

This fact sheet answers the most frequently asked health questions (FAQs) about dinitrocresols. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

**SUMMARY:** Exposure to dinitrocresols occurs mainly from breathing air, drinking water, or eating food that contains the chemicals. At high levels, these chemicals may cause skin rashes or yellowing; increased heart and breathing rates; damage to the liver, stomach, and kidneys; and even death. These chemicals have been found in at least 50 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

### What are dinitrocresols?

(Pronounced dī-nī'trō-krē'sōlz')

Dinitrocresols are a class of manufactured chemicals that do not occur naturally in the environment. There are 18 different dinitrocresols.

The most commercially important dinitrocresol, 4,6-dinitro-o-cresol (DNOC), is a yellow solid with no smell. It is used primarily for insect control and crop protection. It may be sold under several trade names, including Antinonnin, Detal, and Dinitrol. Use of tradenames is for identification only and does not imply endorsement by the Agency for Toxic Substances and Disease Registry, the Public Health Service, or the U.S. Department of Health and Human Services.

DNOC was used in diet pills in the 1930s, but has since been banned for this use.

### What happens to dinitrocresols when they enter the environment?

- DNOC enters the air, water and soil during its manufacture and use, and may be formed from the reaction of other chemicals in the air.
- DNOC may also enter the environment through landfill and storage tank leaks, or accidental spills during manufacture or transport.

- It dissolves slightly in water.
- It can be broken down slowly in air, water, and soil by small organisms.
- It does not easily evaporate into the air.
- DNOC sticks to particles in water, which will cause it to eventually settle to the bottom sediment.
- It also sticks to soil particles, which prevents it from moving very deep into the soil with rainwater.
- It probably does not build up significantly in fish.

### How might I be exposed to dinitrocresols?

- Breathing contaminated workplace air where it is manufactured or used.
- Breathing contaminated air from DNOC-containing waste sites, or during DNOC spraying or waste incineration.
- Touching contaminated soil or water near DNOC-containing waste sites.
- Ingesting contaminated soil or water near DNOC-containing waste sites.

### How can dinitrocresols affect my health?

Most of the information on the health effects of dinitrocresols comes from old studies on patients who were prescribed diet pills containing DNOC before it was banned for this use.

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

Exposure to high levels of DNOC for short periods may cause convulsions, unconsciousness, and death.

Exposure to lower levels may result in an increased basal metabolic rate (the rate that you use energy at complete rest), increased sweating, weight loss, and increased heart rate, breathing rate, and body temperature.

Other effects from DNOC exposure may include difficulty in breathing, headache, drowsiness, dizziness, a yellowing of skin and the whites of the eyes, and mild damage to the stomach, kidneys, and liver. Ingesting DNOC for long periods may cause cataracts and skin rashes.

### **How likely are dinitrocresols to cause cancer?**

The Department of Health and Human Services (DHHS), the International Agency for Research on Cancer (IARC), and the EPA have not classified dinitrocresols for carcinogenicity.

There are no studies available in people or animals on the carcinogenic effects of dinitrocresols.

### **Is there a medical test to show whether I've been exposed to dinitrocresols?**

Yellow-stained skin and eyes may indicate that you have been exposed to DNOC, but these symptoms could also be caused by exposure to other chemicals.

Tests are available that measure the amount of DNOC in blood, urine, and feces. However, since DNOC may remain in your blood and urine for a long time after exposure, these tests cannot reliably tell you the amount to which you have been exposed.

These tests may require special equipment, and they may not be available at your doctor's office.

### **Has the federal government made recommendations to protect human health?**

The EPA lists DNOC as a hazardous air pollutant (HAP). The EPA requires that discharges or spills into the environment of 10 pounds or more be reported.

The Occupational Safety and Health Administration (OSHA) has set an exposure limit of 0.2 milligrams of DNOC per cubic meter of air (0.2 mg/m<sup>3</sup>) for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that average workplace air levels not exceed 1.5 mg of DNOC/m<sup>3</sup> of air for a 10-hour workday, 40-hour workweek.

NIOSH has recommended that 5 mg of DNOC/m<sup>3</sup> of air be considered immediately dangerous to life or health. This is the exposure level of a chemical that is likely to cause permanent health problems or death.

### **Glossary**

Carcinogenicity: Ability to cause cancer.

CAS: Chemical Abstracts Service.

Cataract: A decrease in the transparency of eye lenses.

Evaporate: To change into a vapor or a gas.

Ingesting: Taking food or drink into your body.

Milligram (mg): One thousandth of a gram.

Sediment: Mud and debris that have settled to the bottom of a body of water.

### **References**

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for dinitrocresols. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

