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## Working Safely with Chemicals

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# Supervising Safety Newsletter

Working with chemicals can involve the risk of exposure, which can become hazardous to a person's health. Those health risks are dependent upon the toxicity of the chemical, the types of effects, and how the chemicals enter the body.

There are four major routes of entry that allow chemicals into our body.

- Inhalation (breathing)
- Absorption (skin contact)
- Ingestion (eating)
- Injection

The most common way workplace chemicals enter the body is by breathing. Other chemicals can be absorbed through the skin into the bloodstream. They can also be accidentally swallowed if hands or cigarettes are contaminated. Contaminated cigarettes also pose an inhalation risk, which can be elevated since the cigarette is heating and/or vaporizing the chemical contaminant. Of course, workers should never eat, drink, or smoke in areas where they may be exposed to toxic chemicals.

Injection is another way that chemicals enter the body. Though less common in most workplaces, it can occur when a sharp object (i.e. a needle) punctures the skin and injects a chemical (or virus) into the bloodstream. This can also occur when a chemical is sprayed at the body at high pressure.

Eyes are also another route of entry. Usually only very small amounts of chemicals in the workplace enter through the eyes or mouth.

Whatever way the chemical enters the body, it is distributed via the bloodstream. To prevent harmful health effects from chemicals, steps need to be taken to eliminate or reduce the hazard; control the source, substitute the hazardous chemical with a less hazardous chemical, or if possible change the industrial process. If this can't be done then use other preventive measures such as Engineering Controls, Administrative Practices, or PPE.

**Engineering Controls:** Enclosed process or provide local exhaust.

**Administrative Practices:** Work upwind from mixing operations, shower after shift, change clothes, and regulate the amount of exposure, as well as no food, drink, or smoking in work areas.

**PPE:** Eye Protection, skin protection, and respiratory protection. The required PPE for the chemical we are working with can be

found on the Safety Data Sheet (SDS) for that chemical.

A SDS is an important component of occupational health and safety. It's intended to provide workers and emergency personnel with procedures for handling or working with a hazardous substance in a safe manner. It includes information such as physical data (melting point, boiling point, flash point, etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill-handling procedures.

The description (physical state and appearance) of the material on the SDS needs to be the same as the material that is being worked with. If it is not the same, you may not have the correct SDS.

Workplace hazards can have serious effects on the body, both immediate and long-term, referred to as acute and chronic.

**Acute effects** appear immediately after exposure to high levels of a toxic substance and may be treatable. The sudden collapse of a worker after being exposed to carbon monoxide, for example, is an acute effect.

**Chronic effects** become apparent only after many years and are not treatable. They can occur when the body attempts to repair itself or compensate for acute effects of a substance. For example, cancer is a chronic effect, as is the lung scarring caused by silica dust or the hearing damage caused by excessive noise. Chronic disease becomes evident only after severe damage has occurred.

Exposure limits have been developed for various hazardous materials to protect workers, but they should not be treated as a fine line between safe and unsafe workplaces. Not all individuals react in the same manner to the same amount of a harmful material. The levels of workers' exposures should be reduced to the lowest practical level achievable. Efforts to reduce workers' exposures should start at half the exposure limit.

Make sure that you know the chemical being worked with. Take the time to read through the SDS and always protect yourself accordingly.

