

GROUND WATER CONTAMINATION INFORMATION

Presence of Salty Water

The salt that is normally found in contaminated water wells is composed primarily of calcium or sodium chloride. The salinity of water is measured by the concentration of the chloride ion. The U.S. Environmental Protection Agency has established a Secondary Drinking Water Standard of 250 mg/l for chloride in public drinking water supplies. This is an aesthetic standard and simply means that some individuals will begin noticing a salty taste in water when the chloride concentration exceeds this level. Salt contamination of water wells may occur by a single or a combination of ways. Following are a number of possible sources of salt contamination:

1. **Oil-field brine** is a waste water produced during oil and gas drilling and producing operations. Brine can be as much as ten times more salty than sea water. According to Ohio oil and gas law, brine must be contained and properly injected into deep formations through permitted injection wells or properly spread on roadways for ice and dust control. However, improper storage or disposal of brine can cause contamination of ground water.
2. **Rock-salt** used during winter months for the deicing of highways or stored in open piles, can enter ground-water by surface or stream runoff.
3. **Water softeners** use salt to condition hard water. Discharge of salty regeneration fluid into septic systems, on the ground surface or into storm sewers may contaminate shallow ground-water aquifers.
4. **Naturally occurring saline fluids** can contaminate a water well that is drilled too deep. In addition, if a water well is developed in a fresh water aquifer that is underlain by heavier saline water, contamination can occur when the water well is pumped. If fresh water is pumped from the aquifer more quickly than it can be replenished, the underlying saline water may eventually be drawn upward into the water well.

Answers to the attached questionnaire will help the Division to determine the source of your water well contamination problem. You may also help by performing a simple water quality test. The chloride concentration of your water supply can be estimated using a simple plastic strip such as the Quantabs provided with this packet. Instructions for testing your water are included. Please follow the instructions and return the activated Quantabs and the questionnaire to the following address.

Attn: Manager / Administrator
Division of Oil and Gas Resources Management
Technical Support Services
2045 Morse Rd. Bldg. F-2
Columbus, OH 43229-6693

USING THE QUANTAB

The attached Quantab chloride titrator can be used to measure salt (chloride) concentration in water. When the Quantab is placed upright in water, fluid will rise in the brown column of the Quantab. If chloride is present in the water, it will cause a chemical reaction that turns the brown column, white. When the reaction is complete, the yellow strip at the top of the column turns dark blue. The height of the white color change in the column indicates the chloride concentration.

Directions:

1. Obtain a sample of your water prior to any filters or water conditioning equipment. The valve at the bottom of your pressure tank is a good place to obtain a sample if you have conditioning equipment.
2. Fill a cup or jar with water to a depth of one inch after you have run the water five minutes.
3. Stand the plastic strip upright in the cup or jar with the word Quantab at the top. Do not immerse the entire strip.
4. Within several minutes, the yellow strip will turn blue indicating completion of the test.
5. Within five minutes after this change, read the scale on the plastic strip.
6. Holding the top of the Quantab, run your thumbnail along the numbered strip toward the bottom. This procedure will make the test result permanent.
7. Return the Quantab with your questionnaire.

Following is a table to provide you with an estimated chloride concentration of your water based on the test you have completed.

CALIBRATION TABLE

| <u>Quantab Reading</u> | <u>Approximate Milligrams Per Liter Chloride</u> |
|------------------------|--|
| 1.0 | Less than 30 |
| 2.0 | 50 |
| 3.0 | 100 |
| 4.0 | 150 |
| 5.0 | 200 |
| 6.0 | 300 |
| 7.0 | 450 |
| 8.0 | Greater than 600 |

If the reading is over 5.5, the concentration of chloride in your water probably exceeds the U.S. Environmental Protection Agency Secondary Drinking Water Standard of 250 milligrams per liter. This is only an aesthetic standard and does not indicate a health hazard for most individuals. For questions or concerns about using your water for drinking, bathing, or cooking, you should contact your County Health District Sanitarian or personal physician.

GROUND WATER CONTAMINATION QUESTIONNAIRE

Salty Water

1. When did you first notice a change in your water quality?

2. What indications make you believe that your water is salty?

3. Do you use water-conditioning equipment?

4. If so, what type of equipment are you using? (i.e., filters, water softener, iron removal, etc.)

5. How much salt does your softener use? (Pounds per month)

6. Has the amount of salt used by your softener per month changed? Yes No

If so, when and how much?

7. Where does the water softener discharge?

Septic System

Public Sewer System

Ground Surface

Other:

8. Describe the following properties of your water prior to being conditioned?

a) Color: _____

b) Odor: _____

c) Sediment present: Yes No

Color of sediment: _____

d) Deposits on fixtures: _____

e) Stain on fixtures: _____

9. During the winter months, is road salt spread on your road? Yes No

10. Is oil-field brine spread on your road to control ice or dust? Yes No

11. Has your water supply been tested previously? Yes No

If yes, attach a copy of each analysis, or list the results below:

| | | | | |
|--------------------------------|--|--|--|--|
| Date(s) of Sample Collection | | | | |
| Sample Collector: | | | | |
| Testing Laboratory or Service: | | | | |
| Results: | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Signature

Date