

# 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 production of dyes, rubber, photographic chemicals, medicines, pesticides, and fungicides (chemicals used to kill fungus, like mold). They are also formed in auto exhaust. These three nitrophenols 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. 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 a day to 21 days in different types of surface water.
- Once deposited in soil, nitrophenols break down very slowly.

Living or working near roadways with heavy traffic or near hazardous waste sites may expose you to low levels of nitrophenols in air or soil.

## How can I be exposed to nitrophenols?

- You may be exposed to low levels of nitrophenols in the air, especially if you live and/or work near roadways with heavy traffic.
- You may be exposed to nitrophenols if you directly consume drinking water with high levels. This could be more common near farmlands that use certain pesticides. 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.
- Children may be exposed to nitrophenols if they play in soil where certain pesticides have been used.

## How can nitrophenols affect my health?

- There are no studies that have looked at health problems in people exposed to nitrophenols. Information on health effects has come from studies in animals.
- In animals, breathing in or eating nitrophenols had harmful effects on the respiratory system (nose and lungs), causing wheezing and shortness of breath.
- Based on studies in rats, it is possible that breathing in 2-nitrophenol or 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, bluish skin color changes, or dizziness.
- In animals, breathing in 4-nitrophenol or having it directly applied to their eyes caused eye irritation.
- Animal studies also show that skin can be irritated if 4-nitrophenol touches it.

# Nitrophenols

## Can nitrophenols cause cancer?

No agency or organization has made an assessment about whether nitrophenols can cause cancer.

- The [National Toxicology Program](#) has no data on the carcinogenicity status of 2-, 3-, or 4-nitrophenol.
- The [Environmental Protection Agency](#) has not evaluated the carcinogenicity classification of 2-, 3-, or 4-nitrophenol.
- The [International Agency for Research on Cancer](#) has no data on the carcinogenicity status of 2-, 3-, or 4-nitrophenol.

## 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 only.

## How can I protect my family from nitrophenols exposure?

- Avoid exposure to air, water or dirt that has high levels 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.

## Want more information?



Go to ATSDR's Toxicological Profile for Nitrophenols at

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

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 Toxic Substances Portal: <http://www.atsdr.cdc.gov/substances/index.asp>

If you have any more questions or concerns, you can also find & contact your ATSDR Regional Representative at [http://www.atsdr.cdc.gov/DRO/dro\\_org.html](http://www.atsdr.cdc.gov/DRO/dro_org.html)