Monsanto

FROM
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May 22, 1989

SUBJECT Worldwide Environmental Guidelines

REFERENCE

TO Distribution List

Following the practice of the past several years, Monsanto's six worldwide environmental guidelines have once again been revised and updated.

These guidelines have been approved by the Corporate Environmental, Safety and Health Committee and represent our "rules of the road" for environmental, safety and health programs across the corporation. While requirements vary across different units of the corporation and worldwide guidelines require some compromise to permit application to all operating units, compliance with the spirit of the guidelines is not optional. Modifications which achieve the spirit of the guideline and are more appropriate to a local condition are permitted, but not in any case where the level of protection, quality assurance or safety is less than the intent of the guideline.

As an additional aid to performance in environmental, safety and health issues -- we are including an environmental, safety and health vision for the corporation. This vision statement together with premises and indicators has been widely reviewed by operating units within and outside the U.S. It represents a vision of the company we would like to become and should be working toward. Actions taken by all employees of Monsanto should be consistent with the tone and direction of this vision. Further, where current performance does not measure up to the longer term expectations as described in the vision, the need for more aggressive improvement plans should be self-evident.

This vision statement is intended to complement the worldwide guidelines as we proceed toward achieving "great company" status in environmental, safety and health performance.

While elements of the vision and guidelines may be discussed with individuals outside the company as appropriate -- copies of the guidelines should be considered "company confidential".

H.J. Corbett

attachment

DSW 107888

IN-1120

MONSANTO'S VISION
ENVIRONMENTAL, SAFETY AND HEALTH PERSPECTIVE

- A company which develops and markets only products which benefit society without unacceptable risks to any group.
- A company where major environmental, safety, or health incidents do not occur.
- A company with recognized and demonstrated concern for our neighbors, our employees, and both local and worldwide environments.
- A company which is viewed by its publics, regulatory agencies, and stakeholders as responsible, open, and honest -- a constructive component of society and the communities in which we do business.
- A company which encourages outside peer review of its decision making processes and proposed actions in environmental, safety and health matters.
- A company which as a matter of policy, separates the issue of the "right thing to do" from the issue of cost or affordability.
- A company which monitors employee health on a continuing basis and investigates possible health issues affecting current and former employees.
- A company which knows first whether its products, processes, plants, or people may be causing potential problems.
- A company which maintains a continuing multimedia toxic waste minimization program emphasizing source reduction and recycle with an ultimate goal of achieving a de minimis emissions level.
- A company which achieves its ESH objectives at capital and operating costs which do not significantly impair growth and profitability.

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- A company which turns its exemplary practices into a competitive advantage.

PREMISES

- We will organize to achieve maximum effective results at the lowest cost.
- We will organize to assign primary execution responsibility to operating entities.
- We will organize to provide analysis, interpretation, strategic planning, oversight and quality assurance by groups which are independent of short term profit considerations.
- We will organize to provide state of the art scientific capability to ensure ESH results without the need for each entity to maintain fully proficient and complete professional skill bases.
- We will take a leadership role in a variety of industry and academic initiatives to influence public opinion, stay abreast of trends, and achieve our goal of public approval. This includes active participation with environmental groups, trade associations, professional groups and academic institutions which have goals compatible with Monsanto's objectives.

PREDICTORS AND INDICATORS OF SUCCESS IN ACHIEVING OUR VISION

- As a minimum, full compliance with all laws, regulations, and permits on a worldwide basis.
- Continuing reduction in injuries to employees and reduction of unexpected incidents and spills.
- Continuing reduction of overall waste production with emphasis on toxic and hazardous air emissions. Waste minimization at the source is preferred over waste treatment.
- Rapid approval of new products, at least equal to the best in our industry.
- Participation in the public debate on ESH issues via active membership in relevant organizations, trade associations, environmental groups, professional associations, etc.

- Positive employee and community acceptance of our performance.

- Maintenance of strong relationships with Federal, State, and Regional institutions, in all countries in which we operate or do business.

- Maintenance of management skill and knowledge bases to achieve most effective legislation and regulations, interpretation and implementation of regulations.

- Maintenance of professional skill bases in toxicology, occupational medicine, epidemiology, industrial hygiene, safety and property protection, quality assurance, analytical capability, risk assessment, and others as required by future events.

- Rigid multi-discipline quality assurance review of new products, new processes, existing processes, products and facilities.

#1

EFFLUENT AND EMISSION CONTROL

Reduce pollutants in effluents and emissions from Monsanto operations to meet corporate targets, going beyond those levels either required for regulatory compliance or necessary to protect health and the environment.

PROGRAM

EFFLUENT CONTROL: Control options for both direct and indirect (i.e., to Publicly Owned Treatment Works - POTW) liquid discharges from Monsanto operations will be developed consistent with compliance dates in permits or other enforceable instruments and to meet internal Monsanto needs. Substances subject to such controls will include those listed pursuant to Section 307(a) of the U.S. Clean Water Act, those substances known to be present in proposed or promulgated effluent limitation guidelines, or other site-specific pollutants identified by the plant which appear to warrant consideration, including those reported via SARA Title III, Section 313. For ex-U.S. locations, use a site-specific list which is equivalent to the U.S. EPA lists.

For each location where any of these substances are used or produced, address the following:

1. ***Regulatory compliance*** — Develop specific information necessary to identify control options to ensure compliance with regulatory-driven limitations in permits or other enforceable instruments. Such information should include substance quantification profiles at reasonable levels of confidence and could include factors such as variations due to seasonal effects, product mix, hydraulic loading, production capacity, waste treatment variables, or other site-specific parameters. Timetables for this effort should be developed on a site-specific basis, consistent with needs to meet legally enforceable compliance.
2. ***SARA Section 313 substances*** — Conduct a site-specific substance-by-substance review of significantly reported SARA Section 313 releases (for both direct and indirect discharges) for those substances not addressed by limitations in permits or other enforceable instruments. Within the framework of the corporate waste minimization program, reduce the quantities of such releases.
3. ***Water quality*** — Conduct an aquatic safety assessment to determine the measurable impacts, if any, of Monsanto's effluents on receptor water quality. This should cover both direct and indirect discharges (if appropriate), with the latter impacts based on POTW effluent, where possible, including judging Monsanto's contribution to the POTW's effluent. Details for this assessment and appropriate response actions should be developed based on individual site-specific needs.

Operating units will annually review, and adjust as necessary, the priorities and timetables for the above programs.

EMISSION CONTROL: Monsanto intends, by the end of 1992, to reduce air emissions, worldwide, by 90% for the chemicals reported on the SARA Section 313 reports for 1987. Beyond 1992, Monsanto will work toward an ultimate goal of zero emissions for these same chemicals. The baseline in the U.S. for this reduction will be the chemicals and quantities on the 1987 SARA Section 313 emissions report, with comparable programs being developed for the ex-U.S. operations. Operating units will establish and implement plans to achieve these reductions and will issue annual progress reports.

Conduct an assessment of potential human health impacts for selected routinely emitted air pollutants and develop appropriate control strategies to reduce identified potential unreasonable risk of harm to human health in surrounding communities. In addition to providing additional understanding of the potential human health impact from Monsanto plant operations, this information will facilitate Monsanto responses to regulatory proposals and future permit needs.

The list of air pollutants to be studied include: (a) those listed and regulated under Section 112 of the U.S. Clean Air Act; (b) those currently being reviewed as candidates for listing by EPA as Section 112 pollutants; (c) those for which EPA has established cancer unit risk values; (d) those contained on the International Agency for Research on Cancer (IARC) groups 1 and 2A lists; and (e) other site-specific pollutants identified by the plant which appear to warrant consideration (including those in significant quantities reportable via SARA Section 313). For ex-U.S. locations, use any local regulatory lists which are equivalent to the U.S. EPA lists.

Each Monsanto location will carry out the following program:

EFFLUENT AND EMISSION CONTROL *(continued)*

1. Identify, for each air pollutant selected for review, all emission point sources (ongoing, continuous, and intermittent), as well as area and volume sources where the substances are released into the atmosphere.
2. Estimate for the selected air pollutants, their emission rates from each source.
3. Rank each of the selected air pollutants to determine their relative priorities for further evaluation using a chemical prioritization protocol established by the Monsanto Air Steering Committee which utilizes workplace exposure guides and estimated emission rates.
4. Develop work plans to complete the detailed assessment of priority 1 and major 2 pollutants by 7/1/89 (by date consistent with local needs for ex-U.S. locations). For remaining prioritized pollutants, work plans and further evaluation will be conducted within the confines of existing resources.
5. Estimate the potential maximum downwind concentration for each pollutant at receptors representative of the exposed population, utilizing appropriate dispersion modeling techniques incorporating refined quantification of emissions based upon relative priorities (i.e., ranging from point source measurements for priority 1 to best estimates for priority 4).
6. Assess the potential for human health impacts at community receptor points using the results of the dispersion analysis, and determine if there is, or is not, a potential for unreasonable risk of harm to human health.
7. Define appropriate, cost effective controls to reduce risks to acceptable levels where a potential human health concern exists and take actions to implement such reductions.

For U.S. locations, complete the first six steps above for priority 1 and major priority 2 pollutants by 7/1/89, complete step seven on a timetable consistent with local needs, and for the remaining prioritized pollutants by a date consistent with resource availabilities. For all ex-U.S. locations, complete the seven steps for all priorities by dates consistent with local needs.

GENERAL: The following program elements will be implemented as required.

1. Sample the significant emission and effluent release points of each new or modified process after startup to confirm that no pollutant, in an amount having potential to endanger health or the environment, exceeds those levels specified by the design and/or contained within any applicable permits.
2. Operating Companies will periodically report data on permit exceedances and reportable releases (including those reportable under CERCLA), with performance to be reviewed annually. During 1989, develop uniform corporate reporting criteria and obtain ESH Committee approval.

(Revised and Approved by Environmental, Safety & Health Committee April 25, 1989.)

#2

WASTE MANAGEMENT

Design and operate facilities to minimize in waste streams the routine and accidental release of pollutants to the environment. Over the long term, work toward the ultimate goal of zero releases to all media. For wastes that remain, use waste disposal practices that achieve compliance with regulations and which achieve acceptable environmental impact, no health effects, minimum long-term liability and cost effectiveness. Continue waste management programs that establish Monsanto control of disposal and that favor alternatives to land disposal.

PROGRAM

Except as modified by item 5. below, this guideline applies to all worldwide Monsanto facilities.

1. ***Release Reduction***

   a) *Routine Releases*

   Each operating unit will establish a program which targets multi-media reduction of releases in waste streams to the environment, establishing numerical reduction goals. Units will report progress annually.

   In the selection of alternatives for pollutant release reduction from processes, the following order of preference will be used:

   - Reduction of source generation through process design and modification.
   - Reuse, recycle or co-product sale.
   - Incineration or other treatment to reduce the volume or toxicity of pollutant streams.
   - Responsible disposal of treatment residuals or wastes not amenable to the above.

   The operating unit programs will integrate into release reduction plans a corporate goal to achieve a 90% reduction, worldwide, of 1987 SARA Section 313 reported air emissions by the end of 1992.

   Releases to air, water or the land which continue in spite of reductions will be assessed as applicable through the programs outlined in Guideline #1 and in #2 (below) to assure no danger to health and the environment.

   b) *Accidental Releases*

   Accidental releases that are reportable to regulatory or response agencies, or that involve evacuation, significant community response or media coverage, will also be reported internally together with an action plan to prevent recurrence. The operating units will establish programs as necessary to eliminate such occurrences, working toward a goal of zero events. Progress against this goal will be reported annually through the Manufacturing Management Council to the ESH Committee.

   c) *Waste Databases*

   Operating units will develop and utilize multi-media databases on releases to the environment to enable reporting against operating unit goals and against the 90% SARA Section 313 air emission reduction target. A waste-stream based U.S. database will also be maintained to facilitate external reporting and as another internal measure of release reduction progress.

2. ***Waste Management***

Landfill of "acutely hazardous" wastes[1] and "incinerables"[2] will not be practiced. Fixation of particularly mobile, persistent or bio-accumulative wastes will be accomplished wherever warranted and feasible, or where required by regulations.

Land disposed wastes which are not subjected to management as "hazardous" waste will be evaluated for present and future environmental risk and managed

[1]As listed in 40 CFR 261.33(e), plus any mixtures containing greater than 5%.
[2]Wastes with a heat of combustion of greater than 6,000 BTU/#.

2. ***Waste Management*** *(continued)*

in an appropriate manner which has been reviewed by the unit Director of Environmental Operations. (To be completed by 12/31/90.)

Waste contractors will be subject to contracting and assessment requirements (See Guideline #5). The number of off-site hazardous waste incinerators used will be minimized. In the U.S., off-site Class 1 landfills used will be approved by the ESH Committee and limited in number.

Medical wastes generated at Monsanto locations will be disposed of via incineration. Assurance of destruction will be obtained via manifest, or other equivalent approaches if manifest is not available. (For the purposes of Guideline #5, outside processors used will be considered Secondary Services.)

An evergreen record of both on-site and commercial waste treatment, storage and disposal sites will be maintained by each plant.

Monsanto will retain ownership of all property known to contain wastes with the potential to cause injury to health or the environment unless otherwise approved by the ESH committee. The use of company facilities to treat, store or dispose of non-Monsanto wastes is normally discouraged. Any such use or joint ventures for waste management must be reviewed and approved by the ESH Committee.

3. ***Deepwell Injection Program***

Monsanto will continue to operate its deepwell disposal systems in a sound manner protective of public health and the environment. Each plant using on-site or off-site deepwell disposal will have and maintain contingency plans for exiting deepwells. There will be no new use of deepwells except as approved by the ESH Committee on an exception basis. All new project appropriation requests will be based on the economics of disposal technology other than deepwells.

4. ***Corrective and Remedial Action***

When on-site abandoned waste or groundwater contamination is discovered, appropriate assessment and corrective action will be carried out. Any necessary projects will be scheduled to expedite remediation in a planned, orderly process.

When we become aware of possible involvement in "Superfund" sites, we will actively participate in generator group efforts to achieve settlement and expedite cleanup. At sites where we are a/the major contributor, we will seek a leadership role when appropriate to facilitate resolution. The operating units will cooperate to establish responsibility for sites where several units contributed wastes. A goal of the corporation is to resolve as soon as reasonably possible our liability and remedial plans for sites where we have major responsibility.

We intend a lessened legalistic approach to site cleanup negotiations. Where our responsibility is fairly established, we will not delay cleanup unnecessarily by legal, yet negatively perceived litigious steps. We will pursue fair legislation and regulations on the general issues in the public arena, but minimizing legal risk will not be the determining factor in site-specific decisions.

5) ***Ex-U.S. locations***

The above program elements and timing will be implemented at ex-U.S. locations, but with modifications as necessary to reflect local limitations, restraints to compliance, and the extent of Monsanto's operating control. Status and direction of local programs will be reviewed in planned environmental audits of these facilities.

(Revised and Approved by Environmental, Safety & Health Committee April 25, 1989.)

#3

PLANT ENVIRONMENTAL ASSESSMENTS

A program of environmental assessments and audits of all plant sites will be maintained in order to assure regulatory compliance and the protection of the surrounding environment.

PROGRAM

1. Environmental assessment documents (information such as local air and water quality, relationships with regulatory agencies, and the effects of our presence on the surrounding environment) will be prepared for each operating location. Documentation of subsequent changes or additions to assessment contents will be filed with assessments at the plant site so that an update can readily be prepared should the need arise. Executive summary sections reflecting long-range plans and highlighting key environmental issues will be updated annually and transmitted as information to Environmental Managers.
2. Compliance audits for large and environmentally sensitive sites will be conducted on a three-year maximum cycle with other sites to be audited at least every five years. Audit follow-up plans will be reviewed semi-annually.
3. Groundwater assessments will be maintained for all major locations and for lesser sites with known groundwater issues. The assessment status and plans will be updated in the second quarter of each year.
4. Each location shall maintain a groundwater protection plan to include inspection, testing and maintenance of facilities with the potential of contaminating groundwater (i.e., sewers, process lines, sumps, tanks, loading/unloading areas, etc.). The groundwater protection plans and designs shall be commensurate with the risk posed by the specific situation.
5. New, replacement or expansion facility designs (including sewers and lines) should consider aboveground and/or double containment, improved materials of construction and/or cathodic protection to provide improved assurance against groundwater contamination. New, replacement or expanded surface impoundments for wastewater treatment or storage will be approved by the ESH Committee on an exception basis.
6. New storage tanks for materials that could potentially cause contamination will be provided with impervious secondary containment (dikes, liners, vaults, double wall, etc.) unless a clear showing is made on a tank-by-tank basis during project reviews that vessel contents (e.g. dilute wastewaters) or setting (e.g. in-battery containment, other adequate containment systems) do not warrant such containment. Existing storage tanks will be addressed and reviewed through normal environmental audits.

(Revised and Approved by Environmental, Safety and Health Committee April 25, 1989.)

#4

EMPLOYEE AND COMMUNITY SAFETY AND HEALTH

Monsanto will provide a healthful and safe environment for its employees and community neighbors and will monitor and evaluate employee health status, determine and monitor workplace factors affecting employee safety and health, comply with Monsanto workplace exposure guidelines and with governmental safety and health regulations, review major capital projects to protect the health of people at work and in the community.

PROGRAM

1. Continue to perform periodic on-site surveys of worldwide operations to evaluate total safety, occupational health, and industrial hygiene status. Utilize observations and recommendations to achieve and maintain regulatory and code compliance, attain appropriate technological sophistication, reduce the probability of accidents of all types, and further employee safety and health education. Generally assist sites in attaining year-to-year reductions in employee injuries and property losses. Optimize health surveillance programs to identify and prevent occupational illnesses.
2. Achieve and maintain compliance with governmental regulations and Monsanto guidelines as they relate to facility design, safe work practices, workplace exposures, health surveillance, and community safety and health in each country in which a Monsanto facility is located. If regulatory guidelines are unavailable or inadequate to protect worker health, Monsanto will establish guidelines where appropriate.
3. Monitor and evaluate the effect of work exposures on employee health by providing health surveillance in all locations, with a goal of offering periodic examinations for all employees. Special emphasis must be given to implementing scheduled health surveillance examinations for those employees routinely exposed to hazardous chemicals in the workplace. These examinations will be conducted by Monsanto or contract health professionals in accordance with the Occupational Medicine Program defined by the Department of Medical and Health Sciences.
4. Collect and enter workplace materials, worker exposure, work history and employee health assessment data into the MEHI/MARS data base which will be used to perform epidemiological and other appropriate studies evaluating worker health to enhance worker protection.
5. Continue workplace surveillance to identify potential health risks, evaluate risks based on current toxicological information and initiate appropriate safeguards to protect the health of employees.
6. Establish guidelines for use in classifying and recording injuries and illnesses to monitor company-wide performance and adherence to federal regulations regarding recordkeeping. Issue monthly summaries of appropriate statistics, and various publications designed to improve awareness and to communicate relevant technologies to the workplace. Develop understanding of the causation of accidents and the techniques of accident prevention.
7. Provide corporate safety and industrial hygiene reviews on design, startup, and operational issues for major new installations and expansions.
8. Participate relative to safety and health through trade associations, other cooperative endeavors of the chemical and manufacturing industries and professional associations.
9. Provide employee training, orientation and education in safety and health.
10. Contract employees should receive any required surveillance and safety and industrial hygiene indoctrination in accordance with Monsanto's Contractor Health and Safety Guideline.

(Revised and Approved by Environmental, Safety & Health Committee April 25, 1989.)

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OUTSIDE PROCESSORS

Select companies for support of Monsanto operations — through product conversions, custom manufacture, formulating, by-product sales, waste management, and other services supporting Monsanto businesses — which will operate with concern for worker safety, regulatory compliance, community protection and protection of the environment.

PROGRAM

1. Monsanto will utilize only outside processors which have been selected and periodically assessed to assure:
   (a) Their ability to adequately protect the public, employees and environment from any effect of Monsanto chemicals, products or wastes.
   (b) Their compliance with all applicable laws and regulations.
   (c) Their knowledge of potential hazards and any applicable manufacturing requirements associated with Monsanto materials handled.
   (d) Their use of approved waste disposal methods and locations, with recordkeeping of all material use and waste disposal.
2. Selections and assessments shall be documented and approved by the Operating Unit Director of Environmental Operations and an appropriate contractural arrangement shall be established with each firm prior to startup of operations.
3. Outside "processors" include firms which provide services related to Monsanto chemicals, products or wastes. "Primary" firms will receive an on-site assessment, management approval, and a written contract.

   Secondary firms should be assessed and be subject to approval and contracts when high hazard materials or Class B poisons are involved, or whenever the situation involves a significant risk.

   Primary services include:

Conversions	Tank Car Cleaning[1]
Processing	Barge Cleaning[1]
Blending	Drum Cleaning/Reclaiming[1]
Formulations	Waste Material Sales
Material Recovery/ Reclaiming	Waste Hauling (including oil)
	Hazardous Waste Disposal
Material Purification	Waste Oil Disposal
Packing or Repacking	Waste Oil Reclaiming
Bulk Truck Cleaning[1]	Transformer Retrofill

[1]Applicable to hazardous products or Monsanto owned or leased vehicles.

   Secondary services include:

   Bulk Terminals
   Transloading
   Fulfillment Houses
   Packaged Goods Warehousing
   Non-hazardous Waste Disposal
   Vessel and Equipment Cleaning

   Excepted are services performed by established major chemical firms (approved by the Unit Director of Environmental Operations), publicly owned treatment works, sales of wastes which are equivalent to virgin chemicals in commerce and transformer retrofill where wastes are retained under Monsanto control.
4. Assessments are to be performed prior to initial use and at a frequency recommended in the prior assessment (normally one to three years).
5. MCC Environmental Engineering maintains a corporate-wide database of all outside processors to avoid redundant assessments and contracts and to facilitate use of approved contractors.
6. The above program elements will be implemented at ex-U.S. locations, but with modifications as necessary to reflect local limitations, restraints to compliance, and the extent of Monsanto's operating control. Status and direction of the local program will be reviewed in planned environmental audits of these facilities.

(Reviewed and Approved without change by Environmental Safety & Health Committee April 25, 1989.)

#6

PRODUCT STEWARDSHIP

Monsanto products and intermediates will not present an unreasonable risk of harm to human life or health, or to the environment when they are properly handled, transported, used or disposed. Stakeholders will be provided information regarding handling, storage, use and disposal of Monsanto products.

INTRODUCTION

Employees, customers and the community are all important stakeholders that are directly affected by Monsanto's product stewardship programs. Inherent in these programs is the responsibility for assessing, managing, and communicating the risks associated with the products and intermediates Monsanto manufactures or markets or plans to manufacture or market.

Product assessments are at the heart of this process and involve judgments by specialists about the level of risk borne by stakeholders as a result of manufacture, processing, distribution, use and disposal of a product. They integrate data on effects, (such as toxicology, epidemiology, and medical observations), with product composition and exposure information (such as industrial hygiene monitoring, and environmental fate). For each Monsanto product or intermediate, we need enough data or information to reach a supportable conclusion that under reasonably anticipated conditions of handling and use, the product does not pose an unreasonable risk to those who may be exposed or the environment. We must recognize that our stakeholders have a voice in this decision process. It is our responsibility to provide stakeholders with information such as labels and Material Safety Data Sheets, which will permit them to have knowledgeable input into the process. Our risk management actions must reflect stakeholder input.

PROGRAM

1. All new product candidates and new process intermediate candidates will be assessed and managed as detailed below. Note: in view of the unique characteristics of articles, they will be handled separately from this program.

   a) All local, national and international product regulatory requirements will be satisfied in a timely fashion during project development.

   b) R&D materials utilized in the laboratory will be handled according to Prudent Laboratory Practices (e.g., National Research Council Guidance, Monsanto Research Center Policies and Procedures, or similar).

   c) New R&D products and process intermediates, that are either;

      i) shipped to customers, non-laboratory facilities or laboratories covered by the OSHA Hazard Communications Standard or,

      ii) produced in significant quantities (e.g., U.S. regulations define significant quantities as "quantities in excess of 100Kg/year") or,

      iii) manufactured or handled in non-laboratory facilities,

      will have a completed product safety review (i.e., one or more of the following: ER-200, EC-201, pilot plant safety audit or equivalent, Institutional Biosafety Committee Review) an appropriate label, and a Material Safety Data Sheet, or R&D equivalent.

   d) New products, new process intermediates, and significant new uses of existing products will have a product assessment (EC-202 or equivalent), a Material Safety Data Sheet and a shipping classification (TF-837 or equivalent) completed before commercialization.

   e) Material Safety Data Sheets for new products and process intermediates will be made available to all persons engaged in R&D commercialization of these materials.

2. All commercial products, process intermediates or product families comprised of these materials, will have ongoing product assessments, risk management and hazard and risk communications.

PROGRAM *(continued)*

a) Material Safety Data Sheets or equivalent will be developed for all Monsanto products and process intermediates. Material Safety Data Sheets will be provided to employees and customers and made available to other stakeholders in an appropriate language. All issued Material Safety Data Sheets will be reviewed when significant new information affecting the product or intermediate becomes available. At a minimum, reviews will be performed every five years. Material Safety Data Sheets will be updated as appropriate as a result of these reviews. Records of Material Safety Data Sheet recipients will be maintained, where practical.

b) Product files for all products or product families will be maintained. The product file may include the following:

- Appropriate Material Safety Data Sheets, references to relevant literature or internal reports, relevant information on composition, physical properties, manufacturing processes, principal by-products, protective measures and exposure information.
- A critical review of health and environmental effects and exposure information, such as EC-201, EC-202, Monsanto Work-Place Permissible Exposure Guideline (MWPEG) Reviews, Health Effect Reviews and Toxicology Reviews.

c) Information contained in product files will be used for business decisions, government interactions, public communications and other product management activities.

3. Product Stewardship is the responsibility of the business units. Each operating company, free-standing division or world area will assign an individual(s) the responsibility for assuring that this Guideline program is met.

   Guideline oversight is the responsibility of the Corporate Environmental Policy Staff.

   Units of the corporate staff (Environmental Policy Staff, Safety and Environmental Health, and others) and business units are jointly responsible for developing information needed for product assessments. This includes regular periodic reevaluation of data available in light of new information relevant to the product.

(Revised and Approved by Environmental, Safety & Health Committee April 25, 1989)

ENVIRONMENTAL, SAFETY AND HEALTH REVIEWS OF CAPITAL PROJECTS

Completed Monsanto capital projects will meet Corporate Worldwide Environmental Protection Guidelines, Corporate Social Responsibility Policies, and will be in compliance with existing and anticipated government regulatory requirements. Monsanto will, at all levels of the corporation, review capital projects for environmental safety and health impact prior to, and as a condition of, project funding approval.

The Senior Vice President, ESH, or his delegate will review those projects requiring approval by the Chief Operating Officer, the Chief Executive Officer or the Board of Directors. A system for reviewing other projects will be administered by the Directors, Environmental Operations, of the operating companies.

The personnel assigned to evaluate a new site for the location of a Monsanto operation will prepare an internal Monsanto Environmental Impact Assessment which addresses potential environmental limitations at the site as a result of the existing socioeconomic and biophysical conditions. The effects of existing and future government environmental regulations which may apply are also to be considered.

Any exceptions to this guideline must be approved by the Environmental Safety & Health Committee.

(Approved: Environmental Policy Committee, April 21, 1980.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

ENVIRONMENTAL, SAFETY AND HEALTH REVIEW OF DIVESTITURES OR ACQUISITIONS OF PROPERTY AND/OR BUSINESS

Negotiating the acquisition or divestiture of U.S. and ex-U.S. property or business units and the securing of final corporate approval are the primary responsibility of the involved operating company unit. However, corporate staff review of environmental, health and safety factors — and any attendant liability issues — are required during the course of such transactions. This review should be arranged through the office of the operating company Director of Environmental Operations, who will, in turn, involve appropriate Environment, Health and Safety staff and Environmental Law personnel and arrange for review by the Vice President, Environmental Policy Staff, and/or the Senior Vice President, Environment, Safety and Health.

(Approved: Environmental, Safety and Health Committee, August 29, 1986.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

ENVIRONMENTAL, SAFETY AND HEALTH PROTECTION FOR INVESTMENTS IN WHICH MONSANTO DOES NOT HAVE OPERATING CONTROL

Monsanto's six major Worldwide Guidelines apply at all manufacturing sites in the U.S. and ex-U.S. where Monsanto has operating control. For those investments in which Monsanto does *not* have operating control, we will require, at a minimum, compliance with applicable local laws, regulations and practices.

If such applicable rules and practices do not provide safety, health or environmental protection which would be acceptable for Monsanto controlled sites, the company will initiate action to bring about the necessary upgrading.

(Approved: Corporate Administrative Committee, October 6, 1980.)

(Revision Approved: Environmental Policy Committee, June, 1985.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

WOMEN EMPLOYED IN AREAS WHICH POSE AN UNACCEPTABLE HAZARD TO THE HUMAN FETUS

Women employees of childbearing potential or who are pregnant will not be exposed to work situations which are judged to pose an unacceptable hazard to the human fetus.

The Department of Medicine and Health Sciences will:

Conduct appropriate toxicological tests of Monsanto raw materials, products, intermediates and byproducts.

Review current literature for information on the hazards of chemicals and physical agents used or produced by Monsanto.

Assess safety and health implications and the potential risks posed by these chemicals and physical agents.

Make recommendations to senior management and maintain a record as to work situations which in their judgment pose an unacceptable hazard to the human fetus.

Management of the site(s) involved will take action so that women employees of childbearing potential or who are pregnant will not be hired into, be allowed to bid into, or continue in job situations which have physical agents or chemical exposure levels that have been identified by DMHS as posing an unacceptable hazard to the human fetus.

Where rearrangement of the job situation to avoid exposure to the identified hazard cannot be achieved, and an employee has to be transferred out of a job assignment, every effort will be made to protect her job grade level and her seniority.

In instances where the displacement or exclusion of women of childbearing potential adversely affects our EEO goals, efforts will be made to hire or place an equivalent number of women in other departments or areas which do not pose unacceptable hazards to the human fetus.

(Approved: Corporate Administrative Committee, August 7, 1978.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

SAFE HANDLING OF CARCINOGENS

We will provide safe and healthful working conditions for our employees.

We will comply with all government regulations concerned with exposure to carcinogens.

Where there is any data which suggest that a chemical to which our employees are exposed is a carcinogen, and such chemical is not subject to government regulations, we will evaluate that data, and based on that evaluation, take the following action:

Where such data establishes the chemical as a human carcinogen, we will take appropriate action to reduce exposure to the lowest reasonable level, unless exposure is already at such a level.

Where such data establishes the chemical as an experimental or suspect carcinogen, we will (individually or jointly with others) initiate study to confirm or disprove such designation. During such study, exposure will be reduced to and/or minimized at the lowest reasonable level.

If it is concluded that a material cannot be produced or used without jeopardizing the health of employees, its manufacture or use will be discontinued.

(Revised and Approved: Corporate Administrative Committee, October 6, 1980.)

(Reviewed and Approved: Environmental Safety and Health Committee, October 20, 1987.)

CONTRACTOR HEALTH AND SAFETY

Proper concern for employee health and safety will be required in the execution of contract work performed for Monsanto.

SCOPE

This Contractor Health and Safety Guideline sets forth safety and occupational health guidelines applicable to Contractors performing services on Monsanto Company property where, in the judgment of Monsanto site management, there may exist the potential for personal injury or property damage or for significant safety or health issues to arise. Services administered either by individual sites or by Monsanto Engineering groups are covered. Recognizing that these guidelines may not be appropriate in all cases, judgments may be required by the individual sites as to implementation and application. These judgments are to be made taking into account the objective of this guideline that proper concern be given to Monsanto and contractor employee health and safety in the execution of contract work performed for Monsanto. Substantial departure from these guidelines should be approved in advance by the appropriate manufacturing director and, as appropriate, the Department of Medicine and Health Sciences (DMHS). This guideline applies to Monsanto U.S. sites.

OBJECTIVE

All services performed by Contractors on Monsanto sites are to be covered by written contracts. Normally the Contractor is to be made aware of the requirements of this guideline before bidding, the costs agreed upon before contracting the work, and the appropriate requirements incorporated into the written contract or otherwise appropriately documented in consultation with the Purchasing and Law Departments.

In accordance with the objective of providing for Monsanto and Contractor employee safety and health in the execution of contract work, Monsanto will utilize Contractors who: have demonstrated a high degree of compliance with workplace laws/standards, policies and practices; have a history of good health and safety performance; and maintain adequate insurance coverage. Monsanto will take into account the nature of the services, the availability of Contractors, and other relevant considerations.

DEFINITIONS

Contractor A person (other than employee of Monsanto), firm or corporation engaged by Monsanto to provide a service on a Monsanto site.

Contract The writing which contains the agreement of Monsanto and the Contractor with the agreed upon terms and conditions and which serves as proof of their respective obligations. Contracts are to be signed by authorized representatives of Contractor and Monsanto. Contracts are to be on forms previously approved by the Purchasing and Law Departments for that use (*e.g.*, Master Maintenance Agreement [Form G-2536], Short Form Contract [G-615], etc.). Plant purchase order forms may not be utilized for contracts which require on-site Contractor employees unless approved by the Law Department. When approved existing contract forms are not appropriate, the Purchasing and/or Law Departments are to be contacted for assistance.

Monsanto Representative The employee designated by site management to represent Monsanto with respect to the services being performed pursuant to the particular Contract. For Engineering awarded Contracts, this will normally be a site construction superintendent/supervisor.

RESPONSIBILITIES

While Contractors are responsible for assuring healthful and safe operations, work on a Monsanto site may involve unique or site specific health and safety issues as to which this guideline is directed. The manager of each site is responsible for the implementation of this guideline.

CONSIDERATIONS

In furtherance of the objective that Contractors provide a healthful and safe operation at Monsanto locations, the following is to be considered and implemented, when deemed applicable to the service being provided.

1.0 COORDINATION

The Monsanto Representative is to:

1.1 Coordinate Contractor activity on the site.

1.2 Be familiar with the Contracts and obtain Purchasing and Law Department review and approval as appropriate.

1.3 Explain to Contractors any unique or site specific safety or health hazards and precautionary measures associated with the services (Orientation).

1.4 Apprise Contractor of its responsibilities and restrictions while on site to include a mutual exchange of health and safety information, for example Material Safety Data Sheets (MSDS's), as required under the OSHA Hazard Communication Standard.

1.5 Follow contract services with the objective of having the Contractor minimize potential hazards to both Monsanto and Contractor employees, and to property, which may arise during Contractor services.

1.6 Conduct in consultation with health and safety professionals a final health and safety evaluation before the job is accepted as completed.

2.0 PRACTICES AND PROCEDURES

2.1 Unique or site specific work hazards involved with the services (of which Monsanto is aware but with which the Contractor may not be familiar) and expected performance relating to such hazards are to be communicated to and reviewed with the prospective Contractor(s) prior to submission of bids. The following items are to be considered and addressed when applicable:

- Contractor Safety/Health Orientation
- Respiratory Protection
- Hazard Communication
- Hearing Protection
- Personal Protective Equipment and Clothing
- Supervision of Contractor Employees
- Hygiene Facilities and Practices
- Exposure Monitoring
- Medical Services
- Biological Health Monitoring
- Injury Reporting
- Use of Plant Permit Systems
- Site Work Practices
- Emergency Response and Plant Evacuation
- Tie-in to Monsanto Equipment
- Environmental Control Procedures
- Waste Disposal

2.2 Contractors, at a minimum, are to be made aware of and required to comply with proper plant procedures for securing permits involving hot work, tank or other enclosed space entry, breaking into pipelines, lock-out, etc. Permits are to be coordinated through the Monsanto Representative.

2.3 For confined space entry permits, Monsanto will execute the permit and provide required testing prior to the beginning of contracted work. In case of hot work permits, Monsanto will execute the permit, inspect the area and provide required testing. Agreement on whose responsibility it is to provide a qualified fire watch must be made in writing prior to the beginning of contracted work.

3.0 ORIENTATION - TRAINING

3.1. Each location is to maintain a general Contractor health and safety orientation program to convey Monsanto's commitment to health and safety, Contractor general obligations, and plant rules/procedures. The following topics are to be included and addressed when applicable:

- General Plant Policies
- Hazard Communication
- Hearing Protection
- Site Safety and Housekeeping Practices
- Basic Protective Equipment Usage
- Personal Hygiene Practices
- Site Emergency Plan
- Respiratory Protection

3.2 All Contractor employees whose work may involve unique or site specific health or safety hazards will upon first entry to the site and prior to beginning work in the field be presented supplemental information pertaining to:

- Material Safety Data Sheets (MSDSs) for Monsanto hazardous chemicals to which Contractor employees may be potentially exposed;
- Known safety and health hazards unique or specific to operating areas in which Contractor personnel will work;
- Requirements for any special protective clothing, equipment or other measures specific to the

chemicals involved; and
- Other basic orientation information, as appropriate, to operating areas in which Contractor employees will work.

3.3 The Monsanto Representative, working with the Contractor, Engineering Contruction Manager (as appropriate) and site health and safety staff, shall coordinate the orientation sessions. A record of the date, information presented, who conducted the training, and a signed list of attendees will be retained in permanent files maintained by the site.

4.0 SUPERVISION

4.1 In all Contractor services on a Monsanto site, the Contractor is responsible for providing safe operations, and for the health and safety of its employees.

4.2 Monsanto will not usually undertake direct supervision of Contractor employees. The Monsanto representative will relate to the Contractor and its employees through the Contractor supervisor in charge at the site. Contractors are to have a competent, responsible supervisor in charge at the site at all times during which its employees or those of its subcontractors are present. However, it is recognized that there may be situations in which it would be impractical for the Contractor to provide full time, on-site supervision. Exceptions to the foregoing are to be first approved by the Site Manager or his designee.

4.3 In some instances a single individual (*e.g.*, a specialized service repair person) who is employed by an outside agency may come onto a site to perform expert service. The Monsanto Representative is to determine that this individual is generally competent to perform the work without supervision.

4.4 In those instances where a Contractor employee has no on-site Contractor supervision, the Monsanto Representative is to provide for appropriate implementation of this guideline. In all other cases, the Contractor is to provide for implementation of this guideline as incorporated in the Contract or otherwise communicated to the Contractor.

5.0 OVERSIGHT

5.1. Contractor operations are to be periodically reviewed by the Monsanto Representative in consultation with health and safety professionals as a further check that the Contractor is complying with applicable health and safety laws, rules and regulations and with contractual requirements and is not endangering personnel and property.

5.2 If significant non-compliance is observed, the related work is to be immediately suspended and resumed only when compliance with requirements is assured. Contractors are to be advised of all non-compliance matters observed by the Monsanto Representative and is to be required to bring its operations into compliance promptly.

6.0 PERSONAL PROTECTIVE EQUIPMENT

6.1 The Contractor is to be notified prior to beginning work of the minimum requirements for personal protective equipment such as special work clothing, goggles, gloves or full body protection.

6.2 The Contractor is to furnish and require the use and wearing of proper personal protective equipment by its employees.

6.3 If a Contractor does not have the specified equipment, the task is to be delayed until such equipment is provided by Contractor.

6.4 Personal protective equipment, including special clothing, are not to be supplied by Monsanto unless dictated by an emergency. (See Section 14.0 for indemnification requirements).

7.0 RESPIRATORY PROTECTIVE DEVICES

7.1 Use of respiratory protective devices requires a program for proper selection, fitting, training, cleaning and disinfection, storage, inspection and repair, surveillance, periodic evaluation, medical approval, and the use of National Institute of Occupational Safety and Health (NIOSH) approved equipment.

7.2. Contractors are to require each of their employees who will be expected to wear a respirator as part of his/her job to be medically evaluated for approval, properly

fitted, and trained in its use prior to beginning work.

7.3. Documentation of the medical approval to wear a respirator is to be provided by the Contractor to Monsanto for review by the location Medical Services. Where location Medical Services do not exist, documentation of medical approval is to be submitted to DMHS for review.

Positive pressure self-contained respiratory protective devices designed and used for the sole purpose of emergency escape do not require medical approval and fitting. These respirators do however require training in their application and use.

7.4. Contractors are to be responsible for properly fitting and training its employees. In extenuating circumstances, if the Contractor is not able to properly fit and train its employees, Monsanto may, upon written request, consider assisting the Contractor in providing such services. (See Section 14.0 for indemnification requirements).

7.5 Contractors are to furnish the proper respiratory protective devices to its employees and to assure that such devices are used in conformity with applicable laws and regulations.

7.6 In the event that Contractor's employees have not been fit-tested and respiratory protection is necessary, only positive pressure, supplied air equipment is to be used.

7.7 Contractors are to adhere to the location policy regarding facial hair in the sealing area of respirators.

7.8 Supplied breathing air for respirator usage is to be provided by the Contractor unless dictated by an emergency. Monsanto may, upon written request, consider furnishing breathing air. (See Section 14.0 for indemnification requirements).

7.9 The Contractor is to test all breathing air sources for oxygen content, and insure that the breathing air is certified as meeting the specifications for Grade D air as described in the Compressed Gas Association Commodity Specification G-7.1-1973 prior to use, whether Monsanto or Contractor supplied.

7.10 Monsanto is to retain the right to test at its discretion all supplied breathing air provided by Contractor.

8.0 MEDICAL SERVICES

The listing below includes chemical/physical agents and situations for which occupational health surveillance is presently required. This listing could be changed periodically as appropriate by DMHS. This surveillance may be required by regulation and therefore legally mandated. In addition, there are exposures for which no legally enacted standard mandates surveillance, but for which Monsanto requires periodic health evaluation. Occupational health surveillance is targeted to specific at-risk groups as defined by workplace assignment, known exposure history, and/or workplace monitoring data and conducted by performing certain specific health examinations to include the following:

ACRYLONITRILE	FORMALDEHYDE	METHEMOGLOBIN FORMERS
ASBESTOS	HAZARDOUS SUBSTANCE EMERGENCY RESPONSE	PAB
BENZENE	HEARING PROTECTION REQUIRED	PHOSPHORUS
CADMIUM		RADIATION
DMAC	LEAD	RESPIRATORY PROTECTION REQUIRED
DMF	MERCURY	

Pre-placement health examinations are to be provided for Contractor employees who are employed in jobs for which Monsanto required/legally mandated health examinations would be performed for its full time employees (if they were to perform the job) and who:

- Are or may be potentially exposed at or above the action level (*i.e.*, one half the 8-hour time-weighted average permissible exposure limit or Monsanto workplace exposure guideline) to a chemical/physical agent and situations as identified above.

AND

- Are anticipated to work in a designated exposure area(s) for 30 or more consecutive work days or where non-consecutive work periods may result in sufficient cumulative work exposure to warrant evaluation. Such work evaluations will be conducted by Monsanto Industrial Hygiene in consultation with Occupational Medicine (DMHS) as to what constitutes sufficient cumulative work exposure;

OR

Regardless of work duration, are assigned to a job for which Industrial Hygiene, in consultation with Occupational Medicine, determines sufficient potential exposure to require health examinations.

When there is any question as to whether or not the job assignment requires special health surveillance or any question as to the specifics

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of the health examination, Occupational Medicine, DMHS is to be consulted and is the final authority.

Section 8.0 will not normally apply to Construction Contractors unless the service performed is directly associated with an active chemical processing area.

Section 8.0 is not intended to apply to potential exposures which might result from possible catastrophic events not reasonably foreseeable.

8.1 Specifications for health examinations and provisions for medical services are to be designated in the contract with the providing Contractor or otherwise appropriately communicated to the Contractor.

8.2 Where "baseline" medical data on Contractor employees are required prior to working in an area, sufficient lead time for collection and analysis of samples is to be required in scheduling work.

8.3 The examinations are to be performed by qualified medical professionals. Examinations may be performed by an outside physician(s), identified by the Contractor, who meets the approval of Monsanto.

8.4 Surveillance health examinations for Contractor employees are to follow as closely as possible the examinations as defined for Monsanto employees.

8.5 In the event a specific health examination procedure has not been established, Occupational Medicine (DMHS) is to be consulted.

8.6 Periodic and termination physicals for Contractor employees are to be in accordance with the same frequency/timing practices provided for Monsanto employees similarly situated.

8.7 Maintenance and storage of medical record information on Contractor employees will be at the discretion of the location and will follow the same policies regarding confidentiality and retention as for Monsanto employees. In all cases whether the examination is performed on or off site, a copy is to be accessible to Monsanto medical personnel or be maintained by Monsanto in the same area as the medical records for that site are maintained. Where feasible, Monsanto forms are to be used.

8.8 Contractors are to assure that medical services are available for contract employees in the event of injury/illness. Where the severity of the injury dictates immediate attention on site, Monsanto may provide first aid treatment to the extent necessary to stabilize the condition of the Contractor employee. (See Section 14.0 for indemnification requirements).

9.0 TRANSPORTING MATERIALS

Contractors are to require all individuals delivering or picking up materials in the plant to have and use appropriate protective equipment consistent with the hazards of the material being transferred and the work procedures of the areas being entered.

10.0 TOOLS AND EQUIPMENT

10.1 All Contractor tools and equipment on site are, as a minimum, to conform to OSHA standards. This requirement is to be communicated to Contractor prior to equipment usage.

10.2 Monsanto is to retain the right to refuse or restrict the use of tools, equipment or chemicals on the site.

11.0 CHANGE AND EATING FACILITIES

11.1 Contractors are to ensure their eating facilities are separate from work areas, kept clean, and have proper washing facilities.

11.2 Contractor change and shower facilities, if required, are to be arranged by Contractor. Monsanto is to retain the right to enter these facilities for purpose of inspection with notice to and accompaniment by the Contractor's supervisor.

11.3 The Monsanto Representative is to provide the Contractor with guidelines, as appropriate, relating to these facilities consistent with the practices prevailing in the area.

12.0 OSHA RECORDABLE INJURY/ILLNESS

12.1 The Monsanto Representative is to be immediately notified by the Contractor of any OSHA recordable injury/illness sustained by Contractor employees.

12.2 The incident is to be investigated by the Contractor and Monsanto following site procedures.

12.3 Contractors are to provide to Monsanto copies of OSHA 200 summary log (or equivalent) upon request of the Monsanto Representative.

12.4 Injuries and illnesses that occur to Contractor employees who are supervised by Monsanto management on a sustained basis must be recorded on Monsanto's Contractor OSHA 200 Log.

13.0 PERSONNEL EXPOSURE MONITORING

13.1 In situations where personnel industrial hygiene monitoring is required by Monsanto and/or OSHA standards for air contaminates or physical agents to which Contractor employees may have potential significant exposure, the Contractor's supervisor and Contractor's employees through their supervision are to be advised of the situation prior to performing the work and within the context of the contact.

13.2 Monsanto may consider assisting Contractor in providing necessary monitoring services upon written request of the Contractor. (See Section 14.0 for indemnification requirements).

13.3 Monsanto sampling instrumentation is not to be loaned to or used by the Contractor.

14.0 MONSANTO ASSISTANCE

14.1 In the event Contractor is permitted to use Monsanto's tools/ equipment, first aid/medical facilities, personal protective equipment, breathing air or other services (as provided in sections 6.0, 7.0, 8.0, 10.0, or 13.0), Contractor (through an officer or other authorized representative) shall be required to agree in writing to the following:

In consideration of Monsanto Company ("Monsanto") providing for use by Contractor, its employees, representatives or agents, *(Fill in appropriate items, services, tools, equipment or facilities to be provided by Monsanto . (Name of Contractor) ("Contractor") agrees that (1) Monsanto, its subsidiaries, and their respective employees, representatives and agents, shall not be liable for and* Contractor releases and discharges Monsanto, its subsidiaries, and their respective employees, representatives and agents, from any and all claims, liabilities, actions, suits, judgments, losses, illnesses, injuries, deaths, damages, costs and expenses arising out of, related to or connected with Monsanto's providing to, or use by, Contractor, its employees, representatives or agents, of the above described items, services, tools, equipment or facilities, (2) Contractor assumes all risk and responsibility therefore, (3) Contractor shall indemnify and save harmless Monsanto, its subsidiaries, and their respective employees, representatives and agents, from and against any and all such claims, liabilities, actions, suits, judgments, losses, illnesses, injuries, deaths, damages, costs and expenses and (4) the foregoing shall apply irrespective of any negligence or fault of Monsanto, its subsidiaries, or their respective employees, representatives or agents, whether such negligence or fault is joint, several, sole or otherwise.

The items, services, tools, equipment or facilities are provided by Monsanto on an AS IS, WHERE-IS BASIS. MONSANTO MAKES NO WARRANTY OR REPRESENTATION OF ANY KIND, EXPRESS OR IMPLIED, WITH RESPECT TO THE ITEMS, SERVICES, TOOLS, EQUIPMENT OR FACILITIES AND MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE.

Contractor agrees to return any items, tools, equipment or facilities in the same, good-working condition as received from Monsanto.

14.2 Should Contractor refuse to agree to the above the Contractor is not to be permitted to use Monsanto tools, first aid/medical facilities, equipment, breathing air apparatus, or other services.

(Reviewed and Approved: Manufacturing Management Council, December 7, 1987; Environmental, Safety and Health Committee, December 15, 1987.)

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RESEARCH ANIMAL CARE

Monsanto Company recognizes that animals must be used in research both to determine the effects of various biologically active materials and the safety of all products. However, it is the stated purpose of the company that animals be utilized only when necessary and always in a humane and considerate fashion.

Monsanto encourages and supports efforts to develop safety testing procedures which do not involve animals and will encourage their use and official recognition as and when their scientific validity is established.

Research investigators shall abide by the terms of the Animal Welfare Act and shall at all times follow the Guide for the Care and Use of Laboratory Animals as issued by the National Research Council.

A designated officer of the company will each year appoint a committee to be known as the Monsanto Research Animal Committee. This committee will be composed of at least three members and will have at least one representative from each major user group within Monsanto and at least one veterinarian actively engaged in the care of research animals.

It shall be the responsibility of the committee and the Animal Resources Veterinarian to assure full compliance with existing laws and guidelines as they relate to the care and utilization of animals at Monsanto.

Responsibilities of this committee will include but not be limited to the following:

1. Provide for review and approval of all protocols which involve the use of live animals,
2. review and approve all facilities which house animals for research including new facilities in the planning phase and,
3. together with the Animal Resources Veterinarian, assure that corrective action is taken if deficiencies or violations occur. It shall further be the responsibility of this committee to file with the United States Department of Agriculture a report of animal usage at the end of each year.

It shall continually be the goal of Monsanto to give high consideration to the well-being of all animals used by this company.

(Policy approved by the Corporate Administrative Committee, October 6, 1980; revisions approved by the Environmental Policy Committee, March 20, 1984.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

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EMPLOYEE HEALTH AND EXPOSURE COMMUNICATIONS

It is Monsanto's intent to identify hazards of chemical substances and physical agents in the workplace and to communicate such hazards to employees who may be exposed.

1. ***Responsibilities***

   Identification of health hazards of chemical substances, physical agents, and biological agents in the workplace is the joint responsibility of site management, the Directors - Environmental Operations (DEOs) and Corporate Environmental Safety and Health (ESH). Line management is responsible for the necessary communications to and education and training of employees on such hazards.

   Europe/Africa Specific: The Director of DMHS Europe/Africa also assumes responsibility for the necessary communications within Europe/Africa. In Europe, the DEO is represented by the Director, Environmental and Regulatory Affairs. Other countries/regions may specify additional functions who share responsibility.

2. ***Employee Communication, Education and Training Concerning the Hazards of Substances in the Workplace***

   All employees whose work provides potential exposure to a hazardous chemical substance will have ready access to reference material, such as a Material Safety Data Sheet (MSDS), and will receive training in the nature of the hazards and appropriate work practices, protective measures and emergency procedures. Such training will be provided to employees when newly assigned to an area with potentially hazardous exposures and annually thereafter.

3. ***Employee Access to Medical and Exposure Records***

   Access to an employee's medical or exposure records (if generated) will be provided within 15 working days after Monsanto receives a request in person or in writing from that employee, or as required by law if more stringent.

   In addition to individual medical and exposure records, an employee may have access to general exposure records (such as area samples) for his/her work area and the individual exposure records (with all identifiers deleted) of other employees in the same work environment. Since much of the data requires interpretation or explanation, the most appropriate physician or nurse should be present during the review of medical records, and the industrial hygienist or industrial hygiene contact should be present during the review of exposure records to provide such interpretation and consultation.

   Written requests for medical and exposure records will be kept at the location housing the records.

4. ***Other Communication of Exposure Information***

   Employees who participate in individual (personal) industrial hygiene monitoring will be informed of the sampling results.

   All employees in an area where ambient air concentrations or physical agents are monitored should be informed of area concentrations, their relationship to relevant federal, state or local permissible exposure limits, Monsanto guidelines and intended corrective action where required.

   U.S. Specific: For certain substances, OSHA regulations require written notification to the employee.

5. ***Communication of Physical Examination and Medical Test Data to the Employee***

   An employee will be informed about results of health evaluations and medical tests. Copies of medical information will be sent to private physicians upon the employee's request and only with written authorization.

   U.S. Specific: The employee will be informed in writing about results of health evaluations performed for occupational surveillance.

6. *Employee Inquiries*

Any employee inquiry about work exposures must be addressed by site management. The location physician, industrial hygienist or other appropriate management representative(s) should meet with the employee and provide a specific response based on the factual information available. The appropriate DEO, Manager, Human Resources and Corporate Environmental, Safety and Health representative should be consulted in any non-routine situation.

Europe/Africa Specific: The Director of DMHS Europe/Africa should be consulted in any non-routine situation in Europe/Africa.

7. *Communication of Health Studies*

When employees have been involved in epidemiology or other health studies conducted by or on behalf of Monsanto, an executive summary of the study results prepared by ESH will be communicated in writing to the responsible DEO and site managers. Communications with the employees will be coordinated by the DEO. The DEO may ask ESH and/or Europe - Environmental and Regulatory Affairs (ERA) to develop a Communications Document and Dissemination Plan in consultation with plant personnel. A decision will be made at that time as to the total population to be included in the communication.

Other studies known to Monsanto which are scientifically sound and which present significant new information concerning the potential hazards of a material to workers should be communicated to employees who have potential exposure to the substance. Where possible, employees should learn of significant potential hazards of materials with which they work from Monsanto, not from outside sources. However, a multitude of epidemiological, animal and other health studies are conducted annually by Monsanto and by others. These studies vary widely in terms of new knowledge provided, scientific validity, conclusiveness of the findings, applicability to humans or the work environment, etc. Location management in consultation with the DEO and Corporate Environmental Safety and Health and DMHS Europe/Africa (for Europe/Africa sites) should communicate in writing any applicable, reliable study results.

In determining where the results of a study should be communicated, factors such as the following should be evaluated:

- the scientific validity and conclusiveness of the study,
- whether the study produced new results of significance,
- the applicability of the study to employees,
- the significance of any potential hazard identified, and
- the plans for follow-up studies.

When there is a question of whether the results of a study are significant enough to be communicated to appropriate employees corporate-wide, the matter will be referred to the following by any member of concerned management: The Director of Medical and Health Sciences, Industrial Hygiene Director, Corporate Toxicology Director, Epidemiology Director, Medical Director, appropriate DEO and the Assistant General Counsel - Environmental. The appropriate Directors of Manufacturing, Human Resources and Public Affairs/Relations will also provide consultation. A draft Communication Document and Dissemination Plan will be developed upon request, initially within ESH, to ensure that the study results are properly interpreted and that the 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.

8. *Access to Employee Medical or Exposure Records by Designated Representatives*

A designated representative with the appropriate written authorization from the employee will be provided access to an employee's medical and exposure records within 15 working days of receipt of the authorization. A designated representative is any individual or organization to whom the employee has given written authorization to have access to the employee's medical or exposure records for a specific purpose on a specified occasion.

U.S. Specific: OSHA rules require that an employee's recognized or certified collective bargaining agent will be treated as a designated representative without regard to written employee

EMPLOYEE HEALTH AND EXPOSURE COMMUNICATIONS (continued)

8. ***Access to Employee Medical or Exposure Records by Designated Representatives (continued)***

authorization with respect to access to employee exposure records (with all identifiers deleted) and analyses of group medical and exposure records only. Final reports of completed epidemiological studies of unionized employees will be provided to the union involved on specific written request. Information on the study results will be provided to all affected employees in a timely manner if this has not been done previously.

The appropriate managers, Human Resources and ESH representatives, (DMHS Europe/Africa when Europe/Africa sites are involved) and the Assistant General Counsel - Environmental should be advised of requests for access to records from a designated representative.

An OSHA inspector who presents a written access order approved by the Assistant Secretary of Labor for OSHA will be given immediate access to records specified by the order. No order is required for access to exposure records. Requests should be reported immediately to the Assistant General Counsel - Environmental. Requests by NIOSH have been supported by the courts but should be cleared by the Assistant General Counsel - Environmental before being granted. Reference should be made to 29 CFR Part 1910 Access to Employee Exposure and Medical Records, Final Rule 9-29-88.

9. ***Notification to Employees of Right of Access***

Each location should make such notification of the existence, location and right of access to medical and exposure records a part of its new hire orientation program and should post or otherwise inform all employees of this information and right each year.

10. ***Employee Health and Exposure Communications Plans***

Each manufacturing and laboratory location should have written Employee Health and Exposure Communications Plans which address such things as:

the communication of and training on the hazards of chemical substances and physical agents in the workplace and proper handling methods, protective measures and emergency procedures,

the handling of employee inquiries and expressions of concern about exposures,

the handling of employee and designated representative requests for access to medical and exposure records,

the communication of abnormal physical exam/medical test findings,

the regular communication of the industrial hygiene program and of exposure levels vs. standards,

the identification of materials or other subjects needing special communications efforts and plans for development of such programs locally or with the help of DMHS or others, and

notification to employees of their right of access to their medical and exposure records.

11. ***ESH Responsibility for Communication Programs***

When its specialized expertise and/or a general communications need makes it appropriate, ESH has a responsibility to develop a Communication Document and Dissemination Plan upon request for new health hazard information. The appropriate DEOs and management at representative plants will be consulted in the development of such plans to make them more suitable and effective for plant use.

Europe/Africa Specific: Europe Environmental and Regulatory Affairs will be responsible for developing a Communication Document and Dissemination Plan which is appropriate for the laws and customs governing handling of employee health and exposure information in those countries.

12. Definitions

Access to Records: Consists of an opportunity to review an employee's medical and exposure records on site, and if requested, receipt of or opportunity to make a copy of the records. Unless otherwise specified by law, trade secret information may be deleted from the records provided to an employee or designated representative, but they must be so informed that this was done.

Medical Records: Include reports of physical examinations, medical tests and other medical information on the employee in the Company's possession.

Exposure Records: Include records of an employee's work history and the level of exposure to potentially harmful or toxic substances or agents and analyses of such records.

Epidemiology Studies: Defined as scientific investigations of potential relationships between workplace exposures and health outcome of Monsanto employees or other occupational populations, as outlined in a study protocol.

(Approved by: Environmental Policy Committee, May 17, 1982.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

(Revised and Approved: DEO Liaison Meeting, August 12, 1991.)

TRANSMITTAL TO EPA OF SUBSTANTIAL RISK INFORMATION UNDER TSCA - U.S.

Monsanto procedure for handling the reporting of information to EPA under the 8(e) substantial risk section of the Toxic Substances Control Act (TSCA).

1. ***Abstract of Requirements*** - TSCA Section 8(e) requires any person (Company) who manufactures, processes or distributes in commerce a chemical substance or mixture and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment shall immediately inform the EPA of such information.

2. ***Who is responsible for reporting?***

   The requirements of Section 8(e) of the Toxic Substances Control Act apply to "any person who manufactures, processes, or distributes in commerce." It is Monsanto's position that the "person" who engages in the commercial activity is only the business organization, whether a sole proprietorship, corporation, partnership, or association.

3. ***How are 8(e) reporting decisions made?***

   Monsanto organizations that might receive TSCA 8(e) information will have a designated individual to whom such information shall be communicated. At least annually, the Director of Regulatory Management (DRM) - Toxic Substances, will publish a list of the designated individuals.

   Anyone obtaining information of the type given in the abstract of requirements and detailed by EPA in their policy statement on Interpretation and Enforcement of TSCA 8(e) (43FR 11110, March 16, 1978), should immediately submit such information to their supervisor. The supervisor shall immediately relay the information to the location or department manager, whichever is applicable, who, in turn, transmits it to the proper designated individual in the organization. The information is then transmitted directly to the Director of Medicine and Health Sciences.

   It is imperative that the flow of information through this transmittal chain be rapid. In the event of nonavailability of a member of the communication network at the time information is first obtained, such member should be bypassed in the interest of speed.

   All individuals involved in submission of substantial risk information to the Director of Medicine and Health Sciences should keep a record of date of receipt and pertinent identifying details.

   The Director of Medicine and Health Sciences, Environmental Counsel, DRM - Toxic Substances, and the appropriate operating unit Director(s) of Environmental Operations will comprise the designated official 8(e) committee to make decisions with respect to information that must be reported to the EPA under Section 8(e) of the Toxic Substances Control Act.

   Appropriate Senior Management will be informed of committee decisions.

   In the event that a committee decision is not unanimous, the next appropriate level of management shall be consulted, and the matter will be resolved at the highest level, if necessary.

   Employees who submit information through Company channels will be notified of action taken by the 8(e) committee together with reasons for such action.

   In the event that, after Monsanto has evaluated information and has determined that the item is not reportable under Section 8(e), the Company becomes aware that an employee, as an individual, subsequently reported the item to the EPA, the Company should review the situation to determine what action, if any, it should take with the EPA.

4. How are employees notified of 8(e) requirements?

All exempt company employees and others so designated by their organizational unit (plant nurses, contract physicians, scientists and engineers, etc.), within organizations that might receive or have access to TSCA 8(e) information, shall be informed of the provisions of Section 8(e). Annual reminders of 8(e) requirements will be provided to said employees. Records documenting the information communication will be maintained by the DRM - Toxic Substances.

(Approved by Vice President, Environmental Policy Staff, April 11, 1986.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

(Revised and Approved by the DEOs and the Vice President, Environmental Policy Staff, May 16, 1991.)

RECORDING ALLEGATIONS OF SIGNIFICANT ADVERSE REACTIONS UNDER TSCA - U.S.

Monsanto procedure for handling the Recordkeeping Requirements of Final U.S. Environmental Protection Agency Rule Under Section 8(c) of the Toxic Substances Control Act (TSCA).

1. ***Abstract of Rule*** - Manufacturers and certain processors of chemical substances and mixtures must maintain records of significant adverse reactions to health or the environment alleged to have been caused by a substance, mixture, article, process, effluent or emission. These records are subject to EPA inspection.

   Rule Reference - 40 CFR Part 717 (48 FR 38178 - August 22, 1983)

   Note: The Rule does not apply to pesticides, food, food additives, drugs or cosmetics when manufactured, processed or distributed for these uses.

2. ***Key Definitions*** - (See Section 717.3 of the Rule for complete listing of definitions.)

   a. "Allegation" means a statement made without formal proof or regard for evidence, that a chemical substance or mixture has caused a significant adverse reaction to health or the environment.

   b. "Known human effect" means a commonly recognized human health effect of a particular substance or mixture described either in:

      i. Scientific articles or publications abstracted in standard reference sources.
      ii. The firms product labeling or material safety data sheets (MSDS).

   However, an effect is not a "known human effect" if it:

      i. Was a significantly more severe toxic effect than previously described.
      ii. Was a manifestation of a toxic effect after a significantly shorter exposure level than described.
      iii. Was a manifestation of a toxic effect by an exposure route different from that described.

   c. "Significant adverse reactions" are reactions that may indicate a substantial impairment of normal activities, or long-lasting or irreversible damage to health or the environment.

3. ***Exemptions from the Rule that relate to Monsanto***

   a. Activities involving solely mining or other solely extractive functions.

   b. Significant adverse reactions that are known human effects.

   c. Significant adverse reactions to the environment directly attributable to incidents of environmental contamination that have been reported to the federal government under any applicable authority.

4. ***Who can receive an allegation?***

   Allegations can come from a variety of sources including: employees, contractors, customers and neighbors.

   As a result, Monsanto's receiving network must be broad. Initial receptors include: plant, laboratory and other Monsanto location supervision; plant and other Monsanto location managers, the Monsanto medical community at all locations, the offices of the Operating Company Directors of Environmental Operations, sales and marketing contacts, switchboard operators at all locations and environmental network contacts.

5. ***Procedure for Handling Health or Environmental Allegations***

   The Monsanto Toxic Substances Control Act (TSCA) Section 8(c) procedure consists of a four-step review and decision process. (Note: A separate procedure for litigation claims will be used see Appendix 3.1. A determination 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 3.2).

5. ***Procedure for Handling Health or Environmental Allegations*** **(continued)**

   a. ***Step One*** - Each plant or other Monsanto-designated locations or laboratory will have at least one identified and trained TSCA Section 8(c) key contact. The Director of Environmental Operations (DEO) or designate from the appro-priate operating companies, representatives of the WHSA (World Headquarters Site Administration), and Director, Regulatory Management (DRM), Toxic Substances will serve as the key contacts for the General Offices. The DEO's have responsibility under this procedure for free-standing divisions and subsidiaries of which Monsanto owns 50 percent or more of the voting stock or other equity rights, or for which Monsanto has the power to control the management and policies of that firm. At Step One, all initial receptors will automatically transfer persons making oral allegations to the key contact at their locations. Initial receptors will also transfer written allegation to the key contact at their location. (There are two exceptions with respect to oral allegations: If the initial receptors are either members of the Department of Medicine and Health Sciences Occupational Medicine (DMHS-OM) group (physicians) or the DEO's office, then these individuals can judge at Step One if an oral allegation is excluded.) Decision Criteria for Step One: pesticides, food, food additives, drugs, or cosmetics are excluded. If a decision is made that the allegation is excluded, the allegation, if written, will be discarded and, if oral, will not be acted on under the Rule.

      If the allegation is oral and not excluded, the key contact will inform the 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 2, is available to be used for all employee related oral health allegations and can be used at the discretion of the DEO for external oral health allegations. All key contacts must note on a written allegation the date of its receipt.

   b. ***Step Two*** - The key contact at a Monsanto location or the appropriate DEO for the General Offices will provide Monsanto employees with Form 8(c)A for oral allegations of health effects. Written allegations will then be reviewed by the key contact, who will then make a Step Two decision. The key contact will determine if the written allegation is exempted from the Rule using the criteria in paragraph 3 above. If a decision is made that an allegation is exempt from the Rule, the allega-tion will be discarded. Otherwise, the allegation will be sent to the appropriate DEO for review.

   c. ***Step Three*** - The appropriate DEO will serve as the coordinator for Step Three and Step Four activities. Allegations received from the location (plant, etc.) key contacts will be reviewed by the DEO and a Step Three decision made. A Step Three decision also will be made by the DEO or other General Offices key contact regarding allegations made to the General Offices receptors. If the Step Three decision is that the allegation is not recordable under the Rule, the allegation will be discarded. Otherwise the allegation will proceed to Step Four.

   d. ***Step Four*** - The DEO will form a committee to make decisions with respect to allegations that must be recorded under the Rule. The committee will be chaired by the DEO and consist of appropriate members of DMHS-OM for human effects, appro-priate members of Environmental Sciences for environmental effects, Environmental Law and the DRM, Toxic Substances. If the decision is that the alle-gation is not recordable under the Rule, the allegation will be discarded. The DEO will provide feedback to the location key contact. If the Step Four decision is that the allegation is recordable under the Rule, then the DRM-Toxic Substances, will place the allegation and documents mandated by the Rule in the TSCA Section 8(c) file. The DEO will provide feedback to the location key contact.

6. ***Record keeping***

   The TSCA Section 8(c) file will be kept in the Office of the DRM Toxic Substances. The file structure will confirm to requirements of Section 717.15 of the Rule. Files pertaining to adverse reactions to health of employees will be retained for 30 years. Files pertaining to other adverse reactions will be maintained for 5 years.

7. ***Communications***

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

   b. A summary of the TSCA Section 8(c) procedure will be periodically communicated to all affected employees and updated, as appropriate.

(Reviewed and Approved: Environmental Safety and Health Committee, October 20, 1987.)

TSCA 8(c) RECORDKEEPING: LITIGATION CLAIMS

DETAILED PROCEDURE:

Step 1

Litigation complaints will be reviewed at the time of receipt by the law department for relevance to TSCA 8(c) recordkeeping. Criteria for this review include the following:

a) Is the claim against a Monsanto product or process?

b) Is the product(s) in question one that is covered by TSCA, i.e., other than pesticide, herbicide, food, food additive, or pharmaceutical?

c) Is the claim a health or environmental claim?

If questions a, b and c are all yes, the claim will be sent to the DMHS occupational medicine group. Exceptions to this include: PCB claims which will be sent to the EPS/Product Safety Group for review and claims against MAP, Nutrition and Health Care Products which will be sent to these respective groups when the law department is unsure of the answer to question (b).

Step 2

The occupational medicine group of DMHS will review the litigation claims passed to them by the law department. The review will be based on EPA's definitions of "known human effect" and "significant adverse reactions." (40 CFR 717) For environmental effects, DMHS may need to contact the appropriate DEO for assistance. Claims that do not meet TSCA 8(c) criteria will be dropped from further TSCA review of this step. Those claims that meet TSCA 8(c) criteria will be forwarded to the DRM, Toxic Substances, for filing. PCB claims that meet the 8(c) criteria will also be forwarded for filing.

Step 3

Claims meeting the 8(c) criteria will be filed in the TSCA 8(c) file maintained by the DRM, Toxic Substances. This office will request a copy of the complaint "answer" from the law department.

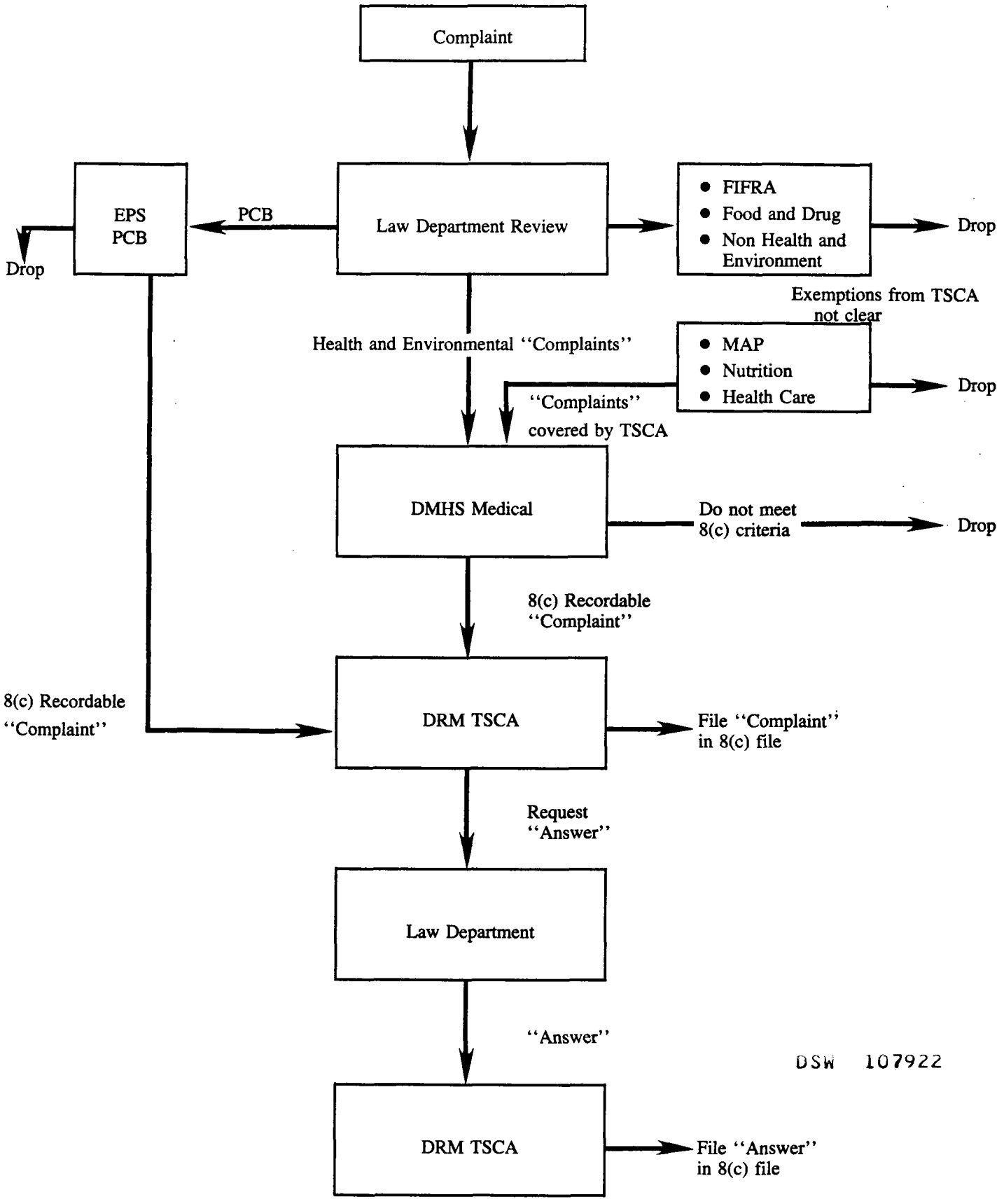
Step 4

The law department will forward a copy of the complaint "answer" to the DRM, Toxic Substances for filing in the TSCA 8(c) file, along with the "complaint." The "complaint" and "answer" will constitute the TSCA 8(c) recordable "allegation" and "follow-up" for all litigation filings.

A block flow diagram of the TSCA 8(c) process for litigation complaints appears on the reverse side of this page.

DSW 107921

TSCA 8(c) REVIEW PROCEDURE OF LITIGATION CLAIMS



DSW 107922

PR3-Appendix 3.2

PREMANUFACTURE NOTIFICATION TO EPA UNDER TSCA - U.S.

Monsanto procedure for development of premanufacture notification (PMN) as required under Section 5 of the Toxic Substances Control Act (TSCA).

1. ***Abstract of Requirements*** - A PMN is required to be submitted to EPA for all new chemical substances at least 90 days before the substance can be manufactured for commercial purposes. A number of substances are exempted from these requirements including, but not limited to: drugs, food and food additives, pesticides, R&D substances, nonisolated intermediates, and substances on the TSCA inventory.

   Final Rules Reference - **40** CFR Part 720.

2. ***Is a PMN required?***

   At a very early stage of a new product development, including isolated intermediates and new imports, several checks should be made to determine if a PMN will be required for the product.

   a. Is the product (substance) exempt under TSCA?
   Responsibility: Operating Company Director, Environmental Operations (DEO) or designate.

   - Section 2(B) of TSCA exempts broad classes of substances such as pesticides, food, food additives, mixtures and others.
   - Section 5(h) exempts small quantities for R&D purposes and has provisions to exempt substances for test marketing low volume manufacture, and polymer manufacture.
   - Refer to TSCA law and regulations for details or contact Director, Regulatory Management (DRM), Toxic Substances.

   b. Is the substance "new" under TSCA? (Is it on the TSCA Inventory of Chemical in Commerce?)
   Responsibility: Operating Company DEO or designate.

   - Contact the Manager of Administrative Services in the Department of Safety and Environmental Health Administration and have the TSCA non-confidential searched for the substance.
   - If the substance is on the TSCA non-confidential inventory, it is not new under TSCA definition and a PMN is not required. If the substance in question is not on the nonconfidential inventory, the con-fidential inventory must be searched.
   - To search the confidential inventory, a Bona Fide Intent to Manufacture (BIM) Notice must be submitted to EPA. A copy of the instructions for submitting a BIM can be found in 720.25 of **40** CFR 720. Send a copy of the BIM to the DRM, TSCA for corporate record-keeping purposes.
   - If EPA reports that the substance is not on the confidential inventory, then the substance is a new substance under TSCA and a PMN is required unless the material is exempt under Section 1 (a) above.

3. ***What information is required on a PMN submission?***

   Final rules detailing the PMN requirements can be found in **40** CFR 720. All PMNs must be submitted on EPA Form 7710-25 (4/26/83). Copies of the form and instructions for its use are available from the DRM, TSCA. The required PMN information falls into either the category of General Information or Risk Assessment Data. EPA will accept additional data. In many cases, it is desirable to submit Risk Analysis or other information to assist EPA with their assessment. Since Monsanto performs a Risk Analysis on all new products via Corporate Environmental Protection Guidelines and the EC-201 and 202 procedures, the information is available for this purpose.

4. *What are the details of the PMN procedure?*

The PMN process should be integrated into the development scheme of a new project. In most cases, the PMN development will be initiated during the earliest phases of commercialization of a product. The PMN must be submitted to EPA at least 90 days before the product can be manufactured for commercial purposes, including test marketing.

a. How is a PMN initiated?
Responsibility: Operating Company DEO or designate.

- The Operating Company contact submits an ER-200 or EC-201 to the Department of Medicine and Health Science (DMHS) if one has not already been submitted (See Monsanto booklet G-2738 for ER-200 and EC-201-202 Procedures).
- The Operating Company contact drafts a PMN using the EPA form.
- The Operating Company contact calls a scoping meeting. Minimum participants at the meeting are Operating Company contact, Operating Company DEO or designate (if not serving as a contact), member of Corporate Environmental Sciences group or other qualified environmental effects expert (if appropriate), DMHS toxicologist and DRM-TSCA. Copies of PMN drafts, along with an approved ER-200 or EC-201 for the substance are supplied to participants.
- At the scoping meeting, decisions are made by the Operating Company contact, as to the scope and detail of optional information to supply. If optional risk analysis is required, assignments are made to DMHS toxicology, industrial hygiene, etc., to complete the necessary sections. A decision is also made as to whether an EC-202 is needed before a PMN submission. Note: It is appropriate at this stage of product development to initiate a Material Safety Data Sheet and a TF-837 for label and freight classification.

b. How are PMNs finalized?
Responsibility: Operating Company DEO or other designated Operating Company contact.

- The Operating Company contact prepares a final draft using input from the scoping meeting as well as follow-up input from DMHS.
- The Operating Company contact, together with the patent department reviews the final draft for confidential information and develops appropriate confidentiality claims with substantiation, where necessary.
- The final draft is circulated to the participants of the scoping meeting for final review.
- The Operating Company contact calls a meeting for final comments/approvals.

c. How are PMNs submitted?
Responsibility: DRM, TSCA

- After final review/approval, the Operating Company contact forwards the PMN to the DRM, TSCA (Authorized Official), for submission.
- The DRM, TSCA will submit the PMN (both confidential and non-confidential as appropriate), using applicable EPA submission requirements.

d. How is EPA follow-up on a PMN handled?

Each PMN will identify a technical contact in addition to an authorized official. The technical contact will typically be an Operating Company DEO, Commercial Development, or R&D contact.

Phone Contact

- All calls from the EPA on technical matters should be handled by the "Technical Contact."
- All verbal questions concerning non-confidential inquiries by the EPA may be discussed at the time of call or deferred to obtain an answer if unknown or if unsure as to EPA authority to ask for the information.
- Non-confidential oral responses may be followed up with a written response when deemed appropriate by the contact. In all cases the technical contact should write a note to file documenting the conversations, with a copy to the DRM, TSCA.
- Confidential inquiries previously discussed with the EPA or claimed confidential in the PMN may be discussed at the discretion of the technical contact.
- All other verbal confidential questions will be addressed by written response only.

DSW 107924

PREMANUFACTURE NOTIFICATIONS TO EPA UNDER TSCA - U.S. *(continued)*

***Phone Contact* (continued)**

- Uncertain areas of confidentiality will be deferred and handled according to item (5).
- Verbal response to EPA will be followed up, at the discretion of the technical contact, with a written letter documenting the conversation and clearly indicating areas of confidentiality.

EPA Actions

Responsibility: The Operating Company DEO or designate will have prime responsibility, with counsel of Environmental Law and the DRM, TSCA.

- EPA may extend the review period by an additional 90 days.
- EPA may ask for more information under Section 5(e). i.) An order may be issued by EPA. ii.) A consent order may be jointly agreed to. The consent order can include restriction on manufacture or use in lieu of information generation. (Note: As a rule, consent orders should be signed by line management).
- EPA may restrict manufacture or use under Section 5(f).

e. How is Monsanto follow-up on the PMN submission handled? Responsibility: Operating Company DEO or designate.

- Monsanto may request EPA to stop the clock on PMN reviews at any time during the review period.
- After EPA's review period expires, manufacture can commence at any time, subject to any 5(e) or 5(f) restrictions. A Notice of Commence to Manufacture (NCM) must be submitted to EPA within 30 days of the first manufacture for commercial purposes. The information to be included in the notice are detailed in 40 CFR 720. Confidential claims must be made again at this time, as appropriate. Send a copy of the NCM to the DRM, TSCA for corporate recordkeeping purposes. Once a NCM is filed with EPA, the PMN substance is placed on the TSCA inventory.

(Approved: Operating Company Directors of Environmental Operations and the Director, Regulatory Management TSCA, October, 1983.)

(Reviewed and Approved: Environmental Safety and Health Committee, October 20, 1987.)

DSW 107925

OCCUPATIONAL FATAL ACCIDENT REPORTING

In case of a fatal accident, Monsanto's Law Department must be contacted in addition to government, operating company, and corporate reporting requirements.

OSHA regulations require that, within 48 hours after the occurrence of an employment accident which is fatal to one or more employees or which results in hospitalization of five or more employees, the employer of such employee(s) shall report the accident either orally or in writing to the nearest office of the OSHA Area Director. The reporting may be by telephone or telegraph. The report shall relate the circumstances of the accident, the number of fatalities, and the extent of any injuries.

In such instances the following Monsanto guidelines are considered necessary to protect the civil rights of company employees.

In addition to routine Operating Company and Corporate notifications in fatal accidents, either Mary M. Tonkin or Michael E. Gewin (for accidental deaths) or L. William Higley (for deaths from long-term chemical exposure), Monsanto's attorneys for OSHA matters, must be notified immediately.* They will provide prompt necessary legal guidance including, where necessary, sending an attorney to the site for on-the-spot counseling.

In the meantime, OSHA inspector(s) should be given access to the site of the accident when the inspector arrives on the premises, without requiring that the inspector secure a warrant for entry. However, neither members of location management nor any wage employee should discuss the accident with the OSHA inspector until advised to do so by the company attorney.

The location manager or his designee will greet the inspector and state that location employees have been asked not to discuss the accident until the company attorney advises them accordingly.

The inspector is to be told that we have been forced to take this posture as a result of the OSHA Procedure for Investigating Criminal/Willful Violations. The inspector will be permitted to inspect the plant, and, of course, should be advised of any chemical hazards and protective measures needed, related or not to the accident.

Location personal will not allow the inspector to view any records or documents at this time, other than the lost-time injury log, OSHA Form 200 and Form 101 or its equivalent, until advised to do so by the company attorney.

If the location is requested to rope off the area of the accident, local discretion should be exercised. The inspector, however, is not authorized to keep plant management away from any part of the operation.

If local management believes entry by the inspector must be delayed for a few hours because of exposure, safety, confusion, etc., seek such a recommendation from Ms. Tonkin or Mr. Higley at the time of the initial call to St. Louis.

* Mary M. Tonkin, 314/694-2967 (office), 314/721-8209 (home).

Michael E. Gewin, 314/694-2849 (office), 314/352-2176 (home).

L. William Higley, 314/694-8503 (office); 314/862-1796 (home).

(Approved: Environmental Policy Committee, February 18, 1980.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

(Updated for key contacts, December 16, 1991)

TRANSMITTAL OF TOXICOLOGY AND HEALTH-RELATED DATA TO REGULATORY AGENCIES - U.S.

Health-related information should be submitted through the Department of Medicine and Health Sciences.

The various regulatory agencies are continually supplied information from toxicology and health-related tests on Monsanto products done by or for Monsanto. In order to provide consistency in the handling and review of such information, as well as to assure proper follow-through on commitments to these agencies, the transmittal of such test results will be carried out in accordance with the following guidelines:

1. All toxicology or health-related data will be reviewed with the Department of Medicine and Health Sciences (DMHS) prior to submission to any regulatory agency, except for routine submissions by Monsanto Agricultural Company of test data re-quired under FIFRA. In addition, DMHS will be informed of all such submissions at the time via the letter of transmittal.

2. Any such information transmitted must be recorded and the copy of the final submission retained both by DMHS and the involved operating company.

3. The letter of transmittal for any toxicology or health-related data must include a listing of the materials being transmitted including sufficient bibliographic information for subsequent retrieval of the original data.

4. If the submission includes data on human health effects, it is preferable that the information be submitted to the regulatory agency by the Director of the Department of Medicine and Health Sciences.

5. Agreements with a regulatory agency which commit Monsanto to the future transmittal of toxicology or health-related data must also be reviewed and approved in advance by DMHS; further, DMHS must concur with the feasibility of meeting commitment dates. Appropriate records of such commitments must be maintained both by the involved operating company and DMHS in order to assure future Monsanto compliance with such agreements.

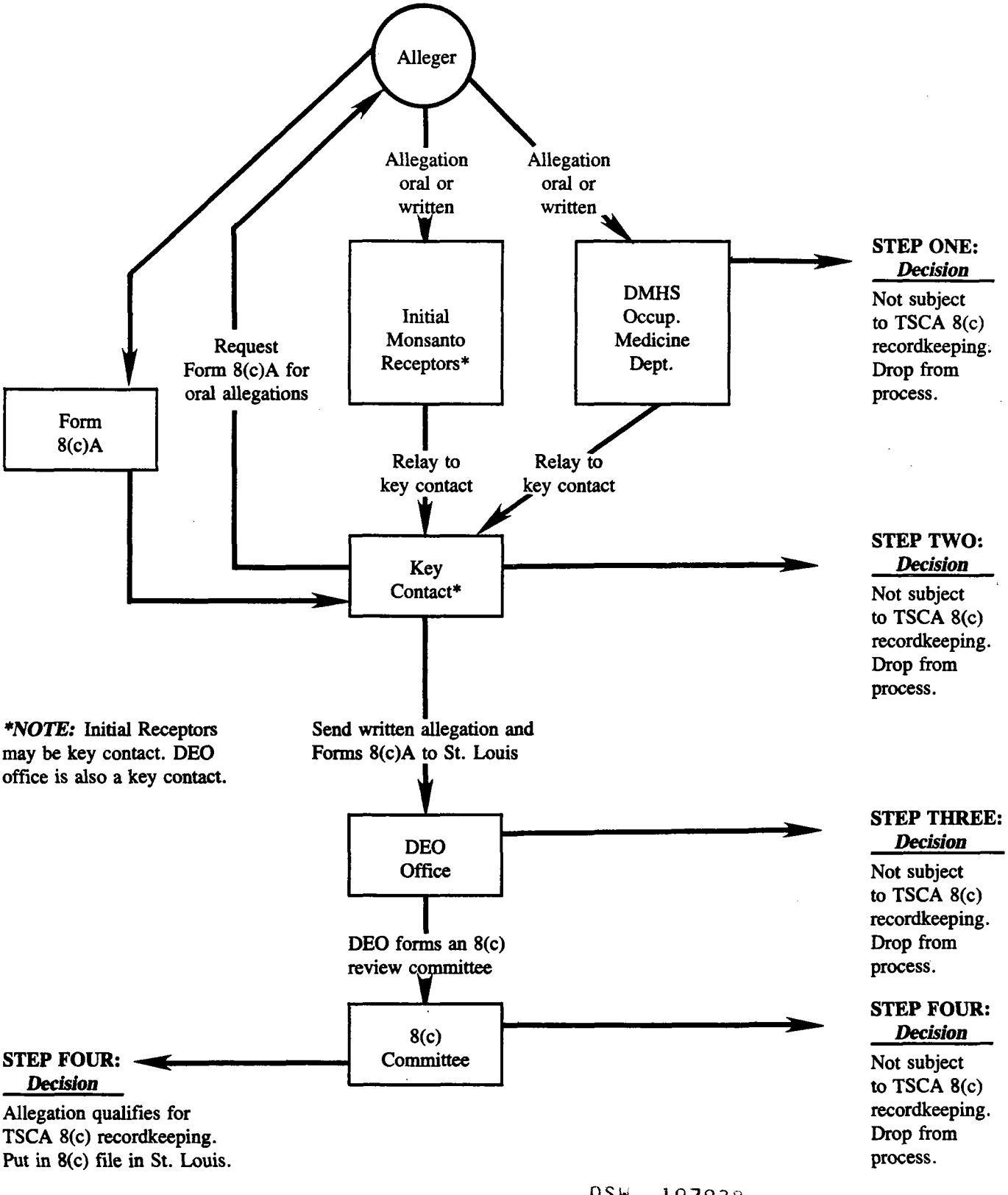
6. Any exceptions to the above must be approved by the Director of DMHS.

(Approved: Environmental Policy Committee, January 17, 1984.)

(Reviewed and Approved: Environmental, Safety and Health Committee, October 20, 1987.)

DSW 107927

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



DSW 107928

ESH **PROCEDURE**

TO: SITE KEY CONTACT _____

Form 8(c)A
11/83

REPORTING FORM FOR

ALLEGATIONS OF SIGNIFICANT ADVERSE REACTION TO HEALTH

Toxic Substances Control Act, Section 8(c) 40 CFR Part 717

NAME OF ALLEGER: _____ DATE: ____ / ____ / ____ (MO / DAY / YR)

ADDRESS: *(If not employee)*

_____

_____

_____

SITE LOCATION: _____

SITE ADDRESS: _____

_____

_____

_____

SITE LOC. CODE: _____

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

Employer *(if other than Monsanto)*: _____

DESCRIPTION OF ALLEGED ADVERSE HEALTH EFFECT:

1. WHAT IS THE HEALTH EFFECT BEING CLAIMED? _____
2. HOW LONG DID IT LAST? _____
3. HOW OFTEN HAVE YOU EXPERIENCED EFFECT? _____
4. IN WHAT WAY DID IT AFFECT YOUR NORMAL ACTIVITIES? _____
5. HOW WERE YOU EXPOSED? _____

WHAT SUBSTANCE, MIXTURE, PROCESS OR OPERATION DO YOU THINK CAUSED THE EFFECT YOU DESCRIBED:

_____

_____

_____

_____

Signature

FOR COMPANY USE ONLY:

RECEIVED ON: _____ BY: _____

MONSANTO COMPANY

DSW 107929

PR3-Appendix 2

STLCOPCB4022747