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UC-1695

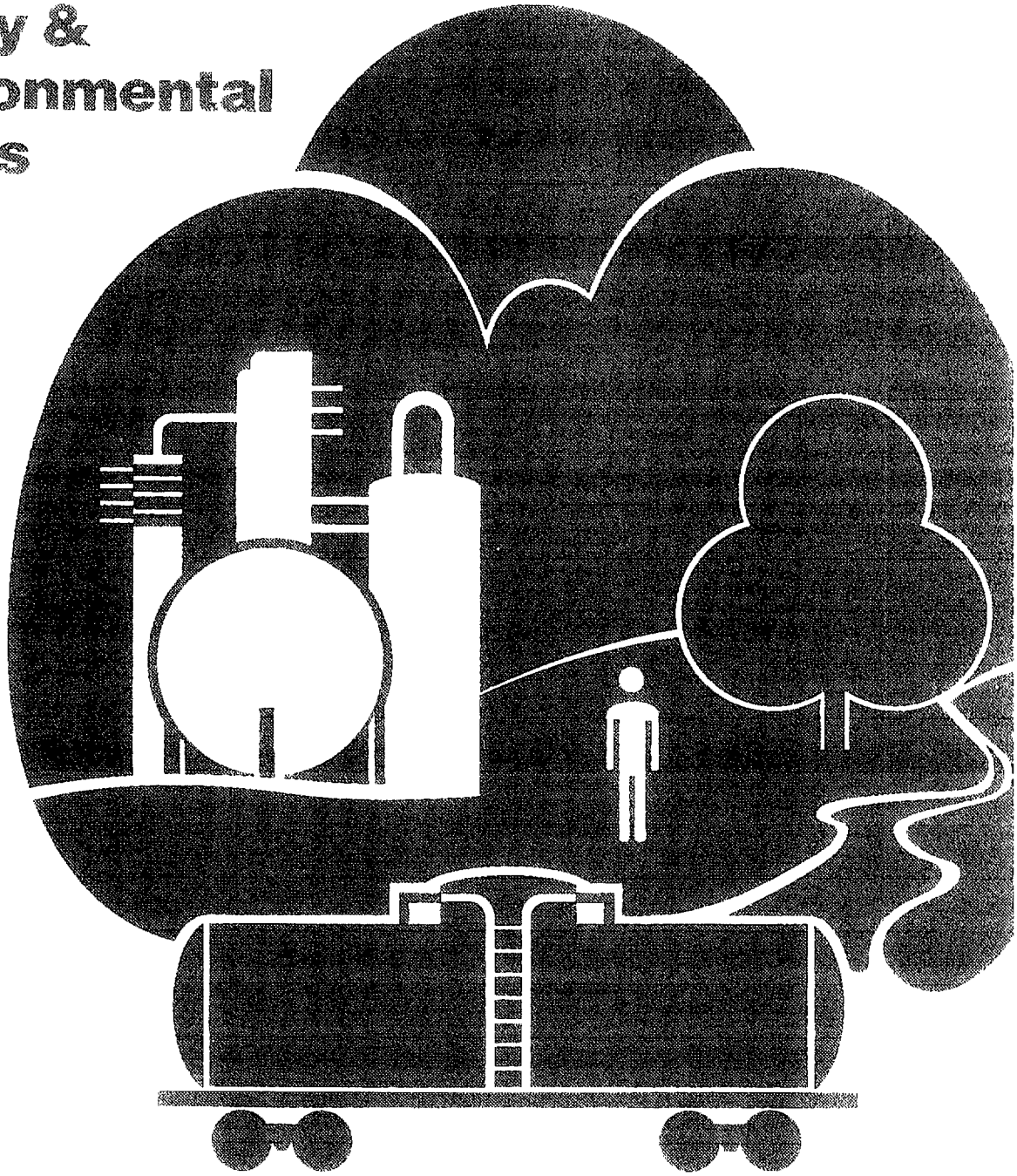
Health, Safety & Environmental Affairs

Procedures Manual

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Health Safety & Environmental Affairs



Procedures Manual

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UNION CARBIDE CORPORATION
Solvents & Coatings Materials Division

39 Old Ridgebury Road
Danbury, CT 06817-0001

TO: S&CMD HS&EA Procedures
Manual Holders

DATE: March 31, 1988

CC: J. H. Bees
H. W. Lichtenberger
R. Van Mynen

SUBJECT: New S&CMD HS&EA Procedures Manual

The Solvents and Coatings Materials Division is committed to conduct its businesses in a manner designed to protect the health and safety of its employees, its customers, the public and the environment. A key element in the management system needed to carry out this commitment is a set of requirements that is accurate, clear, understood and accepted. The procedures contained in this new S&CMD HS&EA Procedures Manual will serve that purpose.

This manual replaces the two-volume manual issued January 1, 1983. To satisfy our commitment to Simplicity and Focus, the new manual has been reduced from 300+ pages to 150 pages. The new procedures trace directly to and are based on the Corporate HS&EP Procedures issued October 1, 1987.

Even though the format and language has been extensively changed, the intent of the new procedures is very similar to that of the procedures in the previous manual. Implementing most of these new procedures should not create new work. There are exceptions in the operational safety and environmental areas, and in these areas implementation will be progressively staged as noted in the specific sections.

Because of the March 31, 1988 implementation date required for the Corporate HS&EP Procedures, it is necessary to implement the new S&CMD HS&EA Procedures immediately. There has been extensive review of most of them with the effected users, but the review is not as complete as we would like. Because of this we plan to review all of them after six months of use and make any changes needed to facilitate compliance.

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These procedures will be used as a basis for any audits that take place after today. Please work with your Divisional HS&EA Manager to process any variances you need and can justify. We must be in full compliance with all these requirements unless an approved variance is in effect.

N. L. Zutty

:ms

Att:

4702e/JBE

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S&CMD HS&EA PROCEDURES MANUAL
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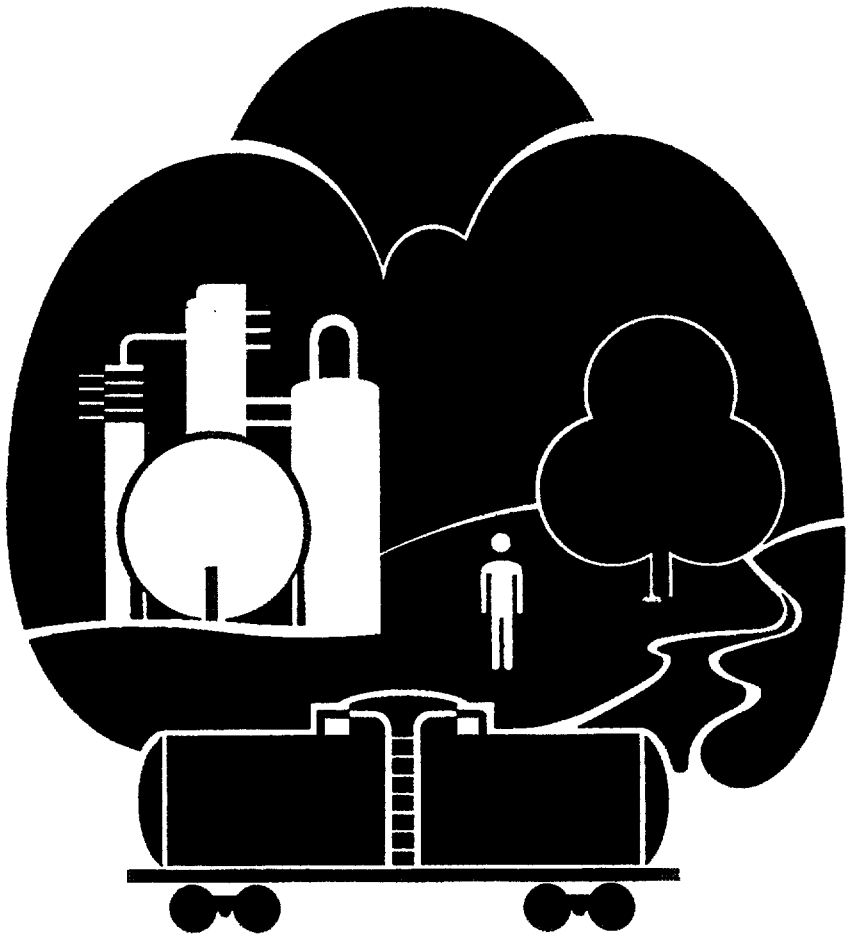
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Health Safety & Environmental Affairs



Procedures Manual

S&M

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INTRODUCTION

Purpose	This manual defines specific procedures that must be followed to provide reasonable assurance that the Solvents and Coatings Materials Division is able to meet Union Carbide Corporation commitments to safety, health, and environmental protection.
Scope and Use	The procedures in this manual apply to all Solvents and Coatings Materials Division businesses, functional groups, and hosted locations, residing either in the United States or in other countries. The procedures are recommended for all Union Carbide affiliates which are associated with the Solvents and Coatings Materials Division.
Source	These procedures consist of Corporate HS&EP Procedures (published 10/87), additional C&P requirements, and additional S&CMD requirements. The additional C&P requirements are indicated by a single asterisk (*), and the additional S&CMD requirements are indicated by a double asterisk (**).

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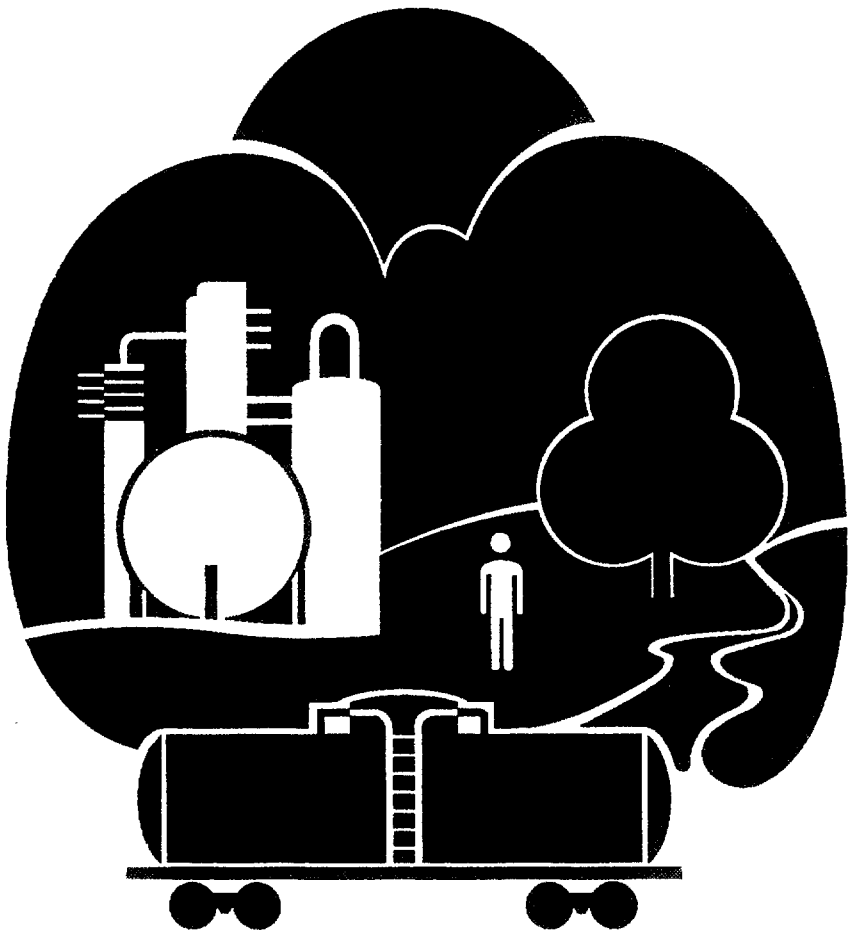
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Corporate HS & EP Policy



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UNION CARBIDE CORPORATION
CORPORATE POLICY

HEALTH, SAFETY, AND ENVIRONMENTAL PROTECTION

GOVERNING PRINCIPLE

The Corporation will conduct its business responsibly, and in a manner designed to protect the health and safety of its employees, its customers, the public and the environment.

Management Requirements

Programs will be implemented and maintained which are equal to or better than our competition and provide reasonable assurance that the Corporation:

Compliance

■ Complies with all applicable governmental and internal health, safety and environmental requirements.

Operations

■ Designs its facilities and conducts its operations in such a manner as to avoid unacceptable risk to human health and safety and the environment.

Products

■ Produces and sells products that if manufactured, used, handled, stored, distributed and disposed of utilizing Union Carbide's product safety communications and common safety practices will not present an unacceptable risk to human health and safety and the environment.

Hazard Communications

■ Conducts appropriate research and communicates the known hazards of its products and operations together with relevant health, safety and environmental protection information to potentially affected persons.

Public Policy

■ Establishes and presents responsible and consistent positions to governments and the public on health, safety and environmental matters affecting its products and operations.

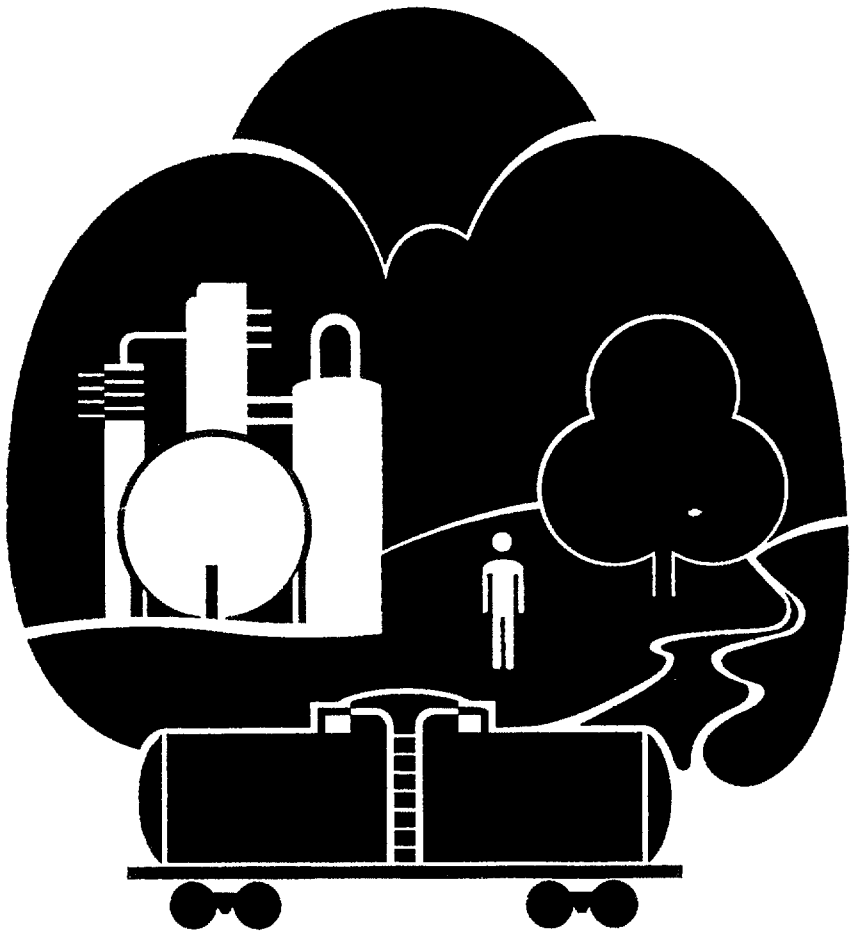
Reporting Irregularities

Any departure or suspected departure from this policy must be reported to the Corporate Vice President of HS&EP.

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Management Systems

MANAGEMENT SYSTEMS



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BASIC REQUIREMENT

Health, safety and environmental management systems must be designed, implemented and maintained at all management levels to provide reasonable assurance that the Corporation complies with governmental and internal requirements.

Specific requirements are listed below.

A. Accountability

Health, safety and environmental responsibilities are understood and accepted at all levels of the organization. Critical health, safety and environmental activities and results to be achieved are included in every manager's measures of performance and evaluations.

** S&CMD HS&E Accountabilities:

- The S&CMD is divided into four business areas, Solvents and Intermediates, UCAR Coatings Resins, UCAR Emulsion Systems, and Electronic Processing Materials. Each of these areas is structured differently.

- Solvents and Intermediates and UCAR Coatings Resins operate their manufacturing facilities as tenants in large plants hosted by S&CMD and other C&P divisions. In these facilities they have primary accountability for operational safety, product safety, and process related environmental activities. This accountability is delegated through the Business Directors for product safety activities, and through the Director of Operations for operational safety and environmental activities. The primary accountability for personnel safety and health and plant related environmental activities in these facilities lies with the host division.

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A. Accountability (cont'd)

- UCAR Emulsion Systems operates its manufacturing facilities in its own plants, and therefore has full accountability for all health, safety, and environmental activities and results, both domestically and in foreign countries. This accountability is delegated through the Business Director for product safety activities, and through the Director of Operations for all other health, safety, and environmental activities.

- Electronic Processing Materials primarily operates domestic and foreign subsidiaries. The subsidiaries have full accountability for all health, safety, and environmental activities and results. The subsidiaries operate in accordance with Corporate, C&P and divisional health, safety and environmental requirements. Accountability for health, safety, and environmental activities and results is delegated through the subsidiary President or Managing Director.

- The S&CMD hosts two major plant locations. Accountability for health, safety, and environmental activities and results in these plants is delegated through the Plant Manager.

- Division line management is supported by a Health, Safety, and Environmental Affairs staff group, which is tied to C&P HS&EA. The divisional HS&EA staff has accountability for writing divisional policy and procedures, communicating and interpreting internal and external requirements, coordinating HS&E programs, and providing advice and service as needed.

B. Adequate Resources

Plans, budgets and programs provide adequate resources to comply with applicable governmental and internal health, safety and environmental requirements and to identify and promptly correct deficiencies.

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C. Equivalent requirements

Internal health, safety and environmental requirements established by management are at least equivalent and
** traceable to Corporate, C&P and Divisional policy and procedures.

** The policies and procedures contained in this S&CMD Procedures Manual include all Corporate health, safety, and environmental requirements. They also contain additional C&P and Divisional requirements. These additional requirements are marked so as to be distinguishable from the Corporate requirements.

D. Reviews

Mandatory health, safety and environmental management systems (including programs, policies, procedures, etc.) are reviewed at least every three years and updated when circumstances warrant a revision.

E. Documentation

Mandatory health, safety and environmental management systems (including programs, policies, procedures, etc.) are documented, including reviews and revisions.

F. Control Programs

1. Control programs (audits, reviews, inspections, monitoring, sampling, testing, etc.) are designed to provide reasonable assurance that:

   - Products and operations comply with applicable governmental and internal requirements and
   - Deficiencies, if any, are identified and promptly corrected.

**2. Every manufacturing location conducts internal health, safety and environmental audits at least once each year.

**3. Periodic health, safety and environmental reviews of each manufacturing location are conducted by divisional HS&EA staff at a frequency appropriate to the risks involved, but in no case less than once every two years.

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F. Control Programs

**4. Division locations are subject to and respond to Corporate HS&EP Compliance Audits as follows:

- An initial action plan and subsequent semi-annual status reports are required for each audit.
- Formal responses are made by the Division President based on input from the locations.
- A review meeting with the Divisional President and location management is held for any audit which "Requires Substantial Improvement to Meet Requirements".

Definition:

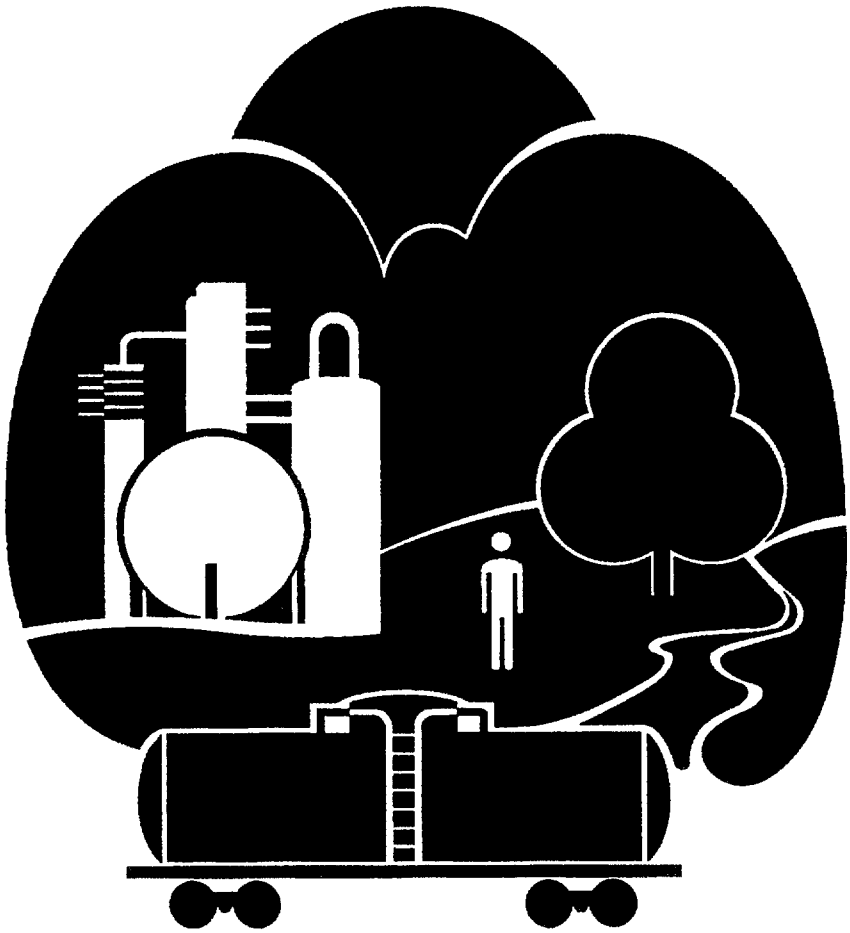
Internal requirements: Corporate Health, Safety and Environmental Protection Policy, the procedures contained in this manual and additional health, safety and environmental mandatory requirements defined by:

- Management to reflect their individual business needs and
- Other Corporate Departments (Investment Recovery, Purchasing, Employee Relations, etc.).

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General Procedures



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BASIC REQUIREMENT

Programs must exist and be designed to address reasonably foreseeable emergency situations at Union Carbide locations and to provide appropriate hazard and emergency response information to local communities.

Specific requirements are listed below.

A. Location Emergency Response Plans

Written emergency response plans and/or procedures exist and contain at least the following:

- Identification of reasonably foreseeable emergency situations that could have serious adverse effects on the health or safety of employees or the public, or the environment.
- Instructions for managers, operators and other employees for coping with emergency situations including, as appropriate, discussion of the location's:
  - emergency organization
  - alarm systems
  - internal communication network
  - external notification requirements including, as appropriate, media, community agency and neighbor contacts
  - emergency equipment and facilities and
  - specific steps for minimizing harm to human health and the environment and for returning to normal operations and
- Provisions for employee training and drills.

B. Community Hazard Communication

Appropriate hazard and emergency response information is offered to local emergency response agencies that may be required to respond to emergency situations occurring at Union Carbide locations. Local emergency response agencies may include police and fire departments, civil defense units, hospitals or designated lead agencies for responding to emergency situations.

Persons who could be affected by emergency situations at Union Carbide locations are provided access to appropriate hazard and emergency response information.

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C.	Community Emergency Response Plans	Locations with the potential for emergency situations that could have serious adverse effects on health, safety or the environment in surrounding communities actively encourage, support and participate in efforts by those communities to establish, implement and maintain appropriate community emergency response plans.

Definition	Emergency situations: Any incidents that could have serious adverse effects on the health or safety of employees or the public, or the environment. These incidents may be the result of accidents, process upsets, fires, explosions (including bomb threats) or unplanned releases of contaminants; natural disasters, such as tornadoes, hurricanes, earthquakes and floods; or other external factors, including accidental chemical releases from neighboring facilities.

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BASIC REQUIREMENT	Programs must exist and provide reasonable assurance that independent contractors at Union Carbide locations perform their work in compliance with applicable health, safety and environmental requirements. Specific requirements are listed below.
A. Contractor Selection	Contractor selection criteria include an evaluation of their ability to comply with applicable governmental and internal health, safety and environmental requirements.
B. Communication to Contractors	Before on-site contractors begin work, they are informed by Union Carbide representatives of the following: • Known hazards to which they or their employees may be exposed • Appropriate precautionary measures and • Applicable internal health, safety and environmental requirements, including site emergency procedures.
C. Contractor Commitments	Prior to beginning work, on-site contractors agree in writing to: • Abide by applicable governmental and internal health, safety and environmental requirements • Use equipment that is safe to operate and • Provide authorized Union Carbide representatives access to their work site(s). A written agreement is not required for those contractors whose work on-site will not expose the contractor, their employees or Union Carbide employees to reasonably foreseeable health or safety hazards.

BRC 1047

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D.	Contractor Performance	Ongoing health, safety and environmental performance of on-site contractors is reviewed by authorized Union Carbide representatives.
E.	Contractor Independence	Union Carbide's oversight role does not involve direct supervision, instruction or management of contractor personnel unless specifically authorized by Business Group or Corporate Department management. Best efforts are made to preserve the independence of such contractors.

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BASIC REQUIREMENT	Programs must exist and provide reasonable assurance that independent off-site contractors for processing and storage perform their work for Union Carbide in compliance with applicable health, safety and environmental requirements. Specific requirements are listed below.

A.	Contractor selection	1. Contractor selection criteria include an evaluation of their ability to comply with applicable governmental and Union Carbide health, safety and environmental requirements. The evaluation includes a review of health, safety and environmental practices at the contractor's place of business prior to contract signing, if hazardous materials are involved in the contracted activity.
B.	Risk Management*	Process hazards associated with the contracted activity are identified and appropriate risk control methods are determined in accordance with Section VI of the C&P Operational Safety Program.
C.	Communications to contractor	Before off-site contractors begin work, they are informed in writing by Union Carbide representatives of the following: • Known hazards to which they or their employees may be exposed • Appropriate precautionary measures • Union Carbide standards and any health, safety and environmental requirements, including emergency procedures, that are unique to the contracted activity and * • Operational Safety Standards developed for risk management.

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	Contractor commitments	Prior to beginning work, off-site contractors agree in writing to: • Abide by applicable governmental requirements and Union Carbide precautionary practices that are unique to the contracted activity. • Use equipment that is safe to operate • Notify Union Carbide of any process or raw material changes that may affect product or operational safety and • Provide authorized Union Carbide representatives access to the locations where they are performing the work.
D.	Contractor performance	Ongoing health, safety and environmental performance of off-site contractors is reviewed by authorized Union Carbide representatives. The reviews are conducted at the contractor's place of business and documented if hazardous materials are involved in the contracted activity.
E.	Contractor independence	Under normal circumstances, Union Carbide's oversight role does not involve direct supervision, instruction or management of contractor personnel. Best efforts are made to preserve the independence of such contractors.
F.	Endorsement*	Off-site contracted processing and storage activities are endorsed by Divisional HS&EA before the activity begins.
G.	Responsibility**	It is the responsibility of the Operations Manager for the product/process area involved to implement this program. It is the responsibility of the HS&EA Manager to provide advice and project review and endorsement service to support the Operations Manager.

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Definition

Hazardous materials: Materials that can cause acute or chronic health effects in humans, or are classified as combustible liquids, compressed gases, explosives, flammables, organic peroxides, oxidizers, pyrophorics or unstable or water-reactive materials.

Off-site contractors for processing and storage: Any contractors who manufacture, process, package or store products for use or sale by Union Carbide and who use our technology or equipment on property not owned by Union Carbide. Product containers are not considered to be equipment. Licensing agreements are excluded.

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2.3
CAPITAL PROJECT REVIEW

BASIC REQUIREMENT	Capital projects must be reviewed to identify health, safety or environmental hazards and to evaluate potential risks. Specific requirements are listed below.

A. Review Criteria

1. Capital projects are reviewed to identify health, safety or environmental hazards and to evaluate potential risks associated with:

   - Episodic incidents
   - Chronic adverse effects on employees, customers, the local community or the environment and
   - Non-compliance with governmental and internal requirements.

*2. Capital projects are reviewed to identify those which would expose the corporation to Significant Potential Risk (SPR), as defined in the attachment. Projects involving SPR are independently reviewed, using C&P HS&E Checklists.

3. Appropriate corrective actions and control measures identified by the reviews are included as conditions placed on the capital project.

B. Review documentation

Capital project reviews that identify health, safety or environmental hazards are documented and include:

- Title and description of the project
- Review findings and conclusions, including:
  - assessment of episodic risk potential
  - assessment of potential adverse effects on employees, customers, the local community or the environment
  - assessment of compliance with governmental and internal requirements and
  - appropriate corrective actions and control measures

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B. Review documentation (cont'd)

- Name and location of the person primarily responsible for performing the review
- Recommendations and terms of endorsement, including conditions placed on the project and
- * Completed appropriate C&P HS&E Checklists.

C. Capital project approval

**1. All capital projects are reviewed and endorsed by Divisional HS&EA.

*2. Capital projects that involve Significant Potential Risk (SPR) are endorsed in writing by Divisional HS&EA. Endorsement letters include any conditions placed on the project.

*3. Capital projects that involve significant hazards are endorsed by C&P HS&EA.

4. Capital projects that involve substantial hazards or that will be submitted to the Board of Directors are endorsed by the Corporate Health, Safety and Environmental Protection Department. Endorsement requests include:

- A recommendation letter from C&P HS&EA stating any conditions placed on the project
- The review documentation listed above and
- C&P or Corporate Department management approvals.

The requests must be received at least five business days prior to the date the endorsement is required.

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Definition:

Hazard: The potential to cause adverse effects on human health or safety, or the environment.

Major Capital Project: A capital project of two million dollars or more in cost or a capital project of any size that commits the Corporation to an important new course of action.

Risk: The likelihood that an undesirable outcome will result under a given set of circumstances, expressed in terms of its consequences and its probability of occurrence.

Significant hazards: Hazards introduced into an operation by increasing the amount of hazardous materials in an operation.

Substantial hazards: Hazards introduced into an operation by increasing the capacity of the largest vessel containing a hazardous material.

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Determination of Significant Potential Risks (SPR)

Capital Project Proposals

The determination of SPR is required for all capital project proposals. The criteria for determination of SPR for a project is as follows:

1. All capital project proposals which involve one or more of the chemicals listed below are presumed to have a SPR.

Acrolien	Hydrogen Sulfide
Acrylates	Sulfur Dioxide
Amines	Sulfur Trioxide
Acrylonitrile	Liquified Petroleum Gas
Aldicarb Solution	Methyl Isocyanate
Ammonia	Nickel Carbonyl
Carbon Monoxide	Phosgene
Chlorine	Phosphine
Ethylene Oxide	Vinyl Chloride
Propylene Oxide	Vinyl Methyl Ether
Hydrogen Chloride	Carbon Disulfide
Chlorosilane	

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2. All other capital project proposals will be evaluated using the UCC Hazard Factor. Any project which has raw materials, intermediates or products with a Hazard Factor equal to or above 1900, as defined below, is presumed to have a SPR. Transportation Hazard Factor determination information will be issued at a later date. The Hazard Factor for non-transportation related projects is determined as follows:

UCC Hazard Factor = (Physical State) X (Health Rating) X (Population) X (Quantity)

Where:

a. Physical State

State	Factor
Gas	1
Liquid	1
Solid	0

b. Health Rating - Lowest of OSHA, PEL, UCC Internal Exposure Standard or ACGIH TLV, (See REFERENCES for Definitions and Exposure Standards)

Standard PPM	Factor
<1	100
1-10	30
11-50	2
>50	1

c. Estimated Population

Plant Area (includes estimated population on the plant site and with in a radius of one mile of the plant boundary).

Estimate	Factor
>1000	100
100-1000	30
<100	5

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d. Quantity (pounds of material under consideration in largest single container or any other containers within 1500 feet)

Pounds	Factor
>100,000	4
10,000-100,000	3
1,000-9,000	2
<1,000	1

3. All capital project proposals which meet any of the following criteria are presumed to have a SPR.

   a. Produces or handles materials that can exceed the following in concentrations at the fenceline under reasonable "worst case" conditions:

      1. 25% of the Health rating, as defined in 2b above, if the effects are based on acute effects;

      2. 25% of the IDLH (Immediately Dangerous to Life and Health);

      3. 50% of the Lower Flammable Limit for gases; or

   b. Produces, stores or otherwise handles materials that:

      1. decompose into substances meeting any of the criteria in 3a of this guideline; or

      2. have exothermic reaction potential in the presence of available contaminants

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BASIC REQUIREMENT	Acquisitions must be reviewed to identify health, safety or environmental hazards and to evaluate potential risks and/or liabilities. Specific requirements are listed below.

A. Review Criteria

Acquisitions are reviewed to identify health, safety or environmental hazards and to evaluate potential risks and/or liabilities associated with:

- Episodic incidents
- Chronic adverse effects on employees, customers, the local community or the environment and
- Non-compliance with governmental and internal requirements.

Appropriate corrective actions and control measures identified by the review are included as conditions placed on the acquisition.

B. Review documentation

Acquisition reviews are documented and include:

- Title and description of the acquisition
- Review findings and conclusions, including:
  - assessment of episodic risk potential
  - assessment of potential adverse effects on employees, customers, the local community or the environment
  - projected potential liabilities
  - assessment of compliance with governmental and internal requirements and
  - appropriate corrective actions and control measures.

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B. Review documentation (cont'd)

- Name and location of the person primarily responsible for performing the review and
- Recommendations and terms of endorsement, including conditions placed on the acquisition and
- * Completed facility acquisition checklists: Air Pollution, Water Pollution and Spills Prevention, Hazardous Wastes, Occupational Safety and Health, Process Safety and Accident Prevention, and Product Safety.

C. Acquisition approval

1. Acquisitions are reviewed and endorsed by the Corporate Health, Safety and Environmental Protection Department. Endorsement requests include:
   - A recommendation letter from C&P HS&EA stating any conditions placed on the acquisition
   - The review documentation listed above and
   - C&P or Corporate Department management approvals.

*2. Acquisition requests are reviewed and endorsed by C&P HS&EA. Endorsement requests include:
   - A recommendation letter from the Division HS&EA manager stating any conditions placed on the acquisition and
   - To review documentation listed above.

   The request must be received at least ten working days prior to the date Corporate endorsement is required.

Definition: Acquisition: A business unit or real estate obtained by any means (direct asset purchase, share purchase, lease, property trade, stock exchange, joint venture, legal settlement, etc.). A business unit includes all or part of a business (process technology, product technology, facilities, etc.).

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2.5
DIVESTITURE REVIEW

BASIC REQUIREMENT	Divestitures must be reviewed for health, safety or environmental liabilities prior to execution of a definitive sale agreement. Specific requirements are listed below.

A. Review criteria

1. Divestitures are reviewed to document compliance and evaluate known health, safety and environmental liabilities associated with:

   - Pre-divestiture non-compliance with governmental requirements
   - Chronic adverse effects on employees, customers, the local community or the environment resulting from pre-divestiture operations and
   - Impact of new ownership.

*2. Divestiture reviews follow the C&P divestiture checklist.

B. Review documentation

Divestiture reviews are documented and include:

- Title and description of the divestiture
- Review findings and conclusions
- Name and location of the person primarily responsible for performing the review and
- Recommendations and terms of endorsement, including conditions placed on the divestiture.

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C. Divestiture approvals

1. Divestitures are reviewed and endorsed by the Corporate Health, Safety and Environmental Protection Department. Endorsement requests include:

   - A recommendation letter from C&P HS&EA stating any conditions placed on the divestiture
   - The review documentation listed above and
   - Business Group or Corporate Department management approvals.

   The requests must be received at least five business days prior to the date the endorsement is required.

*2. Divestiture requests are reviewed and endorsed by C&P HS&EA. Endorsement requests include:

   - A recommendation letter from the Division HS&EA manager stating any conditions placed on the divestiture and
   - The review documentation listed above.

   The request must be received at least ten working days prior to the date Corporate endorsement is required.

Definition: Divestiture: The sale or transfer of a business unit or real estate by any means (direct sale, lease, property trade, stock exchange, joint venture, legal settlement, etc.). A business unit includes all or part of a business (process and/or product technology other than licensing agreements, integrated facilities, etc.).

BRC 1061

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2.6
VARIANCES FROM INTERNAL
REQUIREMENTS

BASIC REQUIREMENT	Variances from internal health, safety and environmental requirements must be approved by authorized persons and documented prior to implementation. Specific requirements are listed below.

A. Variance approval

1. Only a business organization or department that prescribed an internal requirement is authorized to approve a variance from it. Such approvals are obtained from:

   - The administrative head of the organization or department or
   - An authorized representative reporting directly to the administrative head of the organization or department.

**2. Variances against the requirements in this manual are coordinated and endorsed by Division HS&EA.

**3. Variances against the C&P or Corporate requirements in this manual are endorsed by C&P HS&EA.

B. Variance rationale

Variances may be requested in the following situations only:

- When the internal requirement conflicts with governing laws or regulations
- When an acceptable action plan is in place to eliminate the need for the variance and continued operation under the action plan will not adversely affect the health or safety of employees or the public, or the environment.

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C.	Variance request data	Written variance requests are to contain the following: • Reference to the internal requirements to which the variance applies • The requested time period for the variance • Description of the variance requested • Variance rationale • Description of the alternative procedures and/or standards to be used during the term of the variance and • Justification for the requested term of the variance if it exceeds one year.
D.	Term of Variance	Variances normally have a term of one year or less, and in no case are approved for more than five years.
E.	Variance Records	Copies of approved variances (including the information supplied with their requests) are kept on file by: • The organization or department granting the variance and • The organization or department originating the variance request.
F.	Variance renewals	Variance renewals are subject to the same requirements and restrictions as original variance requests.
G.	Variance form	Variances against the requirements in this manual are submitted using the attached form.

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Definition: Variance: Authorization to deviate from an applicable internal requirement. A variance may exempt locations from performing actions or maintaining conditions spelled out in an internal requirement, or it may authorize acts or conditions that differ from internal requirements.

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CP 2.6 VARIANCE FROM INTERNAL REQUIREMENTS - C&P FORM

(See HS&EP Procedure 2.6)

° Variance Requestor: _____

° Internal Requirement To Which Variance Applies
(i.e., policy, procedure or mandatory standard)

° Variance Rationale

° Variance Request Data

° Requested Period Of Time
(Normally one year, and in no case longer than five years)

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° Justification For Variance Term If Longer Than One Year

° Request Approval Routing: (HS&EA) _____

(Line) _____

(Other) _____

° Internal Requirement Issuing Body: _____
(i.e., Corporate, C&P Group, Division,
Functional Group, Location)

° Variance Endorsement Signatures:

C&P Division/Functional Group _____

C&P Group HS&EA _____

° Variance Approval Signature:

Issuing Body _____

NOTES:
The approved variance document is kept on file by:

Organization granting variance
Organization requesting variance

Renewals are subject to the same requirements and restrictions as original variance requests.

FORM CP 2.6A

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BASIC REQUIREMENT	Programs must exist and be designed to address employee information and training, visitor safety, communications and internal reporting and follow-up. Specific requirements are listed below.

A.	Employee information and training	Employees are provided with appropriate information and training to reasonably assure that they have adequate knowledge and skills to fulfill their health, safety and environmental responsibilities and to understand that full compliance with health, safety and environmental requirements is an integral part of their jobs.
B.	Visitors	1. Visitors at Union Carbide locations are provided with appropriate information about potentially significant hazards to which they may be exposed and precautionary measures and actions to be taken in response to reasonably foreseeable emergency situations.
		2. Appropriate personal protective equipment is provided to visitors, along with information on proper use, when necessary to prevent on-site injuries and/or overexposure to physical, chemical or biological agents in the workplace.
C.	Communications	Employee-management communication mechanisms are maintained to: • Encourage employees to voice health, safety and environmental concerns and suggestions. • Provide for responsive management investigations, action plans and feedback as appropriate and • Address employee understanding and acceptance of the need for adherence to health, safety and environmental requirements.

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D.	Substantial risk reporting	New information that a Union Carbide product, material or activity may present a substantial health, safety or environmental risk is shared among potentially affected Union Carbide businesses and reported to divisional HS&EA.
E.	Significant events reporting	1. Significant health, safety and environmental events are reported according to the attached table.
F.	Monthly Reports	1. Significant health, safety and environmental events and spills/incidents are reported to the Corporate Health, Safety and Environmental Protection Department in writing no later than the 14th day of the month following the month in which they occur. Monthly reports contain the following information: • Description of each event, including the nature of the event, location, process and/or substance involved. • Date(s) of occurrence • Determination of underlying causes, when known and • Response action(s) identified for significant events to mitigate risks and avoid future occurrences. **2. Location spill and release reports and injury reports are supplied to Divisional HS&EA at a specified date which allows sufficient time to meet the above requirements.

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G. Miscellaneous requirements

Location procedures provide for appropriate handling of the following health, safety and environmental matters:

- Governmental inspections and information requests, with the following minimum requirements:
  - Designation of trained individual(s) to handle such inspections and requests
  - Documentation of the inspector(s) name and type, purpose and scope of the inspection
  - Notification of divisional HS&EA
  - Appropriate review before release of confidential information
  - Release of copies, not originals, of documents requested by the agent
  - Retention of duplicates of samples taken by or given to the agent, and
  - Full documentation of the inspection
- Media and private citizen information requests.
- Formulation and communication of positions on public policy issues and proposed governmental requirements having a potential impact on Union Carbide operations or products and
- Governmental enforcement actions and third-party lawsuits and claims.

Definitions:

Hazardous substances: Materials that can cause acute or chronic health effects in humans, or are classified as combustible liquids, compressed gases, explosives, flammables, organic peroxides, oxidizers, pyrophorics or unstable or water-reactive materials.

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Definitions (cont'd)

Significant health, safety and environmental events: Events that meet any of the following conditions:

- Releases of toxic or hazardous substances
- Fires, explosions or other accidents
- Governmental investigations, information requests or enforcement actions
- Private actions or claims against the Corporation, its officers or employees
- Deviations from Corporate policies or governmental requirements by senior or middle level management or
- Events deemed to be significant by senior management or the Corporate Health, Safety and Environmental Protection Department which have resulted in or present a significant and realistic risk of resulting in:
- Death, serious injury or serious adverse health effects on employees or the public
- Property damage of $1,000,000 or more
- Governmental investigations or enforcement actions seeking a substantial limitation on a facility's operation or to impose fines or penalties of $100,000 or more
- Significant criminal actions being brought against the Corporation, its officers or employees or
- Substantial media coverage

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Definitions (cont'd)

Spills/incidents: Releases that meet any of the following criteria:

- Was reported to a government agency as required by law
- Worker (UCC or Contractor) recordable injury or illness associated with the release
- Community impact or awareness reported
- Publicity resulted or is anticipated or
- Release of 5,000 pounds (2,270 kg) or more of a process material, waste or product.

Substantial risk: A risk of considerable concern because of the seriousness of its consequences and the fact or probability of its occurrence.

Imminent safety concern: A situation in which there is a possibility, that is greater than remote, of (1) serious injury to personnel inside or outside a facility or (2) a release outside the plant boundaries of a toxic substance in a quantity that poses the potential of serious injury.

BRC 1071

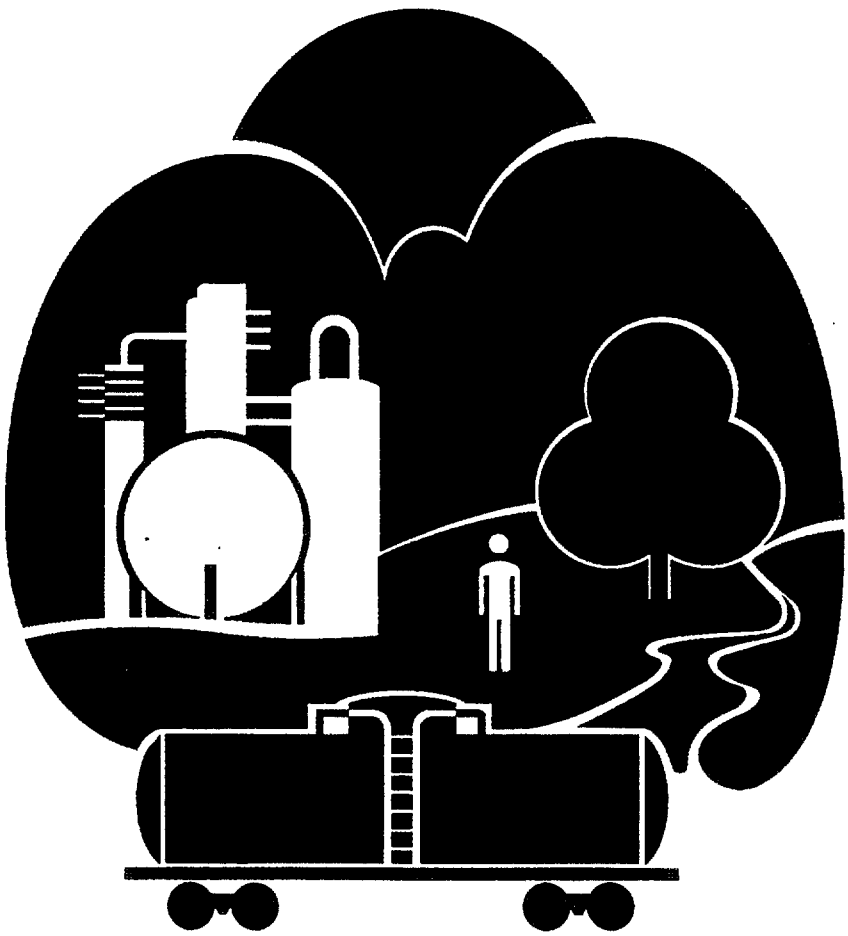
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EVENTS REPORTING

	Event	Line Mgrs	Other
Immediate Notification	Significant Events	Host/Tenant Division President Group President	Division HS&EA Group HS&EA Corporate HS&EA UCC Security Corporate Communications Corporate Insurance (property damage)
	Imminent Safety Concern	Host/Tenant Division President Group President	Division HS&EA Group HS&EA
First Business Day Notification	Spills/Releases (that are not Significant Events)	Division VP/OP	Division HS&EA Group HS&EA
	Agency Inspections	Division VP/OP	Division HS&EA Group HS&EA
	Agency Fines/Citations	Division VP/OP	Division HS&EA Group HS&EA
	Fires and Explosions (estimated above $5M but less than $1MM)	Division VP/OP	Division HS&EA Corporate Insurance
	Lost Workday Case Injury/Illness	Division VP/OP	Division HS&EA
	Access To Medical and/or Exposure Records	Division VP/OP	Division HS&EA
As soon as Practical	Recordable Injury/ Illness	Division VP/OP	Division HS&EA
	Off the Job Injury/ Illness	Division VP/OP	Division HS&EA

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Health & Safety Procedures



HEALTH & SAFETY PROCEDURES

BRC 1073

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BASIC REQUIREMENT

Programs must exist and provide reasonable assurance that operational hazards are identified, significant episodic incidents are avoided, and operational safety requirements are considered in evaluating business decisions. The programs must cover all phases of operating life from conceptualization, design, and construction through operation and decommissioning.

The C&P Operational Safety Programs, which follows, meets this requirement.

Implementation of the Operational Safety Program is to be done in steps according location action plans endorsed by divisional HS&EA.

Specific requirements are listed below.

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I. Basic Concepts

All C&P Divisions and Departments must implement and maintain an operational safety program which reasonably ensures that the safety and health of employees, the community and the environment are protected.

1. General principles

The C&P Operational Safety Program reasonably ensures that all organizations:

a. Comply with applicable governmental and internal operational safety requirements.

b. Accept that prevention of *accidents* and any adverse community impact from *operations* are key factors in the personal and business success of every Union Carbide employee.

c. Recognize that when commercial and safety priorities are in conflict, these conflicts must be addressed and resolved in a timely manner. Operational safety must never be compromised for production or profit.

d. Establish clearly defined roles and responsibilities for operational safety, including interface responsibilities between functional groups, with an emphasis on line management's ultimate responsibility for operational safety.

e. Assess and control *risks* associated with operations.

f. Assess practices impacting on operational safety and implement corrective action as required.

g. Provide resources that are sufficient to maintain an operational safety program consistent with risk and needs.

h. Maintain personnel skill and knowledge levels required for safe operation.

i. Implement an operational safety communications program that accomplishes the following objectives:

- Gives all employees a clear understanding of what is mandatory.
- Fosters a culture which encourages employees to openly voice their legitimate operational safety concerns.
- Provides for the documentation and dissemination of *process* technology information.

Continued

BRC 1075

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I. Basic Concepts
(Continued)

1. General principles *(Continued)*	j. Secure *independent assurance* for specific aspects of operational safety as defined by C&P HS&EA. k. Institute an overlapping system of checks and balances to protect against the inadvertent error of a well-trained and motivated employee. l. Take into account significant operational safety risk management issues in business plans. m. Follow specified *variance* procedures when deviating from mandatory internal requirements.
2. Accountability and responsibility	In locations where operations belong to divisions other than the division responsible for managing the location (i.e. host-tenant situations), the accountability for operational safety program implementation is shared in the following manner: a. The division owning the operation (tenant) provides the following: ■ Technology-specific standards for operational safety at location facilities ■ Facility designs ■ The technology resources and documentation necessary for tenant operations. b. The location management (host) provides the following: ■ Location operational safety *procedures, policies,* and programs ■ Site support systems ■ Management control systems to reasonably ensure that all standards for operational safety are met ■ Operations staffing and training ■ Technology-specific standards for operational safety and technical resources for non-commercial operations (energy systems, environmental protection, etc.).

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II. Performance Measurement and Control

A. Management Control
B. Performance Appraisals

A. Management Control

Every organization must comply with operational safety commitments and remain knowledgeable about the conduct of work affecting operational safety.

STANDARDS	
1. Management system	Each division employs a management system to confirm that the standards included in this operational safety program are being met.
2. Location audit systems	Every location maintains its own internal audit and control system to reasonably ensure that location safety *procedures* are being followed and conform to Corporate HS&EP *Policy* and Procedures.
3. Annual functional review	Accountable functional managers review safety related activities specific to *operations* at least once a year.
4. Operational Safety Standards audit	Audits of each operation's compliance with *Operational Safety Standards* are conducted by accountable technology and operational personnel at least once every two years.
5. Division sponsored audits	Division sponsored operational safety audits are conducted on facilities for which the division is accountable. Specific elements of this system include the following: a. Audits against operational safety and loss control programs (including fire safety, emergency response, etc.), on a schedule compatible with Corporate HS&EP Department audits. b. Operational safety/health surveys, conducted in individual operating areas at a frequency based on the perceived level of *hazard*.
6. Corporate audits	Periodic audits by Corporate HS&EP Department teams provide *independent assurance* of compliance with applicable internal and governmental requirements.

Continued

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II. Performance Measurement and Control
(Continued)

A. Management Control *(Continued)*

7. Corrective action	**Operational safety deficiencies identified through audits and reviews are addressed by appropriate action plans, which are tracked to timely completion.**
8. Audit protocols	**Audit protocols are reviewed and updated every five years or whenever required by changes in the law or internal requirements.**

B. Performance Appraisals

Operational safety performance must be an important factor in performance appraisals for all employees whose performance or decisions have an impact on safe operation.

STANDARDS	
1. Criteria	**Standards for operational safety performance exist for all employees, including functional and commercial managers.**
2. Scope	**Operational safety performance appraisals are given to employees, including hourly, at least once a year.**

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III. Communication

A. Safety Communications
B. Commercial/Operational Communications

A. Safety Communications

Employees must receive and have easy access to the operational safety information needed to perform their work.

STANDARDS	
1. Basic requirement	All employees are informed of the safety-related requirements, laws and regulations that pertain to their work performance.
2. Technology updates	Results of research, development, and engineering work important for safe *operations* are promptly communicated to operations personnel.
3. Process deviations	Unexpected or unexplained *process* deviations are promptly communicated to technology functions.
4. Sharing information	Significant operational safety information is periodically shared within C&P.

B. Commercial/Operational Communications

Communications involving operation-related commercial requirements must take operational safety into account.

STANDARDS	
1. Commercial requirements	Commercial objectives and requirements are consistent with safe *operation*.
2. Chain of command	Operation-related commercial requirements communicated to operations personnel are transmitted through the pre-established organizational chain of command at each location.

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IV. Staffing and Resources

A. Program Implementation
B. Operation Staffing

A. Program Implementation

Sufficient staffing and resources must exist to implement this Operational Safety Program.

STANDARDS	
1. Coordinating criteria	**Individuals responsible for coordinating division and location safety activities have the skills and knowledge needed to fulfill this responsibility.**
2. Resources	**Division and location coordinators have sufficient resources to implement this program.**

B. Operation Staffing

Each operation must be staffed in a manner that allows for safe operation of facilities.

STANDARDS	
1. Minimum requirements	**On-site and off-site requirements for staffing, experience and skill levels needed for *operations* are identified and met.**
2. Special situation staffing	**Staffing and technical skill requirements posed by startups, shutdowns, abnormal or unique operating situations, and emergency response needs are identified and met.**
3. Development and rotation	**Plans for personnel development and rotation are consistent with operational safety requirements.**
4. Commercial expectations	**Commercial expectations are kept in balance with safety standards and the capabilities of available resources.**

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V. Training and Certification

A. Basic Training
B. Certification
C. Technology Training
D. Management of Training Programs

A. Basic Training

Operators and other selected plant personnel must have the skills and knowledge needed to perform their jobs safely.

STANDARDS	
1. Safety criteria	Training programs incorporate skills and knowledge required for the safe performance of job-specific tasks.
2. Training objectives	Safety knowledge and performance training objectives are developed for each training program.
3. Documentation	The safety content of training programs and trainee attendance are documented.
4. Testing	Achievement of safety training objectives is verified through testing.
5. Updates	The content of training programs is continually updated to keep pace with changing needs.

B. Certification

Locations must certify that personnel whose work could affect operational safety have attained the skills and knowledge required to perform their specific jobs safely.

STANDARDS	
1. Basic requirement	A job-specific *certification* and *recertification* program is established at each location.
2. Criteria	The certification process consists of testing (both written and practical) and job performance evaluation of assigned work.
3. Work Performance	Personnel are certified prior to their performing assigned work independently as defined by the location program.

Continued

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V. Training and Certification
(Continued)

B. Certification *(Continued)*

4. Documentation	The certification and recertification process is documented and kept current.

C. Technology Training

Operations supervisors and technical support staffs must have sufficient knowledge of the technology required to safely conduct their work.

STANDARDS	
1. Operational safety training	*Formal* technical operational safety training exists for each *operation*.
2. Process technology training	Operating department staffs are trained in the *process* technology and the equipment for which they are responsible.
3. Support staff training	Process technology support staffs are trained in operational safety.

D. Management of Training Programs

Training programs must be managed in a manner that provides operational safety knowledge to appropriate personnel.

STANDARDS	
1. Basic requirement	**Mandatory operational safety training requirements are documented and kept current.**
2. Feedback	A formal system documents the training that has been conducted and provides routine feedback on training due dates and exception reports.

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VI. Process Risk Management

A. Hazard Identification
B. Risk Control

A. Hazard Identification

Process hazards associated with operations must be identified.

STANDARDS	
1. Identification methodology	*Process hazards* are identified and grouped by major or lesser severity using methodologies endorsed by C&P HS&EA. These methodologies take into consideration information concerning the following factors involving materials handled in the operation: ■ Toxicity ■ Flammability ■ Reactivity ■ Explosivity.
2. Scope	*Process hazard identification* activities encompass the complete *operation*, including handling of raw material, processing, storage, and product handling in all operating modes (including startup and shutdown).
3. Timing	A *formal* hazard identification activity for any given operation is conducted at a frequency based on the perceived level of hazard, or earlier if the operation is revised substantially beyond the current technology employed.
4. New hazards	Hazard identification documentation is revised as new hazards are discovered.

Continued

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VI. Process Risk Management

(Continued)

B. Risk Control

Risks associated with process hazards must be controlled at an acceptable level.

STANDARDS	
1. Basic requirement	*Risks* associated with identified *process hazards* are controlled at an *acceptable level*, using control methods appropriate to the hazard severity and the risk level involved.
2. Management involvement	Risk control methods are documented, and are understood and accepted by both functional and commercial management.
3. Risk assessment methodology	Risks associated with *major process hazards* are assessed, using methodologies endorsed by C&P HS&EA.
4. Operational Safety Standards	Risk control methods employed for major process hazards are documented by means of *Operational Safety Standards*. a. **Purpose.** Operational Safety Standards document what must exist to control the risk, not what already exists in the facility. b. **Availability.** Operational Safety Standards are available before the startup of any process or facility having the potential for major process hazards. c. **Content.** Operational Safety Standards include, as appropriate: ■ *Critical Operating Parameters* and associated limits ■ Critical controls (administrative and instrumentation) ■ *Critical equipment*, including emission control devices that must be in service ■ Special *procedures* ■ Special materials specifications ■ Special equipment design standards ■ Special test and inspection requirements.

Continued

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VI. Process Risk Management
(Continued)

B. Risk Control *(Continued)*

4. Operational Safety Standards *(Continued)*	**d. Use.** Operational Safety Standards are used as a basis for the following: ■ Unit Critical Operating Parameters ■ Standard Operating Procedures ■ The technology base for new plants or design modifications ■ Mandatory operational safety training. **e. Technical endorsement.** Operational Safety Standards are endorsed by the *technical authority* for the *operation*. **f. Review.** Operational Safety Standards are reviewed for effectiveness at a frequency based on the perceived level of risk.
5. Reassessment	The effectiveness of risk control methods employed for major process hazards are confirmed by reassessing the risk resulting from employment of the control.
6. Independent assurance	Compliance with Operational Safety Standards is *independently assured*.

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VII. Operations Management

A. Operating Procedures and Documentation
B. Operating Instructions
C. Critical Operating Parameters (COP)
D. Facility and Operations Change Review (FOCR)
E. Pre-startup Safety Review (PSSR)
F. Operations Records and Logs
G. Critical Instrumentation and Alarms
H. Accident/Incident Investigation and Communication
I. Piping & Equipment Labeling

A. Operating Procedures and Documentation

Operating procedures and documentation must be up to date and must include the information necessary for the safe conduct of work.

STANDARDS	
1. Usability	Operating *procedures* and documentation are usable by a *certified operator*.
2. Scope	Operating procedures and documentation cover *Operational Safety Standards* and other operational issues in sufficient detail to allow for safe work, and to provide direction for routine, abnormal and emergency operations.
3. Mandatory requirements	Operating procedures and documentation make clear which parts are mandatory.
4. Training support	Operating procedures and documentation contain flow and *process* diagrams necessary to support training and day-to-day *operations*.
5. Updates and reviews	Operating procedures and documentation are updated to reflect changes as they occur. Operating procedures and documentation are completely reviewed at least every two years.
6. Changes involving process hazards	Any change to an operating procedure or documentation that involves a *major process hazard* is reviewed by the *technical authorities* and, where possible, field checked by appropriate personnel prior to general release.
7. Access to equipment	Procedures exist to control access to process equipment by non-operating personnel.

Continued

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VII. Operations Management
(Continued)

A. Operating Procedures and Documentation *(Continued)*

8. Support diagrams	When required for safe operation, the following diagrams are available in the workplace, and updated as needed: ■ Control loop and Emergency Shutdown logic diagrams ■ Analyzer functional diagrams ■ Electrical control logic and connections schematics ■ Power distribution diagrams.

B. Operating Instructions

Operating instructions must support safe operation.

STANDARDS	
1. Location standards	Standards for operating instructions that support safe operation exist at each location.
2. Staff notes	Where not otherwise provided, staff notes to shift provide guidance on non-routine activities, including post-maintenance testing.
3. Review of staff notes	Staff notes to shift are reviewed regularly for content and clarity.

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C. Critical Operating Parameters (COP)

Critical operating parameters, never-exceed-limits, and mandatory responses must be identified for operations.

STANDARDS	
1. Basis	*Critical Operating Parameters (COPs)* are based on *Operational Safety Standards* and endorsed by the *technical authority*.
2. Identification	COPs are identified in operating procedures and recorded on a dedicated document at the operating station.
3. Documentation requirements	The documentation includes the following information: ■ A rationale for the COP ■ The *hazard* involved ■ The *never-exceed-limit*, at which level troubleshooting ends and immediate, predetermined remedial action is taken.
4. Never-exceed-limit	Reaching the never-exceed-limit is treated like a significant *incident* with written communications and formal investigation.

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D. Facility and Operations Change Review (FOCR)

Changes to operating facilities and processes must not introduce an unacceptable risk.

STANDARDS	
1. Basis	The *Facility and Operations Change Review (FOCR)* is based on appropriate, up-to-date process documentation or a physical inspection of the facility.
2. Scope	The FOCR *procedure* applies during all hours to permanent and temporary changes.
3. Documentation	The FOCR documentation defines newly authorized operating parameters and facilities.
4. Independent review	The FOCR procedure includes an *independent review.*
5. Approval	The FOCR procedure specifies a tiered *approval* system that requires at least *first level manager* approval. The proper level of management approval is described and is based on the perceived level of *risk*.
6. Technical review	Significant FOCRs require the approval of the *technical authorities*.

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E. Pre-startup Safety Review (PSSR)

Operating facilities and processes must be reviewed for readiness of facilities and people prior to startup in specific situations.

STANDARDS	
1. Scope	The *Pre-startup Safety Review (PSSR) procedure* applies at all hours to the following: ■ new or revised facilities and *processes* ■ the restart of *idled facilities* ■ infrequent *operations* ■ new or revised operating methods and maintenance procedures that have the potential to significantly affect operational and personnel safety.
2. Independent review	The PSSR procedure includes an *independent review* and an on-site inspection of the as-built facilities and supporting documents.
3. Approval	The PSSR is *approved* by at least the *first level manager* of the facility. The PSSR procedure specifies a tiered approval system in which the proper level of management for approval is based on the perceived level of *risk*.
4. Corrective action	A system exists to verify that all identified deficiencies are resolved, and that all items necessary for safe operation are corrected prior to startup.
5. FOCR compatibility	The PSSR addresses concerns stated in applicable *Facility and Operations Change Reviews (FOCR)*.

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F. Operations Records and Logs

Records must be maintained to document what has occurred and been observed during the work period.

STANDARDS	
1. Basic requirement	Standards for *operations* records and logs exist at each location.
2. Information transfer	**Location standards exist so that operational personnel reporting to work after any absence become familiar with the work status. Similar standards also exist for the transfer of important information during shift or job relief.**
3. Shut-down or standby operations	**Logsheets and other appropriate systems exist for monitoring operations which are shut down or on standby but continue to be of operational safety concern.**
4. Equipment maintenance	**Equipment maintenance needs are recorded in a systematic manner.**

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G. Critical Instrumentation and Alarms

Critical instrumentation and alarms must be managed to maintain safe operations.

STANDARDS	
1. Alarm hierarchy	A hierarchy of instruments and alarms exists in which: ■ *Critical Instruments* and *Critical Alarms* are identified ■ Critical Alarms are distinguished from all other alarms.
2. Alternate protection	A management system exists to reasonably ensure equally effective protection during outages of Critical Instrumentation and Critical Alarms, and to return these systems to full service as soon as possible.
3. Instrumentation status visibility	The status of Critical Instrumentation bypasses and interlocks and of Critical Alarms is clearly visible in the control room.
4. FOCR	*Facility and Operations Change Review (FOCR) procedures* are required in the following situations: a. When a change to a Critical Instrument affects its function upon reaching the *never-exceed-limit*. b. When there is a change to the setting of a Critical Alarm. c. When there is any change to alarm hardware or software.
5. Testing	Critical Instruments and Critical Alarms are periodically tested and placed on a preventive maintenance schedule.
6. Nuisance alarms	*Nuisance alarms* are not allowed to persist. Alarm systems are designed and managed to avoid nuisance alarms while allowing monitoring of necessary variables on equipment out of service.
7. Documentation	Critical Instrumentation and Critical Alarm documentation is kept current and available.

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H. Accident/Incident Investigation and Communication

Accidents, incidents, and unexpected process deviations having operational safety implications must be investigated and the results communicated to appropriate personnel.

STANDARDS	
1. Basic requirement	Investigation *procedures* exist for *accidents, incidents,* and unexpected *process* deviations.
2. Investigation protocol	The investigation protocol fosters understanding of the underlying reasons for the *event*.
3. Management involvement	The level of management participation in an investigation is determined by both the actual and potential consequences of the event.
4. Investigating team	Significant event investigations include representatives of the technology involved, safety staff and personnel not normally involved with the particular *operation*.
5. Communication	Significant events are communicated promptly to persons and groups selected on the basis of their ability to benefit, use, and disseminate the information.
6. Record keeping	Records of significant events and their qualifying description summaries are maintained in usable form, facilitating retrieval and analysis.

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VII. Operations Management
(Continued)

I. Piping and Equipment Labeling

Piping and equipment must be identifiable by trained users.

STANDARDS	
1. Basic requirement	**Location labeling standards exist.**
2. Equipment identification	**Operating equipment likely to be used during emergencies is identified.**

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VIII. Process Technology Documentation

A. Operations
B. Emergency Control

A. Operations

Process technology must be known, documented and available to those who need it.

STANDARDS	
1. Basic requirement	Currently available *process* technology information for existing processes, including safety and health data, are collected, maintained, and made available.
2. New designs and revisions	Process technology documentation for new plant designs and significant revisions includes the following: a. The HS&EA Section of a *Definition of Technology* b. The *Safety / Health Consideration Report* c. Identified process *hazards*, *risk assessments*, and hazard mitigation measures as developed in accordance with the Process Risk Management Section (see Section VI) d. Process and Control Diagrams.
3. Availability	Availability of current process technology documentation is reviewed during annual functional reviews (see Section II, A-3).
4. Design basis	The basis for facility design, including the basis for technology endorsement of *Facility and Operations Change Reviews (FOCR)*, is made part of the process technology documentation.

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VIII. Process Technology Documentation

(Continued)

B. Emergency Control

Technology required to characterize and control reasonably foreseeable emergencies must be known and made available to those who need it.

STANDARDS	
1. Uncontrolled reaction products	**Safety and health data are defined and made available for products generated from uncontrolled reactions (including polymerization, decomposition, and combustion).**
2. Reaction conditions	**Conditions which may lead to likely uncontrolled reactions are identified and this information made available to appropriate personnel.**
3. Control	**Mechanisms and materials for controlling undesired events (e.g., uncontrolled reactions, fires and spills) are identified and communicated to appropriate personnel.**

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IX. Facility Design

A. Mandatory Engineering Standards
B. Appropriate Skills
C. Safety and Health Review

A. Mandatory Engineering Standards

Engineering standards and legal requirements applicable to each new design and revision are mandatory.

STANDARDS	
1. Criteria	*Engineering standards* based on consensus safety practices or code and regulatory requirements exist.
2. Review procedure	A documented review *procedure* exists to create, revise or delete an engineering standard. Each engineering standard is reviewed and reissued at least every five years.
3. Retrofit requirements	Facilities are designed to meet applicable codes and standards in effect at the time of installation. Applicable retrofit requirements are included in the engineering standards.
4. Technical review	Proposed *variances* from engineering standards are reviewed by the *technical authority* of the standard prior to *approval* by line management.
5. Engineering standard variance review	Approved variances from engineering standards are reviewed as part of updating the standards.

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IX. Facility Design
(Continued)

B. Appropriate Skills

In conjunction with design standards, appropriate skills for design of an operationally safe facility must be utilized for each new design or revision.

STANDARDS	
1. Input	Input from appropriate technology and equipment design specialists is used to resolve significant safety issues and to define applicable code and regulatory requirements.
2. Process/operator control interface	The *process/operator* control interface is reviewed to reasonably ensure that it is appropriate for both the process technology involved and the organizational/operating environment.

C. Safety and Health Review

Each new design and revision must be subjected to an appropriate safety and health review process.

STANDARDS	
1. Basic requirement	A formal system exists to screen each new design and revision to determine the type and timing of safety/health reviews and endorsements, based on the level of *risk*.
2. HS&E Review	Formal health, safety and environmental review and endorsement are obtained prior to the *approval* of major capital projects and those working budget projects that involve *substantial hazards*, as determined by C&P HS&EA criteria.
3. Inherent process hazards	Inherent *process hazards* are identified, reviewed, and documented in the early stages of new process designs and for significant process revisions.

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IX. Facility Design
(Continued)

C. Safety and Health Review *(Continued)*

4. Process Safety Review	A Process Safety Review is conducted during the design by an *independent reviewer*.
5. Documentation	The hazards identified during the design, and a discussion of mitigation measures employed, are documented and made available for use in the *Pre-Startup Safety Review (PSSR)*.

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X. Equipment and Process Integrity

A. Operating Equipment Integrity
B. Maintenance Quality Assurance
C. Maintenance Procedures

A. Operating Equipment Integrity

The reliability, integrity, and availability of equipment is managed for safe operations.

STANDARDS	
1. Basic requirement	*Process* activities and equipment are routinely checked, with deviations from the norm documented, and corrective action initiated where needed.
2. Preventive maintenance	Requirements for preventive maintenance and functional testing of critical equipment are developed using appropriate technical skills.
3. Inspection and test assurance	Appropriate procedures are employed so that test and inspection and other maintenance work essential to operational safety are completed in a timely manner.
4. Critical equipment	*Critical equipment* is identified and examined on a routine basis.
5. Outage contingencies	A management control system exists to provide equally effective protection during outages of critical equipment.
6. Corrective action	A management control system exists to promptly correct deficiencies affecting the integrity of critical equipment.
7. Repair documentation	Repair history of critical equipment is documented and maintained.
8. Emergency equipment	Fire protection and other emergency equipment necessary for safe *operation* of a process facility are identified, and a management system exists to provide for the following:

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X. Equipment and Process Integrity
(Continued)

A. Operating Equipment Integrity *(Continued)*

8. Emergency equipment *(Continued)*	a. Alternative protection during outages of fire protection and other emergency equipment b. The return to service of fire protection and other emergency equipment as soon as possible.
9. Emergency equipment testing	Fire protection and other emergency equipment is tested and/or inspected routinely.

B. Maintenance Quality Assurance

Maintenance work necessary for safe operation must be conducted under a formal maintenance quality assurance program.

STANDARDS	
1. Basic requirement	Maintenance *procedures* and quality control techniques support proper execution of work.
2. Materials of construction	Systems are in place to require the use of correct materials of construction.
3. Cleaning	Procedures and techniques essential to operational safety are employed in cleaning operations.
4. Calibration	Critical test equipment calibration is traceable to a recognized standard reference data base.

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X. Equipment and Process Integrity
(Continued)

C. Maintenance Procedures

Maintenance procedures must take into account the operational safety impact of the work.

STANDARDS	
1. FOCR	**Maintenance personnel know the *Facility and Operations Change Review (FOCR) procedure* and how their work may initiate the use of the procedure.**
2. Operational safety	**Maintenance procedures necessary for operational safety (before, during, and after maintenance) are adhered to.**
3. Operational impact	**Potentials for impact on the reliability and integrity of in-service operating equipment during maintenance work are identified and addressed.**

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XI. Emergency Response

A. Emergency Planning for On-site Protection
B. Emergency Planning for Community Protection

A. Emergency Planning for On-site Protection

Emergency response capability must be sufficient to protect site personnel and equipment.

STANDARDS	
1. Basic requirement	Emergency Response plan *procedures* exist at every site where personnel can become involved in an operational emergency threatening their safety or health. These procedures are appropriate to the level of *risk* and consistent with government regulations and internal requirements.
2. Tests, drills and critiques	Tests and/or drills of the site capability, based on reasonably foreseeable emergencies, are periodically conducted to maintain response skills. Critiques are used to update emergency plans and improve response capabilities.
3. Staffing	The emergency response plans clearly define the roles, responsibilities, and staffing requirements needed during emergencies.
4. Communication procedures	Communication, warning, and notification procedures are kept current. External authorities and the media are communicated with as required.
5. Responder training	On- and off-site training of emergency responders, commensurate with the needs of the site, are provided on a periodic basis.
6. Emergency Operations Centers	Site Emergency Operations Centers are designed and staffed to meet the level of risk addressed. Where reasonably foreseeable emergencies determine the need, two site Emergency Operations Centers are established to separate internal and external roles and to serve as a back-up to each other.

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XI. Emergency Response
(Continued)

A. Emergency Planning for On-Site Protection *(Continued)*

7. Emergency Operations Center data	Emergency Operations Centers are equipped with updated documents and data on site *hazardous* materials, emergency procedures, and reasonably foreseeable emergency situations.
8. Weather impact	The impact of meteorological conditions on emergencies is taken into account in all plans.
9. Emergency equipment	Breathing air and other emergency response equipment are available on-site in quantities consistent with emergency response plan needs.
10. Operations area monitoring	Periodic monitoring of appropriate *operations* areas and the site perimeter are part of the emergency response plan.
11. Communication systems	Emergency communication systems are used and operated by specifically designated personnel.
12. Medical emergency plan	A comprehensive medical emergency plan exists and is coordinated with area governmental agencies and organizations. Toxic treatment information and Material Safety Data Sheets are available to recognized local emergency response agencies in accordance with government regulations and internal requirements.
13. Standby procedure	A procedure for safely achieving stand-by status of operations exists for reasonably foreseeable emergencies.
14. Emergency equipment	Emergency response plans take into account the possibility of fire protection systems and other emergency equipment being out of service.
15. Site security	Security procedures exist to control personnel permitted access to the site during and after emergencies.

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XI. Emergency Response

(Continued)

B. Emergency Planning for Community Protection

An emergency response capability to help protect the community during on-site emergencies must be maintained.

STANDARDS	
1. Basic requirement	Site emergency response plans for the community exist for any situation where the community can become involved in an *operational* emergency.
2. Plan standards	The site's emergency response plan for the community is appropriate to the level of *risk* and in compliance with applicable governmental and internal requirements.
3. Community plan	The site's emergency response plans for the community support the local community emergency response plans. The site plans are based on reasonably foreseeable emergencies and defined responsibilities.
4. Notification procedures	Communication, warning, and notification *procedures* are kept current (internal to the site and to the community).
5. Population center identification	Off-site population centers (hospitals, schools, etc.) are identified and plans are established to support their specific needs in an on-site emergency situation.
6. Tests, drills and critiques	The site's emergency response plans for the community are regularly tested, based on reasonably foreseeable emergencies, and updated as required to maintain emergency response capabilities. Periodically, local authorities and governmental agencies participate in the site's emergency response plan test. Site personnel also participate, where possible, in local community emergency response plan tests.

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XI. Emergency Response
(Continued)

B. Emergency Planning for Community Protection *(Continued)*

7. Media relations	**Each site's emergency plan includes the following:** **a. The selection of a designated and trained media spokesperson(s), supported by technical, legal and environmental protection expertise. The training includes information about the chemicals potentially involved, likely *hazards*, and emergency response procedures as required by the site.** **b. Adequate facilities and support equipment required to conduct briefings for public officials and the media.**

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XII. Variance Procedures

All deviations from mandatory requirements must follow a prescribed procedure and must be approved by authorized personnel and documented prior to implementation.

STANDARDS	
1. Basic requirement	*Variance procedures* exist.
2. Variance criteria	Variances may be requested in any of the following situations: a. When the internal requirement conflicts with governing laws or regulations b. When the variance will result in an equally effective measure of protection for health, safety, the environment or c. When an acceptable action plan is in place to eliminate the need for the variance, and when continued operation under the action plan will not adversely affect the health or safety of employees, the public, or the environment.
3. Variance request content	All variance requests are in writing and contain the following information: a. The internal requirements to which the variance applies b. The requested time period for the variance c. Description of the variance requested d. Variance rationale e. Description of the alternative *procedures* and/or standards to be used during the term of the variance and f. Justification for the requested term of the variance if it exceeds one year.

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XII. Variance Procedures
(Continued)

4. Approval	Only a business organization or department that prescribed an internal requirement is authorized to approve a variance from it. Such approvals are obtained from: a. The administrative head of the organization or department or b. An authorized representative reporting directly to the administrative head of the organization or department.
5. Duration	Variances normally have a term of one year or less, and in no case are approved for more than five years.
6. Record keeping	Copies of approved variances (including the information supplied with their requests) are kept on file by: a. The organization or department granting the variance and b. The organization or department originating the variance request.
7. Engineering standards	Variances to *engineering standards* are maintained in a central file by the issuer of the standard and reviewed along with the engineering standard at least every five years.
8. Renewals	Variance renewals are subject to the same requirements and restrictions as original variance requests.
9. New manager review	Every manager newly appointed to an area in an operating location reviews, within six months, every variance from location operational safety requirements in the new area of responsiblity, and either indicates agreement or pursues corrective actions.

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Glossary

Acceptable Level of Risk	The level of risk at which governmental and internal health, safety, and environmental related requirements are met and at which the probability of incident occurence or hazard severity is sufficiently low, in management's opinion, that further precautions against jeopardy to human health, the environment, or the company's assets are not warranted.
Accident	Any undesired and unplanned event that results in harm to a person and/or damage to property or the environment.
Approval	Formal permission from the accountable person.
Certification	A formal process that attests to an individual's capability to perform specified work safely and independently.
Critical Alarm	A process alarm indicating an approach to a Critical Operating Parameter never-exceed-limit.
Critical Equipment	Equipment that falls into the following categories: ■ It is required to avoid a major process hazard event. ■ Its functional failure would cause a major process hazard event. ■ It has a reasonably foreseeable potential for containment failure resulting in a major process hazard event.
Critical Instrument	An instrument, such as a Critical Operating Parameter instrument, that detects, transmits, indicates, alarms, or acts on information to control risk associated with a major process hazard.
Critical Operating Parameter (COP)	A process parameter that at some measurable level indicates an approach to a major process hazard.
Definition of Technology (DOT)-HS&EA Section	The section of a DOT that defines the technology and data necessary for the design and operation of a facility that meets safety, health, and environmental protection requirements.

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Glossary
(Continued)

Engineering Standard	A design standard which has been formally reviewed to develop consensus among all C&P divisions so that it meets one or both of the following criteria: ■ It represents an essential part of the total consideration necessary to provide a safe and environmentally sound facility. ■ It meets regulatory and code requirements. (Currently engineering standards are TMS Standard Practices. See C&P Technology Manuals and Standards [TMS] program).
Event	Any accident, incident, or unexplained process deviation.
Facility and Operations Change Review (FOCR)	A review conducted by qualified personnel to verify that changes to operating facilities and processes do not introduce unacceptable risks. (See ***Facility Change*** and ***Operations Change***).
Facility Change	Any physical, mechanical, or instrumentation (hardware or software) revision, rearrangement, addition, or deletion to an existing facility or installation of any new facility, including temporary connections abnormal to routine operations. (See ***Operations Change***).
First Level Manager	The lowest level of management responsible for locally applying the technology and accountable for the performance of the operation. (Typically, for the larger C&P plants, this is the Department Head).
Formal	Generated and documented using a pre-established protocol.
Hazard	The existence of a potential for an adverse effect on safety, health, property, or the environment.
Idled Facilities	Facilities that have been out of service long enough that the readiness of the people, the documentation and equipment to operate safely is uncertain.

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Glossary
(Continued)

Incident	Any undesired or unplanned event that, under different circumstances could have resulted in, or may result in an accident. ***(See Accident.)***
Independent Assurance	The formal audit of an activity or plan by a knowledgeable, qualified individual(s) not routinely associated with the specific operation or project.
Independent Review	The formal review of an activity or plan by a knowledgeable, qualified individual(s) not routinely associated with the specific operation or project.
Major Process Hazard	A condition that poses the potential for: ■ Life threatening injury to employees and/or the public ■ Serious location, community, or environmental impact.
Never-Exceed-Limit	The pre-established level of a Critical Operating Parameter at which troubleshooting ends and immediate, predetermined action is taken. Reaching this limit must be treated as an incident.
Nuisance Alarm	Any repetitive alarm which distracts the operator and is not essential for safe operation.
Operator	The individual who directly controls the operation.
Operation	Any activity which includes one or more of the following: manufacturing, distribution, storage, mixing and blending, waste treatment, and pilot plant, pipeline, and energy systems operations.
Operational Safety Standards	Mandatory requirements needed to control, at an acceptable level, the risks associated with major process hazards.

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Glossary
(Continued)

Operations Change	A process modification which results in operation outside the envelope of the well understood and documented technology. (See ***Facility Change*** and ***Safe Operating Envelope***).
Policy	A formally defined course of action that applies to repetitive situations/ issues of significance to the organization as a whole.
Pre-startup Safety Review (PSSR)	An operational safety review conducted by qualified personnel to reasonably ensure that the startup of any new or revised facility, or the introduction of any procedure, does not introduce unacceptable risks.
Procedure	A written method of performing specified work in which the mandatory and non-mandatory portions are identified.
Process	A series of closely related operational steps designed to produce a specific result or product.
Process Hazard Identification	A systematic method of identifying process hazards. The methodologies vary with the level of detail desired.
Recertification	Reassessment of the individual's capability to safely and independently perform the specified work.
Risk Assessment	The activity in which the identified hazards are evaluated to estimate the level of risk.
Risk	The measure of the exposure for an undesirable outcome, expressed in terms of its magnitude and probability of occurrence.

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Glossary
(Continued)

Safe Operating Envelope	The range of process parameters (including the limits and everything inside) for which: ■ The technology is known ■ The facility design provides an acceptable level of risk ■ The operating procedures are developed ■ The operator is trained.
Safety/Health Consideration Report	An engineering report which reviews the process and chemical characteristics which could lead to unsafe operating conditions. Specific provisions are described to mitigate the identified hazards.
Substantial Hazards	Hazards that can cause severe adverse effects on human health or safety, or the environment.
Technical Authority	The person accountable for the technology. In most cases for process technology, this is the Technology Manager and/or the Engineering Manager. For engineering standard practices, this is the issuer of the practice.
Variance	A formally approved deviation from a mandatory internal requirement.

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BASIC REQUIREMENT

Programs must exist and be designed to enable employees to perform their work-related responsibilities safely.

Specific requirements are listed below.

A. Job Safety

S&CMD locations must review work areas and assignments, and implement appropriate safe work procedures, including the use of personal protective equipment to prevent work related injuries.

B. Pre-Startup Safety Reviews

1. S&CMD manufacturing locations must conduct pre-startup safety reviews to identify personnel and operational safety concerns, and to provide reasonable assurance that appropriate corrective actions and control measures are implemented for:

- New facilities
- Modified facilities
- New and revised operating methods and/or maintenance procedures that have the potential for significantly affecting personnel/ operational safety, and
- * Older facilities which are to be operated after being idle for an extended period of time.

*2. Timing: The pre-startup safety/health inspection must be held before the startup of the facility and after installation and revision is sufficiently complete.

*3. Review procedures must exist and include the following:

- Team selection and makeup
- Unit familiarization
- Items to be reviewed
- Preparation of written report and followup activity.

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*4. The Facility Manager must ensure the following before giving approval for startup and operation of the unit:

(a) All significant deficiencies and/or concerns highlighted by the team have been addressed.

(b) Action plans, with accountabilities and completion dates, are in place for all other safety deficiencies and/or concerns noted by the team.

C. Accident/Incident Investigations

S&CMD functions and locations must investigate potentially serious accidents and incidents, as well as job related injuries and illnesses.

1. Location procedures must describe the type of accidents/incidents to be reported.

2. Accident/incident reports must be prepared in a standardized format which includes:

- Accident/incident description
- Determination of underlying cause(s)
- Identification and implementation of corrective actions to prevent recurrences
- Management review and assignment of accountabilities and timetable for corrective actions

3. Accident/incident investigation reports must be adequately documented and communicated to similar facilities.

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D. Injury/Illness Recordings

1. Employee injuries and illnesses that result from a work accident or from an exposure in the work environment must be recorded when they involve:

   - A death
   - An illness or
   - An injury which involves either:
     - medical treatment (other than first aid)
     - loss of consciousness
     - restriction of work or motion or
     - transfer to another job.

*2. Criteria for the recordability of occupational injuries and illnesses must be in conformance with the new Bureau of Labor Statistics Guidelines (Recordkeeping Guidelines for Occupational Injuries and Illnesses. OMB No. 1220-0029).

**3. All cases of Recordable Injuries and Illnesses must be entered into OSHA Form 200 (Attachment 1) within six working days after receiving information that a Recordable Injury or Illness has occurred.

   - A supplementary record of occupational injuries and illnesses must also be completed within six working days after receiving the information by completing the OSHA Form 101 (Attachment 2) or an equivalent form.
   - The annual summary of occupational injuries and illnesses (the portion of the OSHA Form 200 to the right of the dotted vertical line) for the previous year must be completed by February 1 and posted at the location and must remain in place until March 1.
   - OSHA Forms 200 must be retained for at least 5 years following the end of the calendar year to which they relate.

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E. Off-The-Job Accidents

1. S&CMD locations and functions must provide an off-the-job safety education system to help employees minimize personal pain, suffering and loss of earnings to themselves, their families and the company.

*2. Off-The-Job Safety Program must be initiated by the management of each location/function.

*3. Off-The-Job Safety Program must reach all employees, with communication and information sufficient to make employees knowledgeable in the fundamentals relating to transportation, home and public safety. Employee's families are involved where practical.

4. Records must be maintained for off-the-job disabling accidents and must be routinely analyzed to determine most serious and frequent causes of such accidents.

5. Training and educational programs must be developed and conducted to address the most serious and frequent causes.

*6. Management follow-up must be utilized to assure that disabled employees are aware of management concern, are fully informed of Company benefits, and return to work promptly following convalescence, where possible.

*7. Information regarding accidents must be utilized to emphasize preventive measures. Successful program activities must be shared throughout the division.

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F. Injury/Illness Reporting

All cases of Recordable Injuries and Illnesses, as well as Off-The-Job disabling accidents, must be reported to the divisional HS&EA as follows:

1. All personnel safety related significant events must be reported to the line management and the divisional Manager of HS&EA in a timely manner and no later than the next business day.

2. All confirmed and suspected Lost Workday Cases must be reported to the divisional Manager of HS&EA by the next business day, to be followed by the written investigation report.

3. All cases of Recordable Injuries and Illnesses must be reported to the divisional Manager of Personnel Safety by the 5th working day after the accident and must be followed by the written investigation report.

4. Divisional HS&EA must comply with all personnel safety related reporting to the C&P Business Group and the Corporate HS&EA.

REFERENCES

1. UCC Corporate Health, Safety and Environmental Protection Procedure Manual: "Personnel Safety - 3.1".

2. S&CMD Health, Safety and Environmental Procedure Manual: "General Health, Safety and Environmental Requirements - 2.7".

3. Safety and Health Technology Manual: "Accident/Incident Investigation and Communication Procedure - SH 107".

4. Safety and Health Technology Manual: "Pre-Startup Safety/Health Inspection Procedure - SH 108A".

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ATTACHMENT I

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ATTACHMENT II

Bureau of Labor Statistics
Supplementary Record of
Occupational Injuries and Illnesses

U.S. Department of Labor

This form is required by Public Law 91-596 and must be kept in the establishment for 5 years. Failure to maintain can result in the issuance of citations and assessment of penalties.

Case or File No.

Form Approved
O.M.B. No. 1220-0029

Employer

1. Name

2. Mail address *(No. and street, city or town, State, and zip code)*

3. Location, if different from mail address

Injured or Ill Employee

4. Name *(First, middle, and last)* | Social Security No.

5. Home address *(No. and street, city or town, State, and zip code)*

6. Age | 7. Sex. *(Check one)* Male ☐ Female ☐

8. Occupation *(Enter regular job title, not the specific activity he was performing at time of injury.)*

9. Department *(Enter name of department or division in which the injured person is regularly employed, even though he may have been temporarily working in another department at the time of injury.)*

The Accident or Exposure to Occupational Illness

If accident or exposure occurred on employer's premises, give address of plant or establishment in which it occurred. Do not indicate department or division within the plant or establishment. If accident occurred outside employer's premises at an identifiable address, give that address. If it occurred on a public highway or at any other place which cannot be identified by number and street, please provide place references locating the place of injury as accurately as possible.

10. Place of accident or exposure *(No. and street, city or town, State, and zip code)*

11. Was place of accident or exposure on employer's premises? Yes ☐ No ☐

12. What was the employee doing when injured? *(Be specific. If he was using tools or equipment or handling material, name them and tell what he was doing with them.)*

13. How did the accident occur? *(Describe fully the events which resulted in the injury or occupational illness. Tell what happened and how it happened. Name any objects or substances involved and tell how they were involved. Give full details on all factors which led or contributed to the accident. Use separate sheet for additional space.)*

Occupational Injury or Occupational Illness

14. Describe the injury or illness in detail and indicate the part of body affected. *(E.g., amputation of right index finger at second joint; fracture of rib; lead poisoning; dermatitis of left hand, etc.)*

15. Name the object or substance which directly injured the employee. *(For example, the machine or thing he struck against or which struck him; the vapor or poison he inhaled or swallowed; the chemical or radiation which irritated his skin; or in cases of strains, hernias, etc., the thing he was lifting, pulling, etc.)*

16. Date of injury or initial diagnosis of occupational illness | 17. Did employee die? *(Check one)* Yes ☐ No ☐

Other

18. Name and address of physician

19. If hospitalized, name and address of hospital

Date of report	Prepared by	Official position

OSHA No. 101 (Feb. 1981)

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3.2
POTENTIALLY HAZARDOUS WORK

BASIC REQUIREMENT	Programs must exist and be designed to protect employees exposed to potentially hazardous work conditions. Specific requirements are listed below.

A.	Management Review	Line management must review work assignments to identify potentially hazardous work and to reasonably assure that: • Appropriate methods to reduce or eliminate the hazard are implemented and • No additional hazards could result from adjacent equipment or systems.
B.	Hazardous Work Procedures	Written procedures must be established for potentially hazardous work which define the following: • Work hazards (including ignition sources, hazardous conditions, chemical hazards etc.) • Identification of restricted work areas • Restrictions to limit exposure • Protective equipment required • Special tools to be used • Special worker knowledge and skill requirements • Requirements for both pre-work and periodic safety reviews, monitoring, testing and supervision • Applicable emergency procedures and requirements • Establishment of job authorization, supervision and job monitoring accountabilities

BRC 1121

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B. Hazardous Work Procedures (cont'd)

- Communications between involved functional groups regarding job status.
- Establishment of a mechanism for review and authorization of changes in job scope, conditions, requirements, etc.
- * Provision for double checking requirements and conditions, and
- Other required safety precautions and activities.

C. Hazardous Work Permit

1. Written hazardous work permits must be posted or be readily available at potentially hazardous work sites prior to initiating work. At a minimum, each permit must contain the following:
   - Date and length of time for which permit is valid.
   - Description of work to be done.
   - Copy of reference(s) to special hazardous work procedures.
   - Description of preparations, testing, precautions, inspections, safety equipment required and/or unique job conditions.
   - Provision for written job authorization, including verification that the conditions of the permit have been met prior to starting work, and acknowledgement by involved functional group representatives, job supervision and/or management as appropriate.
2. Verify that upon completion of work, conditions are safe for the resumption of normal operations.

D. Training

Training must be provided on safe work practices, special procedures and equipment and emergency procedures for employees who perform potentially hazardous work.

BRC 1122

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E.	Engineering Design	Engineering design of new or modified equipment and facilities must seek to reduce or eliminate potentially hazardous work.
F.	Exceptions	* Provisions for exceptions must be clearly defined, with appropriate approval levels.
G.	Audit	* Location procedure must include an audit responsibility to ensure understanding and compliance with this procedure.

REFERENCES

1. UCC Corporate Health, Safety and Environmental Protection Procedure Manual: "Potentially Hazardous Work - 3.2"

2. Safety and Health Technology Manual: "Hazardous Work Permit Procedure - SH 102".

DEFINITION

POTENTIALLY HAZARDOUS WORK: Work that includes, but is not limited to:

- Entry into confined spaces
- Electrical hot work and trouble shooting or energized systems above 50 volts except diagnostic hot work on low voltage or low amperage instrumentation circuits by persons qualified to perform such work
- Breaking lines which contain or could be expected to contain hazardous materials or conditions, e.g., pressure, temperature, etc.
- Working in oxygen-enriched or deficient environments
- Crane operations near utility lines
- Manual excavations exceeding four feet in depth and all powered excavation work
- Ignition sources in areas where flammable vapors may be present
- Hot tapping pressurized systems or
- Relocation or moving of radioactive sources

BRC 1123

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BASIC REQUIREMENT	Programs must exist and be designed to protect employees exposed to potentially hazardous work conditions. Specific requirements are listed below.

A.	Confined Space Identification	Work assignments must be reviewed prior to the start of work to identify potential confined space hazards and define appropriate safety precautions.
B.	Precautionary Measures	The following precautionary measures must be addressed prior to entering a confined space: 1. Training must be provided for persons authorized to work in confined spaces. 2. A pre-job discussion of the potential hazards must be held between the supervisor(s) and person(s) involved in the confined space work activity. 3. Hazardous substances must be removed to the extent feasible. 4. The confined space must be isolated to prevent entry of hazardous substances. 5. Equipment and sources of hazardous energy release must be physically immobilized, including lock-out of all powered equipment through use of applicable lock-out and tagging procedure (S&CMD Procedure - 3.2.2). 6. All compressed gas/oxygen cylinders and manifolds except breathing containers must be located outside of the confined space. 7. The motive force for pneumatic tools must be of breathing air quality.

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B. Precautionary Measures (cont'd)

8. Adequate ventilation must be provided to prevent accumulation of flammable materials, combustible dusts, oxygen excess or deficiency (above 22%, below 19.5%), toxic contaminants above the allowable exposure limit or flammable gas above 10% LFL (lower flammable limit).

9. Testing for oxygen, flammable gas, suspected toxic materials and excessive heat must be carried out prior to initial entry, after each interruption, at shift change, and more frequently, if required, during the entire job sequence.

10. The classification of electrical equipment and lighting to be used within the confined space must be reviewed for acceptability and restricts the use of portable electrical lighting to 12 volt maximum in vessels.

11. All hoses must be inspected for mechanical integrity.

12. Appropriate personnel safety equipment must be available and used, and

13. Appropriate work signs must be provided.

C. Special Entry Requirements

1. If any of the precautionary measures mentioned above are not possible, special entry requirements must be developed and documented by qualified persons and written entry authorization must be obtained from the immediate supervisor and approved by a higher level manager.

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C. Special Entry Requirements (cont'd)

*2. The procedure may permit entry into steam generators without physical disconnect or blanking of the larger boiler feed water lines and steam lines. However, the procedure must contain the following:

(a) Applies only to inlet boiler feed water lines (six inches or larger) and exiting steam lines (six inches or larger) from steam generators. All other lines must either be blanked or physically disconnected.

(b) Provides that the steam and boiler feed water lines must have double valves and a 1 1/2 inch minimum vent directed to the atmosphere between the valves.

(c) Provides that the in-line valves be padlocked in the closed position and the vent valve padlocked open. Access to the keys to these locks must be controlled through the requirements of Equipment Lock-out and Tagging procedure.

(d) Provides that each in-line valve is leak tested at full operating pressure and assurance is provided that the vent valve is open and not plugged.

(e) The padlocked valves must be near the entry point and readily accessible for inspection by the person entering the steam generator.

D. Attendant and Rescue Requirements

1. Qualified safety attendant(s) must be provided at each confined space entry who must be in communication at all times with persons inside the confined space. The attendant must be able to call for and receive assistance in job-related emergencies, such as:

- Loss of communication
- Bodily injury or loss of consciousness
- Loss of ventilation or breathing air supply

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D.	Attendant and Rescue Requirements (cont'd)	• Plant emergencies or *• Changes in conditions which may make continued entry hazardous. 2. Rescue equipment and personal protective equipment must be immediately available at the point of entry.
E.	Training	* Annual training in location confined space entry procedure must be provided to all personnel who engage in or authorize the performance of such work.
F.	Audit	* Location procedure must include an audit responsibility to ensure understanding and compliance with this procedure.
G.	Hazardous Work Permit	Requirements listed in this procedure are in addition to the applicable general requirements listed in the Hazardous Work Permit procedure 3.2.

REFERENCES

1. UCC Corporate Health, Safety and Environmental Protection Procedure Manual: "Confined Space Entry - 3.2.1".
2. Safety and Health Technology Manual: "Confined Space Entry - SH 103".
3. S&CMD Health, Safety and Environmental Procedure Manual: "Hazardous Work Permit - 3.2".

DEFINITIONS

CONFINED SPACES: Enclosures which are potentially hazardous due to possible:

(1) atmospheric contamination by toxic or flammable vapors, or oxygen deficiency or excess

(2) physical hazards such as agitators, other moving parts, or electrical shock

(3) contamination by liquids, gases, or solids during occupancy, or

(4) isolation of occupants from help in case of need.

ENTRY: Placement of any part of the head or torso inside the boundaries of the confined space.

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BASIC REQUIREMENT

Programs must exist and be designed to protect the safety of employees working on or in close proximity to equipment with the potential for unexpected operation, movement, release of energy, or release of hazardous materials.

Specific requirements are listed below.

A. Pre-work Requirements

Pre-work requirements must include the following:

1. Adequate communication between maintenance and operating personnel.

2. Equipment isolation from sources of energy or hazardous materials.

3. Lock-out and tagging of equipment.

4. Release of stored energy and removal of process material from equipment, and

5. Application of mechanical or structural constraints for equipment or equipment parts that have the potential for unexpected movement.

B. Equipment Lock-out Requirements

Equipment lock-out procedures must include the following requirements:

1. Administrative controls to supplement lock-out practices when a single lock is used to protect several workers, including:

   - designation of accountability for placing and removing lock

   - controls to verify that all persons are clear of the equipment prior to removing the lock, and

   - training requirements for all affected persons.

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B. Equipment Lock-out Requirements (cont'd)

2. Provisions for the use of individually keyed personnel safety locks when requested by persons working on the equipment.

*3. Inspections and tests to verify location and release of stored energy.

*4. Provision for management review and authorization for permitted work on equipment when such work could result in personnel injury through operation of the appended equipment or system.

*5. Provision for appropriate surveillance to assure that procedures are not violated.

C. Equipment Tagging Requirements

1. Highly visible tags must be used with or without locks to communicate that control points tagged are not to be altered.

*2. Use of tags without locks must be limited to situations where strict administrative controls are employed and include:

- The designation of individuals having the authority to place or remove tags.
- Training of all persons who may have access to tagged equipment.
- Frequent monitoring to assure compliance.
- Use of appropriate supplemental protective measures, such as, physical separation, blocking, removal of fuses, grounding and/or stationing an attendant by the tagged equipment to prevent unauthorized or inadvertent changes.

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D.	Engineering Design	Except where not practical, engineering design of new or modified equipment and facilities must include provisions for: • Lock-out capability • De-energizing and isolation from all stored energy, and • Purging, decontaminating and depressurizing of equipment.
E.	Hazardous Work Procedures	Requirements listed in this procedure are in addition to the applicable general requirements listed in the Hazardous Work Permit Procedure 3.2.

REFERENCES

1. UCC Corporate Health, Safety and Environmental Protection Procedure Manual: "Equipment Lock-Out and Tagging - 3.2.2".

2. Safety and Health Technology Manual: "Master Tag Procedure - SH 101".

3. S&CMD Health, Safety and Environmental Procedure Manual: "Potentially Hazardous Work - 3.2".

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BASIC REQUIREMENT: Programs must exist and be designed to protect employees from accidental exposure to electrical shock.

Specific requirements are listed below.

A. Electrical System Procedures

Trouble shooting and repair work procedures for electrical systems must include the following:

1. De-energization, isolation and lock-out prior to commencing work if practical (S&CMD procedure 3.2.2).
2. Tests to verify de-energized status.
3. Special control procedures and skill requirements for switching activity on distribution systems.
4. Regular inspection/maintenance to assure integrity of electrical insulating and grounding systems, and
5. Regular inspection and maintenance to assure protective devices on generating and distribution systems are in good operating order.

B. Electrical Diagnostic Hot Work

Procedures for performing diagnostic work (troubleshooting), load measurement and adjustments on energized electrical systems above 50 volts must include:

1. A definition of work limitations.
2. Approval of the equipment/system supervisor.
3. Appropriate limitations on the breaking of mechanical connections and no breaking of mechanical connections if the system voltage is above 150 volts (Probes, spring loaded clips, sliding stabs, etc., are not considered mechanical connections) and

*4. A Hazardous Work Permit, except for diagnostic hot work on low voltage or low amperage instrumentation circuits by persons authorized to perform such work.

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C. Electrical Hot Work

1. Work on energized electrical systems must not be commenced until the following conditions have been satisfied:

   - All methods and scheduling options for de-energizing the system have been considered.
   - A hazardous work permit has been obtained in accordance with S&CMD procedure 3.2.
   - *Responsibilities have been clearly defined for job planning and for execution of all phases of work.
   - *Required safety equipment has been specified.

*2. Class A electrical hot work must require:

   - Hazardous work permit.
   - Pre-work safety review and
   - Full time continuous supervision by an electrical supervisor or qualified person specifically authorized for that job by the plant management.

*3. Class B electrical hot work must require:

   - Hazardous work permit.
   - Joint review by the worker, his supervisor and the supervisor responsible for the equipment or a qualified person authorized by the plant management, prior to the commencement of work and
   - A review of routine practices, if it is a first time job for a non-routine job.

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C. Electrical Hot Work

4. Electrical hot work will not be performed on equipment energized above 1000 volts.

*5. S&CMD locations must clearly define exceptions and indicate approval levels. Such exceptions must be limited to the following:

- Telephone company equipment owned and maintained by the telephone company.
- Public utility equipment owned and maintained by the public utility and
- Changing brushes on generator excitors.

D. Training

Training in safe work procedures must be given to all employees required to work on energized electrical systems.

E. Audit

* Location procedure must contain an audit responsibility to ensure understanding and compliance with this procedure.

F. Hazardous Work Permit

Requirements listed in this procedure are in addition to the applicable general requirements listed in the Hazardous Work Permit Procedure-3.2.

REFERENCES

1. UCC Corporate Health, Safety and Environmental Protection Procedure Manual: "Electrical Safety - 3.2.3".

2. Safety and Health Technology Manual: "Electrical Hot Work - SH 113".

3. S&CMD Health, Safety and Environmental Procedure Manual: "Potentially Hazardous Work - 3.2".

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DEFINITIONS

HOT WORK:	Any work on or in the immediate vicinity of the minimum clearance zone of an exposed and energized, alternating or direct current, electrical system.
CLASS A ELECTRICAL HOT WORK:	Repair work to exposed and energized electrical systems over 150 volts to 1000 volts inclusive or repair work in the immediate vicinity to exposed and energized systems above 1000 volts; or troubleshooting work performed on or in the immediate vicinity to exposed and energized systems above 1000 volts.
CLASS B ELECTRICAL HOT WORK:	Repair work to exposed and energized systems over 50 volts to 150 volts inclusive.

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BASIC REQUIREMENT

Programs must exist and be designed to protect employees required to perform elevated work from risk of injury due to falls.

Specific requirements are listed below.

A. Special Workplace Safeguards

*1. Design practices and operating procedures must be utilized to protect personnel from falls while performing routine operating or maintenance work at elevated locations.

2. Persons performing elevated work must be provided with one or more of the following type of protection:

- Fixed work platforms or scaffolds equipped with solid guard rails.
- Vehicles with mounted elevating and rotating work platforms securely attached to the vehicles and their brakes set prior to persons occupying the elevated scaffolds or platforms. Personnel occupying the scaffolds or platform must use securely attached safety belts.
- Straight ladders equipped with safety shoes and tie-off ropes, which are secured to appropriate structures or
- Safety belts and lanyards, which are tied to a secure object, lifeline or horizontal fixed line.

3. Mobile work platforms and portable ladders used in close proximity to electrical lines must have appropriate clearance.

*4. When a safety belt/harness with lanyard is used as the sole means of fall protection, the lanyard must be attached to a firm support close enough to the worker. Lanyards used as personal fall protection must not exceed 2 meters (six feet) in length and a minimum size of 1/2" nylon or equivalent. Where tie offs cannot be made in accordance with this procedure, the use of nets, cranes, cherry pickers, etc., must be considered.

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A. Special Workplace Safeguards (contd.)

*5. Personnel protection from falling while in transit to and from an elevated work site must be considered in all job planning and execution. The use of fall restraints during transit is not to be considered mandatory unless undue risk is clearly present.

6. All open-sided floors, platforms, runways, and roof, wall and earth openings that qualify as elevated work locations must be effectively barricaded where practical.

*7. For work assignments on flat or low-pitched roof type structures with a ground-to-eave height greater than ten feet, or a slope greater than or equal to 4 inches rise in 12 inches, employees must be protected from falling from all unprotected sides and edges of the roof by the use of a:

- motion-stopping safety system or
- highly visible warning line system erected not less than 6 feet from the roof edge; or
- person who monitors the safety of all employees in a roofing crew and remains in sight of and in voice contact with each employee.

*8. Materials and tools must not be "dropped" or "tossed" to any elevated levels. Equipment/tools that need to be raised or lowered must be controlled by the use of hand lines or mechanical lifting devices. The equipment/tools must also be contained by rigging, use of tool buckets, tool belts, chute, etc.

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B.	Equipment Inspection	Inspections must me made of equipment used in elevated work (ladders, scaffolds, safety belts and lanyards, life lines, mobile elevating equipment, etc.) to identify defective equipment and promptly remove it from service.
C.	Training	Training programs and schedules must exist and be documented at divisional locations where elevated work is performed to assure that levels of worker competence and knowledge of elevated work practices and associated equipment are adequate to provide necessary protection.
D.	Engineering Design	Engineering design of new or modified equipment and facilities must seek to minimize the hazards associated with the performance of elevated work.

REFERENCES:

1. UCC Corporate Health, Safety and Environmental Protection Procedure Manual: "Elevated Work - 3.3".

2. OSHA 29 CFR 1926.500 Subpart M - Floor and Wall Openings, and Stairways, (g) (3) Warning Lines.

3. Safety and Health Technology Manual: "Elevated Work Procedure - SH 117".

DEFINITIONS:

ELEVATED WORK:	Work performed at an elevation of three (3) or more meters above a surface.

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BASIC REQUIREMENT	Programs must exist and be designed to protect employees from the hazards associated with in-plant vehicle operations, in-plant vehicle traffic and off-site transport of personnel on company business. Specific requirements are listed below.

A. In-Plant Vehicles

1. Programs for the safe operation of in-plant vehicles (forklifts, tractors, sweepers, sideboom trucks, earth moving equipment, mobile cranes, mobile conveyors, etc.) must include:

   - Operator training and testing in safe operation of vehicles.
   - Operator licensing with specified license expiration date and requiring a:
     - physical examination and
     - review of vehicle operation
   - *Written inspection procedures and checklists for the inspection of vehicle equipment by the operator prior to use each day or shift, before equipment is placed in service.
   - Written safe operating requirements.
   - Appropriate vehicle safety equipment, such as horns, lights, operational warning devices indicating vehicle motion, fire extinguishers and appropriate overhead protection devices, and
   - Written procedures and checklists for scheduled maintenance and inspection.

*2. Records of inspections, maintenance and training must be maintained.

3. Standard in plant over-the-road vehicles such as automobiles, trucks and buses are excluded from the above requirements.

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B. Off-Site Vehicles

Programs for the safe operation of off-site vehicles and transport of personnel on Company business must include the following:

- Operators have valid driver's licenses for the vehicle being driven.
- Only vehicles designed and intended for transport of personnel are used (vans, automobile, buses, truck cabs, etc.) and
- Seat belts are used by all occupants.

REFERENCES:

1. UCC Corporate Health, Safety and Environmental Protection Procedure Manual: "Vehicle Safety - 3.4".

2. Safety & Health Technology Manual: "Powered Industrial Trucks and Mobile Equipment Program - SH 186".

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BASIC REQUIREMENT

Programs must exist and be designed to protect employees from overexposure to physical, chemical and biological agents in the workplace.

Specific requirements are listed below.

A. Hazard Identification

Potentially significant health hazards in the workplace must be identified. Consideration is given to the available information, including:

- Known health hazards associated with physical, chemical and biological agents in the workplace.
- The results of employee medical surveillance and health and epidemiological studies.
- Employee and other worker health complaints, and
- Industrial hygiene monitoring information.

B. Hazard Communication

Employees must be provided with information and training about job related health and safety hazards as required under S&CMD procedure "Hazard Communication - 3.5.4".

C. Exposure Limits

**1. Permissible exposure levels for chemical hazards within S&CMD locations must be lowest of the levels mandated by the following:

- Current OSHA Standards (29CFR 1910) or other governmental (federal, state and local) regulations/standards applicable to the facility
- Union Carbide Internal Exposure Standards established for specific health hazards whenever governmental requirements or supplier recommendations do not exist or they are judged to be inappropriate. (Internal Exposure Limits List is included in the Appendix).

**2. For radiation, OSHA Standard (29CFR 1910.96) and National Bureau of Standards Handbook No. 69 (Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and Water for Occupational Exposure) must be followed.

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D. Internal Exposure Limits And Health Effects Classifications

**1. Whenever governmental standards or supplier recommended exposure limits do not exist or they are judged to be inappropriate, S&CMD locations must initiate the process of establishing Internal Exposure Limit and/or Health Effects Classifications by contacting the divisional Manager of Occupational Health.

**2. The divisional Manager(s) of Occupational Health and/or Product Safety must initiate the process of establishing Internal Exposure Limit and/or Health Effects Classifications. The process used must meet the following requirements:

- Appropriate technical and scientific review and input is made to the process.
- All affected Business Groups and the Corporate Health, Safety and Environmental Protection Department have the opportunity to participate.
- Law Department has provided appropriate legal counsel and
- Results are communicated to all affected Business Groups and the Corporate Health, Safety and Environmental Protection Department.

**3. The divisional Manager of Occupational Health must keep the divisional locations informed about the current UCC Internal Exposure Limits and/or Health Effects Classifications by distributing the current lists maintained by the C&P Business Group.

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E. Exposure Monitoring

S&CMD locations must assess employee exposure to identified significant health risks on a periodic basis and must include the following:

1. A written, statistically valid industrial hygiene monitoring strategy (C&P Industrial Hygiene Sampling Strategy included in the S&CMD Safety and Health Information Manual may be used).

2. Quality assurance procedures which define the quality control features for the industrial hygiene sampling and analysis program (C&P Industrial Hygiene Quality Assurance Program included in the S&CMD Safety and Health information Manual may be used.)

F. Employee Notification

Employees must be notified promptly of exposure monitoring results relevant to their own potential exposures.

G. Exposure Reduction

S&CMD location management must take immediate action to reduce employee exposures to potentially significant health hazards to levels that comply with the applicable exposure limits when it is determined that exposures exceed such limits. These actions must consider:

1. Engineering design modifications to further limit potential exposures.

2. Appropriate administrative controls and work practice procedures or

3. Use of personal protective equipment.

H. Exposure Records

Exposure monitoring records must be maintained in accordance with governmental and internal requirements and contain the following information:

- Employees and/or work areas monitored.

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H. Exposure Records (cont'd)

- Conditions and type of work going on (normal operations, shutdown, emergency situation etc.).
- Personnel protective measures in use.
- Sampling and analytical methodology used.
- Exposure conditions measured and duration of exposure and
- Applicable governmental requirements and/or internal exposure limits in effect at the time of sampling.

I. Engineering Design

New or modified facilities and equipment must be designed to achieve compliance with governmental and internal requirements. Consideration must be given to the feasibility of achieving the lowest possible employee exposure levels for identified workplace health hazards.

REFERENCES:

1. UCC Corporate Health, Safety and Environmental Protection Procedure Manual: "Occupational Health - 3.5".

2. S&CMD Health, Safety and Environmental Protection Procedure Manual: "Hazard Communication - 3.5.4".

3. S&CMD Safety and Health Information Manual

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BASIC REQUIREMENT: Programs must exist and be designed to protect employees from overexposure to noise in the workplace.

Specific requirements are listed below.

A. Identification of Noise Areas

1. Noise measurements must be made to identify areas where noise levels exceed 85 dBA and 90 dBA respectively.

   (a) Appropriate warnings must be communicated to employees potentially affected by the 85 dBA areas.

   (b) Those work areas where noise levels exceed 90 dBA must be posted with appropriate high noise warnings.

*2. Exposure monitoring (noise dosimeters and/or sound level meters) must be used to identify employees who may be exposed to noise levels at or above 85 dBA as an 8-hour TWA and they must be notified.

*3. Repeat measurements must be made every two years or within 60 days of a change in a process, equipment controls, or personnel.

*4. Employees must be entitled to observe the monitoring procedures.

*5. Noise levels which trigger employee exposure monitoring, employee controls and training must be appropriately adjusted for shift durations other than 8 hours, e.g. for a 12 hours shift, 90 dBA is reduced to 87 dBA.

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B. Noise Programs

Employees exposed to noise levels that exceed 85 dBA, as an eight-hour, time weighted average, must participate in the following program:

1. An information and training program which must include:

   - A review of the effects of noise overexposure on hearing and methods to prevent overexposure.
   - An explanation of the purpose and procedures of audiometric testing.
   - A discussion of the purpose of hearing protectors and of the advantages and disadvantages and the attenuation of various types, and instructions on their selection, fit, use and care.

2. An audiometric test program which must include:

   - Establishment of a baseline audiogram within six months of an employee's first exposure to noise level at or above 85 dBA as an 8-hour TWA or during pre-placement or initial physical examination.
   - Availability of annual audiometric testing.
   - Retesting within 30 days of a measured Standard Threshold Shift (STS), if possible.
   - Written employee notification within 21 days after the STS is confirmed.

3. Other appropriate programs based on audiogram reviews.

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C. Exposure Control

*1. Engineering and administrative controls must be the primary noise control methods for all new facilities.

2. Appropriate personal protective equipment must be used to control exposure to excessive noise where engineering and/or administrative controls are not practical.

* • Hearing protectors must be made available to all employees exposed to noise levels of 85 dBA or more as an 8-hour TWA.

• Employees entering areas where noise levels exceed 90 dBA must wear appropriate personal protective equipment.

D. Record Keeping

*1. Noise exposure records must be retained for two years.

*2. Audiometric test records must be kept in the employee's medical file.

*3. Records must be accessible to all employees and must include exposure measurements, all audiometric tests, and audiometer test room and calibration procedure.

E. Audit

* Location procedures must include an audit responsibility to ensure understanding and compliance with this procedure.

F. General Requirements

Requirements listed in this procedure are in addition to the applicable general requirements listed in the S&CMD procedure -3.5.

REFERENCES:

1. UCC Corporate Health, Safety and Environmental Protection Procedure Manual: "Hearing Conservation- 3.5.1".

2. S&CMD Health, Safety and Environmental Protection Procedure Manual: "Occupational Health - 3.5".

3. Safety and Health Technology Manual: "Hearing Conservation and Noise Control Program - SH 208A".

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BASIC REQUIREMENT	Programs must exist and provide reasonable assurance that respiratory protective equipment is maintained and used properly when provided as part of an overall program to protect employees from overexposure to chemical or biological agents in the workplace. Specific requirements are listed below.

A. Safe Respirator Use

1. Written procedures must be developed to describe when and how respiratory protective equipment is to be used. The procedures must address:

   (a) Accountability and authority for each aspect of the program.

   (b) Proper respiratory selection for specific tasks based on health hazards known or expected to be associated with the activity.

   * • Respirators selected must comply with OSHA requirements (29 CFR 1910.134 and 29 CFR 1910 Subpart Z), state and local requirements where such requirements exist and ANSI Z 88.2 requirements (except for fit testing frequency).

   * • Only NIOSH/MSHA approved positive pressure atmosphere supplied respirators, either SCBA (self contained breathing apparatus) or combination supplied air/5 minute egress SCBA must be used in an atmosphere which is immediately dangerous to life or health.

   * • As far as practical, NIOSH/MSHA approved respirators must be used. Where NIOSH/MSHA approved respirators are not available for a certain specific chemical or service, positive pressure or general purpose respirators may be used, provided adequate data is available to document the effectiveness of the respirator.

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A. Safe Respirator Use (cont'd)

(c) Instructions for maintenance, care, storage, cleaning and inspection of respirators.

* • Respiratory protection equipment must be stored in convenient, clean and sanitary locations.

* • All repairs to the respiratory protection equipment must be performed by qualified personnel.

* • Respiratory protective equipment facepieces must be cleaned and disinfected following each day of use and more often, if necessary.

* • All respirators must be inspected routinely before and after each use. The inspection must include a check of the tightness of connections and the condition of the facepiece, valves, headbands, connecting tubes, canisters, and rubber or elastomer parts.

  Respiratory equipment that is not used routinely must be inspected as required by regulations or manufacturer's recommendation.

(d) Proper use instructions, training requirements and fit testing procedures that enable an effective fit (including consideration of such factors as facial hair, glasses etc.) for respirators that are available for use under routine or reasonably foreseeable emergency situations.

* • Employees must be periodically instructed and trained in the proper use, location, limitations, and emergency use of respiratory equipment.

* • Personnel training must include:

  - Proper fit and adjustment of mask and equipment.
  - Testing of the seal between the facepiece and face.

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A. Safe Respirator Use (cont'd)

- Wearing of the respiratory equipment in a non-hazardous atmosphere.
- Wearing of the respiratory equipment in a test atmosphere.
- Additional requirements for negative pressure respirators as per OSHA health standards in 29 CFR 1910 Subpart Z.

* • A qualitative or quantitative fit testing must be performed to determine the ability of each individual respirator wearer to obtain a satisfactory fit with each type of air-purifying respirator that the individual is expected to wear, including single use respirators and dust masks.

Fit testing must be performed:

- At the time of the initial fitting prior to assignment into an area where negative pressure respirator may be used and

- At least every two years thereafter or as specified in specific OSHA health standards.

* • A policy concerning facial hair and the use of positive pressure or negative pressure respirators with facepieces must be established at each location and must include the requirement that the respirator wearer's face be clean shaven in the area of the facepiece to face seal.

*2. Provisions for exceptions to the written standard operating procedures must be clearly defined with appropriate approval levels.

B. Medical Fitness

Medical fitness reviews must be conducted to provide reasonable assurance that employees who are potential respirator users are physically capable of wearing a respirator without endangering their health.

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C. Records

*1. Accurate records must be maintained for each employee subject to negative pressure fit testing and include:

- Protocol for either the qualitative or quantitative procedures selected for respirator fit testing.
- Results of any quantitative fit test performed.
- Size and manufacturer types of respirators successfully fit tested.
- Type and facepiece selected for the employee.
- Date of most recent fit test.
- Name, social security number, and job description of the tested employee.

*2. Records must also be maintained of inspections and repairs of emergency use respiratory equipment.

D. General Requirements

Requirements listed in this procedure are in addition to the general requirements listed in the S&CMD procedure - 3.5.

REFERENCES

1. UCC Corporate Health, Safety and Environmental Protection Procedure Manual: "Respiratory Protection - 3.5.2".

2. S&CMD Health, Safety and Environmental Procedure Manual: "Occupational Health - 3.5".

3. Safety and Health Technology Manual: "Respiratory Protective Equipment Procedure - SH 104".

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BASIC REQUIREMENT	Programs must exist and be designed to protect employees from reproductive hazards in the workplace. In addition, affirmative programs must be designed to protect the embryo-fetus in the workplace. Specific requirements are listed below.

A.	Identification Of Hazardous Areas	1. Those work areas where reproductive hazards, teratogens and/or embryo-fetal toxins are present must be identified. *2. Occupational health surveys must be conducted to identify the risks for the reproductive system and/or embryo-fetus. 3. Appropriate warnings must be communicated to potentially affected employees. *4. Periodic re-surveys must be completed to verify the risk status of the workplace. *5. A current list of identified reproductive and/or embryo-fetus risk areas must be maintained.
B.	Exposure Control	Locations having identified reproductive hazards, teratogens and/or embryo-fetal toxins must have procedures relating to reproductive system and/or embryo-fetus protection. When developing such procedures, consideration must be given to implementation of programs in the following areas: 1. Engineering design modifications to further limit potential exposures. 2. Appropriate administrative controls and work practice procedures and 3. Use of appropriate personal protective equipment.

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C. Employee Transfer

Where adequate protection cannot be provided by such procedures, employees at risk must be removed from the work area. Employee removal actions must conform with applicable governmental and internal personnel requirements.

D. Training

Training programs for employees who work in risk areas from reproductive hazards, teratogens and/or embryo-fetal toxins, must include the following elements:

*1. Upon initial employment and periodically thereafter, employees must be instructed on the reproductive system and embryo-fetus protection procedures.

2. Employees must be informed of the risks and the procedures required for protection in the area of assignment.

3. Medical and line management must strongly urge female employees to report pregnancy to their supervisors and/or medical department. Similar reporting by contract workers and visitors must be encouraged.

E. Records

* Records pertaining to exposure data, employee training and medical recommendations must be adequately documented and maintained.

F. Audit

* Location procedure must include an audit responsibility to ensure understanding and compliance with this procedure.

G. General Requirements

Requirements listed in this procedure are in addition to the applicable general requirements listed in the S&CMD Procedure - 3.5.

H. Variance

A C&P wide variance has been obtained to comply with the reproductive hazards related requirements by September 30, 1988.

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REFERENCES

1. UCC Corporate Health, Safety and Environmental Procedure Manual: "Reproductive System and Embryo-Fetus Protection - 3.5.3".

2. S&CMD Health, Safety and Environmental Procedure Manual: "Occupational Health - 3.5".

3. Safety and Health Technology Manual: "Reproductive System and Embryo-Fetus Protection Procedure - SH 255".

DEFINITIONS

EMBRYO-FETAL TOXIN:	A substance which can cause detrimental or delayed development of the embryo or fetus but does not cause structural and/or functional abnormalities of development.
REPRODUCTIVE HAZARD:	A substance which can cause adverse effects on the function of the reproductive organs (male or female) and interferes with the ability to have offspring.
TERATOGEN:	A chemical substance or physical agent which can cause abnormalities in structural and/or functional development during gestation, in the absence of significant maternal toxicity.

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BASIC REQUIREMENT

Programs must exist and be designed to ensure compliance with OSHA's Hazard Communication Standard.

Specific requirements are listed below.

A. Written Program

1. All S&CMD locations which use and/or produce hazardous chemicals must develop a written Hazard Communication Program. This program must include sections dealing with:

   - Labels and other forms of warning.
   - Material safety data sheets.
   - Employee information and training.
   - List of hazardous chemicals known to be present at the location.
   - The methods the employer will use to inform employees of the hazards of non-routine tasks.
   - The methods the employer will use to inform contractors of the hazards to which their employees may be exposed.

2. The written Hazard Communication Program must be made available to the employees.

B. Hazard Determination

1. S&CMD locations must ensure that all chemicals processed, stored or otherwise handled at the location have been evaluated to determine if they are hazardous as defined in 29 CFR 1910.1200.

2. A master listing of "Hazardous" chemicals must be maintained at the location. In addition, a listing of hazardous chemicals in each individual work area is also to be maintained in that work area, along with specific information concerning the nature of the chemical and the physical hazards involved.

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C. Material Safety Data Sheet

1. Each S&CMD location must obtain a Material Safety Data Sheet (or an acceptable equivalent) for each hazardous chemical present on site.

   (a) Divisional Product Safety Manager must be responsible for the development, review and/or approval of MSDS's for all divisional products, intermediates or waste products used internally or being offered for sale.

   (b) Locations must obtain MSDS's for all raw materials and other purchased products from their vendors. If a vendor does not send an MSDS, a repeat effort must be made and adequately documented.

2. Material safety data sheets must conform with the specific requirements established in 29 CFR 1910.1200 Section (g).

3. A centralized MSDS (or equivalent) document file must be maintained at each location. In addition, applicable MSDS's must be readily accessible at each work area.

4. Material safety data sheets must accompany or precede initial shipment of hazardous chemicals to other UCC locations, including terminals and warehouses, to off-site contractors, and to customers.

D. Labeling

1. Each stationary and portable container of hazardous chemical(s) in a given work area must be marked or identified in such a manner as to allow it to be cross referenced back to an MSDS in the work area, which is specific to the chemical(s) being contained.

   EXCEPTION: Portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer, are exempt from this labeling requirement.

2. Laboratory chemicals are exempt from the labeling requirements provided that the labels on the incoming materials are in accordance with the Hazard Communication Standard and have not been removed or defaced.

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D. Labeling (cont'd)

3. Labels and other forms of warnings used must be in compliance with 29 CFR 1910.1200 Section (f).

4. All hazardous chemicals leaving the location must be properly labeled in accordance with 29 CFR 1910.1200.

E. Information and Training

1. S&CMD locations must provide information and training to all employees about hazardous chemicals present in their work areas initially and whenever a new hazard is introduced.

(a) The information provided must include:

- The requirements of 29 CFR 1910.1200.
- Any operations in their work area where hazardous chemicals may be present
- The existence of, location and availability of the location's written Hazard Communication Program, including the required list(s) of hazardous chemicals, and Material Safety Data Sheets (or equivalent).

(b) The training provided must include:

- Methods and observations that may be used to detect the presence or release of the hazardous chemical in the work area.
- The physical and health hazards of the chemicals in the work area.
- The measures the employee can take to protect themselves from these hazards (for example, special procedures, protective equipment, etc.).
- The specific details of the location's written Hazard Communication Program, including an explanation of the labeling system employed, material safety data sheets and how employees can obtain and use the appropriate hazard information.

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E.	Information and Training (cont'd)	2. All training administered in conjunction with the Hazard Communication Standard and the employees covered must be adequately documented.
F.	Audits	Location procedure must include an audit responsibility to ensure compliance with this procedure.

REFERENCES

1. UCC Corporate Health, Safety and Environmental Protection Procedure Manual: "Occupational Health - 3.5".

2. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

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3.5.5
**COMMUNICATION OF NEW HEALTH INFORMATION

BASIC REQUIREMENT

Programs must exist and be designed to ensure that all new significant health information about S&CMD products, intermediates, wastes, and raw materials is communicated to employees who may be exposed to them.

Specific requirements are listed below.

A. New Information

All S&CMD locations and functions must have a procedure which requires employees to communicate any significant new information about the divisional products, raw materials and/or process materials to the divisional Manager(s) of Product Safety and/or Occupational Health.

B. Information Review

Divisional Manager(s) of Product Safety and/or Occupational Health must initiate and complete a review of the information submitted to determine its significance by utilizing Corporate, C&P Business Group and/or Divisional resources.

C. Communication

1. If the information is determined to be significant, the divisional Manager(s) of Product Safety and/or Occupational Health must coordinate the preparation of internal and/or external communication(s) as appropriate. Copies of such communications must be sent to the C&P Business Group and the Managers of Product Safety and Occupational Health of the other UCC Divisions.

2. The divisional Manager of Occupational Health must communicate this information and other similar communications received from other UCC divisions, to the affected S&CMD manufacturing and other locations.

3. If the divisional Manager of Occupational Health prepares any special information dealing with employee protection methods and/or procedures, this information must be sent to the Occupational Health Managers of the other UCC Divisions.

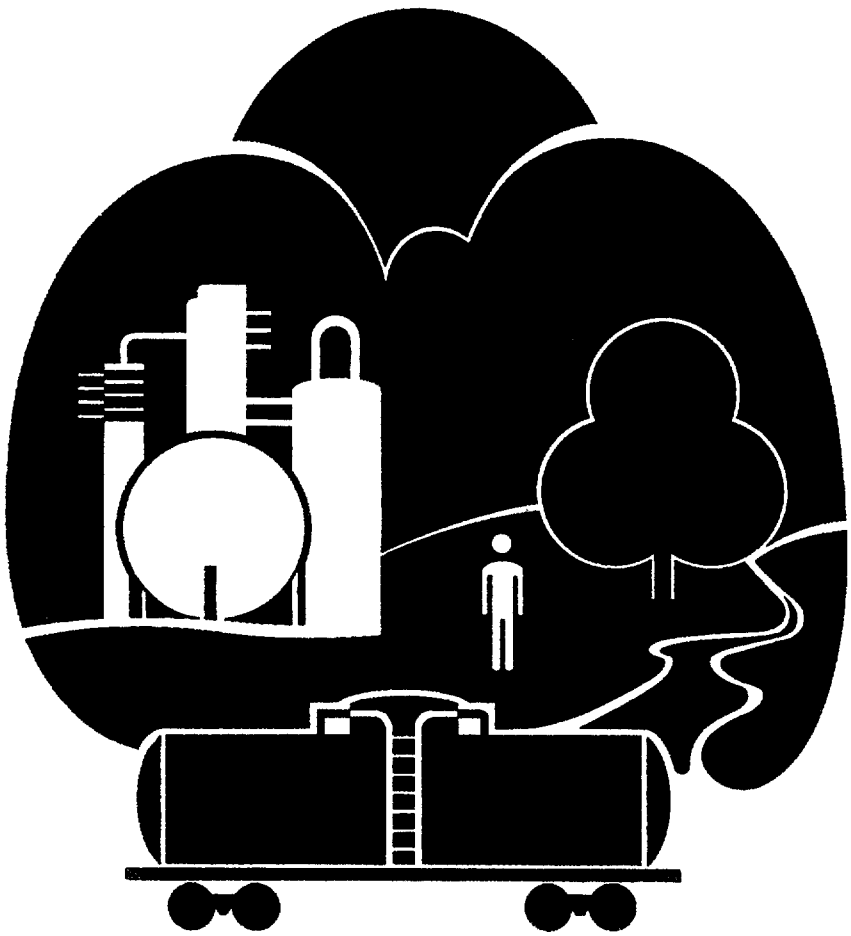
REFERENCES

1. UCC Corporate Health, Safety and Environmental Protection Procedure Manual: "Occupational Health - 3.5".

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Product Responsibility Procedures



PRODUCT RESPONSIBILITY PROCEDURES

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BASIC REQUIREMENT	Programs must exist and provide reasonable assurance that product safety and distribution safety risks are properly evaluated and controlled. Specific requirements are listed below.

Hazard Evaluations

Products are evaluated to determine their hazards. These evaluations take into consideration available information about the products, including:

- Literature reviews
- Results of in-house studies
- Information about accidents and near-misses and
- Internally shared information and experience concerning similar products.

Appropriate research is conducted to identify and characterize significant potential product hazards.

Risk Assessments

A. Products are evaluated to determine their product safety and distribution safety risks, using information about product hazards, human and environmental exposures, accidents and near-misses, complaints and legal claims experience. Consideration is given to reasonably foreseeable accidents and product misuse.

**B. Risk assessments are accomplished through formal Product Safety Reviews, which are:

- Required for each ongoing business area and each new business, significant business change, or special business circumstances posing risk potential.
- Conducted annually or more often when special circumstances exist.

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Risk Assessment (cont'd)

- Done by a multi-functional team involving
  - Product Marketing Manager
  - Operations Manager
  - Product Safety Manager
  - Toxicology expert
- Utilize an established protocol

Business Decisions

A. Product safety and distribution safety risks are considered in evaluating business decisions, such as new product development or acquisition, expansion of existing products into new markets, customer requests for special free services, significant process or raw material changes that may affect product safety and changes in packaging or distribution practices.

** B. Customer requests for special free services, outside the normal technical and sales service, are to be discouraged. If circumstances warrant consideration of such a request, the Product Marketing Manager is responsible for the conduct of a Product Safety Review and Risk Assessment according to current Guidelines.

** C. Before any significant change in product markets or in manufacturing process, raw material, packaging, or distribution practices which may affect product safety, a risk assessment must be conducted under the responsibility of the Product Marketing Manager and the appropriate functional manager.

Risk Management

A. Critical actions necessary to maintain product safety and distribution safety risks within acceptable levels are identified and implemented. These actions include, as appropriate:

- Implementation of quality control and quality assurance programs.
- Development of exposure limits or guidelines.
- Distribution of appropriate product safety communications.
- Product modifications.
- Changes in packaging, storage, handling, or distribution modes or
- Withdrawal of a product from a market.

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Risk Management (cont'd)	**B. Management of product risks comprises identification in the product safety review of risk elements requiring action, development and execution of appropriate action plans, and evaluation of the effectiveness and sufficiency of risk management activities during subsequent product safety reviews.
Reporting of Incidents, Complaints and Questionable Practices	Distributors and carriers are requested to report to the Product Marketing Manager and the S&CMD Product Safety Manager, through the C&P Distribution organization, incidents and complaints regarding any of S&CMD products. This includes reporting of accidents and near-misses, health, safety or environmental incidents, and product misuse or unsafe handling.
	** S&CMD personnel are required to report questionable health, safety or environmental practices of which they are aware involving any of S&CMD products in non-Union Carbide facilities to the employee's line manager, the Product Marketing Manager and the Product Safety Manager.
Follow-up Actions	** The Product Marketing Manager shall review the reports of incidents, complaints and questionable practices and prepare a response plan in collaboration with the employee's line manager, the Product Safety Manager, and where appropriate, the Union Carbide managers responsible for distributors and carriers.

Definition:

Product: Chemical substances and mixtures, materials, machinery, new or used equipment, items and services that are sold, distributed in commerce or otherwise provided by Union Carbide. The term is not intended to include intermediates or internally used products if they remain at the facility where produced. The term is not intended to include waste products, unless they are destined for recycling or reuse.

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BASIC REQUIREMENT	Programs must exist and provide reasonable assurance that the known hazards of Union Carbide's products, together with relevant health, safety and environmental protection information, are communicated to potentially affected persons in a timely manner. Specific requirements are listed below.

Hazard Information	Appropriate product safety communications are prepared for every hazardous product that is offered for sale, distributed in commerce or otherwise provided by S&CMD and for every potentially hazardous experimental product offered by S&CMD to a prospective customer.
Distribution of Information	Appropriate product safety communications are distributed in a manner designed to reach potentially affected persons, including distributors, contractors, carriers, purchasers, and prospective customers, before or with the initial delivery of any hazardous product and before or with the first delivery following any revisions that incorporate significant new information.
Preparation and Review	Product safety communications are prepared by persons who have knowledge of the hazards associated with the product and the information presented. All such communications are reviewed by legal counsel, appropriate business management, and the S&CMD Product Safety Manager or his designee.
Revisions and Updates	Product safety communications are revised promptly after learning of significant new information dealing with known hazards of a product including ways to protect against product hazards.
Consistency between Businesses	** To facilitate consistency of product safety communication for products that are common to more than one business area, the S&CMD Product Safety Manager will share product safety communications with the Product Safety Manager of other UCC divisions.

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Material Safety

A. A Material Safety Data Sheet is prepared for every hazardous chemical product and for every hazardous experimental chemical product. The information contained in a Material Safety Data Sheet is sufficient to effectively communicate known hazards and relevant health, safety and environmental protection information.

**B. Data in the MSDS shall be prepared in accordance with the Chemicals and Plastics MSDS/Labeling Manual and published divisional Guidelines. The Manual and Guidelines will specify the qualified persons and accountable individuals whose participation in the MSDS preparation/approval process is required.

**C. Information contained in the MSDS shall be consistent with the information in all external and internal product safety communications, including but not limited to label, product safety literature, operating manuals, and internal data sheets.

**D. MSDS revisions required by laws or regulations such as the OSHA Hazard Communication Standard shall be implemented in accordance with those requirements. Revisions necessitated by new information shall be implemented in a manner and time that is commensurate with the severity of the newly perceived hazard and in conformance with existing regulations. Otherwise, MSDS's shall be reviewed by a responsible individual at least every four years and updated if necessary.

Labels

A. Each product or product container is labeled or marked with sufficient information before being distributed to identify the product, communicate appropriate hazard warnings and precautionary use information, and link it to other product safety communications.

**B. Labels shall be prepared in accordance with the Chemicals and Plastics MSDS/Labeling Manual.

**C. S&CMD shall use the services of the C&P Label Committee in preparing specific labels and providing approved label text to the shipping locations.

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Supplemental Information	Material Safety Data Sheets and product labels are supplemented when appropriate by additional product safety communications, such as operating instructions or safe practice and safe use literature. **This information must be consistent with the basic product safety communications in use, and subject to comparable standards.
Shipping Documents	A. All carriers of Union Carbide's hazardous chemicals are provided with shipping papers that: • Identify each Union Carbide product in the shipment and • Give instructions for response to and reporting of emergencies and incidents. **B. The shipping papers for each shipment of covered products or mixtures shall be accompanied by a copy of the current precautionary label or product tag of each product in the shipment. **C. Material Safety Data Sheets for each product or mixture shall be forwarded by the C&P Distribution Group to the management of those for-hire highway and water carriers who transport such products.
Information to Distributors**	Product safety communications to Distributors must include all information provided to direct customers plus provision for passing along of the information by the Distributors to their customers.

Definition: Product safety communications: Any method of communicating product safety information, including but not limited to product labels, Material Safety Data Sheets, operating manuals, product manuals and safe practice/safe use literature.

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BASIC REQUIREMENT	Programs must exist and provide reasonable assurance of compliance with all applicable governmental laws and regulations relative to product safety. Specific requirements are listed below.
TSCA 5(a) Premanufacture Notice	Each business area involved with the manufacture or importation of a new chemical must establish a procedure to assure that the new chemical is on the TSCA inventory. The procedure must establish an accountable individual for this activity.
TSCA 8(c),(e) Adverse Reaction and Substantial Risk Reporting	Each S&CMD location must have a procedure to assure that allegations of significant adverse reactions to health or the environment and evidence of substantial risk of injury to health or the environment are reported to the S&CMD Product Safety Manager. The procedure must establish a trained coordinator to facilitate this activity.
TSCA 8(d) Health and Safety Data Reporting	Each business area involved in the manufacture, processing or distribution of chemical substances specified under TSCA 8(d) must establish a procedure to assure that the required health and safety data is provided to the S&CMD Product Safety Manager.
Federal Food, Drug and Cosmetic Act	Each business area involved in the manufacture or marketing of products subject to FDA regulation must work with the S&CMD FDA Liaison Manager to: • Determine the applicable FDA requirements. • Implement needed compliance activities and • Assure compliance.
Federal Insecticides, Fungicide and Rodenticide Act	Each business area involved in the manufacture or marketing of products subject to FIFRA regulation must work with the S&CMD FIFRA Liaison Manager to: • Determine the applicable FIFRA requirements. • Implement needed compliance activities and • Assure compliance.

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4.3
PRODUCT SAFETY RECORD RETENTION**

BASIC REQUIREMENT	Product safety records must be retained for a time period sufficient to satisfy regulatory and litigation needs. Specific requirements are listed below.
Record Retention Systems	A. Each business must develop a system to retain needed documents and dispose of unneeded documents. B. The documents listed in the attached table must be retained for the period of time specified.

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RECORDS RETENTION AND PROTECTION

NAME OF DOCUMENT OR REPORT	RETENTION PERIOD (YRS)
Sales Records	50
Annually; no cut off Sortable by product and by customer-location.	
Precautionary labels and dates of usage	50
MSDSs and dates of usage	50
TSCA records	50
Records regarding products handled by contractors or toll manufacturers, processors, and packagers.	50
Recipients of MSDSs and dates sent	50
Other Product Safety Communications	
a) dated records of seminars, training, advisory letters.	50
b) record of customer distribution or participation.	50
Records of Distribution of MSDS; product safety literature; etc. to customers (including distributors).	50
Product Safety Information	
a) reports of toxicity, epidemiology studies, and safety studies, etc., with acquisition dates.	50
b) records of information reviews and resultant activities.	50

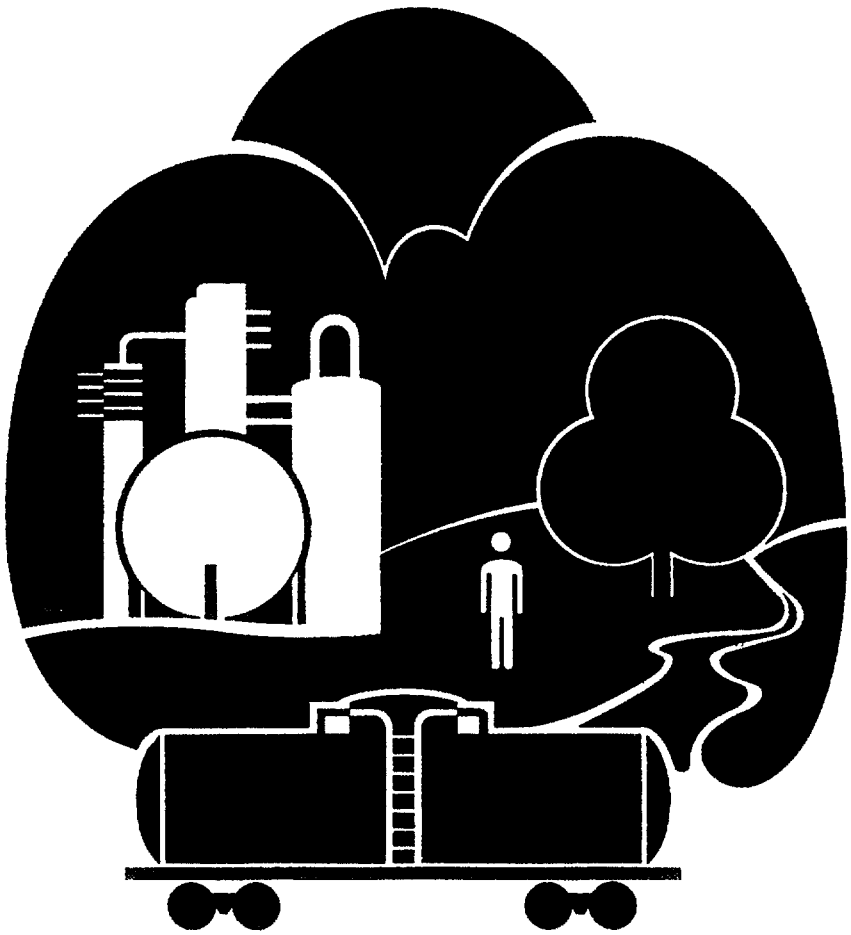
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NAME OF DOCUMENT OR REPORT	RETENTION PERIOD (YRS)
Product Risk Assessment and Management	
a) records of risk management b) action plans	Until superseded or 50 years
Record of Corporate or Divisional Product Safety Audit, Results and Action Plan.	Until superseded or 50 years
Food and Drug Administration	
Petitions, interpretations, etc.	50
Federal Insecticide Fungicide and Rodenticide Act.	
Registrations, reports and other submissions.	While production registration is valid or 50 years whichever longer
Selected records which provide evidence that a product or distribution equipment was carefully designed. Include approval or certification by nationally recognized testing agencies as appropriate.	50
Litigation files	50

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Environmental Protection Procedures



ENVIRONMENTAL PROTECTION PROCEDURES

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5.0
*BASIC ENVIRONMENTAL MANAGEMENT PROGRAM

BASIC REQUIREMENT	Environmental management systems must be designed, implemented, and maintained at all management levels to provide reasonable assurance that the Solvents and Coatings Materials Division complies with governmental and internal requirements.
EFFECTIVE DATE	This procedure is effective on September 30, 1988. Until the effective date, the currently existing Environmental Management Policy shall remain in effect.
	Specific requirements are listed below.

A. ORGANIZATION AND COMMITMENT — Environmental programs incorporate performance standards equivalent to the following:

1. All levels of management demonstrate their concern and support by involvement and actions that are visible to all employees and the community.

2. Environmental objectives are established annually. Critical activities and results to be achieved are included in every accountable manager's Measures of Performance. Environmental accountabilities are documented and accepted by all levels of management.

3. Adequate resources are available to develop and implement environmental programs to achieve established objectives. Resources include: a recognized source of environmental expertise; a designated representative to coordinate location environmental matters; an adequate environmental staff at the location level; and appropriate resources to assist the Corporation in dealing with environmental matters which affect the component.

4. A system exists to monitor existing and proposed federal, state and local environmental requirements that may significantly impact any C/P locations or business activity. Significant changes in Federal, state or local environmental requirements are communicated to Group and Corporate environmental management.

5. Appropriate actions are taken promptly to address valid complaints and incidents.

6. Employees participate in, understand, and accept responsibility for development, implementation, and control of Environmental Management practices at each location, as appropriate.

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B. POLICIES, PROCEDURES AND STANDARDS

1. Development and Control of Documents:

a) Written environmental policies, procedures, and standards are established and effectively implemented to meet Corporate and C/P Group requirements, legal requirements, and critical needs.

b) Variances from mandatory procedures are permitted only with formal approval by designated line management in accordance with S&CMD HS&EA Procedure 2.6.

c) Appropriate component and location involvement is obtained prior to revising or developing division procedures. All new and revised procedures are approved by a designated management representative prior to implementation.

d) Policies, procedures and standards are reviewed at least every three years and are updated as required. Reviews and revisions are properly documented.

2. Specific Procedures:

Procedures at each location include the following where applicable:

- standard operating procedures for maintaining environmental discharges within acceptable limits;

- prevention and emergency response plans to minimize and control adverse environmental impact during abnormal conditions such as releases or spills of hazardous materials, air pollution alerts or emergencies, utility failures, fires and explosions;

- environmental incident reporting/investigation (internal and external);

- responses (routine and non-routine) to requests for environmental information from the news media, private citizens, and government agencies;

- coordination of responses to legal actions;

- environmental audits;

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- application, review, approval and certification of environmental permits, licenses, compliance plans, variances, contracts, and permit renewals;
- regulatory agency inspections;
- air emissions;
- waste management, including hazardous and non-hazardous waste handling, storage, treatment, re-use, recycling, reclamation, disposal, and minimization;
- recordkeeping;
- groundwater protection;
- surface water protection;
- application of environmental requirements to on-site and off-site contractors; and
- other procedures critical to the component or location.

C. FACILITIES/ EQUIPMENT

1. All new facilities, changes in facility design or process changes are reviewed and approved for environmental considerations during design and pre-operation stages. All process, procedural or material changes, and all capital budget proposals are endorsed by Environmental Management prior to authorization.
2. Design, construction, and operation of facilities meet all component engineering and environmental standards, accepted good practice and conform to governmental requirements. New facilities are designed to minimize emissions to the environment.
3. Permits are obtained as required by federal, state, and local governmental agencies. Permit applications, renewals and modifications are reviewed for completeness and accuracy, and are approved by the accountable managers prior to submission.
4. Operation of departmental pollution control equipment is regularly inspected by operating personnel. Pollution control equipment is functioning and will maintain environmental standards.

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5. A regular preventive maintenance Test and Inspection (T/I) system exists for all environmental control and monitoring equipment to assure reliable operation. The system includes identification of equipment, T/I frequency, T/I procedure, and a means for recording results, correcting deficiencies, and for monitoring the effectiveness of the system.

D. IMPLEMENTATION

1. Training:

a) Training accountabilities and responsibilities are defined and understood.

b) Critical knowledge/skill requirements are defined for key management, supervisory, and operating positions.

c) A training program exists to ensure employees receive required environmental training. The program includes a feedback system to measure the quality and effectiveness of the training.

d) Employee training records exist indicating the current training status and the degree of proficiency achieved. Records are monitored periodically to ensure that required training and reviews are being conducted as required.

2. Communications:

a) Environmental requirements are effectively communicated to all employees. Individual responsibilities are clearly identified and understood.

b) Management is promptly informed of all environmental incidents or abnormal events which are reported to governmental agencies and/or those which may result in legal actions or claims, or area-wide publicity or external inquiries.

c) Corporate management is advised of all incidents which may affect other components or the Corporation.

d) Environmental communications with government (including public presentations, written papers, etc.) and the public are consistent with corporate positions. Where necessary, C/P positions are communicated to other business groups.

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e) A system exists to develop C & P positions on major federal, state and local legislative and regulatory issues for input to the Corporation or external organizations. C/P positions will be communicated to other business groups to ensure consistency within UCC.

f) Environmental technology is communicated to those subsidiaries and affiliates which have similar product lines.

3. Environmental Compliance Inventory:

a) A comprehensive environmental compliance inventory exists which includes:

1. A list of all federal, state and local environmental requirements which apply to the facility;

2. Identification of all sources of air, water and solid waste discharges, or other activities subject to governmental regulation;

3. The nature, quantity and frequency of the discharges for each source;

4. A list of all environmental permits and agreements which government agencies, public or privately owned waste treatment facilities, and others who transport, treat, store, or dispose of location wastes; and

5. A listing of all internal (Corporate, C/P, Division) environmental requirements.

b) The inventory is reviewed at least annually and is up-dated each time a significant change takes place.

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E. CONTROL PROGRAM

1. Monitoring equipment, procedures, and programs are used, as appropriate to measure the quality and quantity of all significant environmental discharges. Monitoring results are reviewed and analyzed periodically to identify areas of requiring management attention.

2. Environmental incidents, including all spills or releases, are investigated. Incident causes and management system deficiencies which allowed the incident to happen are accurately determined. Appropriate corrective action is taken to minimize adverse effects of the incident and to prevent similar occurrences. Periodic reviews of location incident data are conducted to reveal trends in causes.

3. All locations record and report information as required by law and Corporate/Group procedures.

4. Performance against established annual goals is reviewed and reported quarterly. Appropriate management action is taken to assure that environmental goals are met.

5. Audits and inspections are made on an established schedule. Audit and inspection procedures are defined in writing. Deficiencies found are communicated to the accountable manager. Action plans to correct the deficiencies noted are implemented.

6. C&P Law Department counsel is obtained as appropriate, to assure that legal aspects of environmental activities are properly addressed.

7. Routine performance appraisals of individual members of management and supervision include a review of agreed-upon environmental Measures of Performance.

8. Appropriate corrective action is taken by management for failure to comply with established environmental standards.

REFERENCES
Corporate HS&EP Procedures 1.0 and 2.7 and C&P Procedure CP1.0 SI

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BASIC REQUIREMENTS

Programs must exist and provide reasonable assurance that air emissions resulting from normal operations at Solvents & Coatings Materials Division locations are properly characterized and controlled.

Specific requirements are listed below.

A. INVENTORY DATA

1. Air emission inventories include the following information:

   a) Nature of substance: The name of the substance, or in the case of a mixture, the names of the constituents. Include all constituents known to be present in the emission stream;

   b) Source of discharge: The name of the operation causing the emission (process unit, incinerator, boiler, etc.) and the type of emission (point source, secondary or fugitive);

   c) Quantities discharged under normal operating conditions, including startup and shutdown: Expressed in pounds per hour (or kilograms per hour) and tons per year (or metric tons per year);

   d) Discharge time periods: Expressed in hours per day of operation and days of operation per year.

   e) Classification of toxicity: Stated in terms of acute or chronic toxicity. Carcinogens, mutagens and teratogens are specifically identified; and

   f) Summary of applicable legal requirements: The regulatory requirements that apply to emissions of the substance or substances to the ambient air. For example, specific governmental emission standards.

   NOTE: Basic inventory information is a Corporate requirement. The definition of the basic information is a C&P requirement.

2. Air emission inventories are based on actual emission measurements when available; otherwise, reasonable engineering estimates are made.

3. Air emission inventories are reviewed annually and updated when circumstances warrant a revision.

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B. EXTREMELY TOXIC SUBSTANCE

An emission evaluation program exists for all emissions of extremely toxic substances. The program is designed to meet applicable governmental requirements and to reasonably assure that these emissions are controlled to a level that safeguards employees, the public and the environment. The program includes:

1. An assessment of the impact of the emissions on the ambient air, using the latest available information and recognized air modelling techniques;

2. A description of the control technology currently in use and an analysis of its adequacy to meet the program objectives stated above; and

3. Identification and implementation of appropriate actions to reduce emissions when required to meet the program objectives stated above.

C. DEFINITIONS

Air emissions: All air emissions not wholly confined within a workplace -- a building, for example. Air emissions include:

1. Emissions from point source, such as a vent or stack;

2. secondary emissions, such as evaporative losses from impoundments and landfills; and

3. fugitive emissions, such as leaks from pump seals, valves, flanges and particulates contained in road dust.

Extremely toxic substances: Substances that may pose a significant risk of serious adverse effects on human health or the environment, including, but not limited to, the substances on the list in Appendix A. Substances that may cause asphyxiation solely by displacing oxygen (e.g., argon or nitrogen) are not considered to be extremely toxic in this context.

REFERENCES
Corporate HS&EP Procedures 5.0
CP 5.0 SI

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BASIC REQUIREMENT

Programs must exist and provide reasonable assurance that all Solvents & Coatings Materials Division locations have programs to minimize waste and that waste management practices do not adversely affect the health or safety of employees, the public, or the environment.

Specific requirements are listed below.

*A. STRATEGIC PLANS

Each S&CMD operating location develops and annually updates a waste management strategic plan. The plans shall meet the following requirements:

1. Forecast are developed and are specific to each operating location. Forecast are based on the following timeframes:

   - Short Term: next budget year, plus four
   - Long Term: five to ten years

2. Action elements are defined in measurable terms that can be incorporated into location and divisional measures of performance.

3. A common C&P format is used (see Table 1).

4. Issues and costs are related, as directly as practical, to the products and businesses with which they are associated.

5. The yearly plan updates are completed in time for incorporation into the annual budget cycle and are submitted to divisional HS&EA no later than August 15.

6. Divisional plans are completed and submitted to C&P HS&EA by September 1.

7. Plans reflect host/tenant understanding and acceptance where applicable.

8. Written waste management strategic plans contain at least the following:

   a. Objectives - A statement of objectives which is consistent with overall C&P objectives to effectively manage wastes and to deal with near and long-term impacts of government regulations and other related issues in a timely and cost-effective manner.

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b. Assumptions - Important assumptions regarding the likely impact of laws and regulations, internal policies and procedures, and external influences.

c. Key Issues - Information on the "critical few" issues which represent the location-specific impact of the assumptions identified in the previous section.

d. Strategy & Contingency Plans - A description of the overall strategy that will guide work during the planning period, including:

- Goals and checkpoints.
- Highlights of recycling and waste minimization activities.
- Steps to decrease dependence on land disposal and to internalize waste management activities to the extent practical.
- Evaluation of short and long-term costs, risks to human health and the environment and liability.
- Identification of and contingency plans for areas where significant deviations from the planned strategy could reasonably occur and,

e. Significant Resource Requirements - Identification of significant resources required to implement the strategy. These resources include:

- Capital costs exceeding $250M, and
- Operating costs exceeding $100M/year for two or more years, or exceeding 3% of the location's site environmental operating budget, whichever is less.

These cost ceilings are applied to the collective total cost of a number of small projects, as well as individual projects.

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f. Individual Waste Stream Information - Information on each waste stream is provided as requested in Table I:

- Each stream being managed in landfills or surface impoundments is evaluated for alternate treatment and/or disposal techniques and the results of the evaluation are included on the data sheet.
- For waste stream involving more than one product, profit center, etc., all are listed. The percent contribution of each product to the total waste stream quantity is also included.
- The "Long Term Outlook" section is provided to highlight events that may occur in the 5-10 year time frame that could significantly affect disposal costs and/or options.

B. WASTE MANAGEMENT

Programs require the selection and use of reasonably practical treatment, storage, recycling or disposal methods to minimize risks to human health and the environment.

1. In the development of waste management strategies, the following are analyzed:

- Inherent waste hazards,
- Degree of effectiveness in destroying or otherwise eliminating hazardous constituents of wastes,
- Residues or by-products created,
- Handling and transportation risks,
- Short and long-term costs,
- Short and long-term risks to human health and the environment,
- Short and long-term liability potential, and
- Applicable governmental and internal requirements.

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*2. Preferred waste management options (listed in descending order) include:

- Source reduction,
- Recycle and reuse within Union Carbide,
- Recycle and reuse by a third party,
- Conversion to a less hazardous form,
- Incineration, biotreatment and/or other destructive methods, and
- Disposal in a secure landfill or surface impoundments:
  -- owned and operated by Union Carbide, or
  -- owned and operated by an approved contractor.

C. WASTE MINIMIZATION

Waste minimization programs exist and are designed to reduce or eliminate waste volume, mobility or hazards whenever practical. Preferential waste minimization practices include source reduction, recycling, reuse and similar practices. Programs require assessment of waste minimization opportunities in the design of new processes or operations.

D. SPECIAL WASTES

Land application of special wastes is minimized and only used in the absence of practical alternatives. Prior to land application, special wastes are pretreated, incinerated, or stabilized whenever practical.

*1. Each waste stream being disposed of in a landfill or surface impoundment is evaluated for alternative treatment and/or disposal techniques, and

*2. Approval for land disposal of new waste is obtained in advance from the accountable operations vice president.

*E. PCB EQUIPMENT

PCB transformers, electrical switches, fluorescent light, ballast and capacitors are not landfilled unless specific approval has been obtained from the S&CMD Divisional President or higher authority. Approval is granted only if there is no practical alternative to land disposal.

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F. OFF-SITE CONTRACTORS

Procedures for special wastes transported off-site by a non-Union Carbide transporter or to a non-Union Carbide facility include the following requirements:

1. All work to be performed is subject to written agreements that:

   - require that the materials (including materials resulting from the recycling or handling of the wastes) be safely and lawfully transported to and handled at predesignated and approved facilities in a specified manner;
   - contain adequate conditions and restrictions to minimize Union Carbide's risks and liabilities; and
   - are reviewed and approved for technical and legal acceptability.

2. Contractors and their facilities are selected on a sound business and technical basis. They are financially sound, reputable, technically capable and legally authorized to handle the material(s) involved.

3. Contractors are provided with adequate information to handle the material(s) in compliance with applicable governmental and internal requirements and in a manner protective of human health and the environment.

4. Contractor facilities are subject to site inspections and approvals by authorized Union Carbide representative before use and at least every three years thereafter.

*5. Contracts for treatment, storage, and disposal of special waste are subject to written agreements that are authorized by C&P's Purchasing and Law Department.

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G. DEFINITIONS

1. Waste: (a) All garbage, refuse, sludge and any other material to be discarded, which result from industrial, commercial, mining or agricultural operations (excluding air emissions) and (b) any waste-like material that is reused, recycled, reclaimed or burned for energy recovery and is subject to governmental waste management regulations.

   This procedure does not apply to materials disposed of before the effective date of this procedure or to remedial or cleanup actions unless wastes are generated as a result of those actions.

2. Special waste: Any waste except for the following:

   - Chemically uncontaminated cafeteria, office and sanitary wastes and similar materials,
   - Chemically uncontaminated construction debris, and
   - Wastewater, cooling water, storm water run-off and similar, primarily aqueous, streams that are discharged to surface waters or municipal sewers.

3. Land application: Storage, treatment, recycling or disposal that occurs on or into land.

REFERENCES
Corporate HS&EP Procedures 5.1
C&P Supplemental Procedure CP 5.1 S1 and S2

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ATTACHMENT TO 5.2

TABLE I

WASTE STREAM MANAGEMENT INFORMATION SUMMARY

WASTE STREAM IDENTIFICATION	Current Year(1)	Current Year +1	Current Year +2	Current Year +3	Current Year +4	Current Year +5
Source: ° Profit Center - ° Product - ° Plant & Unit - ° Process Step -						
Composition:						
Classification:						
Quantity, M-LB/YR						
Waste Management Method						
Disposal Expense, $M						
Disposal Capital, $M(2)						
Destination of off-site waste shipments:						

(1) Base Year, all dollar values are "current year."

(2) Direct and/or allocated

Opportunities for recycling and/or minimization (consider volume or toxicity reduction):

Unique problems/issues:

Long Term Outlook (5 - 10 Years)

0437W

Waste Management Method Key

A = Burn in on-site Boiler
B = Incinerate on-site
C = Incinerate off-site
D = Landfill on-site
E = Landfill off-site
F = Wastewater treatment on-site
G = Waste water treatment off-site
H = Recycle on-site
I = Recycle off-site
J = Treatment (specify)
K = Other - Explain in footnote

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BASIC REQUIREMENT — Programs must exist and provide reasonable assurance that Solvents & Coatings Materials Division locations do not have an adverse effect on groundwater as a result of their operations.

EFFECTIVE DATE — The effective date of this procedure is March 31, 1988. For those S&CMD facilities unable to meet this date, a C&P wide variances has been approved. The time extensions allowed by the variance are as follows:

Complete inventory data	-	9/30/88
Complete prevention/control and countermeasures	-	12/30/88
Complete groundwater assessment	-	3/31/89
Complete evaluation	-	3/31/90

Those facilities who operate under the variance must implement site specific action plans that comply with the alternative dates above.

Specific requirements are listed below.

A. INVENTORY DATA — The following data shall be collected for each facility where applicable:

*1. Inventory of chemicals handled - includes past and present listings of chemicals used (e.g., reactants, catalysts, intermediates, products, solvents, maintenance), stored or disposal of on-site. Includes past information which is reasonably available.

*2. Site facilities/activities - a listing of the various units/operations and activities at the site and includes storage areas, process units, treatment/disposal facilities, maintenance areas, distribution operations.

*3. Previous activities - a listing, where reasonably available, of site activities and land uses prior to current usage/activities.

*4. General Information - includes other information as may exist that would aid in determining the presents or absences of groundwater contamination. Examples include information on:

- Old Spill Sites
- Old Arial Photographs
- Old "Fill" Areas

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B. ASSESSMENT

A groundwater assessment exists for locations with the potential for adversely affecting groundwater. At a minimum the assessment contains:

1. Local Hydrogeology/Groundwater Information - includes reasonably available information on the following:

   *a) underlying soils, including soil types and thickness; any construction soil borings;

   *b) presence of and depth to, groundwater;

   *c) direction of groundwater flow, on at least a regional basis;

   *d) any existing groundwater quality data, from on-site wells, state or local water agencies local health department, surrounding industries;

   *e) possible surface water discharge areas; and

   *f) local aquifer recharge areas.

*2. Groundwater Use - includes current and future projected use and/or classification of groundwater, from local or state health department or water resources agency, employees, neighbors, etc.

3. Existing groundwater quality

4. Governmental classifications and requirements, and

5. Other relevant information

C. REPORTING REQUIREMENTS

Prior to conducting any groundwater monitoring under this procedure, a location should identify, evaluate and fully understand applicable Federal, State or Local laws or regulations which may require reporting of groundwater contamination to a government agency.

Plans on how to manage any such reporting should be made in the early stages of any groundwater investigation.

D. EVALUATION

1. The inventory and groundwater assessment are evaluated to determine if activities have or are likely to have adversely affected groundwater.

*2. The following facilities are presumed to have the potential for adversely affecting groundwater:

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a) Underground storage tanks for liquids, or sewer lines;

b) Landfills, surface impoundments, burning sites, and land treatment units; and

c) Uncontained bulk liquid chemical loading/unloading facilities, manufacturing areas and bulk storage areas.

E. CORRECTIVE ACTIONS — Appropriate remedial/control measures are promptly implemented when it is determined that an adverse effect on groundwater has occurred or is likely to occur.

F. PREVENTION/ CONTROL AND COUNTERMEASURES — Location plans and procedures pertaining to spill prevention, control and countermeasures exist and are designed to minimize releases to groundwaters and to comply with applicable governmental and internal requirements.

G. ENGINEERING DESIGN — Engineering design of new of modified equipment and facilities seek to minimize releases to groundwater.

H. DEFINITIONS

1. Adverse effect: An effect that significantly impairs the current or any reasonably anticipated use of groundwater.

2. Groundwater: Water below the land surface in a zone of saturation.

REFERENCES
Corporate HS&EP Procedures 5.2
C&P 5.2 SI

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5.4
SURFACE WATER PROTECTION

BASIC REQUIREMENTS	Programs must exist and provide reasonable assurance that Solvents & Coatings Materials Division locations do not have an adverse effect on surface water as a result of their operations. Specific requirements are listed below

A.	PREVENTION/ CONTROL AND COUNTERMEASURES	Location plans and procedures pertaining to spill prevention, control and countermeasures exist and are designed to protect surface waters and to comply with applicable governmental and internal requirements. Location plans are to include:
	1.	An inventory of oils, chemicals and pollutants that are, or could be, discharged to surface waters, their storage location(s) and storage capacities;
	*2.	Topographical map showing natural drainage pathways to surface waters;
	*3.	A current facility map showing locations of operations, processes, and/or facilities that contribute to, or could contribute to, discharges to surface waters (includes pipelines, sewer systems, tanks, operating units, etc.); and
	*4.	Drawings and/or descriptions of the facility's spill containment system and equipment/provisions.
B.	INVENTORY DATA	A facility inventory exists and contains, where applicable and available, the following:
	*1.	Toxicity data (human and aquatic) on those materials which could reach the surface water in the event of a spill/release;
	*2.	List of permitted discharges and their allowable concentration levels; and
	3.	Location of point source and non-point source discharges and identification of their receiving waters, their flow rates and typical chemical compositions.

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C. ASSESSMENT

A surface water protection assessment exist for the receiving or potential receiving surface waters listed in Section B, Inventory Data, and includes:

1. The governmental water quality classification;

2. Present and prospective water uses;

3. High/low flow rates and volumes of those surface water which may be effected by facility discharges;

4. Existing water quality data;

*5. The likelihood of both a reasonably foreseeable and a catastrophic release from the facility reaching the surface water;

*6. A history of releases at the facility and, where appropriate, corrective actions taken to prevent a reoccurrence and the resultant impact;

*7. The adequacy of existing

- containment equipment/devices/supplies, and

- operating/maintenance procedures and their associated control systems,

to prevent contamination of surface waters; and

*8. The preparedness of facility personnel to

a) respond to and control a release,

b) correctly assess the potential impact and to obtain necessary assistance, and

c) alert potentially affected parties.

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D. EVALUATION

The spill prevention/control and counter measures plan, the inventory and the surface water assessment are evaluated to determine if, and to what extent, the facility operations could have an adverse effect on surface waters. The evaluation shall consider potential effects on:

*1. human health and safety,

*2. drinking water supplies and the human food chain,

*3. marine life,

*4. wildlife, and

*5. vegetation.

E. CORRECTIVE ACTIONS

Appropriate remedial and/or control measures are promptly implemented when it is determined that an adverse effect on surface waters has occurred or is likely to occur. If warranted, temporary measures are considered until permanent corrective actions can be implemented.

F. ENGINEERING DESIGN

Engineering design of new or modified equipment and facilities seek to minimize releases to surface waters.

G. DEFINITIONS

1. Adverse effect: An effect that significantly impairs the current or any reasonably anticipated use of surface waters.

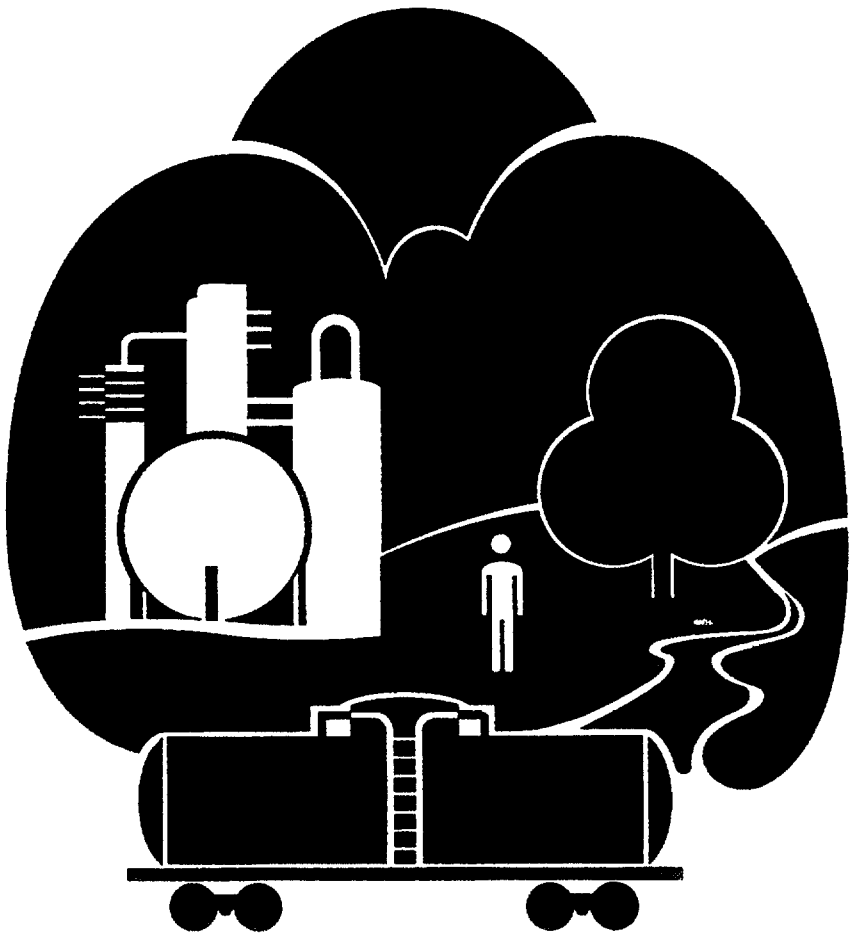
2. Surface water: Flowing and standing water on the land surface. Water contained within impoundments and other location facilities is excluded.

REFERENCES
Corporate HS&EP Procedures 5.2 C&P 5.3 S1

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Definitions



DEFINITIONS

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Acquisition	A business unit or real estate obtained by any means (direct asset purchase, share purchase, lease, property trade, stock exchange, joint venture, legal settlement, etc.). A business unit includes all or part of a business (process technology, product technology, facilities, etc.).
Adverse Effect on Groundwater	An effect that significantly impairs the current or any reasonably anticipated use of groundwater.
Adverse Effect on Surface Waters	An effect that significantly impairs the current or any reasonably anticipated use of surface waters.
Air Emissions	All air emissions not wholly confined within a workplace-a building, for example. Air emissions include: • Emissions from point sources, such as a vent or stack. • Secondary emissions, such as evaporative losses from impoundments and landfills and • Fugitive emissions, such as leaks from pump seals, valves, flanges and particulates contained in road dust.
Confined Spaces	Enclosures that are potentially hazardous due to possible (1) atmospheric contamination by toxic or flammable vapors, or oxygen deficiency or excess; (2) physical hazards, such as agitators, other moving parts or electrical shock; (3) contamination by liquids, gases or solids during occupancy; or (4) isolation of occupants from help in case of need.
Divestiture	The sale or transfer of a business unit or real estate by any means (direct sale, lease, property trade, stock exchange, joint venture, legal settlement, etc.). A business unit includes all or part of a business (process and/or product technology other than licensing agreements, integrated facilities, etc.)
Emergency Situations	Any incidents that could have serious adverse effects on the health or safety of employees or the public, or the environment. These incidents may be the results of accidents, process upsets, fires, explosions (including bomb threats) or unplanned releases of contaminants; natural disasters, such as tornadoes, hurricanes, earthquakes and floods; or other external factors, including accidental chemical releases from neighboring facilities.

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Elevated Work	Work performed at the elevation of three (3) or more meters above a surface.
Extremely Toxic Substances	Substances that may pose a significant risk of serious adverse effects on human health or the environment, including, but not limited to, the substances on the list in Appendix A. Substances that may cause asphyxiation solely by displacing oxygen (e.g., argon or nitrogen) are not considered to be extremely toxic in this context.
Groundwater	Water below the land surface in a zone of saturation.
Hazard	The potential to cause adverse effects on human health or safety, or the environment.
Hazardous Materials	Materials that can cause acute or chronic health effects in humans, or are classified as combustible liquids, compressed gases, explosives, flammables, organic peroxides, oxidizers, pyrophorics and unstable and water-reactive materials.
Hazardous Substances.	Same as the definition for hazardous materials.
Internal Requirements	Corporate Health, Safety and Environmental Protection Policy, the procedures contained in this manual and additional health, safety and environmental mandatory requirements defined by: • Management to reflect their individual business needs and • Other Corporate Departments (Investment Recovery, Purchasing, Employee Relations, etc.).
Land Application	Storage, treatment, recycling or disposal that occurs on or into land.
Major Capital Project	A capital project of two million dollars or more in cost or a capital project of any size that commits the Corporation to an important new course of action.

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Off-Site Contractors for Processing and Storage	Any contractors who manufacture, process, package or store products for use or sale by Union Carbide and who use our technology or equipment on property not owned by Union Carbide. Product containers are not considered to be equipment. Licensing agreements are excluded.
Operational safety	Control of those hazards caused by the maloperation of malfunction of the following types of operations: manufacturing processes, in-plant distribution and storage, mixing, blending and packaging, pilot plants, pipelines, waste treatment or energy systems.
Potentially Hazardous Work	Work that includes, but is not limited to: • Entry into confined spaces. • Electrical hot work and troubleshooting of energized systems above 50 volts except diagnostic hot work on low voltage or low amperage instrumentation circuits by persons authorized to perform such work. • Breaking lines which contain or could be expected to contain hazardous materials or conditions (pressure, temperature, etc.). • Working in oxygen-enriched or deficient environments. • Crane operations near utility lines. • Manual excavations exceeding four feet in depth and all powered excavation work. • Ignition sources in areas where flammable vapors may be present or • Hot tapping pressurized systems.
Product	Chemical substances and mixtures, materials, machinery, new or used equipment, items and services that are sold, distributed in commerce or otherwise provided by Union Carbide. The term is not intended to included intermediates or internally used products if they remain at the facility where produced. The term is not intended to include waste products, unless they are destined for recycling or reuse.

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Product Safety Communications	Any method of communicating product safety information, including, but not limited to, product labels, material safety data sheets, operating manuals, product manuals and safe practice/safe use literature.
Risk	The likelihood that an undesirable outcome will result under a given set of circumstances, expressed in terms of its consequences and its probability of occurrence.
Significant Episodic Incident	Release of a toxic or hazardous substance, fire, explosion, a sudden release of energy or other accident that results in: • Death, serious injury or serious adverse health effects on employees or the public or • Property damage of $1,000,000 or more.
Significant Hazards	Hazards that can cause serious adverse effects on human health or safety, or the environment.
Significant Health, Safety and Environmental Events	Events that meet any of the following conditions: • Releases of toxic or hazardous substances • Fires, explosions or other accidents. • Governmental investigations, information requests or enforcement actions. • Private actions or claims against the Corporation, its officers or employees. • Deviations from Corporate policies or governmental requirements by senior or middle level management or • Events deemed to be significant by senior management or the Corporate Health, Safety and Environmental Protection Department which have resulted in or present a significant and realistic risk of resulting in:

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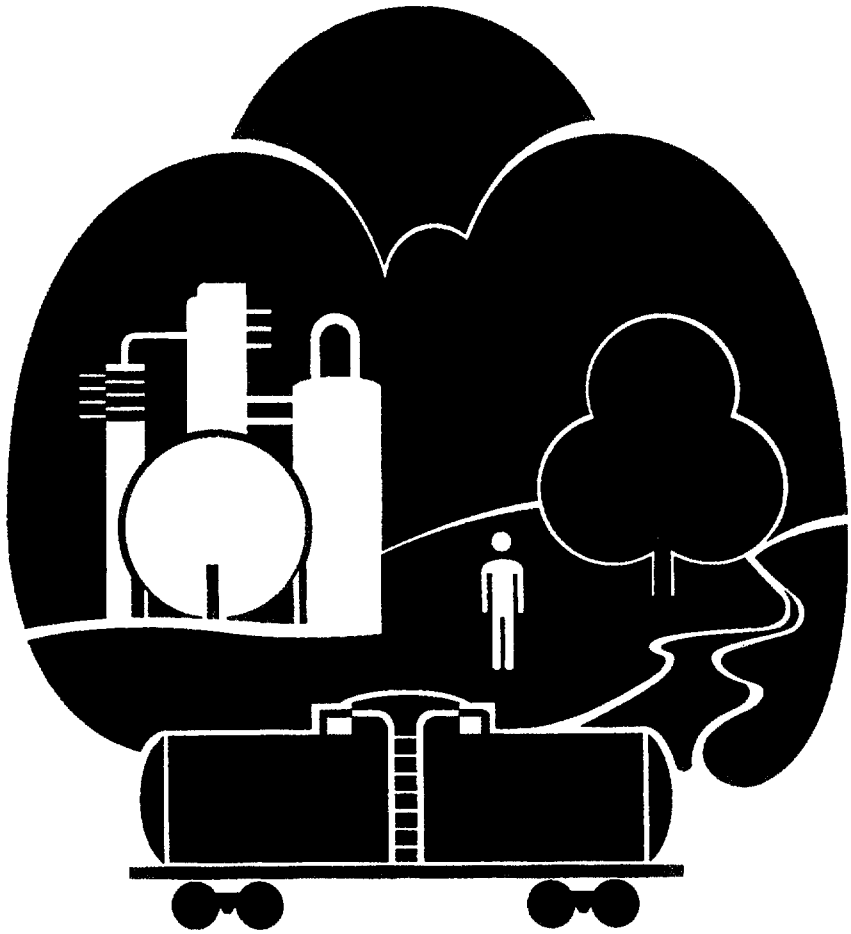
Significant Health, Safety and Environmental Events (cont'd.)	• Death, serious injury or serious adverse health effects on employees or the public. • Property damage of $1,000,000 or more. • Governmental investigations or enforcement actions seeking a substantial limitation on a facility's operation or to impose fines or penalties of $100,000 or more. • Significant criminal actions being brought against the Corporation, its officers or employees or • Substantial media coverage.
Special Waste	Any waste except for the following: • Chemically uncontaminated cafeteria, office and sanitary wastes and similar materials. • Chemically uncontaminated construction debris and • Wastewater, cooling water, storm water run-off and similar, primarily aqueous, streams that are discharged to surface waters or municipal sewers.
Substantial Hazards	Hazards that can cause severe adverse effects on human health or safety, or the environment.
Substantial Risk	A risk of considerable concern because of the seriousness of its consequences and the fact or probability of its occurrence.
Spill/ Incidents	Releases that meet any of the following criteria: • Was reported to a government agency as required by law. • Worker (UCC or Contractor) recordable injury or illness associated with the release. • Community impact reported or awareness. • Publicity resulted or is anticipated or • Release of 5,000 pounds (2,270 kg) or more of a process material, waste or product.

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Surface Water	Flowing and standing water on the land surface. Water contained within impoundments and other location facilities is excluded.
Variance	Authorization to deviate from an applicable internal requirement. A variance may exempt locations from performing actions or maintaining conditions spelled out in an internal requirement, or it may authorize acts or conditions that differ from internal requirements.
Waste	All (1) garbage, refuse, sludge and any other material to be discarded, which resulted from industrial, commercial, mining or agricultural operations (excluding air emissions) and (2) any waste-like material that is reused, recycled, reclaimed or burned for energy recovery and is subject to governmental waste management regulations.

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Appendices



APPENDICES

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3.1
INTERNAL EXPOSURE LIMITS LIST*

SUBSTANCE	CAS NO.	EXPOSURE LIMIT
Acrylic acid	79-10-7	2 ppm TWA_s
Allyl Methacrylate	96-05-9	20 ppm TWA_s (Skin)
2,2'-Azobisisobutyronitrile	78-67-1	0.5 ppm TWA_s 2 ppm STEL
Bis-2-chloro ethyl ether	111-44-4	15 ppm C (Skin)
Butadiene	106-99-0	10 ppm TWA_s
Cadmium	7440-43-9	40 ug/m^3 TWA_s 200 ug/m^3 C
Carbon Disulfide	75-15-0	10 ppm TWA_s 30 ppm STEL
Carbon Tetrachloride	56-23-5	2 ppm TWA_s 4 ppm C
Chlorodifluoromethane (Fluorocarbon-22)	75-45-6	1000 ppm TWA_s
Chloroform	67-66-3	10 ppm TWA_s 25 ppm STEL
Chloroprene	126-99-8	10 ppm TWA_s (Skin)
Chromium-6 compounds	--	0.05 mg/m^3 TWA_s(as Cr)
Diallylamine	124-02-7	10 ppm TWA_s
Dichlorofluoromethane (Fluorocarbon 21)	75-43-4	10 ppm TWA_s
Diethyl sulfate	64-67-5	1 ppm TWA_s No skin or oral contact
Diisopropyl sulfate	2973-10-6	1 ppm TWA_s No skin or oral contact
1,2-Dimethoxyethane	110-71-4	10 ppm TWA_s 25 ppm STEL (Skin)

* Adopted by UCC for domestic use. This listing includes only materials for which no OSHA PEL exists or for which an I.E.L. has been established which is lower than the current OSHA PEL.

BRC 1202

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SUBSTANCE	CAS NO.	EXPOSURE LIMIT
Dimethylamine	124-40-3	10 ppm TWA_s
N,N-Dimethyl ethanolamine	108-01-0	5 ppm TWA_s 25 ppm STEL
Dimethyl sulfate	77-78-1	0.1 ppm TWA_s No skin or oral contact
Dimethyl sulfoxide	67-68-5	10 ppm (Skin) TWA_s
1,4-Dioxane	123-91-1	25 ppm TWA_s 100 ppm STEL (Skin)
n-Dodecyl mercaptan	112-55-0	0.5 ppm C
t-Dodecyl mercaptan	25103-58-6	0.5 ppm TWA_s
Dripolenes-A,B,C		600 ug/m^3 TWA_s, as benzene solubles No skin contact
Epichlorohydrin	106-89-8	0.5 ppm TWA_s
Epoxy resin ERL-2774	25068-38-6	10 ppm TWA_s No skin or oral contact
Epoxy resin ERL-4205	2386-90-5	10 ppm TWA_s No skin or oral contact
Epoxy resin ERL-4206	106-87-6	10 ppm TWA_s No skin or oral contact
Epoxy resin ERL-4234	26616-47-7	10 ppm TWA_s No skin or oral contact
2-ethoxyethanol CELLOSOLVE® Solvent	110-80-5	5 ppm TWA_s (Skin)
2-ethoxyethyl acetate CELLOSOLVE® Acetate	111-15-9	5 ppm TWA_s (Skin)
Ethyl acrylate	140-88-5	5 ppm TWA_s
Ethylene dibromide	106-93-4	0.1 ppm TWA_s
Ethylene dichloride	107-06-2	5 ppm TWA_s
Ethylene glycol	107-21-1	125 mg/m^3(50 ppm) C In vapor and/or mist form

* Adopted by UCC for domestic use. This listing includes only materials for which no OSHA PEL exists or for which an I.E.L. has been established which is lower than the current OSHA PEL.

BRC 1203

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SUBSTANCE	CAS NO.	EXPOSURE LIMIT
2-Ethylhexyl acrylate	103-11-7	5 ppm TWA_s
Formamide	75-12-7	20 ppm TWA_s No skin contact
Hexafluoroacetone	684-16-2	0.1 ppm TWA_s No skin contact
Hexyl CELLOSOLVE®	112-25-4	20 ppm TWA_s
Hydrazine	302-01-2	0.1 ppm (Skin) TWA_s
Hydrogen sulfide	7783-06-4	10 ppm TWA_s
Itaconic acid	97-65-4	5 mg/m^3 TWA_s
Mercury Alkyl Compounds	--	0.01 mg/m^3 TWA_s (as Hg)
Mercury, all compounds except Alkyl	--	0.05 mg/m^3 TWA_s (as Hg)
2-Methoxyethanol Methyl CELLOSOLVE®	109-86-4	For women of childbearing potential: 2 ppm TWA_s 5 ppm, 15 min STEL (Skin) For other persons: 5 ppm TWA_s (Skin)
2-Methoxyethyl acetate Methyl CELLOSOLVE® Acetate	110-49-6	For women of childbearing potential: 2 ppm TWA_s 5 ppm, 15 min STEL (Skin) For other persons: 5 ppm TWA_s (Skin)
Methyl Chloride	74-87-3	25 ppm TWA_s 50 ppm STEL
4,4-Methylenedianiline	101-77-9	0.1 ppm TWA_s No skin or oral contact

* Adopted by UCC for domestic use. This listing includes only materials for which no OSHA PEL exists or for which an I.E.L. has been established which is lower than the current OSHA PEL.

BRC 1204

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SUBSTANCE	CAS NO.	EXPOSURE LIMIT
Methylene Chloride	75-09-2	50 ppm TWA_8 250 ppm STEL
N-Methylpyrrolidone	872-50-4	500 ppm TWA_8
Nitrous Oxide	10024-97-2	25 ppm TWA_8
Ozone	10028-15-6	0.1 ppm TWA_8 0.3 ppm STEL
2,4-Pentanedione	123-54-6	20 ppm TWA_8
Peracetic acid	79-21-0	10 ppm TWA_8 (Skin)
Perchloroethylene	127-18-4	50 ppm TWA_8
Polychlorinated biphenyls(PCB's)	--	100 ug/m^3 TWA_8 No skin contact
Propylene oxide	75-56-9	20 ppm TWA_8 100 ppm STEL
Pyrolysis fuel oil	--	200 ug/m^3 TWA_8, as benzene solubles 600 ug/m^3 C, as benzene solubles No skin contact
Quench oil	--	200 ug/m^3 TWA_8, as benzene solubles 600 ug/m^3 C, as benzene solubles No skin contact
Resin B condensates	--	200 ug/m^3 TWA_8, as benzene solubles 600 ug/m^3 C, as benzene solubles No skin contact
Styrene oxide	96-09-3	10 ppm TWA_8 (Skin)
Sulfur dioxide	7446-09-5	2 ppm TWA_8 5 ppm STEL
Thionyl chloride	7719-09-7	1 ppm or As low As Feasible

* Adopted by UCC for domestic use. This listing includes only materials for which no OSHA PEL exists or for which an I.E.L. has been established which is lower than the current OSHA PEL.

BRC 1205

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SUBSTANCE	CAS NO.	EXPOSURE LIMIT
Toluene-2,4-diamine	95-80-7	0.1 ppm TWA_s No skin or oral contact
Toluene-2,4-diisocyanate	584-84-9	0.005 ppm TWA_s 0.02 ppm STEL
Trichloroethylene	79-01-6	50 ppm TWA_s
Trimethoxy silane	2487-90-3	0.5 ppm TWA_s 5 ppm STEL
Vinyl acetate	108-05-4	5 ppm TWA_s
Vinyl cyclohexene monoepoxide	106-86-5	10 ppm TWA_s

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