



Diisocyanates in Spray-on (Truck) Bed Liners

The purpose of this hazard alert is two fold; to alert employers about the health affects of diisocyanates and to inform employers of OR-OSHA's local enforcement emphasis program to identify specific industries for health inspections where diisocyanates are used. The initial focus will be directed at spray-on bed liners and undercoating applications in the automotive industry.

Diisocyanates, also referred to as isocyanates, are a group of low-molecular weight aromatic and aliphatic compounds frequently used in the automobile industry, autobody repair, spray-on truck bed liners, and building insulation materials. The most common of these are toluene diisocyanate (TDI), methylene diisocyanate (MDI), and hexamethylene diisocyanate (HDI). These chemicals have poor odor warning properties. Do not rely on your sense of smell as a means to protect yourself from chemical exposure.

Exposure to isocyanates can have adverse health effects. They are powerful irritants to the mucous membranes, gastrointestinal and respiratory tract. Irritation may be severe enough to produce bronchitis with bronchospasm. They are also allergic sensitizers and are known to cause respiratory sensitization, an allergic, asthma-type reaction. Once sensitization has occurred, future exposures can produce allergic reactions often with debilitating effects. Sensitization can occur from isocyanates being absorbed through skin contact. 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 skin or clothing.

Employer responsibilities:

- Train workers on the health effects that may result from exposure.
- Make workers aware of materials that contain or are contaminated with isocyanates.
- Substitute less hazardous chemicals when feasible.
- Use engineering controls such as closed systems and ventilation to minimize exposure.
- Clean up spills and leaks immediately.

Employee responsibilities:

- Be aware that enclosed areas can contain high concentrations of isocyanates.
- Use appropriate respiratory protection.
- Wash hands and face before eating, drinking, or smoking outside the work area.
- Shower and change into clean clothes before leaving the worksite.
- Participate in air monitoring and training programs.

The following is a list and discussion of OR-OSHA rules that could apply when using isocyanates.

Hazard Communication: 1910.1200

www.cbs.state.or.us/external/osha/pdf/rules/division_2/div2z-1200-hazcom.pdf

- Review Material Safety Data Sheets for information on isocyanate hazards.
- Train workers to recognize adverse conditions and steps they can take to protect themselves.

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Hazard alerts provide information on unusual safety or health hazards or unusual or hazardous materials or practices. They contain information from OR-OSHA field staff, research from the Standards and Technical Resource staff and various published materials. For more information contact the Standard and Technical Resources Section at 503-378-3272, toll free at 1-800-922-2689 or visit our Web site at www.orosha.org

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Personal Protective Equipment: 1910.132

www.cbs.state.or.us/external/oshapdf/rules/division_2/div2_i.pdf

- Ensure personal protective equipment (safety glasses, chemical goggles, gloves) are selected, used and maintained properly. Document your hazard assessment and training.
- Select chemical resistant gloves for hand protection based on manufacturer recommendations for permeation and degradation breakthrough times. One type of glove may not be protective for all the chemicals present in the product.
- Latex gloves are not recommended for use with these chemicals.

Respiratory Protection: 1910.134

www.cbs.state.or.us/external/oshapdf/rules/division_2/1910-134.pdf

- Perform air monitoring to determine worker exposure.
- Use supplied-air respirators (SARs) when exposure conditions are unknown. SARs are preferred over air-purifying respirators (APRs).
- If exposure concentrations are known, appropriate APRs may be selected. Full-face APRs are preferred since they provide both eye and skin protection.
 - Use cartridges equipped with a combination organic vapor/particulate filter. Contact the manufacturer for respirator/cartridge limitations.
 - Establish a change-out schedule for cartridge replacement. Isocyanates and other solvents present influence the cartridge replacement frequency.
- Workers using respiratory protection must receive a medical evaluation.
- Workers using respiratory protection must be fit tested every year.
- Respirator wearers must be clean-shaven where the sealing surfaces contacts the skin.
- Train employees in the proper use, care, maintenance and storage of respirators.
- A written respiratory protection program is required.

Spray Finishing: OAR 437-002-0107

www.cbs.state.or.us/external/oshapdf/rules/division_2/1910-107.pdf

- Spraying must occur in a spray booth with 100 linear feet per minute of ventilation. The spray booth must be constructed of fire-resistant materials, cleaned daily, and be protected by automatic fire extinguishers. All electrical equipment within the booth must be explosion-proof.

Personal Hygiene: 1910.141

www.cbs.state.or.us/external/oshapdf/rules/division_2/1910-141.pdf

- Use personal hygiene practices to remove chemical exposures to the skin.
- Do not eat, drink, smoke, chew gum, etc. in areas where these chemicals are used.

Medical & First Aid: OAR 437-002-0161

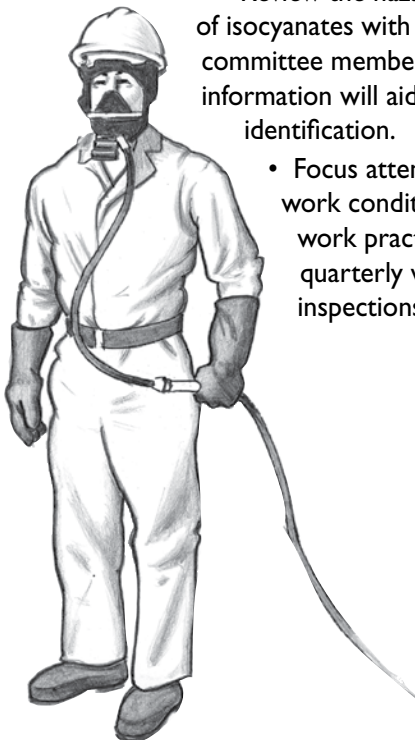
www.cbs.state.or.us/external/oshapdf/rules/division_2/div2_k.pdf

- Develop and implement an emergency medical plan.
- Provide an emergency eyewash and shower for immediate chemical removal.

Safety Committee: OAR 437-001-0765

www.cbs.state.or.us/external/oshapdf/rules/division_1/437-001-0765.pdf

- Review the hazards of isocyanates with safety committee members. This information will aid in hazard identification.
- Focus attention on work conditions and work practices during quarterly walk-around inspections.



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