

Isocyanate-based foam and Work-Related Asthma

Work-related asthma is a lung disease caused or made worse by exposure to substances in the workplace. Isocyanates are a family of chemicals that are well known to cause work-related asthma.¹

Isocyanate-based spray foam is available for both industrial and consumer use. Once isocyanates have fully cured, the risk of getting sick is reduced. However, it can be hard to know when the isocyanates are fully cured such that no one gets sick upon building re-entry.



Spray foam can contain isocyanates

Workers may:

- Have a hard time breathing with wheeze, cough, and chest tightness. Though rare, isocyanate exposure can be fatal.
- Get asthma symptoms from ongoing everyday exposure or from a one-time upset event
- Develop asthma even though they've been around a substance for years
- Improve their health if they stop being around the asthma-causing substance early enough

Workers at risk include:

- Construction workers
- Maintenance staff
- Spray-foam insulation installers
- Building occupants during or after insulation application

Recommendations

- Tell your employer if you feel shortness of breath from work.
- Talk to your doctor about your health symptoms and your job.
- Get the product Safety Data Sheet (SDS) for the material you are working with and look for any form of 'isocyanate' in the ingredients (Section 3). If you're using a 2-part system, be sure to get the SDS for part A and part B.
- Isocyanate-based products should be used inside a spray booth or with adequate ventilation. Good respiratory protection, such as supplied air or a full face air purifying respirator are often warranted. Because isocyanates can pass through the skin and cause sensitization, protective clothing that covers your arms and legs are needed. Latex gloves are not protective, choose nitrile or other chemically compatible glove that is at least 8 ml in thickness.
- Never apply isocyanate products in an occupied area.
- Consult a safety and health professional to help with ventilation, respiratory protection, and protective clothing.
- Washington employers can request a free & confidential [L&I Consultation](http://lni.wa.gov/safety/consultation) (lni.wa.gov/safety/consultation).

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Worker Stories

Office workers get sick after re-entering a building insulated with spray foam

In 2014 six office workers suffered occupational asthma following the application of spray can foam insulation. An additional 2 workers reported respiratory symptoms. Workers continued to experience problems with their breathing for at least 6 months after the application. Two maintenance workers applied approximately 7 spray cans of Great Stuff Pro—Gaps & Cracks Insulating Foam Sealant (30% *diphenylmethane diisocyanate*) over 3 days during business hours. The insulation was applied to interior gaps to restore the building following a recurring wasp infestation.

Maintenance workers wore respiratory and other personal protection during product application and did not suffer breathing problems. Upon building re-entry however, one office worker experienced health symptoms within the first week and was subsequently diagnosed with new-onset occupational asthma. The five remaining workers' compensation claims were accepted. Ultimately, all injured workers were accommodated through permanent relocation to a separate building. The employer experienced approximately 70 lost work days, and \$2,100 in OSHA fines. The cumulative workers' compensation costs exceeded \$200,000.

Professional foam insulator needs emergency help

In 2007 a male laborer, age 36, worked for an insulation company that installed MDI-based spray polyurethane foam in residential attics. His job duties were to mask, cut over-sprayed foam, clean up, and tend the hose used by the lead applicator. During his 3 months of employment he sustained two different severe episodes of shortness of breath requiring emergency medical treatment. At the time of the first episode he was wearing a dust mask, at the second episode he was equipped with an air purifying respirator. He was diagnosed with occupational asthma (Reactive Airways Dysfunction Syndrome) and advised to leave his job, which he did.

Tracking work-related asthma in Washington

The SHARP Program at the Washington State Department of Labor and Industries tracks work-related lung disease. Work-related asthma is a notifiable condition in Washington and surveillance has been ongoing since 2001. A total of 27 isocyanate-induced asthma cases were identified between 1999 and 2010 using Washington State's work-related asthma surveillance data. Out of the 27 cases, five involved foam products including manufacturing (2), spray packaging (2), and insulation (1).¹

For more information, contact the Safety and Health Assessment & Research for Prevention (SHARP) Program at the WA State Department of Labor and Industries at Lni.wa.gov/Safety/Research/OccHealth/Asthma/default.asp, SHARP@Lni.wa.gov or toll free at 1-888-667-4277.

¹Prevention guidance for isocyanate-induced asthma using occupational surveillance data (2013). CK Reeb-Whitaker, NJ Anderson, DK Bonauto, J Occ Env Hgy 10:11 597-608, DOI: 10.1080/15459624.2013.818236.

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