Sampling Fact Sheets

These fact sheets can be used by noncommunity water supplies to assist them in learning about:

- what they may be sampling for
- how to take samples
- interpreting sample results
- dealing with problems that may occur
- creating a contingency plan to use in case of emergencies

In order to get the most benefit from these documents, it is recommended that the noncommunity water supplies use them in conjunction with assistance from their local health department representative, especially when dealing with problems.

Sampling fact sheets will be updated as changes in requirements occur. Please check back periodically.

Last Updated on 12/22/2009

Fact Sheet: 1

BACTERIOLOGIC (COLIFORM) SAMPLING
Noncommunity Public Water Supplies

WATER SUPPLY SERIAL NUMBER (WSSN):_____WELL#:_____
NAME OF WATER SUPPLY:_____
SAMPLING CONTACT PERSON:_____PHONE:_____
HEALTH DEPARTMENT CONTACT:_____PHONE:_____

⇒COLIFORM SAMPLE FREQUENCY: **Every 3 months, Annual***, **___ per Month**** (circle one)
*must be approved by local health department, **required for systems serving > 1,000 persons per day

⇒ COLIFORM SAMPLING TAP LOCATION:_____
(Sample siting plan required to be approved by local health department, see sanitary survey document.)

⇒LABORATORY FOR COLIFORM TESTING:_____ PHONE:_____

Coliform Bacteria - General Information

Coliform bacteria are used as an indicator organism to assess the sanitary quality of drinking water. They are commonly found in high numbers in the intestinal tract of man and other warm-blooded animals and in sewage. They can also be found in surface waters, soils, and surfaces exposed to the elements. Coliform bacteria should not be found in a closed drinking water system that is functioning properly. Their presence can mean the integrity of the water system has been compromised. Repeat testing is required after an initial positive result.

SAMPLING PROTOCOL

- Collect samples just prior to delivery or mailing to the laboratory. Samples must be analyzed within 30 hours of collection.
- Use the proper sample container obtained from a certified laboratory.
- Read sampling instructions carefully.
- Sample from an approved tap per the sample-siting plan not from hoses or locations that are unsanitary.
- Allow water to run at full flow for several minutes before collecting the sample to flush stagnant water. (Fill out the sample form while you wait.)
- Adjust the tap to provide a pencil-sized stream of water. Remove the cap from the sterile bottle and take the sample immediately and replace the cap. **NOTE:** *The inside of the sample bottle may be treated with a powdered reagent, which must not be rinsed or blown out. Do not touch the inside of the bottle or cap.*
- Complete the report form ***making sure the WSSN, date and time of sampling*** and return address are recorded on the form correctly. Be sure to request the proper lab analysis or test code for coliform bacteria and place the form with the container.

- Deliver or mail the sample to the lab as soon as possible so the 30 hours transit time is not exceeded.

WHEN YOU RECEIVE COLIFORM TEST RESULTS:

1. Review sample results and send a copy of results to the local health department. (Note: if you use the DEQ lab and have **properly completed the sample form**, results are automatically sent to the local health department.)

2. If sample results indicate coliform bacteria were detected, i.e. POSITIVE, POS, FC POS, EC POS, or similar notation YOU MUST:
   - Contact the local health department to discuss repeat sampling procedures.
   - Collect FOUR repeat samples within 24 hours of receiving the positive result (or by the next business day).

3. Collecting repeat samples:
   - At least one sample must be from the same tap as the original positive sample.
   - At least one sample should be from the raw water tap (at or near pressure tank).
   - The rest should be from approved sampling locations within the distribution system. If there are not two other approved sampling taps in the system, collect at the original tap and the raw water tap again.

4. ***An MCL (maximum contaminant level)*** violation exists if there is more than ***one total coliform positive result obtained during the month***, or more than one coliform positive in any routine or repeat sampling or combination thereof.

If you have an MCL violation, you must:

- Notify the local health department within 24 hours or the next business day.
- Initiate an investigation to determine the cause and extent of the problem.
- Notify the public (consumers) of the MCL violation as instructed by the local health department.
- In lieu of closure, you must provide a temporary **ALTERNATE SUPPLY OF WATER FROM AN APPROVED SOURCE,** such as bottled water.
- Take corrective measures, such as disinfection, repairs or construction upgrades, installation of a new well, etc., as directed by the local health department.
- Once the corrective measures have been taken, additional sampling is required to resume normal service. Samples must be negative for coliform bacteria and collected at least 24 hours apart. There must be no chlorine residual at the time of sampling, as confirmed by the use of a chlorine test kit.

You must have local health department approval prior to placing the well back into normal service and discontinuing public notice.

¨ Five routine samples are required the month following the MCL violation to confirm the problem was corrected.

Fact Sheet: 2

NITRATE/NITRITE SAMPLING
Noncommunity Public Water Supplies

WATER SUPPLY SERIAL NUMBER (WSSN):_____WELL#:_____
NAME OF WATER SUPPLY :_____
SAMPLING CONTACT PERSON :_____ PHONE:_____
HEALTH DEPARTMENT CONTACT :_____ PHONE:_____

⇒NITRATE SAMPLE FREQUENCY: **Annual**
⇒NITRITE SAMPLE FREQUENCY: **One sample** only unless result is greater than .5mg/l

⇒SAMPLING TAP LOCATION:_____

⇒LABORATORY FOR NITRATE/NITRITE TESTING:_____PHONE:_____

Nitrates and Nitrites – General Information
Nitrate (N03) is a form of nitrogen combined with oxygen, which can be converted in the body to nitrite (N02). It can get into water if a well is improperly constructed, or located where it is subject to contamination sources. Typical sources of nitrate include: sewage disposal systems, run-off from barnyards or fertilized fields, industrial wastes, etc., or may be found naturally occurring in the soil. Nitrates in large amounts may bond with hemoglobin in the red blood cells of infants and prevent it from carrying oxygen. This may cause a condition known as methemoglobinemia or "blue baby syndrome." The acutely poisoned person will have a blue discoloration of the skin due to the reduction of the amount of oxygen in the blood stream and must be attended by a physician immediately. Also, because nitrates may be found in sewage or animal waste, excessive levels in drinking water may indicate the presence of other types of potentially harmful contaminants. The U.S. EPA has established a Maximum Contaminant Level (MCL) for nitrate at 10 milligrams per liter (mg/l) and 1.0 mg/l for nitrite.

SAMPLING PROTOCOL

- Collect samples just prior to delivery or mailing to the laboratory. Samples to be analyzed at the DEQ laboratory (may not be tested on weekends), should be taken early in the week so they can be analyzed within 48 hours of collection.
- Use the proper sample container obtained from a certified laboratory. Do not rinse.
- Read sampling instructions carefully.
- Allow water to run at full flow for several minutes before collecting the sample to flush stagnant water. (Fill out the sample form while you wait.)
- Adjust the tap to provide a pencil-sized stream of water and fill the bottle to the neck.
- Complete the report form ***making sure the WSSN, date and time of sampling*** **and return address** are recorded on the form correctly. Be sure to request the proper lab

analysis or test code for automated partial chemistry if using the MDEQ lab or nitrate/nitrite if using a different lab.

- Deliver or mail the sample to the lab as soon as possible so the 48 hours transit time is not exceeded.

WHEN YOU RECEIVE NITRATE/NITRITE TEST RESULTS:

1. Review sample results and send a copy of results to the local health department. (Note: if you use the MDEQ lab and have **properly completed the sample form,** results are automatically sent to the local health department.) **Normal monitoring requirements are once per year for nitrate and one time for nitrite (no further nitrite testing required unless the result is greater than .5 mg/l).**

2. Whenever an **initial** water sample exceeds the MCL level for nitrate (10.0 mg/l), nitrite (1.0 mg/l) or a combination of nitrate and nitrate (10.0 mg/l), you must:
   - ♦ Collect a confirmation sample within 24 hours of receiving the initial result.
   - ♦ **If the average of two consecutive nitrate/nitrite samples exceeds 10.0 mg/l, the average of two nitrite samples exceeds 1.0 mg/l, or the cumulative average of both exceeds 10.0 mg/l an MCL violation has occurred. (see below)**

3. If the results are **below** the MCL levels for nitrate and nitrite, they are acceptable, however, **if they exceed one half the standard (5.0 mg/l for nitrate or .5 mg/l for nitrite), an increase in sampling frequency is required based on your type II status:**
   - ♦ A **NONTRANSIENT** noncommunity public water supply with greater than 5.0 mg/l nitrate or greater than 0.5 mg/l nitrite must sample QUARTERLY for at least 1 year.
     - If sampling during this or subsequent years indicate nitrate levels are consistently stabilized below the MCL, then the monitoring frequency may be reassigned to once per year.
   - ♦ A **TRANSIENT** noncommunity public water supply with results from nitrite analysis indicating greater 0.5 nitrite must sample QUARTERLY for at least one year as described above for nontransient supplies.
     - NOTE*: Quarterly sampling for transient supplies with nitrate results that exceed 5.0 mg/l is not required unless indicated by the DEQ or it's representative (local health department)*

If you have an MCL violation, you must:

- ♦ Notify the local health department within 24 hours or the next business day.
- ♦ Notify the public (consumers) of the MCL violation as instructed by the health department.
- ♦ Provide a temporary **ALTERNATE WATER SUPPLY OF WATER FROM AN APPROVED SOURCE, such as bottled water for those who request it.**
- ♦ Find a new source. Often a new deeper well can be constructed to obtain water meeting the nitrate/nitrite standard.

♦ If municipal water is available, connection is required if an approved onsite source can not be obtained.

DEQ-DWRP 5/99

Fact Sheet: 3

VOLATILE ORGANIC CHEMICAL (VOC) SAMPLING
Noncommunity Public Water Supplies

WATER SUPPLY SERIAL NUMBER:_____WELL:_____
NAME OF WATER SUPPLY:_____
SAMPLING CONTACT PERSON:_____PHONE:_____
HEALTH DEPARTMENT CONTACT:_____ PHONE:_____

⇒VOC SAMPLE FREQUENCY:_____SAMPLE(S) EVERY _____MOS.

⇒SAMPLING TAP LOCATION:_____
(Sampling siting plan required to be approved by local health department–see sanitary survey document)

Volatile Organic Chemicals – General Information

Volatile organic chemicals include components of petroleum based products and industrial solvents and chemicals. They may be associated with leaking underground tanks, improper disposal practices, leachate from landfills, discharge from chemical plants and other activities. Ingestion of these chemicals at certain levels in drinking water may lead to anemia, liver and spleen disorders, reproductive problems and an increased risk of certain cancers. Their presence in drinking water may be linked to possible contamination by these sources and may indicate a poorly constructed or damaged well, a vulnerable aquifer, a contaminated site or a combination of any of these. The US EPA has established Maximum Contaminant Levels (MCLs) for certain chemicals in public water supplies (see back).

SAMPLING PROTOCOL

- Obtain proper sample containers from a laboratory certified by the Michigan Department of Environmental Quality for analysis of all required parameters.

- The sample vials may contain a chlorine neutralizer. Tap each vial in an upright position to drain the preservatives from the cap. ***DO NOT RINSE VIAL BEFORE COLLECTION.*** Do not open the vial until ready to collect the sample. Do not touch the inside of cap or vial.

- Select a clean faucet without attachments or leaking stem. Allow water to run for ten minutes (until cold) at full flow.

- Reduce flow and collect the sample directly into all vials provided. **Fill vial until water rounds at the top of the vial. Cap and invert to check for air bubbles in the vial. (The septa, i.e. the rubber part inside the cap ring, must be smooth side down in contact with the sample to avoid possible contamination.)**

- If air is observed in the inverted sample, remove cap, add water, (DON'T DUMP SAMPLE) and recap as instructed.

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- Keep the samples refrigerated and complete the report form ***making sure to record the WSSN, date and time of sampling*** and return address on the form correctly. Be sure to request the proper lab analysis or test code for volatile organic chemistry if using the MDEQ lab. Use the appropriate forms if using a different certified lab.

- Deliver or mail the sample units together to the lab as soon as possible so the transit time is not exceeded. See the unit label for transit times.

VOLATILE ORGANIC CHEMICAL SAMPLING (WITH WAIVER)

Contaminant	***MCL (mg/l)***	***Contaminant***	***MCL (mg/L)***
Benzene	*0.005*	*Vinyl Chloride*	*0.002*
Carbon tetrachloride	*0.005*	*1,2-dichloroethane*	*0.005*
Trichloroethylene	*0.005*	*1,2-dichloroethylene*	*0.007*
1,1,1-trichloroethane	*0.20*	*Para-dichlorobenzene*	*0.075*
Cis-1,2-dichloroethylene	*0.07*	*Ethylbenzene*	*0.7*
O-dichlorobenzene	*0.6*	*Styrene*	*0.1*
Tetrachloroethylene	*0.005*	*Toluene*	*1.0*
Trans-1,2-dichloroethylene	*0.1*	*Xylenes (total)*	*10.0*
Dichloromethane	*0.005*	*1,2,4-trichlorobenzene*	*0.07*
1,1,2-trichloroethane	*0.005*	*1,3-dichloropropane*	*0.005*
Monochlorobenzene	*0.1*		

WHEN YOU RECEIVE THE TEST RESULTS:

1. Review the sample results and send a copy of results to the local health department. (Note if you use the MDEQ lab and have **properly completed the sample form,** results are sent to the local health department.)

2. **If the sample shows "non-detect" for all analytes:**
   - ♦ No further action is necessary unless conditions change or you are notified otherwise by the local health department.
   - ♦ Sample on the frequency established by your health department (usually 1 sample every 6 years with a written waiver.)

3. **If the sample indicates the presence of one or more of the analytes:**
   - ♦ Immediately contact your health department for instructions regarding further sampling requirements.
   - ♦ Compliance with MCLs is determined by averaging results for four quarters or if one confirmed result is four times higher than the standard.

Fact Sheet: 4

SYNTHETIC ORGANIC CHEMICAL (SOC) SAMPLING
Nontransient Noncommunity Public Water Supplies

WATER SUPPLY SERIAL NUMBER:_____WELL #:_____
NAME OF WATER SUPPLY: _____
SAMPLING CONTACT PERSON: _____PHONE:_____
HEALTH DEPARTMENT CONTACT:_____PHONE:_____

⇒SOC SAMPLE FREQUENCY:_____ SAMPLES(S) EVERY _____ MOS.

⇒SAMPLING TAP LOCATION:_____
(Sampling siting plan required to be approved by local health department–see sanitary survey document)

Synthetic Organic Chemicals – General Information
Synthetic organic chemicals are commonly found in pesticides and other industrial and commercial chemical discharges, such as emissions from incinerators. It reaches groundwater through runoff and leachate from industrial and agricultural activities, as well as from landfills. Many of these chemicals may cause health effects such as liver and kidney problems, central nervous system and reproductive difficulties and may even increase the risk of certain kinds of cancers. Their presence in drinking water may indicate a damaged or poorly constructed well, an aquifer under the influence of surface water, a contaminated site or a combination of any of these. The US EPA has established Maximum Contaminant Levels (MCL) for certain chemicals in public water supplies.

SAMPLING PROTOCOL

- Obtain proper sample containers from a lab certified by the Michigan Department of Environmental Quality for analysis of all required parameters.

- The MDEQ lab provides three different sample bottles per SOC sample. All three must be filled according to the directions with the bottles. Follow the sampling protocols included with the bottles if using a different certified lab.

- **These bottles contain preservatives. Tap the bottle in an upright position to drain preservatives from cap. Do not rinse bottle before collection.** Do not open bottle until ready to sample. Do not touch the inside of the cap or bottle.

- Select a clean faucet without attachments or leaking stem. Allow water to run for about ten minutes (until cold) at full flow from the sampling tap.

- Reduce flow to avoid splashing and collect the sample directly into the bottle. Fill to the bottom of the neck. **Cap and invert 5 times to mix the sample with the preservatives.**

(over)

- Complete the report form ***making sure the WSSN, date and time of sampling*** and

return address are recorded correctly. Be sure to request the proper lab analysis or test code for synthetic organic chemicals and place the form with the bottles.

- Keep the sample refrigerated. Deliver or mail the samples to the lab as soon as possible to the transit time is not exceeded. See the unit label for transit times.

SYNTHETIC ORGANIC CHEMICAL SAMPLING (WITH WAIVER)

Contaminant	***MCL (mg/l)***	***Contaminant***	***MCL (mg/l)***
Alachlor	*0.002*	*Aldicarb*	*0.003*
Aldicarb sulfoxide	*0.004*	*Aldicarb sulfone*	*0.002*
Atrazine	*0.003*	*Benzo(a)pyrene*	*0.0002*
Carbofuran	*0.04*	*Chlordane*	*0.002*
Dalapon	*0.2*	*Di(2-ethylhexyl)adipate*	*0.4*
Di(2-ethylhexyl)phthalate	*0.006*	*Dinoseb*	*0.007*
Heptachlor	*0.0004*	*Heptachlor epoxide*	*0.0002*
Hexachlorobenzene	*0.001*	*Hexachlorocyclopentadiene*	*0.05*
Lindane	*0.0002*	*Methoxychlor*	*0.04*
Oxamyl (vydate)	*0.2*	*Pentachlorophenol*	*0.001*
Picloram	*0.5*	*Polychlorinated biphenyls*	*0.0005*
Simazine	*0.004*	*Toxaphene*	*0.003*
2,4-D	*0.07*	*2,4,5-TP silvex*	*0.05*
Endrin	*0.002*		

WHEN YOU RECEIVE THE TEST RESULTS:

1. Review the sample results and send a copy of results to the local health department. (Note if you use the MDEQ lab and have **properly completed the sample form,** results are sent to the local health department.)

2. **If the samples are "non-detect" for all analytes**:
   - ♦ No further action is necessary unless conditions change or you are notified otherwise by the local health department.
   - ♦ Sample on the frequency established by the local health department (usually 1 sample every 6 years with a written waiver).

3. **If the sample indicates the presence of one or more of the analytes**:
   - ♦ Immediately contact your health department for instructions regarding further sampling requirements.
   - ♦ Compliance with an SOC MCL is determined by averaging results for four quarters. It is exceeded if one confirmed sample is four times higher than the standard.

Fact Sheet : 5

METALS AND CYANIDE (INORGANIC CHEMICALS) SAMPLING
Noncommunity Public Water Supplies

WATER SUPPLY SERIAL NUMBER (WSSN):_____WELL#:_____

NAME OF WATER SUPPLY: _____

SAMPLING CONTACT PERSON:_____PHONE:_____

HEALTH DEPARTMENT CONTACT:_____PHONE:_____

⇒COMPLETE METALS SAMPLING FREQUENCY:_____SAMPLE EVERY _____YEARS

⇒CYANIDE SAMPLING FREQUENCY:_____SAMPLE EVERY _____YEARS

⇒SAMPLE TAP LOCATION:_____
(Sample siting plan required to be approved by local health department – see sanitary survey document)

⇒LABORATORY FOR METALS/CYANIDE TESTING:_____PHONE:_____

Metals and Cyanide – General Information
The regulated metals are generally toxic in varying degrees and their presence in drinking water may be the result of contamination by industrial waste or some may be naturally occurring in certain soils and geologic formations in Michigan. Their presence at significant levels may be an indication of poor well construction or a vulnerable aquifer. Cyanide is used to make the compounds needed to make nylon and other synthetic fibers and resins, as well as being found in some herbicides. It does not bind with soil and may migrate to groundwater.

SAMPLING PROTOCOL

- Obtain the proper bottles from a certified laboratory and follow the instructions provided.
- Collect samples just prior to delivery or mailing to the laboratory. Samples must be analyzed within 14 days of collection. Keep the sample refrigerated.
- Collect sample as close to the well as possible prior to any treatment and flush stagnant water by running water at full flow for several minutes before collecting the sample. (Fill out the form while you wait.)
- Adjust the tap to provide a pencil sized stream of water and fill the bottle to the bottom of the neck.
- Complete the report form ***making sure to record the WSSN, date and time of sampling*** and return address are recorded on the form correctly. Be sure to request the proper tests.
- Deliver or mail the samples to the lab as soon as possible.

NOTE: IN ORDER TO COMPLY WITH STATE REGULATIONS, IT IS NECESSARY TO USE A LABORATORY CERTIFIED IN THE ANALYSIS OF ALL OF THE REQUIRED CHEMICAL ANALYTES.

SAMPLING FOR COMPLETE METALS AND CYANIDE IS A REQUIREMENT FOR NONTRANSIENT, NONCOMMUNITY WATER SUPPLIES ONLY.

INORGANIC SAMPLING (WITH WAIVER)

Contaminant	***MCL (mg/l)***	***Contaminant***	***MCL (mg/l)***
Antimony	*.006*	*Mercury*	*.002*
Barium	*2.0*	*Nickel*	*.1*
Beryllium	*.004*	*Cadmium*	*.005*
Chromium	*.1*	*Selenium*	*.05*
Cyanide	*.2*	*Thallium*	*.002*

WHEN YOU RECEIVE THE TEST RESULTS:

1. Review the sample results and send a copy of results to the local health department. (Note if you use the MDEQ lab and have **properly completed the sample form**, results are automatically sent to the local health department.**) One sample is required per three year monitoring period. If there have been three testing cycles (9 years) not exceeding the maximum contaminant level (MCL), the frequency may be decreased to one sample every nine years.**

2. Whenever an **initial** water sample exceeds the MCL for any of the analytes:
   - ♦ A confirmatory sample must be taken from the same tap within 24 hours of receipt of the test results.
   - ♦ There is a violation of the drinking water standard if the average of the two samples exceeds the MCL.

If You Have an MCL Violation, you must:

- ♦ Notify the local health department within 24 hours or the next business day.
- ♦ Notify the public (consumers) of the MCL violation as instructed by the health department.
- ♦ Provide a temporary **ALTERNATE SUPPLY OF WATER FROM AN APPROVED SOURCE, such as bottled water.**
- ♦ Begin seeking a new source. When possible drill a new well into an acceptable aquifer or connect to municipal water if available.

Fact Sheet: 6

LEAD/COPPER SAMPLING
Nontransient Noncommunity Public Water Supplies

WATER SUPPLY SERIAL NUMBER (WSSN):_____WELL:_____
NAME OF WATER SUPPLY:_____
SAMPLING CONTACT PERSON:_____PHONE:_____
HEALTH DEPARTMENT CONTACT:_____PHONE:_____

⇒ LEAD/COPPER SAMPLE FREQUENCY:_____SAMPLE (S) EVERY _____MOS.

⇒LEAD/COPPER SAMPLING TAP LOCATION(S):_____
_____

⇒LABORATORY FOR LEAD/COPPER TESTING:_____PHONE:_____

Lead/Copper – General Information
Lead is a common metal found throughout the environment in lead-based paint, air, soil, household dust, food and water. It builds up in the body over many years and may result in damage to the brain, red blood cells and kidneys. Lead enters drinking water primarily as a result of corrosion, or wearing away of materials containing lead in the water distribution system. These materials include lead-based solder used to join copper pipes, brass and lead piping. The concentration of lead in drinking water may be a function of numerous factors related to the presence of lead, water chemistry, temperature, pH, system hydraulics, usage, etc., and can vary over time. The presence of copper in drinking water is also primarily a result of corrosion. Acute exposure to copper can result in nausea and diarrhea. The US EPA has established an action level for lead of .015 milligrams per liter (mg/l) and 1.3 milligrams per liter (mg/l) for copper, for public water supplies.

SAMPLING PROTOCOL

- Obtain sample containers and analysis from a laboratory certified by the Michigan Department of Environmental Quality for lead/copper analysis.
- Collect **FIRST DRAW** samples. (Water has stood motionless in the piping for at least 6 hours.) **DO NOT SAMPLE AFTER WEEKENDS, HOLIDAYS OR**
- **EXTENDED PERIODS OF STAGNATION. Do not flush the sample tap before sample collection.**
- **Collect samples where water is drawn primarily for drinking. Sample drinking fountains, or kitchen/break room faucets if they are used routinely to obtain water for consumption.** Do not sample from slop sinks, hose bibbs, etc.
- Sample the drinking water fixtures in the building up to the chart number. For instance, if your building has eight drinking water fixtures, and you are required to take five samples, sample only five of the fixtures. If you have more than the chart number of drinking water fixtures, select ones that represent the water distribution system, i.e. one in each building wing or on each floor. Or, you can collect more than the minimum number of samples.

Student/Employee Population	# Samples Each 6 months	# Samples after Reduction*
501 to 3,300	20	10
1 to 500	10	5
<101	5	5

* After 2 six month sets below the action level a reduction to annual testing is allowed

(over)

Sampling Protocol, con't

- For large facilities collect at least one sample per building until you get the number of samples required for the population served by the water supply (See Table).
- If you have a only a few buildings, split the samples among them as best you can according to where the water is being consumed.
- If you have fewer drinking water fixtures than the chart requires, sample the ones you have and note on the sample log sheet you have sampled all drinking water fixtures.
- Properly identify the sample location on the lab slip and include the water supply serial number (WSSN) on the lab sample forms to properly identify the samples, otherwise, you may not be credited as having sampled.
- Be sure to request the proper lab analysis or test code for lead/copper and place the forms with the bottles.
- Refrigerate all samples during storage prior to shipment.
- Deliver or mail the samples to the lab as soon as possible.

WHEN YOU RECEIVE LEAD/COPPER TEST RESULTS:

1. Properly record sample results on DEQ sheet following the direction and send a copy to the local health department.
2. Calculate the 90^{th} percentile using the directions on the record sheet, or request the LHD do the calculations to determine the 90^{th} percentile .
3. **If you exceed an action level, you must:**

   - Notify the local health department within 24 hours or the next business day.
   - Notify the public (consumers) of the **lead** action level exceedance as instructed by the health department and take steps to minimize exposure (shutting off fountain, or flushing) as instructed.
   - Additional actions such as sampling the source water for lead/copper and investigating possible sources of lead in the distribution system should be discussed with the local health department.

➔ Within 6 months of the end of the monitoring period in which the action level was exceeded, the facility will need to submit a proposal to conduct a "treatment study" OR install "corrosion control treatment."

Fact Sheet: 7

DRINKING WATER CONTINGENCY PLAN

Noncommunity Public Water Supplies

For the water system serving_____

Water Supply Serial Number (WSSN)_____

Contingency Plan Purpose: In the event of an emergency pertaining to the drinking water supply it is necessary to act promptly and effectively to protect public health and welfare. In the context of this plan, emergencies could include complete loss of water pressure, contamination of water supply, and threats or observed vandalism to water system. Complete loss of water normally would require closure of the facility. Threats or contamination with unknown substances may also warrant such action. However, under certain situations were water is flowing but has been determine unsafe to drink by health authorities, it may be possible to operate the facility with approval of the appropriate local or state agencies. If approved, operation for an interim period is dependent on providing an approved source of water for consumption and notification to the users to not consume the piped water in the facility. This fact sheet is intended to outline procedures and contacts to address such emergencies. If an emergency occurs, immediately contact your local health department for further instructions.

1. **Facility Personnel**: List person(s) responsible for facility (owner or designee), and person(s) in routine charge of water system operation and treatment (certified operator where required), title and telephone number.

   Name Title Phone

2. **Other Contacts**: List local and state contacts for notification of emergencies involving drinking water.

   Local Health Department contact :_____ Telephone: _____

   Department of Environmental Quality - Drinking Water and Radiological Division:
   Lansing: 517-241-1370
   District Office: _____ Name:_____ Tel._____

3. **Certified laboratory**: List local laboratory(s) and telephone number used by your facility for analysis of total coliform bacteria.

4. **Contractors**: List qualified contractors who may be used during emergencies.

   Water Well Drilling Contractor:

   Plumber:

   Other:

5. **Alternate Water Source**: List options for providing safe source of drinking water on a temporary basis:

Purchase bottled water at: Quantity:

Method of dispensing water to individuals in sanitary manner:

Other Alternate approved source:

6. **Other consumptive water uses or equipment that may be directly connected to the potable water supply**. Indicate if these are in the facility need to addressed.

Drinking Fountains to shut off: Yes / No

Ice machines discard contents: Yes / No

Post mix soft drinks disconnect Yes / No

Coffee machines, tea, juices, soups, vending, etc. Yes / No

Other:

Note: If the water supply lost pressure or could not be used due to unsafe conditions, any equipment used for food service or consumption which is connected to the water supply will need to be disinfected or sanitized per the manufacturers specifications.

7. **Public Notification**: Consumers are required to be advised of problem with water and availability of alternate source of water for consumption.

- Post public notice at sinks and any other potential drinking water outlets that can not be shut off. List locations to be posted:

- Retain copy of signed and dated public notice. List any other means to notify public. *(Schools/Child Care Centers/Children's Camps are recommended to provide notice to parents.)*

Consult your local health department for the required public notification language and format. **YOU MUST HAVE APPROVAL FROM YOUR LOCAL HEALTH DEPARTMENT PRIOR TO RESUMING USE OF YOUR WATER SUPPLY FOR CONSUMPTION.**

HOW CAN ARSENIC GET INTO MY WATER SUPPLY?

Earth materials such as bedrock, sand, and gravel may contain arsenic bearing minerals. Arsenic may be dissolved by, and absorbed into, the drinking water we withdraw from the ground. Ground water is water that collects and flows within the earth. Some areas in Michigan have levels of arsenic in drinking water that are above the recommended health level. Arsenic has no smell or taste in water, so you cannot sense if arsenic is present. The best way to determine if your well water is impacted is to have it tested for arsenic. Check with your local health department about the need to have your drinking water tested for arsenic. You can find your local health department location and phone number in the governmental pages of your local phone book or at www.malph.org/page.cfm/18.

HOW CAN I BE EXPOSED TO ARSENIC?

The most common and significant exposure to arsenic is from ground water used for drinking and cooking. However, since arsenic is a natural part of our environment, we may be exposed to some amount of arsenic in any of the following ways:

- The largest source of total arsenic comes from the food we eat. Some fish and seafood contain high amounts of **organic** arsenic. Organic arsenic is much less harmful than **inorganic** arsenic from the ground water.
- Fortunately, arsenic at levels found in well water is not readily absorbed by the skin, so contact with water (showering, laundering, etc.) is not a significant risk. Arsenic from a water supply does not readily disperse into the air, so inhalation during a shower or while washing dishes is not significant.
- Arsenic may be inhaled by breathing in dust from industrial processes or smoke from burning arsenic treated wood. Tobacco smoke contains small amounts of arsenic.

- Direct contact exposure to concentrated arsenic compounds can be absorbed through the skin. These types of exposures would be more likely to result from occupational related contacts.

WHAT FACTORS DETERMINE MY HEALTH RISK?

If you drink water containing arsenic, several factors will determine the health risk. These factors are:

- DOSE – What is my level of exposure to arsenic?
- DURATION – How long and how often have I been exposed?
- TYPE of ARSENIC – Have I been exposed to **inorganic** or **organic** arsenic?
- GENERAL HEALTH, AGE, LIFESTYLE and NUTRITIONAL STATUS, – Some people may be affected by lower levels of arsenic while others remain unaffected. Young children, the elderly, people with long-term illnesses, and unborn babies are at greater risk. They can be more sensitive to chemical exposures. Babies are not exposed to arsenic through breast milk at levels of concern even when their mothers have been exposed.

WHAT ARE THE HEALTH EFFECTS ASSOCIATED WITH ARESENIC EXPOSURE?

The way arsenic affects our bodies is not fully understood. Studies of exposed populations in the United States have not shown clear proof of health problems caused by drinking contaminated water at levels similar to those found in Michigan well water.

Based on studies in other countries, long-term exposure to high arsenic levels (generally greater than 0.30 milligrams per liter [mg/L]) in drinking water has caused the following effects:

- THICKENING and DISCOLORATION of the SKIN. Sometimes these changes can lead to skin cancers. These cancers can be cured if discovered early.
- STOMACH PAIN, NAUSEA, VOMITING, and DIARRHEA.
- NUMBNESS in the HANDS and FEET.

Many of the symptoms of exposure to high levels of arsenic are also seen with other common illnesses, which makes it difficult for a doctor to recognize. If you or your family members are concerned about health problems that may be related to arsenic in your well water, you should discuss them with your doctor. You should also consider having your well water tested for arsenic.

CAN A MEDICAL TEST TELL ME HOW MUCH ARSENIC IS IN MY 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 currently being exposed to arsenic at levels of concern. 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**. If needed, your doctor has additional tests that can be performed to check arsenic levels in your body.

I AM INTERESTED IN HAVING MY WELL WATER TESTED FOR ARSENIC?

Arsenic testing is not routinely performed on private wells. For a fee, the Michigan Department of Environmental Quality (DEQ), Laboratory Services Section (517-335-8184), or a commercial laboratory, certified by the DEQ to test for arsenic, may be contacted to arrange for arsenic testing of your water supply. The DEQ fee for arsenic testing is $16. For a listing of certified commercial analytical laboratories, you may contact the DEQ at the telephone number listed above. Your local health department can also help by providing you with a list of certified laboratories or by making arrangements for the water testing by the DEQ Laboratory.

You may wish to have one or more additional water samples tested to confirm the arsenic level. Generally, samples taken weeks or months apart have not shown a significant change in arsenic levels. However, samples taken after a long inactive water use period, such as following a vacation, will sometimes be higher than those taken after extensive water use, such as lawn watering or doing laundry. You should collect a sample at a time that reflects your typical household water use.

HOW DO I INTERPRET MY WATER SAMPLE RESULTS?

Environmental Protection Agency (EPA) set a maximum contaminant level (MCL) of 0.010 mg/L for arsenic in drinking water. The new MCL replaces the previous MCL of 0.05 mg/L. **The recommended arsenic drinking water health advisory is: 0.010 mg/l.** Expressed in different units of measure, this level is the same as: 0.010 parts per million (ppm), or 10 micrograms/liter (µg/L), or 10 parts per billion (ppb).

The MCL serves as an advisory or recommendation for a safe drinking water level in private single family residential water wells. However, certain public drinking water supplies are required by law to meet the new standard by January 23, 2006.

WHAT SHOULD I DO TO REDUCE MY ARSENIC EXPOSURE?

If the arsenic level in your well water exceeds the health advisory, we recommend that you stop using your well water for drinking and cooking. Bottled water can serve as an alternative for these purposes. Since the MCL for arsenic is a long-term exposure standard protective against cancer and is based on consuming two liters of water per day for a 70-year period, incidental consumption of water containing arsenic above 0.010 ppm and under 0.300 ppm is not a significant exposure.

- Connection to a community water supply system may be the most cost-effective solution. If not already in compliance with the MCL, community water supplies will be required to initiate corrective action by January 23, 2006. When connection to a community water system is not possible, water well replacement or modification may be options. However, well modification may not always result in arsenic reduction. Contact your local health department before replacing or modifying your water well.
- If a water source meeting the recommended health advisory is not available, water treatment may be an alternative. Reverse osmosis (RO), distillation, and activated alumina water treatment devices may be the most effective and practical arsenic treatment methods for residential water supplies. Distillation and RO are best suited as point-of-use treatment devices while activated alumina may be best for treatment of the entire household system. Water softeners and activated carbon filters do not reduce arsenic levels effectively.
- All treatment devices need regular maintenance. Failure to properly maintain a water treatment system may result in exposure to higher levels of arsenic than that coming from the well. An RO unit requires periodic filter replacement. Activated alumina devices should be maintained through a service contract and should not be the type of unit that requires in-home filter media regeneration.
- Private water supply treatment is not regulated nor considered a preferred permanent solution to water quality problems. Before installing a water treatment system, you should carefully research the treatment method's effectiveness for contaminant reduction and the system's operational and maintenance requirements. A treatment unit certified by NSF International and installed to their specifications, is recommended. Information is available at **www.nsf.org** or at 877-867-3435.

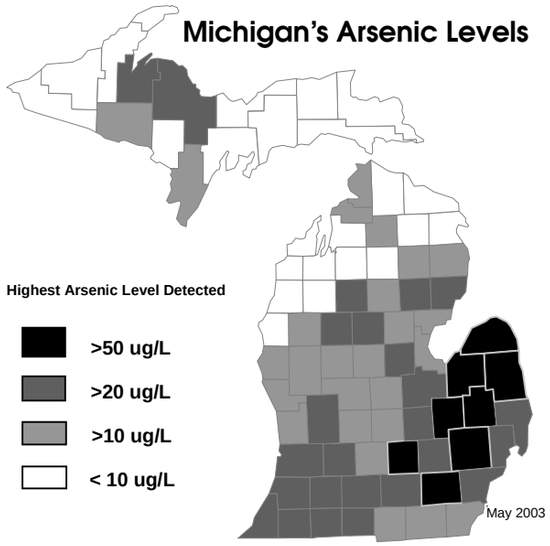
FOR MORE INFORMATION**:**

If you or your physician have questions, please contact your local health department or the following:

Michigan Department of Community Health (DCH)
Division of Environmental and Occupational Epidemiology
3423 North Martin L. King Jr. Boulevard
P.O. Box 30195
Lansing, MI 48909.
1-800-648-6942 or 517-335-8350

DEQ, Water Bureau
Constitution Hall, 525 West Allegan
P.O. Box 30273
Lansing, MI 48909-7773
517-241-1370

Arsenic links:
* U.S. EPA at **www.epa.gov/safewater/arsenic.html**
* U.S. Geological Survey at **webserver.cr.usgs.gov/trace/arsenic/**
* DEQ Arsenic Information at **www.michigan.gov/deq/1,1607,7-135-3313_3675_3691-9753--,00.html**



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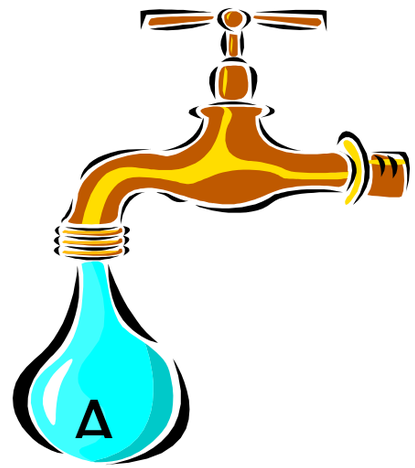
Arsenic in Well Water



Health Information for Water Well Users

Michigan Department of Environmental Quality
Steven E. Chester, Director

Michigan Department of Community Health
Janet Olszewski, Director

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