

FACTS



Pesticides in Drinking Water



Division of Environmental and Occupational Health
Consumer and Environmental Health Services

FACTS Pesticides in Drinking Water

<i>What Are Pesticides?</i>	3
<i>How Can Pesticides Get into Your Drinking Water?</i>	5
<i>How Can You Find Out If Pesticides Are in Your Drinking Water?</i>	6
<i>Are Pesticides Harmful to Your Health?</i>	8
<i>Do Pesticides Affect People at the Levels Sometimes Found in Drinking Water?</i>	9
<i>Is There a Safe Level of Pesticides in Your Drinking Water?</i>	10
<i>Should You Continue to Use Your Drinking Water If Pesticides Are Found?</i>	14
<i>What Can You Do to Remove Pesticides from Your Private Well Water?</i>	15
<i>Is There a Medical Test to See If You Have Been Exposed to Pesticides?</i>	16
<i>For More Information</i>	17
<i>Other Available Materials</i>	19

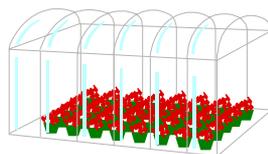
WHAT ARE PESTICIDES?

Pesticides consist of a large group of chemicals that are used in agriculture and residential settings to control plant and animal infestation. There are several different types of pesticides:



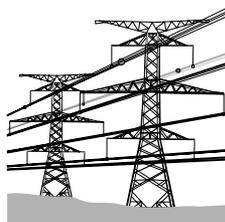
- **Herbicides** are used to suppress weed growth.
- **Insecticides** are used to control insects. For example, **termicides** are used to kill termites.
- **Nematocides** are used to destroy certain types of worms.
- **Fungicides** are used to control molds, mildews, and rusts.

Pesticides are commonly applied on farms, fruit orchards, golf courses, and residential lawns and gardens.



Many pesticides are also used inside homes and other buildings.

Herbicides are also applied on utility and railroad right-of-way lands.





Despite their widespread use, pesticides are not frequently found in drinking water supplies in New Jersey. Some pesticides are less likely than others to get into drinking water supplies because they do not dissolve easily in water. (The table on page 12 lists many of the most heavily used pesticides in New Jersey that can easily get into well water or surface water.)

Over the years, a variety of pesticides have been used in New Jersey. Although some pesticides have been banned, many are still available for use. Some pesticides can be purchased directly by the individual, while others are obtained through a licensed applicator.

In some instances, pesticides have been found in well water, rivers, and reservoirs in New Jersey. Federal and State drinking water regulations require water companies to monitor for many pesticides in public drinking water supplies and to reduce pesticide levels when they are found. (The table on page 12 lists many of the pesticides that have been found at significant levels in water in New Jersey.)

HOW CAN PESTICIDES GET INTO YOUR DRINKING WATER?

There are many ways that pesticides can get into your drinking water:

- Surface water runoff can carry pesticides from areas such as agricultural fields, golf courses, and residential properties into lakes, rivers, and reservoirs.
- Rain and snow can carry pesticides through the soil into underground water supplies.
- Improperly disposed pesticides can move through the soil and reach drinking water supplies.
- Improperly applied termiticides can seep into private well water, especially if the well is close to the house or the well casing is cracked.

Some pesticides do not break down easily in water and can remain in the groundwater for a long period of time.

In recent years, the use of EDB, dieldrin, lindane, chlordane, and DCP have been restricted or banned. Despite this, these pesticides have been found in well water at low levels because they do not readily breakdown as they travel through the soil. Likewise, the insecticide DDT, though banned for nearly twenty years, can still be found at trace levels in some groundwater.

HOW CAN YOU FIND OUT IF PESTICIDES ARE IN YOUR DRINKING WATER?

Under U.S. Environmental Protection Agency (USEPA) regulations, public water supplies are currently monitored for certain pesticides. To obtain the test results for your drinking water system, contact your water company or the New Jersey Department of Environmental Protection (NJDEP), Bureau of Safe Drinking Water. (Some companies send water testing information to their customers once a year).

Before you test your private well for pesticides, contact your local health department or cooperative extension office to determine if your well is at risk of contamination due to pesticide use in your area.

Typically, shallow, poorly constructed wells, and wells located on or near farms, are most likely to become contaminated with pesticides.

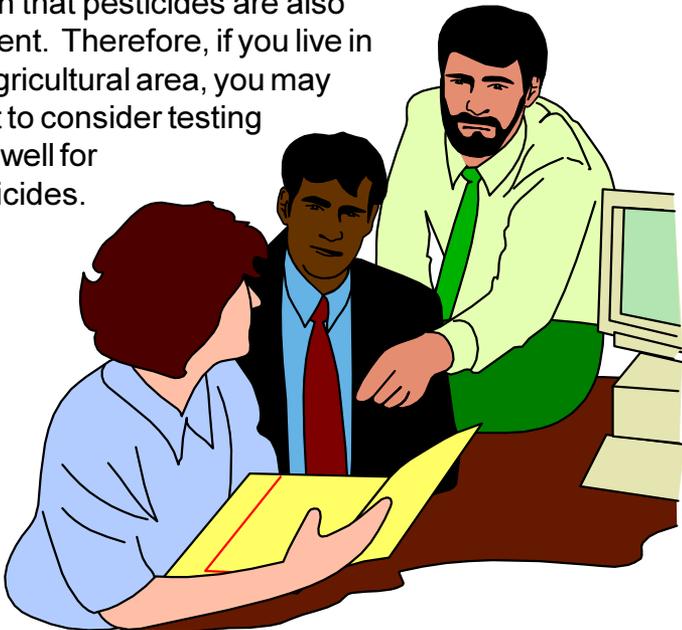


If you have a private well, you can get your water tested by a private laboratory listed in the telephone directory. Call the NJDEP, Office of Quality Assurance, to make sure that the laboratory is certified to test for pesticides in drinking water.

There are several different laboratory tests that look for pesticides in drinking water. Each of these tests can detect different kinds of pesticides. Since these tests can be expensive, you should only test your well for those pesticides you have reason to believe may be contaminating your well.

In New Jersey, wells with nitrate contamination from agricultural or residential fertilizers have often been found to contain pesticides. In other words, high levels of nitrates in a well may mean that pesticides are also present. Therefore, if you live in an agricultural area, you may want to consider testing your well for pesticides.

If you have high levels of nitrates in your private well, contact your local health department or cooperative extension office for advice on additional testing for pesticide contamination.



ARE PESTICIDES HARMFUL TO YOUR HEALTH?

In case of a health emergency, contact your physician, the Poison Control Center (800-POISON1), or your hospital emergency room.

Both short-term and long-term health effects have resulted from exposure to high levels of pesticides, particularly in individuals who work directly with pesticides, such as farmers and commercial applicators.

In the case of a pesticide spill or misapplication near a well, the levels of pesticides in drinking water may reach high enough levels to cause immediate health problems, such as damage to the nervous system (see page 12 for more information on the health effects of pesticides).



**DO PESTICIDES AFFECT PEOPLE AT LEVELS
SOMETIMES FOUND IN DRINKING WATER?**



The levels of pesticides typically found in drinking water are usually quite low and would not be likely to cause harmful health effects. However, the health effects from exposure to small amounts of pesticides in drinking water over a long period of time are not well understood and need to be studied further.

All pesticides should be properly used, stored, and disposed of, in accordance with manufacturer's instructions. Before hiring a pesticide company, make sure that the applicator is State-certified.

After prolonged exposure to high doses, some pesticides can cause cancer; some can also result in birth defects and damage to the nervous system (see page 12 for more information on the health effects of pesticides).



IS THERE A SAFE LEVEL OF PESTICIDES IN YOUR DRINKING WATER?



In order to prevent or reduce the chances of health effects from occurring due to drinking water contamination, **Maximum Contaminant Levels** (MCLs) have been established by the USEPA and NJDEP for many pesticides. MCLs are set at levels well below those known to cause harmful health effects.

MCLs are limits that public water systems are required to meet by law. For most pesticides, New Jersey MCLs are the same as the Federal MCLs. In the case of chlordane, however, NJDEP has adopted a stricter MCL under the State Safe Drinking Water Act.

In addition, USEPA has issued **Health Advisories** for many pesticides. Health Advisories are non-enforceable guidelines meant to assist federal, state, and local officials in dealing with incidents of drinking water contamination. **Lifetime Health Advisories** set acceptable levels of exposure to pesticides in drinking water over a lifetime (see page 12 for more information on the public drinking water standards for pesticides).

If your drinking water exceeds one of the MCLs, it does not necessarily mean that the water will make you sick. Because of the uncertainty, however, it is important that steps be taken to reduce the levels of these chemicals in your drinking water to below the MCLs.

If you have a private well, you should report any test results that exceed the MCLs to your local health department.

They will be able to investigate the source of the contamination and see if other wells around you are also contaminated.



Pesticides: Drinking Water Standards/Guidelines and Health Effects

Common Chemical Name ^a	Chemical Class	Use	MCL ^b	Long Term Health Effects ^{c,d}
<i>Herbicides:</i>				
Alachlor	Acetanilide	Agricultural	2	Cancer
Atrazine	Triazine	Agricultural, Lawn	3	Cancer
Cyanazine	Triazine	Agricultural, Lawn	1 ^e	Cancer
DCPA (Dacthal)	Phthalate	Agricultural	4000 ^e	None identified
Dinoseb	Dinitrophenol	Agricultural	7	Thyroid Changes, Birth Defects
Diuron	Urea Derivative	Right of way areas	10 ^e	Blood Changes
MCPA	Chlorophen-- oxyacid	Lawn	10 ^e	Kidney and Liver Changes
Mecoprop	Chlorophen-- oxyacid	Lawn	none	Kidney Changes
Metolachlor	Acetanilide	Agricultural	70 ^e	Cancer
Prometon	Triazine	Lawn	100	None identified
Simazine	Triazine	Agricultural, Lawn	4	Cancer
2, 4-D	Chlorophen-- oxyacid	Agricultural, Lawn	70	Cancer ^f , Birth Defects

Common Chemical Name ^a	Chemical Class	Use	MCL ^b	Long Term Health Effects ^{c,d}
<i>Insecticides:</i>				
Carbofuran	Carbamate	Agricultural	40	Nervous System Effects, Birth Defects
Trichlorofon	Organo-phosphate	Lawn	none	Nervous System Effects
<i>Nematocides:</i>				
1,2-dichloro-propane	Halocarbon	Agricultural	5	Cancer
Ethylene Dibromide	Halocarbon	Agricultural	0.05	Cancer
<i>Fungicides:</i>				
Ethylene Thiourea ^g	none	Agricultural	0.3 ^h	Cancer

^aTrade names may differ.

^bUSEPA Maximum Contaminant Levels measured in parts per billion (ppb) or micrograms per liter (ug/l)

^cMost health effects are studied in laboratory animals exposed to very high levels of contaminants. Some have occurred due to exposure in the work-place. Only some possible long-term health effects are listed here. Kidney and liver damage has also been reported for some of these pesticides.

^dCancer risk, as used in this table, means that this pesticide has been found to cause cancer in laboratory animals exposed to very high levels, and has been classified as a "probable" or "possible" human carcinogen.

^eUSEPA Lifetime Health Advisory

^fThe USEPA has decided that there is not enough evidence to classify 2,4-D, but some studies have suggested a cancer link.

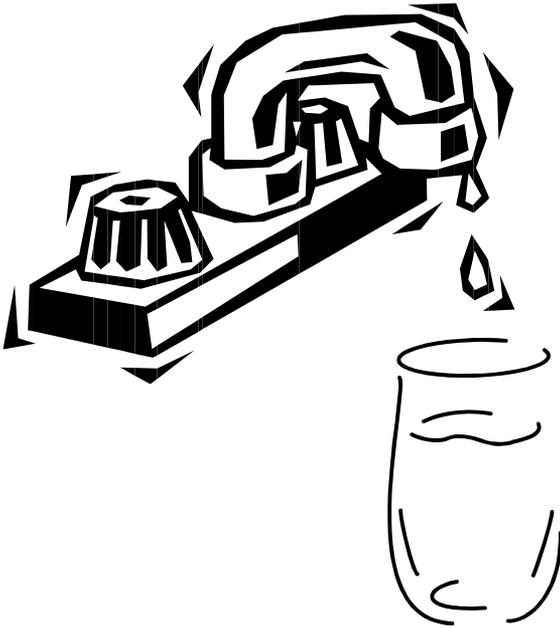
^gThis is a breakdown product of the related fungicides: maneb, mancozeb and zineb.

^hEstimated cancer risk of one-in-a-million. There is no MCL or Lifetime Health Advisory.

Source: Federal and NJ State Drinking Water Standards, 11/96

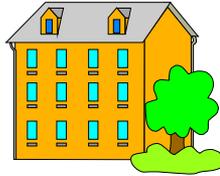
SHOULD YOU CONTINUE TO USE YOUR DRINKING WATER IF PESTICIDES ARE FOUND?

- If your public water supply is found to contain pesticides at levels above the MCLs, the NJDEP will require your water company to take actions to reduce pesticide levels to below the MCLs.



- If you have a private well with pesticide contamination, you should follow the advice of your local health department. Their advice will be based on how much of these chemicals are found in your water. For example, they may recommend that you use another source of water, such as bottled water, until the problem is resolved.

WHAT CAN YOU DO TO REMOVE PESTICIDES FROM YOUR PRIVATE WELL WATER?



In the long-term, one possible solution for a contaminated well may be to connect to a public water system that is regularly monitored and that meets state standards. An alternative may be to drill a deeper well.

As a short-term solution, there are some drinking water treatment devices that can be installed in your home. Depending on the pesticides involved, you may consider installing a Granulated Activated Carbon (GAC) system or a reverse osmosis unit. For more information on home water treatment devices, contact the NJDEP, Bureau of Site Management; USEPA, Safe Drinking Water Hotline; or NSF International.



Your local health department can also provide you with information on alternate water supplies, such as bottled water, for use while a long-term solution is developed.



IS THERE A MEDICAL TEST TO SEE IF YOU HAVE BEEN EXPOSED TO PESTICIDES?

Presently, there are no medical tests to determine if you have been exposed to low levels of pesticides that may be found in drinking water. In the unusual case of high exposure to certain pesticides that affect the nervous system, the blood enzyme, **cholinesterase**, can be used as a marker for exposure.

For example, exposure to an organophosphate or carbamate pesticide can be determined by measuring cholinesterase levels in a blood sample.

Talk to your doctor if you think that you are sick because of drinking water contamination. Be prepared to tell your doctor what contaminants have been found in the water and what effects you feel might be related. Your doctor consult with the NJDHSS, or an occupational and environmental medical clinic.



FOR MORE INFORMATION...



◆ **Local Health Department**

Local telephone directory

Local water issues, private well testing guidance, and health effects of pesticides in drinking water

◆ **New Jersey Department of Health and Senior Services
Consumer and Environmental Health Services**

PO Box 369

Trenton, NJ 08625-0369

(609) 588-3120

Health effects of pesticides in drinking water

(609) 588-3123

Bottled water regulations

Visit our
website at:
[www.state.nj.us/
health](http://www.state.nj.us/health)

◆ **New Jersey Department of Environmental Protection
Bureau of Safe Drinking Water**

(609) 292-5550

Federal and State drinking water regulations and public water supply monitoring results

Bureau of Site Management

(609) 984-2990

Home water treatment devices

Pesticide Control Program

(609) 984-6920

Pesticide use and regulations

Office of Quality Assurance

(609) 292-3950

NJ certified laboratories for pesticides in drinking water

FOR MORE INFORMATION...



◆ **United States Environmental Protection Agency
National Pesticide Telecommunications Network**
(800) 858-7378
Health effects of pesticides

Safe Drinking Water Hotline
(800) 426-4791
Federal drinking water regulations, health effects of pesticides
in drinking water, and other water safety issues

◆ **Public Water Company**
Local telephone directory
Public drinking water regulations and monitoring results

◆ **County Office of Rutgers Cooperative Extension**
Local telephone directory
Local land use activities and private well testing guidance

◆ **NSF International**
(313) 769-8010
(800) NSF-6275
Home water treatment device and bottled water information

◆ **Environmental and Occupational Health Clinical Center
University of Medicine and Dentistry/New Jersey**
(732) 445-0123
Physician referral or consultation on health effects of
pesticides

OTHER AVAILABLE MATERIALS...



- FACTS: Cryptosporidium in Drinking Water*
- FACTS: Lead in Drinking Water*
- FACTS: Mercury in Drinking Water*
- FACTS: Microorganisms in Drinking Water*
- FACTS: Nitrate and Nitrite in Drinking Water*
- FACTS: Volatile Organic Compounds in Drinking Water*
- Parasites and New Jersey Drinking Water: Information on Giardia and Cryptosporidium*
- Contacts and Information: Drinking Water Issues*
- Private Well Testing*
- Don't Drink Lead (11" x 17" poster)*
- Keep Your Baby Safe From Lead (11" x 17" poster)*

Name _____

Address _____

Town _____ State _____ Zip _____

Please send this order form to:

New Jersey Department of Health and Senior Services
Consumer and Environmental Health Services
PO Box 369
Trenton, NJ 08625-0369



Division of Environmental and Occupational Health
Consumer and Environmental Health Services
PO Box 369
Trenton, NJ 08625-0369