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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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.

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

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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" wastes[1] 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.

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, October 22, 1992.)

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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.)

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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 fenceline 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.

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- 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

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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.

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 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.

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

[1]*Material 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

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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.)

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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.

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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 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.

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.)

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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.)

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.)

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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.

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.

Any exceptions to this guideline must be approved by the Environmental Policy Committee.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

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.)

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 processe 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.)

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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.)

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#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.

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- ***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 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.

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.

(Revised and approved by the Environmental Policy Committee, October 22, 1992.)

MONSANTO CONTRACTOR/GUEST ENVIRONMENTAL, SAFETY & HEALTH GUIDELINE

Management Process

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STLCOPCB4022782

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.

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.)

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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.)

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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.)

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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 communique 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

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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 inquires 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.)

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.

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.)

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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.

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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 than 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 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. *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, than 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.

[1]*A 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

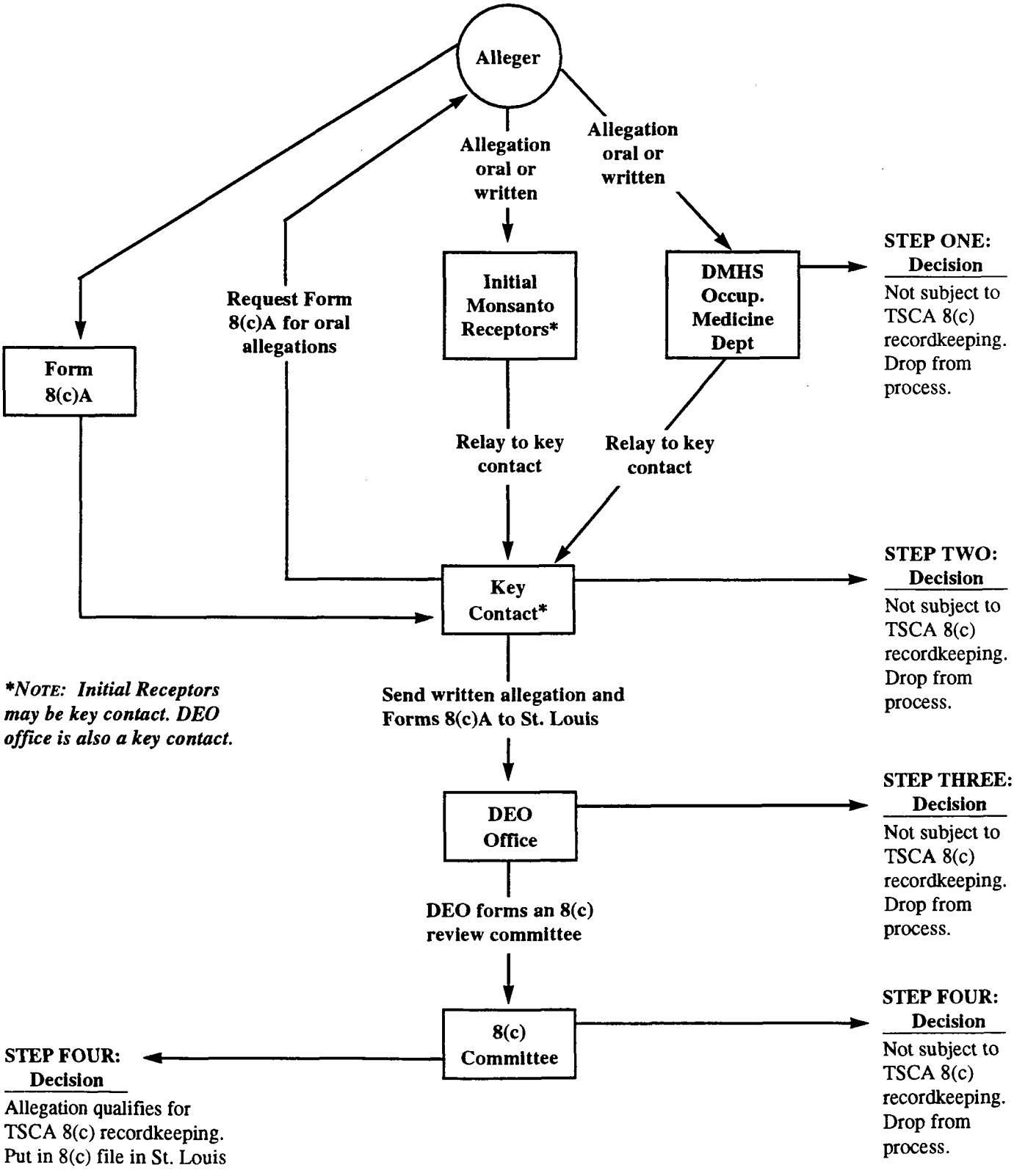
a. Disposition of written allegations will be communicated back to the individual making the allegation. The key contact will facilitate the communication.

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.)

Appendix 3.1

SIMPLIFIED FLOW DIAGRAM OF MONSANTO PROCEDURE FOR HANDLING ALLEGATIONS SUBJECT TO TSCA 8(c)



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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: _____

(If health effect only): M ☐ F ☐ YR. OF BIRTH: _____

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: _____

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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)

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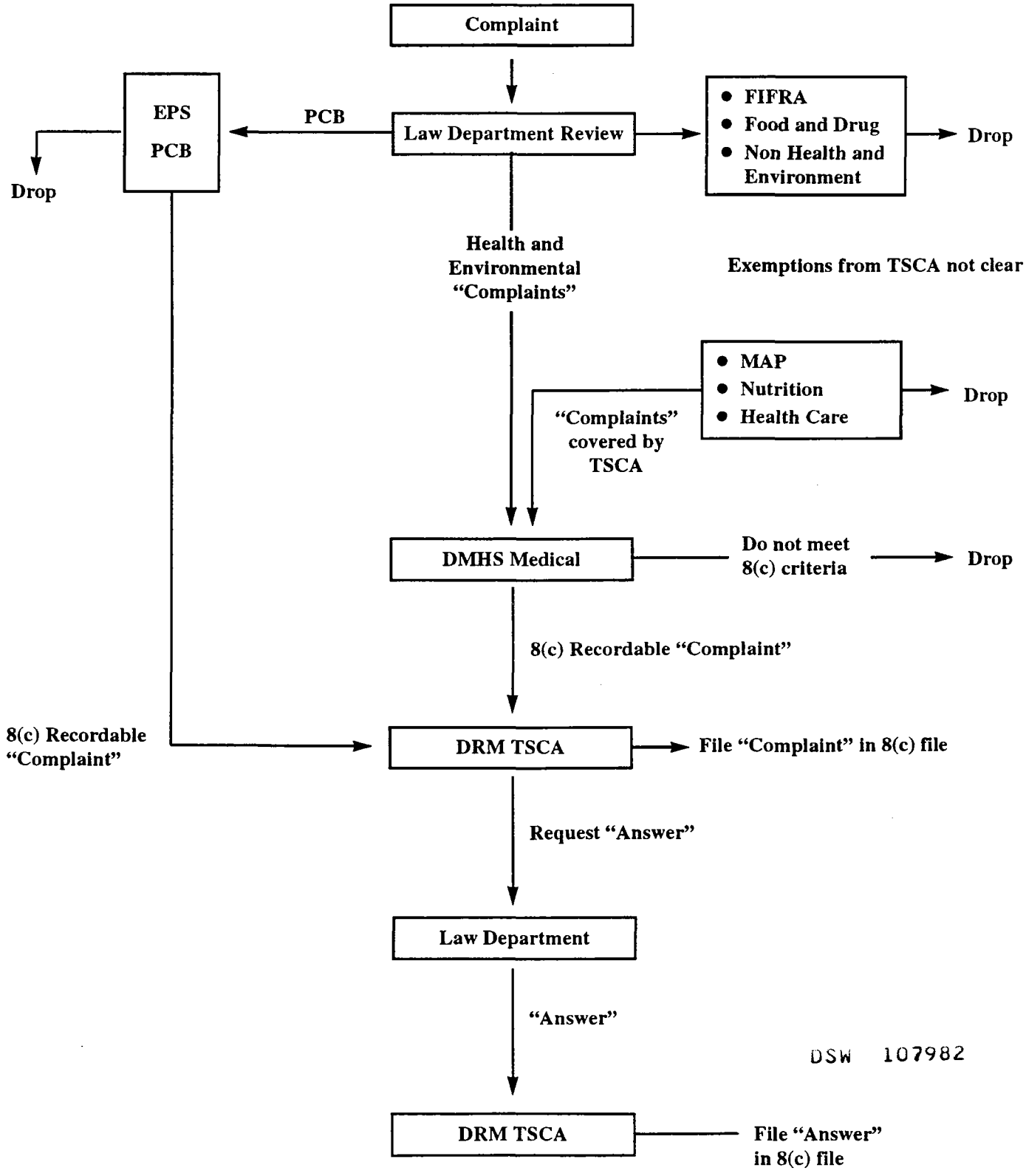
Appendix 3.3.2

TSCA 8(c) REVIEW PROCEDURE OF LITIGATION CLAIMS



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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.

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.

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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 de 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.

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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 contracts 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.

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Responsible Care:®
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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 pubic 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 imput?

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.

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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.

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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.

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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_____

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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

STLCOPCB4022819

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.**

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	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:_____						

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 IA - **Implementing action plan**
Category PP - **Management Practice in place.**
Category RI - **Reassessing Management Practice implementation.**

DSW 108001

STLCOPCB4022821

Emergency Response	Categories 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:_____						

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 IA - **Implementing action plan**
Category PP - **Management Practice in place.**
Category RI - **Reassessing Management Practice implementation.**

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STLCOPCB4022822

	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.						

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 IA - **Implementing action plan**
Category PP - **Management Practice in place.**
Category RI - **Reassessing Management Practice implementation.**

DSW 108003

STLCOPCB4022823

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.

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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

STLCOPCB4022827

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

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DSW 108009

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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

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.						
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.						

SAMPLE

DSW 108013

STLCOPCB4022832

Carrier Safety	I		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.						

DSW 108015

STLCOPCB4022834

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 heirarchy, 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 108018

STLCOPCB4022838

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

STLCOPCB4022839

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 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 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.

DSW 108020

STLCOPCB4022840

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 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.

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.

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.

DSW 108023

STLCOPCB4022843

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

STLCOPCB4022844

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 managementpractices 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."

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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_____

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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	Form R	Form NR		
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.

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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 RI - **Reassessing Management Practice implementation.**

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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.**

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	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 benefitting 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 IA - **Implementing action plan**
Category PP - **Management Practice in place.**
Category RI - **Reassessing Management Practice implementation.**

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	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.**

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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.

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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.

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.

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.

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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.

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.

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STLCOPCB4022860

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.

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STLCOPCB4022862

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

STLCOPCB4022865

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_____

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STLCOPCB4022867

DSW 108048

STLCOPCB4022868

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.

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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.**

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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.**

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SAMPLE

Facilities	Categories 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.**

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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.**

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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.**

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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.

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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.

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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.

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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.

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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 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

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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:_____

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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.***

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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.

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Management Practices	Categories					
	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:_____						

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 IA – Implementing action plan.
Category PP – Management Practice in place.
Category RI – Reassessing Management Practice implementation.

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Management Practices	Categories					
	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:_____						

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 IA – Implementing action plan.
Category PP – Management Practice in place.
Category RI – Reassessing Management Practice implementation.

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Management Practices	Categories					
	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.

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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.

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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.

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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-

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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

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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.

Companies are responsible for assessing the capabilities of each contract manufacturer and for supplementing their expertise with enough guidance to foster proper handling (including storage), use and disposal. If contract manufacturers are unwilling to implement appropriate controls, a company may decide to cease doing business with them. While companies are committed to working with contract manufacturers to help them improve performance, improvement to meet appropriate H,S&E standards should occur within a reasonable time frame.

The level of a company product's involvement and review will vary according to the degree of product risk. "Working with" may include providing detailed H,S and E product information, providing technical assistance on product handling techniques and waste minimization and management, and possibly visiting the contract manufacturer's facilities. These actions will vary according to the individual contract manufacturer and operation. Because of the greater degree of company control, much closer interaction will be appropriate with contract manufacturers than compared to distributors and customers. All contract manufacturers should be subject to periodic performance reviews.

Along with Management Practices 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 be better health, safety and environmental performance -- not just for CMA companies but for the entire chemical industry.

Management Practice 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.

The objective of this management practice is to extend product stewardship practices to suppliers. Where appropriate, health, safety and environmental factors should be an integral part of the procurement process, including product exchange. For some companies, this management practice may mean close cooperation within the purchasing, manufacturing, health and loss prevention functions to determine how the supplier can contribute to a safer environment. Other companies may opt to make these health, safety and environmental considerations part of their supplier quality reviews or to factor them into contractual decisions. Suppliers should describe health, safety and environmental programs and goals.

Along with Management Practices 9 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 be better health, safety and environmental performance -- not just for CMA companies but for the entire chemical industry.

As with customers, reviews of suppliers will be commensurate with product risk. However, it is appropriate to expect companies to make a continuous effort to extend the principles of product stewardship beyond the CMA membership and Responsible Care® partners.

Management Practice 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

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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.

The objective of this management practice is to encourage distributors to establish and implement proper health, safety and environmental practices involving our products. It should be implemented in conjunction with Management Practice 4.6 of the Distribution Code, which focuses on the inbound/outbound and storage aspects of distributor operations. The emphasis in the Product Stewardship Code is on working with distributors to help them achieve an appropriate level of performance on other aspects of their operations, such as recycling, handling, storage, use, disposal, waste minimization and management and the transmittal of information to downstream users. As with customers and other direct product receivers, a company may decide to terminate the business relationship with those unwilling to implement corrective actions appropriate for limiting risks and otherwise achieving the health, safety and environmental objectives of product stewardship.

The level of involvement with a distributor will vary according to the product's risk. That risk should also trigger the frequency of the periodic performance reviews mandated in the Distribution Code. These reviews may be used as a forum to share accumulated knowledge that will elevate health, safety and environmental performance -- and product stewardship practices.

It is recognized that distributors perform a broad range of functions, from repackaging the original product to reformulating it into a new product with new health, safety and environmental characteristics. The "transmittal of appropriate" information acknowledges that while we expect distributors to pass along H,S&E information, product changes made by the distributor may mean that the information originally supplied with the product no longer applies. In these cases, the distributor needs to issue information that reflects the current H,S&E information.

As with customers and suppliers, reviews of distributors will be commensurate with product risk. It is appropriate to expect companies to make a continuous effort to extend the principles of product stewardship beyond the CMA membership and Responsible Care®partners.

<u>Management Practice 12</u>

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.

The objective of this management practice is to encourage customers to establish proper health, safety and environmental practices involving our products. While the emphasis is on providing information to customers, other assistance may be appropriate where the product risk requires it. This management practice recognizes that if those efforts are unsuccessful, a company has a range of actions that it can take. Possible actions include, in the exercise of the company's independent judgement, not selling a given product to the customer. .

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.