

Arsenic Analysis (Community)

Purpose: To determine the Arsenic concentration in drinking water.

Determination will be done by using a test strip method. You will see if the water meets the present Canadian Drinking Water Guideline of 25 micrograms/L. You will also see if the water will meet the proposed new stringent guideline of 5 micrograms/L. Arsenic in the form of arsenate is very similar to phosphate, an essential nutrient in the human body, and is incorporated into many compounds causing many different diseases including cancer. This is the reason why Health Canada's guideline ten years ago of 50 micrograms/L, was decreased to the present limit of 25 micrograms/L and will be decreased shortly to 5 micrograms/L.

Materials:

- 1 - Capped Plastic bottle containing 5 ppb Arsenic sample (CGLS).
- 1 - Flip top cap
- 2 - Packets with arsenic reagent 1.
- 2 - Packets with arsenic reagent 2.
- 2 - Packets with arsenic reagent 3.
- 2 - Packets with indicator strips.
- 1 - Colour Chart

Method:

1. One 5 micrograms/L Arsenic. Put 100 mL of water sample in second plastic bottle with lid (not the flip top type). Water should be room temperature.
2. Add reagent #1 to bottle containing the CGLS, cap securely and shake vigorously with bottle upright for 15 seconds.
3. Uncap the bottle, add reagent #2 to bottle, cap securely and shake vigorously with bottle upright for 15 seconds.
4. Allow the reaction bottle to stand undisturbed for 2 minutes (this will ensure that there is no Hydrogen Sulfide interference).
5. While waiting, prepare reagent strip by inserting into flip top cap as illustrated in diagram. **(Do not touch the small pads on the test strip)**
6. After 2 minutes uncap the reaction bottle and add reagent #3 to reaction bottle, cap securely and shake vigorously with bottle upright for 15 seconds.

Visit the Safe Drinking Water Foundation Website www.safewater.org to learn more about issues affecting safe drinking water.

7. Uncap; now recap securely using the flip top cap with the strip in it. (Use a small tool to adjust the strip so that it is hanging straight down from the cap)
8. After 10 minutes, carefully remove indicator strip from cap and compare colour to that of color chart.
9. Rinse bottle twice with DI water, and twice with sample water.
10. Measure 100 mL of water sample into the bottle.
11. Repeat steps 2-8, for your water sample.
12. Put indicator strips back in Ziploc bag, and dispose of in garbage.

Results:

The 5 microgram/L sample should compare to the concentration on the color chart, which is the proposed future limit for the Canadian Drinking Water Guidelines. If the sample is darker in color than the Proposed Canadian Drinking Water Guideline, then the drinking water **Does NOT** meet the future Canadian Drinking Water Guidelines. Communities with levels higher than 5 micrograms/L need to carefully optimize their treatment plant processes or look at alternate processes to achieve the new lower guideline level. The current Arsenic limits for the European Union and the United States are set at 10 ppb (microgram/L) with possible changes going to 5 ppb.

Safe Handling of Materials

Caution must be taken at all times when handling any chemicals, please use an exhaust/fume hood when performing this test, a very well ventilated area, or outdoors.

Wear gloves, safety glasses and some type of apron (coveralls) when handling these materials, please dispose of test strips by putting them back in Ziploc bag, and discarding in garbage. This test is only recommended for adults.

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