

ACCIDENTAL RELEASE MEASURES AND SPILL CLEANUP PROCEDURES

COURSE OUTLINE

- **Hazardous materials have become a "routine" part of our lives. They:**
 - Fuel our vehicles.
 - Lubricate our machines.
 - Help us clean our homes.
 - Are all around us.
- **But if you aren't careful, they can cause serious problems.**
 - Knowing what to do in the event of a spill or leak could mean the difference between life and death.
- **When you are dealing with hazardous materials, even a tiny release can become a major problem.**
 - It might look like nothing more than a common puddle.
 - If it's a gas, you might not see it at all... but it can be very dangerous.
 - Large or small, a hazardous materials release is a situation that must be dealt with quickly and efficiently.
- **No matter where you work, there is always the possibility that a release of hazardous materials will occur.**
 - Without a plan of action to deal with these incidents, it could already be too late to be able to respond effectively.
 - By thinking ahead you can save precious time and be ready for any possibility.
- **Planning for emergencies takes everyone's cooperation.**
 - You can begin by participating in your company's "hazard communication" program.
- **It provides you with the information that you need to understand:**
 - The hazards of the chemicals you work with.
 - Chemical labeling.
 - Safety Data Sheets (SDSs).

- **You will also find that the "spill guidelines" for your facility can be helpful.**
 - These are instructions for cleaning up various types of chemical spills in your workplace.
- **In addition, you should ask your supervisor where you can get a copy of the facility's "emergency response plan".**
- **This plan spells out how to report and handle emergencies at your location, and includes information on:**
 - The roles of personnel participating in a "response".
 - Lines of authority.
 - Methods of communication.
 - Emergency recognition and prevention.
 - Site security and evacuation.
 - Decontamination procedures.
 - First aid.
 - Emergency medical treatment.
- **The emergency response plan also discusses the five levels of training that OSHA's HAZWOPER regulation requires for people involved in emergency response at your facility.**
- **"First Responder: Awareness Level" training must be given to all workers who are likely to witness a spill, leak or other accidental release of a hazardous material (since spills are the most common form of releases, they will be used in many of the examples in this program).**
 - These workers must go through four hours of training to learn the reporting procedures that should be used to initiate an emergency response.
- **The first group of workers who actually respond to spills are trained at the "First Responder: Operations Level" This is for workers whose job is to:**
 - Keep a spill from spreading.
 - Prevent unauthorized people from entering the spill area.
 - Workers involved in these activities must undergo a minimum of eight hours of emergency response training.
- **After a spill is contained, "Hazardous Materials Technicians" will locate the point of release and plug, patch or stop the leak in some other way.**
 - These workers must undergo a minimum of 24 hours of training.

- **In many spill situations "HAZMAT Specialists" may also be called upon, to act as site liaisons with federal, state, local or other government authorities.**
 - A specialist gets the same 24 hours of training as a HAZMAT Technician, but receives more detailed information about the chemicals that are normally on-site at your facility.
- **The individual with the most authority in an emergency response situation is the "Incident Commander".**
 - This person goes through 24 hours or more of specialized training, which focuses on how to control the incident scene and coordinate the entire emergency response operation.
- **Now, lets look more closely at exactly how a release should be handled, and the personal protective equipment (PPE) that should be used in various situations.**
- **Whenever a hazardous spill occurs, an operations level first responder will immediately:**
 - Evacuate the area.
 - Secure the spill.
 - Place barriers or absorbents around the spill to prevent contamination from spreading.
 - Put up signs or caution tape to let other workers know that there was a spill and to stay away.
- **As soon as the area is secure, the spill site will be "characterized". This process includes:**
 - Identifying the chemicals involved in the release.
 - Determining the hazards they present.
- **If you are authorized to characterize a release site, you need to make sure that you put on the proper personal protective equipment before you enter the spill area.**
 - There are many forms of PPE available.
- **PPE that is used when dealing with chemical releases is grouped into four levels... A, B, C and D.**
 - These groups are defined according to how much protection they provide.

- **Level D personal protective equipment provides the least amount of protection.**
 - It shields you from "nuisance contamination", such as materials that might stain your clothes.
 - It is simply a work uniform, and must never be used on any site where respiratory or skin hazards exist.
- **Typically, Level D PPE includes:**
 - Coveralls.
 - Cloth or rubber work gloves.
 - Boots with steel toes and shanks.
 - Safety glasses or chemical splash goggles.
 - A hard hat.
- **Unlike Level D, Level C PPE provides respiratory protection, through the use of air-purifying respirators (APRs).**
 - These respirators filter contaminants out of the air before they can be breathed in.
 - APRs use the principle of negative pressure (when you inhale, the air pressure inside your facepiece is less than that of the outside air, so the power of your own breathing keeps air moving).
- **Level C personal protective equipment is also used in situations where skin hazards are present. It includes:**
 - A chemical splash suit with a hood.
 - Safety glasses or goggles.
 - Gloves.
- **In contrast to Level C, Level B PPE is designed to be used in environments where the air is so contaminated that the hazards cannot be simply filtered out.**
 - Here you will need to wear an air-supplying respirator.
- **There are two major types of air-supplying respirators:**
 - The "self-contained breathing apparatus" (SCBA).
 - The "supplied-air respirator" (SAR).
- **An SCBA allows you to breathe air from a portable tank.**
- **An SAR, on the other hand, supplies air through a hose from a source located some distance away.**

- **Both SCBAs and SARs maintain positive pressure.**
 - This means that they are forcing a constant supply of fresh air into your facepiece, whether you are breathing in or out.
 - The flow of air from an outside source provides additional protection by preventing contaminants from entering the facepiece.
- **Level B PPE also includes:**
 - A one or two piece chemical splash suit with a hood.
 - A chemical resistant inner suit.
 - Gloves.
 - Chemical resistant boots with steel toes and shanks.
- **Level A PPE is used in places where the most severe skin, respiratory, and eye hazards are encountered.**
 - As with Level B, Level A PPE also includes an SCBA or SAR.
 - But unlike Level B, the protective outfit that is worn with the air supplying respirator is a totally- encapsulating suit.
 - This suit completely covers both you and your air supplying respirator.
- **These suits provide the maximum possible protection against all kinds of chemical exposure by keeping you isolated from the outside air.**
 - To provide complete protection, a totally- encapsulating suit must be used with a chemical resistant inner suit made of a material like Tyvek.
- **The Level A package also includes:**
 - Chemical resistant outer and inner gloves.
 - Chemical resistant boots with steel toes and shanks.
- **However, depending on the design of your chemical protective suit, you may also be able to wear an additional outer protective layer, including:**
 - A disposable protective suit.
 - Gloves.
 - Boots.
- **No matter what level of PPE you are wearing, make sure that your gloves and other equipment are compatible with any hazardous materials that you are working around.**
 - If they aren't, they could fall apart, or even melt, and leave you completely unprotected.

- **Once you are dressed in the PPE that is appropriate for the incident, you will need to start the site characterization by "monitoring" the site.**
 - Monitoring detects potentially dangerous contaminants in the spill area.
 - This is usually done with "direct reading instruments," such as combustible gas monitors and detector tubes.
 - If radiation is suspected, a field survey meter will also need to be used.
- **In addition to monitoring for dangerous contaminants, you should watch out for general hazards, such as:**
 - Open pits.
 - Unstable piles of material.
 - These types of hazards should be reported to your supervisor.
- **After the site has been characterized, the spill itself will need to be contained.**
 - The best technique for this is "diking", which is to enclose the spill to keep it from spreading.
 - Be sure to use diking materials that have been specifically designed for the type of material that has been released, such as urethane barriers or absorbent socks.
- **Sandbags should never be used to block any type of spill.**
 - They are not made to absorb hazardous substances.
 - Spilled chemicals can leak through a sandbag, allowing contamination to spread.
 - In some cases, the sand itself could actually react with the spilled liquids.
- **Diking should be arranged to keep the spill from running into storm drains and sewers, which could contaminate the environment.**
 - If you spot chemicals leaking into a drain, contact your supervisor immediately.
- **When a spill takes place indoors, vents and air ducts leading from the contaminated area to other parts of the building need to be closed off.**
 - This prevents harmful vapors from spreading to other parts of the facility.
 - Windows and doors to the outside should also be opened in any area where an indoor spill has occurred, so that vapors can escape and safely dissipate in the outside air.

- **If contamination from a release becomes too dangerous, the area around it may need to be evacuated.**
 - For an outside spill, windsocks should be used to monitor the speed and direction of the air flow through the site.
 - This will aid in determining how the evacuation should be conducted.
- **Once they are evacuated, workers should be kept at a safe distance from the contaminated area.**
 - The area should be sealed off with "caution tape", to remind everyone to stay away from the spill.
 - Once the spill area has been evacuated and aired out, the cleanup process can begin.
- **HAZMAT Technicians use a number of different methods to clean up spills.**
 - One of the most common is "absorption"... using various techniques to soak up the spilled material.
 - To start, an absorbent compound such as vermiculite is usually shoveled onto the spill.
 - Disposable towels or spill blankets can also be placed over the vermiculite to help soak up the liquid.
- **Some spills can be neutralized.**
 - For instance, putting soda ash on certain chemicals will break them down into harmless substances.
 - Be careful because this approach to cleanup can generate a great deal of heat, so it can only be performed on non-flammable materials.
- **Another cleanup method is to "transfer" the spilled material away from the incident location.**
 - For instance, using a pump you can move liquids from the ground into a barrel.
 - Then the barrel can be properly disposed of.
 - Keep in mind that if the spilled chemical is a flammable liquid or powder you should only use non-sparking tools (such as plastic shovels) to transfer the material to the disposal container.

- **When cleaning up a spill, it is also important to be careful around electrical equipment.**
 - Most liquids conduct electricity, so you need to make sure that nearby machinery is de-energized, as well as locked and tagged out.
 - Be careful though, because turning a machine off can sometimes produce a spark that could ignite flammable chemicals.
 - The best thing to do is to turn off the power at the main breaker.
 - If you have questions, ask your supervisor before proceeding.
- **Once the cleanup is complete, all waste products will need to be disposed of.**
 - If this can't be done immediately, you are permitted to store the waste at your facility in approved containers.
 - It is important to remember, however, that the storage time in most states is limited to 90 days.
- **After the spill has been cleaned up, everyone involved in the cleanup will have to undergo decontamination.**
 - Decontamination usually takes place in what is called a "contamination reduction corridor" (CRC).
 - The CRC restricts decontamination activities to a limited area, and helps to keep workers who are still contaminated from leaving the cleanup site.
- **The decontamination solutions that are used in the CRC are usually nothing more than water mixed with detergent.**
 - However, if you are contaminated by a substance that will react with water, a specialized decontamination mixture must be used.
- **Remember that once decontamination procedures have been completed, the solutions used in the contamination reduction corridor need to be properly disposed of as well.**
 - These solutions are often contaminated, and must be handled according to specific OSHA guidelines.
 - See your supervisor if you have any questions about how to deal with used decontamination solutions.

*** * *SUMMARY* * ***

- **Working with hazardous spills and releases can be dangerous.**
 - Poor preparation can result in catastrophe.
 - But there are a number of things that you can do to help keep yourself and your coworkers safe.
- **Participate in your company's hazard communication program.**
- **Familiarize yourself with your facility's emergency response plan.**
- **Learn about your company's spill cleanup processes.**
- **Know who to notify when a spill occurs, and call them if necessary.**
- **If you are involved in cleaning up a spill yourself, determine what personal protective equipment should be used and then wear it.**
- **Once the cleanup is over, make sure that both you and your equipment have been properly decontaminated.**
- **Releases of hazardous chemicals do occur. By knowing what you are working with... and how you can protect yourself... you can help to clean up leaks and spills safely!**