EMERGENCY RESPONSE PLANNING FOR RAILROAD TRANSPORTATION RELATED SPILLS OF OIL OR OTHER HAZARDOUS MATERIALS

A Thesis

by

GEOFFREY BENTON REEDER

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

August 1995

Major Subject: Soil Science

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Approved as to style and content by:

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(Chair of Committee)

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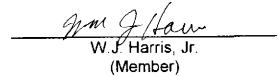

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ABSTRACT

Emergency Response Planning for Railroad Transportation Related Spills of Oil or Other Hazardous Materials. (August 1995)

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In December 1984 an unintentional release of poison gas from a chemical plant in Bhopal, India killed over 2,500 people. Thousands of others were injured. Although this material was not in transportation at the time, this accident raised public awareness. Americans began to ask, "What if something similar happened here?" Chemicals with hazardous properties have become part of daily life. Industry, government, and the public have become aware of the need to respond to problems involving hazardous materials.

Safe transportation of hazardous materials is very important. Union Pacific Railroad transports more hazardous material shipments than any other carrier. Early on they realized the benefits to having a dedicated team of personnel to respond to incidents involving hazardous materials. In order to remain the safest carrier of these commodities, an emergency response plan utilizing in house response personnel was needed. This document describes

how that plan was created and includes a copy of the plan for the Union Pacific Railroad's Settegast Yard in Houston, Texas. Other carriers may use this as a template to establish their own in house response teams or emergency response plans.

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1. INTRODUCTION

On December 4, 1984 methylisocyanate gas escaped from a Union Carbide plant in Bhopal, India. Over 2,500 people were killed. Thousands of others were injured. Soon after that, a similar incident occurred at a facility in Institute, West Virginia. (USEPA, 1988) These were not railroad accidents. The materials were not in transportation. However, the effects of these incidents spread across all aspects of the chemical industry. Americans began to ask "What if it happened here?" Chemicals with hazardous properties have become part of daily life. Industry, government, and the public have become aware of the need to respond to problems involving hazardous materials. In 1980, in response to another hazardous material incident, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act, CERCLA, to provide for liability, compensation, cleanup, and emergency response to hazardous substances released into the environment. (NIOSH, 1985) The law levied a fee on industry to pay the costs associated with it and became known as the Superfund law. This was the first major legislation dealing with emergency response to hazardous material incidents.

Safe transportation of hazardous materials is very important. If not handled properly, the outcome can be disaster. Railroads transport large quantities of hazardous material across the United States.

The journal model is *Journal of Environmental Management.*

As common carriers, railroads must accept for transportation all properly tendered shipments. Every load of hazardous material brings a tremendous responsibility.

Customers expect the load to arrive safely and on schedule. Communities along the railroad right of way demand a minimum risk of exposure to a release of hazardous materials. Railroads must make a profit to remain in business.

Railroads are a safe method of transporting large quantities of hazardous materials. In 1993, American Railroads transported over 1.6 million shipments of hazardous materials. There were 262 accidents involving hazardous material cars, but only 58 cars released any product. No one has been killed by hazardous materials in rail transportation in the last seven years. (AAR,1994) Though accidental releases occur infrequently, preparations must be made to manage these incidents. The United States Occupational Safety and Health Administration (OSHA) requires facilities that manufacture, store, transport, or use hazardous materials to plan for an unintentional release of those materials. The emergency plan must be written and available to all employees. (USOSHA, 1990)

Generally, in case of an accidental release of hazardous materials, the

Environmental Protection Agency (EPA) dictates what actions must be taken to protect the environment. The Occupational Safety and Health Administration (OSHA) governs how those actions will be performed to protect worker safety.

For a response to be effective, the community and the railroad must plan and work together. Local communities plan and train for the incidents they commonly encounter, such as fire, rescues, and natural disaster. Railroad accidents involving hazardous materials require specialized knowledge and equipment that may exceed local resources. The communities look to the railroads for assistance. Therefore, the railroads must maintain a resource of personnel that have knowledge of hazardous materials and their containers. In addition, the railroad must use specialized outside contractors for specific tasks such as lifting and righting of damaged equipment or multimedia monitoring.

2. OBJECTIVE

The Federal Government has established a National Contingency Plan for spills of oil or other hazardous materials. States and local entities are also required to have plans and they may be more stringent or have additional requirements. (USEPA, 1989) Some industries have adopted comprehensive emergency plans for their facilities. However, these are usually site specific, dealing with a few chemicals and may contain proprietary information. Very few, if any industrial emergency response plans are available in public literature. Railroads are unique, in that their "facility" is only 100 feet wide, but runs for thousands of miles, through a variety of environments and carries an assortment of hazardous materials.

As a result of a 1977 accident investigation, the National Transportation Safety Board (NTSB) issued a safety recommendation asking the Department of Transportation (DOT) to clearly identify the responsibilities of the responding Federal, State, local, and private agencies. Several Federal agencies took action, so in 1982 the NTSB closed the recommendation. In 1985 the NTSB issued a safety recommendation to American railroads asking them to coordinate with local communities to develop emergency response plans for accidents involving hazardous materials. Of the 54 railroads that received the recommendation, 29 did not respond. Only 6 indicated they had been in contact with communities to develop emergency response procedures. The NTSB

continued to see a lack of coordinated emergency response planning in the accidents it investigated. In 1991, the NTSB closed its 1985 recommendation and superseded it with another, again asking railroads and communities to develop, implement, and keep current written emergency response plans for handling releases of hazardous materials. (NTSB, 1991)

Early on, some chemical manufacturers chose not to rely on the local communities for fire protection. The potential hazards posed by their manufacturing plants often exceeded the capabilities of the local fire departments. In house fire brigades were established and later grew to include rescue and emergency medical services. As regulations became more stringent, the brigades were trained to provide the capability to respond to releases of hazardous materials. Railroads can also benefit from having an in house capability to respond to unintentional releases of the hazardous materials they transport. This capability will allow them to effectively support the local response community and reduce the amount of time the line is out of service.

The primary objective of this study was to design a comprehensive emergency response plan for the Union Pacific Railroad Company, utilizing its internal responders. The plan was designed so that it can be customized for each yard facility and the main lines. This document will be available to serve as a template that can be used by other rail carriers if they choose to establish

dedicated teams to respond to transportation related spills of oil or other hazardous materials.

3. LITERATURE REVIEW

The Environmental Protection Agency has established reportable quantities or "RQ's" for approximately 724 hazardous materials and wastes and about 1,500 radionuclides. Reportable quantities are being defined for an additional 360 extremely hazardous substances. (USEPA, 1989)

As soon as a person in charge of a facility has knowledge of an unintentional release of a hazardous substance in a quantity equal to or greater than the reportable quantity, he must immediately notify the National Response Center in Washington, D.C. (USEPA, 1989) Once the spill has been reported, the employer may choose to evacuate their employees from the danger area and not permit any of their employees to assist in the handling of the emergency. (USOSHA, 1990) If this option is selected, no other emergency response plan is required. However, this limits the company's ability to influence the outcome of the response effort.

If the company chooses to allow its employees to respond, an emergency response plan must be developed and implemented before commencement of emergency operations. The basic elements of an emergency response plan are: (USOSHA, 1990)

- Pre-emergency planning,
- personnel roles, lines of authority, training, and communication,

- emergency recognition of hazardous materials,
- safe distances and places of refuge,
- site security and control,
- evacuation routes and procedures,
- decontamination,
- emergency medical treatment and first aid,
- emergency alerting and response procedures,
- critique of response, and
- personal protective equipment.

In addition to the emergency response plan OSHA also requires a safety and health program for employees who respond to releases of, or substantial threats of releases of hazardous substances. The basic elements of the safety and health program are: (USOSHA, 1990)

- An organizational structure,
- a comprehensive workplan,
- site specific safety plan,
- safety and health training,
- medical surveillance program, and
- employer's standard operating procedures for safety and health.

Some requirements of the emergency response plan overlap those of the safety and health plan. Safety and health programs need not repeat elements covered

by the employer's standard operating procedures or other programs.

The Federal Railroad Administration (FRA) has established requirements for hazmat employees. Hazmat employees are defined as those persons employed by a person who transports hazardous material in commerce and whose duties directly affect the safe transportation of those materials. (USDOT, 1994a) If railroads choose to actively participate in the emergency response and remediation actions, they also become subject to the requirements of the EPA for emergency response planning and OSHA for planning and training of response personnel.

OSHA has addressed many of the elements of the safety and health plan. The organizational structure must establish a chain of command and specify the responsibilities of the supervisors and employees. The workplan shall identify the tasks to be performed and the resources required to achieve the objectives. The site safety plan will address the safety and health hazards associated with each phase of the operation and the procedures for employee protection. All employees that may be exposed to hazardous materials at the site, must receive training before they are allowed to work at the site. That training includes; the name of the person responsible for site safety and health, safety and health hazards present at the site, use of personal protective equipment, work practices and engineering controls, and medical surveillance requirements. The medical

surveillance program is one of the most comprehensive and is required for all employees who are, or may be, exposed to hazardous materials. It also includes employees who have been injured or develop signs of overexposure to hazardous materials. Employees who are required to wear a respirator for 30 or more days a year must also be included in the program. A medical consultation must take place prior to assignment, at least every twelve months thereafter, at termination of assignment, and as soon as possible upon notification that an employee has developed symptoms of overexposure to hazardous materials. (USOSHA, 1990) Employer's standard operating procedures for safety and health are not specifically addressed by OSHA in these regulations.

The National Institute for Occupational Safety and Health (NIOSH) has published a guidance manual for managers who are responsible for safety and health programs. In order to use the manual effectively, the manager must have a basic knowledge of science and occupational safety. The document is intended for use at inactive waste sites, however, some of the sections are appropriate to emergency response planning. Sections of particular importance are the; medical program, personal protective equipment, and decontamination. (NIOSH, 1985)

Many railroad employees must use safety equipment to perform their duties. At least one carrier, Union Pacific Railroad, has developed a safety

manual to assist in the selection and use of safety equipment. The section on respirators is relevant to hazardous material emergency response activities. The Union Pacific Safety Department has issued instructions for the selection, use, cleaning, maintenance, and storage of respiratory protection equipment. (Union Pacific, 1993)

Each emergency response is unique. OSHA has not mandated how each element of the emergency response plan must be met. Instead it has developed elements necessary for a comprehensive emergency response plan and placed the responsibility upon the employer to develop a means of addressing those requirements.

4. METHODS

In addition to the Federal regulations issued by the DOT, EPA, and OSHA, NIOSH has published a guidance manual to assist industry with regulatory compliance. Many railroads have issued internal safety procedures for employees. This study will examine the appropriate areas of these documents. Personal interviews will be conducted with representatives from each railroad job classification that directly participates in the emergency response process.

The plan will be prepared in two sections. The first is to be site specific for each facility. This is information that may change from time to time, such as telephone numbers or personnel assignments. The second section is the basic body of the plan. Information in this section will remain relatively constant over time. This section will also remain constant for all geographic areas of the railroad. A sample plan for Union Pacific Railroad's Settegast Yard in Houston, Texas is attached. This sample will serve as a template for the individual contingency plans for each facility.

5. PRE-EMERGENCY PLANNING

Laws and procedures for responding to emergencies and natural disasters have existed for many years. The Texas Disaster Act of 1975 created the Texas Emergency Management Council which acts as the state's emergency planning body. (Texas, 1993) After the 1984 accident in Bhopal, India attention focused on the possibility that facilities that handle hazardous materials could experience problems that would harm neighboring communities. Governments responded with a variety of laws. The first congressional response appeared as Title III of the Superfund Amendments and Reauthorization Act (SARA). Actually, SARA has little to do with the original Superfund program. A much more important program is a sub-section titled Emergency Planning and Community Right to Know Act of 1986. (USEPA, 1989) Title III establishes four efforts to ensure information about hazardous materials in the community is made available to emergency response agencies and the general public.

The first set of SARA requirements mandates that state and local communities establish agencies to plan for emergencies caused by releases of hazardous materials. (USEPA, 1988) Each governor designated a state emergency response commission (SERC). The SERC then designed local emergency planning districts and required the appointment of local emergency planning committees (LEPC). Each LEPC prepared a local emergency response plan. Although representatives of transportation agencies are asked to serve on

the committees, the plans usually focus on fixed facilities. The LEPC must review the plan annually.

The second requirement of SARA is the reporting of unauthorized discharges, leaks, or spills in an amount greater than the reportable quantity to the National Response Center. Emergency response agencies must be notified immediately. Subsequent written reports are also required. States may establish their own reportable quantities that are equal to or less than the federal levels.

The third and fourth requirements of SARA are reporting of hazardous substances in the workplace and a summary of chemical releases, respectively. These do not directly relate to transportation and will not be addressed here.

6. PERSONNEL ROLES, LINES OF AUTHORITY, TRAINING, AND COMMUNICATION

The DOT through the Federal Railroad Administration defines railroad employees whose duties directly affect the safe transportation of hazardous materials as hazmat employees. These persons must receive hazardous material training. Initial training must be completed within 90 days of employment or assignment to a hazardous material job. Recurrent training must take place every two years. The training must cover three specific areas: (USDOT, 1993)

- General awareness/familiarization,
- function-specific, and
- safety.

General awareness/familiarization training requires that employees become familiar with the regulations governing the transportation of hazardous materials. In addition, each employee should be trained to recognize and identify hazardous materials in transportation using the communication standards described by the DOT. Function-specific training explains regulations that are specifically applicable to the duties the employee performs. Safety training for hazmat employees must cover three specific objectives. Each person must become familiar with the emergency response information provided with the shipping papers. The employees must also be trained on the specific

measures the employer has in place to protect personnel. Finally, employees must be aware of the procedures for preventing accidents. If an accident happens, employees must know what procedures to use to protect themselves and the public from exposure. (USDOT, 1993)

Personnel who respond to hazardous material incidents must know what is expected of them once they arrive on the scene. OSHA has identified five levels of knowledge required for emergency responders. Those levels are:

- First responder awareness leve,l
- first responder operations level,
- hazardous material technician,
- hazardous material specialist, and
- on scene incident commander.

The training required for each individual depends on the responsibilities of that responder at the scene. (USOSHA, 1990) The most visible role is that of incident commander. Fire departments are frequently called to respond to chemical accidents. Many communities have designated the senior fire officer on site as the incident commander although some states have named the state police as incident commander. The incident commander assumes total control over response activities. All on site positions report to the incident commander. The railroad's incident commander coordinates the railroad activities so they support the local incident commander. The incident commander may also

appoint a site safety officer to be responsible for all health and safety issues on the site. Some duties include; selecting protective clothing, monitoring workers for signs of stress or fatigue, knowing emergency procedures, and coordinating emergency medical care. The site safety officer has the authority to stop any operation that threatens the safety of the workers or the public. Other specific roles may include team leaders, decontamination station officer, rescue teams, and work parties.

First responders at the awareness level are those who are likely to discover a hazardous material release. They must be trained to recognize the material as hazardous and begin the emergency response process by notifying the proper agencies. They are to take no further action. Responders at the operations level are trained to act in a defensive fashion to protect people, property, and the environment. They must remain at a safe distance to prevent exposure. These responders must have at least eight hours of training equal to the awareness level and demonstrate their competency. Hazardous material technicians are those who respond for the purpose of stopping a release. These persons approach the leaking container and attempt to plug, patch, or otherwise stop the leak. They must receive 24 hours of training equal to the operations level. Hazardous material specialists provide support to the technicians. The specialist brings specific knowledge of the materials or containers. They also act as liaison with local, state, and Federal authorities in regards to site

activities. The specialist must receive 24 hours of training equal to the technician level and demonstrate specific competencies of this level. The on scene incident commander will assume control of and be responsible for all on scene activities. Incident commanders must receive 24 hours of training equal to the operations level.

Employers must certify the competency of the individuasl to serve at the various levels. In many organizations, the lines separating the levels of response are not always clear. Each person who is a potential responder should seek as much training as possible so they can function effectively. (Henry, 1989)

Railroads should appoint a person who is knowledgeable of all aspects of the company's operations to act as their on scene coordinator or commander. The superintendent or senior operating department official is the logical choice.

Communication is often the weak link in emergency response efforts. Police, fire, and emergency medical services usually use different radio frequencies. They may not be able to utilize a common radio channel. Cellular telephones have greatly enhanced mobile communications. Some command posts are equipped with multiple cellular telephones and fax machines. One person should be assigned to handle off site communications so that other

personnel are not distracted from their duties. The most important communication link is between on scene personnel. Portable radios are commonly used for this task. Personal protective equipment, such as respirators and encapsulating suits hamper these devices. Noise is also a detrimental factor. Machinery or other ambient sounds can make spoken communications difficult. Simple hand signals should be devised to relay critical information. Since emergency operations continue around the clock, darkness is also a problem. Hand signals, barrier tape, and warning flags may not be visible at night. Responders must be prepared to address each of these as the situation demands. Radio transmissions, including cellular telephones, are not secure and can easily be monitored by others. Therefore, sensitive conversations should be handled by wireline devices.

Railroads often participate in emergency response exercises. Railroads can assist the local responders by providing training about hazardous materials in transportation. An effective response begins by recognizing that hazardous materials are involved and knowing how to handle them in an emergency.

7. EMERGENCY RECOGNITION OF HAZARDOUS MATERIALS

Emergency recognition of hazardous materials is a direct safety concern of all onsite personnel. Chemicals with harmful effects may not have adequate warning properties. Many are colorless, odorless, or tasteless. Various clues exist to detect the presence of hazardous materials. (Wright, 1990) Some of the most common are:

- Occupancy and location,
- container shapes and construction materials,
- markings and colors,
- placards and labels,
- shipping papers, and
- senses.

Occupancy and location refers to knowing locations in the community where hazardous materials are manufactured, used, or stored. Obvious locations are gas stations and automotive body shops. Places commonly overlooked are high school chemistry labs and hardware stores. Transportation vehicles serving these facilities may also carry hazardous materials.

Container shapes can also be used to locate hazardous materials. Tanks with rounded ends may indicate a commodity carried under high pressure. Unusually small tanks are used to carry heavy liquids such as acids.

Containers made of glass or plastic are fragile and may signal the presence of hazardous material.

Markings and colors may indicate a specific product or a general group of products. For example, in rail transportation, a white tank car with a horizontal red stripe around the center and a vertical red stripe around each end indicates hydrocyanic acid. Chemical company names, such as Chevron or Big 3, on the container could mean their products are inside. Although some of their products are not dangerous, the safe course is to assume a hazardous material until the commodity can be verified. Labels are applied directly to packages. Placards are applied to the transport vehicle. Labels and placards display important information, such as hazard class or division, and identification number. However, these may be damaged or destroyed in an accident, making these one of the least reliable sources of information in an emergency situation.

Shipping papers are the most reliable source for information about products in transportation. Shipping papers for railroads are called train consists and are carried by the conductor. If the crew leaves the train, they will take the shipping papers with them. Shipping papers provide first responders with important information about the commodity. Included on the papers are; the proper shipping description, the "UN" or "NA" identification number, the hazard class, the total quantity by weight or volume, an emergency telephone number,

and emergency response information. (USDOT, 1993) The main disadvantage of shipping papers is that the responders usually must approach the vehicle to retrieve them. Railroads are a notable exception. Train consists can be obtained by telephone from most railroads and can be sent by facsimile machine to the command post. This eliminates the need to approach the vehicle to retrieve shipping papers. First responders should become familiar with the various railroads in their communities and know how to contact them in an emergency.

Senses may provide clues to the presence of hazardous materials. Many chemicals have little or no warning properties and may be harmful at low levels. Therefore, senses should be used only as a last resort. Some sensory clues include; fire, vapor clouds, dead animals or fish nearby, unusual odors or tastes, sounds of escaping gas or explosion. Generally, if you can smell or taste the material, you are too close.

8. SAFE DISTANCES, PLACES OF REFUGE, EVACUATION ROUTES, AND PROCEDURES

Fixed facilities have a distinct advantage over railroads when trying to establish safety areas and evacuation routes. In manufacturing plants, only a few chemicals are handled, and they are in fixed locations. In contrast, railroads transport many materials through their yards. The materials and their locations within the yard change continuously. If employees are indoors when an incident occurs, they should be notified of the nature of the incident and directed to remain inside. By closing windows and doors and shutting off air handling equipment, buildings can offer limited protection against vapors and gases. The person in charge of the yard should notify employees working outdoors of the location and nature of the incident then direct affected persons to a meeting place where they can be counted. Roads available for evacuation routes should be described in the plan. Prevailing weather conditions should dictate the exact route chosen. The person in charge should direct employees away from fires or vapor clouds.

Not all rail yards have buildings suitable for use as shelters. If an incident occurs at these facilities, employees should go together to a meeting point located a safe distance from the incident. Upon arrival, the supervisor should be notified of their location and condition, i.e. injuries or exposures. Recommended safe distances can be found on train consists or in the DOT Emergency

Response Guidebook. (USDOT, 1993)

9. SITE SECURITY AND CONTROL

Most security plans deal with keeping unnecessary persons out of the control area. Law enforcement agencies are trained in crowd control techniques. Often overlooked are those people who might be leaving the site. These individuals may be able to provide important information to responders. That information may include; what happened, what materials are involved, what control actions, if any, have been implemented, and the number and types of injuries. They may be able to assist in accounting for other personnel. Medical triage and treatment are more efficient if all injured or exposed persons are gathered at one location. Site security and control is best handled by local law enforcement personnel. Railroad police should meet with these agencies to become familiar with local plans and procedures.

10. DECONTAMINATION

Decontamination is the process of neutralizing or removing contaminants from equipment or personnel. Decontamination protects workers from materials that may contaminate and permeate protective clothing. It minimizes the spread of harmful materials into clean areas. It protects the community from the uncontrolled transportation of contaminants from the site. Work practices should be developed that prevent contamination. These would include: (NIOSH, 1985)

- Minimize contact with hazardous substances,
- protect equipment by bagging, and
- wear disposable protective clothing.

A comprehensive decontamination plan is essential before allowing personnel to enter the hazardous work area. The plan should address the following as standard operating procedures:

- Decontamination station locations,
- decontamination equipment,
- decontamination methods, and
- method of disposal of contaminated clothing and materials.

Chemical protective clothing can be decontaminated using variou methods. Many chemical contaminants can be removed by physical methods, i.e. wiping, washing, or simple evaporation. High pressure sprays should be avoided as they may spread contamination through splashing. Extremely hot water or other heat sources may weaken the construction material of the protective clothing. Chemical solvents may be able to remove or neutralize some contaminants. Table 1 provides a brief guide to contaminant solubility. (NIOSH, 1985)

Decontamination usually occurs in the "warm zone" or the "contamination reduction zone." These zones must be identified in the site safety plan and discussed in the job safety briefing before employees begin work at the site.

Table 1. General guide to solubility of contaminants in four solvent types.

SOLVENT	SOLUBLE CONTAMINANTS
Water	Low chain hydrocarbons. Inorganic compounds. Salts. Some organic acids and other polar compounds.
Dilute acids	Bases. Amines. Hydrazines.
Dilute bases for example: detergent soap	Acidic compounds Phenols. Thiols. Some nitro and sulfonic compounds.
Organic solvents for example: alcohols ethers ketones aromatics straight chain alkanes common petroleum hydrocarbons, i.e. kerosene, fuel oil	Nonpolar compounds, i.e. some organic compounds.

Note: Some organic solvents can degrade protective clothing. (NIOSH, 1985)

There are no reliable tests to readily determine the effectiveness of decontamination. (NIOSH, 1985) Discolorations, stains, or obvious deterioration of construction fabrics indicate contaminants are not being removed. Some materials may be visible under ultraviolet light. Not all contaminants have visible effects. Many may weaken or permeate protective clothing material without visible notice. Wipe tests from the inside and outside of the garment may provide limited information about the effectiveness of the decontamination process. If the final rinse solution has high levels of the contaminant, additional cleaning may be needed. The only certain method of identifying whether permeation has occurred is to have the garment fabric analyzed by a laboratory. Due to the difficulty of field decontamination, disposable clothing is recommended.

11. EMERGENCY MEDICAL TREATMENT AND FIRST AID

Medical emergencies may occur at the site of a hazardous material spill. Chemical exposure is a possibility but, common accidents are much more likely. Every worker on site is a potential victim of insect stings, animal bites, heat stress, slips, trips, or falls. Since medical treatment may range from a simple bandage to life saving techniques, all on site personnel should receive training in first aid, including cardiopulmonary resuscitation, CPR. If possible, emergency medical technicians should be on standby at the site during work that could result in health threatening chemical exposures. A physician should be on duty or on call 24 hours a day at a local health facility to deal with life threatening exposures.

Local ambulance, and hospital personnel should be advised of possible exposures and consequences. Their assistance in developing plans for site related chemical exposures will help protect emergency medical workers and lessen delays due to fears of contamination.

Emergency decontamination is another concern. Chemical exposure must be weighed against medical needs. The decision whether or not to decontaminate a victim is based on the severity of the injury or illness and the effects of the contaminant. For some victims immediate decontamination is an essential part of the life saving process. However, it may delay life saving

treatment. Generally, if decontamination does not interfere with the treatment, it should be performed. If decontamination cannot be performed, wrap the victim in plastic or blankets and notify emergency medical personnel of the potential for exposure. (NIOSH, 1985)

12. EMERGENCY ALERTING AND RESPONSE PROCEDURES

Workers at hazardous material spill site should be alert for dangerous conditions and signs of exposure. In an emergency, information must be conveyed quickly and accurately. Emergency signals must be different and distinct from ordinary signals. Alarm systems may be sirens, whistles, colored flags, lights, or hand signals. Any type of signal system may be used as long as all personnel understand the meaning of each signal. Means of contacting off site personnel must also be established. Telephone communication is preferred, however radio systems may be equally effective and readily available from police, fire, or emergency medical services.

If an accident occurs, a simple procedure should be followed to determine the type response required. The following questions should be answered in the size up process:

- What happened?
- What has been lost (including personnel)?
- What can be saved and at what cost?
- What resources are needed to handle the situation? and
- What resources are available?

Provisions must be made in advance to request assistance to handle those problems that are beyond the capabilities of on scene personnel.

13. CRITIQUE OF RESPONSE

Emergency incidents occur under adverse conditions, where decisions are made quickly, and usually without the benefit of complete knowledge. This often results in less than perfect operations. This justifies the post incident analysis process.

Termination of an incident is a three phase process; debriefing the incident, post incident analysis, and critique of the incident. Debriefing is the collection of all pertinent information relating to the incident. Post incident analysis means evaluating the collected information. The purpose of the critique is to understand the "lessons learned" from actual experience. The critique session must have one person in charge to facilitate and lead the discussions. The session must maintain a positive tone and not be used to fix blame. A written record should be made of the critique session. (Henry, 1989)

14. PERSONAL PROTECTIVE EQUIPMENT

The most common type of personal protective equipment (PPE) is structural firefighter's clothing. Many hazardous material incidents do not involve fire and therefore firefighter's clothing is not appropriate as it provides limited protection against chemical hazards. No single piece of PPE can provide protection against all hazards. Therefore, PPE must be used in conjunction with other protection methods. Care must be taken that workers do not obtain a false sense of security from wearing protective clothing. Protective equipment should not replace good work practices that minimize contact with spilled materials. There are some chemicals for which there is no durable protective equipment. PPE itself can create significant worker hazards such as heat stress, psychological stress, limited vision, and impaired communications. (NIOSH, 1985) Overprotection will unnecessarily burden workers.

Providing a variety of PPE is not a complete program. Personnel must be trained in the selection, use, maintenance, and storage of equipment. (Henry, 1989) Protective equipment is divided into two basic areas, respiratory and dermal. Respiratory equipment is further divided into air purifying and supplied air respirators. Dermal protective clothing can range from splash protection to full encapsulation to protect against gases.

Responders must select PPE based upon the hazards likely to be

encountered. Many protective garments provide a chart of chemical resistance times. Hazards to be considered are not only chemical concentrations, but also physical such as fire, terrain, and ambient temperature. Maintenance of PPE is essential. Equipment should be inspected periodically to examine for signs of deterioration. Supplied air respirators should be tested to confirm they are in working condition. All PPE must be completely cleaned after use, even if it is not exposed to hazardous materials. Determining the effectiveness of decontamination is difficult. This has led some major hazardous material response units to use only disposable clothing. (Snell, 1994, Day, 1994) Some manufacturer's provide an estimation of shelf life. These are usually based on optimal storage conditions. Stored equipment must be inspected regularly for signs of deterioration. Equipment stored in response vehicles is subject to temperature extremes, varying humidity, and vibration from transportation. It must be inspected frequently to ensure it has not deteriorated. Visual inspection may not reveal equipment failures. Testing procedures must be adopted that will identify potential problems. Procedures are available from the manufacturer or from OSHA. (USOSHA, 1990)

Four levels of protection are identified by OSHA. Descriptions of each level and recommended equipment for each level are listed in Table 2.

Table 2. Four levels of personal protective equipment. (NIOSH, 1985)

Level A Provides the greatest level of respiratory, skin, and eye protection. Use when the materials have been identified and the highest level of protection is necessary. Must also be used when contaminants or concentrations are unknown.	1. Positive pressure, full face, supplied air respirator. 2. Totally encapsulating chemical protective suit. 3. Coveralls. 4. Inner and outer chemical resistant gloves. 5. Chemical resistant boots with steel toe and shank. 6. Hard hat.
Level B Provides the highest level of respiratory protection, but a lesser level of skin protection. Use when the oxygen level is below 19.5%.	1. Positive pressure, full face, supplied air respirator. 2. Chemical protective suit with hood. 3. Coveralls. 4. Inner and outer chemical resistant gloves. 5. Chemical resistant boots with steel toe and shank. 6. Hard hat.
Level C Used when the concentration and type of substances is known. The criteria for using air purifying respirators is met. The contaminants do not pose a significant threat to skin.	1. Full face, air purifying respirator. 2. Chemical protective suit. 3. Coveralls. 4. Inner and outer chemical resistant gloves. 5. Chemical resistant boots with steel toe and shank. 6. Hard hat.
Level D A work uniform that provides minimum protection.	1. Coveralls. 2. Gloves. 3. Safety shoes with steel toe and shank. 4. Safety glasses. 5. Hard hat.

15. SAFETY AND HEALTH PROGRAM

Safety and health programs are designed to identify, evaluate, and control hazards encountered during emergency response operations. Portions of the plan are site specific. Each plan must be written and available to all employees. (USOSHA, 1990) Major portions of the safety and health program may be addressed by the site safety plan or the medical surveillance program. Those procedures need not be duplicated here.

16. ORGANIZATIONAL STRUCTURE

The organizational structure will establish a chain of command and identify the responsibilities of all employees. Various incident command systems are in use throughout the emergency response community. Each has its strengths and weaknesses. All command systems should enable the person in command to manage both personnel and equipment efficiently for an effective response. (Henry, 1989) Command systems must also be able to expand and contract to meet the size of the response effort.

No matter how large or small the response project, each organization should have an incident commander who has the authority to control all aspects of the response. Safety is the most important element of the structure. Workers and the general public must be protected from contamination. The safety officer must have the support of upper management in establishing and enforcing all aspects of the safety program. The safety officer must have access to health professionals including physicians and industrial hygienists. In addition the safety officer must have the authority to stop any actions that pose a threat to personnel safety.

Various team leaders can be assigned to handle specific tasks to increase management effectiveness. These might include; rescue, decontamination, work party, logistics, security, and public information. At

smaller incidents, one person may be assigned multiple duties.

Railroads have the benefit of an organizational structure that works in an emergency as well as in normal operations. The carrier must work to ensure their efforts support the local community. In a rail transportation accident, the carrier is the responsible party, not the incident commander.

17. COMPREHENSIVE WORKPLAN

A workplan describing all activities must be developed before beginning remediation. The plan should include at a minimum:

- Objectives of the project,
- methods for accomplishing objectives,
- personnel requirements, and
- equipment needed.

The progress of the project must be continually evaluated and compared with the workplan. In emergency response efforts, there may be significant differences between what personnel and equipment are needed and what are available. If the objectives of the plan are not being met, objectives and methods must be re-evaluated.

18. SITE SAFETY PLAN

The site safety plan should identify the hazards associated with the work area. This includes physical and chemical dangers. The primary function is to identify control zones. These are usually listed as hot, warm, and cold. The hot zone is the contaminated area where emergency work is taking place. Employees in this area must wear protective equipment. The warm zone is a buffer between the contaminated area and the clean area. Decontamination usually takes place in the warm zone. The cold zone is uncontaminated but, has restricted entry. Support activities take place in the cold zone. Access to the site must be controlled using a specific entry and egress route. Physical dangers such as stumbling hazards must also be identified.

A pre-entry briefing must be held to inform employees of the tasks to be accomplished and the potential hazards that may be encountered. The plan must identify personal protective equipment to be used by employees for various tasks. If airborne contaminants are present, a monitoring procedure must be established. Site specific control and decontamination procedures must be developed. If confined spaces are expected to be encountered, a specific section must address those areas. Plans for emergencies must include specific signals, evacuation routes, and emergency medical services. (USOSHA, 1990)

19. SAFETY AND HEALTH TRAINING

All employees who will be engaged in activities that expose or potentially expose them to hazardous substances must receive a minimum of 40 hours of training off the site. In addition, they must work under the direct supervision of an experienced, trained supervisor for three days of field experience.

Employees who are on site occasionally and who are unlikely to be exposed over permissible limits must receive a minimum of 24 hours of training off the site. In addition, they must work under the direct supervision of an experienced, trained supervisor for one day of field experience.

Employees who are on site regularly, but work in areas that have been monitored and are free of contaminants must also receive a minimum of 24 hours of training off the site. In addition, they must work under the direct supervision of an experienced, trained supervisor for one day.

All covered employees shall receive eight hours of refresher training each year. The employer must certify that employees have been trained. A written certificate is issued to each trained employee. Employees who have not been trained will not be allowed to work on site. (USOSHA, 1990)

Skilled support personnel, such as backhoe or crane operators who are

needed only on a temporary basis to perform emergency tasks generally are not required to be trained to the levels described above. However, they must be given an initial site safety briefing before starting work.

20. MEDICAL SURVEILLANCE

Workers handling hazardous materials can experience many challenges. Among those are heat stress from wearing protective equipment and high ambient temperatures. The medical program is designed to determine the health and fitness of employees before they begin work and while they are actively handling hazardous material incidents. The medical program should include:

- Surveillance including
  - baseline physical,
  - annual medical examinations, and
  - termination physical.
- Treatment in case of
  - emergency, or
  - exposure, whether actual or suspected.
- Recordkeeping.

Medical examinations should be conducted annually. The examining physician may recommend a longer interval, not to exceed two years. Periodic examinations should contain the following:

- Medical and work histories (or updates if previous records are available).
- A general physical examination, including the following tests:
  - CBC, SMA, UA,

- lipid profile,•
- stool Guaiac,
- visual acuity, color vision, peripheral vision, and tonometry,
- spirometry,
- chest X-ray (program entry baseline, followed by age indexed schedule),
- graded exercise test (program entry baseline, followed by age indexed schedule),
- audiogram, and
- urine heavy metals screen (program entry baseline, followed by annual retest if there has been a significant exposure or significant medical findings during the previous year).

Chest X-ray and graded exercise test age indexed schedule.

Program entry	Perform baseline
Below age 35	Every 3rd year
Age 35 to 49	Every 2nd year
Age 50 and above	Every year

A chest x-ray, graded exercise test, and/or EKG may be performed annually for employees below age 30 if determined by the examining physician to be medically indicated based on the presence of risk factors, history/physical

findings, or other evaluation abnormalities. (Richling, 1994) If an employee is exposed or exhibits symptoms of exposure, a medical examination must be conducted as soon as possible. All examinations are to be at a reasonable time and place and at no cost to the employee. Employers must furnish the results of the examination to the employee. Medical records must be retained for each employee for 30 years after termination. (USOSHA, 1990)

21. STANDARD SAFETY AND HEALTH PROCEDURES

Most companies have developed standard safety practices for their employees when conducting routine work. The requirements commonly include the use of hard hats, safety glasses, and safety shoes. These procedures establish safe work practices and should be followed at all times. Standard safe work practices should be an integral part of any safety plans established at hazardous material incident sites.

22. MULTI-AGENCY COOPERATION

Railroads are regulated by the DOT. Those regulations are administered by the FRA. States are specifically preempted from imposing regulations that are not substantially the same as the Federal regulations. This includes written notification and reporting of unintentional releases of hazardous materials in transportation. Some railroads send a copy of the Federal report required by the DOT to the appropriate state agency as a courtesy. (USDOT, 1994b)

The FRA regularly inspects all aspects of the railroads to ensure regulatory compliance. When an accident occurs, the FRA investigates to determine if any regulation was violated. They also want to discover how the accident can be prevented from happening again. If the accident involves the release of hazardous materials, FRA inspectors can not enter until the area is safe. The inspectors do not receive the required OSHA training for emergency responders. The inspectors are specifically prohibited from advising responders on clean up actions. (Pritchard, 1994) The DOT role in emergency response is limited to the information required on shipping papers. Neither DOT nor FRA places any requirements on emergency responders. (Pritchard, 1994)

The primary role of the National Transportation Safety Board is to investigate transportation accidents. They are not involved in pre-emergency planning. The NTSB receives notification of accidents from many sources.

Once notified of an accident involving deaths or injuries, the NTSB begins an intensive investigation. The primary question is "Why did the accident happen?" If hazardous materials are involved other questions also become important, such as "Was the material packaged properly?" and "Did the package fail?" The performance of the packaging material is carefully evaluated even if the materials are not released.

The investigators also look at the response effort. They try to determine if responders had proper information, such as shipping papers or material safety data sheets on the hazardous materials involved. The responders themselves are interviewed to determine if they were properly trained. The carrier is also evaluated to determine if its employees were properly trained. NTSB personnel check to see that plans were in place prior to the accident. The plans are evaluated to determine how well they performed. The responders are questioned to learn their knowledge of the plan and if they followed procedures during the incident. In summary, the NTSB strives to determine the cause of the accident and learn how it can be prevented from recurring. (Chipkevich, 1994)

The issue of shipments of radioactive materials continues to generate considerable discussion. The Department of Transportation regulations state that if an incident involves a Class III fissle material, the Department of Energy will provide advice and assistance to the carrier. (USDOT, 1994a) The Union

Pacific Railroad has taken the stance that the handling of a release of these materials exceeds the knowledge and capabilities of Union Pacific Railroad personnel. Therefore, Union Pacific Railroad will rely on the shipper to establish action plans and respond to accidents involving high level radioactive materials. (Tierney, 1994) Fortunately, there are currently no shipments of spent nuclear fuel moving from civilian reactors for disposal. There are a few shipments moving between civilian reactors to balance storage capacity. These shipments are being handled by eastern railroads. Shipments moving under the Department of Defense (DOD) are accompanied by armed military escorts. The DOD has established response teams to handle accidents involving these materials.

23. CONCLUSION

There are no simple recipes for handling hazardous material emergencies. Companies should develop plans that protect the safety of the public, employees, and the environment. Prevention is the first priority. If an accident occurs, companies must be prepared to respond and recover quickly and cost effectively. Emergency response planning is not a finite task. Plans must not become idle documents. Regulations, operating practices, and personnel may change. Plans must be reviewed and updated regularly to remain effective tools for handling hazardous material emergencies.

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UNION PACIFIC RAILROAD COMPANY

EMERGENCY RESPONSE PROCEDURES FOR TRANSPORTATION RELATED SPILLS OF HAZARDOUS MATERIALS, OIL OR OTHER ENVIRONMENTAL POLLUTANTS

SETTEGAST YARD

SOUTHERN TERMINALS

CHEMICAL TRANSPORTATION SAFETY
OMAHA, NE
DRAFT

POLICY

It is the policy of the Union Pacific Railroad Company to maintain adequate response preparedness for hazardous materials , environmental and catastrophic emergencies in order to protect the public, the environment and its employees. Hazardous materials, environmental and catastrophic emergency preparedness consists of a uniform emergency plan for all of UPRR's facilities which is in full compliance with all federal and state regulations. The Company will respond to every type of emergency affecting its operations in cooperation with local emergency response agencies and with adequately trained and equipped employees, contractors and such other resources necessary to mitigate the emergency.

A. L. Shoener
Executive Vice President Operations
DRAFT

SOUTHERN TERMINALS SERVICE UNIT

SETTEGAST YARD

1 **EMERGENCY TELEPHONE NUMBERS:**

Local Agencies:

Houston Fire Department 713 227 2323 (911)
Houston Police Department 713 222 3131 (911)
City of Houston Ambulance 713 227 2323 (911)
City of Houston Public Works 713 754 0600

State Agencies:

Texas Natural Resource Conservation Commission 512 463 7727

Texas Railroad Commission 512 463 6788

National Agencies:

Chemtrec 800 424 9300

National Response Center 800 424 8802

UPRR Personnel:

Operating:

Harriman Dispatch Center (emergency) 800 726 1099
Pat Crabtree, Superintendent
- Spring Office 713 350 7150
- Home (Spring) 713 580 7051
- Home (Lottie) 504 637 2586
- Pager 800 999 6710 (9993158)
- Cellular 713 906 5518
- Hyrail 504 921 4936

JoJo Birkenfeld, Director Terminal Operations
- Settegast Office 713 350 7121
- Home 713 251 8347
- Pager 800 688 8125 (1830)
- Cellular 713 252 9911

Managers Train Operations - Settegast Office 713 590 2902
Rick Pennington, Manager Terminal Operations

Home 713 288 5336
Pager 800 688 8125 (1832)
Cellular 713 865 6181

Jim Skinner, Manager Terminal Operations
Home 713 350 6027
Pager 800 688 8125 (1839)
Cellular 713 865 0872

Teresa Lawler, Manager Terminal Operations
Home 713 443 1541
Pager 800 688 8125 (1826)
Cellular 713 823 9399

Mike McCarthy, Manager Terminal Operations
Home 713 361 7870
Pager 800 688 8125 (1827)
Cellular 713 829 9603

Yardmasters 713 590 2903

Mechanical:

Charlie Nelson, Manager Car Maintenance
Settegast Office 713 590 2936
Home 713 355 0620
Pager 713 949 7062
Cellular 713 725 5515

Jim Learmouth, Manager Locomotive Maintenance
Settegast Office 713 590 2941
Home 713 353 1772
Pager 713 684 3188

Chemical Transportation Safety:

Geoffrey Reeder, Manager Chemcial Transportation Safety
Spring office 713 350 7197
Home 713 251 1741
Pager 713 490 0369
Cellular 713 882 8431

Tom Robinson, Regional Manager Chemical Transportation Safety
Livonia office 504 338 2935
Home 504 755 6230
Pager 800 759 7243 (2371903)
Cellular 504 933 9998

If you can not reach the Chemical Transportation Safety managers above, call the network control center at 800 877 0511

Casualty Management:

David Hambrick, Claims Investigator
- Spring office 713 350 7397
- Home 713 379 6331
- Pager 800 759 7243 (8795591)

David Flenker, Claims Investigator
- Spring office 713 350 7397
- Home 713 251 0173
- Pager 800 759 7243 (8795669)

Gary Gregory, Director Casualty Management
- Spring office 713 350 7397
- Home 713 288 8642
- Pager 800 759 7243 (5738120)

Environmental Management:

Lanny Schmid, Director Environmental Operations
- Omaha office 402 271 2262
- Home 402 721 3694
- Pager 402 272 4532

Brian Stewart, Manager Environmental Field Operations
- Omaha office 402 271 4888
- Home 402 393 0169
- Pager 402 272 4794

Public Relations:

Mark Davis, Regional Director
- Omaha office 402 271 5459
- Home 402 330 8235

John Bromley, Manager Media Relations
- Omaha office 402 271 3475
- Home 402 333 6202

24 hour emergency number 800 544 1869

Settegast Terminal Phonelist:

TCS message "SW USE PHONELIST SOUTHERN"

Response and Cleanup Contractors:

Emtech Emergency Service (preferred) 800 336 0909

OHM Corporation 800 537 9540
W.T. Byler (diesel spills only) 713 445 2070
Radian Corp. (air monitoring) 512 454 4797
Pager 800 759 7243 (5711834)

2 Description and Location of Yard: Settegast Yard is located at the convergence of the Palestine, Brownsville, and Beaumont Subdivisions. The station number is B-372. The yard lies north of IH 610 between Kirkpatrick Boulevard and Wayside Drive in the City of Houston.

3 Notification Procedures:

3.1 Employee: Any employee in the yard observing a leaking railcar or container, that contains or last contained a hazardous material or pollutant, shall immediately notify the Yardmaster or the Manager Terminal Operations, by the quickest means available, giving a complete description of the accident, including the following:

3.1.1 Location in the yard where the accident happened.

3.1.2 Number of fatalities and names, if known;

3.1.3 Number of injuries and names, if known;

3.1.4 Car initial and number, unit number, name and quantity of hazardous material or pollutant, and hazard class.

3.1.5 Whether train operations on adjacent tracks are affected.

3.1.6 Description of the surrounding area affected by the release of the hazardous material or pollutant, including;

3.1.6.1 Nearness of populated buildings;

3.1.6.2 Nearness of other important buildings;

3.1.6.3 Nearness to important roads, bridges, drainage structures or open streams.

3.1.7 Resources needed to handle the situation, such as fire, ambulance, law enforcement agencies.

3.1.8 Name and title of the person making the report.

3.1.9 Phone number or location where the person can be reached.

3.1.10 If the person observing an incident is unable to contact the Yardmaster or Manager Train Operations, he or she should contact the UPRR dispatcher as soon as possible.

3.2 Yardmaster: Obtain as much of the above information as is available and notify:

3.2.1 Manager Terminal Operations

3.2.1.1 If the Manager Terminal Operations is not available, and there is an immediate threat to human life or safety, notify the Houston Fire Department at the number listed above (911).

3.2.2 All employees in the affected area, using telephone, radio, or yard speakers as appropriate. Advise them of the emergency response information obtained using the TCS function TTH(CAR INITIAL-NUMBER). Those employees may include:

3.2.2.1 Truck lines 713 590 2907

3.2.2.2 Diesel shop 713 590 2948

3.2.2.3 RIP Track 713 590 22936

3.2.2.4 Maintenance of way (including outside contractors).

3.2.3 Harriman Dispatch Center.

NOTE: A series of short sounds in succession such as from a locomotive horn or car shop whistle indicate a general emergency. Employees should be alert for further instructions.

3.3 Manager Terminal Operations: Obtain as much information as is available from the yardmaster or person reporting the incident and notify the following persons. This list should be followed as closely as possible, however, on the scene circumstances may require the order be altered to protect life and property. See Table 1 for

guidance in determining the incident level and evacuation recommendations.

3.3.1 Local emergency response agencies if the incident:

3.3.1.1 Involves hazardous materials and there is a reasonable belief that the actual or threatened release poses a significant present or potential harm to persons, property, or the environment.

3.3.1.2 Involves a medium or major release of hazardous substances, hazardous materials, hazardous wastes, oil or other pollutants.

3.3.1.3 Is an accident resulting in personal injury, fire, or other circumstance requiring the assistance of the local emergency response agency.

3.3.2 Director Terminal Operations.

3.3.3 Manager Chemical Transportation Safety.

3.3.4 Harriman Dispatch Center.

3.3.5 State agencies:

3.3.5.1 Texas Natural Resource Conservation Commission.

3.3.5.2 Texas Railroad Commission.

3.3.6 Using emergency response information from the shipping papers, determine if evacuation of the area is necessary. If yes, determine wind direction using wind socks located at the rip track shed or south camera tower. Order all employees to the refuge located upwind of the incident.

Table 1. Guide for determining incident levels and response.

Incident Conditions	Incident Level		
	One	Two	Three
Life Safety	No life threatening situation from material involved.	Localized area, limited evacuation.	Large area, mass evacuation area.
Environmental Impact	Minimal.	Moderate.	Major
Leak Severity	Minor discharge: may be contained or controlled with readily available resources.	Medium discharge: may not be controlled without special resources.	Major discharge: may not be controllable even with special resources.
Container Integrity	Not damaged.	Damaged but able to contain contents to allow handling or transfer of product.	Damaged to such an extent that catastrophic rupture is possible.
Fire/Explosion Potential	Low	Medium.	High
Commodity or Hazard Class	Placard may not be required. Container may be marked.	Placarded	Placarded with square white background or placarded with car marked INHALATION HAZARD
Evacuation Recommendation	None	100-ft radius or DOT's recommended initial isolation distance.	Evacuation distance shown on emergency response document or DOT's protective action zone.

4 Safety Equipment:

4.1 Safety showers are located at:

4.1.1 North end switchman's shanty

4.1.2 South end switchman's shanty

4.2 Wind socks are located above:

4.2.1 The rip track shed

4.2.2 The yardmaster's tower

4.2.3 The south camera tower.

5 Safe Distances and Places of Refuge: If ordered to take refuge, the following buildings are available and provide limited protection. For maximum protection it is necessary to close all windows and doors and turn off all air handling equipment. When it is safe to do so, open all windows and doors and exit the building.

5.1 North carmen's shanty.

5.2 South switchmen's shanty.

5.3 Yardmaster's tower.

5.4 Truckline terminal building.

5.5 Each foreman or manager must account for all direct report employees. Any exceptions must be reported to the incident commander.

6 Access Points and Staging Areas: There are many entrances and access points at this yard. Four gates have been designated for emergency use. These areas have sufficient land to serve as staging areas for additional equipment if necessary.

6.1 Gate A is located at the south end of the yard. Access is from the north or south service road of IH610 under the overpass bridge.

6.2 Gate B is located at the road crossing in the 6800 block of Kirkpatrick Boulevard.

6.3 Gate C is located at the north end of the yard. Access is from the 7500 block of Ley Road.

6.4 Gate D is located on the east side of the yard at the end of Fields Street.

7 Command Post Location: The Company command post will be located:

7.1 In proximity to the Houston Fire Department's command post, or

7.2 In the office of the Manager Terminal Operations on the fourth floor of the Yardmaster's Tower.

8 Isolation Tracks: If a leaking container cannot be repaired, it may be moved a short distance for unloading or transfer of contents. The movement of leaking containers must be made under the approval of the manager on duty. Designated isolation tracks are:

8.1 Ley Road team track.

8.2 South end cab track.

9 Special Environmental Considerations: Storm water runoff from Settegast Yard is collected by a series of containment ditches. All water passes through three oil skimmers before being discharged to the city sewers. Should a liquid spill reach the containment ditches, provisions must be implemented to contain the material. This may be accomplished by booms, underflow dams, or dams as appropriate. Booms and sorbent materials may be available from the diesel shop.

10 Maintenance of plan: The responsibility for the maintenance of this plan is shared between the Manager Terminal Operations and the Manger Chemical Transportation Safety. The Manager Terminal Operations shall notify the Manager Chemical Transportation Safety of any changes that affect the operation of this plan. The Manager Chemical Transportation Safety shall periodically review this plan to update it and make corrections, as necessary.

11 Other related plans: The following plans contain provisions which affect this emergency response plan. In order to avoid duplication, those provisions are incorporated into this plan by reference:

11.1 Hazard Communication Program Written Plan.

11.2 Spill Prevention, Control and Countermeasures.

11.3 Facility Response Plan (for large oil storage tanks).

11.4 Storm Water Pollution Prevention Plan.

PERSONNEL ROLES

1 Service Unit:

1.1 Superintendent: The Superintendent, or the senior operating manager, is the Railroad Incident Commander under the Unified Incident Command System. His duties include:

1.1.1 Ensure that required notifications have been made to state and local agencies.

1.1.2 Determine if there have been personal injuries to company employees or the general public and ensure that the receiving hospital has been provided with the name of the commodity, the name of the shipper and emergency medical information, if available. If emergency medical information is not readily available, it can be obtained from CHEMTREC, phone (800) 424-9300.

1.1.3 Determine if train operations have been affected by the emergency and notify the Area Director in the Harriman Dispatch Center.

1.1.4 Proceed to the scene of the incident and establish the Company's command post. It should be either part of the local Incident Commander's command post or in proximity to it.

1.1.5 Establish contact with the local Incident Commander and inform of arrangements made by UPRR to respond to the emergency and its plans to mitigate the emergency.

1.1.6 Conduct a job safety briefing for all persons present. Inform them of the types and quantities of hazardous materials present, and the potential harm from exposure to the commodities. This information is obtained from the emergency response information printed at the bottom of the train consist.

1.1.7 Notify next of kin in the event of death or serious injury to Company employees.

1.2 Director Terminal Operations (DTO):

1.2.1 Immediately respond to the accident scene when an accident involving hazardous materials closes the yard or main line entering the yard.

1.2.2 Act as the Railroad Incident Commander and perform the duties listed under Superintendent until relieved by higher authority.

1.2.3 Supervise efforts by terminal managers to ensure proper handling of the emergency.

1.3 Manager Terminal / Train Operations (MTO):

1.3.1 Immediately respond to all accidents involving hazardous materials. Act as the Railroad Incident Commander and perform the duties listed under Superintendent until relieved by higher authority.

1.3.2 Ensure that the Local Incident Commander is fully informed concerning:

1.3.2.1 The location of the emergency.

1.3.2.2 Identification of the rail cars.

1.3.2.3 Identification of the types and quantities of hazardous materials.

1.3.3 Obtain a copy of the material safety data sheet for each material involved, if possible.

1.3.4 Provide the Local Incident Commander with a copy of the emergency response information for all hazardous materials shipment involved in the accident.

1.3.5 Determine if any Company employees have been injured and arrange for their medical treatment.

1.3.6 Ensure that all road crossings are accessible to emergency vehicles.

1.3.7 Consider measures to protect the environment and limit environmental hazards. Take only those actions that can be accomplished safely.

1.3.8 Assist in the accident investigation.

1.4 Yardmaster:

1.4.1 Receive the initial report of a hazardous materials emergency from terminal employees.

1.4.2 Initiate the emergency notification process in accordance with the terminal's emergency plan.

1.5 Director Track Maintenance:

1.5.1 Coordinate the rebuilding of damaged track by:

1.5.1.1 Estimating damage to track.

1.5.1.2 Ordering required track materials.

1.5.2 Assist in the accident investigation.

1.6 Manager Track Maintenance:

1.6.1 Directly supervise the rebuilding of damaged track.

1.7 Manager Equipment Maintenance:

1.7.1 Conduct the initial assessment of damaged rail cars.

1.7.2 Coordinate the rerailing of damaged rail cars and perform needed repairs to allow them to move to destination.

1.7.3 Assist in the accident investigation.

1.8 Manager Signal Maintenance:

1.8.1 Inspect the signal system and interview crew to ensure it was in proper working order at the time of the accident.

1.8.2 Coordinate and supervise the repair to damaged signal systems.

1.8.3 Assist in the accident investigation.

1.9 Manager Administration and Purchasing:

1.9.1 Arrange for required testing of employees in accordance with the Federal Railroad Administration's regulations relating to drug and alcohol abuse.

1.9.2 Audit invoices arising from the emergency and arrange for their payment.

1.10 Manager Operating Practices:

1.10.1 Determine if employees involved in the accident complied with applicable operating and safety rules.

1.10.2 Retrieve the event recorder from the locomotive if a train accident and examine the recorded data.

1.10.3 Interview the engine crew and other witnesses to determine rules compliance.

2 Other Departmental Resources - Local:

2.1 Manager Chemical Transportation Safety (MCTS)/Special Agent Hazardous Materials (SAHM):

2.1.1 Proceed to the scene of the emergency by the quickest transportation available.

2.1.2 Ensure that the initial job safety briefing for Company employees, its contractors, and representatives from public agencies has been conducted. Ensure that all persons are informed of the types and quantities of hazardous materials present and the potential harm from exposure to the commodities.

2.1.3 Lead a damage assessment team to determine the extent of damage to rail cars, if hazardous materials have been released and threat to the environment.

2.1.4 Take actions to control the release of hazardous materials.

2.1.5 Advise the Superintendent of the extent of damage to rail cars transporting hazardous materials, types and quantities of hazardous materials which have been released, the effect on emergency operations caused by these events and recommendations on how to proceed in a safe manner.

2.1.6 Arrange for response of Radian Corporation (UPRR's air toxic monitoring contractor) and hazardous materials spill clean-up contractor.

2.1.7 Act as liaison for the Superintendent with local emergency response agencies, environmental contractors, shippers representatives and others, as requested.

2.1.8 Serve in the capacity of UPRR'S Safety Officer and coordinate the Company's safety program with the safety officers for the Local Incident Commander and UPRR's contractors.

2.2 Regional Manager Chemical Transportation Safety:

2.2.1 Arrange for additional manpower and equipment to ensure the MCTS has adequate resources.

2.2.2 Supervise and conduct the emergency transfer of hazardous materials from damaged rail cars or containers using Company equipment.

2.2.3 Evacuate harmful residues of hazardous materials from rail cars or containers by flaring, neutralization, or other means to make them safe for handling at the accident scene and for return to owner.

2.2.4 Ensure transfer equipment is decontaminated, cleaned, and reconditioned for its prompt return to service.

2.3 Special Agent (SA):

2.3.1 Establish contact with local law enforcement agencies to determine the scope of their activities and request any additional assistance, if required.

2.3.2 Exclude all persons not directly involved in response to the emergency from the scene, including the support zone.

2.3.3 Prevent trespassers from entering or remaining on Company property.

2.3.4 Provide security for high value loads involved in the incident.

2.4 Manager Claims Investigation:

2.4.1 Travel to the emergency scene and report to the Company's command post.

2.4.2 Coordinate evacuation plans for persons living or working in proximity to the right-of-way with the local incident commander.

2.4.3 Establish an emergency claim processing center, if one is necessary, at a facility near the yard.

2.4.4 Conduct an investigation of the Company's liability position, under the direction of the Law Department, and claims that may arise from an evacuation, spill, explosion, or toxic exposure.

2.4.5 Handle claims that may arise from personal injury, property damage, business interruption, or evacuation.

2.5 Manager Quality Operations:

2.5.1 Assist MCTS in arranging for offloading, transfer, or disposition of hazardous materials.

2.5.2 Inspect lading for damage and coordinate with shipper for transfer, salvage, or disposition of non-hazardous commodities.

2.6 General Solicitor:

2.6.1 Evaluate the Company's legal position relative to the emergency situation.

2.6.2 Establish contact with federal, state, and local elected officials to resolve legal or community affairs issues.

2.6.3 Research the accident with the Casualty Management Department to assess the Company's position with regard to liability.

2.6.4 Coordinate with the Casualty Management Department in its effort to determine Company policy regarding claim disposition.

3 Other Departmental Resources - Headquarters:

3.1 Area Director-Harriman Dispatch Center (HDC): Conduct operations in accordance with the section titled "HARRIMAN DISPATCH CENTER NOTIFICATION PROCEDURES AND COMMAND POST OPERATIONS".

3.2 Director / Manager Chemical Transportation Safety (DCTS):

3.2.1 Immediately report to UPRR's off-site command post at the HDC.

3.2.2 Ensure that required notifications have been made to:

3.2.2.1 The National Response Center.

3.2.2.2 The Local Emergency Response Agency.

3.2.2.3 The designated State agency.

3.2.2.4 Chemtrec.

3.2.2.5 The MCTS/SAHM.

3.2.3 Provide expert technical advice concerning the hazardous materials involved in the incident to the executive officers and department heads.

3.2.4 Proceed to the scene of the accident with other members of the "go team" by Company aircraft or other means.

3.2.5 Assist the MCTS/SAHM in the performance of their duties.

3.2.6 Render final written reports concerning hazardous materials releases to federal and state agencies.

3.3 Director / Manager Environmental Field Operations (DEFO/MEFO):

3.3.1 Immediately report to UPRR'S off-site command post at the HDC.

3.3.2 Ensure that required notifications have been made to:

3.3.2.1 The National Response Center.

3.3.2.2 The designated State agencies.

3.3.3 Provide advice concerning the environmental risk from hazardous materials involved in the incident to the Executive Officers and Department Heads.

3.3.4 Proceed to the scene of the accident with other members of the "go team" by Company aircraft or other means.

3.3.5 Report to the Company command post.

3.3.6 Act as liaison for the Superintendent with representatives from federal and state environmental agencies and environmental managers employed by shippers.

3.3.7 Arrange for sampling and analysis of soil and water samples.

3.3.8 Direct the remediation activities of spill clean-up contractors to ensure compliance with federal and state regulations relating to clean-up and disposal of spills of hazardous waste.

3.3.9 Prepare written close out reports covering remediation of the spill to federal and state agencies.

3.4 Regional Director Public Relations:

3.4.1 Travel to the scene of the accident with the "go team" and conduct media briefings on a regularly scheduled basis, or as new information becomes available.

3.4.2 Determine status of emergency efforts from the Superintendent and other Company personnel; representatives of federal, state and local agencies; contractors hired by the Company; and, representatives from the shipper whose commodities are involved in the accident, to ensure accurate and timely reporting of events.

3.5 General Director Car System Shop / Director Field Maintenance (Car):

3.5.1 Immediately report to UPRR's off-site command post at the HDC.

3.5.2 Determine extent of damage to locomotives, rail cars and lading.

3.5.3 Ensure that a derailment contractor is responding to the scene of the accident with adequate resources.

3.5.4 Proceed to the accident scene with other members of the "go team" by company aircraft or other means.

3.5.5 Coordinate movement of derailed cars into the clear, rerailing of damaged cars and disposition of destroyed cars.

3.5.6 Participate in the investigation of the cause of the accident, if unknown.

3.6 Chief Engineer Maintenance of Way:

3.6.1 Immediately report to UPRR's off-site command post at the HDC.

3.6.2 Determine extent of damage to track, subgrade, bridges and culverts, signals and other structures on the right-of-way.

3.6.3 Ensure that sufficient track panels, ballast and other track materials are enroute to restore the track to operation.

3.6.4 Proceed to the accident scene with other members of the "go team" by company aircraft or other means.

3.6.5 Coordinate the rebuilding of the track and other structures.

3.6.6 Participate in the investigation of the cause of the accident, if unknown.

3.7 General Director Operating Practices:

3.7.1 Immediately proceed to UPRR's off-site command post at the HDC.

3.7.2 Ensure that arrangement have been made for employee testing in accordance with Federal Railroad Administration rules concerning drug and alcohol abuse.

3.7.3 Ensure that event recording tapes are secured for analysis.

3.7.4 Determine compliance with operating and safety rules by Company employees.

3.8 Director Derailment Prevention:

3.8.1 Immediately proceed to UPRR's off-site command post at the HDC.

3.8.2 Proceed to the scene of the accident with other members of the "go team" by Company aircraft, or other means, if the cause of the accident is unknown.

3.8.3 Determine the cause of the accident with other members of the "go team", advise executive officers and department heads the cause of the accident and make recommendations to prevent recurrence.

4 EXECUTIVE DEPARTMENT - HEADQUARTERS:

4.1 Chairman:

4.1.1 Ensure that financial and human resources are available to respond to an accident involving hazardous materials to protect human health and the environment and to restore the operation of the railroad.

4.1.2 Inform the Chairman, Union Pacific Corporation and other corporate executive officers of events concerning the hazardous materials accident.

4.2 Executive Vice President Operation:

4.2.1 Ensure that department heads in the Operating Department know they are responding to an accident involving hazardous materials and are acting in accordance with plans.

4.2.2 Inform the Chairman, UPRR, and other Company executive officers of events concerning the hazardous materials accident.

4.3 Executive Vice President Marketing/Sales:

4.3.1 Inform shippers of the hazardous materials shipments involved in the accident of events concerning the accident.

4.3.2 Ensure that the National Customer Service Center and the Quality Operations Department are providing required assistance to shippers, consignees, and the Operating Department.

4.4 Executive Vice President Finance & Information Technologies:

4.4.1 Ensure that adequate financial resources are available to fund hazardous materials emergency response activities.

4.5 Vice President Law:

4.5.1 Ensure that elected or appointed officials at the federal, state and local level are fully informed of the events concerning the hazardous materials accident and UPRR's measures undertaken to protect human health and the environment.

4.5.2 Coordinate all legal efforts on behalf or UPRR.

4.6 Assistant Vice President Public Relations:

4.6.1 Ensure that adequate media coverage is provided at the scene of the accident.

4.6.2 Provide updates to national media on request.

5 Department Heads - Headquarters:

5.1 Vice President Transportation:

5.1.1 Ensure that general superintendents transportation and superintendents transportation have necessary resources to protect human health and environment at the scene of the accident and to restore train operations.

5.2 Vice President Risk Management:

5.2.1 Ensure that managers from Chemical Transportation Safety, Environmental Management, Casualty Management, and Police are fulfilling their responsibilities in ac-

cordance with this plan.

5.2.2 Provide updated information to the EVPO and VP Law as the situation requires.

5.3 Vice President Engineering Services:

5.3.1 Ensure that required resources are available to restore the track, structures, signal and other track facilities to operation.

5.4 Vice President Supply & Maintenance Operations:

5.4.1 Ensure that necessary tools, equipment and supplies are made available at the accident scene to support operations.

5.4.2 Ensure that necessary manpower and equipment are available from Car Maintenance to handle damaged locomotives and rail cars.

5.5 Assistant Vice President Intermodal Operations:

5.5.1 Ensure that intermodal ramps respond to hazardous materials emergencies in accordance with this plan.

6 Staff - Headquarters:

6.1 Senior Assistant Vice President Train Management:

6.1.1 Immediately respond to the HDC for major accidents involving hazardous materials.

6.1.2 Ensure that the HDC off-site command post functions in accordance with the plan.

6.2 Assistant Vice President Environmental Management:

6.2.1 Ensure that DEFO's and MEFO's have responded to the accident scene and are coordinating efforts to protect the environment with federal, state and local environmental agencies.

6.2.2 Arrange for the director environmental field operations to conduct remedial field investigation, develop a remediation plan and contract for services to remediate the spill site in accordance with federal and state environmental regulations.

6.3 General Director Police:

6.3.1 Ensure that adequate site security exists at the scene of the accident and that railroad police are coordinating efforts with local law enforcement agencies.

6.3.2 Arrange for an investigation by federal, state and local law enforcement agencies working with railroad police if the cause of the accident is due to criminal activity.

6.4 General Director Chemical Transportation Safety:

6.4.1 Ensure that MCTS and/or SAHM have responded to the scene of the hazardous materials accident in a timely manner.

6.4.2 Arrange for the Director Chemical Transportation Safety and Manager Technical Resources (MTR) to assist the local MCTS or SAHM, as required.

6.4.3 Update the VP Risk Management of events from the accident scene.

6.5 General Director Claims:

6.5.1 Ensure that the Manager Claims is at the scene of the accident.

6.5.2 Arrange for additional resources to support the Manager Claims, if required.

6.5.3 Update the VP of events from the accident scene.

SAFETY BRIEFINGS AND SITE SAFETY PLANS

1 General: Job safety briefings and site safety plans are required for accidents involving hazardous materials when there is a reasonable belief that the release or threatened release poses a significant present or potential hazard to human health and safety. This determination will be made by the senior transportation manager when acting as the company's incident commander, or his designated representative.

1.1 Job safety briefings are required upon arrival at a Level 2 or 3 Incident, or when:

1.1.1 Uprighting or stabilizing cars containing hazardous materials.

1.1.2 Rerailing cars which contain a load or a residue of a hazardous material, or

1.1.3 Off-loading hazardous materials into trucks or transferring hazardous materials into other rail cars.

1.2 Site safety plans are required upon completion of emergency response operations.

2 Initial Job Safety Briefing: The job safety briefing will consist of a series of meetings between first arriving managers from the Company, emergency responders, and others with a responsibility for protection of the health and safety for persons in proximity to the scene of the accident, or protection of the environment. The manager train/terminal operations will conduct the initial briefing as soon as practical. The manager chemical transportation safety will hold followup meetings for late arrivals, at change of shifts, or when there is a significant change in conditions at the scene. The briefing will consist of:

2.1 Identification of public and railroad incident commanders and safety officers:

2.1.1 The railroad incident commander will wear a high visibility fluorescent/reflective nylon hard hat cover.

2.1.2 The company safety officer ordinarily will be the manager chemical transportation safety (MCTS).

2.2 Discussion of the potential risk from hazardous materials, as deter-

mined by the initial site survey, including:

2.2.1 Condition of each car,

2.2.2 Contents of each car,

2.2.3 Chemical and physical properties of the materials as described on the hazardous materials printout from the bottom of the train consist,

2.2.4 Behavior of the material when released, and

2.2.5 Health hazards from contact with the material.

2.3 Personnel protective equipment and decontamination procedures,

2.4 Identification of work zones, including the exclusion area, decontamination area, restricted area, command post, and other support areas.

2.5 Emergency signals, and

2.6 Evacuation route and place of assembly.

3 Site Safety Plan: The site safety plan is prepared by the railroad's emergency response contractor(s) before beginning work. If no contractor(s) are present, this plan will be prepared by the manager chemical transportation safety. The plan should be supplemented with a copy of the train consist or a yard inventory of cars containing hazardous materials in a yard, together with the hazardous materials printout from the bottom of the train consist. To complete the plan:

3.1 Site description:

3.1.1 Name the chemical that has been spilled together with the car initials and number. Include the same information for cars that have been heavily damaged and pose a threat of release.

3.1.2 Identify area affected by the spill and describe:

3.1.2.1 Health hazards, such as pooled hazardous materials, contaminated soil or the dispersion area for a vapor cloud and

3.1.2.2 Geographic hazards, such as bridges, water-filled ditches, underground pipelines, fiber optic cables or similar natural or manmade items which have an adverse effect on the operation.

3.1.3 Identify the population which would be included within the greatest evacuation distance recommended in the emergency response procedure printed at the bottom of the train consist or similar document.

3.1.4 Describe the weather.

3.2 Railroad emergency response organization:

3.2.1 Enter names and cellular or office telephone numbers for Company managers at the scene. Enter N/A for those positions listed but not present.

3.3 Local emergency response organization:

3.3.1 Request representatives from local emergency response agencies to provide information requested. Indicate the person who is the Incident Commander.

3.4 Shipper contacts:

3.4.1 Enter names of shippers of the hazardous materials involved in the accident, the name of the personal contact and the call-back telephone number.

3.5 Contractors:

3.5.1 Enter information requested for each of the Company's contractors on-scene. The names of both the senior manager and the safety officer for each organization should be provided.

3.6 Environmental/Health/Safety:

3.6.1 Identify primary representatives from other public agencies.

3.7 Site plan:

3.7.1 The site plan is to be completed by making a sketch of the accident scene. Include on the sketch:

3.7.1.1 A north arrow.

3.7.1.2 Location of the track.

3.7.1.3 Approximate location of each car. Identify each car by car type, initial and number, if possible.

3.7.1.4 The exclusion area.

3.7.1.5 The decontamination area.

3.7.1.6 The support area, including staging, eating-drinking-smoking, and hazardous materials storage areas, should be shown on the plan.

3.7.2 The location of each of the above areas, together with the required level of personal protective equipment, when appropriate, must be entered in the narrative portion of the plan.

3.8 Personal protective equipment and decontamination:

3.8.1 Identify personal protective equipment required and enter the information in the space provided.

3.8.1.1 Determine the required material of construction for the personal protective equipment from the information included with the emergency response printout.

3.8.1.2 Determine that the personal protective equipment available for use is compatible. If so, enter the name of the acceptable material next to the item listed under the appropriate level.

3.8.2 Identify required solutions or mixtures of decontamination compounds.

3.9 Emergency medical care:

3.9.1 Enter the location where first-aid equipment is available at the scene.

3.9.2 Determine the location of the nearest hospital and provide directions. Contact the hospital and inform them of the hazardous materials at the scene of the accident and the nature of the potential injuries that could result from exposure.[1]

3.10 Monitoring equipment:

3.10.1 Indicate the type of available and suitable monitoring equipment, when monitoring is to be done and by whom.

3.10.1.1 The MCTS or SAHM will have a combustible gas detector.

3.10.1.2 Radian Corporation, the Company's multi-media monitoring contractor has a wide variety of air monitoring equipment.

3.10.1.3 Federal and state environmental agencies that may be at the scene often will have various items of monitoring equipment that may be useful.

3.11 Emergency signals:

3.11.1 Identify the emergency signals to be used in the event of an emergency requiring immediate shutdown of the operation and evacuation from the area.

[1] The requirements of this item can be disregarded if an emergency medical team with ambulance is standing by at the scene.

SITE SAFETY AND HEALTH PLAN

1 SITE DESCRIPTION:

Date Subdivision MP/CP Station

Chemical Hazards and Area Affected:

Site Hazards and Area Affected:

Population Exposures: Weather:

2 RAILROAD EMERGENCY RESPONSE ORGANIZATION:

Title	Name	Phone
Railroad Incident Commander:		
Manager Train/Terminal Opns:		
Manager Track Maintenance:		
Manager Mechanical Maintenance:		
Manager Chem. Trans. Safety:		
Manager Environmental Management:		

3 LOCAL EMERGENCY RESPONSE ORGANIZATION:

Agency	Name	Phone
Fire:		
Sheriff/Police:		
Ambulance/EMT:		
Hospital:		

4 SHIPPERS CONTACTS:

Company	Name	Phone

5 RAILROAD CONTRACTORS:

Company	Name	Phone

6 ENVIRONMENTAL/HEALTH/SAFETY:

Agency	Name	Phone
Local:		
State:		
Federal:		

Diagram of scene:

SITE PLAN

7 WORK ZONES:

Location	PPE Level
Command Post:	A B C D Other
Exclusion Area:	A B C D Other
Decontamination Area:	A B C D Other
Support/Staging Area:	A B C D Other
Eating/Drinking/Smoking Area:	A B C D Other
Hazardous Materials Storage Area:	A B C D Other

8 PERSONAL PROTECTIVE EQUIPMENT (PPE):

Level A: SCBA Level B: SCBA
Encapsulating suit:
Splash suit Outer gloves Outer & inner gloves
Outer boots Outer & inner boots
Level C: Air purifying respirator
Level D: Hard hat Splash suit Safety glasses
Safety Shoes Work uniform Gloves

Note: If air purifying respirators are authorized, verify the canister is appropriate for use at the site.

9 DECONTAMINATION PROCEDURES:

Personnel and equipment leaving the Exclusion Zone shall be thoroughly decontaminated. The following decontamination stations are for persons wearing Level A, B, or C protection:

1. Equipment drop
2. Outer garment wash and rinse
3. SCBA tank exchange
4. Outer boot and glove removal
5. Outer garment removal
6. SCBA removal
7. Field wash

The following decontamination equipment is required:

_____

_____

_____

10 EMERGENCY MEDICAL CARE:

First-aid equipment is available at the following locations:
First-aid kit
Emergency eye wash
Emergency shower

Other
Nearest hospital
Phone
Directions to nearest hospital
Hospital was contacted at and briefed on the accident, potential hazards, and chemical involved.

11 MONITORING EQUIPMENT:

Type	Date/Time/Interval	By Whom
Combustible gas detector:		
Photoionization detector:		
Organic vapor analyzer:		
Colorimetric tubes:		
Other:		

12 EMERGENCY SIGNALS:
Hand:
Audible:
Other:

13 SAFETY BRIEFING SIGN-IN SHEET:

TERMINATION PROCEDURES

1 General: The termination process includes a debriefing of employees and contractors prior to their departure from the incident site, completion of a post incident analysis and reporting of the incident, and critiquing the incident with the participants. The following procedures ensure the personal safety of railroad personnel, its contractors, emergency response personnel and the public; establish a record of the chronology of the incident and resources used; share lessons learned from these incidents; and, provide a mechanism for developing new procedures or training programs to ensure continuous improvement.

2 Debriefing/Turnover: To ensure an orderly transition of field personnel at the incident the following responsibilities must be met:

Table 2. Debriefing responsibilities.

Each manager or representative of the contractor on the incident site.	Identifies the railroad incident commander or designated representative.
	Before leaving the site, contacts the railroad incident commander, or designated representative, and conducts a turnover or requests a debriefing.
	Participates in debriefing with the railroad incident commander before leaving the site.
	Provides information requested during the debriefing process.
Railroad incident commander, or designated representative.	Summarizes activities performed.
	Identifies problems requiring immediate attention.
	Discusses action plans for future activities.
	Reviews health hazards and symptoms of over-exposure of released hazardous materials.
	Names follow-up contact in case of symptoms of over-exposure.
	Determines disposition of contaminated, damaged, or destroyed equipment.
	Assigns responsibility for compiling information for post-incident analysis.
Manager or contractor's representative.	Signs and enters time of debriefing on Log Sheet.

3 Post Incident Analysis (PIA): At the close of each incident the following responsibilities must be met to ensure proper reporting and prepare for critique sessions.

Table 3. Reporting responsibilities.

CTS Manager	Prepares drafts of Form 5800.1 or Hazardous Materials Incident Report (HMI) as soon as possible but in no event later than five working days after returning to office.
	Forwards draft Form 5800.1 or HMI to CTS Regional Manager.
CTS Regional Manager	Reviews draft Form 5800.1 or HMI, verifies facts are listed properly and explained accurately.
	Discusses necessary revisions with CTS Manager.
CTS Manager	Makes necessary corrections to DOT 5800.1 or HMI and enters reports in computer.
Railroad Incident Commander, or designated representative.	Compiles data concerning incident from persons assigned to collect information during debriefing within five working days after completion of emergency operations.
	Prepares draft of post-incident analysis.[2]
	Identifies key responders to the incident.
	Distributes draft post-incident analysis to critique participants for review and identification of any discrepancies.
Key responders to incident.	Reviews draft PIA report,verifies facts are listed properly and explained accurately.
	Informs Railroad Incident Commander of any discrepancies within five days of receipt of draft PIA report.
Railroad Incident Commander, or designated representative.	Identifies critique participants to include key responders and their supervisors.
	Arranges for facilities to hold critique.
	Schedules critique within 15 to 30 days following receipt and review of comments on draft PIA report from key responders.
	Distributes final corrected copy of PIA report to those invited to requested to participate in the critique in advance of its scheduled time.

[2]The Incident Level (1, 2 or 3) will determine the type of reporting which is required. For most Level 1 incidents, the DOT Form 800.1 or HMI report will be sufficient. For Level 2 and 3 incidents other supporting documents may be required in addition to the DOT Form 5800.1 or HMI report to meet PIA documentation requirements.

4 Internal Critique: Internal critiques will be conducted by conference call. Each manager participating in the critique will have a copy of the chronological report prepared by the Area Director in the Harriman Dispatch Center.

Table 4. Internal critique responsibilities.

Railroad Incident Commander, or designated representative.	Serves as the critique leader.
	Assigns a critique participant as the recorder to take notes and prepare the critique report.
	Introduces participants and procedures.
	Asks a representative from each work group to present their observations. Ensures direct questions receive direct answers.
	Identifies issues by asking representatives from each work group to comment on the group's performance, including strengths and weaknesses.
	Identifies those items requiring future action.
	Assigns action items to persons for completion.
	Summarizes lessons learned.
Recorder	Prepares critique report identifying the lessons learned and the plan of action for handling open issues.
	Forwards critique report to all critique participants and CTS Regional Managers.
Railroad Incident Commander, or designated representative.	Forwards critique report to General Superintendent, Assistant Vice President Environmental Management and General Director Chemical Transportation Safety.
General Superintendent, AVP/EMG and GD/CTS.	Commits resources to resolve open action items.
	Directs commitment of time and resources to complete action items and notifies critique participants of final handling.
Railroad Incident Commander, or designated representative.	Tracks progress of open action items.
	Advises AVP/EMG and GD/CTS of progress of open action items on a timely basis.
	Arranges for the filing of incident reports to affected public agencies.

5 Internal Reports: Except for Form 5800.1, which is required to be submitted to the U.S. DOT, internally prepared reports are confidential and may not be released to any outside party without permission of the Law Department.

5.1 Derailment reports from TCS-AIRS may be obtained by making the

following TCS entries:

5.1.1 Type "=as" and enter.

5.1.2 Type "1" on the request area of the main menu screen and enter.

5.1.3 The screen will display a listing of all recent derailments. Move the cursor down and place a "V" to the left of the derailment report you wish to view.

5.1.4 Type "PR I******" (where ****** represents your printer lata number) over "CP" to obtain a copy of the report.

5.2 A hazardous materials incident report not resulting from a train accident may be obtained by making the following TCS entries:

5.2.1 Type "HE *RX: (where * is replaced by the initial of the region and enter.

5.2.2 Type "SW USE (message name) *RX (where * is replaced by the initial of the region) and enter.

5.2.3 Enter your printer lata number in the space provided and delete all other printer latas shown.

5.2.4 Move the cursor to the blank space following the word "Send" at the bottom of the page, type "x" and enter.

6 External Critique: The Manager Chemical Transportation Safety will contact the Local Agency Incident Commander to determine the time and location for any critique scheduled for local agencies and determine if the Company will be allowed to attend and participate.

Table 5. External critique responsibilities.

CTS Manager	Contact Local Incident Commander and determine time and location for any critique scheduled by local agencies and determine if UPRR representatives will be allowed to attend.
	Advise the Railroad Incident Commander, AVP/EMG and GD/CTS and CTS Regional Manager of findings.
	Arrange to attend if duties allow.
	Prepare a report covering the critique and forward copies of the report to the Railroad Incident Commander, AVP/EMG and GD/CTS.
Railroad Incident Commander and other representatives of work groups.	Arrange to attend the critique scheduled by local agencies if duties allow.

TRAINING

1 Policy: All employees whose duties affect the transportation of hazardous materials will be trained to perform the tasks assigned to them in response to releases or potential releases of hazardous materials, oil, or other environmental pollutants. Training will be provided in compliance with Federal Occupational Safety and Health Administration (OSHA) requirements.

2 Levels of training:

2.1 First Responder Awareness Level - Employees (TE&Y, Engineering, Mechanical, other field personnel) who are likely to witness or discover a release of hazardous substances (hazardous materials) and who will initiate an emergency response sequence by notifying the proper authorities that the release has occurred.

2.1.1 Employees at this level must be able to:

2.1.1.1 Explain what hazardous materials are.

2.1.1.2 Explain the expected hazards and potential outcomes associated with the presence of hazardous materials.

2.1.1.3 Explain their role in an emergency involving hazardous materials.

2.1.1.4 Recognize hazardous materials in an emergency (rail transportation).

2.1.1.5 Identify the hazardous materials present in an emergency, if possible (name, identification number, or placard).

2.1.1.6 Determine the basic hazard and response information on each hazardous material present.

2.1.1.7 Make the appropriate notifications as required in the Emergency Response Plan for their location.

2.2 First Responder Operations Level - Employees (operating managers and headquarters staff who respond to emergencies) who respond defensively to releases or potential releases of hazardous substances (hazardous materials) for the purpose of protecting nearby persons, property, or the environment from the effects of this release.

2.2.1 In addition to training at the First Responder Awareness Level. employees at this level must be able to:

2.2.1.1 Explain basic hazard and risk assessment techniques.

2.2.1.2 Determine the hazardous materials present.

2.2.1.3 Recognize the various types of transportation containers and vehicles.

2.2.1.4 Determine the likely behavior of the hazardous material and its container.

2.2.1.5 Plan a defensive response to the hazardous materials involved.

2.2.1.6 Select an appropriate defensive strategy for the hazardous materials involved.

2.2.1.7 Select proper personal protective equipment.

2.2.1.8 Perform basic control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available at their location.

2.2.1.9 Use proper personal protective equipment provided.

2.2.1.10 Implement basic decontamination procedures.

2.2.1.11 Explain relevant standard operating procedures and termination procedures.

2.3 Hazardous Materials Technician - Employees (CTS, EMG, and contractors) who respond offensively to releases or potential

releases of hazardous substances (hazardous materials) for the purpose of stopping the release (plug, patch, or otherwise stop the release).

2.3.1 In addition to training at the First Responder Awareness and Operations Level, employees at this level must be able to:

2.3.1.1 Implement the company's emergency response plans.

2.3.1.2 Analyze the hazardous material incident to determine the magnitude of the response problem.

2.3.1.3 Classify, identify, and verify known and unknown materials by using field survey instruments.

2.3.1.4 Determine the physical and chemical properties of the hazardous materials involved.

2.3.1.5 Explain basic chemical, radiological, and toxicological terminology and behavior.

2.3.1.6 Determine the likely behavior of the hazardous material and its container.

2.3.1.7 Plan an appropriate response within the capabilities of the available personnel and equipment.

2.3.1.8 Determine the appropriate strategy for approaching release sites and containing the release.

2.3.1.9 Select appropriate chemical personal protective equipment.

2.3.1.10 Select appropriate decontamination procedures.

2.3.1.11 Develop a site safety and control plan.

2.3.1.12 Implement a response to favorably change the outcome of the incident in a manner consistent with the local emergency response plan and the organization's standard operating procedures.

2.3.1.13 Function within an assigned role in the Incident Command System.

2.3.1.14 Perform control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available.

2.3.1.15 Use the chemical personal protective equipment provided.

2.3.1.16 Implement the selected decontamination procedures.

2.3.1.17 Evaluate the progress of the emergency response to ensure that the response objectives are being met safely, effectively, and efficiently.

2.3.1.18 Adjust the response plan to the conditions of the response and implement higher levels of response when required by the changes to the response plan.

2.3.1.19 Implement termination procedures.

2.4 Railroad Incident Commander - Employees (CTS, EMG, operating managers, and headquarters staff who respond), who at any one time, are responsible for and in control of the railroad response effort. The Railroad Incident Commander is responsible for the direction of the railroad operations at the incident in coordination local on-scene incident commander.

2.4.1 In addition to training at the First Responder Awareness and Operations Level employees at this level must be able to:

2.4.1.1 Implement the company's emergency response

plans.

2.4.1.2 Implement the incident command system.

2.4.1.3 Analyze the hazardous material incident to determine the magnitude of the response problem.

2.4.1.4 Plan and implement an appropriate response within the capabilities of the available personnel and equipment.

2.4.1.5 Implement a response to favorably change the outcome of the incident in a manner consistent with the local emergency response plan and the organization's standard operating procedures.

2.4.1.6 Evaluate the progress of the emergency response to ensure that the response objectives are being met safely, effectively, and efficiently.

2.4.1.7 Adjust the response plan to the conditions of the response and implement higher levels of response when required by the changes to the response plan.

3 Frequency of Training:

3.0.1 Initial training will be provided within 90 days of assignment.

3.0.2 Refresher training will be provided once every year.

3.1 Source of Training:

3.1.1 Contact a representative of the Chemical Transportation Safety Group for assistance in providing necessary training.

4 Record Keeping for Training of Company Employees: A record of all hazardous material training for company employees shall be maintained in the Personnel Information Network System (PINS).

4.1 A record of the employees initial training will be entered into PINS by the Manager Hazardous Material Training.

4.2 Subsequent training data will be entered into PINS by the employees' supervisor.

MEDICAL SURVEILLANCE

1 General: The Medical Director has established and maintains a comprehensive medical surveillance program.[3]

1.1 Covered employees: The following employees are subject to the requirement of this section.

1.1.1 All managers of the Chemical Transportation Safety Group of the Risk Management Department.

1.1.2 All managers of the Environmental Management Group of the Risk Management Department.

1.1.3 All Special Agents Hazardous Materials in the Police Department of the Risk Management Department.

1.1.4 All employees who are injured, become ill or develop signs or symptoms due to possible overexposure to hazardous substances during an emergency response operation.

1.1.5 All employees who have been exposed to hazardous substances or health hazards at or above the permissible exposure limit.

1.2 Availability of medical evaluations: Medical evaluations and consultations shall be made available to covered employees on the following schedule:

1.2.1 When enrolled in the Respiratory Protection Program and assigned to one of the positions covered by subparagraphs 1.1.1. through 1.1.3 above.

1.2.2 During the birth month each year thereafter.

1.2.3 At termination of employment or reassignment to other duties not involving hazardous materials emergency response unless the employee has had a medical examination within the previous six months with no subsequent exposure to hazardous substances.

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[3]See Union Pacific Railroad Safety Resource Manual, which contains the Company's safety regulations, policies and programs, including Section IV-F, " Medical Evaluation to Wear a Respirator."

1.2.4 Promptly after notification by the employee to the medical director of an overexposure, illness, or other health hazard from a hazardous substance.

1.2.5 At any time scheduled by the Medical Director.

1.2.6 Examinations shall be provided without cost to the employee, without loss of pay for lost time, and at a reasonable time and place.

1.3 Content of medical evaluation: The Medical Director shall inform the examining physician of the employees' assigned duties, the personal protective equipment worn by the employee, its frequency of use, and special work conditions such as wearing of chemically protective clothing. The employee shall provide a description of any physical symptoms they have experienced, or are experiencing which seem unusual. The medical evaluation shall consist of:

1.3.1 Medical history.

1.3.2 Medical screening testing including:

1.3.2.1 Height/weight.

1.3.2.2 Blood pressure/pulse.

1.3.2.3 Visual acuity.

1.3.2.4 Urinalysis (dipstick).

1.3.2.5 Spirometry (FEV1, FVC, FEV1/FVC).

1.3.2.6 Audiometry.

1.3.2.7 Chest x-ray.

1.3.2.8 EKG (electrocardiogram: resting, 12 lead).

1.3.2.9 Blood profile.

1.3.2.10 Hemoglobin.

1.3.2.11 Blood sugar.

1.3.2.12 Lipid profile.

1.3.2.13 Graded exercise test.

1.3.2.14 Physician's physical exam.

1.3.3 If indicated, the physician's examination may include evaluation of:

1.3.3.1 Facial contours for gross abnormalities (including facial hair in the seal area) that would make proper fitting or operational wear of a respirator difficult.

1.3.3.2 Gross intranasal or upper airway abnormalities that might interfere with respirator function.

1.3.3.3 Tympanic membrane perforation that might permit toxic leakage through the auditory and eustachian passages.

1.3.3.4 General evaluation of the cardiovascular system to screen for abnormalities. (Added work of breathing through a respirator under emergency response conditions could produce a cardiac overload.)

1.3.3.5 Pulmonary evaluation to screen for functionally significant problems that might be exaggerated further by use of a respirator.

1.4 Physicians written opinion: The Medical Director shall obtain and furnish to the employee a copy of the written opinion from the examining physician which includes:

1.4.1 The physician's opinion as to whether the employee has any medical conditions which would place them at an increased health risk or prevent use of a respirator.

1.4.2 The physician's recommended limitations of duties assigned to the employee.

1.4.3 Results of the medical examination.

1.4.4 A statement that the physician has informed the employee of the results of the medical examination and any medical conditions that require further examination or treatment.

1.5 Recordkeeping: The medical director shall maintain the medical records of employees covered by this section for the duration of employment plus thirty (30) years. The records shall contain at least the following information:

1.5.1 The name and social security number of the employee.

1.5.2 The physician's opinion, recommended limitations, and results of examinations and tests.

1.5.3 Any medical complaints related to exposure to hazardous materials or hazardous substances.

1.5.4 A copy of the information provided by the Medical Director to the examining physician.

2 Emergency Medical Treatment and First Aid:

2.1 Emergency Medical Treatment: Advance first aid personnel must be on standby for all Level Three incidents and any Level Two incident which poses a potential threat of personal injury due to exposure to hazardous materials.

2.1.1 The Public Incident Commander usually will have advance first aid personnel and transportation available at the scene during emergency response operations.

2.1.2 The Company Incident Commander must arrange for advance first aid personnel and transportation during emergency response operations when not provided by the Public Incident Commander.

2.1.2.1 Arrangements should include identification and notification of the nearest hospital emergency room about possible medical problems at the incident, including a listing of hazardous materials involved.

2.1.3 The Company Incident Commander or manager chemical transportation safety may arrange for advance first aid

personnel and transportation during post emergency response operations if there remains a potential threat to human health and safety.

2.2 First Aid: A first aid station must be established at all Level three and Level two incidents capable of providing stabilization for patients requiring offsite treatment and general first aid.

2.2.1 The first aid station may be a part of the emergency medical treatment arrangements made by the Local Incident Commander.

2.2.2 MCTS and SAHM shall have a first aid kit in their assigned vehicles with which to establish a first aid station when necessary.

3 Heat Stress: The wearing of impermeable protective clothing during emergency response can result in heat fatigue. The safe duration of work and rest periods should be determined in accordance with the following guidelines:

3.1 For suggested frequency of physiological monitoring see Table 6:

Table 6. Physiological monitoring schedule.

Adjusted Temperature[4]	Level A, B & C Clothing	Level D Clothing
90-deg. F and above	After 15-min. work	After 45-min. work
87.5 to 90-deg. F	After 30-min. work	After 60-min. work
82.5 to 87.5-deg. F	After 60-min. work	After 90-min. work
77.5 to 82.5-deg. F	After 90-min. work	After 120-min. work
72.5 to 77.5-deg. F	After 120-min. work	After 150-min. work

3.2 Adjusting the work period: The work rate should be adjusted on the basis of heart rate or oral temperature.

3.2.1 Count the radial pulse during a 30-second period as early as possible in the rest period.

[4]Calculate adjusted air temperature by using the equation: Adj air temp deg F = ambient air temp deg F + (13 x % sunshine). Example: Adj air temp deg F = 90 deg F + (13 x .50) = 96.5 deg F.

3.2.1.1 If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same.

3.2.1.2 If the heart still exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third.

3.2.2 Place a clinical thermometer or similar device under the tongue for 3-minutes to measure the oral temperature at the end of the work period and before drinking liquids.

3.2.2.1 If oral temperature exceeds 99.6-deg. F, shorten the next work cycle by one-third and keep the rest period the same.

3.2.2.2 If oral temperature still exceeds 99.6-deg. F at the next rest period, shorten the following work cycle by one-third.

3.2.2.3 Do not continue to wear Level A, B or C protective clothing if oral temperature exceeds 100.6-deg. F.

3.3 Signs and symptoms of heat stress may be indicated by the following:

3.3.1 Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury or death occurs. Competent medial help must be obtained. Signs and symptoms are:

3.3.1.1 Red, hot, usually dry skin.

3.3.1.2 Lack of, or reduced perspiration.

3.3.1.3 Nausea.

3.3.1.4 Dizziness and confusion.

3.3.1.5 Strong, rapid pulse.

3.3.1.6 Coma.

3.3.2 Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include:

3.3.2.1 Pale, cool, moist skin.

3.3.2.2 Heavy sweating.

3.3.2.3 Dizziness.

3.3.2.4 Nausea.

3.3.2.5 Fainting.

3.3.3 Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include:

3.3.3.1 Muscle spasms.

3.3.3.2 Pain in the hands, feet and abdomen.

PERSONAL PROTECTIVE EQUIPMENT

1 Limiting employee exposure: Work practices shall be instituted to reduce and maintain employee exposure below the permissible exposure limits. Whenever work practices are not feasible personal protective equipment (PPE) shall be provided and used in accordance with the following requirements:

2 Protection levels: An ensemble of PPE shall be selected and used which will provide protection to a level of exposure below permissible exposure limits and published exposure levels for known or suspected health hazards.

2.1 Recognized exposure limits are published in these documents:

2.1.1 American Conference of Government Industrial Hygienists Threshold Limit Values.

2.1.2 NIOSH Pocket guide to chemical hazards.

2.2 Four levels of protection are recognized. They are:

2.2.1 Level A -- Fully encapsulating suit, self contained breathing apparatus, inner gloves, and safety boots.

2.2.2 Level B -- Chemical resistant splash suit, self contained breathing apparatus, inner and outer chemical resistant gloves, and safety boots.

2.2.3 Level C -- Chemical resistant splash suit, full face air purifying respirator, inner and outer chemical resistant gloves, and safety boots.

2.2.4 Level D -- Nomex coveralls, safety glasses, work gloves, hard hat, and safety boots.

2.3 During equipment use, each person should remain alert for problems. These may include:

2.3.1 Perception of odors

2.3.2 Skin irritation

2.3.3 Discomfort

2.3.4 Breathing difficulties

2.3.5 Restriction of movement

2.3.6 Pain, nausea, rapid pulse

2.3.7 Interference with movement, vision, or communication

3 SELECTION: PPE selection shall be based on an evaluation of the characteristics of the PPE relative to the requirements of the site, the task, and the hazards identified. Due to the difficulty of field decontamination, disposable PPE is recommended.

3.1 Employees engaged in emergency response that are exposed to hazardous substances presenting an inhalation hazard must wear positive pressure self contained breathing apparatus while engaged in emergency response. A lower level of protection may be used when air monitoring indicates exposures will not be hazardous to employees.

3.1.1 Respiratory protection is required for response to incident levels two and three.

3.1.2 Respiratory protection may be desirable for response to Incident Level 1 or incidental releases.

3.2 For guidelines in the selection of personal protective equipment, see Table 7.

Table 7. Personal Protective Equipment.

BODY PART PROTECTED	TYPE OF CLOTHING OR ACCESSORY	DESCRIPTION	TYPE OF PROTECTION	NOTES
FULL BODY	Totally encapsulating suit (LEVEL A)	One piece garment. Boots and gloves may be attached, or separate	Protects against splashes, dust, gases and vapors.	Does not allow body heat to escape. May contribute to heat stress in wearer. Impairs worker mobility, vision, and communication.
	Splash suit (LEVEL B)	Jacket, hood, pants, overalls, or coveralls.	Protects against splashes, dust, and other materials, but, not against vapors or gases.	Do not use where gas tight or pervasive splashing protection is required. May contribute to heat stress in wearer. Use tape to seal connections between gloves and sleeves.
	Firefighter's protective gear (LEVEL C)	Gloves, helmet, bunker coat, and bunker pants.	Protects against heat, hot water, and some particles. Does not protect against gases, vapors, or chemical permeation.	Decontamination is difficult. Should not be worn in areas where chemical protection is required.
	Nomex coveralls (LEVEL D)	One or two piece garments made of DuPont Nomex.	Provides protection from flash fires. Provides limited protection from liquids.	When worn as undergarments, may add bulk and exacerbate heat stress problems. Recommended undergarment in areas of extreme cold.
HEAD	Hard hat	Hard plastic helmet.	Protects the head from impacts.	

Table 7, continued

BODY PART PROTECTED	TYPE OF CLOTHING OR ACCESSORY	DESCRIPTION	TYPE OF PROTECTION	NOTES
EYES AND FACE	Goggles		Goggles can protect against vaporized chemicals, splashes, large particles, and projectiles.	
	Sweat bands		Prevents sweat induced eye irritation and vision impairment.	
EARS	Ear plugs or muffs		Protect against physiological damage and psychological disturbance.	
HANDS	Gloves	May be integral, attached, or separate from other protective clothing.	Protect hands from chemical contact.	Cuff gloves to prevent liquid from entering sleeve. Wear jacket cuff over glove to prevent liquid from entering glove. Tape seal gloves to sleeve for additional protection.
		Over/undergloves	Provide additional protection to wearer or chemical protective suit.	
		Disposable	Should be worn whenever possible to reduce decontamination.	
FEET	Safety shoes/boots	Boots constructed of chemical resistant materials	Protect feet from contact with chemicals.	
		Steel toe safety boots	Protect feet from compression, or crushing, by moving or falling objects.	Boots should provide ankle support and good traction.
	Disposable shoe covers	Designed to slip over the shoe or boot, made from a variety of materials.	Protect shoes and boots from contact with chemicals.	Covers may be disposed of after use, eliminating decontamination.

Table 7, continued

BODY PART PROTECTED	TYPE OF CLOTHING OR ACCESSORY	DESCRIPTION	TYPE OF PROTECTION	NOTES
RESPIRATORY PROTECTION[5]	Self contained breathing apparatus (LEVEL A & B)	MSA 30 minute air pack.	Provides protection against inhalation of vapors, fumes, mists, and gases.	Facial hair interferes with proper fit. Wearing contact lenses is prohibited. The actual duration of work time may be reduced by strenuous work. Well conditioned individuals use oxygen more efficiently. Larger individuals require more oxygen than small persons. Quick shallow breaths use more air than deep regular spaced breathing.
	Air purifying respirator (LEVEL C)	MSA full face respirator	Provides limited protection against inhalation of vapors, fumes, mists, and gases.	Facial hair interferes with proper fit. Wearing contact lenses is prohibited. Should only be worn when chemical has adequate warning properties of cartridge breakthrough.

3.3 Recognized publications recommending personal protective clothing construction materials and air purifying cartridges are:

3.3.1 Forsberg-Mansdorf Quick Selection Guide to PPE.

3.3.2 AAR Emergency Handling of Hazardous Materials in Sur-

[5]Further information on respiratory protection is contained in Section E of Union Pacific's Safety Resource Manual.

face Transportation, or train consist emergency response information section.

3.3.3 NIOSH Pocket guide to chemical hazards.

3.3.4 3M respirator selection guide.

3.3.5 Manufacturer's material safety data sheets.

4 DONNING AND DOFFING: Fit testing of respirator facepieces and procedures for donning and doffing PPE will be covered in the initial 40 hour Hazardous Waste Operations and Emergency Response Training course and each 8 hour annual refresher course.

5 CONTAMINATION: Some chemical contaminants permeate the PPE construction material. These contaminants are difficult to detect and remove. If chemicals have permeated the construction material they may continue to degrade the PPE and cause an unexpected failure. Some factors affecting permeation are:

5.1 Contact time--longer contact times increase the probability of permeation.

5.2 Concentration--higher concentrations increase the probability of permeation.

5.3 Temperature--higher temperatures generally increase the rate of permeation.

5.4 Physical state--typically gases and vapors tend to permeate more quickly than liquids or solids.

All personnel and equipment must be decontaminated before leaving the work site. Good work practices minimize contamination by reducing contact with the chemicals, i.e. do not walk in spilled materials, do not directly touch spilled materials.

6 DECONTAMINATION: Most chemical contamination occurs at the surface of the PPE. These contaminants can be removed by physical or chemical means. Recommended removal methods are:

6.1 Physical removal--Many contaminants may be removed by physical methods listed below.

6.1.1 Soap and water rinsing.

6.1.2 Wiping, scraping, or brushing.

6.1.3 Evaporation.

6.2 Chemical removal--Some contaminants may require chemical solvents for complete cleaning. A brief guide is listed in Table 8.

Table 8. Decontamination methods

SOLVENT	CONTAMINANT
Water	short chain hydrocarbons inorganic compounds salts some organic acids
Dilute acids	caustic (basic) solutions amines hydrazines
Dilute bases for example-- detergent, soaps	acidic solutions phenols thiols
Organic solvents for example-- alcohol, acetone, common fuel products (diesel or kerosene)	nonpolar compounds some organic compounds
Caution- some organic solvents may degrade PPE material	

6.3 Disposal--If PPE cannot be fully decontaminated, it must be disposed of properly.

7 STORAGE: Clothing and equipment must be stored properly to prevent damage from moisture, sunlight, damaging chemicals, dust, and extreme temperatures.

8 INSPECTION/MAINTENANCE: Each person shall periodically inspect assigned personal protective equipment. Inspections should be made before and after each use, and at regular intervals when PPE is stored. Extra attention should be given to items carried in response vehicles. All items should be examined for signs of physical damage, such as cuts, tears, or abrasions. In addition, look for signs of chemical degradation, such as discoloration, stiff, or sticky material. Respiratory protection equipment must be inspected monthly. If an item is damaged, it must be removed from service and repaired by competent personnel.

A written record of each inspection must be maintained.[6] A copy of that record must be sent to R.M. Stine, annually. R.M. Stine shall maintain and keep the Union Pacific Railroad Respiratory Equipment Log (Form 20851) and Union Pacific Railroad Standard Operating Procedures (Form 20850) for each Chemical Transportation Safety Group employee issued respiratory equipment. Completed copies of the SOP and log will be forwarded by February 1 of the following year to:[7]

Director of Industrial Hygiene
Union Pacific Railroad Company
1416 Dodge Street
Omaha, Nebraska 68179

9 INVENTORY: These items are carried by managers chemical transportation safety and special agents hazardous material in their response vehicles.

MSA self contained breathing apparatus	1 each
SCBA 30minutecylinders	4 each
Full face respirators	2 each
Acid gas/organic vapor cartridges	1 box
Anhydrous ammonia cartridges	1 box
Combination cartridges	1 box
Pesticide cartridges	1 box
Fully encapsulating suit	2 each
PVC chemical splash suit	2 each
Assorted chemical gloves	1 box
Disposable coveralls	1 box

[6]Inspection records are maintained on form 244 for cartridge type full face respirators and on form 27013 for self contained breathing apparatus.

[7]Union Pacific Safety Resource Manual Section E part 2.0

RESPONSE EXERCISES

1 INTRODUCTION: The purpose of exercises is to evaluate the effectiveness of training and employees' understanding of the emergency procedures. These exercises range from a simple communications drill to a full scale response involving public agencies. Brief guidelines are listed in Table 9.

Table 9. Exercise guidelines

	WHO	WHAT	WHERE
COMMUNICATIONS	Harriman Dispatch Center employees, including Manager Data Integrity and Network Control Center.	Check tieups, use ER files, make actual calls to field employees.	HDC and Omaha headquarters.
FIELD EVALUATIONS	MOP, MTO, field employees, including operating, maintenance of way, and mechanical.	Check to see if employees know who to call and what information is needed to report a hazardous material incident.	Terminals and main lines, in coordination with other efficiency tests.
TABLE TOP (Company Employees)	Managers from operating, mechanical, engineering departments, and chemical transportation safety.	Examine incident management skills.	Staff meetings, or in conjunction with annual rules classes.
TABLE TOP (Public agencies)	Operating managers, representatives from public agencies, (i.e. fire, police, EMS, regulatory) and railroad contractors.	Examine coordination with outside agencies.	Local conference room.
FULL SCALE	All available employees, public agencies, and contractors.	Full test of emergency plans, (notification, staging areas, sheltering areas, communications.)	Major terminals or other yards as requested.

2 COMMUNICATIONS: These exercises are designed to evaluate the ability of employees in the Harriman Dispatch Center to locate and notify the appropriate field managers. This should include use of the various tie up systems and the emergency response files (ER) located in TCS. Whenever possible, actual telephone calls should be made to field managers. The caller should state "This is a communication exercise" and confirm that contact has been made with the appropriate person. Instructions for emergency telephone numbers are:

2.1 Emergency response files: These are indexed by station name as listed in the current timetable and include the telephone numbers for the Manager Chemical Transportation Safety, police, fire, and ambulance services that are responsible for that station. Files are in TCS and are accessed by SW USE (STATION NAME) ER.

2.2 Risk Management Tieup system: These files contain tieup phone

numbers and itineraries for all risk management employees including Chemical Transportation Safety, Police, Environmental Management, and Casualty Management. Files are in TCS and are accessed by SW USE (LAST NAME) RMTIEUPS. For common names, such as Smith, it may be necessary to include the first initial. Example SW USE SMITHT RMTIEUPS.

2.3 Emergency notification system: These files contain a notification list for senior management and regulatory agencies. Files are in TCS and are accessed by SW USE NOTIFICATION (WRX, CRX, OR SRX).

3 FIELD EVALUATIONS: These evaluations are designed to determine the effectiveness of training given to all employees on what to do in a hazardous material emergency. This exercise consists of showing a photograph of an incident to an employee and asking "What would you do if you found this?" The manager should then compare the reply to information requested in the local plan or Form 8620. The basic information needed is:

3.1 Location of the incident.

3.2 Number of fatalities and names, if known.

3.3 Number of injuries and names, if known.

3.4 Car initial and number, unit number, name and quantity of hazardous material or pollutant, and hazard class.

3.5 Whether train operations on adjacent tracks are affected.

3.6 Description of surrounding area affected by the release of hazardous material or pollutant, including,

3.6.1 Nearness of populated buildings.

3.6.2 Nearness of other important buildings.

3.6.3 Nearness to important roads, bridges, drainage structures, or open streams.

3.7 Resources needed to handle the situation, such as fire, ambulance, or law enforcement agencies.

3.8 Name and title of person making report.

3.9 Location where reporting person can meet responders.

4 TABLE TOP (Company employees): Table top exercises are an activity where service unit staff members gather to discuss actions to be taken in a hazardous material emergency. The purpose is to have participants practice problem solving, elicit discussion, and resolve questions about handling an incident.

5 TABLE TOP (Outside employees): These exercises serve the same functions as described above. Additionally, responders from the local community and shippers are asked to participate. These are useful in improving cooperation with public agencies with a minimal impact on railroad operations.

6 FULL SCALE: This exercise puts the service unit Emergency Response Plan through a practical evaluation. These drills will be planned in advance and involve participation of local emergency response agencies to the extent possible. The following guidelines are to ensure that the community and Union Pacific Railroad gain the most benefit from the drill while conducting it in the safest manner possible:

6.1 Request for drill-- The drill must be scheduled with the local community response agencies and the Chemical Transportation Safety Group. This will ensure proper personnel and use of equipment to conduct the drill.

6.2 Location-- While Union Pacific Railroad will consider the location requested by the local community, Union Pacific Railroad will not agree to conduct the drill at this location if it is not safe to do so. If possible, use a remote location with limited access. Activities that must be considered in approving the location include the following:

6.2.1 Proximity to active railroad operations that cannot be stopped for the duration of the drill.

6.2.2 The location must have sufficient space for participants to work without having to trespass, move through work areas, or cross man-made or natural obstacles. The area must also offer good footing, normal ballast, and reasonably smooth surfaces.

6.3 Equipment:

6.3.1 Rail cars must remain stationary during the exercise.

6.3.2 Rail cars used must be in good mechanical condition, especially regarding ladders, running boards, and handholds.

6.3.3 The Union Pacific training tank car "911" should be used for exercises, whenever possible. Private tank cars shall be used only with the permission of the owning/leasing company.

6.3.4 All fittings on tank cars shall be secured unless a clean car is being used with water leaking to simulate the released hazardous material.

6.4 Advance planning-- The exercise must be planned in advance. Manager Chemical Transportation Safety will keep all departments of the Railroad informed, including Chemical Transportation Safety, Casualty Management, Law, Public Relations, and Operating. All participants must be aware that this is a drill and be informed of the general nature of the exercise. NO SURPRISE DRILLS! Provision must be made to brief spectators of the general nature of the exercise before or during the exercise.

6.5 Participants-- Participants in the drill should be adults and members of the local response community both industry and public. The exception is those communities that have youth groups designated in their emergency response plans (e.g. Boy Scouts, Girl Scouts). Communities may use minors to simulate accident victims.

6.6 Access-- Site access shall be controlled to the extent possible. The general public shall not be invited to participate in the drill. However, provisions shall be made to provide a spectator area, especially in smaller communities.

6.7 Hazardous materials-- No hazardous materials may be used in any exercise. Only water, dry ice, and smoke generators may be used to simulate a released hazardous material.

7 CRITIQUE: Post exercise activities include an evaluation and critique of the drill. This is usually a meeting of the principal participants. It includes a discussion of both positive and negative aspects of the event. A record of recommendations should be made.

A follow up on the recommendations will provide more benefit to all participants.

CONTRACTS FOR EMERGENCY SPILL CLEANUP

1 Necessity for Contracts: If it is necessary to utilize the services of outside parties to clean up spills of hazardous materials, oil, or other pollutants, a standard form of agreement will be executed in accordance with Operating Instruction No. 9 (OI-9), Instructions Relative to Miscellaneous Work, Construction, Maintenance and Service Contracts.

1.1 Any deviation from OI-9 must be approved by the Executive Vice President Operation (EVPO) before any commitment is made to third parties.

1.2 In cases of emergency, the EVPO is authorized to enter into construction and service agreements without the solicitation of bids.

1.3 All authority for execution of contracts are explained in the Authority Delegations Manual. All contracts, except preapproved standard forms, must be approved by the Law Department prior to execution on behalf of the Railroad.

1.4 See the table of responsibilities at the end of this section for step-by-step procedures for handling of contracts.

2 Contractors for Emergency Response Operations: Either contractors who are fully qualified to conduct hazardous waste operations or skilled persons may be utilized for emergency response to a release or threatened release of hazardous materials.

2.1 Hazardous Waste Operations Contractors: These firms shall currently meet all of the requirements of the Occupational Safety and Health Administration's regulatory requirements for hazardous waste operations and emergency response and:

2.1.1 Have previously entered into an "Environmental Emergency Response Agreement" with UPRR, or

2.1.2 Have completed a "Local Emergency Response Contract" at time of the emergency.

2.1.3 See the list of approved contractors at the end of this section.

2.2 Skilled Persons: These individuals or firms are not required to have

received prior training in matters relating to hazardous materials emergency response; however, they shall be given an initial briefing by the Company's Incident Commander or Manager Chemical Transportation Safety at the site prior to commencement of work covering:

2.2.1 Use of personal protective equipment.

2.2.2 The chemical hazards involved.

2.2.2.1 This requirement may be met by providing the skilled person a copy of the emergency response information from the train consist, a copy of the manufacturer's material safety data sheet, or similar references.

2.2.3 Discussion of duties to be performed.

3 Contractors for Post-Emergency Response Operations: Only contractors who are fully qualified to conduct hazardous waste operations may be utilized for clean-up of hazardous materials spills during post-emergency operations.

3.1 The Chemical Transportation Safety Group may continue to utilize contractors selected to perform emergency response operations.

3.2 The Environmental Management Group may request competitive bids in accordance with OI No. 9 if the scope of the cleanup work so warrants.

4 Contractor Safety[8]: The following special safety rules, which are contained in all Miscellaneous Work Contracts, Work or Service Contracts and Major Construction Project Contracts, shall be observed:

4.1 Safety preparedness and response: Each contractor, at a minimum, shall:

4.1.1 Keep the job site free of safety and health hazards.

4.1.2 Ensure its employees are competent and adequately trained in all safety and health aspects of the job.

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[8]Note: See UPRR's Safety Resource Manual for the complete Contractor Safety Policy.

4.1.3 Have proper first aid supplies available on the job site so prompt first aid services can be provided to any person injured on the job site.

4.1.4 Notify UPRR of any OSHA-reportable injuries occurring to any person that may arise during the work performed on the job site.

4.1.5 Shall have a non-delegatable duty to control its employees while they are on the job site or any other property of UPRR and be certain they do not use, be under the influence of, or have in their possession any alcoholic beverage, illegally obtained drug, narcotic, or other substance.

4.2 Dress regulations: Each contractor's employees shall observe the following dress regulations:

4.2.1 Be suitably dressed to perform duties safely and in a manner that will not interfere with their vision, hearing, or free use of their hands or feet.

4.2.2 Wear only waist-length shirts with sleeves and trousers that cover the entire leg. If flare-legged trousers are worn, the trouser bottoms must be tied to prevent catching.

4.2.3 Wear sturdy and protective footwear, not boots (other than work boots), sandals, canvas-type shoes, or other shoes with thin soles or heels higher than normal.

4.2.4 Wear personal protective equipment as specified by federal, state, or local standards. The protective equipment worn shall be:

4.2.4.1 Protective head gear that meets American National Standard Z89.1 (latest revision). UPRR recommends hard hats have the contractor's or subcontractor's company logo or name affixed.

4.2.4.2 Eye protection that meets American National Standard for occupational and educational eye and face protection, Z87.1 (latest revision). Additional eye protection must be provided to meet specific job situations such as welding,

grinding, burning, etc.

4.2.4.3 Hearing protection that affords enough attenuation to give protection from noise levels that will be occurring on the job site.

4.3 Heavy equipment: All heavy equipment provided or leased by the contractor shall be equipped with audible backup warning devices.

4.4 Removal of unsafe equipment: If any contractor or subcontractor equipment is considered unsafe for use on the railroad's right-of-way, the contractor shall remove the equipment form the railroad's right of way at the request of the railroad representative.

5 Contractor Evaluation: After the termination of each incident where an emergency response contractor responds and performs services, the manager chemical transportation safety and/or the special agent hazardous material should complete the attached Contractor Evaluation. This evaluation should be available for discussion during the incident critique. A completed evaluation should be forwarded to the director chemical transportation safety for his review.

Table 10. Contractor procedures

Person observing spill	Notify MCTS indicating problem and action plans, if known.
MCTS	Contact EMG and discuss problem and plan of action.
MCTS or EMG Representative	Select contractor from the following list and provide the following information: • Name of railroad. • Name and title of person giving notification. • Identification of material discharged. • Exact location of discharge. • Approximate time of discharge. • Other information available to UPRR concerning the nature and extent of discharge. • Description of work or services to be performed. OR Select another local contractor to perform the required work under a Local Emergency Response Contract when no contractor with an Environmental Emergency Response Agreement is available and provide the following information: • Name of railroad. • Name and title of person giving notification. • Identification of material discharged. • Exact location of discharge. • Approximate time of discharge. • Other information available to UPRR concerning the nature and extent of discharge. • Description of work or services to be performed. If the cost is anticipated to be over $25,000, or the length of time is anticipated to be over 72-hours, phone (402) 271-2147 or fax (402) 271-4092 a specific request to the Manager Contract Services. Provide the contractor with a completed Emergency Response Contract for signature.
Local contractor with no agreement.	Attach copy of rate schedule to contract. Sign completed Emergency Response Contract.
MCTS or EMG representative	Receive signed contract with rate schedule. Fax/mail contract and rate schedule to: Manager Contract Services Union Pacific Railroad Company 1416 Dodge Street Omaha, NE 68179 - 1000 Fax No. (402) 271-4092 Provide contractor with Daily Contractor Work Report forms.
Manager Contract Services	Prepares agreement. Arranges for appropriate authority and signatures.
Contractor	Commences activities. Completes Daily Contractor Work Report forms.

Table 10, continued

Mgr. CTS, EMG, or other UPRR representative	Signs Daily Contractor Work Reports on daily or other timely basis. Maintains white copy of Daily Contractor Work Reports until invoice is presented.
Contractor	Upon completion of work, submits Daily Contractor Work Reports with an invoice for environmental clean-up cost only to the MCTS or EMG representative requesting the services.
MCTS or EMG representative	Reviews invoice and Daily Contractor Work Reports. Matches original and green copies of Daily Contractor Work Reports. Verifies that the following information appears on the invoice: • Derailment location. • Date of derailment. • Casualty Work Order Number, if applicable, from the Director Track Maintenance. • Contract Audit Number from the Manager Contract Services. Sign invoice authorizing for payment. Send signed invoices and Daily Contractor Work Reports to: A. A. Ellison Supervisor Contracts and Records Environmental Management Group Union Pacific Railroad Company 1416 Dodge Street Omaha, NE 68179 - 0930 Phone (402) 271-5318
Supervisor contracts and records	Processes invoice for payment. Maintains record of work and invoices.

LIST OF CONTRACTORS

A/C Industrial Services Corp. 1111 Marauder St. Chico, CA 95828 916-343-5488	CA
Big D Environmental Services 4501 East Highway 80 Midland, TX 79707 800-562-4400	TX (Baird Sub)
Code 3 Inc 1101 East Harrison Harlingen, TX 78550 210-421-4911	San Antonio Service Unit
Eagle Construction & Environmental Svcs PO Box 872 Eastland, TX 76448 817-629-1718 (Day) 817-847-1411 (Night)	OK TX
EmTech Environmental Services, Inc. 303 Andrew St. Ft. Worth, TX 76107 800-336-0909	AR LA OK TX
Environmental Management, Inc. P.O. Box 3940 Edmond, OK 73083-3940 405-348-5080	AR CO KS MO NE OK TX
Environmental Specialists, Inc. 3001 E. 83rd St. Kansas City, MO 64132 816-523-6878	AR IL KS MO NE OK
Environmental Tech. of Nevada, Inc. 770 E. Sahara Ave. Las Vegas, NV 89104 702-734-5400	CA NV UT

Environmental Transloading Services 1333 East Sixth Street Los Angeles, CA 90021 213-628-7000	CA
Ferguson-Harbor, Inc 340 Rockland Road Hendersonville, TN 37075 800-235-1344	AR IL KS LA MO OK TX
Flint Engineering & Construction 2440 South Yukon Avenue Tulsa, OK 74107-2729 303-572-0973 or 303-857-2791	CO ID KS NE UT WY
Foss Environmental Services Company 9030 NW St. Helens Road PO Box 83357 Portland, OR 97283-0357 503-283-1150	CA ID OR WA
Haz-Mat Response, Inc. 1203C S. Parker Olathe, KS 66061 913-782-5151	AR CO KS MO NE OK TX WY
Heritage Remediation Engineering, Inc. 1319 Narqyette Drive Romeoville, IL 60441 314-521-3600	AR IL MO
Hulcher Resources, Inc. 611 Kimberly Drive Denton, TX 76202 800-659-8032	AR IL KS LA MO NE OK TX
Industrial Cleanup, Inc. 1213 River Road Westwego, LA 70094 504-436-0883	LA
Intermountain West, Inc 9025 SW Hillman Ct STE 3126 Wilsonville, OR 97070	CA (Northern) ID MT OR WA

503-682-1203 Materials Management Group, Inc. P.O. Box 6984 New Orleans, LA 70174 800-256-5311	LA
Munchiano Trucking, Inc. 12098 W 50 Place Wheat Ridge, CO 80033 303-940-6642	CO NE WY
OHM Remediation Services Corp. WA 16406 US Rte 224 East PO Box 551 Findlay, OH 45839-0551 800-537-9540	AR CA IL KS LA MO NE OK TX
Perma-Fix Environmental 1827 Latham Street Memphis, TN 38106 901-774-2340	AR TN
Petron, Inc. 1600 Harris Street Alexandria, LA 71309 318-445-5685	150-mile radius Alexandria
Ronnie Wall, Inc. P.O. Box 153 Diana, TX 75640 903-663-0600	AR LA TX
Winkel & Son, Inc. Route 1, Box 3 Tennessee Colony, TX 75861 903-928-2560	TX (Oil spills only)
Air Toxic Monitoring:	
Radian Corporation P.O. Box 201088 Austin, TX 78720-1088 Pager phone: (512) 483-8975	--ALL--

Mobile phone: (512) 422-2109
Herndon-home: (512) 328-6500
Matt-home: (512) 343-0951

Naturally Occurring Radioactive Materials:

Enviro-Norm, Inc
PO Box 219312
Houston, TX 77218
713-492-8186

50-mile radius of Houston

CONTRACTOR EVALUATION

Contractor/Consultant_____
Project_____

___ Project Completion Evaluation ___Annual Contractor Audit

Rating Criteria

	Excellent				Poor
Communications (20%):					
Response to Requests	1	2	3	4	5
With UPRR	1	2	3	4	5
With Agency	1	2	3	4	5
With Themselves	1	2	3	4	5
Response Effort (50%):					
Timely Response to Incident	1	2	3	4	5
Adequate Manpower	1	2	3	4	5
Personnel Safety	1	2	3	4	5
Equipment	1	2	3	4	5
Cost Effective Solution	1	2	3	4	5
Regulatory Compliance	1	2	3	4	5
Reports (20%):					
Timeliness	1	2	3	4	5
Appearance	1	2	3	4	5
Graphics Accuracy	1	2	3	4	5
Graphics Presentation	1	2	3	4	5
Quality of Written Presentation	1	2	3	4	5
Conclusions	1	2	3	4	5
Recommendations	1	2	3	4	5
Invoicing (10%):					
Invoicing Timeliness	1	2	3	4	5
Invoice Accuracy	1	2	3	4	5
Invoice Documentation	1	2	3	4	5

Score _____

Comments:

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GLOSSARY

1 Definitions: The following definitions apply to the terms used in these procedures.

1.1 Accident means:

1.1.1 Any impact between railroad on-track equipment and an automobile, bus, truck, motorcycle, bicycle, farm vehicle, or pedestrian on a rail-highway crossing;

1.1.2 Any collision, derailment, fire, explosion, act of God, or other event involving operation of railroad on-track equipment that results in damages to railroad on-track equipment, signals, track structures, and roadbed. Accidents that result in more than $6,700 in damages are reportable to the Federal Railroad Administration.

1.1.3 Any event arising from the operation of a railroad which results in:

1.1.3.1 Death of one or more persons, including passengers;

1.1.3.2 Injury to one or more persons, other than railroad employees, that requires medical treatment;

1.1.3.3 Injury to one or more employees that requires medical treatment or results in restriction of work or motion for one or more days, one or more lost work days, transfer to another job, termination of employment, or loss of consciousness;

1.1.3.4 The emergency evacuation of persons.

2 Derailment means any accident where a wheel leaves the rail, which includes any highway crossing accident that results in a wheel leaving the rail. In addition, any collision between railroad equipment, and any collision between railroad equipment and company or private property that results in damage, even if no wheel leaves the rail. (QSP 1009, pg. 3). Questions on the definition of a derailment can be addressed to Warren Egan, Director Derailment Prevention.

3 Discharge means any spilling, leaking, pumping, pouring, emitting, emptying, or dumping of oil, hazardous substances, hazardous materials or marine pollutants into the environment.

3.1 Environment means navigable water, surface water, ground water, drinking water supply, land surface and subsurface strata, or ambient air.

4 Environmental Cleanup means activity associated with the containment and control of regulated hazardous materials, including petroleum oils, and all activity necessary for mitigation, separation, concentration, decontamination, neutralization, removal, transportation, and disposal of regulated hazardous materials, including petroleum oils. As a point of explanation, this activity does not include rail and tie cleanup or other engineering or mechanical functions.

5 Environmental Emergency Response Agreement an agreement intended to document arrangements with contractors who will be providing services required when a derailment or some other type of emergency occurs. A contractor working under this agreement will have given the Railroad, in advance, a list of his equipment and the prices at which it is available. Contracts are not to exceed a period of 24 months.

6 Go team means a group of headquarters personnel from various departments. Persons may represent car maintenance, chemical transportation safety, derailment prevention, environmental management, general superintendents, maintenance of way, public relations, research and development laboratory and other departments, as required.

7 Hazardous material means a substance or material which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health safety and property when transported in commerce. The term includes hazardous substances, hazardous wastes, marine pollutants and elevated temperature materials.

8 Hazardous substance means a material designated by the U.S. Environmental Protection Agency (EPA) that, when offered for transportation in one package, or in one transport vehicle which, if in bulk, the quantity of the material exceeds the reportable quantity and is so identified by the initials "RQ" on the shipping papers.

9 Hazardous waste means any material subject to the hazardous waste manifest requirements of the U.S. EPA and indicated by the proper shipping name "Hazardous waste, liquid (or)solid, n.o.s.", or the use of the

word "Waste" preceding the proper shipping name.

10 Local emergency response contract a contact intended for use by Superintendents Transportation Services when an emergency operating situation exists (i.e. derailment or hazardous material spill). Contract is limited to total expenditures not to exceed $25,000 and is under the general supervision of the Superintendent Transportation Services. Contracts are not to exceed a period of 72 hours without authority from the Executive Vice President-Operations.

11 Release means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, leaching, dumping, or dispersing a hazardous substance into the environment.

12 Size classes of discharges of oil:

12.1 Minor discharge means a discharge of less than 1,000 gallons (3,785 liters) of oil into the environment;

12.2 Medium discharge means a discharge of 1,000 (3,785 liters) to 10,000 gallons (37,850 liters) of oil into the environment;

12.3 Major discharge means a discharge of more than 10,000 gallons (37,850 liters) of oil into the environment.

13 Size classes of releases of hazardous materials and hazardous substances:

13.1 Incidental release means a release of a hazardous material which does not pose a significant safety or health hazard to employees in the immediate vicinity nor does it have the potential to become an emergency within a short time frame.

13.2 Minor release means a release of a hazardous material, a hazardous substance less than the reportable quantity, or a marine pollutant less than 450 L (118 gallons) or 400 kg (881 pounds), which poses minimal threat to public health, welfare, or the environment.

13.3 Medium release means a release of a hazardous material, a hazardous substance greater than the reportable quantity, or a marine pollutant greater than 450 L (118 gallons) or 400 kg (881 pounds), but does not pose a substantial threat to public health, welfare, or the environment.

13.4 Major release means a release of a hazardous material, a hazardous substance greater than the reportable quantity, or a marine pollutant greater than 450 L (118 gallons) or 400 kg (881 pounds), which poses a substantial threat to public health, welfare, the environment, or results in significant public concern.

14 Work Areas:

14.1 Exclusion Area: The exclusion area is the area of greatest contamination. All persons entering the exclusion area must wear the prescribed level of personnel protection. The boundary for the exclusion area (often referred to as the hotline) is determined by personal judgement, or quantitative measure to determine if:

14.1.1 The concentration of toxic gases or vapors exceed levels immediately dangerous to life and health (IDLH), or

14.1.2 The concentration of flammable gases exceeds 60% of the lower explosive limit (LEL).

14.1.3 The exclusion area shall encompass "initial isolation" distance listed in U.S. DOT's "Emergency Response Guidebook", the recommended evacuation distance suggested in the Association of American Railroad's guide book titled "Emergency Handling of Hazardous Materials in Surface Transportation", or another nationally recognized reference.

14.2 Restricted Area: The restricted area is an area of lesser contamination than the exclusion zone. Primary hazard from a hazardous materials is contact with the skin. The boundary for the restricted area (may be referred to as the hotline) is determined by personal judgement, or quantitative measure to determine if:

14.2.1 The hazardous materials is toxic by skin absorption, corrosive to skin, or an irritant,

14.2.2 The concentration of toxic gases or vapors are below established PEL, or

14.2.3 The concentration of flammable gases is below 10% of the lower explosive limit.

14.3 Decontamination Area: The decontamination area is located between the exclusion area and the support area.

14.4 Support Area: The support area is the outermost area of the site. The boundary for the support area (often referred to as the cold line) is determined by personal judgement, or quantitative measure to determine if:

14.4.1 The concentration of toxic gases or vapors are below established personal exposure levels (PEL), or

14.4.2 The concentration of flammable gases is below 10% of the lower explosive limit.

14.5 Staging Area: The staging area is the location assigned for parking of emergency response vehicles, work equipment and supplies until required at the exclusion or restricted areas. The staging area may be located in the support area.

14.6 Eating/Drinking/Smoking Area: Eating, drinking and smoking is not permitted in the exclusion, restricted, or decontamination areas but may be permitted in the support area.

14.7 Hazardous Materials Storage Area: Hazardous materials storage open to the environment will be confined to areas originally designated as exclusion or restricted areas. Hazardous materials packaged in DOT specification packagings, or other suitable packagings may be stored in the support area.

Letter of Authorization

Geoffrey Reeder has prepared this emergency response plan for the Union Pacific Railroad Company as a part of his graduate studies at Texas A&M University. Permission is hereby granted for this document to be published as necessary as part of those studies.

Leo Tierney
Director Chemical Transportation Safety
Union Pacific Railroad Company
Omaha, Nebraska
1995

VITA

1. NAME: Geoffrey Benton Reeder

2. PERMANENT ADDRESS: 8103 Pheasant Glen
Klein, Texas 77379

3. EDUCATIONAL BACKGROUND:

   1. Schools attended:
      1. Tarleton State University, Stephenville, Texas.
      2. Mountain View College, Dallas, Texas.
      3. University of Texas at Arlington, Arlington, Texas.
      4. Abilene Christian University at Dallas, Dallas, Texas.
      5. Brookhaven College, Farmers Branch, Texas.
      6. University of California at Davis, Davis, California.
      7. Texas A&M University, College Station, Texas.

   2. Degrees earned:
      1. B.S., Career Development, Abilene Christian University, 1980.

   3. Major fields of study:
      1. Civil engineering
      2. Criminal justice
      3. Environmental sciences

4. PROFESSIONAL BACKGROUND

   1. 1976 to 1982: Police officer, City of Mesquite, Texas.

   2. 1982 to 1985: Police officer, Missouri Pacific/Union Pacific Railroad.

   3. 1985 to present: Manager Chemical Transportation Safety, Union Pacific Railroad.

5. PERSONAL DATA

   1. Married to Linda Reeder, 1978.

   2. Children:
      1. Tiffany, 1981
      2. Whitney, 1984.