



# Processing Hazardous Materials

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# Introduction

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## Overview

Keeping the environment clean and healthy for the future has become an important responsibility for warehouse managers. Taking care of the environment, while taking care of business, can be accomplished if the right tools and techniques are in place. Warehouse employees need to understand the requirements placed on them by federal, state, and local agencies.

Government agencies that are concerned with Hazardous Materials (HAZMATs) are the Department of Transportation (DOT), Occupational Safety and Health Administration (OSHA), and the Environmental Protection Agency (EPA). All of these agencies regulate matters concerning hazardous waste, recycling, clean air, and compliance auditing.

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## Objectives

Upon completion of this unit you will be able to describe:

1. The environmental concerns of the warehouse and how each directly impacts the distribution center and the warehouse function.
2. The various aspects of hazardous materials (hazmats).
3. Hazardous material regulations.
4. Spill response.
5. Storm water discharge.
6. Accident prevention strategies.

Notes:



# Hazardous Materials

A hazardous material is a material that is capable of producing harmful physical or health effects.

Harmful physical effects include fire, sudden release of pressure, explosion, and other violent reactions as documented on the chemical Material Safety Data Sheet (MSDS).

Harmful health effects include acute conditions and chronic conditions.

Acute conditions develop soon after overexposure to hazardous materials and include, burns, rashes, respiratory distress, convulsions, and possibly even death.

Chronic conditions develop after long term exposure to hazardous materials and include cancers, nervous system disorders, and damage to other organ systems.



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## Material Safety Data Sheet (MSDS)

The MSDS is produced by the chemical manufacturer and supplied to every customer that has purchased any compound whether it is hazardous or not. All compounds are to be accompanied by the appropriate MSDS at time of delivery. The MSDS contains useful information that you will need to determine how the chemical should be handled, used, stored, transported, or disposed.



## Hazardous Materials Classification

In order to safely and properly handle and store hazardous materials, it is important to know the hazards of those materials. Warehouse personnel working with hazardous materials must be aware of the hazards those materials present. Knowing the hazards presented by materials will help the employee prevent accidental exposure to hazmats through the use of Personal Protective Equipment (PPE). All employees that are responsible for handling hazmats must be trained under supervision of the warehouse manager. Hazardous materials may generally be assigned to one or more of the following classifications.

Hazardous Material Classification	
• Flammable liquid	• Oxidizer
• Combustible liquid	• Corrosive
• Organic peroxide	• Compressed gas
• Poison	• Cryogenics
• Explosive	• Radioactive
• Flammable solid	• Biomedical

### *Hazardous Material Classification*

Flammable liquid	Any liquid having a flash point below 100°F (37.8°C); i.e., at 100°F or less the liquid produces enough vapors to ignite if exposed to an ignition source.
Combustible liquid	Any liquid having a flash point between 100 and 200° F (37.8–93.3° C).
Organic Peroxide	An organic compound containing the chemical bond - O-O- (oxygen joined to oxygen).
Poison	A substance so toxic that it presents a risk to life or health.

Explosive	Any chemical compound, mixture or device that reacts or decomposes with substantial instantaneous release of gas and heat.
Flammable solid	A substance that can cause a fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, will burn so vigorously that it creates a hazard.
Oxidizer	A substance that readily yields oxygen or other electron acceptor to stimulate the combustion of organic matter (fuel).
Corrosive	A liquid that corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 in.) at a test temperature of 130° F (55° C) or has a pH less than 2 or greater than 12.5.
Compressed Gas	A substance in gas or liquid form contained in a vessel under pressure. This includes cylinders, lecture bottles and aerosol cans. These substances may be flammable, nonflammable or poisonous.
Cryogenics	Substances that are extremely cold such as liquid nitrogen, liquid helium and dry ice. These substances may also become asphyxiation hazards if spilled in non-ventilated areas.
Radioactive	Any material having a specific activity greater than 0.002 microcuries per gram ( $\mu\text{Ci/g}$ ).
Biomedical	Tissues, organs, and blood from humans and primates. Syringes, needles, sharps, and other objects containing materials above.

Handling hazardous materials (hazmats) puts tremendous pressure and responsibility on warehouse personnel. Translating regulations and understanding their role in protecting the site and its employees is part of the job.



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## Progress Check #1

Circle the letter in front of the correct answer.

1. Every chemical manufacturer must supply customers with an \_\_\_\_\_ that lists physical and chemical hazards associated with the compound.
  - a. OSHA
  - b. MSDS
  - c. EPA
  
2. Sudden release of pressure, explosion, or other violent reactions are considered to be harmful
  - a. physical effects..
  - b. chemical hazards.
  - c. occupational hazards.
  - d. both b and c.
  
3. Acute health conditions appear
  - a. soon after overexposure to hazardous materials.
  - b. after many years of exposure.
  - c. both a and b.

4. Hazardous materials are assigned to different classifications so that the warehouse employee can properly
  - a. prepare the warehouse location for the item.
  - b. transport the material through the warehouse.
  - c. select PPE to prevent accidental exposure.
  - d. all of the above.
5. The warehouse manager's responsibility is to
  - a. know the hazmat requirements of government agencies.
  - b. translate government regulations for warehouse employees.
  - c. train employees that are required to handle hazmats.
  - e. all of the above.



# Regulations

Producers and users of hazardous chemicals are working together to create legislation that not only will formalize how hazmats are handled but also will ensure user compliance. For example, the nation's public chemical warehouses have joined with the American Warehouse Association (AWA) to form the Council of Chemical Logistics Providers (CCLP). This group is working to improve the handling of chemicals and hazmats. The CCLP is also working to establish a set of standards that chemical warehouses, ranging in size from 40,000 square feet to 250,000 square feet, must follow for handling and storing hazmats.

Regulations currently governing chemicals and hazmats are strict and unpredictable. Many companies have transferred compliance strategies to third parties. However, this does not completely alleviate the burden for company warehouse managers. Under the current environmental and emergency response laws, producers of chemicals and hazmats will always carry some degree of responsibility even if a third party has taken over the task of warehousing the distribution. This is why all managers and their employees should be properly trained.

Training employees to handle hazmats is detailed in DOT regulation HM - 126F. All hazmat employees must be trained and certified, and receive refresher training every two years. New employees must be trained within 90 days of being hired.

HM-126F overlaps with existing OSHA hazard communications requirements, which states that any employee working in a facility storing or using hazardous chemicals must know what those chemicals are and understand their potential threat. Companies with an OSHA training program already in place should consider adapting it to meet the following DOT HM - 126F requirements:

- General awareness/familiarization. Training provides an overview of how hazmats are classified, packaged, marked, labeled, documented, and placarded.
- Function-specific. Includes the normal training required to perform an assigned regulatory function and is designed according to the specific task within the function.
- Safety training. Is required for employees actually handling hazmats. Such training will provide an understanding of emergency response information requirements, methods and techniques for personal protection, accident avoidance measures, and emergency operations.
- Driver's training. Is primarily intended for commercial drivers.
  - Record keeping requirements of HM - 126F are burdensome. Managers must:
  - Document who received training and when.
  - Certify that each employee has successfully completed the appropriate training.
  - Prepare certification listing the name of the hazmat employee, the name and address of the instructor, the employee's work location, and the date of the test.



Penalties for noncompliance are severe. Civil fines can be as high as \$25,000 per violation. Individuals found guilty of noncompliance may face criminal penalties up to \$250,000 per violation and up to five years imprisonment. Organizations may be fined up to \$500,000 per violation for some violations. Just as important as the existing standards are proposed standards. For example, although still in preliminary stages the EPA's proposed Risk Management Programs (RMP) for Chemical Accident Release Prevention have become a top concern for warehouse managers. In response to the perceived laxness regarding DOT standards on storing and transporting hazmats, the EPA plan will regulate 1,000 chemicals if stored or transported in quantities of 500 lbs. to 1,000 lbs. The regulation would also require all companies storing or transporting such chemicals to design a risk management plan based on a worst-case scenario of a spill. In addition, those same firms would have to alert the EPA every time a new or different chemical is handled by filing a report with federal, state, and local governments. It is estimated that such a plan could cost warehouses \$75,000 to \$100,000.



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## Progress Check #2

Circle the letter in front of the correct answer.

1. Public chemical warehouses have joined with the American Warehouse Association to form the
  - a. Office of Safety and Health Administration (OSHA).
  - b. Department of Transportation (DOT).
  - c. DOT regulation HM-126E
  - d. Council of Chemical Logistic Providers CCLP.
  
2. When regulation compliance is too difficult for the warehouse manager to handle
  - a. compliance strategies can be turned over to a third party warehouse.
  - b. the DOT will assign an advisor to assist the warehouse.
  - c. OSHA will delay compliance deadlines for three months maximum.
  
3. Hazmat training is to be conducted
  - a. under supervision of the warehouse manager
  - b. according to DOT HM-126F
  - c. both a and b above
  - d. none of the above



4. Warehouse managers must document who has received hazmat training, certify that all employees have successfully completed training, and
  - a. report training dates to OSHA.
  - b. certify that the trainer has been trained by DOT.
  - c. prepare certification listing the name of the hazmat employee, the name and address of the instructor, the employee's work location, and the date of the test.
  
5. In response to the DOT's lax standards on storing and transporting hazmats, the EPA has proposed
  - a. to regulate 1000 chemicals if stored or transported in quantities of 500 or 1000 lbs.
  - b. a Risk Management Program (RMP) for Chemical Accident Release Prevention.
  - c. both a and b.

Notes:



# Employee Training

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## DOT HM-126F Safety Training

Training employees to handle hazmats is detailed in DOT regulation HM - 126F. All hazmat employees must be trained and certified and receive refresher training every two years. New employees must be trained within 90 days of their hire date.

The Department of Transportation (DOT) published HM-126F to enhance training requirements to make sure that employees who handle or transport hazardous materials:

1. Are familiar with the general provisions of DOT's regulations on handling and transporting hazardous materials.
2. Are able to recognize and identify hazardous materials.
3. Know how the regulations relate to specific functions they perform.
4. Are aware of "self protection" measures they should take when working with hazardous materials.
5. Are aware of accident prevention methods and procedures to be used when working with hazardous materials.
6. Have knowledge of what should be done in an emergency involving hazardous materials.

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## DOT HM-126F Objectives

HM-126F is designed to do three things:

- Make employees aware of DOT regulations on handling and transporting hazardous materials
- Help employees to recognize and identify any hazardous materials they encounter
- Prepare employees to handle and transport hazardous materials safely

Upon completion of training, employees should:

- Understand the general areas covered as well as the purposes behind DOT Hazardous Materials Regulations and HM-126F.
- Understand what information about hazardous materials can be found on Shipping Papers, in the Hazardous Materials Table, on Material Safety Data Sheets and in other sources.
- Recognize “warning indicators” such as Hazard Class Labels and Placards.
- Be aware of the Safe Work Practices that should be followed when handling and transporting hazardous materials.
- Know how to use basic personal protective equipment when dealing with hazardous materials.
- Know how to deal with emergency situations, including fires and spills.
- Be aware of basic first aid procedures that should be used in case contact with hazardous materials occurs.



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## Progress Check #3

Circle the letter in front of the correct answer.

1. Newly hired warehouse employees who will handle hazmats must be trained
  - a. within 90 days of being hired.
  - b. two months after being hired.
  - c. after being certified.
  
2. All certified hazmat employees must be retrained
  - a. in their birth month every year.
  - b. every five years after certification.
  - c. every two years.
  
3. Which of the following is not true? Hazmat training is conducted so that employees that handle hazardous materials:
  - a. Agree with the general provisions of DOT's regulations on handling and transporting hazardous materials.
  - b. Are able to recognize and identify hazardous materials.
  - c. Know how the regulations relate to specific functions they perform.
  - d. Are aware of "self protection" measures they should take when working with hazardous materials.
  - e. Are aware of accident prevention methods and procedures to be used when working with hazardous materials.
  - f. Have knowledge of what should be done in an emergency involving hazardous materials.

Notes:



# Emergency Planning

Since liability for compliance is strict, warehouse managers must create a hazardous waste/material management program that prevents or minimizes a chemical release. OSHA claims that 11,000 in-plant chemical spills are reported annually, resulting in injuries or fatalities and government fines. Federal and state regulations mandate taking precautions against spills by developing an Emergency Response Plan to direct action should a spill occur. Three types of plans provide a variety of options: Emergency Action, Emergency Response and a Contingency Plan.

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## Emergency Action Plan

An Emergency Action Plan (EAP) places spill cleanup responsibilities with the fire department. OSHA requires that the Action Plan cite employee evacuation procedures, rescue and medical duties, and notification procedures. The EAP should describe those actions to be taken to assure safety from fire, hurricanes, blizzards, toxic chemical releases, floods, and other emergencies. Not all EM-40 sites have the organizational capability for responding to emergencies. (EM-40 sites are sites where radioactive material is routinely handled.) Most organizations at EM-40 sites should, in fact, evacuate employees and only perform such activities as emergency shut-down or first aid/CPR. Therefore, it is not necessary for these sites to prepare an emergency response plan. Instead, these sites should prepare an Emergency Action Plan (EAP) that meets the requirements of 29 CFR 1910.38(a) (see Appendix).



The EAP should describe those actions to be taken to assure safety from fire, hurricanes, blizzards, toxic chemical releases, floods, and other emergencies. The Plan should be totally integrated and coordinated with the landlord's emergency response plan, and should contain, at a minimum, the following elements:

- Emergency escape procedures, and emergency escape route assignments.
- Procedures to ensure that all contractors on site coordinate their EAPs to prevent conflicts and confusion.
- Procedures to be followed by personnel who stay behind to conduct critical operations (i.e., shutdown) before they evacuate.
- Procedures to account for all employees after emergency evacuation has been completed.
- Rescue and medical duties (first aid, CPR, etc.) for those individuals who are to perform them.
- Methods for reporting fires and other emergencies,
- Names and phone numbers of personnel and organizations to be contacted for further information or explanation of duties under the EAP.
- Alarm system to be used to alert personnel to the emergency or evacuation.
- Training each employee should receive in order to effectively carry out the requirements of the EAP and the methods for evaluating employee knowledge of the plan.
- Fire prevention plan.
- Procedures for the review and update of the Plan (e.g., schedule, rehearsal).



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## **Activity: Emergency Action Plan**

Set up a typical organizational chart for a warehouse. Use the job titles that have been taught in previous classes. Assume the warehouse serves Home Depot or Lowe's. Establish an emergency action plan covering the following considerations:

- Using the warehouse floor plan given in previous classes, plan emergency escape procedures,
- Establish a contractor communication program with management to prevent conflicts with the warehouse EAP,
- Determine shutdown procedures and assign shutdown responsibility,
- Procedures to account for all personnel after evacuation,
- Assign rescue and medical duties,
- Assign responsibility for reporting fires and other emergencies,
- Call list of other organizations that may need to be called,
- Warehouse alarm system to be used,
- Employee training requirements and schedule,
- Fire prevention plan, and
- Procedures to update the plan.

You will have 1½ hours, including a break, to work through the elements listed above. When you have completed your plan, you must present the plan as a group. (You need only have notes on your flip chart.) Consider problems and oversights in the plan, and how you would plan for contingencies such as an emergency escape that is blocked by construction. You may use your Participant Guide, including the Appendices, for reference.

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## Emergency Response Plan

Emergency Response Plan (ERP) ensures that plant workers are trained to respond to hazardous accidents. In addition to the elements of the Action Plan, the Response Program dictates pre-emergency planning, altering procedures, personal protective equipment (PPE), emergency equipment use and regimented personnel roles.

## Contingency Plan

The Contingency Plan, required by EPA's Resource Conservation and Recovery Act (RCRA), deals strictly with hazardous waste emergency operations.

The Contingency Plan is divided into three sections:

1. **Preparedness:** being able to minimize future accidents
2. **Prevention:** minimizing the risks involved with hazardous materials
3. **Response:** taking action against the spill.



Developing a formal Contingency Plan can take several months, but the following guidelines help to create a formal, well-documented plan. Evaluate the warehouse's needs and objectives, considering all the response activities that personnel will perform. These objectives are based on the type of warehouse and the chemicals stored. Decide upon one of five skill levels employees are expected to attain, based on OSHA and RCRA regulations:

- First Responder Awareness employees witness or discover a release and initiate the response sequence by notifying the proper authorities. These people must have hazardous communication training.
- First Responder Operations employees respond to initial releases only to protect nearby workers. They are trained to respond in a defensive fashion by containing the leak, not stopping it. They must receive eight hours of training.
- Hazardous Materials Technicians actually stop releases. Twenty-four hours of training are mandatory.
- Hazardous Materials Specialists support the technicians and understand the substances involved and also require 24 hours of training.
- On-Scene Incident Commander assumes control of the incident scene. This role typically is assumed by the facility manager. Twenty-four hours of training prepare the commander to perform these duties.

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## Executing the Emergency Action Plan

- **First** - Identify the hazardous substances. Implement the emergency plan and assure that personal protective equipment is worn. Ensure that employees wear breathing apparatus to prevent toxic inhalation. Limit the number of respondents at the scene to only those performing emergency operations. Make sure backup personnel are available with rescue equipment. Designate a safety officer to identify and evaluate hazards. Implement decontamination procedures. Evaluate the plan's effectiveness after the emergency and make any necessary improvements.
- **Second** - Develop a complete list of emergency contacts and telephone numbers for internal contacts and outside backups, first responders, and federal, state, and local agencies. Utilizing their expertise makes the job of planning much easier.
- **Third** - Create a formal evacuation plan with clearly identified emergency escape routes and evacuation procedures. Thorough planning and training pay off during a spill. Conducting simulated spills and practicing fire-fighting techniques familiarizes workers with the emergency procedures. Proper response becomes second nature to an emergency response team the more it practices. Be sure to include these seven steps in any response training: risk assessment, self protection, spill confinement, spill abatement, clean up, decontamination, and reporting. In the event of a spill, make sure that all proper authorities are notified and that all necessary reports are filed.
- Video or classroom instruction that includes science lessons and equipment training can also be effective. Note, however, that even after initial training is completed, refresher education courses must be conducted annually.



- **Fourth** - Form a site plan locating fire hydrants, extinguishers, main electrical switches, fuse boxes, exits, emergency equipment, the fire water storage tank, and evacuation routes. Also, supply personnel with protective equipment and spill cleanup supplies, such as absorbents, mini-dikes, socks, pigs or booms, salvage containers, sand bags, and protective equipment.
- **Finally** - Conduct an analysis. After an incident has occurred, analyze the problem to determine why it happened. Evaluate how the emergency team responded and how employees reacted. Also, make sure that cleanup supplies and personal protective equipment that were used in combating the incident are inspected and restocked.

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## Storm Water Discharge Measures

It is important to realize that spill control does not end inside the warehouse. One of the most critical environmental concerns facing warehouses today is storm water discharge. The EPA recently issued specifications for storm water discharge permits requiring industrial facilities to document how and where storm water runs off the site. Companies currently insured under a group permit are already in compliance. Those that do not have a permit are expected to develop a prevention plan that includes a site map, a form of intent, and an evaluation of how all storm water leaves the property. For some facilities, gutters on the outside of the building may suffice. For others, however, several runoff points and a catch basin may be necessary. The EPA will guide managers as to exactly what is needed.

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## Prevention Strategies

Companies concerned about environmental compliance will want to learn more about product lines developed specifically for safe storage and handling of hazardous materials, including:

- **Salvage drums:** 55-gallon drums are the most popular storage units for holding small quantities of hazmats. Portability and easy disposal are the reasons managers choose drums as a storage option.
- **Flammable liquid storage cabinets:** Codes require that flammables be stored in cabinets made of at least 18-gauge steel. They must be double walled, and have a three-point lock with secondary containment.
- **IBC:** An IBC is a cubed container, similar to a corrugated box, that holds up to 500 gallons of material. Available in reusable and one-way forms. IBCs have some drawbacks. Those made of cardboard are easily penetrated and cannot contain any material that is more than 15 percent volume of liquid.
- **Racking systems** developed specifically for use with hazardous materials.
- **Prefabricated outdoor buildings:** These relocatable storage buildings provide quick compliance with hazmat regulations, provide secondary containment, prevent soil and groundwater contamination, and cost less than half the cost of a permanent facility. Buildings protect against vandalism and access by unauthorized personnel. In addition, they afford full environmental protection against rain, heat, and cold.



Some options to consider when purchasing a building are: construction type, materials to be stored, building size, location, construction, and the moving activity of the stored product. A portable building, constructed of steel or fiberglass, arrives pre-designed and pre-engineered. Their convenience, low price (\$3,000 to \$50,000), code compliance, and UL-certification make these structures an ideal storage option.

Prefab sites are a viable alternative to a permanent building, which cannot easily obtain the UL certification and is not always impervious to hazardous materials, especially if it is constructed of concrete. To prevent permeation, the concrete must be coated, and even then can be subject to cracking and explosion during fire.

- **Containment room.** A room with its own ventilation system can prevent hazmat fumes from filtering into the main building's exhaust.
- **Secondary containment.** The EPA and DOT require that hazmats be stored using secondary containment, such as a plastic, metal or polyethylene spill pallet around a drum; or a dike area around an IBC or building. Containment must handle 100 percent volume of the largest unit or 10 percent of the aggregate of all the drums, whichever is larger.



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## Progress Check #4

Circle the letter in front of the correct answer.

1. The Emergency Action Plan is concerned with
  - a. chemical spills.
  - b. floods.
  - c. hurricanes.
  - d. fire.
  - e. all of the above.
2. The Emergency Action Plan places EM-40 site clean-up responsibilities with
  - a. Warehouse personnel who have received Hazmat training.
  - b. Management personnel.
  - c. Local fire department.
3. The Emergency Response Plan is designed to
  - a. determine if the fire department is able to treat hazardous spills.
  - b. be sure that workers are trained to respond to hazardous accidents.
  - c. dictate pre-emergency planning.
  - d. b and c above.
4. Which emergency plan deals strictly with hazardous waste emergency operations?
  - a. Contingency plan
  - b. Emergency Response Plan
  - c. Alternate Response Plan
  - d. Hazardous Response Plan



# Summary

Handling hazardous materials requires warehouse management to plan for the unexpected. Governmental agencies expect the warehouse to plan and train to fulfill its part of the program. Local fire departments are an integral part of the plan as are trained employees. The goal of all these plans is to protect the environment, the community and the employees.

Governmental agencies that oversee the plans of industry have provided extensively detailed guidelines to help notify employees of hazards in their environments and to help employers plan for accidents. Although planning seems to be overly extensive, employers are responsible to local communities to be sure that every conceivable occurrence is covered.

After emergency plans have been used, employers are asked to critique their plan and improve the planned response for the next possible occurrence.

[illegible]



# Glossary

<b>Acute Toxicity</b>	Acute effects resulting from a single dose of or exposure to a substance.
<b>Aerosol</b>	A fine aerial suspension of particles sufficiently small in size to confer some degree of stability from sedimentation (for example: smoke or fog).
<b>Asphyxiation</b>	Death caused by suffocation (lack of oxygen) is one of the principal potential hazards of working in confined and enclosed spaces.
<b>C</b>	Centigrade, or Celsius; a metric unit of temperature measurement.
<b>Carcinogen</b>	A substance or agent capable of causing or producing cancer in mammals, including humans. A chemical is considered to be a carcinogen if: (a) It has been evaluated by the International Agency for Research on Cancer (IARC) and found to be a carcinogen or potential carcinogen; or (b) It is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or (c) It is regulated by OSHA as a carcinogen.
<b>Carcinogenicity</b>	The ability to produce cancer.
<b>CFR</b>	Code of Federal Regulations
<b>Chemical</b>	Any element, chemical compound or mixture of elements and/or compounds where chemical(s) are or distributed.

<b>Chronic Toxicity</b>	Adverse (Chronic) effects resulting from repeated doses of or exposures to a substance over a relatively prolonged period of time. Ordinarily used to denote effects in experimental animals.
<b>Combustible</b>	A term used by NFPA, DOT and others to classify certain liquids that will burn, on the basis of flash points.
<b>Combustible Liquid</b>	Any liquid having a flashpoint at or above 100° F (37.8° C) but below 200° F (93.3° C) except any mixture having components with flash points of 200° F (93.3° C) or higher, the total volume of which make up ninety-nine (99) percent or more of the total volume of the mixture.
<b>Compressed Gas</b>	(a) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70° F (21.1° C); or (b) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130° F (54.4° C) regardless of the pressure at 70 F (21.1° C); or (c) A liquid having a vapor pressure exceeding 40 psi at 100° F (37.9° C) as determined by ASTM D-323-72.
<b>Concentration</b>	The relative amount of a substance when combined or mixed with other substances.
<b>Container</b>	Any bag, barrel, bottle, box, can cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical
<b>Corrosive</b>	A chemical that causes visible destruction of, or irreversible alteration in living tissue by chemical action at the site of contact.



<b>Decomposition</b>	Breakdown of a material or substance (by heat, chemical reaction, electrolysis, decay, or other process) into parts or elements or simpler compounds.
<b>Density</b>	The mass (weight) per unit volume of a substance.
<b>Dermal</b>	Relating to the skin.
<b>Dike</b>	A barrier constructed to control or confine hazardous substances and prevent them from entering sewers, ditches, streams, or other flowing waters.
<b>DOT</b>	U.S. Department of Transportation regulates transportation of chemicals and other substances.
<b>EM-40</b>	A manufacturing or distribution site that routinely handles radioactive material.
<b>EPA</b>	U.S. Environmental Protection Agency
<b>Explosive</b>	A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.
<b>Exposure</b>	State of being open and vulnerable to a hazardous chemical in the course of employment by inhalation, ingestion, skin contact, absorption, or any other course; includes potential (accidental or possible) exposure.
<b>Extinguishing Media</b>	The fire fighting substance to be used to control a material in the event of a fire. It is usually named by its generic name, such as fog, foam, water, etc.

<b>F</b>	Fahrenheit is a scale for measuring temperature. On the Fahrenheit scale, water boils at 212° F and freezes at 32° F.
<b>First Aid</b>	Emergency measures to be taken when a person is suffering from overexposure to a hazardous material, before regular medical help can be obtained.
<b>Flammable</b>	A chemical that includes one of the following categories: (a) "Aerosol, flammable." An aerosol that, when tested by the method described in the 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flash back (a flame extending back to the valve) at any degree of valve opening; (b) "Gas, flammable." (1) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of 13 percent by volume or less; or (2) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than 12 percent by volume, regardless of the lower limit; (c) "Liquid, flammable." Any liquid having a flashpoint below 100 F (37.8 C), except any mixture having components with flashpoints of 100 F (37.8 C) or higher, the total of which make up 99 percent or more of the total volume of mixture; (d) "Solid, flammable." A solid, other than a blasting agent or explosive that is likely to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily. When ignited the solid flammable will burn so vigorously and persistently as to create a serious hazard.



<b>Flashback</b>	Occurs when flame from a torch burns back into the tip, the torch, or the hose. It is often accompanied by a hissing or squealing sound with a smoky or sharp pointed flame.
<b>Flash Point</b>	The minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested by the following methods.
<b>Fume</b>	A solid condensation particle of extremely small diameter, commonly generated from molten metal as metal fume.
<b>Hand Protection</b>	Specific type of gloves or other hand protection required to prevent harmful exposure to hazardous materials.
<b>Hazard Warning</b>	Words, pictures, symbols, or combination thereof presented on a label or other appropriate form to inform of the presence of various materials.
<b>Hazardous Chemical</b>	Any chemical whose presence or use is a physical hazard or a health hazard.
<b>Ignitable</b>	Capable of being set afire.
<b>Impervious</b>	A material that does not allow another substance to pass through or penetrate it.
<b>Ingestion</b>	Taking in by the mouth.
<b>Inhalation</b>	Breathing in of a substance in the form of a gas, vapor, fume, mist, or dust.



<b>Irritant</b>	A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.
<b>Label</b>	Notice attached to a container, bearing information concerning its contents.
<b>Mixture</b>	Any combination of two or more chemicals if the combination is not, in whole or part, the result of a chemical reaction.
<b>Mutagen</b>	A substance or agent capable of altering the genetic material in a living cell.
<b>Nonflammable</b>	Not easily ignited, or if ignited, not burning rapidly.
<b>Oral</b>	Used in or taken into the body through the mouth.
<b>Organic Peroxide</b>	An organic compound that contains the bivalent -O-O structure and may be considered a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.
<b>OSHA</b>	Occupational Safety and Health Administration, U.S. Department of Labor.
<b>Oxidizer</b>	A chemical other than a blasting agent or explosive that initiates or promotes combustion in other materials, causing fire either by itself or through the release of oxygen or other gases.



<b>pH</b>	The symbol relating the hydrogen ion (H-) concentration to that of a given standard solution. A pH of 7 is neutral. Numbers increasing from 7 to 14 indicate greater alkalinity. Numbers decreasing from 7 to 0 indicate greater acidity.
<b>Reaction</b>	A chemical transformation or change. The interaction of two or more substances to form a new substances.
<b>Reactivity</b>	Chemical reaction with the release of energy and undesirable effects such as pressure buildup, temperature increase, formation of noxious, toxic or corrosive by-products.
<b>Respiratory Protection</b>	Devices that will protect the wearer's respiratory system from overexposure by inhalation to airborne contaminants.
<b>RCRA</b>	Resource Conservation and Recovery Act is environmental legislation aimed at controlling the generation, treating, storage, transportation and disposal of hazardous wastes.
<b>Toxic Substance</b>	Any substance which can cause acute or chronic injury to the human body, or which is suspected of being able to cause diseases or injury under some conditions.
<b>Toxicity</b>	The sum of adverse effects resulting from exposure to a material, generally by the mouth, skin, or respiratory tract.
<b>Vapor</b>	The gaseous form of a solid or liquid substance as it evaporates.

**Vapor Pressure**

The pressure exerted by a saturated vapor above its own liquid in a closed container. When quality control tests are performed on products, the test temperature is usually 100° F, and the vapor pressure is expressed as pounds per square inch (psig or psia), but vapor pressures reported on MSDS's are in millimeters of mercury (mmHg) at 68° F (20° C), unless stated otherwise.

**Workplace**

An establishment at one geographical location containing one or more work areas.



# Appendix

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## MSDS Information

The general sections of the MSDS are explained here. MSDS Sheets normally contain as few as 8 basic sections that cover important information pertaining to a particular chemical or product. The following includes expanded information that may additionally be found in some MSDS sheets.

Additionally, the unit “General Plant Safety” covered earlier in your CWDS Program provides more detailed information about MSDS sheets.

### **1) Identification of the substance**

This chapter contains product details like article number, trade names, etc. that allow the identification of the product and avoid confusion. This section will also mention the supplier’s address as well as the phone number of the company and, most importantly, the emergency telephone number which has to be accessible 24 hours a day, 7 days a week.

### **2) Composition - Information on ingredients**

Composition includes the composition of the chemical. Not all information has to be revealed here, in general only hazardous substances and compositions have to be listed.

### **3) Hazard identification**

This chapter comprises the calculated or prescribed classification according to 67/548/EEC. Some compositions or pure substances have to be labeled with special phrases that have to be mentioned also.

#### **4) First aid measures**

The topic First Aid is divided into early first aid executed by the first responder and measures as taken by the MD. The first aid measures are further subdivided as:

First aid measures

After inhalation

After contact with eyes

After contact with skin

after ingestion

#### **5) Fire fighting measures**

This section should mention suitable extinguishing media and media that must not be used for safety reasons. Any special risks from the substance itself in its gaseous state, or about hazardous combustion products, have to be mentioned as well.

Special protective equipment which should be used during fire fighting (like breathing apparatus, protective suit, etc.) have to be mentioned as well as personal precautions for all those who are not involved in the fire fighting directly.

Some products represent a specific environmental hazard. Here special measures that need to be taken to prevent contaminated fire fighting water from contaminating ground water must be mentioned.



## 6) Accidental release measures

This chapter consists of personal and environmental precautions. It should describe the REAL dangers related to the product. (e.g. a container filled with ethanol may explode in the first instance and the risk of drowning in ethanol may be less important...). Facts that are not obvious at first sight, like danger of slipping, ignition of combustible air gas mixtures which spread on the floor etc should be mentioned here as well as safe clean-up procedures.

## 7) Handling and storage

This is one of the most important chapters in the MSDS. It contains advice on safe handling, protection against fire and explosion, requirements for storage rooms and vessels, storage conditions, etc... Some substances represent a special risk if stored together with other hazardous materials. This section should contain suitable advice concerning storage compatibility.

## 8) Exposure controls/personal protection

Personal protective equipment is a major topic in this section of the MSDS. It should give specific advice about:

respiratory protection

hand protection

eye protection

body protection

hygiene measures

This section should not only mention that there has to be protection, but name the kind of measures as well. There are cases where it is not sufficient to request protective gloves without mentioning suitable materials!

## **9) Physical and chemical properties**

This section of the MSDS might be very extensive. All data relevant to the compound, like ignition temperature, flash point, self-ignition temperature, explosion limits, vapor pressure, density, etc. must be listed here as well as the method by which these data have been obtained.

## **10) Stability and reactivity**

Many products tend to decompose or may react in a hazardous way with other substances. Here hazardous reactions must be listed along with specific conditions that the user has to avoid (high temperatures, sources of ignition, water, etc).

## **11) Toxicological information**

The results of a comprehensive search in databases and related literature should be mentioned here.

In case the data is inaccessible the MSDS can draw conclusions by comparison with similar products. If so, the MSDS should mention this.

Toxicological information comprises:

- Acute toxicity (divided into oral, inhalation and dermal application)

- Irritant effects to skin and eyes

- Sensitization

- Chronic toxicity

- Mutagenicity

- Teratogenicity

- Carcinogenicity



## **12) Ecological information**

One of the most important sections of the MSDS: Ecological information. As a new hazard symbol (N, hazardous for the environment) has been introduced some years ago, distributors must provide ecological information for their products.

The following data should be considered:

- Elimination in the environment

- Biodegradability

- Ecotoxic effects (on fish, daphnia, algae and bacteria)

- Behavior in the environment

This section should also mention the method used to determine the ecological hazard.

## **13) Disposal considerations**

This section of the MSDS should mention waste code, cleaning advice for uncleaned packages and for remains of the product. This section should mention regulations dealing with recycling of packages and containers.

## **14) Transport information**

The acceptable mode of transportation (i.e. ground, water, air) should be mentioned here. Postal transportation may be subjected to national restrictions that should be mentioned in the MSDS.



## **15) Regulatory information**

This section of the MSDS should contain all regulatory information related to the product as required by nations through which the product will be transported.

## **16) Other information**

In general, information on the supplier is given in this section of the MSDS. It has become very common to indicate the person who issued the MSDS and who may give additional information about the product, although it is not required.

Most companies refer to the fact that their MSDS should not be construed as guaranteeing specific properties of their product.

Emergency Action Plans must be implemented by employers. Governmental agencies have developed this guide line to assist in planning. Each item must be addressed in a complete emergency plan.



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## Emergency Action Plan

### I. Introduction

#### *A. Purpose of the Emergency Action Plan*

What is the emergency action plan designed to accomplish? Most EAPs are designed to provide for the safety and welfare of facility personnel, the community, the environment, and property.

Are the following questions addressed?

- Does the EAP specify the specific purpose of the plan?
- Does the plan account for the safety of facility personnel, the community, environment, and facility property?

#### *B. Legal Authority;*

This section typically indicates what specific regulations the plan is designed to meet. The specific regulation and title should be listed, such as OSHA 1910.38(a) Employee Emergency Plans and Fire Prevention Plans.

Is the following question addressed?

- Are all regulations that the plan is to address properly referenced?

#### *C. Assumptions and Situations*

Detail any assumptions that may have been made in the content of the EAP. Common assumptions are that the local fire and police department will respond and assist the facility for emergency situations. Situations would define the specific provisions that the plan is designed for, such as fires, hazardous material spills, bomb threats, hurricanes, etc.

Is the following question addressed?

- Are the assumptions clearly stated?

### ***D. Facility Health and Safety Policy***

This should provide an overview of the facility's health and safety policy as it relates to the identification, response, and handling of an emergency at the facility.

Is the following question addressed?

- Is the plan consistent with the facility health and safety policy?

### ***E. Organization and Personnel Responsibilities***

This section should outline the organization of the facility as it relates to emergency operations and the primary and alternate personnel who will be utilized to handle the emergency situation. Key positions include the facility emergency coordinator, plant manager, human resource director, safety director, and response team members.

Are the following questions addressed?

- Does the plan indicate who is in charge of each emergency situation, and does it cite the location of the emergency operations center (EOC) or the on-scene command post from which direction and control will emanate?
- Does the plan identify an alternate EOC site to serve as a backup if the primary EOC is not able to operate?
- Is there an adequate number of primary and alternate personnel assigned to the EOC and command and control functions so that personnel will always be available, even during peak vacation and holiday periods?



### ***F. Plan Update Procedures and Revisions***

Specific procedures should be followed to update the EAP. The EAP should be considered a controlled document. This means that all copies of the EAP should be numbered and assigned to specific individuals or offices. Each copy of the EAP should have one person who is responsible for ensuring that the plan is updated. There should be a check sheet in each copy of the EAP recording the date and the name of person updating the plan. When you do not control the distribution of the EAP and the responsibility for updating, it will not get done. The individual who is in charge of EAP activities for the facility should periodically inspect each plan to ensure that all revisions and updates have been made.

Are the following questions addressed?

- Have one or more individuals been given the specific responsibility for revising and updating the EAP?
- Is there a specific timetable given for plan revisions and updates?

### ***G. Plan Distribution***

This section deals with the specific list of individuals and offices within the facility that are to receive a copy and any updates of the EAP. This should include both internal and external distribution of the plan. External distribution includes the local fire department, police department, and local emergency planning committee.

Are the following questions addressed?

- Is there a list of all personnel and facility offices that are to receive a copy of the EAP?
- Is there a list of all external organizations that are to receive a copy of the EAP?
- Is the plan distributed as a controlled and numbered document to maintain accountability?

## II. Facility Hazard and Risk Analysis

### *A. Overview of Facility*

This section provides a basic overview of the facility, its activities, processes, and materials used in production.

Are the following questions addressed?

- Is there an overview of the facility provided that gives a clear indication as to the use of the facility?
- Are all hazardous processes and materials identified?

### *B. Facility Risk Evaluation*

This section should provide information on the assumptions that you have made regarding the types of hazards the facility is vulnerable to and the degree of risk and impact anticipated from these hazards.

Are the following questions addressed?

- Have all risks been appropriately analyzed and addressed?
- Have all hazardous materials been identified and their degree of risk evaluated?
- In addressing the potential risk to the facility, have you considered past incidents and incidents at similar types of facilities?
- Are procedures in place to allow for assessment of new hazards or vulnerability as facility processes and operations change?



### ***C. Offsite Risk Evaluation***

This section looks at the types of offsite risk that may impact the facility and its operations. Offsite risks are those posed from other local facilities or transportation routes. An example is a railroad yard located one block from the facility. A chemical spill or fire at this location could cause evacuation and shut down of your facility.

Are the following questions addressed?

- Have offsite hazards that may impact the facility been addressed?
- Does the EAP address procedures for the identification and warning of offsite incidents to facility management?

## **III. Prevention**

### ***A. General Prevention Policy***

This looks at the basic facility policy which addresses how incidents will be minimized through inspections, engineering controls, employee training, and independent consultations.

Are the following questions addressed?

- Does the EAP address the responsibility for the prevention of incidents?
- Does the plan incorporate prevention procedures into all new facility equipment and processes?
- Does the plan reduce risk to the facility by minimizing hazardous materials and processes?

## ***B. Fire Prevention Policy***

Specific procedures should minimize the occurrence of a fire at the facility. Include specific inspection guidelines and inspection frequency.

Are the following questions addressed?

- Does the fire prevention policy clearly address the facility's commitment to the prevention of fires?
- Do the components of the fire prevention policy cover all of the requirements as addressed in OSHA 1910.156 for fire protection?
- Are major workplace fire hazards identified, including the proper handling and storage procedures that are to be followed by personnel?
- Does the plan specify the frequency for the inspection of fire protection, detection, and response equipment?

## ***C. Facility Safety Inspections and Audits***

This section should look at the specific inspection procedures that you have developed to identify safety hazards and housekeeping violations. There should be a specific timetable for inspections and responsibility for conducting the inspections.

Audits should also be conducted to verify compliance with the facility inspection program. In addition, you should develop specific checklists to emphasize the key areas to be inspected. The completed checklist will also serve as the documentation for your compliance audits and for OSHA facility inspections.



Are the following questions addressed?

- Are there procedures in place to address the auditing of the plan for compliance?
- Have inspection checklists been developed for all critical areas and processes?
- Has responsibility been assigned for conducting safety inspections and audits?
- Have training and knowledge requirements of inspection personnel been addressed within the EAP?

#### ***D. Facility Health and Safety Committee***

Each facility should establish a health and safety committee. The health and safety committee should be composed of personnel from management and labor and should be designed to assist the facility in providing a safe workplace. The safety committee should be given specific responsibilities as it applies to the emergency action plan. You may want to give the safety committee members special training and have them conduct safety inspections or audits.

Are the following questions addressed?

- Has a facility health and safety committee been established with clear-cut responsibilities as they relate to the EAP?
- Has training in activities related to the EAP been provided to members of the health and safety committee?



## **IV. Preparedness**

This section will examine the efforts that have been made and the plans that are in place to prepare the facility and its employees for an emergency situation.

### ***A. Training***

Identify the specific types of training for employees by job classification and/or responsibility. Specific training outlines and topic material should be referenced in this section.

Are the following questions addressed?

- Are personnel provided with adequate training to cover their responsibilities and duties as required by the EAP?
- Are the frequency of training and the topics to be covered referenced in the EAP?
- Is the person(s) responsible for ensuring that training activities are completed identified in the EAP?
- Are training records maintained for all personnel instructed in EAP responsibilities or actions?

### ***B. Drills and Exercises***

Drills and exercises of the EAP should be carried out at least annually. Some experts recommend that each facility exercise its EAP every six months. Specific guidelines pertaining to drills and exercises should be addressed in this section.



Are the following questions addressed?

- Are the methods to be used in exercising the EAP identified?
- Is the frequency of drills and exercises specified in the plan?
- Are tabletop and full-scale exercises identified, as well as their frequency?
- Are procedures in place that will involve in the exercises outside organizations and agencies that may be affected by an emergency at the facility?
- Are procedures in place to revise the plan based on results of drills and exercises?
- Are all levels of the facility, from entry level to top level management, included in the EAP exercises?

### *C. Facilities, Supplies, and Equipment*

Provide specific information on the location of equipment and supplies that will be used in the handling of an emergency situation. Included should be specific inspection guidelines for response equipment. Under OSHA regulations, equipment to be used in an emergency must be inspected at least monthly. Checklists should be created to identify equipment that requires inspection and specific items to check during the inspection.

Are the following questions addressed?

- Are all equipment and supplies to be used for emergency clearly identified?
- Are there specific guidelines for the inspection and maintenance of all emergency equipment?
- Are records of equipment inspection, deficiencies, and repairs properly maintained?
- Is emergency equipment clearly marked and accessible by employees?

### *D. Facility Security*

Are procedures in place for the security of the facility and its assets during and after an emergency situation? For facilities that do not have their own onsite security personnel, arrangements will need to be made with a security guard service.

Are the following questions addressed?

- Are provisions in place to ensure the security of the facility during an incident?
- If onsite security personnel are not available or adequate for the potential situation, are there procedures in place for obtaining security personnel from private contractors or from the local police department?
- If security personnel are assigned to response activities, is security for the facility addressed?

### *E. Media Relations Policy*

Every business should have a specific media release policy. Very simply, it should designate who is allowed to talk with the media during and following an emergency situation. One of the worst things that can happen is allowing your employees to talk with the media. The message that your employees have may not be the same message that you want to convey to the public. Your employees may not have all of the facts concerning the incident. Remember—what is reported will have a profound impact on your business.

In one incident, the facility management had prohibited entry onto the facility property by all news media. The news media finally found an employee who was offsite and who would talk to them. Jokingly, he told the media that it was the worst thing that he had ever seen. Keep in mind that this employee had been nowhere near the incident and did not see the injured workers. This became the lead story on the television and in the papers: “Serious chemical explosion. Employee says that it was the worst thing he had ever seen.” This report was a complete distortion of reality, but this was the only perspective that the public had about the incident.



You must talk with the media, because if you don't, they will continue to dig until they get a story. If you talk with the media you have a greater chance of controlling the message about the incident so that it will best represent the truth about the situation at your facility. Accordingly, you must be honest with the media. If you lie about an incident, it will probably come back to haunt you.

Are the following questions addressed?

- Does the facility have a specific media release policy that addresses responsibilities for press releases concerning the incident?
- Have personnel been given specific training to deal with the media?

## **V. Detection, Alarm, and Notification Procedures**

The EAP must include procedures to detect the occurrence of an emergency, make the initial notifications to alert employees, and begin the evacuation of employees.

### ***A. Incident Discovery***

What procedures are in place to discover the occurrence of an incident that either has impacted or may impact the facility?

Numerous methods can be used, such as employee observations, alarm and detection systems, and severe weather alert radios, to name a few.

Are the following questions addressed?

- Are procedures addressed that will provide for the discovery of incidents both onsite and offsite that may impact the facility?
- Does the EAP identify the types of detection and alarm systems that will be utilized?
- Are procedures in place for the monitoring of detection equipment, such as smoke alarms and process control alarms?
- Is training provided to personnel to allow them to properly interpret the meaning and response actions required by an alarm system?
- Are there specific inspection and maintenance guidelines and checklists for detection and alarm equipment?

### ***B. Initial Notification***

Initial notification procedures identify persons to be contacted first and provide all contact information. Typical notifications include facility emergency response teams, company management, and local emergency response organizations, such as the fire and police departments.

Is the following question addressed?

- Are critical personnel, internal response teams, and outside organizations identified, as well as the primary and secondary methods to contact them?



### ***C. Emergency Alerting Procedures***

Specify procedures that will be used to alert employees and others of an emergency situation at the facility.

Are the following questions addressed?

- Are procedures in place for alerting all personnel of an emergency situation?
- Are primary and backup methods to notify personnel of an emergency situation identified?
- Are critical personnel accessible 24 hours a day by pager, cellular phone, or other method?
- Are periodic tests conducted to ensure that the notification systems work as intended?
- Does the alerting system meet the requirements as outlined in OSHA 1910.165?
- Are alarm systems adequate to be heard or noticed in high-noise areas of the facility?

### ***D. Evacuation and Personnel Accountability***

Specify procedures for evacuating personnel from the facility during an emergency. These procedures must provide a means to account for all personnel to ensure that everyone has been safely removed from a hazard area.

Are the following questions addressed?

- Does the plan provide for the evacuation of all personnel from the facility?
- Are procedures in place to account for all facility personnel and visitors?
- Does the plan specify persons who are responsible for determining that all employees and visitors were safely evacuated?
- Does the plan specify how to determine the need to evacuate the facility or site and when to issue evacuation orders?
- Does the plan identify the individuals responsible for issuing evacuation orders and how evacuation orders will be announced?
- Does the plan specify arrangements to assist employees who may need special assistance during evacuation?

## ***E. Emergency Notifications***

### ***1. Internal Facility***

Specify procedures for notifying key personnel within the facility during an emergency.

Is the following question addressed?

- Does the plan identify the procedures to be followed to notify key facility personnel and does it provide necessary contact information, such as office, cellular, and pager numbers?



## *2. External Facility*

Specify procedures for notifying personnel and organizations that may be needed to assist in an emergency at the facility.

Is the following question addressed?

- Does the plan identify procedures to be followed to notify external personnel and organizations that may be needed to assist in the emergency?

## *F. Regulatory Notifications*

### *1. Regulatory Reporting of Incidents*

Specify procedures for notifying regulatory agencies. In addition, the person(s) within the facility responsible for making these notifications must be identified.

Are the following questions addressed?

- Does the plan identify the procedures for notifying regulatory agencies?
- Is the individual responsible for making the regulatory notifications identified in the EAP?

### *2. Regulatory Requirements*

Facilities should develop a spill and emergency reporting matrix that can be referenced during an emergency. This matrix would identify agencies that must be notified and those situations that require notification.

Is the following question addressed?

- Does the EAP contain a spill and emergency reporting matrix?



### *3. Notification Telephone Numbers*

Provide a list of telephone numbers to aid in making regulatory notifications.

Are the following questions addressed?

- Are all telephone numbers of organizations, services, personnel, and regulatory agencies identified in the EAP?
- Is there a procedure in place for the verification of the contact numbers?
- Is responsibility assigned for verification of the contact numbers?

## **VI. Incident Handling Procedures**

Some facilities like to classify incidents by their severity. Typically, incidents are classified into three or four levels. Generally, incident classification will be used at larger facilities and will indicate, depending on the severity of the incident, the internal and external resources required to handle the emergency.

### *A. Fires and Explosions*

Specify procedures for the handling of fires and explosions.

### *B. Hazardous Material Releases*

Specify procedures for the handling of hazardous materials releases and spills.

### *C. Medical Emergency*

Specify procedures for handling a medical emergency or injury.

### *D. Severe Weather Incidents*

Specify procedures for the handling of severe weather conditions that may impact the facility.



### ***E. Bomb Threats***

Specify procedures for handling reports of bomb threats at the facility.

### ***F. Transportation Accidents***

Specify procedures for the handling of a transportation accident at the facility.

### ***G. Public Demonstrations/Civil Disturbances***

Specify procedures for dealing with public demonstrations and civil disturbances that may impact the facility.

### ***H. Terrorism***

Specify procedures for handling acts of terrorism that may impact the facility.

### ***I. Sabotage***

Specify procedures to be used for the detection of possible acts of sabotage.

### ***J. Workplace Violence***

Specify procedures for dealing with workplace violence and providing for the safety of facility personnel and visitors during such incidents.

### ***K. Strikes and Work Stoppages***

Specify procedures for dealing with emergency situations and for ensuring recovery of operations during a strike or work stoppage. This section should generally be kept as a separate appendix item maintained by facility management.

Are the following covered as appropriate for the above Sections A to K?

- Have specific procedures for all potential emergency situations that the facility is vulnerable to been provided?
- Do the procedures clearly specify the responsibilities of each facility employee?
- Are safety concerns adequately addressed as part of the response procedures?
- Do the response procedures adhere to national, industry-specific, or regulatory requirements?

## **VII. Facility Shutdown Guidelines**

If the facility has critical equipment that must be shut down during an emergency situation, this equipment should be identified here.

### ***A. Emergency Shutdown Procedures***

Specify emergency shutdown procedures of critical operations and equipment and identity of persons responsible for this.

Are the following questions addressed?

- Does the EAP address requirements for the emergency shutdown of critical equipment and systems?
- Have checklists of procedures required for shutdown been developed?
- Have personnel received proper training in shutdown procedures?
- If personnel are required to stay behind after evacuation to operate or shutdown critical equipment, how is their safety provided for?



## VIII. Terminating the Emergency

This section deals with the specific activities that a facility will need to undertake following an emergency situation.

### *A. Recovery of Operations*

Specify procedures for the recovery of the facility and the reestablishment of facility operations, as well as the assignment of responsibility for carrying out these tasks. This section is just as critical as the handling of the incident if you want to minimize losses and not be part of the 50 percent of businesses that fail within the two years following an incident.

Is the following question addressed?

- Does the plan specifically address critical procedures and activities that will be required for recovery activities?

### *B. Documentation*

All emergencies that occur at a facility must be documented. Documentation is needed for insurance claims and regulatory reporting. In addition, you should gather documentation just as if you were preparing to go to court over the incident because you might be.

Are the following questions addressed?

- Are the required types of documentation for insurance, regulatory, and legal purposes identified?
- Is the responsibility for collecting and recording documentation addressed?

### *C. Incident Investigation*

Specify procedures and responsibility for the investigation of incidents that occur at the facility. Incident investigation is important in that it can provide critical documentation about the incident and can identify problems that management will be able to resolve to prevent a recurrence in the future.

Are the following questions addressed?

- Are procedures in place for the investigation of incidents at the facility?
- Has specific responsibility been assigned to personnel responsible for conducting the investigation?

### *D. Damage Assessment*

Specify procedures and responsibility for assessing damage and cost impact to the facility as a result of the incident.

Are the following questions addressed?

- Are procedures in place for assessing the damage to facility equipment and resources?
- Have personnel who will be responsible for damage assessment been designated?
- Have designated personnel received training in damage assessment techniques?

### *F. Post-Emergency Activities*

The following post-emergency activities will generally take place within 72 hours of the incident, depending on need.



### *1. Incident Debriefing*

The purpose of debriefing is to inform personnel about the hazards, such as chemicals, that were involved in the incident and to identify damaged equipment and unsafe conditions that require immediate attention. Some employees may be profoundly impacted by the incident in a traumatic manner. In some cases, it may be necessary to arrange for a mental health professional to intervene and help employees deal with the situation. This is especially true when there are serious injuries or deaths as a result of the incident.

### *2. Critique*

A critique is a discussion among those people involved in the handling of the emergency situation. It is designed to allow personnel to talk about what went right and what went wrong. It is not designed to be a shouting match or a session to place blame. It should allow for the flow of ideas and recommendations to improve the emergency action plan and facility policies and procedures.

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## Appendix Materials

The basic emergency operations plan or action checklist should be supported by appropriate appendices providing samples of documents that may be needed during an emergency.

### **A. Maps**

Building floor plans, plot plan (site plan map of building and grounds), street maps, and other appropriate maps that can be tacked to sheets of wallboard in the EOC should be provided. The EOC staff can use pins, stick-ons, grease pencils, and erasable marking pens on clear plastic overlays to depict emergency situations and show the locations of available manpower and equipment. This method of illustrating what is happening will help direction and control staff decide what emergency actions should be taken.

## **B. Procedure Charts**

Simple organizational charts with the names, titles, addresses, and telephone numbers of key emergency personnel should be provided. These charts will be useful before and during emergency operations. The charts should also show which members of the direction and control staff are responsible for certain actions, such as dealing with the local governments, other industries, or contractors who have emergency equipment or supplies on hand.

## **C. Callup Lists**

Callup lists of key personnel responsible for activating the basic plan should be included. These lists should include names, addresses, telephone numbers, and organizational responsibilities for emergency operations. Alternates should be listed in case primary personnel are not available. Company officials should carry pocket cards containing the names, telephone numbers, and locations of local government and company emergency services staff and facilities.

## **D. Emergency Contact Numbers**

Every emergency plan should have a detailed listing of telephone numbers for contacting government and other agencies and organizations.

1. Local and county government
2. State government
3. Federal government
4. Other numbers

Each plan should contain a list of essential services that the facility will need to reestablish operations following an emergency.



## **E. List of Local Resources**

Prepare a resource list of major sources of additional workforce, equipment, and supplies. The data should list by company and location the kind and number of skilled workers, equipment, and supplies available in the community. The resource list should be updated at least annually.

## **F. Mutual Aid Agreements**

The EAP appendices should include agreements among companies and government agencies to assist one another, within defined limits, during major emergencies. The direction, control, and emergency service staffs should be aware of the provisions of these agreements.

## **G. Additional Plan Observations**

The following questions are some general considerations that should be kept in mind as you formulate your emergency action plan. They include items that are common to most facility emergency plans.

- Is the EAP similar in format to other facility policies and procedures?
- Has the plan been given the full support of company management?
- Do all personnel know of their roles and responsibilities during a facility emergency?
- Is the safety of visitors to the facility properly addressed?
- Is the plan easily understood by all employees?
- If the facility has bilingual employees, have the special communication problems of these employees been addressed?
- Is a table of contents included in the EAP?
- Is there a sheet for recording all changes and updates to the plan?



