

Isocyanate Outreach

OSHA Regional Notice Isocyanate Local Emphasis Program

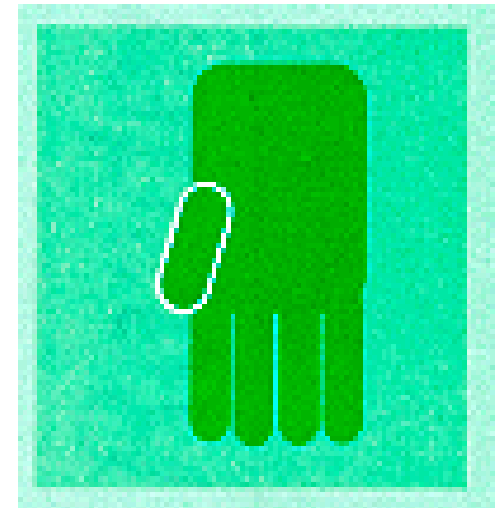


Local Emphasis Programs (LEPs) are a type of Special Emphasis Program, as described in OSHA Instruction CPL 2.25I, in which one or more Area Offices of a Region participate. LEPs are generally based on knowledge of local industry hazards or knowledge of local industry injury/illness experience. Whenever one or more Area Offices of a Region targets inspections to a specific industry, hazard, or other workplace characteristic -- e.g., as part of or in conjunction with a local initiative or problem-solving project - an LEP must be developed and approved. This LEP originated at the Madison Area Office.

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OSHA's Local Emphasis Program for Isocyanates

The Madison Area OSHA Office has instituted a Local Emphasis Program (LEP) for addressing isocyanate exposures in general industry. Our inspection activities will focus on evaluating dermal exposures to isocyanates. We will also evaluate employees' airborne exposures to isocyanates.



Background

Diisocyanates are a group of low-molecular-weight aromatic and aliphatic compounds. The most common of these are toluene diisocyanate (TDI), methylene bisphenyl isocyanate (MDI), and hexamethylene diisocyanate (HDI). They are widely used in the manufacture of flexible and rigid foams, fibers, coatings such as paints and varnishes, and elastomers. Diisocyanates are increasingly used in the automobile industry, autobody repair, and building insulation materials. These chemicals are commonly referred to as isocyanates.

Exposures to isocyanates can have adverse health effects for workers. Respiratory disease among workers exposed to isocyanate compounds has been recognized since the 1950's. Exposure limits have been established in the U.S. and other countries for both ceiling and (time weighted average) TWA exposures.

Isocyanates are powerful irritants to the mucous membranes, gastrointestinal and respiratory tracts. Irritation may be severe enough to produce bronchitis with bronchospasm. Hypersensitivity pneumonitis has been reported in isocyanate-exposed workers. Symptoms are known to continue for months or years after exposure has ceased and there are reports of deaths due to isocyanate induced hypersensitivity pneumonitis.

LEP Outreach

Isocyanates are known to cause respiratory sensitization, an allergic, asthma-type reaction. There is

evidence of cross-sensitization in which a worker is exposed to one isocyanate but reacts adversely to others as well. There is also evidence that dermal exposures are a primary cause of respiratory sensitization. Workers may have skin contact with isocyanates, which causes their immune systems to become sensitized, making them susceptible to respiratory sensitivity reactions upon future exposures. Dermal sensitization may result in rash, itching, hives and swelling of the extremities. Because they are not water soluble, they cannot be easily washed off of skin or clothing.

Workers who do become sensitized experience long-term effects. Isocyanates cause skin and asthma-like allergies. Once an employee develops isocyanate allergy, they always have the allergy and are susceptible to the symptoms even at exposures to very low levels of these chemicals. Depending on the length of time and concentration of the exposures, hypersensitivity pneumonitis, which is a life-threatening build up of fluid in the lungs, may occur.

Inspection Procedures

Inspections conducted under this LEP will focus on the hazards of, exposures to, and

proper work practices for working with isocyanates. All aspects of potential isocyanate related work or exposure, including a review of all related written documents (i.e., recordkeeping, air monitoring, dermal exposure surveys, personal protective equipment program, medical monitoring, respirator fit testing and procedures, hazard communication and training) will be addressed. These programmed health inspections may be expanded in accordance with the guidelines established in the FIRM (CPL 2.103, Chapter II, Paragraph A.1.b) and other guidance documents.

Recommendations for Reducing Exposure

Skin contamination can be controlled with safe work practices and handling procedures. It is important to realize that surface contamination does not itself represent employee exposure. However, tools machinery controls or telephones that are handled with contaminated gloves represent potential exposures when touched by unprotected skin. A weekly detection/ decontamination program will maintain a clean and safe working environment.

Questions:
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