

Heavy Metal Dust Exposure in the Workplace

STOKO® TECH-ALERT

Help guard against the potentially harmful effects of heavy metal dusts exposure by practicing proper hand hygiene

Rest easy, metalheads. This article will *not* be expounding the harmful decibel levels or dubious lyrics of your favorite bands. Instead, it will present a concise overview of a serious health hazard - workplace exposure to heavy metals – and provide practical, relatively simple ways to help guard against their potentially harmful effects.

“Heavy metals” is a term used to describe over a dozen elements that are classified as either metals or metalloids (elements that have both metal and nonmetal characteristics). Examples include arsenic, lead, mercury, chromium, cadmium and manganese. The permanency of these elements (they cannot be degraded or destroyed) means that heavy metals are persistent in all parts of the environment.

How Exposure Occurs

Contact points are seemingly everywhere. They range from entire mines, foundries, smelters (copper, zinc, and lead), and coal-burning power plants to combustion by-products, vehicle emissions, batteries (various) and the manufacturing of chemicals and glasses (arsenic). They also include cable coverings, plumbing, ammunition, fuel additives (lead), cigarettes, dental alloys, electroplating, motor oil and exhaust (cadmium); thermometers, thermostats, and dental amalgams. Even seafood (mercury) is a possibility. An increasing dose of exposure to heavy metals can produce bio-accumulation in the body, eventually resulting in toxicity.

Health Concerns

Exposure to heavy metals can cause a multitude of serious health concerns, including: neurological impairment (lead), mental confusion, muscle and joint pain, headaches, short-term memory loss, gastrointestinal issues, allergies, vision problems, chronic fatigue, and kidney failure. Persons experiencing heavy metal toxicity can be treated by physicians. However, the effects of toxicity can be suffered for extended periods and may not be fully reversible.

Going on the Defensive

To proactively guard against heavy metal exposure, there are three key points to bear in mind:

1. Knowledge: Make sure you know exactly what substances with which you are working. It's as simple – yet critical – as reading the material safety data sheet.
2. Protection: Wear the required personal protective equipment (PPE) – that means every item specified. These may include respirators, eyewear, aprons or sleeves, and the appropriate gloves.
3. Skin Hygiene: Practice consistent and thorough hand hygiene to remove contamination from the skin.

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Skin Care and Hand Hygiene

For skin exposures to heavy metal dusts, the following recommendations can be made:

- PPE and a skin care regimen can work with engineering and work practice controls to prevent further exposure.
- A three-step skin care program should be implemented, starting with the application of an effective before-work cream. Some of these help as a preventive measure against irritants, while others are designed to help combat the effects of maceration due to sweating – for example, under gloves. This program should continue with the application of a skin-compatible cleanser and conclude with the application of an after-work moisturizing cream, which should be used to replenish lost oils and lipids in the skin. In addition, all products in the three-step program should be specific to the substances being handled.
- If cleansers need scrubbers, they should be non-abrasive. They should also be tested to have good skin compatibility and a pH close to the range of the skin's natural acid mantle.
- Wash hands frequently in tepid water with cleanser, especially before eating, using the rest room, and taking breaks. And before heading home, make sure to shower and put on clean clothes.

Only the power chords of Led Zeppelin, Kiss, and Black Sabbath could equal the harmony that knowledge, PPE, and skin hygiene can provide in helping reduce the effects of heavy metal exposure in the workplace (insert guitar riff here).



About the Authors

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