutant at specified receptors representative of the exposed population utilizing appropriate dispersion

¹ As listed in 40 CFR 261.33(c), plus any mixtures containing greater than 5 percent.

² Hazardous wastes, or wastes managed as hazardous, with a heat of combustion greater than 6000 BTU/lb.

modeling techniques. Appropriate assessments of potential human health impacts at the community receptor points will then be analyzed according to protocols established by the company's Environmental, Safety and Health staff. Any potentially unreasonable risk to human health that is identified will be expeditiously reduced to acceptable levels through appropriate actions.

The company will conduct aquatic safety assessments to determine the measurable impacts, if any, of its effluents on receptor water quality. The assessments should include both direct and indirect discharges (if applicable) with the mitigating impacts of the publicly owned treatment works (POTW) taken into account for the indirect discharge assessments. Any potentially unacceptable impacts to the aquatic environment identified will be mitigated in a timely manner. A reconfirming assessment will be conducted to verify that the impacts have been reduced to acceptable levels.

All initial air emission and surface water release assessments required should be conducted for each of the company's worldwide manufacturing sites within two years of the EPC's approval of this guideline. Operating units will review the status of the assessments annually, and if any significant changes have occurred at a plant site, determine whether the assessment should be repeated. Any such reassessments will be completed within 12 months.

hazardous waste streams and toxic SARA Section 313 chemicals.

1.7.5 AIR EMISSIONS AND WATER RELEASE ASSESSMENTS

The company's air and water steering committees will be responsible for tracking the air emission and water release environmental assessments conducted at each site and maintaining an ongoing list of the assessments' current status. In addition, each plant's environmental compliance audit will check the current status of these assessments and report on progress as part of the audit's findings.

1.8 Coordinators

Where clarification is required, the following coordinators should be contacted:

WASTE MANAGEMENT

D. B. Redington, ESH, Corporate, A3NA
(314) 694-6503.

ASSESSMENT

C. D. Malloch, ESH, Corporate, A3NA
(314) 694-8889.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

1.7 Measurement

The following indicators will be used to measure progress against this guideline:

- 1.7.1 Annual progress toward achievement of 90 percent SARA Section 313 air emissions reduction goal.
- 1.7.2 Annual progress toward achievement of 70 percent worldwide SARA Section 313 chemical releases and off-site transfer reduction goal.
- 1.7.3 Achievement of contingency planning for reduction of use of deep-well injection.
- 1.7.4 Annual progress toward goals involving discontinued deep-well injection of RCRA

DSW 107938



MONSANTO PLEDGE GUIDELINE

#2

EMPLOYEE AND COMMUNITY SAFETY AND HEALTH

The company will provide a healthful and safe environment for its employees, site visitors, contractors and neighbors. It will evaluate employee health status, determine and monitor workplace factors affecting employee safety and health, and comply with both the company's workplace exposure guidelines and governmental safety and health regulations. It will review major capital projects to protect the health of its people at work and that of people in the community.

KEY RESULTS

- Approach zero adverse health effects for the company's employees, site visitors and site contractors, including zero occupational injury and illness.
- Certify into the United States Occupational Safety and Health Administrative's (OSHA) Voluntary Protection Program (VPP) or equivalent at all facilities where appropriate by the end of 1997.
- Reduce by 50 percent the company's 1991 level of accidental releases of hazardous materials from production operations by the end of 1996.

PROGRAM

2.1 Health Surveillance and Assessment

The company will monitor and evaluate the effect of work exposures on employee health by providing occupational health surveillance in all locations. The goal is to offer periodic assessments for all employees. Health surveillance and periodic health assessments will be conducted by the company or by contract health professionals in accordance with the Occupational Medicine Program as defined in the company's *Occupational Medicine Program Manual*.

2.2 Workplace Surveillance

The company will conduct workplace surveillance to identify potential health risks, evaluate hazards based on current toxicological and epidemiological information and initiate appropriate safeguards to protect employee health.

2.3 Audits and Reviews

The company will perform periodic on-site audits and reviews of worldwide operations to evaluate status of safety, occupational health and industrial hygiene programs. It will utilize observations and recommendations to achieve and maintain regulatory and code compliance, attain appropriate technological sophistication, reduce the probability of illnesses and injuries, and support employee safety and health education.

2.4 Regulations and Guidelines

The company will achieve and maintain compliance with its guidelines and governmental regulations for facility design, safe work and operational practices, injury and illness recordkeeping, workplace exposures, health surveillance, and community safety and health. If regulatory guidelines are unavailable or inadequate to protect worker health, the company will establish guidelines where appropriate.

2.5 Data Management

The company will collect and enter workplace materials, worker exposure, work history and employee health assessment data into the *Monsanto Environmental Health Information Analysis & Reporting System (MARS)* data base, which will be used to perform epidemiological and other appropriate studies to evaluate worker health and enhance worker protection.

The company will establish guidelines for classifying and recording injuries and illnesses and monitor company-wide performance and adherence to federal and local regulations on recordkeeping. It will issue monthly summaries of appropriate statistics and will produce other publications designed to improve awareness and to communicate relevant technologies to the workplace. The company will develop ways to understand the causation of injuries and exposures as well as techniques for prevention.

2.6 Loss Prevention Reviews

The company will conduct safety and industrial hygiene reviews on design, start-up and operational issues for major new installations and expansions.

2.7 Professional Activities

The company will advance occupational health and safety consciousness through employee participation in trade and professional associations and other cooperative endeavors.

2.8 Employee Education

The company will provide employee training, orientation and education in safety and health.

2.9 Contract Employees

The company will provide contract employees with any required occupational health surveillance, safety and industrial hygiene indoctrination in accordance with *Other*

Guideline No. 6, Contractor/Guest Environmental Health and Safety. Sites located in the United States

will meet the requirements of the contractor environmental, health and safety guideline.

2.10 Security

The company will establish security procedures and systems to control entry and exit of personnel and materials at its sites.

2.11 Measurement

The following indicators will be used to measure progress against this guideline:

- Annual progress toward operating unit's goals for the Total Recordable Rate (TRR).
- Annual progress toward entry of 100 percent United States manufacturing and service locations into VPP by end of 1997.
- Releases as reported per the company's worldwide system.
- Systematic review of employee health and industrial hygiene data.

2.12 Coordinators

Where clarification is required, the following coordinators should be contacted:

V. E. Boyen, Director, Safety & Personal Protection,
A2NG, (314) 694-6007

P. A. Easterday, Director, Industrial Hygiene,
A3NL, (314) 694-8836

J. H. Baker, Director, Occupational Medicine,
A3NB, (314) 694-8806

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107940



MONSANTO PLEDGE GUIDELINE

#3

PROCESS SAFETY AND EMERGENCY RESPONSE

The company will research, develop, design and operate processes in a manner that protects the health and safety of employees, site visitors, contractors and neighbors. Beyond compliance with appropriate governmental regulations, the company will apply such standards and programs as necessary to manage operational risks at a level that ensures its continuing right to operate. All company sites will complement this effort with strategies to mitigate risk in the event of an incident, including site emergency response and support of comparable efforts within the community.

KEY RESULTS

- Sustain no major losses from catastrophic incidents.
- Retain the company's preferred risk status with insurers.
- Reduce by 50 percent the company's 1991 level of accidental releases of hazardous materials from production operations by the end of 1996.
- Incur no major injuries to employees or neighbors from a plant process incident.

PROGRAM

3.1 Process Development and Design

Every new process will be characterized in a document (e.g., *Tentative Process, Red Book, Process for Engineering Design*) that describes all materials, equipment and processing conditions, including known safe limits. Design and engineering will be based on such documentation for a new process and on existing operations if there is already an established process. The basis for design of all major operating components and critical safety systems will be recorded in a design manual. Any new or expanded facility will be reviewed for its safety impact on the community.

3.2 Technical and Engineering Standards

The engineering organizations will maintain such standards as necessary to allow safe and effective

designs. Designs should incorporate relevant consensus standards as appropriate. Additionally, the Safety and Property Protection (S&PP) staff shall provide supplemental guidance through Design Guides, Tecfacts and related documents (e.g., *Guidance Notes* as published by S&PP, Europe/Africa).

3.3 Project Reviews

All projects (new processes, products or facilities) will undergo safety reviews to ensure adherence to applicable internal and external standards as well as to examine the design for potential hazards. Major projects will undergo both a pre-project and a design stage review; new processes will undergo a research stage review. Appropriate participation from the Environmental, Health and Safety (ESH) staff is required for projects managed by an operating unit's engineering organization. All major projects should also have a pre-startup review to confirm that all recommendations from prior reviews and hazard analyses (if performed) have been addressed.

3.4 High Hazardous Materials (HHM) Program

High Hazardous Materials (HHM) are those materials, that if accidentally released would pose the greatest threat to neighbors and employees. A higher level of controls and operating standards are applied to these materials. The major elements of the HHM program include the use of Hazard and Operational Study (HAZOPs), the preparation of a guideline document for each HHM, and audits once every two years.

3.5 Operational Safety Management

Safe process operations on a continuing basis are maintained by each site by the company's commitment to a series of fundamental practices. Included are the following:

3.5.1 OPERATING PROCEDURES

Written procedures are kept current for all processes. They cover necessary operating instructions, safe handling of materials, safe operating limits, and responses to deviations, including emergency steps.

3.5.2 OPERATOR TRAINING

All production and maintenance operators must undergo training to acquire the necessary skills and knowledge for safe execution of their responsibilities. Operators must adequately demonstrate their competence before they assume their positions; training must be periodically reinforced.

3.5.3 CONTRACTOR SAFETY

The company will provide contract employees with any required occupational health surveillance, and safety and industrial hygiene indoctrination in accordance with *Other Guideline No. 6, Contractor/ Guest Environmental, Health and Safety Guideline*. Sites will meet the requirements of the contractor environmental, health and safety guideline.

3.5.4 MANAGEMENT OF CHANGE

Any change in equipment, process or procedures that goes beyond what is recognized as the safe operating regime shall be governed by a "management-of-change" protocol to ensure proper safety review, authorization, training and implementation. This protocol also will apply to capital projects on all changes made subsequent to the previous safety review. A separate protocol will apply to changes in the line organization.

3.5.5 CRITICAL SYSTEM INSPECTIONS

A program involving inspection, replacement and/or testing of critical equipment or safety systems must be maintained in order to ensure reliable operations and system integrity.

3.5.6 IN-DEPTH PROCESS AUDITS

At intervals not to exceed three years, all operations shall undergo intensive audits to examine areas of change, non-routine occurrences, new information and other

unusual factors to ensure that no new hazards have been introduced and that appropriate safety margins have been maintained.

3.5.7 INCIDENT INVESTIGATIONS

All significant incidents that threatened or could have threatened process integrity or the well-being of involved personnel will be investigated by a specially appointed team who will establish causes and make recommendations to prevent recurrence.

3.6 Emergency Response

Effective emergency response includes not only those actions to mitigate and control the incident within the fence line but also includes actions that address the potential impact on the community. Consequently, a site emergency response program should include the following elements:

3.6.1 EMERGENCY PROCEDURES

Written emergency procedures will be available and kept current for each process, as well as for the total site. They will cover actions at each stage of the emergency including shutdown and evacuation. All employees must be trained in these procedures.

Emergency Drills:

Site managers will test and audit their emergency plan annually and revise it as necessary. At intervals determined by the site, the emergency drill will include the active involvement of community resources associated with emergency management.

3.6.2 COMMUNITY PREPAREDNESS

The site managers will review with appropriate community officials the nature and extent of potential incidents from the site and provide the community with assistance in emergency planning if requested.

3.7 Measurements

The following indicators will be used to measure progress against this guideline:

- Annual progress reports on S&PP Compliance Audits, the HHM Report of the Monsanto Manufacturing Council (MMC) once every two years and site In-Depth Process Safety Audit Reports.

- Annual cost of property and business interruption insurance.
- Monthly reports on SARA Title III, Section 304, reportable releases against goals.
- S&PP quarterly property-loss reports.

3.8 Coordinator

Where clarification is required, the following coordinator should be contacted:

V. E. Boyen, Director, Safety & Personal Protection,
A2NG, (314) 694-6007

3.9 Definitions

ESH: Environment, Safety and Health.

HAZOP: Hazard and Operability Study, a hazard identification technique.

HHM: Highly hazardous material (a Monsanto designation for substances posing an acute risk).

MMC: Manufacturing Management Council.

SARA: Superfund Amendments and Reauthorization Act.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107943

MPG 3. Page 3 of 3
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MONSANTO PLEDGE GUIDELINE

#4

PRODUCT STEWARDSHIP

The company will research, develop, design, assess, manufacture, market and dispose of its products so that they meet societal needs and do not pose undue risk to human health or to the environment during all stages of their life cycles. The company will work with product stake holders (suppliers, employees, distributors, customers, consumers and disposers) to understand and reduce risks associated with the life cycle of the company's products.

KEY RESULTS

- Practice the principles and key elements of Product Stewardship, as specified in appropriate programs around the world, at all the company's global operations.
- Provide appropriate safety and handling information, including Material Safety Data Sheets (MSDSs)¹, to potentially exposed employees, including contract employees and product receivers.
- Work toward the goal of no undue risk through systematic risk reduction throughout a product's life cycle
- Gain a competitive advantage by applying product stewardship principles that add value to the company's product offerings.

R&D and prior to off-site shipment. A product-risk characterization (including an EC-202 or equivalent, a final MSDS and a shipping classification) will be completed before new product commercialization.

- 4.1.2 The company's process for generating and maintaining an MSDS is comprehensive and, when coupled with human experience and professional judgment, will fulfill the requirement for a product-risk characterization. Whenever significant new information becomes available, it will be reviewed as part of the MSDS program to satisfy regulatory and product-risk characterization requirements. An MSDS review/product-risk characterization will be periodically performed commensurate with product risk, with revisions performed at a minimum, every five years.

PROGRAM

4.1 Environmental, Safety and Health Information and Risk Characterization

- 4.1.1 New chemical products, new isolated process intermediates, and significant new uses for existing chemical products will be accompanied by adequate environmental, safety and health exposure information to support a preliminary product-risk characterization (ER-200 or EC-201, and an R&D MSDS) at the earliest practical stage of

- 4.1.3 Product files or information systems will be maintained for all products or product families. The product files or information systems will contain the data necessary to fulfill regulatory requirements and perform product-risk characterizations and assessments as appropriate, including:
- Material Safety Data Sheets;
 - References to relevant literature or internal reports dealing with health and

¹Material Safety Data Sheets (MSDSs) and Safety Data Sheets (SDSs) are interchangeable terms, and refer to the similar requirements in different countries.

safety (toxicology, epidemiology, industrial hygiene, flammability, reactivity, etc.), relevant information on composition, physical properties, raw materials, manufacturing processes, principal by-products, protective measures, exposure information, energy requirements, wastes and disposal practices;

- Information on use, including handling, transport, packaging and storage, which will either be estimated (typically for new products), or obtained by visits or reviews of customer, distributor and consumer practices;
- A critical review of health and environmental effects and exposure information, such as EC-201, EC-202, *Monsanto Work-Place Permissible Exposure Guideline* (MWPEG) Reviews, Health Effect Reviews and Toxicology Reviews;
- Technology Risk Reviews;
- Health concerns of customers, employees or the public.

4.2 Risk Management System

4.2.1 A systematic approach to risk management will be implemented and maintained for new products. Existing products will be managed on a case-by-case basis.

4.2.2 Risk management options, where needed, will be an integral part of the follow-up to each phase of a product-risk characterization (as detailed in Section 4.1).

4.2.3 All products will be appropriately labeled for hazard or risk, and will conform at a minimum to governmental requirements and appropriate consensus standards (e.g., ANSI, ISO, etc.).

4.2.4 Document risk-management actions will be recorded in product files (examples of specific risk-management actions are detailed in Sections 4.3 through 4.7).

4.3 Product and Process Design and Improvement

4.3.1 R&D materials used in the laboratory will be handled under Prudent Laboratory Practices or equivalent guidelines.

4.3.2 Pollution prevention principles (*Pledge Guideline No. 1, Pollution Prevention*) will be included as review criteria in technology-risk reviews for new and existing chemicals, and will be incorporated into the EC-201/202 (or equivalent) assessments.

4.4 Employee Education and Product Use Feedback

4.4.1 Employee education in the safe handling and use of chemicals is addressed in *Pledge Guideline No. 2, Employee And Community Safety And Health*. Employees with significant customer interaction will be trained to recognize and feed back information about product use and misuse to the company's environmental network.

4.4.2 Feedback systems to listen to stake holders, including commercial and technical service liaisons with customers, product hotlines, poison control center relationships, etc., will be nurtured and expanded as appropriate.

4.5 Contract Manufacturers

See *Pledge Guideline No. 7, Outside Processors*.

In addition, the company will provide guidance and information to contractor personnel on the safe handling and transportation of company products.

4.6 Suppliers

4.6.1 Up-to-date and high-quality product information, including, as appropriate, composition data and MSDSs, will be obtained from suppliers for all raw materials.

4.6.2 Suppliers will be actively engaged as appropriate, commensurate with raw-material risks.

4.7 Distributors, Customers and Other Direct Product Receivers

4.7.1 The company will ensure that MSDSs and other appropriate safety documents are provided to all direct product receivers.

4.7.2 As appropriate, the company will actively involve product receivers in dialogue and outreach regarding appropriate risk characterization, risk management and risk reduction. Where applicable, the company will assist in conducting audits. If improper practices involving company products are

identified, the company will work with the product receiver to improve the practices. If adequate improvement is not evident, the company will take appropriate action, including termination of sale if necessary.

- 4.7.3 The company will actively seek product-receiver involvement in the continuous improvement of company products and as a means of differentiating those products in the marketplace on the basis of environmental, safety and health stewardship.

4.8 Responsibilities

- 4.8.1 Product stewardship is the responsibility of the business units. Each operating company, free-standing division or world area will assign certain employees the responsibility for ensuring that this program guideline is met.
- 4.8.2 Guideline oversight is the responsibility of the corporate Environmental, Safety and Health staff.
- 4.8.3 The corporate staff and business units are jointly responsible for developing information needed for product evaluations. This includes periodic re-evaluation of new information relevant to the product on a regular basis.

4.9 Measurement

The following indicators will be used to measure progress against this guideline:

- 4.9.1 Progress in meeting internal and external requirements for all new product introductions (i.e., EC 201/202 approvals and governmental approvals).
- 4.9.2 Progress in determining product hazards.
- 4.9.3 The growth of knowledge about how company products are used and the resultant exposures to people and the environment.

- 4.9.4 The availability of adequate environmental, safety and health data to the ultimate product receiver.

- 4.9.5 Increased understanding and diminution of the risks and environmental impacts associated with a product throughout its life cycle.

- 4.9.6 Differentiation of company products in the marketplace.

4.10 Definitions

Product Receiver: An entity (not an individual) to whom the company transfers product. This definition includes product receivers such as brokers or transporters who may not fall into the traditional customer category.

Product: Chemical substances and mixtures, materials and equipment, articles, licensed technology and services related to product use that are sold, distributed in commerce, or otherwise provided.

4.11 Coordinator

Where clarification is required, the following coordinator should be contacted:

J. R. Condray, ESH, Corporate, A3NA
(314) 694-8883.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107946



MONSANTO PLEDGE GUIDELINE

#5

CHEMICAL DISTRIBUTION

The company will reduce potential risk to its employees, the public, carriers, distributors, contractors, customers' employees, and the environment in the distribution of chemicals.

KEY RESULTS

- Work toward incident-free performance in the distribution of chemicals, including raw materials, intermediates, finished products, byproducts and wastes.

PROGRAM

5.1 Chemical Distribution Incident Reduction

5.1.1 The company will continue to improve chemical distribution in order to effect incident-free performance. An "incident" is defined as any undesirable event occurring during a chemical distribution process over which the company has direct control or influence that results in an injury, a release of a chemical, and/or damage to property or the environment.

5.1.1.1 The company will improve the carrier selection process so as to identify and contract transportation services with those carriers who consistently demonstrate safe performance in the movement of the company's chemical products.

5.1.1.2 The safety of chemical transportation practices will be continually improved through application of Total Quality/Total Partnership concepts and tools to achieve the company's goal of incident-free performance.

5.1.1.3 The company will continue to support The Agricultural Group's Bulk No-Spill Delivery Program.

5.1.1.4 The company will develop and apply technological advancements to improve chemical distribution safety and will share these with the industry as appropriate.

5.1.1.5 Through its emergency response system, the company will provide technical advice and assistance in a responsible and timely manner for "outside plant gate" incidents involving its chemical products. The company will measure and continuously improve its response capabilities. Trained personnel will be physically present, in an expeditious manner, at the emergency site upon request of the local emergency responder or public official, or when the company feels a qualified emergency team can lessen the severity of an incident or ease a community's concerns about the company's products.

5.1.2 PROGRAM EMPHASIS AREAS

5.1.2.1 Each shipping location will have a current plan for responding to chemical transportation emergencies involving products/materials within its scope. The plants' emergency responders will receive regular training that meets or exceeds regulatory or industry standards.

5.1.2.2 Training history for all emergency response personnel will be documented.

- 5.1.2.3 The company will discuss with emergency responders and the public their concerns about chemical distribution. The company will encourage partnerships with local communities and local emergency responders along chemical transportation routes, as well as in those communities where its chemical plants are located.
- 5.1.2.4 The total emergency response plan will be continuously monitored and improved. Detailed post-incident reports and preventive action plans will be provided as training aids to all emergency responders.
- 5.1.2.5 Distribution accidents/incidents and any resulting loss of containment will be reduced according to a documented distribution risk-management methodology. An initial qualitative risk-assessment methodology will be made available for use. Quantitative risk assessment models will be evaluated for especially sensitive materials.
- 5.1.2.6 Regulatory changes that affect the distribution of the company's products will be monitored and changes will be communicated to shipping locations. Compliance audits and training will be conducted at all company shipping locations as appropriate and reported on annually.
- 5.1.2.7 The company will support community outreach programs by offering plant facilities and mutual training to those emergency responders in communities neighboring the company's distribution network.
- 5.1.2.8 The company will, as appropriate, through routine communications with the public, emphasize continuous improvement in safe chemical distribution and will be responsive to public concerns.
- 5.1.2.9 As appropriate, trained plant employees will be the company's "ambassadors" to the community to convey the company's progress and its commitment to improving the safety of chemical distribution and effectiveness of its emergency preparedness and response.
- 5.1.2.10 The company will recognize, as appropriate, the potential for adding value to its products.

5.2 Chemical Distribution Safety for Warehouses and Terminals

- 5.2.1 A seamless policy of operating safety results will be extended to warehouses and terminals that receive the company's products. This policy will incorporate standards comparable to the company's.
 - 5.2.1.1 The company will use precontracting guidelines in the selection process to assess firms that can handle company products in a manner that is safe for its employees, the public and the environment.
 - 5.2.1.2 The company will provide information on its policies, procedures and requirements on the safe handling and transportation of chemicals to warehouse and terminal personnel.
 - 5.2.1.3 The company will apply Total Quality Management concepts and tools to all aspects of contract management for continuous improvement in safety and reliability of provided services.
 - 5.2.1.4 The company will use agreed-upon performance measurements and periodic reviews as indicators of progress toward zero-incident status.
 - 5.2.1.5 The company will extend its recognition of public concerns about emergency preparedness and safe distribution practices to all its distribution locations.

5.2.2 PROGRAM EMPHASIS AREAS

- 5.2.2.1 Documented selection criteria that include appropriate safety measures for each product will be maintained.
- 5.2.2.2 The company will maintain defined flows of information concerning its policies, guidelines and requirements on the safe handling of its products.
- 5.2.2.3 The company will conduct reviews of performance against its requirements on a specified review cycle.
- 5.2.2.4 The company will support risk management activities and emergency preparedness at all of its distribution locations.

5.3 Measurement

Appropriate measurement systems will ensure continuous improvement toward stated goals and objectives.

5.4 Coordinator

Where clarification is required, the following coordinator should be contacted:

D. E. Williams, Chemical, Purchasing/Distribution,
BRSS, F2EA, (314) 694-8644.

*(Revised and approved by the Environmental Policy
Committee, October 22, 1992.)*



MONSANTO PLEDGE GUIDELINE

#6

GROUNDWATER AND SOIL QUALITY

The company will design and operate facilities to protect groundwater and soil quality. The company will assess groundwater and soil quality at its facilities and pursue remedies for releases that threaten health or the environment. The company will address on-site and off-site contamination of groundwater and soil attributable to its operating and waste practices to ensure protection of health and the environment.

KEY RESULTS

- Establish an active groundwater assessment program at the company's facilities.
- Ensure that there are no adverse public health impacts attributable to the company's wastes.
- Minimize the financial impact of remedial action and third-party liability attendant to waste sites.

PROGRAM

6.1 Assessment

Programs for assessment and tracking of groundwater quality will be organized at all major locations, and at lesser sites that have known groundwater issues. Follow-up plans will address priority concerns. The assessment status and plans will be updated in a summary report during the second quarter of each year.

Any newly purchased, existing operation will be subjected to the seven-point protocol for assessment of possible groundwater contamination. The coordinator of this guideline (see 6.6 herein) will supply a copy of the assessment protocol upon request.

6.2 Protection

6.2.1 GROUNDWATER PROTECTION PLANS

Each location will maintain a groundwater protection plan that includes inspection, testing and maintenance of facilities that

could contaminate groundwater (e.g., sewers, process lines, sumps, tanks, loading/unloading areas). The groundwater protection plans and designs will be commensurate with the risk posed by the specific situations.

6.2.2 FACILITY DESIGN

New, replacement or expansion facility designs (including sewers and lines) will consider such options as aboveground and/or double containment, improved materials of construction, and/or cathodic protection to provide improved assurance against groundwater contamination.

New, replacement or expanded surface impoundments for wastewater treatment or storage must be approved by the Environmental Policy Committee on an exception basis.

New storage tanks for materials that could cause contamination will be provided with impervious secondary containment (e.g., dikes, liners, vaults, double wall) unless a clear showing is made on a tank-by-tank basis during project reviews that vessel contents (e.g., dilute wastewaters) or setting (e.g., in-battery containment, other adequate containment systems) do not warrant such containment. Existing storage tanks will be reviewed in normal environmental audits.

6.3 Abandoned Waste or Groundwater Contamination

When on-site abandoned waste or groundwater contamination is discovered, appropriate assessment of impacts on human health and the environment will be carried out. Corrective action will be taken, as necessary, in a planned, orderly process to remediate soil and groundwater impacts that threaten human health and the environment.

6.4 Superfund

The company will act to ensure that there are no public health impacts attributable to its wastes at "Superfund" sites.

When the company becomes aware of involvement in "Superfund" sites, it will actively participate in potentially responsible parties' efforts to achieve settlement. The company will seek a leadership role, when appropriate, to facilitate resolution. The operating units will cooperate to establish responsibility for sites where several units contributed wastes, and will undertake an oversight role for sites funded at the corporate level when no current operating unit has responsibility. A goal of the company is to resolve as soon as reasonably possible its share of liability and remedial plans for sites where it has a responsibility, while securing timely and cost-effective resolution.

The company intends a lessened legalistic approach to site cleanup negotiations. Where company responsibility is fairly established, the company will not delay cleanup unnecessarily by legal, yet negatively perceived litigious steps. The company will pursue fair legislation and regulations on the general issues in the public arena, but minimizing legal risk will not be the determining factor in the site-specific decisions.

6.5 Measurement

The following indicators will be used to measure progress against this guideline:

- 6.5.1 Submission of annual groundwater assessment summary reports by each plant subject to reporting.

6.6 Coordinator

Where clarification is required, the following coordinator should be contacted:

D. B. Redington, ESH, Corporate, A3NA,
(314) 694-6503.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107951



MONSANTO PLEDGE GUIDELINE

#7

OUTSIDE PROCESSORS

To support its operations, the company will select outside processors that will operate with concern for worker safety, regulatory compliance, community protection and protection of the environment.

KEY RESULTS

- Manage the company's exposure to present and future liabilities associated with the use of outside processors by maintaining current assessments and written contracts for each outside processor used.

PROGRAM

7.1 Outside Processor Selection

The company will use only outside processors that have been selected and periodically assessed to ensure the following:

- a. their ability to protect the public, employees and the environment adequately from any adverse effect of the company's chemicals, products or wastes;
- b. their compliance with all applicable laws and regulations;
- c. their knowledge of potential hazards and any applicable manufacturing requirements associated with the handling of company materials; and
- d. their use of waste disposal methods and locations as specified in contracts, with recordkeeping of all material use and waste disposal.

Before they are used by the company, outside processors will be subject to contracts and on-site assessments and approval by the appropriate operating unit or subsidiary director of environmental operations and its manufacturing director or world area designee. Periodic reassessments will be conducted for continuing use.

Procedures will be maintained to define the types of outside processors subject to this program, the assessment protocols and frequency, the conditions for waiver of one or more of the above requirements, and other standards.

For toll manufacturing, bulk terminals and transloading, the outside processors will take title to, adopt and own the wastes and manage them as their own under manifests and contracts. For other outside processor categories (waste management, cleaning services, etc.), a processor's waste management practices will be reviewed as part of the on-site assessments.

Outside processors used by all operating units, subsidiaries and world areas will be recorded in one or more data bases to avoid redundant assessments and contracts and to facilitate use of approved processors.

The above elements will be implemented worldwide, but with modifications to reflect local limitations, restraints to compliance with this program, and the extent of the company's operating control. Status and direction of the local program will be reviewed in planned environmental audits of the company's facilities outside the United States.

7.2 Measurement

Each operating unit, subsidiary and world area will maintain records that document the number of outside processors used, the number of outside processors for which assessments are current, and the number of outside processors with contracts in place.

7.3 Coordinator

Where clarification is required, the following coordinator should be contacted:

D. B. Redington, ESH, Corporate, A3NA,
(314) 694-6503.

*(Revised and approved by the Environmental Policy
Committee, October 22, 1992.)*

DSW 107953



MONSANTO PLEDGE GUIDELINE

#8

COMMUNITY AWARENESS AT MANUFACTURING SITES

The company will foster its employees' and the public's right-to-know through a commitment to openness, involvement and community dialogue. The company will be responsive to questions and concerns about human safety, health and the environment at its manufacturing sites.

KEY RESULTS

- Establish active community advisory panels, as appropriate, at manufacturing sites.

PROGRAM

8.1 Community Involvement and Dialogue

Each manufacturing site will implement a policy of openness that provides convenient ways for interested individuals to become familiar with the facility, its operations, its products and its efforts to protect human safety, health and the environment. Community advisory panels, open houses, plant tours, environmental awareness days and other activities to involve the community in plant operations may be used.

Community outreach programs will be implemented at each manufacturing plant to inform key audiences (emergency responders, government officials, the media, employees, other businesses and the community) about the facility's emergency response program, chemical inventory, impact evaluation, and potential risks to the community associated with the facility. The information provided will include details on such topics as waste minimization, emissions reduction, health effects of chemicals, and efforts to ensure safe transport of chemicals.

Further, all information will include planned improvements in each of these critical areas as well as expansion activity and other projects of general interest to the community.

An ongoing dialogue with employees and members of the community will be used to assess and respond to their questions and concerns about environmental, safety and health issues, and to involve them in the community outreach effort. Each manufacturing site will conduct an ongoing assessment of employee and community questions and concerns about the site. The effectiveness of the ongoing community communications effort will be evaluated regularly by the site.

Communications training will be provided for key site and company personnel who communicate with employees and the public concerning human safety, health and the environment.

8.2 Information on Chemical Releases/Incidents

Each operating location will make available timely information about routine or accidental releases of toxic chemicals and other chemicals of local concern. Appropriate audiences may include neighbors in the community, employees and the news media. Information will also include progress in achieving the company's stated emissions reduction and pollution prevention goals and future plans. When possible, the information on chemical releases should be at a personal, face-to-face level, and should emphasize listening to others and discussing their concerns and ideas.

The company will publish and distribute annually an *Environmental Annual Review* that articulates the company's environmental, safety and health policies and its progress toward achieving stated environmental, safety and health goals.

8.3 Measurement

The following indicators will be used to measure progress against this guideline:

- Annual progress toward establishing community advisory panels, as appropriate, at each manufacturing site.
- Annual dissemination of data on toxic chemicals and other chemicals of local concern at each manufacturing site, as appropriate.
- Annual report of the company's status against stated environmental, safety and health goals through wide distribution of the *Environmental Annual Review*.
- Progress, as appropriate, toward developing routine and convenient ways for interested parties to become familiar with the company's manufacturing sites, its operations, its products, and its efforts to protect human safety and health and the environment.

8.4 Coordinator

Where clarification is required, the following coordinator should be contacted:

G. F. Barton, Corporate Communications, A2SP
(314) 694-7233.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)



OTHER GUIDELINE

#1

ENVIRONMENTAL, SAFETY AND HEALTH REVIEWS OF CAPITAL PROJECTS

The company's capital projects will meet the Monsanto Pledge Guidelines, and will be in compliance with existing and anticipated governmental regulatory requirements. The company will review at all levels capital projects for environmental, safety and health impact before, and as a condition of, project funding.

The vice president of Environmental, Safety and Health or his designee will review those projects requiring approval by the chief operating officer, the chief executive officer or the board of directors. A formal premise review will be held for such projects or other projects with major technology changes as determined by the operating unit, technology and engineering directors. A system for reviewing other projects will be administered by the directors, environmental operations, of the operating units.

Any exceptions to this guideline must be approved by the Environmental Policy Committee.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

Employees assigned to evaluate a new location for operation will prepare an internal environmental impact assessment addressing potential environmental limitations at the site as a result of the existing socioeconomic and biophysical conditions. The effects of the public climate of opinion and of existing and future governmental, environmental regulations that may apply also are to be considered.

DSW 107956

OG 1, Page 1 of 1
Company Confidential

MONSANTO COMPANY

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OTHER GUIDELINE

#2

ENVIRONMENTAL, SAFETY AND HEALTH REVIEWS OF DIVESTITURES OR ACQUISITIONS OF PROPERTY AND/OR BUSINESSES

Negotiations for acquisition or divestiture of property or business units and the securing of final corporate approval are the primary responsibilities of the involved operating unit. However, corporate staff review of environmental, safety and health factors and any attendant liability issues is required during the course of such transactions. This review should be arranged through the office of the operating unit's director of environmental operations, who will, in turn, involve appropriate Environment, Safety and Health staff and Environmental Law personnel and arrange for review by the vice president of Environmental, Safety and Health, and/or the executive vice president of Environmental, Safety, Health and Manufacturing. The review should be completed *prior* to seeking board of directors approval of the acquisition or divestiture.

*(Revised and approved by the Environmental Policy
Committee, October 22, 1992.)*

DSW 107957

MONSANTO COMPANY

OG 2. Page 1 of 1
Company Confidential

WATER_PCB-SD0000021662



OTHER GUIDELINE

#3

ENVIRONMENTAL, SAFETY AND HEALTH PROTECTION FOR INVESTMENTS OVER WHICH THE COMPANY DOES NOT HAVE OPERATING CONTROL

The *Monsanto Pledge Guidelines* apply at all sites worldwide where the company has operating control. For those investments over which the company does *not* have operating control, at a minimum, compliance with applicable local laws, regulations and practices will be required.

If such applicable rules and practices do *not* provide environmental, safety and health protection that would be acceptable for company-controlled sites, the company will initiate action to bring about the necessary upgrading.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)



OTHER GUIDELINE

#4

REPRODUCTIVE HAZARDS IN THE WORKPLACE

The company will use all appropriate information to ensure avoidance of reproductive effects in workers of both sexes and in offspring of workers.

Through the departments of Medical and Health Sciences and Safety and Environmental Health, the company will do the following:

The company will conduct appropriate toxicological tests of its raw materials, products, intermediates and byproducts.

The company will review current literature for information on the hazards of chemicals and physical agents that the company uses or produces.

The company will assess safety and health implications and the potential reproductive hazards posed by these chemicals and physical agents.

The company will minimize exposure to potentially harmful materials or activities by substitution with less risky chemicals or processes when feasible, through the use of engineering, work practices, and reliable protective equipment.

The company will provide the most accurate information currently available on materials or work practices thought to have reproductive health effects.

The company will offer counseling by qualified health professionals to employees about workplace reproductive concerns.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107959

MONSANTO COMPANY

OG 4, Page 1 of 1
Company Confidential

WATER_PCB-SD0000021664



OTHER GUIDELINE

#5

SAFE HANDLING OF CARCINOGENS

The company will provide safe and healthful working conditions for its employees. It will comply with all governmental regulations concerning exposure to carcinogens.

The company will do the following to ensure the safe handling of carcinogens:

If any data suggest that a chemical to which its employees are exposed is a carcinogen, and such chemical is *not* subject to governmental regulations, the company will evaluate those data and then take appropriate action.

If the data establish the chemical as a human carcinogen, the company will take appropriate action to reduce exposure to the lowest reasonable level, unless exposure is already at such a level.

If the data establish the chemical as an *experimental* or *suspect* carcinogen, the company will (individually or with others) initiate a study to confirm or disprove such designation. During each study, exposure will be reduced to and/or minimized at the lowest reasonable level.

If it is concluded that a material cannot be produced or used without jeopardizing employee health, its manufacture or use will be discontinued.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107960

MONSANTO COMPANY

OG 5. Page 1 of 1
Company Confidential

WATER_PCB-SD0000021665



OTHER GUIDELINE

#6

CONTRACTOR/GUEST ENVIRONMENTAL, SAFETY AND HEALTH

Continuous improvement in contractor/guest environmental, safety and health performance is necessary to create an injury-free and incident-free environment at all company sites for employees and their guests.

6.1 Scope

This guideline sets forth environmental, safety and occupational health (ESH) guidelines applicable to contractors and guests who perform services on or visit company property. All services administered by individual sites or by company engineering groups are covered. Deviations from the contractor/guest ESH process and requirements will be thoroughly documented and approved by the location manager or as described in the *Contractor/Guest ESH Guideline Manual*. No deviation from regulatory requirements will be permitted.

This guideline applies initially to all company locations in the United States. The intent is to work toward worldwide implementation.

6.2 Definitions

Contractor: Any non-company person performing physical work at a site under a company purchase order or contract.

Guest: Any person visiting, performing work or providing a service at a company-managed site, including company employees who are *not* permanently assigned to that location.

Certified Monsanto Representatives: Employees designated by the location management to administer the *Contractor/Guest ESH Guideline*.

Master Monsanto Representative: The location administrator/facilitator responsible for ensuring effective implementation of the Contractor/Guest ESH process at the location, including training and certification for other Certified Monsanto Representatives.

Contract: The document that contains terms and conditions of the agreement between company and the contractor and which serves as proof of their respective obligations. Contracts are to be signed by authorized representatives of the contractor and company, in a form previously approved by the Purchasing and Law departments.

6.3 Objective

The process described in this guideline was developed to define requirements for all company locations to ensure continuous improvement toward incident-free and injury-free performance for employees and all contractors and guests.

Through this process, it is intended that all services performed by contractors on company sites will be covered by written contracts. Furthermore, the contractor is to be made aware of the requirements of this guideline before bidding, and the appropriate requirements are to be incorporated into the written contract.

In accordance with the objective of providing for employee and guest safety in the execution of contract work, the company will utilize contractors who have demonstrated a high degree of compliance with workplace laws/standards, policies and practices; have a history of good health and safety performance; maintain adequate insurance coverage; and, if involved in safety sensitive work, have a substance-abuse treatment program reasonably equivalent to that of the company.

This process is designed to help ensure that the company will go beyond current regulations, take an industry leadership position in contractor/guest safety and ensure continuous improvement toward incident-free and injury-free performance.

6.4 Responsibilities

The location manager is responsible for ensuring implementation of this guideline. Each site will have a minimum of one company master-certified representative with responsibility for administering and facilitating the *Contractor/Guest ESH Guidelines*.

6.5 Supporting Documentation

This guideline is supported by *Contractor/Guest ESH Guideline Manual* that incorporates the following requirements:

- Contractor Management Systems
- Working in an Operating Facility
- Housekeeping
- Fire Protection and Prevention
- Hazardous Work Permits
- Occupational Health/Workplace Exposure Monitoring
- Vehicle Safety
- Waste Management
- Occupational Medicine
- Management of Change

6.6 Practices and Procedures

6.6.1 The company's contractor/guest environmental, safety and health process defines a fully integrated approach to the management of all contractors and guests within company facilities. The process is *not* intended to restrict management prerogatives, but rather to provide the consistency to help ensure that the Monsanto Pledge is fulfilled and the highest organizational priority is placed on the health and safety of company employees, guests and the communities in which the company operates.

6.6.2 Contractor/Guest Environmental, Health and Safety Process (see Appendix 6.1)

- *Contractor Representative Training and Certification* -- provides for the identification and consistent training of all individuals with responsibilities for selection and management of contractors and guests working at and visiting within company facilities.
- *Guest and Delivery Site Visit Process* -- provides a consistent approach to the orientation and control of all guests, visitors and delivery people who enter company facilities, even those *not* under contract.
- *Pre-Qualification Process* -- provides a consistent approach to identifying and selecting contractors, vendors and service providers who practice effective safety programs with demonstrated leadership and performance in their industry.
- *Selection and Approval Process* -- provides a framework for the contracting of services, which includes the identification of all ESH requirements based on the task and the pre-identified risk. The process stresses clear communication of the company's performance expectations before the contract is finalized.
- *Pre-Job Activities and Compliance Review Process* -- defines a systematic approach for verifying that the contractor and all of the contractor's employees meet the contractual requirements, including orientation, training, medical testing and substance-abuse screening. Plant, operating unit and job-specific expectations are emphasized.
- *Work-in-Progress Process* -- provides a process for the management and audit of the contractor's activities to the ongoing compliance with the company's policies, procedures and requirements. The process focuses on the cooperation between the company's certified representative and the contractor's management to achieve successful and injury-free completion of work.

- *Performance Evaluation Process* -- provides a defined process for the evaluation of and feedback on a contractor's performance, whether the contracted work is for a defined task or ongoing services. Performance evaluations are fed into the contractor pre-qualification process and after evaluation contractors either remain on the pre-qualification list or are stricken from it.

6.7.2 Visitors and all delivery personnel entering the location are to be made knowledgeable of site rules and regulations.

6.7.3 All contractors and guests must communicate in English at a level of proficiency that ensures their safety and the safety of others. Exceptions to the English communication requirement may be granted only by the location manager.

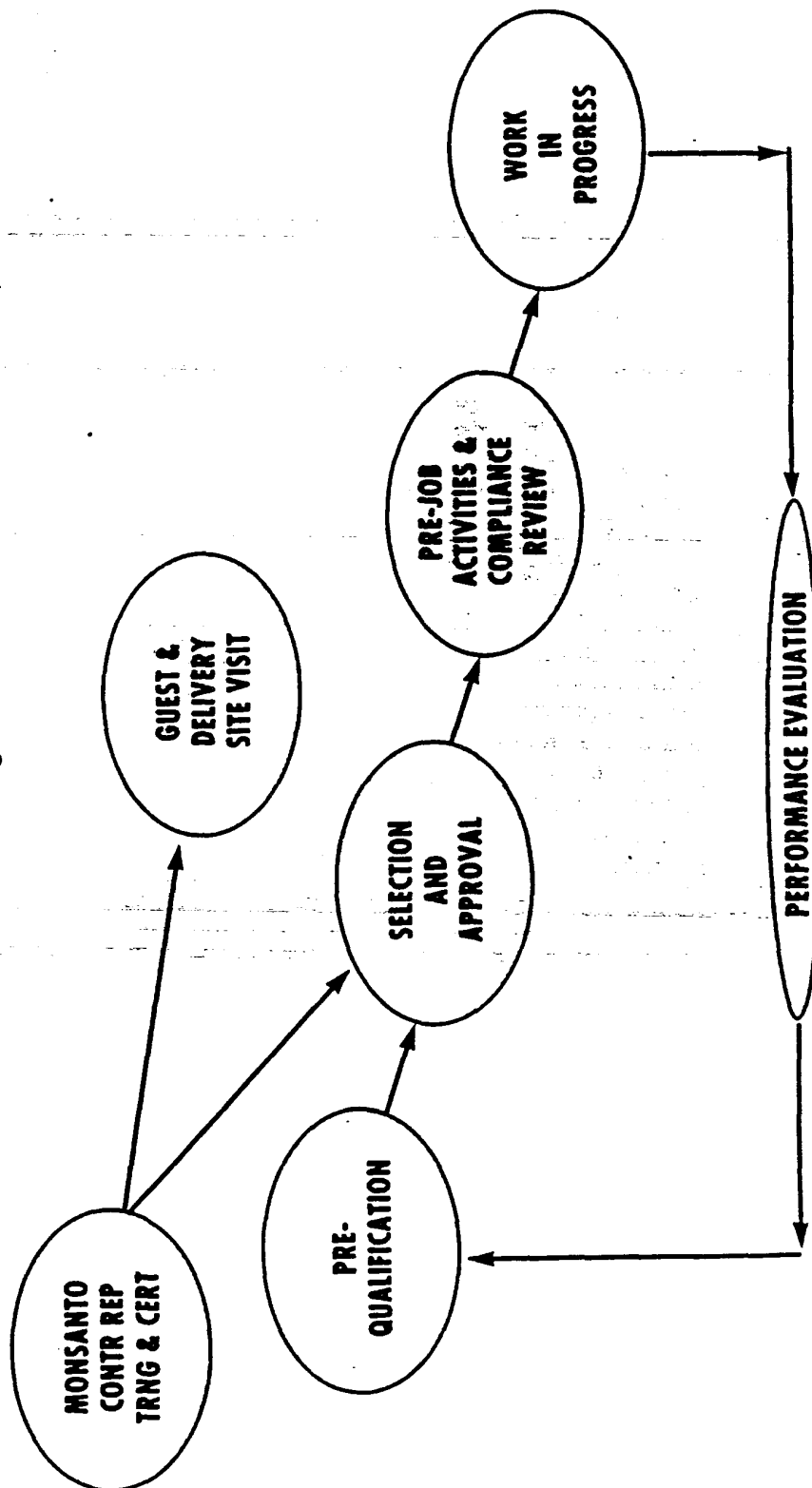
6.7 Contractor/Guest Responsibilities

6.7.1 The contractor/guest is responsible for compliance with this guideline as incorporated into the contract or otherwise communicated to the contractor in order to ensure safe operations. Contractors will have a competent, well-trained supervisor in charge at the site at all times when its employees or those of its subcontractors are present. The company will *not* undertake direct supervision of contractor employees. However, when a contractor employee has no on-site supervision, the contractor should work with the company's certified representative to provide for appropriate implementation of this guideline.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

MONSANTO CONTRACTOR/GUEST ENVIRONMENTAL, SAFETY & HEALTH GUIDELINE

Management Process



OSW 107964



OTHER GUIDELINE

#7

USE OF ANIMALS IN RESEARCH FACILITIES

The company will ensure that all animals used in its research programs are involved in projects of importance to society and that the animals receive humane and professionally competent care and treatment.

7.1 Preamble

The company develops pharmaceuticals, consumer goods, agricultural and industrial products that are used to treat diseases, to grow food, and to better the quality of human life throughout the world. The company works to ensure that these products provide valuable benefits to society and are safe to use.

In conducting research to ensure product efficacy and safety, company scientists use a variety of new technologies such as computer models, cell culture systems and other processes to identify effective products early on and to detect potential health problems or undesirable side effects. However, these systems are limited because they do not fully represent the complex processes of the human body. For that reason, product research and evaluation requires the use of laboratory animals.

7.2 Animal Research

The company requires all scientists, technicians and managers associated with animal research programs to be fully cognizant and supportive of the specifics and spirit of this guideline.

The facilities and management programs established to support company animal research are directed and monitored by an attending doctor of veterinary medicine. The company's programs are fully accredited by the American Association for the Accreditation of Laboratory Animal Care (AAALAC).

All company research with animals is conducted under the review and supervision of Animal Care and Use Committees (ACUC) appointed by senior management. Each ACUC consists of scientists, veterinarians, at least one non-scientist, and at least one person not affiliated with the company. The committees regularly report their findings to senior management and appropriate governmental regulatory officials.

The vast majority of animals used by company researchers are rabbits, rats and mice. Rodents account for over 90 percent of all research subjects. The remainder includes dogs, pigs, sheep, cattle, goats and occasionally monkeys. Laboratory animals are purchased from companies that raise animals specifically for research. Livestock are purchased from commercial farms. The company does *not* buy animals from pounds or shelters.

7.3 Procedures

All company research animals are assigned to a specific protocol under the direction of a principal investigator. Before research can commence, each protocol is reviewed according to procedures prescribed by governmental regulations and adhered to by the ACUC. Each protocol is then reviewed and approved by an attending veterinarian and the ACUC. Records of research use and routine care are maintained for each animal. The company's goal is to give the highest consideration to the well-being of all animals used in research.

DSW 107965

OG 7, Page 1 of 2
Company Confidential

MONSANTO COMPANY

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7.4 Facilities

The company conducts all animal research in modern, well-maintained facilities that meet or exceed all regulatory standards. The company's animal facilities are considered to be among the best in the industry. Housing spaces include special facilities to quarantine newly arrived animals, isolation facilities, and conventional holding rooms to care for required animals. Room temperature, humidity, ventilation, lighting and other environmental conditions are carefully monitored and controlled.

7.5 Regulatory Review

The company is registered with the United States Department of Agriculture as a research facility. Under the provisions of the Animal Welfare Act, the company's facilities are regularly inspected, and the company files an annual report.

7.6 Information Requests

General information on the company's policy and procedures regarding animals used in research may be requested from Monsanto Corporate Communications, 800 N. Lindbergh Blvd., St. Louis, Missouri 63167. The phone number is (314) 694-7233. In general, the company's animal research facilities are not open to the public. However, visits and tours can be arranged by contacting the above address. Because of the nature of the research work under way, the company may restrict access to certain areas to ensure the health and safety of the animals. Recordings, filming, taping, photography and related activities are prohibited except as specifically approved.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107966



OTHER GUIDELINE

#8

OZONE-DEPLETING CHEMICALS (CFC'S)

The company will initiate actions at all of its worldwide sites to minimize the uses and environmental releases of the chemicals subject to this guideline. It will seek out acceptable substitute chemicals, when possible, on or before applicable compliance dates set by the site's local country laws and regulations.

8.1 Scope

The following chemicals are those listed in the Montreal Protocol and are the minimum number subject to this guideline. Each company site should add to the list any other chemicals of local country concern and treat them according to this guideline in conformance with local country laws and regulations.

CFC-11	CFC-112
CFC-12	CFC-211
CFC-113	CFC-212
CFC-114	CFC-213
CFC-115	CFC-214
Halon-1211	CFC-215
Halon-1301	CFC-216
Halon-2402	CFC-217
CFC-13	Carbon tetrachloride
CFC-111	Methyl chloroform

Company sites subject to this guideline include plants, offices, R&D facilities, sales offices, warehouses and farms, when the company owns or operates facilities or equipment that use or contain one of the chemicals subject to the guideline. This coverage includes any subsidiary in which the company is a greater than 50 percent owner.

8.2 Program

The management of each worldwide site will do the following, where applicable:

8.2.1 Develop an inventory of uses and/or equipment containing any of the chemicals subject to this guideline.

8.2.2 Establish for compliance with this guideline a plan that contains the following minimum elements:

- For refrigeration equipment, replace the refrigerant with an acceptable substitute when the equipment needs to be replaced or the original refrigerant is no longer available.
- For explosion suppression and fire extinguishing equipment, replace the suppression or extinguishing chemicals subject to this guideline with an acceptable substitute when the equipment needs to be replaced or the original such chemical is no longer available. Provisions should also exist to provide for such chemical replacement after a system discharge, where practical.
- After Jan. 1, 1994, no new refrigeration, explosion suppression, or fire extinguishing equipment will be purchased that contains any chemical subject to this guideline, if substitute chemicals are reasonably available.

- For process and other uses of chemicals subject to this guideline, the company will expeditiously develop plans to cease using such chemicals by Jan. 1, 1996.
- In advance of any applicable laws and regulations, all sites will institute best management practices to minimize the uses and environmental releases of any chemicals subject to this guideline and seek opportunities for the use of acceptable substitute chemicals, where possible, consistent with good business practices and employee safety/health considerations.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107968



OTHER GUIDELINE

#9

ENVIRONMENTAL, SAFETY AND HEALTH COMPLIANCE AUDITING

The company will conduct environmental, safety and health compliance audits to confirm that site management systems are in place to ensure continuous improvement and compliance with both governmental regulations and corporate, operating unit, and subsidiary policies and procedures.

9.1 Scope

Environmental, safety and health (ESH) compliance auditing will be conducted at all worldwide manufacturing and research sites.

9.2 Criteria

Each operating company and subsidiary will be responsible for ensuring that audits are conducted in accordance with the following criteria:

9.2.1 ESH compliance auditing programs will be consistent with the five-step auditing approach as outlined by the outside consulting firm of Arthur D. Little and follow protocols approved by the corporate ESH staff.

9.2.2 ESH compliance auditors will be appropriately trained, knowledgeable of the subject they audit, and skilled as compliance auditors.

9.2.3 ESH compliance auditors will be independent of the location/site they audit.

9.2.4 ESH compliance audits will be performed on a three-to-five year maximum cycle. The frequency for each site will depend upon the results of the last audit, the degree of risk, complexity, and compliance issues at the site. The audit frequency for each site will be reviewed by the Environmental Policy Committee.

9.2.5 Reports of the actual audit findings and/or recommendations will be reviewed by appropriate legal staff and distributed, at a minimum, to site managers, directors of manufacturing (or equivalent for non-manufacturing locations), legal and the corporate Quality and Compliance Assurance staff.

9.2.6 Follow-up on audit findings/recommendations will be the responsibility of each operating company and subsidiary. The corporate Quality and Compliance Assurance staff will request periodic status reports of auditing and follow-up corrective actions for communication to upper management.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

DSW 107969



PROCEDURE

#1

EMPLOYEE HEALTH AND EXPOSURE COMMUNICATIONS

It is the company's intent to identify hazards of chemical substances and physical agents in the workplace and to communicate such hazards to employees who may be exposed.

1.1 Responsibilities

Identification of health hazards of chemical substances, physical agents, and biological agents in the workplace is the joint responsibility of site management, the directors of Environmental Operations (DEOs) and corporate Environmental, Safety and Health (ESH). Line management is responsible for the necessary communications to and education and training of employees on such hazards.

Europe/Africa Specific: The director of the Department of Medical Health and Safety (DMHS) Europe/Africa also assumes responsibility for the necessary communications within Europe/Africa. In Europe, the DEO is represented by the director, Environmental and Regulatory Affairs. Other countries/regions may specify additional functions who share responsibility.

1.2 Employee Communication, Education and Training Concerning the Hazards of Substances in the Workplace

All employees whose work provides potential exposure to a hazardous chemical substance will have ready access to reference material, such as a Material Safety Data Sheet (MSDS), and will receive training in the nature of the hazards and appropriate work practices, protective measures and emergency procedures. Such training will be provided to employees when newly assigned to an area with potentially hazardous exposures and annually thereafter.

1.3 Employee Access to Medical and Exposure Records

Access to an employee's medical or exposure records (if generated) will be provided within 15 working days after the company receives a request in person or in writing from that employee, or as required by law if more stringent.

In addition to individual medical and exposure records, an employee may have access to general exposure records (such as area samples) for his/her work area and the individual exposure records (with all identifiers deleted) of other employees in the same work environment. Since much of the data requires interpretation or explanation, the most appropriate physician or nurse should be present during the review of medical records, and the industrial hygienist or industrial hygiene contact should be present during the review of exposure records to provide such interpretation and consultation.

Written requests for medical and exposure records will be kept at the location housing the records.

1.4 Other Communication of Exposure Information

Employees who participate in individual (personal) industrial hygiene monitoring will be informed of the sampling results.

All employees in an area where ambient air concentrations or physical agents are monitored should be informed of area concentrations, their relationship to relevant federal, state or local permissible exposure limits, the company's guidelines, and intended corrective action where required.

United States Specific: For certain substances, OSHA regulations require written notification to the employee.

1.5 Communication of Physical Examination and Medical Test Data to the Employee

An employee will be informed about results of health evaluations and medical tests.

Copies of medical information will be sent to private physicians upon the employee's request and only with written authorization.

United States Specific: The employee will be informed in writing about results of health evaluation performed for occupational surveillance.

1.6 Employee Inquiries

Any employee inquiry about work exposures must be addressed by site management. The location physician, industrial hygienist or other appropriate management representative(s) should meet with the employee and provide a specific response based on the factual information available. The appropriate DEO, manager, Human Resources, and corporate ESH representative should be consulted in any non-routine situation.

Europe/Africa Specific: The director of DMHS Europe/Africa should be consulted in any non-routine situation in Europe/Africa.

1.7 Communication of Health Studies

When employees have been involved in epidemiology or other health studies conducted by or on behalf of the company, an executive summary of the study results prepared by corporate ESH will be communicated in writing to the responsible DEO and site managers. Communications with the employees will be coordinated by the corporate DEO. The DEO may ask ESH and/or Europe Environmental and Regulatory Affairs (ERA) staff to develop a *Communications Document and Dissemination Plan* in consultation with plant personnel. A decision will be made at that time as to the total population to be included in the communication.

Other studies known to the company which are scientifically sound and which present significant new information concerning the potential hazards of a material to workers should be communicated to employees who have potential exposure to the substance. Where possible, employees should learn about significant potential hazards of materials with which they work from the company, and not from outside sources. However, a multitude of

epidemiological, animal and other health studies are conducted annually by the company and by others. These studies vary widely in terms of new knowledge provided, scientific validity, conclusiveness of the findings, applicability to humans or the work environment, etc. Location management in consultation with the DEO and corporate ESH and DMHS Europe/Africa (for Europe/Africa sites) should communicate in writing any applicable, reliable study results.

In determining where the results of a study should be communicated, factors such as the following should be evaluated:

- the scientific validity and conclusiveness of the study;
- whether the study produced new results of significance;
- the applicability of the study to employees;
- the significance of any potential hazard identified; and
- the plans for follow-up studies.

When there is a question of whether the results of a study are significant enough to be communicated to appropriate employees corporate-wide, the matter will be referred to the following administration by any member of concerned management: The director of Medical and Health Sciences, Industrial Hygiene director, Corporate Toxicology director, Epidemiology director, Medical director, appropriate DEO and the assistant general counsel, Environmental Law. The appropriate Directors of Manufacturing, Human Resources and Public Affairs/Relations will also provide consultation. A draft *Communication Document and Dissemination Plan* will be developed upon request, initially within ESH, to ensure that the study results are properly interpreted and that the communicate will be properly reviewed and disseminated to all operating units and/or plants. The DEO, with support from corporate Industrial Hygiene and DMHS Europe/Africa (when Europe/Africa sites are involved) will transmit draft statements, announcements and supporting data to the appropriate location management.

1.8 Access to Employee Medical or Exposure Records by Designated Representatives

A designated representative with the appropriate written authorization from the employee will be provided access to an employee's medical and exposure records within 15 working days of receipt of the authorization. A

designated representative is any individual or organization to whom the employee has given written authorization to have access to the employee's medical or exposure records for a specific purpose on a specified occasion.

United States Specific: OSHA rules require that an employee's recognized or certified collective bargaining agent will be treated as a designated representative without regard to written employee authorization with respect to access to employee exposure records (with all identifiers deleted) and analyses of group medical and exposure records only. Final reports of completed epidemiological studies of unionized employees will be provided to the union involved on specific written request. Information on the study results will be provided to all affected employees in a timely manner if this has not been done previously.

The appropriate managers, Human Resources and ESH representatives (DMHS Europe/Africa when Europe/Africa sites are involved) and the assistant general counsel, Environmental Law, should be advised of requests for access to records from a designated representative.

An OSHA inspector who presents a written access order approved by the Assistant Secretary of Labor for OSHA will be given immediate access to records specified by the order. No order is required for access to exposure records. Requests should be reported immediately to the assistant general counsel, Environmental Law. Requests by NIOSH have been supported by the courts but should be cleared by the assistant general counsel, Environmental Law, before being granted. Reference should be made to 29 CFR Part 1910 Access to Employee Exposure and Medical Records, Final Rule 9-29-88.

1.9 Notification to Employees of Right of Access

Each location should make such notification of the existence, location and right of access to medical and exposure records a part of its new hire orientation program and should post or otherwise inform all employees of this information and right each year.

1.10 Employee Health and Exposure Communications Plans

Each manufacturing and laboratory location should have written *Employee Health and Exposure Communications Plans* which address such things as those as follows:

- the communication of and training on the hazards of chemical substances and physical agents in the workplace and proper handling methods, protective measures and emergency procedures;
- the handling of employee inquiries and expressions of concern about exposures;
- the handling of employee and designated representative requests for access to medical and exposure records;
- the communication of abnormal physical exam/medical test findings;
- the regular communication of the industrial hygiene program and of exposure levels vs. standards;
- the identification of materials or other subjects needing special communications efforts and plans for development of such programs locally or with the help of DMHS or others; and
- notification to employees of their right of access to their medical and exposure records.

1.11 ESH Responsibility for Communication Programs

When its specialized expertise and/or a general communications need deem it appropriate, corporate ESH has a responsibility to develop a *Communication Document and Dissemination Plan* upon request for new health hazard information. The appropriate DEOs and management at representative plants will be consulted in the development of such plans to make them more suitable and effective for plant use.

Europe/Africa Specific: Europe Environmental and Regulatory Affairs will be responsible for developing a *Communication Document and Dissemination Plan* which is appropriate for the laws and customs governing handling of employee health and exposure information in those countries.

1.12 Definitions

Access to Records: Consists of an opportunity to review an employee's medical and exposure records on site, and if requested, receipt of or opportunity to make a copy of the records. Unless otherwise specified by law, trade secret information may be deleted from the records provided to an employee or designated representative but they must be so informed that this was done.

Medical Records: Include reports of physical examinations, medical tests and other medical information on the employee in the company's possession.

Exposure Records: Include records of an employee's work history and the level of exposure to potentially harmful or toxic substances or agents and analyses of such records.

Epidemiology Studies: Defined as scientific investigations of potential relationships between workplace exposures and health outcome of company employees or other occupational populations, as outlined in a study protocol.

(Revised and Approved: Vice President, Environmental, Safety and Health, October 22, 1992.)

DSW 107973



PROCEDURE

#2

TRANSMITTAL TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY OF SUBSTANTIAL RISK INFORMATION UNDER THE TOXIC SUBSTANCES CONTROL ACT

The company's procedure for handling the reporting of information to the United States Environmental Protection Agency (USEPA) under the 8(e) substantial risk section of the Toxic Substances Control Act (TSCA) as follows:

2.1 Abstract of Requirements

TSCA Section 8(e) requires any person (company) who manufactures, processes or distributes in commerce a chemical substance or mixture and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment shall immediately inform the EPA of such information.

2.2 Who is responsible for reporting?

The requirements of Section 8(e) of the TSCA apply to "any person who manufactures, processes, or distributes in commerce." It is the company's position that the "person" who engages in the commercial activity is only the business organization, whether a sole proprietorship, corporation, partnership or association.

2.3 How are 8(e) reporting decisions made?

Company organizations that might receive TSCA 8(e) information will have a designated individual to whom such information shall be communicated. At least annually, the director of regulatory management (DRM), Toxic Substances, will publish a list of the designated individuals.

Anyone obtaining information of the type given in the abstract of requirements and detailed by EPA in their *TSCA Section 8(e) Reporting Guide*, dated June, 1991, should immediately submit such information to their supervisor. The supervisor shall immediately relay the information to the location or department manager, whichever is applicable, who, in turn, transmits it to the

proper designated individual in the organization. The information is then transmitted directly to the director of Medicine and Health Sciences.

It is imperative that the flow of information through this transmittal chain be rapid. In the event of nonavailability of a member of the communication network at the time information is first obtained, such member should be bypassed in the interest of speed.

All individuals involved in submission of substantial risk information to the director of Medicine and Health Sciences should keep a record of date of receipt and pertinent identifying details.

The director of Medicine and Health Sciences; environmental counsel; DRM, Toxic Substances; and the appropriate operating unit director(s) of environmental operations will comprise the designated official 8(e) committee to make decisions with respect to information that must be reported to the EPA under Section 8(e) of the TSCA.

Appropriate senior management will be informed of committee decisions.

In the event that a committee decision is not unanimous, the next appropriate level of management shall be consulted, and the matter will be resolved at the highest level, if necessary.

Employees who submit information through company channels will be notified of action taken by the 8(e) committee together with reasons for such action.

MONSANTO COMPANY

DSW 107974

PR2. Page 1 of 2
Company Confidential

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In the event that, after the company has evaluated information and has determined that the item is not reportable under Section 8(e), the company becomes aware that an employee, as an individual, subsequently reported the item to the EPA, the company should review the situation to determine what action, if any, it should take with the EPA.

2.4 How are employees notified of 8(e) requirements?

All exempt company employees and others so designated by their organizational unit (plant nurses, contract physicians, scientists and engineers, etc.) within organizations that might receive or have access to TSCA 8(e) information, shall be informed of the provisions of Section 8(e). Annual reminders of 8(e) requirements will be provided to said employees. Records documenting the information communication will be maintained by the DRM, Toxic Substances.

(Revised and Approved: Vice President, Environmental, Safety and Health, October 22, 1992.)



PROCEDURE

#3

RECORDING ALLEGATIONS OF SIGNIFICANT ADVERSE REACTIONS UNDER THE TOXIC SUBSTANCES CONTROL ACT

The company's procedure for handling the Recordkeeping Requirements of the United States Environmental Protection Agency's (USEPA) Final Rule Under Section 8(c) of the Toxic Substances Control Act (TSCA) is as follows:

3.1 Abstract of Rule

Manufacturers and certain processors of chemical substances and mixtures must maintain records of significant adverse reactions to health or the environment alleged to have been caused by a substance, mixture, article, process, effluent or emission. These records are subject to USEPA inspection.

Rule Reference - 40 CFR Part 717 (48 FR 38178 - August 22, 1983)

Note: The Rule does not apply to pesticides, food, food additives, drugs or cosmetics when manufactured, processed or distributed for these uses.

3.2 Key Definitions

(See Section 717.3 of the Rule for complete listing of definitions.)

- a. "Allegation" means a statement made without formal proof or regard for evidence, that a chemical substance or mixture has caused a significant adverse reaction to health or the environment.
- b. "Known human effect" means a commonly recognized human health effect of a particular substance or mixture described in:
 - i. Scientific articles or publications abstracted in standard reference sources.
 - ii. The firm's product labeling or material safety data sheets (MSDS).

However, an effect is not a "known human effect" if it:

- i. Was a significantly more severe toxic effect than previously described.

- ii. Was a manifestation of a toxic effect after a significantly shorter exposure level than described.
- iii. Was a manifestation of a toxic effect by an exposure route different from that described.

- c. "Significant adverse reactions" are reactions that may indicate a substantial impairment of normal activities, or long-lasting or irreversible damage to health or the environment.

3.3 Exemptions from the Rule that Relate to the Company

- a. Activities involving solely mining or other solely extractive functions.
- b. Significant adverse reactions that are known human effects.
- c. Significant adverse reactions to the environment directly attributable to incidents of environmental contamination that have been reported to the United States federal government under any applicable authority.

3.4 Who Can Receive an Allegation?

Allegations can come from a variety of sources including employees, contractors, customers and neighbors.

As a result, the company's receiving network must be broad. Initial receptors include plant, laboratory and other company location supervision, plant and other company location managers, the company's medical community at all locations, the offices of the operating company directors of Environmental Operations, sales and marketing contacts, switchboard operators at all locations, and environmental network contacts.

3.5 Procedure for Handling Health or Environmental Allegations

The company's Toxic Substances Control Act (TSCA) Section 8(c) procedure consists of a four-step review and decision process. A determination that an allegation is not recordable under the Rule can be made at any step in the process. The procedure is shown schematically on Appendix 3.3.2.¹

a. *Step One* - Each plant or other company-designated locations or laboratory will have at least one identified and trained TSCA Section 8(c) key contact. The director of Environmental Operations (DEO) or designee from the appropriate operating companies, representatives of the Business and Research Support Services (BRSS), and director, regulatory management (DRM), Toxic Substances, will serve as the key contacts for the *General Office*. The DEOs have responsibility under this procedure for free-standing divisions and subsidiaries of which the company owns 50 percent or more of the voting stock or other equity rights, or for which the company has the power to control the management and policies of that firm. At Step One, all initial receptors will automatically transfer persons making oral allegations to the key contact at their locations. Initial receptors will also transfer written allegation to the key contact at their location. There are two exceptions with respect to oral allegations: If the initial receptors are either members of the department of Medicine and Health Sciences Occupational Medicine (DMHS-OM) group (physicians) or the DEO's office, then these individuals may judge at Step One if an oral allegation is excluded. Decision criteria for Step One: pesticides, food, food additives, drugs, or cosmetics are excluded. If a decision is made that the allegation is excluded, the allegation, if written, will be discarded and, if oral, will not be acted on under this procedure.

If the allegation is oral and not excluded, the key contact will inform the allegor that such allegation may be recordable under the Rule and request that the allegor submit a written and signed allegation to the key contact. *Monsanto Form 8(c)A*, shown on Appendix 3.2, is available to be used for all employee related oral health allegations and can be used at the discretion of the DEO for external oral health allegations. All key contacts must note on a written allegation the date of its receipt.

- b. *Step Two* - The key contact at a company location or the appropriate DEO for the *General Office* will provide company employees with Form 8(c)A for oral allegations of health effects. Written allegations will then be reviewed by the key contact, who will then make a Step Two decision. The key contact will determine if the written allegation is exempted from the Rule using the criteria in Step One. If a decision is made that an allegation is exempt from the Rule, the allegation will be discarded. Otherwise, the allegation will be sent to the appropriate DEO for review.
- c. *Step Three* - The appropriate DEO will serve as the coordinator for Step Three and Step Four activities. Allegations received from the location (e.g. plant, etc.) key contacts will be reviewed by the DEO and a Step Three decision made. A Step Three decision will also be made by the DEO or other *General Office* key contact regarding allegations made to the *General Office* receptors. If the Step Three decision is that the allegation is not recordable under the Rule, the allegation will be discarded. Otherwise the allegation will proceed to Step Four.
- d. *Step Four* - The DEO will form a committee to make decisions with respect to allegations that must be recorded under the Rule. The committee will be chaired by the DEO and consist of the appropriate members of DMHS-OM for human effects, appropriate members of Environmental Sciences staff for environmental effects, Environmental Law staff, and the DRM, Toxic Substances. If the decision is that the allegation is not recordable under the Rule, the allegation will be discarded. The DEO will provide feedback to the location key contact. If the Step Four decision is that the allegation is recordable under the Rule, then the DRM, Toxic Substances, will place the allegation and documents mandated by the Rule in the TSCA Section 8(c) file. The DEO will provide feedback to the location key contact.

3.6 Recordkeeping

The TSCA Section 8(c) file will be kept in the Office of the DRM, Toxic Substances. The file structure will conform to requirements of Section 717.15 of the Rule. Files pertaining to adverse reactions to health of employees will be retained for 30 years. Files pertaining to other adverse reactions will be maintained for five years.

¹A separate procedure for litigation claims (Appendix 3.3.1) and the company's Wear-Dated ☉ Hotline (Appendix 3.3.3) will be used.

3.7 Communications

- a. Disposition of written allegations will be communicated back to the individual making the allegation. The key contact will facilitate the communication.
- b. A summary of the TSCA Section 8(c) procedure will be periodically communicated to all affected employees and updated, as appropriate.

(Revised and Approved: Vice President, Environmental, Safety and Health, October 22, 1992.)

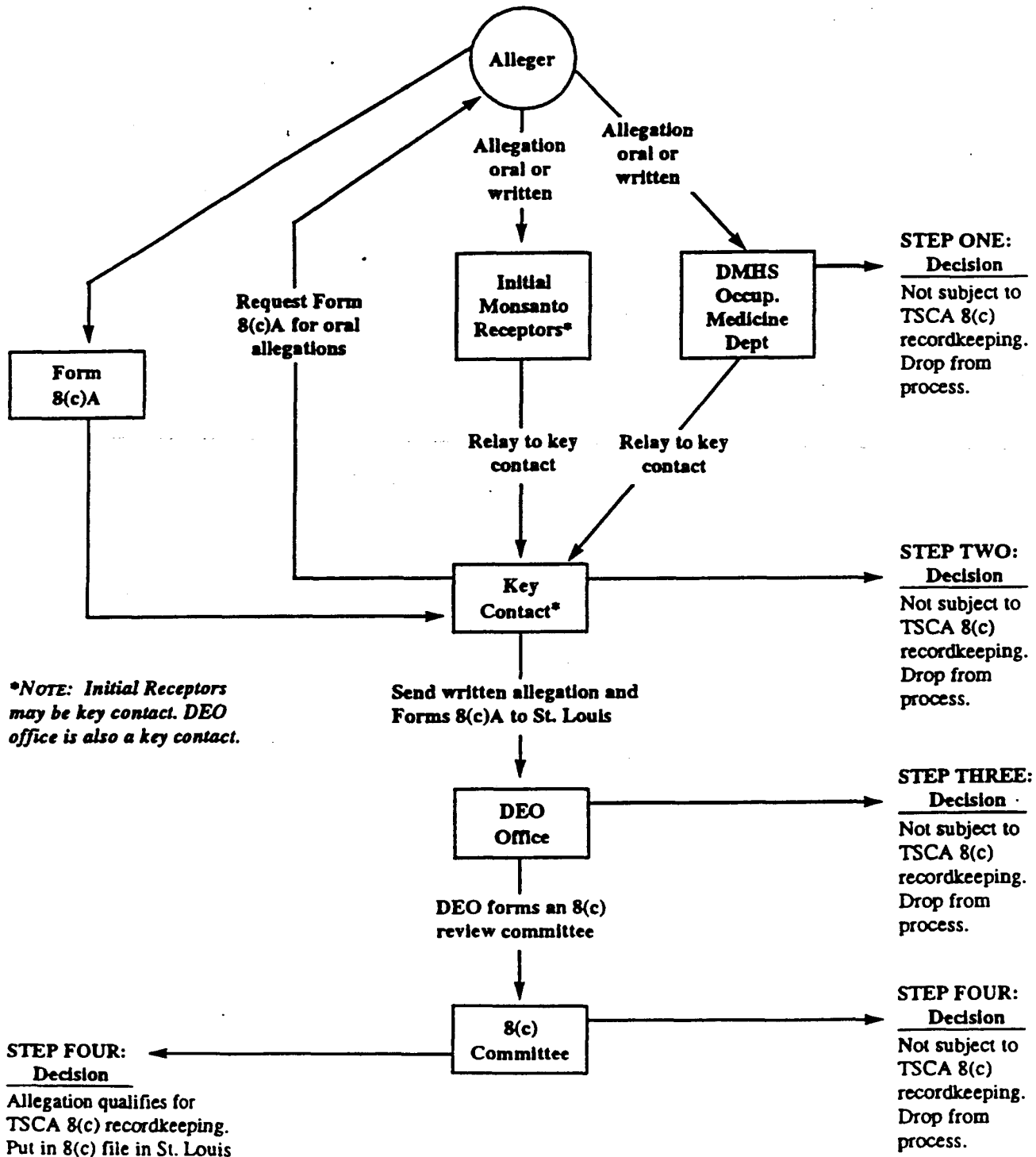
DSW 107978

PR3. Page 3 of 8
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WATER_PCB-SD0000021683

Appendix 3.1

SIMPLIFIED FLOW DIAGRAM OF MONSANTO PROCEDURE FOR HANDLING ALLEGATIONS SUBJECT TO TSCA 8(c)



DSW 107979

TO: SITE KEY CONTACT _____

Form 8(c)A
11/92

Appendix 3.2
REPORTING FORM FOR
ALLEGATIONS OF SIGNIFICANT ADVERSE REACTION TO HEALTH
Toxic Substances Control Act, Section 8(c) 40 CFR Part 717

NAME OF ALLEGER: _____

DATE: ____/____/____
MO DAY YR

ADDRESS: (If not employee)

SITE LOCATION: _____

SITE LOC. CODE: _____

YR. OF BIRTH: _____

(If health effect only): M ☐ F ☐

Employer (if other than Monsanto): _____

DESCRIPTION OF ALLEGED AVERSE HEALTH EFFECT:

1. WHAT IS THE HEALTH EFFECT BEING CLAIMED? _____

2. HOW LONG DID IT LAST? _____

3. HOW OFTEN HAVE YOU EXPERIENCED EFFECT? _____

4. IN WHAT WAY DID IT AFFECT YOUR NORMAL ACTIVITIES? _____

5. HOW WERE YOU EXPOSED? _____

WHAT SUBSTANCE, MIXTURE, PROCESS OR OPERATION DO YOU THINK CAUSED THE EFFECT YOU DESCRIBED:

Signature

FOR COMPANY USE ONLY:

RECEIVED ON: _____ BY: _____

DSW 107980

PR3. Page 5 of 8
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WATER_PCB-SD0000021685

Appendix 3.3.1

TSCA 8(c) RECORDKEEPING: LITIGATION CLAIMS

Detailed Procedure:

Step 1

Litigation complaints will be reviewed at the time of receipt by the law department for relevance to TSCA 8(c) recordkeeping. Criteria for this review include the following:

- a) Is the claim against a Monsanto product or process?
- b) Is the product(s) in question one that is covered by TSCA, i.e., other than pesticide, herbicide, food, food additive or pharmaceutical?
- c) Is the claim a health or environmental claim?

If all criteria is met, the claim will be sent to the DMHS occupational medicine group. Exceptions to this include claims against the Agricultural Group, Nutrition and Health Care Products that will be sent to these respective groups when the law department is unsure of the answer to question (b).

Step 2

The occupational medicine group of DMHS will review the litigation claims passed to them by the law department. The review will be based on EPA's definitions of "known human effect" and "significant adverse reactions" (40 CFR 717). For environmental effects, DMHS may need to contact the appropriate DEO for assistance. Claims that do not meet TSCA 8(c) criteria will be dropped from further TSCA review of this step. Those claims that meet TSCA 8(c) criteria will be forwarded to the DRM, Toxic Substances, for filing.

Step 3

Claims meeting the 8(c) criteria will be filed in the TSCA 8(c) file maintained by the DRM, Toxic Substances. This office will request a copy of the complaint, abstract, and "answer" from the law department.

Step 4

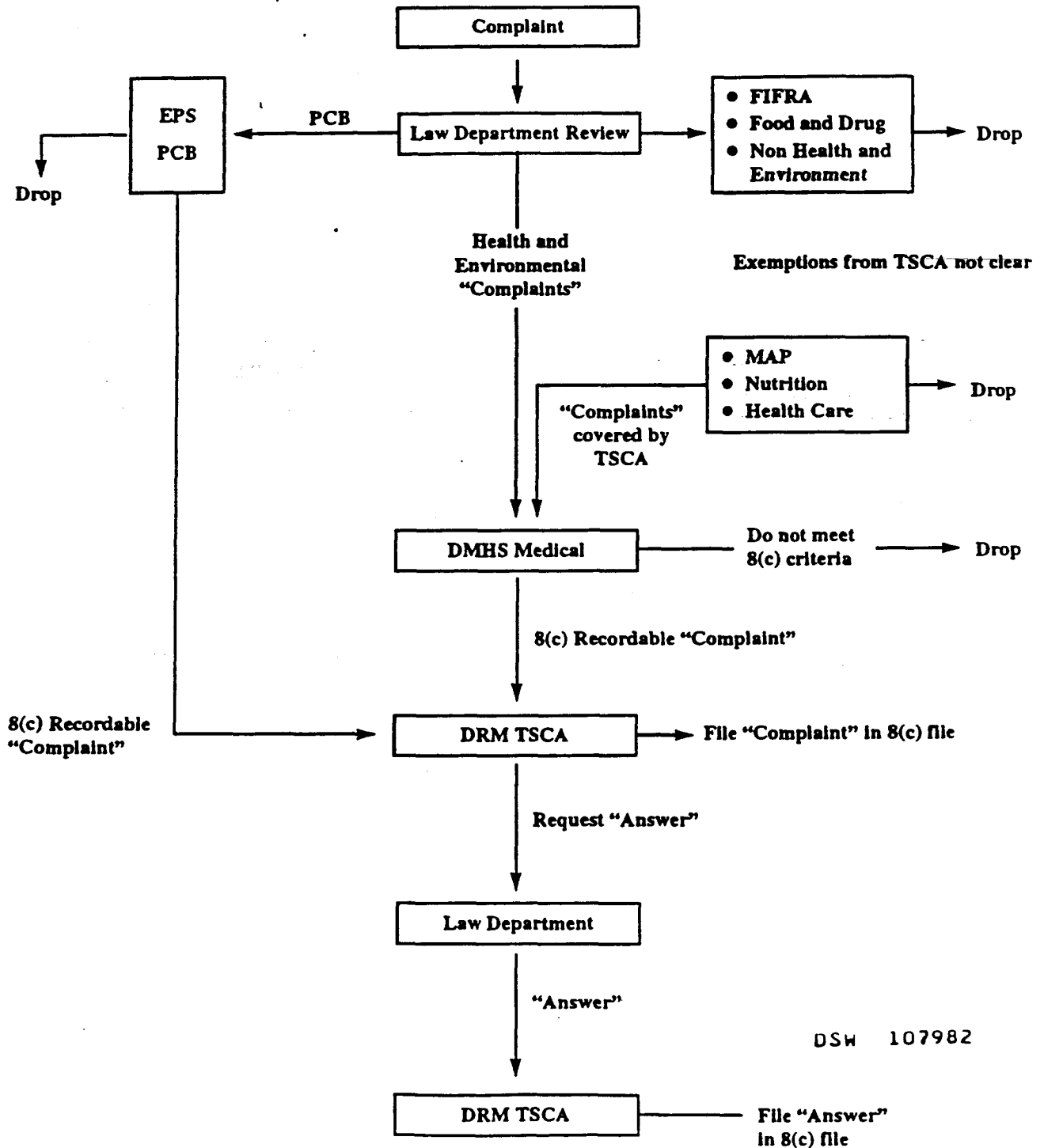
The law department will forward a copy of the complaint, abstract, and "answer" to the DRM, Toxic Substances, for filing in the TSCA 8(c) file, along with the "complaint." The "complaint," abstract and "answer" will constitute the TSCA 8(c) recordable "allegation" and "follow-up" for all litigation filings.

A block flow diagram of the TSCA 8(c) process for litigation complaints appears on the reverse side of this page.

(Revised 10/22/92)

Appendix 3.3.2

TSCA 8(c) REVIEW PROCEDURE OF LITIGATION CLAIMS



DSW 107982

Appendix 3.3.3

TSCA 8(c) RECORDKEEPING: WEAR-DATED® HOTLINE

Detailed Procedure:

Step 1

All health and environmental effect allegations received by the Wear-Dated® hotline will be documented by the phone operator on a standard form.

Step 2

The documented health and environmental effect hotline call will be reviewed by the Chemical Group Product Safety department for TSCA 8(c) relevance.

Step 3

The hotline allegations that are judged by the Chemical Group Product Safety department as meeting TSCA 8(c) recordkeeping requirements will be forwarded to the DRM, Toxic Substances, for filing.

OSW 107983



PROCEDURE

#4

PREMANUFACTURE NOTIFICATION TO UNITED STATES ENVIRONMENTAL PROTECTION AGENCY UNDER THE TOXIC SUBSTANCES CONTROL ACT

The company's procedure for development of premanufacture notification (PMN) to the United States Environmental Protection Agency (USEPA) as required under Section 5 of the Toxic Substances Control Act (TSCA) is as follows:

4.1 Abstract of Requirements

A PMN is required to be submitted to USEPA for all new chemical substances at least 90 day before the substance can be manufactured for commercial purposes. A number of substances are exempted from these requirements including, but not limited to drugs, food and food additives, pesticides, R&D substances, nonisolated intermediates, and substances on the TSCA inventory.

Final Rules Reference - 40 CFR Part 720.

4.2 Is a PMN Required?

At a very early stage of new product development, including isolated intermediates and new imports, several checks should be made to determine if a PMN will be required for the product.

4.2.1 Is the Product (Substance) Exempt under TSCA?

Responsibility: Operating unit director, Environmental Operations (DEO) or designee.

- Section 2(B) of TSCA exempts broad classes of substances such as pesticides, food, food additives, mixtures and others.
- The PMN rule exempts small quantities for R&D purposes and has provisions to exempt substances for test marketing low volume manufacture and for polymer manufacture.

- The rule also exempts impurities, some by-products, articles and nonisolated intermediates.
- Refer to TSCA law and regulations or the company's PMN manual for details or contact operating unit DEO or designee or director, regulatory management (DRM), Toxic Substances (TSCA).

4.2.2 Is the Substance "New" under TSCA? (Is It on the TSCA Inventory of Chemical in Commerce?)

Responsibility: Operating Unit DEO or designee.

- Contact the operating unit DEO or designee and have the TSCA non-confidential inventory searched for the substance.
- If the substance is on the TSCA non-confidential inventory, it is not new under TSCA definition and a PMN is not required. If the substance in question is not on the nonconfidential inventory, the confidential inventory must be searched.
- To search the confidential inventory, a *Bona Fide Intent to Manufacture* (BIM) notice must be submitted to USEPA. A copy of the instruction for submitting a BIM can be found in 720.25 of 40 CFR 720. Send a copy of the BIM to the DRM, TSCA, for corporate recordkeeping purposes.

- If USEPA reports that the substance is not on the confidential inventory, then the substance is a new substance under TSCA and a PMN is required unless the material is exempt under Section 2 (a) above.

4.3 What Information Is Required on a PMN Submission?

Final rules detailing the PMN requirements can be found in 40 CFR 720. All PMNs must be submitted on USEPA Form 7710-25 (1/91). Copies of the form and instructions for its use are available from the DRM, TSCA. The required PMN information falls into either the category of General Information or Risk Assessment Data. USEPA will accept additional data. In many cases, it is desirable to submit Risk Analysis, pollution prevention data or other information to assist USEPA with their assessment. Since the company performs a Risk Analysis on all new products via the *Pledge Guidelines* and the EC-201/202 procedures, the information is available for this purpose.

4.4 What Are the Details of the PMN Procedure?

The PMN process should be integrated into the development scheme of a new project. In most cases, the PMN development will be initiated during the earliest phases of commercialization of a product. The PMN must be submitted to USEPA at least 90 days before the product can be manufactured for commercial purposes, including test marketing.

4.5 How Is a PMN Initiated?

Responsibility: Operating unit DEO or designee.

- The operating unit contact submits an ER-200 or EC-201 to the Department of Medicine and Health Science (DMHS) if one has not already been submitted (See company booklet G-2738 for ER-200 and EC-201/202 Procedures).
- The operating unit contact drafts a PMN using the USEPA form.
- The operating unit contact calls a scoping meeting. Minimum participants at the meeting are operating unit contact, operating unit DEO or designee (if not serving as a contact), member of corporate Environmental Sciences center or other qualified environmental effects expert (if appropriate), DMHS toxicologist and DRM, TSCA. Copies of PMN drafts, along with an

approved ER-200 or EC-201 for the substance are supplied to participants in advance. *Note: The scoping meeting can be bypassed at the discretion of the operating unit DEO.*

- At the scoping meeting, decisions are made by the operating unit contact, as to the scope and detail of optional information to supply. If optional risk analysis is desired, assignments are made to DMHS toxicology, industrial hygiene, etc., to complete the necessary sections. A decision is also made as to whether an EC-202 is needed before a PMN submission. *Note: It is appropriate at this stage of product development to initiate a Material Safety Data Sheet (MSDS) and a TF-837 for label and freight classification.*

4.6 How Are PMNs Finalized?

Responsibility: Operating unit DEO or other designated operating unit contact.

- The operating unit contact prepares a final draft using input from the scoping meeting as well as follow-up input from DMHS.
- The operating unit contact, together with the patent department, reviews the final draft for confidential information and develops appropriate confidentiality claims with substantiation, where necessary.
- The final draft is circulated to the participants of the scoping meeting for final review.
- The operating unit contact calls a meeting for final comments/approvals if needed.

4.7 How Are PMNs Submitted?

Responsibility: DRM, TSCA

- After final review/approval, the operating unit contact forwards the PMN to the DRM, TSCA (authorized official), for submission.
- The DRM, TSCA, will submit the PMN (both confidential and non-confidential as appropriate), using applicable USEPA submission requirements.

4.8 How Is USEPA Follow-up on a PMN Handled?

Each PMN will identify a technical contact in addition to an authorized official. The technical contact will typically be operating unit DEO, Commercial Development, or R&D contact.

4.8.1 PMN Fees

- A \$2,500 fee is required for all PMNs, except intermediates filed at the same time as final product (\$1,000) or exemptions (zero cost).
- A unique six-digit TS-user fee identification must be assigned to each PMN and must also appear on the check.
- The fee is sent to a separate USEPA office from the PMN.

4.8.2 Phone Contact

- All calls from the USEPA on technical matters should be handled by the "Technical Contact."
- All verbal questions concerning non-confidential inquiries by the USEPA may be discussed at the time of call or deferred to obtain an answer if unknown or if unsure as to USEPA authority to ask for the information.
- Non-confidential oral responses may be followed up with a written response when deemed appropriate by the contact. In all cases the technical contact should write a note to file documenting the conversations, with a copy to the DRM, TSCA.
- Confidential inquiries previously discussed with the USEPA or claimed confidential in the PMN may be discussed at the discretion of the technical contact.
- All other verbal confidential questions will be addressed by written response only.
- Verbal response to USEPA will be followed up, at the discretion of the technical contact, with a written letter documenting the conversation and clearly indicating areas of confidentiality, with a copy to the DRM, TSCA.

4.8.3 EPA Actions

Responsibility: The operating unit DEO or designee will have prime responsibility, with counsel of Environmental Law and the DRM, TSCA.

- USEPA may extend the review period by an additional 90 days.
- USEPA may ask for more information under Section 5(e).
 - i. An order may be issued by USEPA.
 - ii. A consent order may be jointly agreed upon. The consent order can include restriction on manufacture or use in lieu of information generation.
- USEPA may restrict manufacture or use under Section 5(f).

4.9. How Is the Company Follow-up on the PMN Submission Handled?

Responsibility: Operating unit DEO or designee.

- The company may request USEPA to stop the clock on PMN reviews at any time during the review period.
- After USEPA's review period expires, manufacture can commence at any time, subject to any 5(e) or 5(f) restrictions. A *Notice of Commence to Manufacture* (NCM) must be submitted to USEPA within 30 days of the first manufacture for commercial purposes. The information to be included in the notice are detailed in 40 CFR 720. Confidential claims must be made again at this time, as appropriate. Send a copy of the NCM to the DRM, TSCA for corporate recordkeeping purposes. Once a NCM is filed with USEPA, the PMN substance is placed on the TSCA inventory.

(Revised and Approved: Vice President, Environmental, Safety and Health, October 22, 1992.)



PROCEDURE

#5

OCCUPATIONAL FATAL ACCIDENT REPORTING

In case of a fatal accident, the company's Law Department must be contacted in addition to following government, operating company, and corporate-reporting requirements.

OSHA regulations require that, within 48 hours after the occurrence of an employment accident which is fatal to one or more employees or which results in hospitalization of five or more employees, the employer of such employee(s) shall report the accident either orally or in writing to the nearest office of the OSHA Area Director. The reporting may be by telephone or telegraph. The report shall relate the circumstances of the accident, the number of fatalities, and the extent of any injuries.

In such instances the following guidelines are considered necessary to protect the civil rights of company employees.

In addition to routine operating company and corporate notifications in fatal accidents, either Mary M. Tonkin or Michael E. Gewin (for accidental deaths) or L. William Higley (for deaths for long-term chemical exposure), the company's attorneys for OSHA matters, must be notified immediately. The telephone numbers are listed below. They will provide prompt necessary legal guidance including, where necessary, sending an attorney to the site for on-the-spot counseling.

In the meantime, OSHA inspector(s) should be given access to the site of the accident when the inspector arrives on the premises, without requiring that the inspector secure a warrant for entry. However, neither members of location management nor any wage employee should discuss the accident with the OSHA inspector until advised to do so by the company attorney.

The location manager or his designee will greet the inspector and state that location employees have been asked not to discuss the accident until the company attorney advises them accordingly.

The inspector is to be told that we have been forced to take this posture as a result of the *OSHA Procedure for Investigating Criminal/Willful Violations*. The inspector will be permitted to inspect the plant, and, of course, should be advised of any chemical hazards and protective measures needed, related or not to the accident.

Location personnel will not allow the inspector to view any records or documents at this time, other than the lost-time injury log, *OSHA Form 200 and Form 101* or its equivalent, until advised to do so by the company attorney.

If the location is requested to rope off the area of the accident, local discretion should be exercised. The inspector, however, is not authorized to keep plant management away from any part of the operation.

If local management believes entry by the inspector must be delayed for a few hours because of exposure, safety, confusion, etc., management will seek such a recommendation from Ms. Tonkin or Mr. Higley at the time of the initial call to St. Louis.

Contacts

Mary M. Tonkin, 314/694-2967 (office),
(314) 721-8209 (home).

Michael E. Gewin, 314/694-2849 (office),
(314) 352-2176 (home).

L. William Higley, 314/694-8503 (office);
(314) 862-1796 (home).

(Revised and Approved: Vice President, Environmental, Safety and Health, October 22, 1992.)



PROCEDURE

#6

TRANSMITTAL OF TOXICOLOGY AND HEALTH-RELATED DATA TO UNITED STATES REGULATORY AGENCIES

Health-related information should be submitted through the Department of Medicine and Health Sciences.

The various regulatory agencies are continually supplied information from toxicology and health-related tests on the company's products done by or for the company. In order to provide consistency in the handling and review of such information, as well as to assure proper follow-through on commitments to these agencies, the transmittal of such test results will be carried out in accordance with the following guidelines:

6.1 All toxicology or health-related data will be reviewed with the department of Medicine and Health Sciences (DMHS) prior to submission to any regulatory agency, except for routine submissions by the company's Agricultural Group of test data required under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). In addition, DMHS will be informed of all such submissions at the time via the letter of transmittal.

6.2 Any such information transmitted must be recorded and the copy of the final submission retained both by DMHS and the involved operating company.

6.3 The letter of transmittal for any toxicology or health-related data must include a listing of the materials being transmitted including sufficient bibliographic information for subsequent retrieval of the original data.

6.4 If the submission includes data on human health effects, it is preferable that the information be submitted to the regulatory agency by the director of the department of Medicine and Health Sciences.

6.5 Agreements with a regulatory agency that commit the company to the future transmittal of toxicology or health-related data must also be reviewed and approved in advance by DMHS; further, DMHS must concur with the feasibility of meeting commitment dates. Appropriate records of such commitments must be maintained both by the involved operating company and DMHS in order to ensure future compliance with such agreements.

6.6 Any exceptions to the above must be approved by the director of DMHS.

(Revised and Approved: Vice President, Environmental, Safety and Health, October 22, 1992.)

**REFERENCE: Cross Reference ESH Worldwide Guidelines,
Pledge Guidelines, and Responsible Care**

ESH Worldwide Guideline	Pledge Guideline	Responsible Care
• Effluent and Emission Control • Waste Management • Plant Environmental Assessments	• Pollution Prevention	• Code on Pollution Prevention Practices No. 1 through No. 11, except No. 4 and No. 8
• Employee and Community Safety and Health	• Employee And Community Safety and Health	• Code on Process Safety, Employee Safety and Health and Community Awareness and Emergency Response
• None • (Internal Process Safety and Emergency Response Policy Elements)	• Process Safety and Emergency Response	• Code on Process Safety • Code on Community Awareness and Emergency Response
• Product Stewardship	• Product Stewardship	• Code on Product Stewardship
• None • (Internal Distribution Policy Elements)	• Chemical Distribution	• Code on Distribution
• Waste Management - Corrective and Remedial Action • Plant Environmental Assessments	• Groundwater and Soil Quality	• Code on Pollution Prevention, Practices No. 13 and No. 14 • Code on Pollution Prevention, Practices No. 12
• Outside Processors	• Outside Processors	• Code on Pollution Prevention, Practices No. 12
• None • (Internal Policy Elements on Public Participation and Involvement)	• Community Awareness at Manufacturing Sites	• Code on Community Awareness and Emergency Response, Practices No. A1 - No. A9 • Code on Pollution Prevention Practices No. 4 and No. 8



Responsible Care:[®]
A Public Commitment

GUIDING PRINCIPLES

Member companies of the Chemical Manufacturers Association are committed to support a continuing effort to improve the industry's responsible management of chemicals. They pledge to manage their businesses according to these principles:

- To recognize and respond to community concerns about chemicals and our operations.
- To develop and produce chemicals that can be manufactured, transported, used, and disposed of safely.
- To make health, safety and environment considerations a priority in our planning for all existing and new products and processes.
- To report promptly to officials, employees, customers and the public, information on chemical-related health or environmental hazards and to recommend protective measures.
- To counsel customers on the safe use, transportation and disposal of chemical products.
- To operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public.
- To extend knowledge by conducting or supporting research on the health, safety and environmental effects of our products, processes and waste materials.
- To work with others to resolve problems created by past handling and disposal of hazardous substances.
- To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.
- To promote the principles and practices of Responsible Care[®] by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of chemicals.

DSW 107990

DSW 107991



Responsible Care®
A Public Commitment

SUMMARY DESCRIPTION RESPONSIBLE CARE® PROGRAM ELEMENTS

The statement of **Guiding Principles** for Responsible Care® is a commitment by each member company to fully support a continuous effort to improve the industry's responsible management of chemicals. Each member company has pledged to operate according to the Guiding Principles and has signed to that effect. The signed statement is considered an obligation of membership in the Chemical Manufacturers' Association (CMA). The Guiding Principles are based on CMA's 1983 policy statement on health, safety and the environment and on the Canadian Responsible Care® principles. They also incorporate guidance received from member company executive contacts.

Following association adoption of the Guiding Principles, various CMA committees began developing **Codes of Management Practices** in January 1989. Each Code of Management Practices addresses several public concerns. Impetus for developing a specific Code comes from either a substantial public concern(s) identified by the Public Advisory Panel or the industry, a substantive need to take voluntary action, or both. Codes in development address community awareness and emergency response, distribution, pollution prevention, process safety, employee health and safety, and product stewardship. The Codes of Management Practices identify expected management practices as objectives rather than prescribing absolute or quantitative standards. Since the Codes are intended to serve as objectives, they complement existing member company programs or practices that achieve the same goals. Responsible Care®, therefore, becomes an integral part of existing company programs and will cause each company to stretch to continually improve performance.

Another important element in the Responsible Care® initiative is the **Public Advisory Panel** which is composed of a group of environmental, health and safety thought leaders. The panel is an industry (CMA) effort, not a company responsibility. It was assembled and is moderated by an experienced facilitator working at the association's direction. It serves to assist the industry in identifying and developing programs and actions that are responsive, and are viewed as responsive, to public concerns. Meeting several times a year, the panel reviews issues on which CMA requires comment and advice. Panel members also identify areas they believe require industry response, critique all proposed Codes of Management Practices and provide early definition of public concerns involving the chemical industry. Community Advisory Panels at the local or regional level can serve companies and the industry in a similar manner. CMA has developed guidance to facilitate companies' formation and operation of local panels.

Effective performance evaluation is a critical element of Responsible Care®. Therefore each Code of Management Practices includes a **Self-Evaluation Form** that measures a company's improved use of the management practices that the Code defines. Member companies will conduct self-evaluations

for each Code annually. CMA will compile the results and periodically report industry's collective implementation progress to the public.

To document progress in ways that are meaningful to the public, CMA also will monitor statistical trend data where available, on industry performance. For example, Superfund Section 313 emissions reporting and Department of Transportation hazardous materials incident statistics will be a component of public reporting for the Pollution Prevention Code and the Distribution Code.

Due to their varying size and operations, member companies will not be expected to be at the same level of performance for each Code of Management Practices at the same time. However, it is expected that each member company report continued progress.

To facilitate and support each member company's continual improvement in the responsible management of chemicals, **Executive Leadership Groups (ELGs)** have formed. ELGs provide an opportunity for corporate leaders to discuss progress and share experiences with implementing elements of Responsible Care®. These regional groups of ten to twenty executive contacts will meet at least once a year to review Codes of Management Practices under development, discuss members' progress with implementing existing Codes, identify areas where individual companies need assistance from CMA or other companies, and to address other priority industry issues.

Endorsement of the Responsible Care® initiative is an **Obligation of Membership** in the association. A member company's obligation to Responsible Care® applies to all of its chemical business. Each member company is expected to make a commitment to Responsible Care® by:

- a) signing the Guiding Principles of Responsible Care®
- b) communicating the commitment to Responsible Care® to employees;
- c) making good-faith efforts to implement the Codes of Management Practices, participate in the self-evaluation process, and meet the expectations of the Responsible Care® initiative; and
- d) using the Responsible Care® name and logo according to CMA's guidelines.

Member companies are also expected to participate in the development of the Codes and programs.

In an extreme case, where a member company has consistently not conducted its operations in accordance with the Guiding Principles and program elements of Responsible Care®, association representatives will meet with the member company's executive contact to seek the company's positive involvement in the program. If this fails to produce a commitment to pursue the objectives of Responsible Care®, appropriate actions will be taken including the disassociation of the company from membership.

DSW 107993



Responsible Care[®]
A Public Commitment

QUESTIONS AND ANSWERS ABOUT RESPONSIBLE CARE[®]

Q Who had the idea for the Responsible Care[®] initiative?

A. Executives of the Canadian Chemical Producers Association (CCPA) began developing the concept in 1984. Executives of Chemical Manufacturers Association (CMA) member companies that have Canadian operations brought Responsible Care[®] to CMA's attention. CMA considered a variety of options and adopted the performance-based Responsible Care[®] initiative in 1988.

Q How is Responsible Care[®] different from what the chemical industry has been doing?

A. Many chemical companies have programs that are designed to improve performance. However, Responsible Care[®] is a broad chemical industry commitment to improve performance through a process that ensures responsiveness to the public's concerns. Two aspects make Responsible Care[®] unique. First, bylaws obligate CMA member companies, representing 90% of basic industrial production capacity in the United States, to participate in the initiative. And second, through a Public Advisory Panel, the public is directly involved in developing program elements.

Current CMA programs such as Community Awareness and Emergency Response (CAER), Air Quality, Waste Minimization, and National Chemical Response and Information Center (NCRIC) are vital parts of the initiative. Through Responsible Care[®]'s self-evaluation process and Public Advisory Panel, CMA will identify areas where additional resources need to be developed to help member companies achieve the goals of the initiative. Responsible Care[®] also encourages member companies to help each other improve performance by sharing experiences and resources in specific areas of chemical operations.

Q Why does the chemical industry need to do anything?

A. Because in spite of past efforts there still are too many incidents involving chemical operations. Politicians and government regulators will respond to the public's concerns about chemicals and our industry if the chemical industry does not respond first. Therefore, it is important for the industry to take continuing positive action to address public concerns.

Q Isn't there some other way? The chemical industry is already doing a lot; can't it just communicate this?

A. The CMA membership concluded that the chemical industry doesn't just have a public relations problem; it has a performance problem. The chemical industry has to respond effectively to public concerns through improved performance. It is clear that the public's expectations are not being met on a

performance basis. Until the chemical industry truly understands public concerns and addresses them for a performance standpoint, CMA member companies can't possibly improve the public perception of their industry.

Q Who prepared the Guiding Principles and what are they based on?

A. The guiding Principles are based on CMA's 1983 board-approved policy on "Health, Safety and the Environment" and the Canadian Responsible Care[®] principles. They are consistent with both. They were prepared by representatives of CMA member companies and approved by the CMA Board of Directors.

Q Why does CMA's Board think Responsible Care[®] will work?

A. Since Responsible Care[®] is based on concepts proven in both the Canadian experience and CMA's voluntary programs such as CAER, the CMA membership has confidence that it can achieve improved industry performance. Most important, by signing the Guiding Principles, CMA member companies have demonstrated their commitment to make Responsible Care[®] work.

Q How much will Responsible Care[®] cost CMA member companies to implement?

A. Significant resources are needed from member companies, both in terms of the "sweat equity" of participants in the development and support of the program, and in the people and dollars necessary to make the initiative "live" in each company.

These costs have not been quantified because they will be different for each company. However, overall industry costs for Responsible Care[®] implementation will undoubtedly add to the billions of dollars already being spent by industry to manage health, safety, and environmental issues.

Q Why should a commitment to Responsible Care[®] be an obligation of membership?

A. Public concerns about chemicals and the industry are the result of collective experience with the entire industry. If the chemical industry is to respond to public concerns effectively, it must act as a total industry. Responsible Care[®] must be visibly working throughout the industry and, therefore, must be both a commitment and a membership obligation of every company in the association. It is critical to achieve the cultural change needed for the industry to improve performance in a responsive manner. The public must be convinced that the chemical industry is living up to its commitment.

Q Why have a Public Advisory Panel?

A. Responding to public concerns is what Responsible Care® is all about. Therefore, a key component of the initiative is the Public Advisory Panel. The panel helps the industry identify and develop programs and actions that are responsive to public concerns about specific performance problems.

CMA has also developed a guidebook for companies which wish to establish community advisory panels at operating locations.

Q Who is on the Public Advisory Panel? Who sets it up? Can panel members be replaced?

A. The Public Advisory Panel acts as a sounding board for public concerns and as a specially qualified focus group that directly impacts industry policies and programs under Responsible Care®. Meeting five times a year, panel members help CMA identify public concerns and suggest ways to respond to those concerns. Panel members also review proposed Codes of Management Practices and evaluate other features of the initiative. Each meeting is managed by an outside facilitator experienced with panel management. Industry representation is kept to a minimum to encourage an open exchange of views and ideas.

Currently, the panel is a 15-member group composed of individuals from both public and private sectors. To ensure that a wide range of public opinion is expressed, the composition of the panel is diverse. Occupations and interests of members range from business and local government officials to environmental, academic, and consumer activists, a farmer, and an expert in business ethics.

Panel members were selected by the facilitator. Panel membership will periodically change in response to panel members' availability and/or the changing needs of panel expertise. The facilitator will handle such changes.

Q Who will develop the Codes of Management Practices? Will the public have input?

A. The development of Codes of Management Practices begins with the identification of public concerns by a number of sources, including the Public Advisory Panel and CMA's Board of Directors. CMA reviews these concerns and recommends priorities for Code development. If a public concern cuts across a range of company operations or activities, it may be addressed by more than one Code.

CMA member company experts develop each Code. Every member company has opportunities to comment on the Codes through open meetings and workshops. Public input to the codes is achieved through the Public Advisory Panel. All codes, once approved by CMA's Board of Directors, are made available to others. Use of the Responsible Care® service mark, however, must follow CMA's guidelines and can be used only with CMA approval.

Q Will Responsible Care® Codes of Management Practices become the basis for future legislation and regulation?

A. A very positive result of Responsible Care® should be for its meaningful and workable practices to be reflected in legislation or regulation that the public endorses through government action.

Q How will performance against the practice Codes be measured? Who does the measuring and how are the results reported?

A. Individual company management will evaluate their own performance against the Codes of Management Practices annually by filing out a self-evaluation form for each Code. Companies will feed this information back to CMA. Primary use of such feedback would be to direct the association's support work to areas of the greatest need and highest potential. Over the longer term, these aggregate reports should establish a record of improvement that will enable CMA to communicate industry's performance progress to the public.

Q What will CMA do to help companies address the Codes of Management Practices?

A. CMA will develop support programs to help companies implement the practices defined in the Codes. In general, programs and aids (videotapes, guide-books, educational meetings, etc.) will be similar to the support provided for Title III and CAER. A unique element of Responsible Care® is that member companies will help each other by sharing resources and methods they develop to implement the Codes of Management Practices.

Q Given the kind of data we are reporting under Title III, will the public accept the Responsible Care® initiative now?

A. Disclosures under Title III raise the level of public concern significantly in some cases. But their only effective response is to deal with the concerns through company and industry-wide improvements. This is the essence of Responsible Care®. The experience in Canada and in the United States suggests it can work.

Q Will chemical companies apply the initiative outside the United States?

A. CMA represents North American manufacturers and can best assist its members in implementing Responsible Care® here. However, the initiative is already international in scope. CMA learned from a two-year old Canadian effort. Other countries that have officially adopted Responsible Care® initiatives include Australia, New Zealand, England, Germany, The Netherlands, and France.

CMA's experience with CAER suggests that good initiatives spread rapidly. The United Nations, with U.S. chemical industry assistance, has already developed an international emergency response program modeled on CAER.

CMA has shared Responsible Care® materials with counterpart organizations in Europe, Japan, Australia, and Taiwan.



Responsible Care®: A Public Commitment

COMMUNITY AWARENESS AND EMERGENCY RESPONSE CODE OF MANAGEMENT PRACTICES

Purpose:

The goal of the Community Awareness and Emergency Response (CAER) Code of Management Practices is to assure emergency preparedness and to foster community right-to-know. It demands a commitment to openness and community dialogue. The code has two major components: first, to assure that member facilities that manufacture, process, use, distribute or store hazardous materials initiate and maintain a community outreach program to openly communicate relevant, useful information responsive to the public's questions and concerns about safety, health, and the environment; and second, to help protect employees and communities by assuring that each facility has an emergency response program to respond rapidly and effectively to emergencies.

The community outreach component will communicate program activities and performance under all codes of management practices and will promote an open, ongoing dialogue with employees and the community. Information should be provided about such activities as waste minimization, emission reduction, health effects of chemicals, and efforts to ensure the safe transport of chemicals.

The CAER Code of Management Practices is supported by, and will build on, CMA's CAER process. CAER supports the community's right to know about chemical industry operations and their effect on safety, health, and the environment. CAER originally was a voluntary initiative focused on emergency response issues. The new CAER Code of Management Practices broadens the facility-community dialogue to cover the full range of safety, health and environmental issues.

Relationship to Guiding Principles:

The Code helps achieve several of the Responsible Care® Guiding Principles:

- ☐ To recognize and respond to community concerns about chemicals and our operations.
- ☐ To report promptly to officials, employees, customers, and the public, information on chemical-related health or environmental hazards and recommend protective measures.
- ☐ To participate with government and others in creating responsible laws, regulations, and standards to safeguard the community, workplace and environment.
- ☐ To promote the principles and practices of Responsible Care® by sharing experiences and offering assistance to others who produce, handle, use, transport, or dispose of chemicals.

Management Practices:

A. Community Awareness and Outreach

Member facilities that manufacture, process, use, distribute or store hazardous materials shall have a community outreach program that includes:

For Employees:

1. An ongoing assessment of employee questions and concerns about the facility.
2. Communications training for key facility and company personnel who communicate with employees and the public concerning safety, health, and environmental issues.
3. Education of employees about the facility's emergency response plan and safety, health, and environmental programs.
4. An ongoing dialogue with employees to respond to their questions and concerns and involve them in community outreach efforts.
5. A regular evaluation of the effectiveness of the ongoing employee communications efforts.

For Community:

6. An ongoing assessment of community questions and concerns about the facility.
7. An outreach program to educate responders, government officials, the media, other businesses and the community about the facility's emergency response program and risks to the community associated with the facility.
8. A continuing dialogue with local citizens to respond to questions and concerns about safety, health, and the environment, and to address other issues of interest to the community.
9. A policy of openness that provides convenient ways for interested persons to become familiar with the facility, its operations, and products, and its efforts to protect safety, health, and the environment.
10. A regular evaluation of the effectiveness of the ongoing community communications efforts.

B. Emergency Response and Preparedness

Member facilities that manufacture, process, use, distribute or store hazardous materials shall have an emergency response program that includes:

1. An ongoing assessment of potential risks to employees and local communities resulting from accidents or other emergencies.
2. A current, written facility emergency response plan which address, among other things, communications and the recovery needs of the community after an emergency.

DSW 107997

3. An ongoing training program for those employees who have response or communications responsibilities in the event of an emergency.
 4. Emergency exercises, at least annually, to test operability of the written emergency response plan.
 5. Communication of relevant and useful emergency response planning information to the Local Emergency Planning Committee.
-
6. Facility tours for emergency responders to promote emergency preparedness and to provide current knowledge of facility operations.
 7. Coordination of the written facility emergency response plan with the comprehensive community emergency response plan and other facilities. If no plan exists, the facility should initiate community efforts to create a plan.
 8. Participation in the community emergency response planning process to develop and periodically test the comprehensive community emergency response plan developed by the Local Emergency Planning Committee.
 9. Sharing of information and experience relating to emergency response planning, exercises, and the handling of incidents with other facilities in the community.

MEMBER SELF-EVALUATION

Each member company shall report annually to CMA, or its designated agent, the stage of implementation of each Management Practice in this Code. The reports shall be on the member self-evaluation form attached as Exhibit A.

DSW 107998



Responsible Care®:
A Public Commitment

SAMPLE

CHEMICAL MANUFACTURERS ASSOCIATION

MEMBER SELF-EVALUATION FORM

**COMMUNITY AWARENESS AND EMERGENCY RESPONSE
CODE OF MANAGEMENT PRACTICES**

Member Company

Name: _____

Responsible Care® Coordinator

Name: _____

Address: _____

Telephone () _____

Number of facilities subject to code _____

DSW 107999

COMMUNITY AWARENESS AND EMERGENCY RESPONSE CODE OF MANAGEMENT PRACTICES

SAMPLE

Instructions:

1. Under the Responsible Care® Initiative, each member company will submit a Self-Evaluation form annually to CMA. To establish the industry baseline, each member company should complete this Self-Evaluation form.
2. Indicate on the cover page the number of member company facilities subject to the Code. Each company must report the implementation category for all facilities subject to the Code on this form.
3. For each Management Practice on the following four pages, indicate the number of facilities that have attained each implementation category. Each facility should appear in only one milestone category per Management Practice. The total number of facilities subject to the Code should equal the number of facilities across all six implementation categories for each Management Practice.
4. Only subject facilities owned or operated as of the reporting date should be included.
5. The implementation categories are:
 - Category NA - No action. If no action taken because the management practice is not applicable, please explain.
 - Category EV - Evaluating existing company practices against the Management Practice.
 - Category DP - Developing plan to implement Management Practice.
 - Category IA - Implementing action plan
 - Category PP - Management Practice in place.
 - Category RI - Reassessing Management Practice implementation.

DSW 107999.01

Management Practices

Categories

Community Awareness

NA EV DP LA PP RI

1. An ongoing assessment of employee concerns and questions about the facility.						
Comments on Category NA: _____ _____ _____						
2. Communications training for key facility and company personnel who will communicate with employees and the public concerning safety, health and environmental issues.						
Comments on Category NA: _____ _____ _____						
3. Education of employees about the facility's emergency response plan and safety, health, and environmental programs.						
Comments on Category NA: _____ _____ _____						
4. An ongoing dialogue with employees to respond to their questions and concerns and to involve them in community outreach efforts.						
Comments on Category NA: _____ _____ _____						
5. A regular evaluation of the effectiveness of the ongoing employee communications efforts.						
Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category LA - Implementing action plan
- Category PP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

DSW 108000

Categories

NA EV DP IA PP RI

SAMPLE

6. An ongoing assessment of community questions and concerns about the facility. Comments on Category NA: _____ _____ _____						
7. An outreach program to educate responders, government officials, the media, other business, and the community about the facility's emergency response program and risks to the community associated with the facility. Comments on Category NA: _____ _____ _____						
8. A continuing dialogue with local citizens to respond to questions and concerns about safety, health, and the environment, and to address other issues of interest to the community. Comments on Category NA: _____ _____ _____						
9. A policy of openness that provides convenient ways for interested persons to become familiar with the facility, its operations, and products, and its efforts to protect safety, health, and the environment. Comments on Category NA: _____ _____ _____						
10. A regular evaluation of the effectiveness of the ongoing community communications efforts. Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category IA - Implementing action plan
- Category PP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

DSW 108001

		Categories					
Emergency Response		NA	EV	DP	IA	PP	RI
1.	An ongoing assessment of potential risks to employees and local communities resulting from accidents or other emergencies.						
Comments on Category NA: _____ _____							
2.	A current, written facility emergency response plan which address, among other things, communications and the recovery needs of the community after an emergency.						
Comments on Category NA: _____ _____							
3.	An ongoing training program for those employees who have response or communications responsibilities in the event of an emergency.						
Comments on Category NA: _____ _____							
4.	Emergency exercises, at least annually, to test operability of the written emergency response plan..						
Comments on Category NA: _____ _____							
5.	Communication of relevant and useful emergency planning information to the Local Emergency Planning Committee.						
Comments on Category NA: _____ _____							

Category NA - No action. If no action taken because the management practice is not applicable, please explain.
 Category EV - Evaluating existing company practices against the Management Practice.
 Category DP - Developing plan to implement Management Practice.
 Category IA - Implementing action plan
 Category PP - Management Practice in place.
 Category RI - Reassessing Management Practice implementation.

DSW 108002

Categories

NA EV DP IA PP RI

6. Facility tours for emergency responders to promote emergency preparedness and to provide current knowledge of facility operations.						
Comments on Category NA: _____ _____ _____						
7. Coordination of the written facility emergency response plan with the comprehensive community emergency response plan and other facilities. If no plan exists, the facility should initiate community efforts to create a plan. Comments on Category NA: _____ _____ _____						
8. Participation in the community emergency response planning process to develop and periodically test the comprehensive community emergency response plan developed by the Local Emergency Planning Committee. Comments on Category NA: _____ _____ _____						
9. Sharing of information and experience related to emergency response planning, exercises, and the handling of incidents with other facilities in the community. Comments on Category NA: _____ _____ _____						
Notes: Please identify any specific problems and/or resources.						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category IA - Implementing action plan
- Category PP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

DSW 108003



Responsible Care:® A Public Commitment

DISTRIBUTION CODE OF MANAGEMENT PRACTICES

Purpose

The purpose of the Distribution Code of Management Practices is to reduce the risk of harm posed by the distribution of chemicals to the general public; to carrier, distributor, contractor and chemical industry employees; and to the environment. Adherence to the code will lead to continually safer chemical distribution and help member companies to:

- ☐ evaluate the risks associated with chemical distribution and methods to reduce those risks;
- ☐ meet or exceed all regulations and industry standards governing chemical distribution;
- ☐ provide emergency advice and/or assistance to people on the scene in the event of a chemical distribution emergency;
- ☐ develop new technologies and methods to improve chemical distribution safety.

The code will also promote improvements in:

- ☐ employee preparedness and awareness in preventing distribution emergencies;
- ☐ the safety performance of carriers and other providers of distribution services;
- ☐ the public's preparedness in responding to chemical distribution emergencies;

DSW 108004

- ☐ the public's understanding of, and confidence in, industry efforts to improve chemical distribution safety.

The Distribution Code of Management Practices applies to all modes of transportation (highway, rail, marine, air and pipeline) and to the shipment of all chemicals, including chemical waste. The code also applies to distribution activities (storage, handling, transfer and repackaging) while chemicals are in transit between member companies and their suppliers and customers. The implementation of a number of practices of the code will vary according to the characteristics of the chemical being distributed, the mode of transportation and the type of distribution activity involved.

Relationship to Responsible Care Guiding Principles

This code helps achieve several Responsible Care Guiding Principles:

- ☐ to recognize and respond to community concerns about chemicals and our operations;
- ☐ to make health, safety and environmental considerations a priority in our planning for all existing and new products and processes;
- ☐ to counsel customers on the safe use, transportation, and disposal of chemicals;
- ☐ to operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public;
- ☐ to participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment; and
- ☐ to promote the principles and practices of Responsible Care by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of chemicals.

Management Practices

Each member company shall have an ongoing chemical distribution safety program that includes senior management commitment through policy, communications and resources to improvements in chemical distribution safety. The program should include the following elements:

1. Risk Management

- 1.1 Regular evaluations of chemical distribution risks which consider the hazards of the material, the likelihood of accidents/incidents and the potential for human and environmental exposure from release of the material over the route of transport.
- 1.2 Implementation of chemical distribution risk reduction measures that are appropriate to the risk level.

- 1.3 Internal reporting and investigation of chemical distribution accidents/incidents, and implementation of preventive measures.

2. Compliance Review and Training

- 2.1 A process for monitoring changes and interpretations of new and existing regulations and industry standards for their applicability to the company's chemical distribution activities, and for implementing those regulations and standards.
- 2.2 Training for all affected company employees in the proper implementation of applicable regulations and company requirements.
- 2.3 A program for providing guidance and information to carriers, distributors and contractors who perform distribution activities for the company on the company's training and compliance requirements for the activities.
- 2.4 Regular reviews of company employee, carrier, distributor and contractor compliance with applicable regulations and company requirements.

3. Carrier Safety

- 3.1 A process for qualifying carriers of all modes and types (common, contract, private and customer controlled) that transport chemicals to and from company facilities that emphasizes carrier safety fitness and regulatory compliance, and includes regular reviews of their performance and compliance.
- 3.2 Feedback to carriers on their safety performance and suggestions for improvement.

4. Handling and Storage

- 4.1 Documented procedures for the selection and use of containers that are appropriate for the chemical being shipped, in compliance with testing and certification requirements, and free of leaks and visible defects.
- 4.2 Documented procedures for loading chemicals at company facilities that will reduce emissions to the environment, protect personnel and provide securement of the lading during transit.
- 4.3 Documented procedures for unloading chemicals at the company's facilities that will reduce emissions to the environment, protect personnel, and provide for safe unloading into proper storage facilities.
- 4.4 Defined criteria for the cleaning and return of tank cars, tank trucks, marine vessels, and returnable/refillable bulk and semi-bulk containers, and for the proper disposal of cleaning residues.

DSW 108006

- 4.5 A program for providing guidance and information to customers, distributors, and other receivers on proper procedures for unloading and storing the company's chemicals.
- 4.6 A process for selecting distributors and other facilities that store or handle the company's chemicals in transit that emphasizes safety fitness and regulatory compliance and includes regular reviews of their performance and compliance.
- 4.7 Feedback to distributors and operators of other facilities that store or handle chemicals in transit on their safety performance and suggestions for improvement.

5. Emergency Preparedness

- 5.1 A process for responding to chemical distribution accident/incidents involving the company's chemicals.
- 5.2 Documented procedures for making information about the company's chemicals in distribution available to response agencies.
- 5.3 A program for making facilities and/or training materials available to emergency response agencies.
- 5.4 Dialogue with state and local emergency planning organizations on the distribution and hazards of the company's chemicals to improve community preparedness to respond to chemical distribution emergencies.
- 5.5 Dialogue with the public on their concerns about chemical distribution safety, actions taken by the industry and the company to improve the safety of chemical distribution, and the effectiveness of emergency preparedness and emergency response assistance.

Member Self Evaluation

Member companies shall report annually the stage of implementation of each management practice in this code to an agent designated by the Chemical Manufacturers Association.

Relationship to Other Codes of Management Practice

This Code complements, and should be implemented in conjunction with, current and future Codes of Management Practices.

OSW 108007

SAMPLE



Responsible Care:®
A Public Commitment

CHEMICAL MANUFACTURERS ASSOCIATION
MEMBER SELF-EVALUATION FORM

DISTRIBUTION CODE
OF MANAGEMENT PRACTICES

Member Company

Name: _____

Responsible Care Coordinator

Name: _____

Address: _____

Telephone () _____

DSW 108008

DSW 108009

SAMPLE

**Member Self-Evaluation
Distribution Code of Management Practices**

1. Under the Responsible Care initiative, each member company must submit a Self-Evaluation Form annually to CMA or its designated representative. The annual self-reporting has three purposes:
 - ☐ to establish an industry baseline from which to demonstrate continual progress in implementation of the Code.
 - ☐ to assist individual member companies in establishing a base line from which to set priorities for future development; and
 - ☐ to assist the industry (CMA) in designing programs to assist the member companies in achieving the goals of the Responsible Care initiative.
2. **TO ESTABLISH THE INDUSTRY BASELINE, EACH MEMBER COMPANY SHOULD COMPLETE THIS SELF-EVALUATION FORM AND SEND IT BY C.O.B., MAY 23, 1991**
3. The Distribution Code is unique in the sense that it deals with both products and facilities, but more importantly it deals with a broad range of third party providers of services and many external organizations and communities. This is considerably different than the CAER, WARR and Process Safety Codes, which deal primarily with fixed facilities and, as a result, have a more common base for self-evaluation. In contrast, different self-evaluation bases for each element of the Distribution Code will likely be more helpful and appropriate.
4. Self-evaluations for the Distribution Code should be expressed as percentages since the different bases for Code elements may not always be countable units. Therefore, the evaluation of each of the 21 separate elements of the Distribution Code of Management Practices should show what percentage of the company's distribution process is at each of the six implementation stages. For example, for a specific Code element, a company could report that 10% of their distribution process is at stage I, 50% at stage II, 30% at stage III, 10% at stage IV and 0% at stages V and VI. Judgment will be required on how to develop these percentages, both in terms of what base to use for the calculation, and how to reflect centralized and/or decentralized distribution activities. Most importantly, each company will need to establish a methodology that will remain constant over the years in order to measure annual progress. The suggestions under Item 4 below are meant to assist you in developing your self-evaluation methodology.
5. The following bases for evaluation can be applied to a number of specific code elements:
 - ☐ Corporate programs, such as a corporate emergency response process, may be viewed as applying across the company for purposes of completing the Self-Evaluation Form. The percentage implementation would result from judgment of

DSW 108011

SAMPLE

the existence and implementation of that process, or progress upon your own implementation action plan.

- ☐ Alternatively, decentralized programs, such as site or division specific emergency response processes, should be judged as separate processes. A large multi-division company may have multiple emergency response processes to consider in establishing a percentage of implementation.
 - ☐ Risk management activities are often undertaken on a product specific basis. Each company deals with a very large number of products which are hazardous or non-hazardous, and must select a basis from which to evaluate and report future progress in implementing the Code. Judgment is required to make sure that a large number of non-hazardous products which the company produces or distributes do not distort the evaluation. They should also not decrease the validity of the base for future evaluations.
 - ☐ Carrier safety reviews should be based on the number of carriers that fall under the code. Judgment must also be used where data is not readily available on all carriers. The time spent on determining this basis will provide good information for progressing toward full implementation.
 - ☐ The number of third party providers of services to your company can serve as the basis for determining percentages of implementation in each stage.
 - ☐ Customer related elements should be evaluated on the basis of the number of customers, the hazardous nature of the products, and/or by the company divisional or business unit programs.
 - ☐ There are some elements, such as loading and unloading procedures, that are site specific and should be evaluated on that basis.
6. It is recognized that self-evaluation methodologies will vary from company to company. Because of this, flexibility has been built into the evaluation process. The basis for evaluating a company's distribution process should be established, documented and applied consistently for each annual self-evaluation exercise.
7. The six implementation stages are:
- Stage I - No action
 - Stage II - Evaluating company practices against Code practices
 - Stage III - Developing action plan to implement Code practice
 - Stage IV - Implementing action plan
 - Stage V - Code management practice in place
 - Stage VI - Implementation reviewed and reaffirmed this year

Risk Management Practices	I	II	III	IV	V	VI
1.1 Regular evaluations of chemical distribution risks which consider the hazards of the material, the likelihood of accidents/incidents and the potential for human and environmental exposure from release of the material over the route of transport.						
1.2 Implementation of chemical distribution risk reduction measures that are appropriate to the risk level.						
1.3 Internal reporting and investigation of chemical distribution accidents/incidents, and implementation of preventive measures.	SAMPLE					
Compliance Review and Training						
2.1 A process for monitoring changes and interpretations of new and existing regulations and industry standards for their applicability to the company's chemical distribution activities, and for implementing those regulations and standards.						
2.2 Training for all affected company employees in the proper implementation of applicable regulations and company requirements.						
2.3 A program for providing guidance and information to carriers, distributors and contractors who perform distribution activities for the company on the company's training and compliance requirements for the activities.						
2.4 Regular reviews of company employee, carrier, distributor and contractor compliance with applicable regulations and company requirements.						

Carrier Safety

I

III

IV

V

VI

SAMPLE

3.1 A process for qualifying carriers of all modes and types (common, contract, private and customer controlled) that transport chemicals to and from company facilities that emphasizes carrier safety fitness and regulatory compliance, and includes regular reviews of their performance and compliance.

3.2 Feedback to carriers on their safety performance and suggestions for improvement.

Handling and Storage

4.1 Documented procedures for the selection and use of containers that are appropriate for the chemical being shipped, in compliance with testing and certification requirements, and free of leaks and visible defects.

4.2 Documented procedures for loading chemicals at company facilities that will reduce emissions to the environment, protect personnel and provide securement of the lading during transit.

4.3 Documented procedures for unloading chemicals at company facilities that will reduce emissions to the environment, protect personnel, and provide for safe unloading into proper storage facilities.

4.4 Defined criteria for the cleaning and return of tank cars, tank trucks, marine vessels, and returnable/refillable bulk and semi-bulk containers, and for the proper disposal of cleaning residues.

1.5 A program for providing guidance and information to customers, distributors, and other receivers on proper

SAMPLE

Handling and Storage

I II III IV V VI

procedures for unloading and storing the company's chemicals.						
4.6 A process for selecting distributors and other facilities that store or handle the company's chemicals in transit that emphasizes safety fitness and regulatory compliance, and includes regular reviews of their performance and compliance.						
4.7 Feedback to distributors and operators of other facilities that store or handle chemicals in transit on their safety performance and suggestions for improvement.						
Emergency Preparedness						
5.1 A process for responding to chemical distribution accidents/incidents involving the company's chemicals.						
5.2 Documented procedures for making information about the company's chemicals in distribution available to response agencies.						
5.3 A program for making facilities and/or training materials available to emergency response agencies.						
5.4 Dialogue with state and local emergency planning organizations on the distribution and hazards of the company's chemicals to improve community preparedness to respond to chemical distribution emergencies.						
5.5 Dialogue with the public on their concerns about chemical distribution safety, actions taken by the industry and the company to improve the safety of chemical distribution, and the effectiveness of emergency preparedness and emergency response assistance.						

Distribution Code of Practices

Questions and Answers

SAMPLE

1. What is the distinction between a distribution emergency and a distribution accident/incident?

Answer:

An accident/incident is a definite and distinct occurrence of an undesirable event. It may involve an accident (traffic, derailment, collision, mishandling) or near miss, or be a result of a non-accidental container or operational failure. The undesirable effect can range from a small release of product (but major media coverage) to a major release with subsequent loss of property or personal injury.

An emergency is simply an accident/incident that requires immediate action.

In the context of the code, we distinguish between the two because we have direct control or influence over the causes of accidents and incidents. Many circumstances that dictate the emergency nature of the situation are most often outside of our sphere of control and influence.

2. The words process, program, documented procedures and defined criteria are used throughout the code. What do they mean?

Answer:

A program is meant to mean an organized list of processes and procedures. In developing a comprehensive distribution safety program the management practices of Responsible Care should be included in the list of processes and procedures. In a hierarchy of terms, a program lies below a policy (a general statement of commitment or philosophy) and somewhere above a process or procedure. A program must address management needs, as expressed by policy, and contain feedback and measurement steps to determine if the needs are being met.

A process is a series of related activities or actions that will lead to the desired end result. In the context of the code we have used process when it is clear the process can take many different forms, yet still provide the desired results.

Documented procedures are specific instructions or steps required to complete a task successfully. They may be written procedures or videotaped procedures, for example, that are to be explicitly followed and are not left open to interpretation. They are the most detailed step in the hierarchy, below policies, programs and processes.

Defined criteria are the ground rules around which a process or a procedure must be developed. In the code, the term is used to provide criteria to a third party that would enable that party to develop a process or procedure to lead to the desired end.

3. Reference is made in the code to adherence to industry standards. What is meant by this?

Answer:

The term industry standards, means those agreements, developed and complied with voluntarily, by a wide range of co-producers, interindustry groups and trade associations. Many of these agreements, in time, result in regulations or rulemaking procedures. It may also apply to a company's own internal standards of operation or practice.

4. The term, regular reviews, is used when referring to carrier safety performance, contractor and distributor performance and regulatory compliance. What is meant by the term, regular review?

Answer:

Regular reviews is a term used to measure or test whether our expectations are being met. They are crucial for managing the whole distribution safety process. By regular, we allow room for periodic or random reviews and allow the company to determine its own frequency of review for each element of the code, where it is appropriate. Reviews can take many forms, ranging from on-site and detailed audits, to presentations of progress with charts and graphs. This also allows incorporation of many of the safety performance reviews into quality and service review initiatives.

5. The code refers to cleaning and return of returnable/refillable containers. What is meant by returnable/refillable?

Answer:

Returnable containers are those containers specifically designed for return to the company for reuse without reconditioning or reworking the container. Generally, this typically only applies to containers of 55 gallons and above. The EPA is developing regulations regarding refillable containers that would drop below 55 gallons. Tank trucks, tank cars and marine vessels may or may not normally return to the company. Often, they are cleaned and placed back in general service.

All of the containers listed above are examples of returnable/refillable containers. For the purpose of the Distribution Code we must define criteria aimed at developing proper cleaning and residue disposal of these containers. Non-refillable, non-returnable containers are not covered under this code.

6. What is meant by regular evaluations of chemical distribution risks?

Answer:

How often distribution risk studies should be conducted will depend significantly on the chemical involved and the dynamics of the distribution. Evaluations should be regular in the sense they become a normal and routine part of distribution activities and are conducted often enough to respond to technology changes and operating experience.

7. The code requires dialogue with state and local planning organizations and the general public. What do we mean by dialogue?

Answer:

Dialogue is simply two-way conversation. It implies that both parties listen and respond to each other in a constructive way. With state and local planning organizations, the dialogue will naturally focus on the more technical and factual aspects of chemical distribution. Dialogue with the public will involve more educational types of interchange for both parties.

DSW 108017

DSW 108018

April 6, 1990

Amended September 6, 1991



Responsible Care:® A Public Commitment

POLLUTION PREVENTION CODE OF MANAGEMENT PRACTICES

Purpose.

This Code is designed to achieve ongoing reductions in the amount of all contaminants and pollutants released to the air, water, and land from member company facilities. These reductions are intended to respond to public concerns with the existence of such releases, and to further increase the margin of safety for public health and the environment.

The Code is also designed to achieve ongoing reductions in the amount of wastes generated at facilities. These reductions are intended to help relieve the burden on industry and society of managing such wastes in future years.

In implementing the Code, each company should strive for annual reductions, recognizing that production rates, new operations, and other factors may result in increases. Despite these fluctuations, however, the goal is to establish a long-term, substantial downward trend in the amount of wastes generated and contaminants and pollutants released. Quantitative reduction goals will be established for giving priority to those pollutants, contaminants and wastes of highest health and environmental concern.

This code also includes practices that address the broader waste management issues beyond source reduction and other waste and release reduction efforts. Each member company must manage remaining wastes and releases in a manner that protects the environment and the health and safety of employees and the public.

This Code complements, and should be implemented in conjunction with current and future Codes of Management Practices. Key terms are defined in the Glossary, which should be consulted for assistance in interpreting the provisions of this Code.

DSW 108019

Relationship to Guiding Principles

Implementation of this Code helps achieve the following Guiding Principles:

- o To recognize and respond to community concerns about chemicals and our operations;
- o To develop and produce chemicals that can be manufactured, transported, used and disposed of safely.
- o To make health, safety, and environmental considerations a priority in our planning for all existing and new products and processes;
- o To report promptly to officials, employees, customers and the public, information on chemical-related health or environmental hazards and to recommend protective measures.
- o To operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public;
- o To extend knowledge by conducting or supporting research on the health, safety, and environmental effects of our products, processes, and waste materials.
- o To promote the principles and practices of Responsible Care by sharing experiences and offering assistance to others who produce, handle, use, transport, or dispose of chemicals.
- o To work with others to resolve problems created by past handling and disposal of hazardous substances.
- o To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.
- o To promote the principles and practices of Responsible Care by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of chemicals.

DSW 108020

Management Practices.

Each member company shall have a pollution prevention program which shall include:

1. A clear commitment by senior management through policy, communications, and resources, to ongoing reductions at each of the company's facilities, in releases to the air, water, and land and in the generation of wastes.
2. A quantitative inventory at each facility of wastes generated and releases to the air, water, and land, measured or estimated at the point of generation or release.
3. Evaluation, sufficient to assist in establishing reduction priorities, of the potential impact of releases on the environment and the health and safety of employees and the public.
4. Education of, and dialogue with, employees and members of the public about the inventory, impact evaluation, and risks to the community.
5. Establishment of priorities, goals and plans for waste and release reduction, taking into account both community concerns and the potential health, safety, and environmental impacts as determined under Practices 3 and 4.
6. Ongoing reduction of wastes and releases, giving preference first to source reduction, second to recycle/reuse, and third to treatment. These techniques may be used separately or in combination with one another.
7. Measurement of progress at each facility in reducing the generation of wastes and in reducing releases to the air, water, and land, by updating the quantitative inventory at least annually.
8. Ongoing dialogue with employees and members of the public regarding waste and release information, progress in achieving reductions, and future plans. This dialogue should be at a personal, face-to-face level, where possible, and should emphasize listening to others and discussing their concerns and ideas.
9. Inclusion of waste and release prevention objectives in research and in design of new or modified facilities, processes, and products.

DSW 108021

10. An ongoing program for promotion and support of waste and release reduction by others, which may, for example, include:
 - a. Sharing of technical information and experience with customers and suppliers;
 - b. Support of efforts to develop improved waste and release reduction techniques;
 - c. Assisting in establishment of regional air monitoring networks;
 - d. Participation in efforts to develop consensus approaches to the evaluation of environmental, health, and safety impacts of releases;
 - e. Providing educational workshops and training materials;
 - f. Assisting local governments and others in establishment of waste reduction programs benefitting the general public.
11. Periodic evaluation of waste management practices associated with operations and equipment at each member company facility, taking into account community concerns and health, safety, and environmental impacts and implementation of ongoing improvements.
12. Implementation of a process for selecting, retaining, and reviewing contractors and toll manufacturers taking into account sound waste management practices that protect the environment and the health and safety of employees and the public.
13. Implementation of engineering and operating controls at each member company facility to improve prevention of and early detection of releases that may contaminate groundwater.
14. Implementation of an ongoing program for addressing past operating and waste management practices and for working with others to resolve identified problems at each active or inactive facility owned by a member company taking into account community concerns and health, safety, and environmental impacts.

DSW 108022

Industry Trend Data

To develop and maintain statistical industry trends. CMA will collect currently available data. Each company shall report annually to CMA, or its designated agent, for each facility:

- o Releases of substances as reported under SARA Section 313; and
- o Wastes generated, as defined and reported in CMA's annual waste survey.

Member Self-Evaluation.

Each member company shall report annually to CMA, or its designated agent, the stage of implementation of each management practice in this Code. The reports shall be on the member self-evaluation form attached as Attachment A.

OSW 108023

Glossary of Terms

As used in this Code, key terms are defined as set forth below. Note that these definitions may be broader than regulatory definitions, and that adherence to this Code does not relieve a company of the obligation to meet Federal, state and local regulatory requirements.

Facility - A site used for chemical manufacturing, processing, refining, packaging, R&D, distribution or related commercial activity.

Recycle - A practice which regenerates or processes a material from a process to recover a useable product or material for reuse.

Release - Any emission, effluent, spill, discharge or disposal to the air, land, or water, of any pollutant or contaminant, whether routine or accidental, at or from a facility. The term does not include shipment or distribution of chemical product, nor release to the environment as part of normal and intended use of a product by the consumer.

Reuse - A practice that reemploys a material from a process either as an ingredient in a process to make a product, or as an effective substitute for a commercial product in a particular function or application.

Source Reduction - A practice that reduces the amount of any release or waste generated at the source, including closed loop recycle and reuse before exit from a process. The term includes, among other practices, equipment and technology modifications, process and procedures modifications, reformulation and redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training and inventory control.

Treatment - A practice, other than recycle or reuse, that alters the physical, chemical, or biological characteristics or the volume of a waste through a process or activity separate from the production of a commercial product or the provision of a service.

Waste - Any gas, liquid, or solid residual material at a facility, whether hazardous or non hazardous, that is not used further in the production of a commercial product or provision of a service and which itself is not a commercial product.

DSW 108024

POLLUTION PREVENTION CODE

REPORT 1: MEMBER SELF-EVALUATION FORM FOR THE 1991 REPORTING YEAR

SAMPLE

Instructions for the Company Responsible Care® Coordinator:

1. This form is to be submitted annually to CMA by each member company. This year the due date is XXX 31, 1992. Please submit directly to:
2. Indicate on page 1 the number of your member company's facilities that are subject to the Code. Each company's Responsible Care® Coordinator must report the implementation stage for all facilities subject to the Pollution Prevention Code on this form.
3. The Self Evaluation form for the 1991 reporting year covers fourteen management practices. DO NOT COMPLETE THIS FORM. [CMA will send the Self Evaluation Form for the 1991 reporting year in April/May 1992.]
4. For Management Practices 1-11 and 13 on the following pages, indicate the number of facilities that have attained each implementation category. Identify the current implementation category for each of your facilities at the time you complete the form. For management practices 12 & 14, indicate the company-wide reporting using a percentage (following instructions on page 5).
5. For the Industry Trend Data, show the total number of facilities in each appropriate box. The total number of facilities for each type of Trend Data should equal the total number of facilities subject to the Code.
6. Only subject facilities owned or operated as of the reporting date should be included.
7. The implementation categories are:
 - Category NA - No action. If no action taken because the management practice is not applicable, please explain.
 - Category EV - Evaluating existing company practices against the Management Practice.
 - Category DP - Developing plan to implement Management Practice.
 - Category IA - Implementing action plan
 - Category PP - Management Practice in place.
 - Category RI - Reassessing Management Practice implementation.
8. If any facilities are shown in Category NA, please add any pertinent remarks to the space marked "comments."

DSW 108025

POLLUTION PREVENTION CODE OF MANAGEMENT PRACTICES

REPORT 1: MEMBER SELF-EVALUATION FORM FOR THE 1991 REPORTING YEAR

SAMPLE

Member Company

Name: _____

Responsible Care® Coordinator

Name: _____

Address: _____

Telephone: () _____

Number of facilities subject to the Pollution Prevention Code _____

DSW 108026

POLLUTION PREVENTION CODE

SAMPLE

Industry Trend Data

Report annually to CMA or its designated agent, the number of facilities for which annual report to CMA has or has not been submitted:

Member Company Name: _____

	Annual Report Submitted*		Annual Report Not Submitted*	Total Facilities
T-1. Release of substances as reported under SARA Section 313; and	<u>Form R</u>	<u>Form NR</u>		
T-2 Wastes generated, as defined and reported in CMA's annual waste survey.				

*Enter the number of facilities.

NOTES:

1. CMA expects to receive release data only from those facilities that are required to complete the Form R following the requirements in the Superfund Amendment and Reauthorization Act (SARA) Section 313 and EPA's clarifying regulations and instructions.
2. Instruction: Under Form R, enter the number of facilities that are submitting TRI data to CMA.

Line T-1:

- ☐ These facilities should submit the same data as EPA requires. The 313 Form R release data are due to EPA on July 1, 1992 and to CMA on July 31, 1992.
- ☐ Under Form NR, enter the number of facilities that are not subject to the EPA reporting requirements. These facilities should complete Form NR. Companies, not required to report 313 release data to EPA, may volunteer to send release data to CMA. These facilities are not required to submit TRI release data to CMA as an obligation of membership.

Line T-2:

- ☐ The 1991 Reporting year is the first year that facilities must complete CMA's annual Waste Survey as an obligation of membership under the Pollution Prevention Code.

DSW 108027

POLLUTION PREVENTION CODE OF MANAGEMENT PRACTICES

SAMPLE

Management Practices

Categories

NA EV DP IA PP RE

1. A clear commitment by senior management through policy, communications, and resources, to ongoing reductions, at each of the company's facilities, in releases to the air, water, and land and in the generation of wastes. Comments on Category NA: _____ _____ _____						
2. A quantitative inventory at each facility of wastes generated and releases to the air, water and land, measured or estimated at the point of generation or release. Comments on Category NA: _____ _____ _____						
3. Evaluation, sufficient to assist in establishing reduction priorities, of the potential impact of releases on the environment and the health and safety of employees and the public. Comments on Category NA: _____ _____ _____						
4. Education of, and dialogue with, employees and members of the public about the inventory, impact evaluation, risks to the community. Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practices.
- Category DP - Developing plan to implement Management Practices.
- Category IA - Implementing action plan.
- Category PP - Management Practices in place.
- Category RE - Reassessing Management Practices implementation.

DSW 108028

SAMPLE

Categories

NA EV DP IA EP RI

5. Establishment of priorities, goals and plans for waste and release reduction, taking into account both community concerns and the potential health, safety, and environmental impacts as determined under Practices 3 and 4. Comments on Category NA: _____ _____ _____						
6. Ongoing reduction of wastes and releases, giving preference first to source reduction, second to recycle/reuse, and third to treatment. These techniques may be used separately or in combination with one another. Comments on Category NA: _____ _____ _____						
7. Measurement of progress at each facility in reducing the generation of wastes and in reducing releases to the air, water, and land, by updating the quantitative inventory at least annually. Comments on Category NA: _____ _____ _____						
8. Ongoing dialogue with employees and members of the public regarding waste and release information, progress in achieving reductions and future plans. This dialogue should be at a personal, face-to-face level, where possible, and should emphasize listening to others and discussing their concerns and ideas. Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category IA - Implementing action plan
- Category EP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

DSW 108029

Categories

	NA	EV	DP	IA	PP	RI
9. Inclusion of waste and release prevention objectives in research, and in design of new or modified facilities, processes, and products. Comments on Category NA: _____ _____ _____						
10. An ongoing program for promotion and support of waste and release reduction by others, which may, for example, include: a. Sharing of technical information and experience with customers and suppliers; b. Support of efforts to develop improved waste and release reduction techniques; c. Assisting in establishment of regional air monitoring networks. d. Participation in efforts to develop consensus approaches to the evaluation for environmental, health, and safety impacts of releases; e. Providing educational workshops and training materials; f. Assisting local governments and others in establishment of waste reduction programs benefiting the general public. Comments on Category NA: _____ _____ _____						
11. Periodic evaluation of waste management practices associated with operations and equipment at each member company facility, taking into account community concerns and health, safety, and environmental impacts and implementation of ongoing improvements. Comments on Category NA: _____ _____ _____						

Category NA - No action. If no action taken because the management practice is not applicable, please explain.

Category EV - Evaluating existing company practices against the Management Practice.

Category DP - Developing plan to implement Management Practice.

Category IA - Implementing action plan.

Category PP - Management Practice in place.

Category RI - Reassessing Management Practice Implementation.

DSW 108030

Categories

	NA	EV	DP	IA	PP	RI
12. See Instructions below.						
13. Implementation of engineering and operating controls at each member company facility to improve prevention and early detection of releases that may contaminate groundwater. Comments on Category NA: _____ _____ _____						

SAMPLE

Instructions for Practices 12, Contractor Review, and 14, Past Sites:

CMA recognizes that companies may implement Practices 12 and 14 on a company-wide or even corporation-wide basis rather than on a facility basis. Therefore, CMA asks companies to complete the Self-Evaluation Form using percentages that represent company-wide implementation for these two practices. In adding up the total percentages across all of the six categories, the number must equal 100%. Also, please use only whole numbers. For these two management practices the number of facilities used to calculate the percentage may exceed the number of facilities shown on page 1.

Companies may use any appropriate method to calculate these percentages. One caution, companies will want to carefully consider how this calculation is performed and use it on a yearly basis so that the data from year to year can be compared meaningfully.

Categories

	NA	EV	DP	IA	PP	RI
12. Implementation of a process for selecting, retaining, and reviewing contractors and toll manufacturers taking into account sound waste management practices that protect the environment and the health and safety of employees and the public. Comments on Category NA: _____ _____ _____						
14. Implementation of an ongoing program for addressing past operating and waste management practices and for working with others to resolve identified problems at each active or inactive facility owned by a member company, taking into account community concerns and health, safety, and environmental impacts. Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category IA - Implementing action plan.
- Category PP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

DSW 108031

ATTACHMENT C

WASTE AND RELEASE REDUCTION
CODE OF MANAGEMENT PRACTICES
QUESTIONS AND ANSWERS

SAMPLE

1. Is this a voluntary or mandatory policy?

Answer: The Waste and Release Reduction Code of Management Practices has been developed under CMA's Responsible Care program. Adherence to the Responsible Care guiding principles is an obligation of membership in CMA.

2. Must the Management Practices be completed in the specific order listed?

Answer: The Management Practices are laid out in a logically sequential pattern to complete a reduction project. The sequence should be generally adhered to although slight re-arrangement under specific circumstances may be warranted.

3. Since the scope of this policy covers all hazardous and non-hazardous wastes and releases, doesn't the Code require too much too fast or dilute the focus from hazardous pollutants?

Answer: The public is not seeing or asking a distinction between hazardous and non-hazardous releases and wastes. Public opinion research shows that the public wants releases lowered and performance improved. This research indicates that the public is concerned about both chemicals and trash generated by industry.

The definition of "hazardous" is not uniform throughout the United States, since many states have their own definitions that are more restrictive than the federal EPA's. Furthermore, these definitions of "hazardous" keep changing over time.

Each company is starting from differing points. Each company must identify its own reduction opportunities, identify the concerns of its own public, determine the reduction priorities and goals, and develop and implement its own reduction plan. The goal of this Code is continued performance improvement by a long term commitment to the reduction of wastes and releases.

DSW 108032

4. Why does this Code appear to endorse reductions for reductions sake? Why should wastes and releases be reduced below health-based standards? Why should wastes and releases be reduced below levels allowed by statute, regulation, or permit?

Answer: The public does not endorse the concept of "permitted" generation of wastes or releases to the environment. The public desires an increased margin of safety and environmental protection as a goal. If the policy is to address the concerns of the public, it must require sustained reductions.

5. Is this Code a never-ending spiral of reduction?

Answer: The policy is flexible so that each company can assess the viability of further reductions. Certainly, reductions will be sustained under the Code as long as they are technically and economically viable. To the extent reduction options remain viable, the goal is to establish a long-term, substantial downward trend in wastes generated and releases to the environment.

6. Will this Code cause member to accomplish substantive reduction?

Answer: To achieve the goal of earning the public's trust through improved performance, real reductions must occur. Therefore, this Code has measurable implementation stages and industry trends data submission requirements.

7. Does this Code apply to both large and small companies and facilities? Is there a threshold below which this Code does not apply?

Answer: The Code applies to all members of CMA. Even a small company or facility can generate wastes and releases to the environment. There is no threshold for volume of wastes generated, releases to the environment, or size of facility below which this Code does not apply. Each company/facility will establish its own priorities. The Code envisions progress by all of industry in reducing wastes and releases.

8. Does this Code apply to domestic or world-wide operations?

Answer: The principles behind the Code are universal in concept. The reduction of wastes and releases is good business and good citizenship. However, for purposes of CMA eligibility requirements, the Code applies to that portion of a corporation or company that is used to determine CMA dues.

9. What about multi-divisional companies? Does this Code apply to mining operations? Service stations? Warehouses?

Answers: Adherence to the Code of Management Practices is a Guiding Principle of the Responsible Care program. The Responsible Care program is a membership requirement for those portions of a company that determine the CMA dues structure. The principle of reducing wastes and releases is responsible corporate behavior and should be encouraged throughout an organization.

The Waste and Release Reduction Code of Management Practice is designed for flexible implementation by companies and facilities. Each company/facility must determine the reduction opportunities, priorities, baseline, and implement the reduction plan in accordance with these company/facility-derived goals. Inherent in this Code is the need to communicate with the public when determining reduction opportunities and priorities. Therefore, while the scope of this policy is broad, each company must identify the sources that are included in its implementation activities as well as the priority and timing for these reduction activities.

10. If all of the chemical industry is to be affected, how do we ensure fair and equitable reductions? How do we prevent competitive disadvantages among CMA member companies?

Answer: The Waste and Release Reduction Code is predicated on making reductions that are economically and technically sound. The Code does not envision enforcing competitive disadvantages on member companies by usurping their decision-making processes. Each company must evaluate its own reduction opportunities and develop its own reduction plan to meet company/facility priorities.

11. If all of the chemical industry is to be affected, how do we ensure fair and equitable reductions? How do we prevent competitive disadvantages with other industry segments?

Answer: This Code will actually make our industry more competitive than those that do not embrace its concepts. Waste and release reductions will result in less wastes, improved efficiency, and make the industry a superior competitor.

12. Is this a non-growth Code? How can this Code be reconciled with the need for expansions? How are opportunities for emission offsets (needed for air permitting) to be preserved?

Answer: This Code envisions a long-term, substantial downward trend in total releases to the environment and waste generation. However, the method of achieving reductions is left to the needs and priority determinations of the individual member companies.

The policy is not a no-growth policy; rather, it is a policy of balancing future expansions with future waste and release reductions.

Voluntary waste and release reductions may be eligible to be banked with appropriate governmental agencies. Any plan for waste and release reductions must also plan to accommodate expansions. Public perceptions may ultimately require a waste and release reduction type program just as a condition to be able to construct or expand. Several states already have proposed such regulations.

13. Won't this Code have enormous economic consequences?

Answer: Waste and release reductions may or may not have a huge price tag. Some reduction projects, like fugitive emission abatement, tend to pay for themselves in recovered product(s); other projects may increase the price of doing business. Industry must be willing to invest in plants that will lead to a future with less wastes and fewer releases to the environment. The goal of Responsible Care is that the chemical industry will improve the performance of its operations constantly.

In making reduction progress, each company must look at all the reduction opportunities and set their own priorities. Each company can set the scope of these priorities broadly or narrowly and implement actions at their own pace.

Each company must identify its own reduction priorities and implement a reduction plan to meet company/facility-set goals.

14. Does the hierarchy of reduction methodologies mean that all projects must use source reduction unless it is technically infeasible?

Answer: Each waste and release source must be evaluated for its reduction potential. The hierarchy requires that reduction projects for source reduction be evaluated before recycle/reuse or treatment. However, the project to be implemented will depend on the evaluation.

Technical infeasibility is only one of several facility and/or waste specific criteria that can lead to selection of a reduction project involving recycle/reuse or treatment. When developing their reduction priorities, companies may choose to consider other criteria including risk/benefit mechanisms, public concern, size of the facility, economics, and other factors such as conservation of resources.

DSW 108035

15. This Code, as well as other codes under the Responsible Care program, require ongoing dialogues with employees and members of the public. Does each such Management Practices require a separate meeting?

Answer: No. Meetings with employees or the public can have multiple agenda items. If several Management Practices items are to be covered in a single meeting, all that is required is that the agenda and presentation clearly address each topic, rather than have a general "discussion of topics."

Under the Responsible Care Program, the process to communicate with the public and employees is established under the Community Awareness and Emergency Response (CAER) Code of Management Practice. Companies are encouraged to use the mechanisms set up under other codes to enhance effective implementation of the Responsible Care Program and to better use and conserve company resources.

16. Is dialogue with the public required for all facilities?

Answer: Meaningful dialogue is essential to better understanding public concern, improving the public's understanding of our operations, and building trust. Some facilities, due to size and location, may have limited opportunity for such dialogue. Where the opportunity for dialogue exists, even on a limited basis, it should be actively pursued individually or jointly with other neighboring companies/facilities.

17. Should individual companies and/or facilities submit to CMA the rationale behind the annual Industry Trend data submissions?

Answer: No. The data submitted for the Industry Trend Data reports need not have supporting documentation submitted to CMA. However, when discussing these data with the local public, it is assumed that general methods and assumptions will be discussed as part of the public education and dialogue process.

18. When completing the Self-Evaluation Form, must every facility attempt to progress through all the implementation stages, or can some facilities "mature" their progress in code implementation at less than full implementation?

Answer: All participating facilities should work to achieve full implementation of each Code and embrace the concepts of this Code in the spirit of the Responsible Care Guiding Principles. Depending on the size of particular facility or the activities carried on by that facility, a company may decide that different implementation methods are appropriate. For example, a large facility may use formal procedures such as written policies and

manuals and conduct formal employee meetings. Whereas, a smaller facility can accomplish the same implementation using less formal methods.

CSW 108037

Attachment B

QUESTION AND ANSWERS FOR
PRACTICES 11-14

These questions address issues in the four practices added to the Pollution Prevention Code of Management Practices. As companies implement Practices 1-10, they should examine their implementation actions and modify them to include waste management.

QUESTIONS:

IN PRACTICE 11, WHAT ARE THE WASTE MANAGEMENT
PRACTICES ASSOCIATED WITH ALL OPERATIONS
AND EQUIPMENT?

The Code envisions companies reviewing all waste management practices at each step of the operation(s) where wastes are generated or released within each facility. This review is within the operating processes not just at the "end of the pipe."

WHAT DO YOU MEAN BY A CONTRACTOR
AND TOLL MANUFACTURER?

Contractors are any entity a member company uses to handle its secondary materials and wastes. This includes, for example, waste treatment facilities, disposal facilities, tank cleaners, reclaimers, recyclers, and the like. "Contractors" does not include publicly owned treatment works.

Responsible Care® covers toll manufacturers' operations under two Codes. This code covers the wastes generated by relevant operations of toll manufacturers. For the purpose of this code, toll manufacturers are independent parties who: perform a manufacturing step for a member company in which the member company owns the work in process; use the member company's feed stock; and generate waste from the manufacturing step.

DSW 108038

WHAT DOES "IMPLEMENTATION OF A PROCESS. . ." MEAN?

The requirement for the "Implementation of a process. . ." is designed to encourage member companies to do business with those contractors and toll manufacturers that, after reasonable inquiry, are believed to engage in sound waste management practices.

As part of the contracting procedure, member companies should consider including language requiring the contractor to use proper health, safety, and environmental practices and stating that the member company has a right to inspect for that purpose.

HOW DO YOU REVIEW THAT A CONTRACTOR OR TOLL MANUFACTURER USES SOUND WASTE MANAGEMENT PRACTICES?

A process for "reviewing" includes reasonable reviews of the relevant practices of contractors and toll manufacturers. Because of the variety of commercial relationships and circumstances, member companies are to exercise their own judgement as to how to conduct "reviews" and precisely what to do with the information obtained.

CMA members are not expected to control the operations of their contractors and toll manufacturers. CMA member companies should consider performing a site visit and visual inspection of waste management practices by a company representative. The member company may determine that a more rigorous inspection is appropriate based on initial findings.

HOW OFTEN SHOULD YOU REVIEW CONTRACTORS AND TOLL MANUFACTURERS?

A review or evaluation should be done on some repeat basis. Companies should determine the timing by an evaluation of the results of previous reviews, potential impacts, potential liability, etc.

WHAT DO WE MEAN BY "IMPROVE THE PREVENTION OF RELEASES TO GROUNDWATER?"

The goal is to prevent releases to the ground and to protect existing groundwater quality. While it is envisioned that a company will have an SPCC (Spill Prevention Control and Countermeasures) plan for certain materials, companies should review the chemicals at the facility and extend the SPCC concepts to other materials. To improve efforts to prevent releases, member companies should review the chemicals and operations at a facility; develop plans to prevent, detect, and contain releases or potential releases; and implement these plans to protect groundwater from contamination.

DSW 108039

**IN PRACTICE 14 WHAT IS MEANT BY IMPLEMENTATION OF
AN ONGOING PROGRAM TO RESOLVE IDENTIFIED PROBLEMS?**

"Implementation of an ongoing program..." means developing processes for evaluating the health, safety, and environmental impacts of identified problems arising from past operating and waste management practices and for setting priorities for addressing those problems. The Code recognizes that not every identified problem poses adverse impacts. Resolving identified problems should consider factors such as, regulatory, technical, and economic considerations.

**WHAT IS MEANT BY "PAST OPERATING AND
WASTE MANAGEMENT PRACTICES?"**

Past operating practices and waste management practices that companies should consider may include operating practices such as: manufacturing operations, loading and unloading areas, storage, areas of spill containment, and recycling and reuse processes; and waste management practices such as: surface impoundments, waste treatment, land disposal, land treatment and farming, and deepwell injection.

**WHAT IS MEANT BY "WORKING WITH OTHERS TO
RESOLVE IDENTIFIED PROBLEMS?"**

Each member company's program should include a process to cooperate, to the extent appropriate, with governmental agencies, past owners, operators, insurance carriers, the community, and others to resolve the potential health, safety, and environmental impacts, and community concerns associated with identified problems.

**WHICH MEMBER COMPANY FACILITIES, ACTIVE OR
INACTIVE, ARE INCLUDED IN PRACTICE 14?**

This practice applies to facilities currently owned by a member company. This includes properties that are still owned, but no longer have ongoing operations. Inactive sites that are not owned by a member company, but where the company has potential involvement, should be addressed to the extent the member company determines feasible.

DSW 108040

WHAT IS MEANT BY "TAKING INTO ACCOUNT
COMMUNITY CONCERNS AND HEALTH, SAFETY,
AND ENVIRONMENTAL IMPACTS?"

When CMA member companies implement the employee and public outreach of the Code (Practices 4 and 8), companies should present information about their current and past waste management practices with the goal of identifying the community concerns. Companies should consider this input when developing plans and setting priorities for waste management and remediation activities.

DSW 108041

DSW 108042



Responsible Care®: A Public Commitment

PROCESS SAFETY CODE OF MANAGEMENT PRACTICES

Purpose

The Process Safety Code is designed to prevent fires, explosions and accidental chemical releases. The Code is comprised of a series of management practices that reflect this goal, with the expectation of continuous performance improvement for each management practice. The practices are based on the principle that facilities will be safe if they are designed according to sound engineering practices, built, operated and maintained properly and periodically reviewed for conformance.

Process safety is an interdisciplinary effort. Consequently, the Code is divided into the following four elements: management leadership, technology, facilities and personnel. Each element is composed of Management Practices. Individually, each Practice describes an activity or approach important to preventing fires, explosions and accidental chemical releases. Collectively, the Practices encompass process safety from the design stage through operation, maintenance and training. The scope of this Code includes manufacturing, processing, handling and on-site storage of chemicals. This Code must be implemented with full recognition of the community's interest, expectations and participation in achieving safe operations.

The process safety management program in each facility is complemented by workplace health and safety programs, as well as waste and release reduction programs which address and minimize releases and waste generation. These three programs, and others, will help assure that CMA member facilities are operated in a manner that protects the environment and the health and safety of personnel and the public.

Relationship to Guiding Principles

The Code helps achieve several of the Responsible Care® Guiding Principles:

- ☐ To recognize and respond to community concerns about chemicals and our operations,
- ☐ To make health, safety and environmental considerations a priority in our planning for all existing and new plants and processes.
- ☐ To operate our plants and processes in a manner that protects the environment and the health and safety of our employees and the public.

Management Practices

Each member company shall have an ongoing process safety program that includes:

Management Leadership

1. Leadership by senior management through policy, participation, communications and resource commitments in achieving continuous improvement of performance.
2. Clear accountability for performance against specific goals for continuous improvement.
3. Measurement of performance, audits for compliance and implementation of corrective actions.
4. Investigation, reporting, appropriate corrective action and follow-up of each incident that results or could have resulted in a fire, explosion or accidental chemical release.
5. Sharing of relevant safety knowledge and lessons learned from such incidents with industry, government and the community.
6. Use of the Community Awareness and Emergency Response (CAER) process to assure public comments and concerns are considered in design and implementation of the facility's process safety systems.

Technology

7. Current, complete documentation of process design and operating parameters and procedures.
8. Current, complete documentation of information relating to the hazards of materials and process technology.
9. Periodic assessment and documentation of process hazards, and implementation of actions to minimize risks associated with chemical operations, including the possibility of human error.
10. Management of changes to chemical operations to maintain or enhance the safety originally designed into the facility.

Facilities

11. Consideration and mitigation of the potential safety effects of expansions, modifications and new sites on the community, environment, and employees.
12. Facility design, construction and maintenance using sound engineering practices consistent with recognized codes and standards.
13. Safety reviews on all new and modified facilities during design and prior to start-up.
14. Documented maintenance and inspection programs that ensure facility integrity.

15. Sufficient layers of protection through technology, facilities and employees to prevent escalation from a single failure to a catastrophic event.
16. Provision for control of processes and equipment during emergencies resulting from natural events, utility disruptions and other external conditions.

Personnel

17. Identification of the skills and knowledge necessary to perform each job.
18. Establishment of procedures and work practices for safe operating and maintenance activities.
19. Training for all employees to reach and maintain proficiency in safe work practices and the skills and knowledge necessary to perform their job.
20. Demonstrations and documentation of skill proficiency prior to assignment to independent work, and periodically thereafter.
21. Programs designed to assure that employees in safety critical jobs are fit for duty and are not compromised by external influences, including alcohol and drug abuse.
22. Provisions that contractors either have programs for their own employees consistent with applicable sections of this Code or be included in the member company's program, or some combination of the two.

Glossary

This Code uses key terms in a context that may be broader than their associated regulatory definitions. However, adherence to this Code does not relieve a company of the obligation to meet Federal, state and local regulatory requirements.

Process Safety - The application of management and engineering principles to prevent fires, explosions and accidental chemical releases at chemical process facilities.

Sound Engineering Practice - The application of mandatory codes and standards supplemented by the use of voluntary codes, standards and guidelines, tempered by professional judgement.

Safety Critical Jobs - Jobs, activities and tasks, if improperly performed, that have the potential to significantly increase the risk of a fire, explosion or accidental chemical release.

Accidental Chemical Release - Unplanned, sudden releases of chemicals from manufacturing, processing, handling and on-site storage facilities to the air, water or land. It does not include permitted or other releases.

DSW 108045

DSW 108046

SAMPLE



**Responsible Care®:
A Public Commitment**

**CHEMICAL MANUFACTURERS ASSOCIATION
MEMBER SELF-EVALUATION FORM**

**PROCESS SAFETY CODE
OF MANAGEMENT PRACTICES**

Member Company

Name: _____

Responsible Care® Coordinator

Name: _____

Address: _____

Telephone () _____

Number of facilities subject to code _____

DSW 108047

DSW 108048

SAMPLE**PROCESS SAFETY CODE OF MANAGEMENT PRACTICES****Instructions:**

1. Under the Responsible Care® Initiative, each member company will submit a Self-Evaluation form annually to CMA.
2. Indicate on the cover page the number of member company facilities subject to the Code. Each company must report the implementation category for all facilities subject to the Code on this form.
3. For each Management Practice on the following four pages, indicate the number of facilities that have attained each implementation category. Each facility should appear in only one milestone category per Management Practice. The total number of facilities subject to the Code should equal the number of facilities across all six implementation categories for each Management Practice.
4. Only subject facilities owned or operated as of the reporting date should be included.
5. The implementation categories are:
 - Category NA - No action. If no action taken because the management practice is not applicable, please explain.
 - Category EV - Evaluating existing company practices against the Management Practice.
 - Category DP - Developing plan to implement Management Practice.
 - Category IA - Implementing action plan
 - Category PP - Management Practice in place.
 - Category RI - Reassessing Management Practice implementation.

CSW 108049

OSW 108050

SAMPLE

Management Practices

Categories

Management Leadership

NA EV DP IA PP RI

1. Leadership by senior management through policy, participation, communications and resource commitments in achieving continuous improvement of performance. Comments on Category NA: _____ _____ _____						
2. Clear accountability for performance against specific goals for continuous improvement. Comments on Category NA: _____ _____ _____						
3. Measurement of performance, audits for compliance and implementation of corrective actions. Comments on Category NA: _____ _____ _____						
4. Investigation, reporting, appropriate corrective action and follow-up of each incident that results or could have resulted in a fire, explosion or accidental chemical release. Comments on Category NA: _____ _____ _____						
5. Sharing of relevant safety knowledge and lessons learned from such incidents with industry, government and the community. Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category IA - Implementing action plan.
- Category PP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

DSW 108051

SAMPLE

Categories

NA EV DP IA PP RI

6. Use of the Community Awareness and Emergency Response (CAER) process to assure public comments and concerns are considered in design and implementation of the facility's process safety systems. Comments on Category NA: _____ _____ _____						
Technology 7. Current, complete documentation of process design and operating parameters and procedures. Comments on Category NA: _____ _____ _____						
8. Current, complete documentation of information relating to the hazards of materials and process technology. Comments on Category NA: _____ _____ _____						
9. Periodic assessment and documentation of process hazards, and implementation of actions to minimize risks associated with chemical operations, including the possibility of human error. Comments on Category NA: _____ _____ _____						
10. Management of changes to chemical operations to maintain or enhance the safety originally designed into the facility. Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category IA - Implementing action plan
- Category PP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

DSW 108052

SAMPLE

Categories

Facilities

NA EV DP IA PP RI

11. Consideration and mitigation of the potential safety effects of expansions, modifications and new sites on the community, environment, and employees. Comments on Category NA: _____ _____ _____						
12. Facility design, construction and maintenance using sound engineering practices consistent with recognized codes and standards. Comments on Category NA: _____ _____ _____						
13. Safety reviews on all new and modified facilities during design and prior to start-up. Comments on Category NA: _____ _____ _____						
14. Documented maintenance and inspection programs that ensure facility integrity. Comments on Category NA: _____ _____ _____						
15. Sufficient layers of protection through technology, facilities and employees to prevent escalation from a single failure to a catastrophic event. Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category IA - Implementing action plan
- Category PP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

DSW 108053

SAMPLE

Categories

NA EV DP LA PP RI

16. Provision for control of processes and equipment during emergencies resulting from natural events, utility disruptions and other external conditions. Comments on Category NA: _____ _____ _____						
Personnel 17. Identification of the skills and knowledge necessary to perform each job. Comments on Category NA: _____ _____ _____						
18. Establishment of procedures and work practices for safe operating and maintenance activities. Comments on Category NA: _____ _____ _____						
19. Training for all employees to reach and maintain proficiency in safe work practices and the skills and knowledge necessary to perform their job. Comments on Category NA: _____ _____ _____						
20. Demonstrations and documentation of skill proficiency prior to assignment to independent work, and periodically thereafter. Comments on Category NA: _____ _____ _____						

- Category NA - No action. If no action taken because the management practice is not applicable, please explain.
- Category EV - Evaluating existing company practices against the Management Practice.
- Category DP - Developing plan to implement Management Practice.
- Category LA - Implementing action plan
- Category PP - Management Practice in place.
- Category RI - Reassessing Management Practice implementation.

DSW 108054

SAMPLE

Categories

NA EV DP IA PP RI

21. Programs designed to assure that employees in safety critical jobs are fit for duty and are not compromised by external influences, including alcohol and drug abuse. Comments on Category NA: _____ _____ _____						
22. Provisions that contractors either have programs for their own employees consistent with applicable sections of this Code or be included in the member company's program, or some combination of the two. Comments on Category NA: _____ _____ _____						

- Category NA . No action. If no action taken because the management practice is not applicable, please explain.
- Category EV . Evaluating existing company practices against the Management Practice.
- Category DP . Developing plan to implement Management Practice.
- Category IA . Implementing action plan
- Category PP . Management Practice in place.
- Category RI . Reassessing Management Practice implementation.

DSW 108055

DSW 108056

Process Safety Code of Management Practices

Questions and Answers

Management Leadership

1. Q: How does one define senior management?

A: Senior management is that level that has the authority to establish policies and authorize expenditures to implement them. As used in this Code, this probably includes plant managers and above.

2. Q: What is meant by participation by senior management?

A: Participation in this context refers to activities which convey and reinforce commitment and leadership as well as support the implementation of policies and procedures.

3. Q: Is it necessary to have a written process safety policy?

A: Yes.

4. Q: What parameters can be used to measure process safety performance?

A: Each company should establish its own methods of measurement. Counts of unwanted incidents, frequency rates, property loss statistics, audit violations, permit violations, risk reviews and completion of training are a few examples.

5. Q: How should one define the type of incident that should be investigated?

A: There is no single standard which defines the type of incident or near-miss to investigate. Management should establish a formal procedure to investigate those uncontrolled events which have potentially serious consequences.

6. Q: What should be done after each incident or near-miss investigation?

A: Corrective actions or follow-up should be identified, carried out and communicated as appropriate within the company.

7. Q: What kind of knowledge and lessons should be shared?

A: Knowledge and lessons which can benefit others because of their general applicability or novelty or unusualness. Member companies may establish procedures to promote sharing consistent with proprietary and legal considerations.

8. Q: How much input do you envision our industry receiving from the public sector?

A: The CMA fully supports the concepts of working with local communities to listen to their views and concerns and to consider them in plant safety systems. The intent is to discuss major process additions and new grass-roots construction as opposed to minor plant changes. Individual companies are responsible for the safe design and operation of facilities; that responsibility cannot be shared with the public. It is intended that public concerns be considered in design and operations of the facility. The CAER network provides a useful vehicle to accomplish this.

Technology

9. Q: What type of documentation of process design and operating parameters should exist?

A: Each operating unit should have up-to-date safety related information that contains the design basis and procedures, (e.g., process flowsheets, piping and instrument diagrams or engineering flow diagrams, vessel drawings, electrical area classifications, safety valve capacity information and operating manuals). The documents will serve as the back bone for employee training, hazard evaluation and process modifications.

10. Q: What is meant by operating parameters?

A: Operating parameters are the ranges of conditions (eg. temperature, pressure and flow composition) within which a unit is designed to operate. Within that range, a unit is expected to operate without any problems. For example, the safe operating parameter for a reactor temperature during exotherm might be 70 degrees minimum to 130 degrees maximum. Operating outside the range could cause instability in the reaction — runaway temperature if above, potential brittle fracture if below.

11. Q: What are some of the types of information needed to define the chemistry?

A: Each reactant and product should have a material safety data sheet (MSDS). Chemical reaction kinetics and acute toxicity should be known and understood. Reactive chemical performance upon mixing various chemicals in different proportions should be documented. Waste streams should be included as well as reactants and products.

12.Q: What type of procedures should be maintained?

A: Generally, all routine jobs or tasks with process safety implications should have written step-by-step instructions. These procedures should capture the experience base of the knowledgeable experts. The protective equipment and employee concerns should be incorporated in the procedures. Also, emergency procedures must be clear and unequivocal.

13. Q: What is the difference between documentation covered in practice 7 versus that included in practice 8?

A: Number 7 refers mainly to design and operating information, while number 8 specifically addresses the hazards associated with the unit being evaluated.

14. Q: Does the reference in the Code to risk imply that we will be required to perform quantitative risk assessments on all our plants?

A: No. Qualitative analysis alone should be sufficient to satisfy process safety analysis objectives in most cases. In any case, qualitative analysis should be considered prior to performing numerical frequency or consequence calculations.

15. Q: What does periodic assessment of process hazards mean in the technology element?

A: Each member company should establish its own review frequency based on inherent hazards, operating experience, rate of technology change and other factors. Typical review frequencies range from three to seven years. Under very special circumstances, review frequency may be as short as one year.

16. Q: What is meant by "management of change"?

A: "Management of change" means having management systems in place that ensure the original safe design of the unit is maintained and all changes, including minor modifications, are properly reviewed, recorded and communicated.

17. Q: What changes should be covered?

A: All changes except like for like substitutions. Examples include hardware, procedures, raw materials, operating conditions, throughput, employee, software and control mode.

18. Q: There does not seem to be a clear distinction between Technology and Facilities - shouldn't these two sections be combined?

A: While it is true that the two sections are closely related and interdependent, Technology (i.e., chemistry and know-how) and Facilities (i.e., equipment and hardware) each deserve an independent focus as related to process safety.

Facilities

19. Q: Should the community be consulted when considering potential effects of a new site or new installation?

A: Yes, using principles of the CAER process.

20. Q: Does this mean the community has approval or rejection authority over our projects?

A: No: It means that we should identify and respond to community concerns.

21.Q: Choosing a new plant site involves many complex considerations. Can we realistically expect to completely satisfy all interests?

A: Possibly not, but the Responsible Care® Guiding Principles require health, safety and the environment to be priority considerations and such issues must be adequately resolved.

22.Q: Does the Code cover concerns about sabotage or terrorism?

A: Such issues are not intended to be within the scope of the Code. However, good practice in site selection and planning will consider such general security issues as buffer zones, fencing, lighting, entrance gates and security surveillance. Also, mitigation and emergency response measures can help minimize consequences of hostile acts.

23. Q: Does "sound engineering practice" extend beyond mandatory codes and regulations?

A: In many cases, yes. While government codes and regulations may establish minimum legal requirements for plant design, operation and maintenance, member companies are expected to use qualified professionals to identify and apply other engineering practices (such as contained in many non-mandatory or consensus standards or codes) as may be necessary to fulfill our safety commitment to employees and the community.

24. Q: Are "Safety Reviews" as prescribed in practice 13 different from "Process Hazard Assessments" as prescribed in practice 9?

A: Yes. "Process Hazard Assessment" is done during the process design stage and periodically thereafter. It focuses on the hazards inherent to the process and measures to control these hazards. "Safety Reviews" use "Process Hazard Assessment" as a starting point and focus on the physical installation to assure that it is in accordance with design and is safe to start-up and operate.

25. Q: Shouldn't Safety Reviews go beyond simple field inspection?

A: Yes. Safety Reviews may include such things as testing equipment, controls, control logic, interlocks, "water runs" etc., prior to operation with hazardous materials. In addition, such reviews should also confirm that process documentation and procedures are in place and that operators have been trained.

26. Q: Doesn't a "Preventive Maintenance Program" meet the requirement of practice 14?

A: To meet the intent of this code practice, the preventive maintenance (PM) program must go beyond operating reliability and economic considerations and address all potential failures which, while possibly extremely unlikely, could impact process safety. A program to "ensure facility integrity" must search out hidden deterioration and flaws that can result in sudden and unexpected failure that can impact process safety.

DSW 108060

27. Q: What are some examples that could be included in a PM program to satisfy practice 14?

A: Metallurgical examinations for stress corrosion cracking, nondestructive acoustic testing, compressor vibration monitoring, thickness measuring for erosion or corrosion on key parts of pressure vessels and pipelines, verification of bolt and clamp material of construction and quality, reliability of critical instruments and operation of safety valves are examples.

28. Q: Shouldn't a hierarchy be considered in applying "layers of protection"?

A: Normally technology should be applied first, choosing an inherently safe or less hazardous process whenever possible. Then hardware, safety factors, redundant controls, failure detection systems, etc., should be applied. Finally, emergency procedures and employee training should complement the process and hardware design.

29. Q: How many layers constitute "sufficient layers of protection"?

A: There is no absolute answer to this question. The number of levels needed depends on the likelihood of an initial failure, the nature of the consequences and whether additional levels of protection will materially improve safety. Layers of protection include more than redundant equipment. They may include process techniques, instrumentation and hardware, operating procedures and operator training.

30. Q: What is meant by "external conditions"?

A: By external conditions we mean anything that is beyond the direct and immediate control of the process operator. An example might be an evacuation order for your plant caused by a fire or toxic release from a neighboring plant as well as an upset or incident in an adjoining process unit.

Personnel

31. Q: We train our employees thoroughly; why is it necessary to also demonstrate their proficiency?

A: Even with the best employee training programs, people learn at different rates and comprehension. An actual demonstration is the only way of being sure that each individual has grasped essential concepts or skills. Demonstrations can involve written tests and/or having the trainee show a qualified observer how they would do a job.

32. Q: Do procedures and work practices have to be documented?

A: Generally, yes. Procedures typically require proper execution of several stages. Documented procedures help assure that a critical action is not overlooked and that the procedure is carried out consistently by everyone.

33. Q: Does the code require that employees be screened for alcohol and drug abuse?

A: No. The Code requires programs designed to assure fitness for duty.

34. Q: What kinds of jobs are safety-critical?

A: A position is safety-critical when it involves tasks which, if not performed properly, can significantly increase the likelihood of a fire, explosion, or accidental chemical release.

35. Q: What is meant by "external influence"?

A: External influences include abuse of alcohol or drugs, but the terms also refers to any factor which might impair judgement, attention or general capacity to perform a job safely. Examples include physical impairment, emotional stress, and stress from too much overtime work.

DSW 108062



Responsible Care®: A Public Commitment

EMPLOYEE HEALTH AND SAFETY CODE OF MANAGEMENT PRACTICES

PURPOSE

The goal of the Employee Health and Safety Code of Management Practices is to protect and promote the health and safety of people working at or visiting member company work sites.

To achieve this goal, the Code provides Management Practices designed to continuously improve work site health and safety. These practices provide a multidisciplinary means to identify and assess hazards, prevent unsafe acts and conditions, maintain and improve employee health, and foster communication on health and safety issues.

Implementation of the Employee Health and Safety Code, together with other Codes of Management Practices, can enable member companies to operate in a manner that further protects and promotes the health and safety of employees, contractors, and the public, and protects the environment.

RELATIONSHIP TO GUIDING PRINCIPLES

Implementation of the Code helps achieve several of the Responsible Care® Guiding Principles:

- 1 To recognize and respond to community concerns about chemicals and our operations.
- 1 To make health, safety, and environmental considerations a priority in our planning for all existing and new products and processes.
- 1 To operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public.
- 1 To extend knowledge by conducting or supporting research on the health, safety, and environmental effects of our products, processes, and waste materials.

MANAGEMENT PRACTICES

Each member company shall have an ongoing occupational health and safety program that includes:

Program Management

1. Commitment by all levels of management to protecting and promoting the health and safety of people working at or visiting member company work sites through published policies; accountability for implementation; and provision of sufficient resources, including qualified health and safety personnel.
2. Opportunities for employees to participate in developing, implementing, and reviewing health and safety programs.
3. Provisions, including selection criteria, to confirm that on-site contractors' programs are consistent with applicable Management Practices of this Code.
4. Written, up-to-date health and safety programs and procedures appropriate to the facility.
5. Means to verify that health and safety programs and procedures are effective and that actual practices are consistent with these programs and procedures.
6. Systems for maintaining records and analyzing data to evaluate health and safety performance, determine trends, and identify areas for improvement.

Identification and Evaluation

7. Methods to identify and evaluate potential health and safety hazards in planned or existing facilities, including facilities to be modified.
8. Exposure assessments and safety analyses to evaluate health and safety hazards to employees from processes; equipment; potentially hazardous chemical, physical, or biological agents; or other work site conditions.
9. Health assessments to determine employee medical fitness for specific job tasks.
10. Employee occupational medical surveillance programs tailored to work site hazards.

Prevention and Control

11. Mechanisms for reviewing the design and modification of facilities and job tasks, taking into account the following hierarchy of controls: inherent safe design, material substitution, engineering controls, administrative controls, and personal protective equipment.
12. Systems to verify that health and safety equipment is properly selected, maintained, and used.

OSW 108064

13. Preventive maintenance and housekeeping programs to maintain the safety of facilities, tools, and equipment.
14. Timely investigation of work site illnesses, injuries, and accidents; corrective actions to prevent recurrence; and evaluation of the effectiveness of corrective actions taken.
15. Security procedures and systems to control entry and exit of personnel and materials at the work site and restricted areas.
16. Provisions for emergency medical assistance for people at work sites.

Communications and Training

17. Communication of health and safety information that is relevant to specific job tasks and the work site.
18. Health and safety training programs, including documentation of these programs, and methods to evaluate the effectiveness of both training and communications activities.

INDUSTRY TREND DATA

To identify industry trends, each company shall report to CMA, or its designated agent, occupational injuries and illnesses, as specified in CMA's Occupational Injury and Illness Reporting Program.

RELATIONSHIP TO OTHER CODES OF MANAGEMENT PRACTICES

This Code complements, and should be implemented in conjunction with, current and future Codes of Management Practices, especially those elements of the CAER Code involving emergency response, the Process Safety Code involving training of employees in their job functions, and the Product Stewardship Code involving health, safety, and environmental information, and employee education and product use feedback.

MEMBER SELF-EVALUATION

Each member company shall report annually to CMA, or its designated agent, the implementation category attained for each Management Practice in this Code. The reports should be submitted on the member self-evaluation form provided.

RESOURCE GUIDE

A separate resource guide is available to assist member companies in implementing the Code.

The Responsible Care® Employee Health & Safety Code of Management Practices was approved by CMA's Board of Directors on January 14, 1992

DSW 108065

DSW 108066



Responsible Care®:
A Public Commitment

SAMPLE

**EMPLOYEE HEALTH AND SAFETY
CODE OF MANAGEMENT PRACTICES**

MEMBER SELF-EVALUATION FORM

Member Company

Name: _____

Responsible Care® Coordinator

Name: _____

Address: _____

Telephone: (____) _____

Number of facilities subject to
the Employee Health and Safety Code: _____

DSW 108068

EMPLOYEE HEALTH AND SAFETY CODE

MEMBER SELF-EVALUATION FORM

SAMPLE

Instructions for the Company Responsible Care® Coordinator

1. This form is to be submitted annually to CMA by each member company.
2. Indicate on page 1 the number of your member company's facilities that are subject to the Code. Each company must report the implementation stage for all facilities subject to the Employee Health and Safety Code on this form.
3. For each Management Practice on the following pages, indicate the number of facilities that have attained each implementation category. Each facility should appear in only one implementation category per Management Practice. Identify the current implementation category for each of your facilities at the time you complete the form.
4. For the Industry Trend Data, report the previous calendar year's cumulative occupational injuries and illnesses. Occupational injuries and illnesses should be reported on a company wide basis as specified by CMA's Occupational Injury and Illness Reporting (OIIR) Program.
5. Only subject facilities owned or operated as of the reporting date should be included.
6. The implementation categories are:
 - Category NA - No action. If no action taken because the Management Practice is not applicable, please explain in space marked "comments."*
 - Category EV - Evaluating existing company practices against the Management Practice.*
 - Category DP - Developing plan to implement Management Practice.*
 - Category IA - Implementing action plan.*
 - Category PP - Management Practice in place.*
 - Category RI - Reassessing Management Practice implementation.*

DSW 108069

DSW 108070

EMPLOYEE HEALTH AND SAFETY CODE OF MANAGEMENT PRACTICES

SAMPLE

Management Practices

Categories

	NA	EV	DP	LA	PP	RI
1. Commitment by all levels of management to protecting and promoting the health and safety of people working at or visiting member company sites, through: published policies; accountability for implementation; and provision of sufficient resources, including qualified health and safety personnel. Comments on Category NA: _____ _____ _____						
2. Opportunities for employees to participate in developing, implementing, and reviewing health and safety programs. Comments on Category NA: _____ _____ _____						
3. Provisions, including selection criteria, to confirm that on-site contractors' programs are consistent with applicable Management Practices of this Code. Comments on Category NA: _____ _____ _____						
4. Written, up-to-date health and safety programs and procedures appropriate to the facility. Comments on Category NA: _____ _____ _____						

Category NA - No action. If no action taken because the Management Practice is not applicable, please explain.
 Category EV - Evaluating existing company practices against the Management Practice.
 Category DP - Developing plan to implement Management Practice.
 Category LA - Implementing action plan.
 Category PP - Management Practice in place.
 Category RI - Reassessing Management Practice implementation.

DSW 10807.1

Management PracticesCategories

NA EV DP IA PP RI

5. Means to verify that health and safety programs and procedures are effective and that actual practices are consistent with these programs and procedures. Comments on Category NA: _____ _____ _____						
6. Systems for maintaining records and analyzing data to evaluate health and safety performance, determine trends, and identify areas for improvement. Comments on Category NA: _____ _____ _____						
7. Methods to identify and evaluate potential health and safety hazards in planned or existing facilities, including facilities to be modified. Comments on Category NA: _____ _____ _____						
8. Exposure assessments and safety analyses to evaluate health and safety hazards to employees from processes; equipment; potentially hazardous chemical, physical, or biological agents; or other work site conditions. Comments on Category NA: _____ _____ _____						
9. Health assessments to determine employee medical fitness for specific job tasks. Comments on Category NA: _____ _____ _____						

Category NA - No action. If no action taken because the Management Practice is not applicable, please explain.
Category EV - Evaluating existing company practices against the Management Practice.
Category DP - Developing plan to implement Management Practice.
Category IA - Implementing action plan.
Category PP - Management Practice in place.
Category RI - Reassessing Management Practice implementation.

DSW 108072

Management PracticesCategories

NA EV DP LA PP RI

10. Employee occupational medical surveillance programs tailored to work site hazards.

Comments on Category NA: _____

11. Mechanisms for reviewing the design and modification of facilities and job tasks, taking into account the following hierarchy of controls: inherent safe design, material substitution, engineering controls, administrative controls, and personal protective equipment.

Comments on Category NA: _____

12. Systems to verify that health and safety equipment is properly selected, maintained, and used.

Comments on Category NA: _____

13. Preventive maintenance and housekeeping programs to maintain the safety of facilities, tools, and equipment.

Comments on Category NA: _____

14. Timely investigation of work site illnesses, injuries, and incidents; corrective actions to prevent recurrence; and evaluation of the effectiveness of corrective actions taken.

Comments on Category NA: _____

Category NA - No action. If no action taken because the Management Practice is not applicable, please explain.
Category EV - Evaluating existing company practices against the Management Practices.
Category DP - Developing plan to implement Management Practices.
Category LA - Implementing action plan.
Category PP - Management Practices in place.
Category RI - Resourcing Management Practices implementation.

DSW 108073

Management PracticesCategories

NA EV DP LA PP RI

15. Security procedures and systems to control entry and exit of personnel and materials at the work site and restricted areas.

Comments on Category NA: _____

16. Provisions for emergency medical assistance for people at work sites.

Comments on Category NA: _____

17. Communication of health and safety information that is relevant to specific job tasks and the work site.

Comments on Category NA: _____

18. Health and safety training programs, including documentation of these programs, and methods to evaluate the effectiveness of both training and communications activities.

Comments on Category NA: _____

INDUSTRY TREND DATA

Occupational injuries and illnesses for the previous calendar year were reported as specified in CMA's Occupational Injury and Illness Reporting Program.

Yes _____ No _____

If no, please explain: _____

Category NA - No action. If no action taken because the Management Practice is not applicable, please explain.
Category EV - Evaluating existing company practices against the Management Practice.
Category DP - Developing plan to implement Management Practice.
Category LA - Implementing action plan.
Category PP - Management Practice in place.
Category RI - Recovering Management Practice implementation.

DSW 108074

QUESTIONS AND ANSWERS

EMPLOYEE HEALTH AND SAFETY CODE OF MANAGEMENT PRACTICES

Throughout its development, the Employee Health and Safety (EHS) Code was reviewed regularly by CMA's Health and Safety Committee, Engineering and Operations Committee, and Responsible Care® Coordinating Group. An early draft of the EHS Code was reviewed by member companies through written comments and an open meeting, and member companies conducted a second review of the draft EHS Code with their employees. In addition, the draft EHS Code was reviewed periodically by the Responsible Care® Public Advisory Panel.

During these reviews, the following questions were frequently asked about the EHS Code of Management Practices:

1. Does the EHS Code cover all aspects of an employee's health and safety?

Answer: The EHS Code is restricted to those aspects of an employee's health and safety that are affected by his or her employment in the chemical industry. The EHS Code addresses occupational health and safety and does not address employee wellness or off-the-job safety.

2. Does the EHS Code include visitors and all contractor operations?

Answer: The EHS Code covers all visitors and contractor employees who enter a member company's work site. Visitors should be protected from hazards they may encounter while on the work site. All contractors should have health and safety programs for their employees that are appropriate for the hazards encountered in their contracted job tasks and that are consistent with applicable management practices of the EHS Code. Contract manufacturers, or tollers, are addressed in the Product Stewardship Code.

3. Does the EHS Code require employee participation at work sites at which employees are represented by a union?

Answer: The objective of the EHS Code is to encourage member companies to fully involve employees in safety and health activities. However, at facilities at which employees are represented by a union, negotiations concerning such employee participation may be required. In the contract negotiation process, member companies should make a good-faith effort to address opportunities for employee participation.

4. What is CMA's Occupational Injury and Illness Reporting (OIIR) Program?

Answer: CMA's OIIR Program serves as a basis for awarding the annual Lammot Du Pont Safety Awards recognizing sustained achievement by CMA member companies in reducing workplace injury and illness rates. Each participating company submits its injury and illness data, as reported on the OSHA Form 200, based on guidelines issued by the U.S. Bureau of Labor Statistics (BLS).

5. Are contractor employees included in the OIIR Program?

Answer: At this time, contractor employees are not included in the CMA OIIR Program, unless the company directly supervises their day-to-day activities. Current BLS guidelines require reporting of occupational injuries and illnesses by individual employers based on Standard Industrial Classification (SIC) codes. Both CMA and OSHA are considering revisions to the reporting guidelines that would consolidate the reporting of occupational injuries and illnesses for a single work site, without regard to the SIC code of the employer.

6. Does the EHS Code address substance abuse in the workplace as part of assessing medical fitness for specific job tasks?

Answer: Substance abuse is addressed by the Process Safety Code in Management Practice 21: "Programs designed to assure that employees in safety-critical jobs are fit for duty and are not compromised by external influences, including alcohol and drug abuse."

7. Does the EHS Code require job tasks to be evaluated for physical requirements?

Answer: Job tasks should be evaluated to determine the specific physical abilities associated with a task. An employee's abilities should be evaluated using medical criteria before being assigned to a job task with specific physical requirements. For example, employees should be medically evaluated to determine their ability to wear a respirator before being assigned to job tasks requiring the use of a respirator.

8. Does the EHS Code require member companies to provide annual medical examinations to all employees as part of an occupational medical surveillance program?

Answer: No. Occupational medical surveillance programs should provide appropriate, targeted medical assessments to those employees exposed to specific hazards. For example, regular spirometry examinations to assess lung function should be offered to employees exposed to an agent known to affect lung function.

9. Does the EHS Code require member companies to assess the effect of exposures to chronic hazards on the health of employees?

Answer: As a part of maintaining records and analyzing data for trends, member companies should assess the long-term health experience of their employees in relationship to exposures to chronic hazards. Chronic hazards include, for example, long-term exposures to carcinogens.

Product Stewardship Booklet for the Code of Management Practices

The code's management practices are grouped into three categories, described as follows:

Management Leadership and Commitment contains Management Practices 1-3. These practices serve to give direction, provide resources, set priorities, and establish responsibilities within your company that provide an appropriate atmosphere and foundation for successfully implementing product stewardship.

Information and Characterization includes Management Practices 4 and 5. These address the need to continually increase the body of knowledge surrounding chemical products in order to improve hazard identification and risk characterization at every stage in a product's life.

As the cornerstone of product stewardship, Management Practices 6-12 are categorized as **Risk Management** practices, which work together to manage risks at every stage of a product's life. Some of these management practices are the most challenging in the Code because they extend the risk management process beyond traditional boundaries to consider risks beyond the point of sale.

Management practices in the first two categories provide the foundation for conducting the risk management practices in the third category. The ability to implement each management practice, therefore, relies upon the successful implementation of previous practices, with the successful development and implementation of product stewardship progressing from a planning and resource allocation to an information collection phase, and finally to action-oriented, risk management activities.

Purpose and Scope

The purpose of the Product Stewardship Code of Management Practices is to make health, safety and environmental protection an integral part of designing, manufacturing, marketing, distributing, using, recycling and disposing of our products. The code provides guidance as well as a means to measure continuous improvement in the practice of product stewardship.

The scope of the code covers all stages of a product's life. Successful implementation is a shared responsibility. Everyone involved with the product has responsibilities to address society's interest in a healthy environment and in products that can be used safely. All employers are responsible for providing a safe workplace, and all who use and handle products must follow safe and environmentally sound practices.

The code recognizes that each company must exercise independent judgment and discretion to successfully apply the code to its products, customers and business.

Relationship to Responsible Care® and Guiding Principles

Implementation of the code promotes the achievement of several of the Responsible Care® Guiding Principles:

- to make health, safety and environmental considerations a priority in our planning for all existing and new products and processes;
- to develop and produce chemicals that can be manufactured, transported, used and disposed of safely;
- to extend knowledge by conducting or supporting research on the health, safety and environmental effects of our products, processes and waste materials;
- to counsel customers on the safe use, transportation and disposal of chemical products;
- to report promptly to officials, employees, customers and the public, information on chemical-related health or environmental hazards and to recommend protective measures;
- to promote the principles and practices of Responsible Care® by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of chemicals.

This code complements, and should be implemented in conjunction with, current and future Codes of Management Practices. Chapter 3 discusses the Product Stewardship Code's relationship to the other existing codes.

Management Practices

Management Practice 1

LEADERSHIP: Demonstrates senior management leadership through written policy, active participation and communication.

The objective of this management practice is to set the driving force for the Product Stewardship Code. To this end, senior management must first adopt a policy that reflects the company's vision of product stewardship. This policy should state clearly how senior management expects product stewardship to be managed within the company.

To be effective, the policy should emphasize that product stewardship, like quality and safety, must be woven into the company's culture. It also should be clear that the commitment is an ongoing, long-term part of the company's operations and business.

Finally, if the new policy represents a change in the way of doing business, it should be clear that a change in behavior is expected. In some companies, a separate written product stewardship policy may be effective. In others, a broader health, safety and environmental (H,S&E) policy that incorporates the principles of product stewardship may be more appropriate.

However, a policy alone is not enough. The words of a policy must be reinforced by actions and behaviors that continuously reaffirm the goals senior management has set. Senior management is responsible for conveying throughout the organization its involvement with, and support of, product stewardship—especially to the next level of manage-

ment and encouraging it to do the same. (Management Practices 2 and 3 focus on some of the visible signals -- for example, goals, performance measurement and resource allocation).

Management Practice 2

ACCOUNTABILITY and PERFORMANCE MEASUREMENT: *Establishes goals and responsibilities for implementing product stewardship throughout the organization. Measures performance against these goals.*

One of the key ways senior management can convey the importance of product stewardship is by establishing it as a priority in business planning and individual performance planning. The objective is to develop a process that will result in continuous improvement through goals that are well-defined, achievable and measurable. Similarly, individual responsibilities should be clear and consistent.

Management Practice 3

RESOURCES: *Commits resources necessary to implement and maintain product stewardship practices.*

The commitment of resources, both human and financial, is a critical signal that management can send to show its commitment to product stewardship practices and is a vital component for some implementation activities. Undoubtedly, resources will vary from company to company. However, in all cases, the commitment of resources should be consistent with product stewardship implementation plans and sufficient to support continuous improvement.

Management Practice 4

HEALTH, SAFETY and ENVIRONMENTAL INFORMATION: *Establishes and maintains information on health, safety and environmental hazards and reasonably foreseeable exposures from new and existing products.*

Just as Management Practice 1 is the driving force for the Product Stewardship Code, Management Practice 4 is the foundation. The objective of Management Practice 4 is to establish a knowledge base of human and environmental hazards and reasonably foreseeable exposures and, once established, to maintain it. Under this practice, companies gather information to support the system that characterizes a product's risk (Management Practice 5) and, ultimately, the system that develops the methods to manage that risk (Management Practice 6).

Initially, some companies may establish their knowledge base by developing information; others may do so by collecting and compiling available information. However, all companies should have a process to continuously gather relevant product information and to review existing information to determine if it is accurate, current and complete.

Sources of information may include published, unpublished and/or internally generated scientific reports on health, safety and environmental effects and exposures. Generally, the types of information could cover animal or human toxicity, ecotoxicity and chemical and physical properties that affect exposure or the environmental impact. In many cases, exposure information is not directly available but may be estimated with product use information.

Information on a product's handling, use and reasonably foreseeable exposures in research, development, manufacturing, transport, storage, packaging and disposal may

be obtained by a number of means. These could include surveys of customers and other product receivers, technical reviews or visits to customers, and/or observations reported by sales and marketing personnel.

Management Practice 5

PRODUCT RISK CHARACTERIZATION: *Characterizes new and existing products with respect to their risk using information about health, safety and environmental hazards and reasonably foreseeable exposures. Establishes a system that initiates re-evaluation.*

This practice has two objectives. The first is to use the information gathered in Management Practice 4 to develop a thorough understanding of the product's risk. This characterization may be either quantitative or qualitative. The second objective is to establish a system that triggers re-evaluation, whether upon receipt of new information or upon periodic, scheduled review.

A product may be characterized as a single entity or it may be characterized in a group of products based on similar uses, compositions or physical properties. Product risks may vary with different uses or exposures.

The time frame for re-evaluation may vary from product to product. Triggers for such re-evaluations might include significant new hazard or exposure data, significant new use or misuse information as it becomes known or a substantial increase in sales volume, suggesting new uses or markets.

Management Practice 6

RISK-MANAGEMENT SYSTEM: *Establishes a system to identify, document and implement health, safety and environmental risk-management actions appropriate to the product risk.*

The objective of Management Practice 6 is to establish a system for identifying and implementing risk-management actions. Risks involved in the production and use of chemicals can be managed and controlled if each company takes the basic information on a product's risk (Management Practice 4), characterizes it (Management Practice 5) and then implements a series of risk management actions (Management Practice 7 through 12). These risk management actions are a result of a conscious weighing of technical, ethical, societal and business issues surrounding a product. Actions taken as a result can range from no action, to providing MSDSs and labels, to product reformulation or repackaging, to removal of the product from a market.

The management practices that follow, Management Practices 7 through 12, are specific areas of company operations that warrant discussion and special emphasis.

Management Practice 7

PRODUCT and PROCESS DESIGN and IMPROVEMENT: *Establishes and maintains a system that makes health, safety and environmental impacts—including the use of energy and natural resources—key considerations in designing, developing and improving products and processes.*

Designing products and processes (or redesigning existing products and processes) with a system to identify health, safety and environmental impacts throughout the product lifecycle is one of the most effective ways of managing the product risks identified in Management Practice #5. One objective of this Practice is attainment of the preferred

environmental hierarchy: source reduction; reuse; recycling; and disposal. Source reduction includes equipment or technology modifications, process or procedure changes, product reformulation or design, substitution of raw materials, and improvements in housekeeping, maintenance, training or inventory control.

This Practice also addresses the need for proper energy and natural resource utilization--important considerations for reducing potential adverse environmental impacts and achieving sustainable development.

The health, safety and environmental attributes of the product throughout its entire life-cycle should be addressed at the beginning, during the concept and design (or redesign) phases. Re-evaluation should occur on a periodic basis or whenever changes to the product or process are contemplated.

Insights and contributions from employees in all functional areas that may affect health, safety and the environment should be incorporated into the review. These functional areas include research and development, manufacturing, distribution, sales and marketing and regulatory personnel.

Management Practice 8

EMPLOYEE EDUCATION and PRODUCT USE FEEDBACK: Educates and trains employees, based on job function, on the proper handling, recycling, use and disposal of products and known product uses. Implements a system that encourages employees to feed back information on new uses, identified misuses or adverse effects for use in product risk characterization.

This practice has two parts. The first is to ensure that all employees who are involved with products have the training and education necessary to understand product (and packaging) hazards, proper use, handling, reuse, recycling and disposal procedures. The second is to help ensure that any new information that may alter the way risk is being managed is factored into the risk characterization process on a timely basis (Management Practice 5).

The training and education of employees should be tailored to specific job functions. For example, marketing and sales personnel are in a unique position to know how customers are using products and must be aware of product hazards, reasonably foreseeable exposures, appropriate uses and proper handling procedures. They should be able to identify product deviations and to recognize adverse health or environmental effects. These personnel should be alert to the customer's and the public's comments or perceptions.

It is essential that there be timely feedback of this safety, health or environmental information or concerns into the risk characterization process (Management Practices 4 and 5). This feedback may change the risk management actions (Management Practice 6).

Management Practice 9

CONTRACT MANUFACTURERS: Selects contract manufacturers who employ appropriate practices for health, safety and environmental protection for the operations under contract, or works with contract manufacturers to help them implement such practices. Provides information and guidance appropriate to the product and process risk to foster proper handling, use, recycling and disposal. Periodically reviews performance of contract manufacturers.

The objective of this Management Practice is to encourage the use of contract manufacturers who have sound health, safety and environmental practices for the specific operations under contract.

The level of involvement will vary according to the product's risk. Activities could include reinforcement of previously provided health, safety and environmental information, additional training, etc. At a minimum, both parties should share any accumulated knowledge that would enhance health, safety and environmental protection.

The "transmittal of appropriate information" acknowledges that while we want customers to pass along H,S&E information, product changes made by the customer may mean that the information originally supplied with the product no longer applies. In these cases, the customer needs to issue information that reflects the current H,S&E information.

Along with Management Practices 9, 10 and 11, this management practice constitutes an important outreach component of the Product Stewardship Code. The long-term result of implementing this practice, like the other outreach management practices, should result in improved health, safety and environmental performance – not just for CMA member companies but the entire chemical industry.

As with distributors and suppliers, reviews of customers will be commensurate with product risk. However, it is appropriate to expect companies to extend the principles of product stewardship beyond the CMA membership and Responsible Care® partners.



MONSANTO PLEDGE GUIDELINE

#1

POLLUTION PREVENTION

The company will work toward the ultimate goal of ensuring zero effect attributable to waste in all media. It will research, design and operate its facilities to minimize the generation of process and nonprocess waste and the potential effect of chemical releases to the environment. For waste and releases that remain, the company will comply with regulations, while minimizing environmental threat and long-term liability.

KEY RESULTS

- Reduce by 90 percent the company's 1987 level of worldwide air emissions of chemicals named by the United States Environmental Protection Agency (USEPA) under Title III of the Superfund Amendments and Reauthorization Act (SARA Section 313) and chemicals of local concern outside the United States by the end of 1992.
- Reduce by 70 percent the company's worldwide SARA Section 313, European Community Priority Pollutant List (EC 129) and carbon monoxide chemical releases to all media and off-site transfers by the end of 1995.
- Discontinue the deep-well injection of Resource Conservation and Recovery Act (RCRA) hazardous waste streams and SARA Section 313 toxic chemicals by the end of 1999.

PROGRAM

1.1 Process Waste

The operating units will integrate into their release reduction plans the corporate goal of reducing all toxic and hazardous releases and emission to all media, working toward an ultimate goal of zero effect. For reducing releases from processes, the order of preference is source reduction, followed by reuse, recycling or co-product sale, and finally by incineration or other treatment to reduce the volume and/or toxicity of pollutant streams.

The development and use of technologies that improve competitive positions will be emphasized.

The operating units will integrate into their release-reduction plans the following corporate goals:

Reduce by 90 percent the company's 1987 level of worldwide air emissions of SARA Section 313 chemicals and chemicals of local concern outside the United States by the end of 1992.

Reduce by 70 percent the company's worldwide SARA Section 313, EC 129 and carbon monoxide chemical releases to all media and off-site transfers by end of 1995. The January 1990 SARA 313 and EC 129 lists plus carbon monoxide apply through the end of the multimedia release reduction program.

An effect-based release reduction target will be established every five years beginning in 1995, working toward an ultimate goal of zero effect. By the end of 1993, a method and process for an effect-based reduction program for toxic chemicals will be developed.

1.2 Nonprocess Waste

Each facility will maintain an inventory of all nonprocess sources of waste generation, including power generation, office and maintenance operations, general warehouse trash, packaging/shipping materials and similar sources.

1.3 Underground Well (Deep-well) Injection

The company will discontinue deep-well injection of RCRA hazardous waste streams by the end of 1999. It will also apply best feasible technology to virtually eliminate the deep-well injection of SARA 313 chemicals. The company's name will not appear on the list of companies making significant use of injection wells for disposal of SARA chemicals for the reporting year 2000 and beyond. The company will demonstrate progress by achieving in 1996 an 80 percent reduction of injected SARA chemicals against the 1990 base reporting year.

To be prepared for the possibility of mandatory regulations, the company intends to select by the end of 1995 optimal technical strategies for total withdrawal from deep wells. This preparation will include study-grade estimates to achieve non-brine, treated surface discharge. All operating units will continue where possible to challenge the technical impediments to total withdrawal from deep wells.

No new uses of deep wells for hazardous or toxic materials are permitted. A "new" use of deep wells is defined as injection of streams from new products or the addition of substances not previously injected at that site. New internal or external uses of deep wells for non-hazardous wastes and nontoxic chemicals will be considered by the Environmental Policy Committee (EPC) only on an exception basis and within the constraints of these guidelines. The economics of any project appropriation request for such use must be based on disposal technology other than the use of deep wells.

1.4 Polychlorinated Biphenyls – "PCB-Free"

All company-owned sites (e.g., warehouses, plants, offices) located in the United States will minimize the potential for releases of polychlorinated biphenyls (PCB) by becoming "PCB-free" of Toxic Substances Control Act (TSCA)-contaminated articles by the end of 1994.

1.5 Land Disposal

Landfill of "acutely hazardous" wastes¹ and "incinerables"² will not be practiced. For hazardous wastes and wastes managed as hazardous, fixation of particularly mobile, persistent or bioaccumulative wastes will be accomplished whenever warranted and

feasible. In making the decision to manage wastes as hazardous, the company will take into account public expectations, emerging trends and worldwide company practice regarding the same or similar wastes.

Contractors hired for land disposal of process wastes will be subject to contracting and assessment requirements (see *Pledge Guideline No. 7, Outside Processors*). In the United States, the use of off-site hazardous waste landfills will be approved by the Environmental Policy Committee and will be limited in number.

Medical wastes generated at the company's locations will be incinerated prior to land disposal of residues. Assurance of incineration will be obtained via manifests or equivalent documents if manifests are not available.

The use of Monsanto facilities to commercially treat, store or dispose of non-Monsanto wastes is normally discouraged. Any such use or joint ventures (other than in site guest/host relationships) for waste management must be reviewed and approved by the Environmental Policy Committee.

Proposals for land application of process by-products and residues, for beneficial use or disposal, should be guided by the "Monsanto Guidance Document: Land Application of Process By-Products and Residues." The ESHA (formerly EC-201/202) discipline will be followed for such proposals, including 5-year reviews. New applications must be approved by the appropriate Directors of Manufacturing and Environmental operations; the Environmental Policy Committee must approve if beneficial use is not included.

Each company location will maintain a record of both the on-site and the commercial waste treatment, storage and disposal sites it uses.

1.6 Air Emission and Water Release Assessments

The company will conduct and maintain an ongoing assessment of potential human health impacts for selected, routinely emitted air pollutants. It will develop appropriate control strategies to reduce identified, potentially unreasonable risk of harm to human health in surrounding communities. The list of air pollutants to be studied include: a) those listed under Section 112(b) of the U.S. Clean Air Act; b) those for which the

¹ As listed in 40 CFR 261.33(e), plus any mixtures containing greater than 5 percent.

² Hazardous wastes, or wastes managed as hazardous, with a heat of combustion greater than 6000 BTU/lb.

USEPA has established cancer unit risk values; c) those contained on the International Agency for Research on Cancer (IARC) group 1 and 2A lists; d) other site-specific pollutants identified by the plant that appear to warrant consideration (including those in significant quantities reportable via SARA Section 313). Plants outside the United States will use the above-given pollutant list plus any additional air pollutants on any local regulatory list that the plant manager deems important.

Each plant will maintain a list of all such air pollutants, ranked by established and approved protocols. Depending upon the pollutant's relative ranking and if required by the protocols, the plant will use appropriate dispersion modeling techniques to determine potential maximum downwind concentrations for each such pollutant at specified receptors representative of the exposed population utilizing appropriate dispersion modeling techniques. Appropriate assessments of potential human health impacts at the community receptor points will then be analyzed according to protocols established by the company's Environmental, Safety and Health staff. Any potentially unreasonable risk to human health that is identified will be expeditiously reduced to acceptable levels through appropriate actions.

The company will conduct aquatic safety assessments to determine the measurable impacts, if any, of its effluents on receptor water quality. The assessments should include both direct and indirect discharges (if applicable) with the mitigating impacts of the publicly owned treatment works (POTW) taken into account for the indirect discharge assessments. Any potentially unacceptable impacts to the aquatic environment identified will be mitigated in a timely manner. A reconfirming assessment will be conducted to verify that the impacts have been reduced to acceptable levels.

All initial air emission and surface water release assessments required should be conducted for each of the company's worldwide manufacturing sites within two years of the EPC's approval of this guideline. Operating units will review the status of the assessments annually, and if any significant changes have occurred at a plant site, determine whether the assessment should be repeated. Any such reassessments will be completed within 12 months.

1.7 Measurement

The following indicators will be used to measure progress against this guideline:

- 1.7.1 Annual progress toward achievement of 90 percent SARA Section 313 air emissions reduction goal.
- 1.7.2 Annual progress toward achievement of 70 percent worldwide SARA Section 313 chemical releases and off-site transfer reduction goal.
- 1.7.3 Achievement of contingency planning for reduction of use of deep-well injection.
- 1.7.4 Annual progress toward goals involving discontinued deep-well injection of RCRA hazardous waste streams and toxic SARA Section 313 chemicals.

1.7.5 AIR EMISSIONS AND WATER RELEASE ASSESSMENTS

The company's air and water steering committees will be responsible for tracking the air emission and water release environmental assessments conducted at each site and maintaining an ongoing list of the assessments' current status. In addition, each plant's environmental compliance audit will check the current status of these assessments and report on progress as part of the audit's findings.

1.8 Coordinators

Where clarification is required, the following coordinators should be contacted:

WASTE MANAGEMENT

D. B. Redington, ESH, Corporate, A3NA
(314) 694-6503.

ASSESSMENT

C. D. Malloch, ESH, Corporate, A3NA
(314) 694-8889.

(Revised and approved by the Environmental Policy Committee, February 18, 1994.)

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