

# WATER WELL INFORMATIONAL PACKET

---

## **For Potential and Existing Well Owners in Oakland County**

**Provided by**

**The Oakland County Executive and The Board of Commissioners**

As a homeowner with an individual well water system, it is your responsibility to maintain proper operations and water quality. A private well is an investment.

This file folder includes information to help insure a properly installed and maintained water supply. This package was designed to file and store information on the construction and maintenance on your water system.

**WELL TASK FORCE MEMBERS:**

- Renee Crouch**
- Chris Davis**
- Thomas Gordon**
- Robert Haney**
- Donna Huntoon**
- Peggy Johnson**
- Ruth Johnson**
- Robert Koski**
- Robert Long**
- Patrick McFee**
- Chuck Palmer**
- Collin Walls**

## **GUIDELINES FOR INSTALLING AND USING A WELL**

---

### **A. TYPES OF WELLS**

1. Drilled wells (rotary or auger)
2. Driven wells (cable tool, jetted, etc.)

### **B. COMMON CAUSES OF WELL WATER CONTAMINATION**

1. Manmade contaminants that have entered the aquifer
2. Naturally occurring contaminants in the aquifer
3. Surface water contamination due to poor grouting
4. Contamination from an improperly abandoned well
5. A leaking underground fuel storage tank

### **C. OTHER CONDITIONS THAT COULD AFFECT QUALITY OF WATER**

1. Location of well
2. Distances from potential contamination
3. Groundwater flow
4. Water treatment devices
5. Proper construction of the well water supply system
6. Leaching from pipes carrying the water

### **D. FINDING REGISTERED/LICENSED WELL CONTRACTORS**

1. Oakland County Health Division ☎(248) 858-1312
2. Michigan Department of Environmental Quality (DEQ)  
☎(517) 241-1355; 🌐www.deq.state.mi.us.
3. Telephone directory under AWater Well Drilling and Service≡
4. Neighbors with wells
5. Well drilling equipment/pump dealers
6. Local building contractors

## **E. QUESTIONS FOR POTENTIAL WELL CONTRACTORS**

1. Ask to see the well contractor=s current state registration.  
*Or contact Oakland County Health Division ☎(248) 858-1312 or the Michigan Department of Environmental Quality (DEQ) ☎(517) 241-1355.*
2. Will steel or plastic pipe (casing) be used?
3. What is meant by gallons per minute, and how will I be affected by it?
4. What type of screen material is used? Will the screen be removable for future replacement if necessary?
5. What type and size pump and pressure tank do you recommend?  
*This is strongly influenced by the size of your home, number of occupants, the production of the well, and proposed indoor/outdoor use.*
6. Will the borehole be sealed (grouted)? To what depth will it be grouted?  
*The law requires that a new well must be sealed or grouted properly full length to help prevent well and aquifer contamination.*
7. What type of sealant material will be used to fill the space between the casing and the borehole?  
*The law prescribes a special cement mix or bentonite (special clay materials) which effectively plugs the borehole.*
8. Are there any water quality problems in my area that will require a deeper well or that will require the installation of water treatment equipment?
9. Will a well log be given to me within 60 days of completion as required by state law?  
*Ask to see a copy of a state water well log and have each entry explained to you.*
10. Do I still pay if no water is found, if not enough water is found, or if poor quality water is obtained? If so, how much will I be charged?  
*These items should be included in a contract which both the owner and the driller agree to and sign before work begins.*
11. How much will it cost to seal my abandoned well? Why should I have it sealed?  
*A well no longer in use can be a channel for contamination, can ruin your new well, and therefore must be properly sealed or plugged. The cost of abandonment should be discussed with the driller and included in a written and signed contract.*
12. Do you carry insurance to protect both of us?  
*Upon request the drilling contractor should be able to provide you with*

*proof of insurance.*

13. What is the guarantee on your work? What equipment is covered under warranty and for how long?  
*These items should be discussed with the driller and be provided either in writing or included as part of the contract which the owner and driller agree to and sign before work begins.*
14. Is some or all of the work performed by subcontractors?  
*If so, ask who they are and who will be responsible for the work performed.*
15. Where on the property do you recommend to place the well and why?  
*A well must be located where it is not subject to contamination and where it is accessible for maintenance.*
16. How much site restoration will be done?  
*Well drilling rigs and support vehicles can make ruts in lawns, damage landscaping, and the drilling process can be messy. Make sure you know what the contractor will do and what you will be expected to do. Discuss these items and make sure they are addressed in the contract which the owner and driller agree to and sign before work begins.*

#### **F. SOME THINGS TO CHECK FOR**

1. The casing should extend 12" or more above the ground surface and a minimum of 25' deep.
2. The casing should not be easily moved and there should not be any open spaces around the casing.
3. To properly isolate a well it must be at least 50' from potential sources of contamination such as septic fields, buried fuel tanks, etc.
4. A sampling tap should be near the pressure tank, pointed downward and at least 8" above the floor.
5. Make sure you get a copy of the well log for your records and that the well driller has sent copies to the Oakland County Health Division and the Michigan Department of Environmental Quality (DEQ) for their files.

## **G. WHEN YOU HAVE A COMPLAINT**

1. First discuss your concerns with the well contractor.
2. If you are not satisfied after your discussion with the well contractor, you may file a complaint with the Oakland County Health Division ☎(248) 858-1312.

## **H. HOW TO FILE A COMPLAINT**

1. Obtain and complete a complaint form by contacting the Oakland County Health Division ☎(248) 858-1312 or the Michigan Department of Environmental Quality (DEQ), Well Construction Program, ☎(517) 241-1355.
2. The Michigan Department of Environmental Quality (DEQ) and the Oakland County Health Division have no power or jurisdiction to investigate or mediate certain types of business practice complaints such as pricing, overcharging, product warranties, or contractual disputes.

## **I. MAINTENANCE RECOMMENDED**

1. Periodic checking of well components such as well cap, vent, and electrical conduit connection for signs of damage and provisions to exclude insects
2. Annual water testing
3. Keep the well area clean and accessible
4. Keep potential contaminants as far away as possible

## **J. ABANDONED WATER WELLS (WELLS NO LONGER IN USE)**

1. State law requires proper closing or plugging of an abandoned well and a record turned in to the Oakland County Health Division.
2. Plugging an unused water well may prevent contamination of your drinking water. When sealed properly, it will stop contaminants from reaching the groundwater through the opening.
3. Effective well plugging calls for experience with well construction materials, time, and cost and should be completed by a licensed well contractor although the owner of an owner-occupied single family home may legally perform this activity.
4. Obtain a copy of an abandonment well record.

## **K. WHAT SHOULD I TEST MY DRINKING WATER FOR?**

The two most common tests recommended for drinking water from new and existing wells in Oakland County are:

1. Coliform (*bacteria including coliform*)
2. Partial Chemistry (*fluoride, chloride, nitrate, nitrite, sulfate, sodium\*, and iron\**)  
*\*Additional tests using State partial chemistry.*

Two tests recommended for drinking water in some circumstances are:

1. Arsenic (*a naturally occurring heavy metal in some aquifers*)
2. Volatile Organics (*often from leaking underground fuel storage tanks*)

Other tests are recommended if you live near a contaminated site or have leaching of contaminants such as lead or copper from the water pipes.

The Oakland County Planning and Economic Development Services, ☎ (248) 858-0720, carries maps of historic landfill and facility sites at a cost of \$6. The Michigan Department of Environmental Quality maintains a website of known sites of manmade contamination at 🌐 [www.deq.state.mi.us/erd](http://www.deq.state.mi.us/erd). The Michigan Department of Environmental Quality ☎ (517) 335-8184, a state certified private lab, or a scan analysis through a private laboratory can test for many things to rule out other types of contamination.

#### **L. WHERE CAN I GET MY WATER TESTED?**

1. Michigan Department of Environmental Quality (DEQ) Laboratory - ☎ (517) 335-8184.  
A full spectrum of tests is available.
2. Oakland County Health Division - ☎ (248) 858-1312.  
Limited testing only: Coliform and Partial Chemistry\* (at no charge).  
\*Excludes testing for sodium and iron.
3. Private Laboratories. Call the Michigan Department of Environmental Quality, ☎ (517) 335-8812, or check the website at 🌐 [www.deq.state.mi.us/dwr](http://www.deq.state.mi.us/dwr) for an up-to-date list of private labs. Available testing varies from lab to lab.

**M. OAKLAND COUNTY HEALTH DIVISION LABORATORY**

If you use the Oakland County Health Division (OCHD) Laboratory: 1) Pick up testing bottles at the Oakland County Health Division; 2) Take samples directly to the Oakland County Medical Care Facility. Samples may be dropped off on Monday, Tuesday, Wednesday, or Thursday mornings only to allow adequate time for testing.

TEST	FEE	NOTE
Arsenic	--	Not available at OCHD
Coliform	None	Bacteria test
Volatile Organic	--	Not available at OCHD
Partial Chemistry	None	Partial chemical

*Note: June 1996 Fees - Subject to Change*

**N. STATE OF MICHIGAN LABORATORY**

If you use the State of Michigan Laboratory, draw and send the samples on Monday or Tuesday to allow adequate time for mailing and testing. Pack the bottles in the boxes supplied and take the samples directly to the Post Office. Send them **First Class or Overnight Mail**. The address is: DEQ, P.O. Box 30035, Lansing, MI 48909, ☎(517) 335-8184. Enclose: 1) the sample; 2) the completed submission form(s); and 3) a check or money order to cover the cost.

TEST	FEE	NOTE
Arsenic - State Test Code ACAS≅	\$16	Unit # 36ME
Coliform - State Test Code ABPTC≅	\$12	Unit # 30 and #30a
Partial Chemistry - State Test Code AR≅	\$14	Unit # 32
Organic Solvents - State Test Code ACXVO≅	\$90	Unit # 36VO

*Note: January 2002 Fees - Subject to Change*

**O. PRIVATE LABS**

Each private lab has their own bottles and policies. If you choose to use a private lab to test the water, please call and get their policies and directions from them. Oakland County Health Division has a list of some private labs. To get a complete up-to-date listing of state certified labs call the Michigan Department of Environmental Quality ☎ (517) 335-8812.

# WATER TESTING LABORATORIES

## PARTIAL LIST OF TESTING FACILITIES

---

### **State of Michigan - Department of Environmental Quality\***

3500 North Martin Luther King Jr. Boulevard, P. O. Box 30630, Lansing, Michigan  
48909

☎ (517) 335-8184

*Offers a vast spectrum of tests including bacteria, partial chemistry, arsenic, lead, inorganics, volatiles, etc.*

### **Oakland County Health Division**

1200 North Telegraph Road, Pontiac, Michigan 48341

☎ (248) 858-1312

*Bacteria and partial chemistry only*

---

## PARTIAL LISTING OF PRIVATE, STATE CERTIFIED LABS

The following private labs offer a vast spectrum of tests which may include bacteria, partial chemistry, arsenic, lead, inorganics, volatiles, etc.

### **AquaTest Laboratories**

10635 Highland Road, White Lake, MI 48386  
(bacteriologic and nitrate/nitrite)

☎ (248) 698-9500

### **Brighton Analytical\***

2105 Pless Dr., Brighton, MI 48116

(bacteriologic, nitrate/nitrite, metals, lead/copper, cyanide and voc)

☎ (810) 229-7575

### **In-House Water Lab**

210 North Center Street, Howell, MI 48843  
(bacteriologic and nitrate/nitrite)

☎ (517) 548-7363

### **National Testing Laboratories\***

556 South Mansfield Road, Ypsilanti, MI 48197

(bacteriologic, nitrate/nitrite, metals, lead/copper, voc and soc)

☎ (800) 458-3330 Ext 3

(National Testing Labs has a "Water Check" analysis for 75-95 different potential contaminants for \$131-\$161 respectively. This scan is for informational purposes only. Note: January 2001 Fees – Subject to Change)

### **Quantum Laboratories\***



28221 Beck Road, Suite A-11, Wixom, MI 48393  
(bacteriologic, nitrate/nitrite, lead/copper, voc)

☎ (248) 348-8378

**TestAmerica, Inc.\***

341 W. Walton Blvd., Pontiac, Mi 48340  
(bacteriologic and nitrate/nitrite – affiliate labs certified for metals, lead/copper, cyanide, voc and soc)

☎ (248) 332-1940

**Water Tech, Inc.\***

718 South Michigan Ave., Howell, MI 48843-2472  
(bacteriologic, nitrate/nitrate, lead/copper and voc)

☎ (517) 548-2505

**Water Testing Service and Laboratory**

11356 Seward St., Grand Blanc, MI 48439  
(bacteriologic and nitrate)

☎ (810) 695-6763

\* Denotes laboratories certified for arsenic testing in the State of Michigan

To get a complete up-to-date listing of state certified labs, call the Michigan Department of Environmental Quality. ☎ (517) 335-8812.

## WATER SAMPLING INSTRUCTIONS

### A. **Arsenic Test** (Usually naturally occurring but can be manmade)

*State Laboratory test bottle is AMDEQ Unit #36ME - General Metals.≅ Some private labs also test for arsenic.*

1. **Do** take the sample from a raw, nonmixing, cold water faucet which is **not** connected to a softener, filter, or other appliance. Remove the aerator if one is present.
2. **Do** run cold water for five full minutes before gathering the sample.
3. Reduce the flow to the size of a thin pencil, remove the top from the bottle, fill the bottle to the top, and cap the bottle.

### B. **Coliform and Partial Chemistry Tests** (Manmade and naturally occurring)

*State Laboratory test bottles are AUnit #30 - Water Bacteria Test≅ and AMDEQ Unit #32 - Partial Chemistry.≅ The Oakland County Health Division Laboratory conducts similar tests at no charge to county residents, ☎(248) 858-1312.*

1. **Do** select a clean faucet and remove such attachments as aerators, connectors, etc.
2. **Do** allow the cold water to run for five minutes at full flow at the sampling point.
3. Reduce the flow to the size of a thin pencil and collect the sample directly into the bottle.

### C. **Volatile Organics** (Can be from leaking underground fuel storage tanks)

*State Laboratory test bottles are AOrganic Solvents≅ and AMDEQ Unit #36VO - Volatile Organic Substances.≅ Some private labs also test for volatile organics; i.e., organic solvents including TCE.*

1. **Do** take the sample from a raw, nonmixing, cold water faucet which is **not** connected to a softener, filter, or other appliance. Remove the aerator if one is present.
2. **Do** allow the cold water to run for five minutes at full flow at the sampling point.
3. Reduce the flow to the size of a thin pencil and collect the sample directly into the bottle.
4. **Do not** overfill the bottles, **but** do fill up to the top to get the air out of the bottle.

---

## CAUTIONS FOR ALL WATER SAMPLING

1. **Do not** open the bottle until ready to collect the sample.
2. **Do not** touch the inside of the cap or bottle.
3. **Do not** rinse the bottle.
4. **Do not** use any other container for collection or transport other than the one provided.
5. **Do not** allow the water from the outside surface of the faucet to drip into the bottle.
6. **Do refrigerate** the sample until it is delivered. Ship or deliver the sample as soon as possible.

## WATER TREATMENT DEVICES

The National Sanitation Foundation (NSF), ☎1-877-867-3435, 🌐www.nsf.org, is one source for information on water treatment devices. The Water Quality Association (WQA), ☎(630) 505-0160, 🌐www.wqa.org, is another source. NSF (a nonprofit organization) and WQA (a not-for-profit trade organization) test, and certify water treatment devices. To gain certification, the device must pass performance objectives and meet policy standards. Before certifying a product, the NSF and the WQA:

- A. Verify all contamination reduction claims for types and amounts.
- B. Perform structural integrity testing.
- C. Perform toxicological assessments.
- D. Test for chemical leaching into the water from the device.
- E. Review claims and advertising.

Water softeners remove some iron and hardness but are not intended to be used to remove contaminants. The two most commonly used water treatment devices to remove contamination (such as arsenic) for homes are reverse osmosis and distillation.\* Both types of units can be very effective. However, both require regular maintenance. Each has certain benefits over the other and each unit treats for different types of contamination. **A comprehensive water test should be performed before choosing which type and then brand of water treatment device to use.** A written performance guarantee should be provided with any equipment purchased.

**The steps to take before purchasing a water treatment device are:**

- A. Have the drinking water tested for the potential contaminants.**
- B. Call NSF or WQA and tell them the results.**
- C. Get a list of certified products from NSF.**
- D. Check what the warranties and guarantees are on the products.**
- E. Check maintenance schedules and maintenance costs.**
- F. Find out what products are available in the area and purchase costs.**

Drilling a new well or using quality bottled water certified and marked A.I.B.W.A. Approved<sup>®</sup> (International Bottled Water Association) may also be options.

\*Reverse osmosis is not certified for the removal or reduction of naturally occurring arsenic, as found in southeast Michigan, unless the supply water is pre-treated by chlorination.

## RESOURCES AVAILABLE

---

OAKLAND COUNTY HEALTH DIVISION 🌐www.co.oakland.mi.us

**Toll Free Tie Line:**

☎(888) 350-0900, Extension 8-1312

**Environmental Health Services:**

1200 N. Telegraph Road, Department 432, Pontiac, MI 48341-0432, ☎(248) 858-1312

27725 Greenfield Road, Southfield, MI 48076-3625, ☎(248) 424-7191

1010 E. West Maple Road, Walled Lake, MI 48390-3588, ☎(248) 926-3305

**Nurse On Call,** ☎ toll free 800-848-5533

---

**STATE OF MICHIGAN**

**Department of Community Health:** 🌐[www.mdch.state.mi.us](http://www.mdch.state.mi.us)

P.O. Box 30195, Lansing, MI 48909-7535, ☎(517) 335-8350

Toxic and Health Hotline, ☎1-800-MI-TOXIC or 1-800-648-6942

**Department of Environmental Quality:** 🌐[www.deq.state.mi.us](http://www.deq.state.mi.us)

P.O. Box 30035, Lansing, MI 48909-7535

Well Construction Program/Well Registration Unit/Complaint Line, ☎(517) 241-1355

Water Testing Laboratory, ☎(517) 335-8184

---

**MICHIGAN GROUND WATER ASSOCIATION, INC.**

☎(734) 428-0020

---

**WATER TREATMENT DEVICE EVALUATION**

National Sanitation Foundation, ☎1-800-NSF-MARK, 🌐[www.nsf.org](http://www.nsf.org)

Water Quality Association, ☎(630) 505-0160, 🌐[www.wqa.org](http://www.wqa.org)

---

## WELL TERMS

**Abandoned well** - A well which is no longer used, a well which is in such disrepair that its continued use for the purpose of obtaining groundwater is impractical, a well which is a threat to groundwater resources, a well which is or may be a health or safety hazard.

**Annular space** - Space between the casing and the sides of the borehole.

**Aquifer** - An underground layer of rock, sand, or gravel that contains groundwater in sufficient quantity to supply a well.

**Bedrock** - A collective and continuous geologic material such as limestone, dolomite, shale, sandstone, basalt, or granite.

**Bentonite** - A clay which is used for grouting.

**Borehole** - A circular hole drilled into the ground for the purpose of constructing a well to remove groundwater.

**Casing** - Steel or plastic pipe installed while drilling a well to prevent collapse of the well borehole and entrance of contaminants and to allow placement of a pump or pumping equipment.

**Contaminant** - A biological, chemical, physical, or radiological component in water that is or may become injurious to the public health, safety, or welfare.

**Drilled wells** - Terminate in sand, gravel or bedrock. Constructed using rotary, cable tool, jetting, hollow rod or auger rigs. Generally 2 inch diameter or larger with typical domestic well 4 inch steel or 5 inch PVC casing.

**Driven well** - Wells constructed by driving assembled lengths of pipe into the ground with percussion equipment or by hand. These wells are usually smaller in diameter (2 inches or less), less than 50 feet deep, and can be installed in areas of relatively loose soils such as sand.

**Dry hole** - An open borehole or cased borehole that does not produce water in sufficient quantity for the intended use.

**Dug well** - Large diameter wells often constructed by hand.

**Groundwater** - Subsurface water in a zone of saturation.

**Grout** - Placement of cement or bentonite (special clay material) to seal the space between the outside of the well casing and the borehole or to seal an abandoned well.

**Pitless adapter** - A device which provides access to the well and to the parts of the water supply system within the well allowing the well to stay free of contaminants.

**Potable water** - Water which is free of harmful contaminants and is safe for human consumption. (In Oakland County both coliform bacteria and nitrate tests are required by law.)

**Pressure tank** - A closed water and air storage container that has an effect on the water supply system pressure within a selected range.

**Static water level** - The distance measured from the ground surface to the water surface in a well that is neither being pumped nor under the influence of pumping.

**Surface water** - Water that rests or flows on the surface of the ground.

**Vent** - An outlet which is at the upper terminal of a well casing and which allows the equalization of air pressure in the well.

**Water supply system** - A well, pump and pumping equipment.

**Water treatment equipment** - If a contaminated aquifer is found, water treatment devices are commonly used to reduce the contaminants in drinking water.

**Well cap (seal)** - A device used to cover the top of well casing pipe to prevent the entrance of contaminants into the top of the well casing.

**Well log (water well record)** - A record of information about a specific well. One copy each shall be filed with the Oakland County Health Division; the State of Michigan, Department of Environmental Quality; the well owner; and the well contractor.

**Well screen** - A filtering device at the bottom of the casing in a sand or gravel aquifer used to keep sediment from entering the well.

---

## **TABLE OF CONTENTS**

---

Page Number

TYPES OF WELLS.....	2
COMMON CAUSES OF WELL CONTAMINATION .....	2
OTHER CONDITIONS THAT COULD AFFECT QUALITY OF WATER.....	2
FINDING REGISTERED/LICENSED WELL CONTRACTORS .....	2
QUESTIONS FOR POTENTIAL WELL CONTRACTORS.....	3-4
SOME THINGS TO CHECK FOR .....	4
WHEN YOU HAVE A COMPLAINT .....	5
HOW TO FILE A COMPLAINT .....	5
MAINTENANCE RECOMMENDED .....	5
ABANDONED WATER WELLS.....	5-6
WHAT SHOULD I TEST MY DRINKING WATER FOR? .....	6
WHERE CAN I GET MY WATER TESTED? .....	6
WATER TESTING LABORATORIES .....	7-9
WATER SAMPLING INSTRUCTIONS.....	10
WATER TREATMENT DEVICES .....	11
RESOURCES AVAILABLE.....	12
WELL TERMS .....	13
COLIFORM FACT SHEET .....	BLUE SHEET
NITRATE FACT SHEET.....	SALMON SHEET
ARSENIC FACT SHEET.....	LILAC SHEET
ALERT MAP	

# PUBLIC HEALTH FACT SHEET



## Coliform

### What are Coliform?

Coliform are generally considered harmless bacteria. However, some specific types of coliform are harmful and may cause disease. Coliform have their origin in the intestinal tract of humans and all other warm-blooded animals and are found in sewage.

### Is it important to test for Coliform?

Due to their origin, coliform are widespread in our environment. Coliform are easy to find and fairly easy to identify. They are excellent indicator organisms. When found in drinking water, coliform bacteria alert us to the potential of finding harmful organisms.

### What should I do when Coliform are found?

Because coliform bacteria are very common, incidental contamination may occur. **Resampling is always recommended before any physical intervention with the water supply system is attempted.** If a second sample is unsafe, a licensed professional well contractor should be contacted. The water supply system can then be evaluated, needed repairs done, and the well and distribution system properly sanitized.

For more information contact the Oakland County Health Division/Environmental Health Service.

[www.co.oakland.mi.us](http://www.co.oakland.mi.us)

For more information please call:  
248-858-1312  
1-888-350-0900 Ext. 8-1312

Pontiac Office  
1200 N. Telegraph Road  
Pontiac, MI 48341-0432  
(248) 858-1308

Walled Lake Office  
1010 E. West Maple Road  
Walled Lake, MI 48390-3588  
(248) 926-3300

Southfield Office  
27725 Greenfield Road  
Southfield, MI 48076-3625  
(248) 424-7031

# PUBLIC HEALTH FACT SHEET



## Nitrate

### What is Nitrate?

Nitrate is a form of Nitrogen. Ammonia entering the soil from animal or human wastes is converted to nitrate by bacteria. Fertilizers, which contain Nitrogen, can also be changed into nitrate.

Nitrates may occur naturally in groundwater. However, they are generally found where there have been various activities on the ground surface (farming, lawn fertilizers and septic systems).

Nitrates found in groundwater often indicate open pollution pathways from the ground surface. When present, particularly at harmful levels, they indicate the need for additional testing.

### Can I tell if my water contains high levels of Nitrate?

No. Nitrate contamination can not be identified by looking, tasting, or smelling the water. The only way to identify nitrate contamination is to have the water tested.

### Who are affected by high levels of Nitrate?

- ☐ infants, birth to one year of age. The greatest risk is to infants under three months of age.
- ☐ infants that are breast-fed, whose mothers drink well water containing unsafe levels of nitrate.
- ☐ premature infants or infants with special health problems (diarrhea).
- ☐ the fetus of a pregnant woman who drinks well water containing unsafe levels of nitrate.

### What are unsafe levels of Nitrate in drinking water?

Levels at or above 10 mg/l (PPM).

### How does Nitrate affect health?

Infants and young children who drink water containing high levels of nitrate can suffer from a condition known as Methemoglobinemia (blue baby syndrome). This condition affects the blood's ability to absorb oxygen, resulting in a bluish color. Adults and older children are generally not affected, unless the levels of nitrate are extremely high.

OVER





## **Can Nitrates cause Cancer?**

Nitrates have been shown to form N-nitrosamines, which have proven to cause cancer in test animals. Cancers of the stomach and intestines are the main concerns. Studies to date have not provided convincing evidence of an increased cancer risk.

## **What can be done with water that has an elevated Nitrate level?**

Water treatment can remove nitrates from the water. Reverse osmosis, ion exchange, and distillation are effective in nitrate removal. However, they may be expensive and require regular maintenance to remain effective. Constructing a new well or correcting the source of the nitrate contamination, if possible, may be a better solution.

[www.co.oakland.mi.us](http://www.co.oakland.mi.us)

For more information please call:

248-858-1312

1-888-350-0900 Ext. 8-1312

Pontiac Office  
1200 N. Telegraph Road  
Pontiac, MI 48341-0432  
(248) 858-1308

Walled Lake Office  
1010 E. West Maple Road  
Walled Lake, MI 48390-3588  
(248) 926-3300

Southfield Office  
27725 Greenfield Road  
Southfield, MI 48076-3625  
(248) 424-7031

The Oakland County Health Division will not deny participation in its programs based on race, sex, religion, national origin, age or disability. State and federal eligibility requirements apply for certain programs.

# PUBLIC HEALTH FACT SHEET



## Arsenic

### What is Arsenic?

Arsenic is found in nature at low levels. Most arsenic compounds have no smell or special taste.

- c Arsenic joins with oxygen, chlorine, and sulfur to make inorganic arsenic compounds. Inorganic arsenic compounds are used to preserve wood, and make insecticides and weed killers.
- c Arsenic in plants and animals combines with carbon and hydrogen to make organic arsenic. Organic arsenic is usually less harmful than inorganic arsenic.

Check the labels of treated wood and insecticides to see if they contain arsenic.

### How are people exposed to Arsenic?

As a natural part of our environment, everyone is exposed to some amount of arsenic. You can come in contact with arsenic in the following ways:

- c from the food we eat every day. Some fish and seafood contain high amounts of arsenic. This organic type of arsenic is much less harmful to humans than inorganic arsenic from groundwater.
- c by either drinking water contaminated with arsenic or by eating food that has been cooked in this water. Arsenic found in well water and food is absorbed through the stomach and the intestines. Arsenic in water or food does not evaporate into the air and is not easily absorbed through the skin.
- c by breathing in smoke from burning materials containing arsenic, like wood treated with preservatives. Arsenic can also be absorbed through the air, as in industrial settings.

### How can Arsenic get into drinking water?

Mineral deposits in some areas of Michigan contain high levels of arsenic. Groundwater flowing through these deposits can dissolve arsenic from the minerals. This may result in elevated levels of inorganic arsenic in well water.

Arsenic has no smell or taste in drinking water. You need to test your well water to find out if arsenic is present.

### Will Arsenic in water cause health problems?

If you are exposed to arsenic, several factors that work in combination with each other will determine whether harmful health effects may occur. These factors are:

- c dose - How much arsenic is in my body?
- c duration - How long and how often have I been exposed?
- c type of arsenic - Have I been exposed to inorganic or organic arsenic?
- c general health, nutritional status, age, and lifestyle

Some people may be affected by small levels of arsenic, others may not. Young children, the elderly, people with long-term illnesses, and unborn babies are at greatest risk. They can be more sensitive to chemical exposures.

OVER

1

## What are the health effects of Arsenic poisoning?

The way arsenic harms our bodies is not fully known. Studies have not shown all the health problems caused by drinking contaminated water found in Michigan wells.

Based on studies in other countries, long-term exposure to high arsenic levels in drinking water has caused the following health effects:

- c thickening and discoloration of the skin. Sometimes these changes can lead to skin cancers. These cancers can be easily cured if discovered early.
- c stomach pain, nausea, vomiting and diarrhea.
- c numbness in the hands and feet.

Some of these problems can be seen with other illnesses, which makes it difficult for a doctor to detect arsenic poisoning. If you or your family members are worried about health problems you think are caused by arsenic in your well water, see your doctor. You should also have your well water tested.

## Can a medical test tell me how much Arsenic is in the body?

Yes, there are several ways you can be tested for arsenic exposure. A urine test is a simple way to tell if you are being exposed to harmful levels of arsenic in your drinking water. However, this test will not tell you what type of arsenic is in your body. (To get the most accurate urine test results, do not eat any fish or seafood for at least three days before your test.)

## Who can test well water?

The Health Division can give you a list of certified laboratories that will test for arsenic in your water. The Michigan Department of Environmental Quality Laboratory may also be of help.

## What should be done if there is an elevated amount of Arsenic in the well?

Stop using your well water for drinking and cooking food. Bottled water can be used for these purposes. You may wish to have one or more additional water samples tested to confirm that your water is above acceptable levels.

Extending the well casing deeper or drilling a new, more shallow well, may be a possible solution. When a new well is not possible, connection to a public water supply system may be an option.

In-home water treatment devices are not a permanent solution. These devices require maintenance and should be considered only after other options have been considered. Note: Reverse Osmosis (RO) is not certified for the removal or reduction of naturally occurring arsenic, as found in southeast Michigan, unless the supply water is pretreated by chlorination.

For more information contact the Oakland County Health Division/Environmental Health Services before replacing your well or if you have any questions.

[www.co.oakland.mi.us](http://www.co.oakland.mi.us)

Telephone: (248) 858-1312  
Toll Free To Pontiac  
1-888-350-0900 Ext. 8-1312

Pontiac Office  
1200 N. Telegraph Road  
Pontiac, MI 48341-0432  
(248) 858-1308

Walled Lake Office  
1010 E. West Maple Road  
Walled Lake, MI 48390-3588  
(248) 926-3300

Southfield Office  
27725 Greenfield Road  
Southfield, MI 48076-3625  
(248) 424-7031

The Oakland County Health Division will not deny participation in its programs based on race, sex, religion, national origin, age or disability. State and federal eligibility requirements apply for certain programs.