

Nitrophenols - ToxFAQs™

What are nitrophenols?

Nitrophenols include three chemical compounds: 2-, 3-, and 4-nitrophenol. They range in color from colorless to pale yellow. Nitrophenols are solids. Nitrophenols are not released from natural sources, but instead are manufactured and used in the production of dyes, rubber, photographic chemicals, medicines, pesticides, and fungicides (chemicals used to kill fungus, like mold). They are also formed in auto exhaust. The three forms of nitrophenol have unique physical and chemical characteristics and different industrial uses.



What happens to nitrophenols in the environment?

- The main source of nitrophenol release is exhaust from cars. Nitrophenols can also form in the environment from the breakdown of certain pesticides used for crop protection.
- Only a very small portion of released nitrophenols is expected to stay in the air because it eventually breaks down when exposed to sunlight.
- Nitrophenols are expected to move from the air to water and land. However, nitrophenols will break down in water after a few days.
- 4-Nitrophenol has been measured with a half-life (the amount of time it takes for the amount of nitrophenols in the water to decrease by half) ranging from less than 1 to 21 days in different types of surface water.
- Once deposited in soil, nitrophenols break down very slowly.

How can I be exposed to nitrophenols?

- You may be exposed to low levels of nitrophenols in outdoor air. Exposure may be higher if you live and/or work near roadways with heavy traffic.
- Nitrophenols are not usually measured in drinking water, but it is possible that you could be exposed this way.
- Those living near or working on farmlands or waste sites that use certain pesticides may be exposed to nitrophenols at greater rates than the general public, particularly if the drinking water is contaminated.
- Children may be exposed to nitrophenols if they play in soil where certain pesticides have been used.

The general population is expected have low exposure to nitrophenols. Exposure may be higher if you live or work near roadways with heavy traffic or near hazardous waste sites.

How can nitrophenols affect my health?

- There are no studies that have looked at health problems in people with confirmed exposure to nitrophenols. Information on health effects has come from studies in animals.
- In animals, 4-nitrophenol is a skin and eye irritant. Eye exposure to 4-nitrophenol dust caused cataracts (cloudiness of the eye).
- Based on studies in rats, it is possible that breathing in 4-nitrophenol could reduce the blood's ability to carry and deliver oxygen to tissues and organs. This can cause tiredness, weakness, lack of oxygen, headache, blueish skin color changes, or dizziness.
- Based on studies in rats and mice, ingestion of 4-nitrophenol may result in decreased body weight.

Nitrophenols

Can nitrophenols cause cancer?

- The [U.S. Department of Health and Human Services \(DHHS\)](#) has not classified the cancer-causing risk of 2-, 3-, or 4-nitrophenol in humans.
- The [U.S. Environmental Protection Agency](#) has not classified the cancer-causing risk of 2-, 3-, or 4-nitrophenol in humans.
- The [International Agency for Research on Cancer](#) has not classified the cancer-causing risk of 2-, 3-, or 4-nitrophenol in humans.

Can I get a medical test to check for nitrophenols?

There are tests to measure nitrophenols in human urine. Because 2- and 4-nitrophenol leave the body through urine very quickly, these tests will only be useful for recent suspected exposures. 4-Nitrophenol is also a metabolite (breakdown product) of certain pesticides, so it is not possible to tell from a medical test whether exposure was from 4-nitrophenol or pesticides.

How can I protect my family from nitrophenols exposure?

- Avoid exposure to air, water, or dirt that has high levels of nitrophenols.
- Do not let children play in the dirt near farmland or hazardous waste sites where nitrophenols or certain pesticides may have been used or thrown away.
- If you work on a farm or in an industrial setting with nitrophenols or certain pesticides, follow all safety instructions and regulations and minimize breathing in or touching the chemical.

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 Nitrophenols at <https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=880&tid=172>

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