

PRESENTER'S GUIDE

"HAZARD COMMUNICATION IN CONSTRUCTION ENVIRONMENTS"

Part of the Construction Safety Kit Series

OUTLINE OF MAJOR PROGRAM POINTS

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The following outline summarizes the major points of information presented in the program. The outline can be used to review the program before conducting a classroom session, as well as in preparing to lead a class discussion about the program.

- **Hazardous materials can be found in a lot of workplaces, doing a number of good things.**
 - They help us to maintain and run our tools and equipment.
 - They play major roles in many construction processes.

- **But these "HAZMATs" can also create serious hazards for us... especially if they aren't handled safely.**

- **That's why the Occupational Safety and Health Administration (OSHA) established the Hazard Communication Standard in 1983.**
 - Also known as the "HAZCOM Standard", this law gives you the "right-to-know" about any potentially hazardous materials that can be encountered on your job sites.
 - It also requires employers and HAZMAT suppliers to provide you with complete information on how to work with them safely.

- **To do this, the Standard established three main sources of HAZMAT information:**
 - Safety Data Sheets.
 - HAZMAT container labels.
 - A company's written Hazard Communication Program.

- **Safety Data Sheets ("SDS's") are provided by HAZMAT suppliers for each of the hazardous materials that they produce. An SDS tells you:**
 - A material's names.
 - The company that manufactured it.
 - The hazards that are associated with it.
 - The precautions you should take when handling it.

- **It also discusses the first aid that should be given to someone who has been exposed to the material, and how to respond to a spill.**

- **On your job sites SDS's are kept in a central location so you can refer to them whenever you need information on the HAZMATs you work with.**
 - Both the information that appears on SDSs and how it is presented are standardized according to the U.N.'s Globally Harmonized System of Classification and Labeling of Chemicals ("GHS").

- **The second source of information about a HAZMAT is its container labels.**
 - Under HAZCOM, hazardous materials' labels are required to follow the GHS standards.
 - A company's "in-house" HAZMAT labels do not have to follow the GHS format, but they do have to display all the information that the system requires.

- **The third source of information about hazardous chemicals is found in a company's written Hazard Communication Program.**
 - This document is a "blueprint" for how the company complies with OSHA's Hazard Communication Standard.

- **A Hazard Communication Program will describe:**
 - What HAZMATs are present on-site.
 - Where they are located.
 - How they are labeled.
 - Where their SDS's are kept.
 - How employees will be trained in HAZMAT safety.
 - Anything else an employee needs to know to work with the materials safely.

- **In spite of all the precautions that we take to handle hazardous materials safely, accidents can still happen.**
 - A HAZMAT "spill" or "unplanned release" could result in people being exposed to a very dangerous substance.

- **To understand how this could affect you, it helps to know a little more about how exposure "works".**

- **Any health effects that result from a HAZMAT spill or leak will depend largely on the "dose" and "duration" of the exposure.**

- **The dose is the amount of the substance you are exposed to the substance.**
 - As a rule of thumb, the larger the dose, the more serious your reaction will be.

- **The duration is the period of time that you are exposed to the substance.**
 - In most cases, a "short-term" exposure will cause no serious health problems, though some materials can cause sudden or "acute" effects, such as a rash or a burn.
 - Long-term exposure to a hazardous material is likely to also cause long-term health effects.

- **So how can we prevent exposure to hazardous materials?**
 - First, it's important to understand how a substance can get into your body.

- **These are called "routes of entry", and there are three of them:**
 - "Skin contact".
 - "Inhalation".
 - "Ingestion".
- **While all materials can be absorbed through skin contact to some extent, liquids are absorbed most easily.**
- **Inhalation occurs when you breathe in hazardous dusts, mists, fumes, vapors or gases.**
- **Ingestion occurs when you swallow a substance.**
- **While ingestion may seem unlikely to happen by mistake, remember:**
 - You could accidentally transfer a hazardous material that is on your hands, arms or face to your mouth.
 - You could eat food that has been contaminated.
- **If you are exposed to a HAZMAT, there are procedures that you can follow to reduce its severity and possibly prevent injury.**
- **If the material gets onto your skin or into your eyes, it should be flushed with running water for at least fifteen minutes.**
 - So you need to make sure you know where sources of running water are located on your job sites.
- **If you begin to cough or have difficulty breathing while working with a HAZMAT, get away from the material and into fresh air immediately.**
- **If you should swallow a HAZMAT, it's important to consult the material's SDS before taking any action.**
 - Doing the wrong thing, even with the best of intentions, could make the situation much worse.

- **In general, you should always check a HAZMAT's SDS before you start to work with it to determine:**
 - What the material's hazards are.
 - How you should respond to an exposure.
 - Whether emergency medical assistance will be required if you are exposed.

- **To help you work with hazardous materials safely, OSHA's HAZCOM Standard divides HAZMATs into categories. These are based on:**
 - The types of hazards that are associated with them.
 - The safety precautions that they require.

- **Three of these groups that can be found on many job sites are "toxins", "corrosives" and "irritants".**

- **Toxic substances affect the organs and tissues of the body and disrupt important physical processes.**
 - People who are exposed to them can be injured, get sick and even die.

- **Toxic chemicals that can be found on job sites include:**
 - Solvents, like toluene and dichloromethane (DCM).
 - Thinners, like turpentine and ethylbenzene (which is also found in glues).
 - Kerosene.

- **Some of the pigments and solvents contained in paints can be toxic as well.**
 - So is the turpentine that is often used for cleanup afterward.

- **Respirable crystalline silica is a toxic material that is used for sandblasting and in making glass, ceramics and asphalt shingles.**
 - Precautions should also be taken against silica dust that is created when stone, cement or concrete is cut or polished.

- **Another toxin you could encounter is asbestos.**
 - While it isn't as common today, asbestos was used in many older buildings before its hazards were fully understood.
 - It can be found in insulation, pipe coverings, wallboard and even some flooring products.

- **Two other groups of HAZMATs that can often be encountered in many environments are corrosives and irritants.**

- **Corrosives can cause serious, even permanent damage if they come into contact with your skin or eyes.**
 - Corrosives that can often be found on job sites include solvents such as toluene and DCM as well as cleaners like bleach.

- **Symptoms of exposure to corrosives can include redness and swelling of the skin, burns and blisters.**

- **Irritants that you can encounter in construction settings include:**
 - Acetone, a thinner and solvent.
 - Turpentine.
 - Kerosene.

- **Exposure to these types of irritants can often cause temporary inflammation of the skin as well as swelling at the point of contact.**

- **Some substances can be especially hazardous, because the first symptoms of exposure might not appear until long after the exposure occurs, and by that time the damage has already been done.**
 - "Carcinogens" and radioactive materials both fall into that category.

- **Carcinogens are substances that are known or thought to cause cancer.**
 - A carcinogen that can frequently be found on job sites is dichloromethane, or "DCM".
 - DCM is also an irritant, which can sometimes provide an "early warning" of exposure.
- **The respirable crystalline silica that is often used in sandblasting and the manufacture of certain masonry products is another common carcinogen.**
 - This hazardous silica dust can also be created by cutting, grinding or polishing materials such as stone, cement or concrete.
- **The asbestos that was used in the construction of many older buildings is a carcinogen as well.**
- **Radioactive materials emit rays and particles that can damage the cells and tissues of living things, which can often result in cancer.**
 - These substances may seem exotic, but they are used in some construction environments.
- **For example, industrial radiography is a process that uses X-rays and gamma rays to locate flaws in materials such as steel beams and concrete.**
 - Iridium-192 and cobalt-60 are two radioactive substances that are often used to generate these rays.
- **While the presence of radioactive materials is unusual on most job sites, if they do exist on your job site, OSHA's HAZCOM Standard requires your company's Hazard Communication Program to provide you with complete information on how to handle them safely.**
- **Many of the substances that are covered by OSHA's Hazard Communication Standard are hazardous because they can injure or cause illness in people who are exposed to them directly.**
 - But with "flammables" and "combustibles", the danger chiefly lies in their potential secondary effects, fires and explosions.

- **While flammables and combustibles are both materials that can burn, what makes them different from each other is their "flashpoint".**
 - "Flashpoint" is the temperature at which a substance releases vapors that can catch fire.
- **Flammables, like gasoline, have a flashpoint of less than 100 degrees Fahrenheit.**
- **Combustibles, such as kerosene, have a flashpoint between 100 and 200 degrees Fahrenheit.**
 - In general, combustibles are safer than flammables because they normally have to be heated up before they can burn.
- **Chemicals such as formaldehyde, ethylbenzene and acetone, are all flammable. So are:**
 - Solvents such as toluene and turpentine.
 - Gases such as propane and acetylene.
- **Combustibles such as fuel oil, grease and other petroleum products can often be encountered on job sites as well.**
 - Many paints, adhesives, waxes and polishes can also contain combustible ingredients.
- **"Flammable gases", such as hydrogen, propane, and acetylene come with their own unique sets of hazards.**
 - They are easily ignited under normal conditions and can cause explosions.
 - Even if they don't catch fire, like many gases they can drive oxygen out of confined spaces.
- **When discussing fire and explosion hazards, it's also important to mention "oxidizers".**
 - Unlike flammables and combustibles, oxidizers don't really "burn".
 - What they do is make it easier for other things to burn.

- **Common oxidizers include perchloric acid, nitric acid and pure oxygen.**
 - These types of oxidizers will make fires burn more intensely, and can even cause some materials to catch fire spontaneously.

- **One of the things that OSHA's Hazard Communication Standard ensures you of is that you are provided with information about the precautions that you should take when handling HAZMATs. These include:**
 - Wearing some type of personal protective equipment ("PPE").
 - Making sure that any hazardous materials on your job sites are stored properly.

- **What PPE you should wear depends on the material you're working with and the likely routes of entry that it can take into your body.**
 - Before handling any HAZMAT, you should check its SDS or your company's written Hazard Communication Program to find out what type of protective equipment (if any) you should put on to work with it.

- **Often some type of PPE is required to prevent exposure to a HAZMAT through skin contact.**
 - Depending upon the chemical you're handling, this could range from gloves to some type of protective clothing.

- **Since our eyes are particularly vulnerable to exposure from chemical splashes, eye protection should always be worn when handling liquid HAZMATs.**

- **Safety glasses cannot adequately protect against splashes, so you should wear goggles instead.**
 - Goggles make a tight seal against your face that helps to keep hazardous liquids out.
 - For especially hazardous chemicals you may need to wear a face-shield over your goggles as well.

- **When you're working with hazardous gases and other HAZMATs that give off fumes, vapors or dusts, the primary route of entry will be by inhalation... that is breathing the material into your lungs.**
 - In these cases you should wear a respirator.
 - There are several types that you can use, and different cartridges that can be used with some of them as well.
 - Check the chemical's SDS to find the right respirator for the job you are doing.
- **How a HAZMAT is stored is very important as well.**
 - Pay attention to the conditions in the storage area itself.
 - If they are not set up for the chemical you are using, it can lead to spills, exposure and possibly much worse.
- **Some materials, such as flammables or combustibles, are sensitive to temperature, so if they are stored where it's hot, they could catch fire or even explode.**
 - Flammables or combustibles should also be stored separately from oxidizers, which can make it easier for these materials to ignite and make fires burn more intensely.
- **Compressed gas cylinders and materials that can emit hazardous vapors or fumes should be stored in areas that are well ventilated.**
 - They should also be away from excessive heat, which can cause the cylinders to pop their valves or even burst.
- **Some HAZMATs can even react with water, others are sensitive to light, still others to shock.**
 - If you ever have questions about how to store HAZMATs safely, consult their Safety Data Sheets and your company's written Hazard Communication Program.

- **When you're handling hazardous materials, using the appropriate PPE and following safe work practices can go a long way in preventing problems.**
 - But if things do go wrong, it's important to be prepared.

- **If there are HAZMATs on your job sites, OSHA's HAZCOM Standard ensures that you will receive training on what to do in case a spill or leak does occur.**

- **First, you should report any signs of an incident to your supervisor or foreman immediately. They will make sure that...**
 - Emergency response personnel are notified.
 - The area around the spill is evacuated if it is necessary.
 - Anyone who has been exposed to the substance or is otherwise injured is given first aid.

- **Different materials can require very different types of emergency procedures and precautions.**
 - So it's very important to identify what material has been released as soon as possible.

- **It's also important to contain the spill and minimize contamination of the area.**
 - This can involve placing absorbent "socks" or flexible barriers of urethane or PVC around the spill.

- **HAZMATs should always be prevented from escaping into storm drains or sewers.**
 - If not, the material can contaminate the surrounding area and be carried into the local watershed as well.

- **Once a spill has been contained, the material will usually be soaked up using "sorbents" and "blankets" that help neutralize it.**

- **But some substances can require special cleanup precautions.**
 - For example, to prevent a fire, only non-sparking tools should be used when cleaning up substances that are flammable.
- **Arrangements should be made to dispose of any cleanup residue properly.**
 - Hazardous chemicals are classified as “regulated waste”.
 - They must be removed by licensed waste-handling companies for special processing and disposal.

*** * * SUMMARY * * ***

- **OSHA's HAZCOM Standard gives you the "right-to-know" about the HAZMATs that are present on your job sites.**
- **Employers must create a Hazard Communication Program that serves as a detailed “blueprint” for the safe handling of hazardous substances.**
- **Your HAZCOM program specifies the equipment and safe work practices that you should use when handling different types of HAZMATs.**
- **The program will also specify proper HAZMAT storage practices and emergency response procedures.**
- **Safety Data Sheets and container labels can both provide you with important safety information about the chemicals you work with.**
- **When you know about the hazardous substances that you can encounter on your job sites, and understand the right ways to handle them, you can help ensure that you, your coworkers as well as the surrounding community are kept safe from HAZMATs... every day!**