

# 3,3'-Dichlorobenzidine - ToxFAQs™

## What is 3,3'-dichlorobenzidine?

3,3'-Dichlorobenzidine is a man-made chemical used in the production of dyes and pigments that are in textiles, plastics, rubbers, and leather. 3,3'-Dichlorobenzidine can be found in the environment near facilities making or using the chemical, or in hazardous waste sites through industrial wastewater discharge. Since its classification as a possible human carcinogen (substance causing cancer), the production of 3,3'-dichlorobenzidine in the United States has significantly decreased, including its use in manufacturing processes. However, it continues to be imported from other countries.



## What happens to 3,3'-dichlorobenzidine in the environment?

- When exposed to natural sunlight in water or air, 3,3'-dichlorobenzidine breaks down rapidly.
- 3,3'-Dichlorobenzidine sticks to soils or sediments and can travel in air or water for long distances if it is not exposed to sunlight.
- When released in wastewater, 3,3'-dichlorobenzidine can contaminate groundwater.
- Fish can build up 3,3'-dichlorobenzidine in their body.

## How can I be exposed to 3,3'-dichlorobenzidine?

- You may be exposed to 3,3'-dichlorobenzidine if you work in a facility that produces or uses it.
- If you live near a facility making, using, or disposing 3,3'-dichlorobenzidine, you may be exposed to amounts through water, air, and soil.
- You may be exposed to very small amounts of 3,3'-dichlorobenzidine in cosmetic, skin care, or other personal care products using yellow or orange dyes.
- You or your children could be exposed by eating paint chips that contain 3,3'-dichlorobenzidine as a pigment in yellow and orange paint.

## How can 3,3'-dichlorobenzidine affect my health?

Workers handling high levels of 3,3'-dichlorobenzidine have reported itchy or red skin or rash.

3,3'-Dichlorobenzidine exposure has been associated with an increased risk of bladder cancer in workers who have used 3,3'-dichlorobenzidine in manufacturing for long periods of time.

Studies in animals that ate this chemical have shown that 3,3'-dichlorobenzidine can increase the risk of tumors and other cancers, and may result in mild-to-moderate liver injury.

Results of some animals studies suggest that 3,3'-dichlorobenzidine exposure of fetal animals during pregnancy or after birth through exposure to breast milk may affect the liver and kidney of animals, but results are limited. There is not enough information to determine if 3,3'-dichlorobenzidine leads to developmental effects in these animals after birth. There is indirect evidence that 3,3'-dichlorobenzidine or its metabolites can cross the placenta.

# 3,3'-Dichlorobenzidine

## Can 3,3'-dichlorobenzidine cause cancer?

Several agencies and organizations both in the United States and internationally have reviewed studies and made an assessment about whether 3,3'-dichlorobenzidine could cause cancer.

The [U.S. Department of Health and Human Services \(DHHS\)](#) has classified 3,3'-dichlorobenzidine as reasonably anticipated to be a human carcinogen (substance causing cancer), based on evidence from animal studies.

The [U.S. Environmental Protection Agency \(EPA\)](#) has classified 3,3'-dichlorobenzidine as a probable human carcinogen, based on evidence from animal studies.

The [International Agency for Research on Cancer \(IARC\)](#) has classified 3,3'-dichlorobenzidine as “possibly” carcinogenic to humans, which means there is sufficient evidence to find cancer in animals, but limited evidence finding cancer in humans.

## Can I get a medical test to check for 3,3'-dichlorobenzidine?

There are tests to check for exposure to 3,3'-dichlorobenzidine using blood and urine that can be sent by your doctor to appropriate laboratories for analysis. However, these tests are not part of a standard health test. The tests may only tell you if you have been recently exposed to 3,3'-dichlorobenzidine and will not predict if you will have health problems.

## How can I protect my family from 3,3'-dichlorobenzidine exposure?

- Reduce contact with contaminated soils and sediment, and wash hands and face after contact.
- Prevent children from eating paint chips or putting paints in their mouth. Trace amounts of 3,3'-dichlorobenzidine may be found in dyes and paints.
- When working with 3,3'-dichlorobenzidine, follow instructions or guidelines for safe-handling in the workplace and any applicable standards for protective clothing.
- If you think you or anyone in your family has been exposed to 3,3'-dichlorobenzidine, contact your doctor, nurse, or poison control center.

## 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 3,3'-Dichlorobenzidine: <https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=959&tid=200>

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](http://www.atsdr.cdc.gov/DRO/dro_org.html)

Visit OSHA (Occupational Safety and Health Administration) and NIOSH (National Institute for Occupational Safety and Health) to learn more about protective gear and worker protection.

