

Toluene Diisocyanate (TDI) and Methylenediphenyl Diisocyanate (MDI) - ToxFAQs™

What are TDI and MDI?

TDI and MDI are man-made chemicals that do not occur naturally in the environment. TDI is a clear, colorless to pale yellow liquid. MDI is a light yellow crystalline solid.

TDI and MDI are used to make many household products. They combine with other chemicals to produce various polyurethanes. Some of the products made with these polyurethanes include foam for furniture cushions, carpet padding, and waterproof sealants.



What happens to TDI and MDI in the environment?

TDI and MDI can be released into the air, water, and soil at places where they are made or used. TDI and MDI are extremely reactive chemicals and do not stay in the environment long.

In the air, half of the TDI and MDI will be removed in less than a day. In water, TDI and MDI react rapidly to form other compounds and half will be removed within a few minutes to a few hours. These chemicals do not build up in plants or animals.

How can I be exposed to TDI and MDI?

You may be exposed by using products such as adhesives, sealants, coatings, paints, craft materials, and insulating foams. Exposure through food and water is unlikely.

Workers involved in the manufacture of polyurethane products or involved in other industries using TDI and MDI may be exposed to higher levels.

How can TDI and MDI affect my health?

Respiratory effects, including a decrease in lung function, have been reported in workers exposed to TDI or MDI.

Asthma and symptoms of asthma, such as wheezing and shortness of breath, have been observed in some individuals who are sensitive to the toxicity of TDI and MDI.

Exposure to TDI and MDI can occur by contact with some polyurethane products. Exposure to these chemicals may affect your breathing.

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Can TDI and MDI cause cancer?

An excess of lung cancer was seen in some workers at a polyurethane foam manufacturing plant. However, it is not known whether the lung cancer was due to exposure to TDI.

Laboratory animals that ate TDI for a long time had increases in tumors in the pancreas, breast, and liver.

The [U.S. Department of Health and Human Services \(DHHS\)](#) has determined that TDI is reasonably anticipated to be a human carcinogen (causes cancer).

The [U.S. Environmental Protection Agency \(EPA\)](#) has not classified the carcinogenicity of TDI. EPA notes that the carcinogenicity of MDI cannot be determined, but there is suggestive evidence that raises concern for carcinogenic effects.

The [International Agency for Research on Cancer \(IARC\)](#) has classified TDI as possibly carcinogenic to humans and determined that MDI is not classifiable as to its carcinogenicity to humans.

Can I get a medical test to check for TDI and MDI?

There are tests that can measure TDI and MDI and their breakdown products in blood and urine. These tests need to be done soon after exposure since these chemicals quickly leave the body. These tests cannot predict if you will have health effects.

How can I protect myself and my family from TDI and MDI?

Take appropriate precautions when working with or around TDI or MDI products (such as spray foam or sealants).

For more information:

Call **CDC-INFO** at 1-800-232-4636, or submit your question online at

<https://wwwn.cdc.gov/dcs/ContactUs/Form>

Go to ATSDR's Toxicological Profile for Toluene Diisocyanate and Methylenediphenyl Diisocyanate:

<https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=1453&tid=245>

Go to ATSDR's Toxic Substances Portal: <https://wwwn.cdc.gov/TSP/index.aspx>

Find & contact your ATSDR Regional Representative at http://www.atsdr.cdc.gov/DRO/dro_org.html

