

Spring on Canning Factory Rd (Floyd, VA)

Spring water samples were collected in pre-sterilized acid-washed polypropylene bottles and stored on ice during transport to Virginia Tech for analysis. Samples were analyzed for the presence of total coliforms and *E. coli* via the Colilert defined substrate method ([Standard Method 9223](#)). If conducted, metals concentrations were determined via Standard Methods [3030D](#) and [3125B](#). Conductivity and pH analyses were determined via a YSI Quattro Pro on-site (YSI Inc., Yellow Springs, OH) through 2019. After 2019, conductivity and pH were determined in the lab via a Oakton pH/conductivity meter (Eutech Instruments, Singapore).

Observed water quality values are compared to maximum contaminant levels ([MCLs](#); health-based), secondary maximum contaminant levels ([SMCLs](#); taste and aesthetics), and guidance levels (for special populations) for [sodium](#) and health reference levels for [strontium](#) put forth by the USEPA.

EPA MCLs/Action Levels (for Health)					
Coliform bacteria	8	ABSENT (<0 MPN/100 mL)	100	215.4	1046.0
<i>E. coli</i> bacteria	8	ABSENT (<0 MPN/100 mL)	63	9.8	73.0
Arsenic	4	<10 ppb	0	0.0	0.0
Barium	4	<2000 ppb	0	32.3	35.0
Cadmium	4	<5 ppb	0	0.0	0.0
Chromium	4	<100 ppb	0	0.4	0.6
Copper	4	<1,300 ppb	0	0.3	0.9
Lead	4	<15 ppb	0	0.0	0.0
Selenium	4	<50 ppb	0	0.1	0.4
Uranium	4	<30 ppb	0	0.0	0.0
EPA SMCLs (for taste and aesthetics)					
Aluminum	4	<50 ppb	0	10.6	23.0
Chloride	4	<250 ppm	0	13.4	16.0
Iron	4	<300 ppb	0	17.6	27.0
Manganese	4	<50 ppb	0	1.5	2.3
pH	8	6.5-8.5	0	6.5	6.8
Conductivity	8	<500 µS/cm	0	84.9	96.8
Silver	4	<100 ppb	0	0.0	0.0
Zinc	4	<5000 ppb	0	9.4	10.5
EPA Guidance/Health Reference Levels					
Sodium	4	<20,000 ppb	0	5846.6	6100.0
Strontium	4	<4000 ppb	0	40.5	44.0

MAXIMUM CONTAMINANT LEVELS

If coliform bacteria are present: Coliform bacteria live in the soil so this means the water is not sterile.

If coliform bacteria and E. coli are present: *E. coli* bacteria are a specific type of coliform bacteria that live in the intestines of warm blooded animals (including humans). Their presence indicates possible fecal contamination and an associated health risk, so you should treat this water before drinking as you would water on a hiking/hunting trip (boiling or other treatment).

If the arsenic level is high: High levels of arsenic can cause cancer, circulatory system problems, and skin discoloration. You should seek a different drinking water source and look into in-home treatment. *Please note that boiling your water will concentrate arsenic levels.*

If the barium level is high: High levels of barium can change your blood pressure. You should seek a different drinking water source. *Please note that boiling your water will concentrate barium levels.*

If the cadmium level is high: High levels of cadmium can cause kidney damage. You should seek a different drinking water source and look into in-home treatment. *Please note that boiling your water will concentrate cadmium levels.*

If the chromium level is high: High levels of chromium can cause allergic dermatitis (skin problems). You should seek a different drinking water source. *Please note that boiling your water will concentrate chromium levels.*

If the copper level is high: High levels of copper can cause liver and kidney damage, or gastrointestinal distress (e.g. nausea, diarrhea). You should seek a different drinking water source. *Please note that boiling your water will concentrate copper levels.*

If the fluoride level is too high: High levels of fluoride can cause bone disease or tooth discoloration. You should seek a different drinking water source. *Please note that boiling your water will concentrate fluoride levels.*

If the lead level is high: The current USEPA Action Limit for lead is 15 ppb. It is worth noting that children are particularly susceptible to lead toxicity: the American Academy of Pediatrics recommends that children not consume water of more than 1 ppb. Lead generally originates from “premise plumbing”, i.e. solder and pipes. You should seek a different drinking water source. *Please note that boiling your water will*

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If the nitrate level is high: This is particularly dangerous for young children, who may develop “blue baby syndrome”, a serious disease. You should seek a different drinking water source and look into in-home treatment. *Please note that boiling your water will concentrate nitrate levels.*

If the selenium level is high: High levels of selenium can cause hair loss, circulatory problems, and numbness in the fingers or toes. You should seek a different drinking water source. *Please note that boiling your water will concentrate selenium levels.*

If the uranium level is high: High levels of uranium can cause kidney disease and increase the risk of cancer. You should seek a different drinking water source. *Please note that boiling your water will concentrate uranium levels.*

SECONDARY MAXIMUM CONTAMINANT LEVELS

If the aluminum level is high: This is a recommendation based on taste/aesthetics, not health concerns, and is why the water may appear discolored.

If the chloride level is high: This is a recommendation based on taste/aesthetics, not health concerns, but may cause an unpleasant taste.

If the iron level is high: This is a recommendation based on taste/aesthetics, not health concerns, and is why the water may appear red/brown.

If the manganese level is high: This is a recommendation based on taste/aesthetics, not health concerns, but may cause the water to appear discolored.

If the pH is low or high: This may result in an unpleasant taste or damage the piping.

If the total dissolved solids (conductivity) level is high: This is a recommendation based on taste/aesthetics, not health concerns, but may cause staining, unpleasant tasting water, or discolored water.

If the silver level is high: This is a recommendation based on taste/aesthetics, not health concerns; however, consumption of this water may cause “graying” of the eye or skin discoloration. If concerned, please consult your doctor.

If the zinc level is high: This is a recommendation based on taste/aesthetics, not health concerns, but may cause an unpleasant taste.

GUIDANCE/HEALTH REFERENCE LEVELS

If the sodium level is high: This is an EPA Guidance Level for those on low salt diets, i.e. if ⁱur doctor recommends that you follow a low salt diet, you may want to ask

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If the strontium level is high: This is an EPA Guidance Level for vulnerable populations such as children. There is evidence that exposure to high levels of strontium in water can affect dental and skeletal health, potentially leading to rickets in children. If you have children that consume this water, you should consult with their pediatrician about whether it is safe for them to consume.

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