

MEDICAL SCREENING AND SURVEILLANCE FOR WORKERS POTENTIALLY EXPOSED TO DIISOCYANATES

A GUIDE FOR WORKERS

Workers exposed to diisocyanates may be at risk of health effects. The purpose of medical screening and surveillance is to detect potential health effects early. This will make treatment more effective and may prevent illness progression.

WHO CAN BENEFIT FROM A MEDICAL SURVEILLANCE PROGRAM FOR DIISOCYANATES?

Workers assigned to a work area where diisocyanates are used or who have potential exposure to diisocyanates through the skin or lungs can benefit from a medical surveillance program. Workers involved in production, processing, application, spill clean-up, and/or maintenance activities where diisocyanates are present would benefit from medical surveillance. See the table¹ for some of the most common products and jobs with potential diisocyanate exposure. Exposure is primarily related to the manufacture and use of the uncured diisocyanates and not to the finished product(s) in which the diisocyanate has completely cured into a polyurethane. However, care must also be taken during any production or maintenance activities that might result in thermal decomposition (breakdown) of these cured products, as potentially hazardous chemicals, including diisocyanates, may be released.

Products and Jobs Where Exposure to Diisocyanates May Occur

Common Products*

- Paints, lacquers, ink, varnishes, sealants, finishes
- Insulation materials
- Polyurethane rubber
- Glues and adhesives

Common Jobs and Job Processes*

- Manufacture of PU foam
- Car manufacture and repair
- Building construction (plaster, insulation)
- Foam blowing and cutting
- Painting
- Truck bed liner application

**Many more jobs and products may also cause work-related asthma.*

WHAT ARE THE SYMPTOMS AND HEALTH EFFECTS OF DIISOCYANATE EXPOSURE?

Diisocyanate exposure causes irritation of the skin, eyes, nose, throat and lungs. Symptoms may include burning of the eyes, skin rashes, runny nose, shortness of breath, cough, chest tightness and wheezing. Diisocyanates can also cause work-related asthma. Early on, the symptoms of asthma (shortness of breath, cough, chest tightness, and/or wheezing) may be worse during or right after work, but improve away from the jobsite such as on weekends and vacations. If asthma is allowed to progress due to ongoing exposure, the symptoms can become permanent. In addition, exposure to diisocyanates can aggravate pre-existing asthma.

If exposed to high concentrations, diisocyanates may also cause a type of pneumonia called hypersensitivity pneumonitis, with cough, shortness of breath, and fever.

¹ OSHA Fact Sheet "Do You Have Work-Related Asthma? A Guide for You and Your Doctor":
<https://www.osha.gov/Publications/OSHA3707.pdf>



HOW DOES MEDICAL SURVEILLANCE HELP?

Medical surveillance uses screening tools, such as questionnaires, physical examination, and breathing tests (pulmonary function tests) to find health effects that may be due to diisocyanate exposure. The surveillance is most effective when done before you begin any job with potential exposure to diisocyanates and repeated periodically, such as once a year.

A physician or licensed health care professional (PLHCP) reviews your medical history and any symptoms you have. Depending on the review, the PLHCP may do a physical examination, order further testing, such as the breathing test, and/or refer you to a specialist. The PLHCP should discuss all results with you, including any recommendations regarding exposure to diisocyanates. If you have symptoms or illnesses, such as asthma, due to exposure to diisocyanates, eliminating further exposure is the most important step to improve your health.

In addition, de-identified information from medical surveillance (names and confidential information removed) can help employers find and fix workplace hazards, such as jobs and processes that may overexpose workers to diisocyanates.

WHAT SHOULD YOU DO IF YOU THINK YOU HAVE SYMPTOMS OR AN ILLNESS THAT MAY BE DUE TO DIISOCYANATE EXPOSURE?

It is important to report symptoms early, so that a medical evaluation can be done and, if necessary, you can be removed from exposure. Your employer should have a process in place to report symptoms or ask questions about your exposures. You can also discuss concerns with your family doctor. You are entitled to a safe workplace. Learn more about your rights at OSHA's Worker Rights (<https://www.osha.gov/workers/index.html>) webpage.

OTHER HELPFUL RESOURCES

OSHA's webpage on Isocyanates (includes information on both monoisocyanates and diisocyanates):

<https://www.osha.gov/SLTC/isocyanates/>

OSHA Fact Sheet "Do You Have Work-Related Asthma? A Guide for You and Your Doctor":

<https://www.osha.gov/Publications/OSHA3707.pdf>

A Guide for the Primary Care Physician in Evaluating Diisocyanate Exposed Workers for Occupational Asthma:

<https://dii.americanchemistry.com/Primary-Care-Physician-Asthma.html>

Health Effects of Diisocyanates: Guidance for Medical Personnel:

<https://polyurethane.americanchemistry.com/Resources-and-Document-Library/Health-Effects-of-Diisocyanates-Guidance-for-Medical-Personnel.pdf>

Guidance for Working with MDI and Polymeric MDI: Things You Should Know:

<https://polyurethane.americanchemistry.com/Resources-and-Document-Library/11364.pdf>

Guidance for Working with TDI: Things You Should Know:

<https://polyurethane.americanchemistry.com/Resources-and-Document-Library/3857.pdf>

Guidance for Working with Aliphatic Diisocyanates: <https://adi.americanchemistry.com/Guidance-for-Working-with-ADIs.pdf>



Through the OSHA and the American Chemistry Council Alliance, ACC developed this medical guidance document for informational purposes only. It does not necessarily reflect the official views of OSHA or the U.S. Department of Labor. (February/2019)

Under the Occupational Safety and Health Act, employers are responsible (www.osha.gov/as/opa/worker/employer-responsibility.html) for providing a safe and healthy workplace and workers have rights (www.osha.gov/workers). OSHA can help answer questions or concerns from employers and workers. OSHA's On-site Consultation Program (www.osha.gov/consultation) offers free and confidential advice to small and medium-sized businesses, with priority given to high-hazard worksites. For more information, contact your regional or area OSHA office (www.osha.gov/html/RAmap.html), call 1-800-321-OSHA (6742), or visit www.osha.gov.