

Talks **ZONE**

Safety Talks
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T4012

PPE can be key with chemicals

Chemicals are found in all workplaces and many of them are hazardous. They come in various forms and can affect those exposed in different ways — from mild discomfort to disability and death.

A chemical can take the form of a mist, vapor, liquid, dust, fume or gas. The type of chemical, the way it is used, and the form it takes determine what should be done to avoid harmful exposure.

When working with chemicals, personal protective equipment (PPE) often is worn to reduce or eliminate exposure. However, PPE is considered to be the last line of defense against chemical hazards. It does not remove or reduce those hazards, and it cannot replace effective engineering or administrative control methods, such as ventilation or substitution.

Material Safety Data Sheets (MSDSs) often list the appropriate PPE to wear. Not all types of PPE will protect against all hazards, so it is important to always check the MSDS before using both the chemical and the PPE.

Here is what should be worn when chemical hazards are present:

Skin Protection. Many kinds of protective gloves and clothing are available, including aprons, full body suits and boots. Gloves and clothing are made from a wide variety of materials such as latex, rubber, Viton™ and Tychem® — but no single material can protect from all chemical hazards. It's necessary to determine which specific protective materials are best for the chemicals with which you are working. It's also advisable to consider factors such as temperature or the need to protect against punctures, tears and abrasion.

Eye and Face Protection. This must be used if there is a possibility of injury from



hazards such as airborne particles or splashes of toxic or corrosive liquids. Types of eye and face protection include safety glasses, chemical splash goggles and face shields, or combinations of these.

Safety glasses and/or goggles should always be worn when working with hazardous chemicals. A face shield may be required (over the eye protection) when there is a risk of splashing, leaks or dangerous reactions. In general, contact lenses can be worn under appropriate eye protection (but should not be relied upon for protection).

Respiratory Protection. When airborne chemicals cannot be controlled below occupational exposure limits, respiratory protection must be used. There are two main types:

- Air-purifying respirators use filters or cartridges to remove contaminants. Various types of filters and cartridges are effective against different classes of chemicals.

- Supplied air respirators provide clean air for breathing. This type is used when air is oxygen-deficient, heavily contaminated or of unknown condition.

Selection of respiratory PPE must be done by a qualified person who has assessed the work situation.

Before deciding which kind of chemical protective clothing to use, a number of factors should be considered, such as:

- A complete, accurate description of the task.
- Identification of all hazards that may require protection. This should include a list of the chemicals involved as

well as physical hazards such as abrasion, tearing, puncture and temperature.

- Flexibility and touch sensitivity needed for the task. This could limit the thickness of glove material that can be used. The requirement for textured or non-slip surfaces to improve grip must also be considered.
- Type of potential contact (e.g., occasional contact or splash protection or continuous immersion of hands).
- How long the worker could be in contact with the chemical(s).
- Potential effects. Immediate irritation or corrosion of the skin must be considered in addition to possible health effects to the entire body from absorbing the chemical through the skin.
- Whether the items should be disposed of or cleaned after use.
- Training required.

As with any form of PPE, what you wear when working around chemicals should fit properly, and not impair dexterity or flexibility or create other safety risks, such as entrapment.

The Quiz

These questions are meant to help you remember what was discussed today — not to test your patience or challenge your intelligence. The answers are at the bottom of the page. Cover them up, and complete the quiz as quickly as you can.

1. There are only a few chemicals that can pose a serious workplace hazard.
TRUE ____ FALSE ____
2. Can a dangerous chemical be in the form of dust or gas?
YES ____ NO ____
3. Which of these should be consulted to determine what personal protective equipment should be worn with a certain chemical:
 - A. Maintenance manual
 - B. Operating instructions
 - C. Material safety data sheet
 - D. Google
 - E. Shipping label
4. There are clothing materials that can protect against all chemical hazards.
TRUE ____ FALSE ____
5. Which of these are types of eye protection that can be worn when working with chemicals:
 - A. Safety glasses
 - B. Goggles
 - C. Face shields
 - D. All of the above
6. Are air purifying respirators and supplied-air respirators the two types of respiratory protection used when working with chemicals?
YES ____ NO ____
7. Which of these is NOT a factor to be considered when determining the type of chemical protective clothing to wear?
 - A. A list of all chemicals involved in the task and their physical hazards.
 - B. Flexibility and touch sensitivity.
 - C. The smell of the chemical(s).
 - D. Length of expected contact.
8. Is PPE available for all the potential hazards of chemicals being used in your workplace?
YES ____ NO ____ DON'T KNOW ____

ANSWERS: 1. False, 2. Yes, 3. C., 4. False, 5. D., 6. Yes, 7. C., 8. Your answer

Hold These Thoughts

The Workplace Hazardous Materials Information System (WHMIS) provides information about many hazardous materials used in the workplace. WHMIS calls these hazardous materials controlled products.

Under WHMIS, workers have the right to receive information about each controlled product they use — its identity, hazards, and safety precautions.

WHMIS has a system of six hazard classes, depicted by eight symbols that identify the specific hazards of controlled products. After a controlled product has been classified, three elements are used to communicate health and safety information:

- WHMIS labels
- Material Safety Data Sheets (MSDSs)
- Education and training programs

WHMIS legislation exists at both the federal and provincial levels. Federal legislation establishes which products are controlled under WHMIS and deals with either the importation or sale of these materials.

Provincial legislation covers the use of hazardous materials in the workplace and identifies employer responsibilities. Workers who work with or near controlled products must know how to handle them safely.

With expected implementation of the Globally Harmonized System (GHS) in Canada, WHMIS will change. GHS is an international initiative to standardize chemical hazard classification and communication. It is not likely to replace WHMIS, but rather will incorporate GHS elements. When implemented in Canada, there will be new standardized classification rules, label requirements and safety data sheet (SDS) formats.

For the Record

Date of Meeting: _____

Topic: _____

Location: _____

Department: _____

Start Time: _____ Finish Time: _____

Meeting Leader: _____

In Attendance:

It really happened...

A foundry worker accidentally contacted the tip of a flame from an unshielded gas-burning torch. The flame ignited his coveralls upon contact, because he had earlier splashed flammable liquid on them. The worker suffered second-degree burns to his legs from the hips to the ankles.

A bulldozer operator was sprayed with hot oil when a hydraulic hose ruptured. He was wearing polyester clothing that melted on his skin. He later died from his burn injuries.

Other workers have suffered painful burns when their clothing melted from contact with hot metal or open flames.

These incidents illustrate the need to wear proper

protective clothing when working with flammable liquids or gases. It should be made of flame-resistant cotton or wool blends. The fabric should have a smooth, tightly woven finish.

Avoid clothing made of nylon, polyester, acetate or acrylic fibers. These fabrics are moderately flammable and will melt while burning and cause deep and extensive burns to the skin. Workers should avoid laminated fabric containing polyurethane sponge, as this ignites and burns quickly. Many synthetic materials do not char or ash when they reach ignition temperatures. Rather, they melt and form a hot, tacky residue which sticks to the skin and burns the flesh.

Note: *TalksZone* safety meetings are not intended to take the place of your own safety procedures. Always consult and/or review your procedures before attempting any work.