

# LITHIUM AND SELENIUM INFORMATION FOR VALMONT STATION

INFORMATION SHEET  
COLORADO



## Groundwater Monitoring

The U.S. Environmental Protection Agency's (EPA's) Coal Combustion Residuals (CCR) regulation requires that electric utilities measure levels of coal ash compounds in groundwater from wells next to coal ash units (such as landfills and impoundments). Since 2015, Xcel Energy has collected hundreds of groundwater samples around Valmont Station to test for many coal ash compounds, including selenium and lithium, related to historic coal ash management. If groundwater samples do not meet a groundwater protection standard, it does not mean that any harm has occurred, only that further investigation is needed.

Xcel Energy samples groundwater around Valmont Station in groundwater monitoring wells and private drinking water wells. Monitoring wells provide information about general groundwater conditions in the area. Some of the sample results from the monitoring wells did not meet the federal groundwater protection standards for lithium and/or selenium and one private well exceeded the lithium standard. The public is not exposed to lithium or selenium from groundwater because no untreated groundwater above the groundwater protection standards is used for drinking water. Xcel Energy is continuing to monitor groundwater in the area to ensure drinking water supplies remain safe for consumption.

## Lithium in Our Environment

Lithium is present in rocks, soils and minerals such as coal. Nearly everyone is exposed to small amounts of lithium every day through our contact with soils, the food we eat, water we drink and the air we breathe. Lithium is the critical component of lithium-ion batteries in cellphones, power tools and, more recently, electric vehicles. It is also used as a sanitizing agent in pools and hot tubs; however, with the demand for lithium in batteries, lithium products for pools are not currently available. Lithium is also used in certain medicines.

The average concentration of lithium in groundwater in the U.S. is 0.006 mg/L (or parts per million "ppm") but can range up to 1.2 mg/L (or ppm). These values could also be reported as 6 µg/L (or parts per billion "ppb") and 1200 µg/L (or ppb) respectively. The highest concentration of lithium measured in one private well near Valmont Station was less than 0.1 mg/L. To put this into context, if water contained the highest amount of lithium detected in private wells near the Valmont Station, then an adult would have to drink over 6,000 glasses of water per day to reach the level that any negative health effects were detected in scientific and medical studies.

## How are Valmont's groundwater protection standards for lithium set?

Lithium is a naturally occurring element in rocks, soil and minerals. The naturally occurring lithium is slightly higher in the Valmont area than the groundwater protection standard set in the CCR rule. Because it is not possible to reduce the concentration of a chemical below its naturally occurring background level, the natural background level becomes the site-specific groundwater protection standard under the CCR rule. At Valmont Station, the groundwater protection standard for lithium in groundwater is 0.051 mg/L (or 51 µg/L), based on measured naturally occurring levels in the area.

## How are chemicals in groundwater measured?

Chemicals in groundwater are typically measured as the mass of the chemical (milligrams or mg) per volume of water (liters or L). This is usually written as mg/L. One mg/L is the same as one part per million or ppm. To understand this concept of one ppm, think of one tablespoon of water in an above-ground residential pool, which holds about 4,000 gallons of water.

**One mg/L or one ppm  
is similar to:**



**1 tablespoon of water**



**in an above-ground  
backyard pool**

**Selenium in Our Environment**

Selenium is a naturally occurring element that is distributed widely in nature in rocks, soils and minerals such as coal. Everyone is exposed to low levels of selenium daily through the food we eat, the beverages and water we drink and the air we breathe. Selenium is used in a variety of household and consumer products, such as paints, blue-tinted glass, and personal care products. In fact, selenium is the active agent in several anti-dandruff shampoos, and is an antioxidant present in many dietary supplements.

All groundwater samples from private wells near the Valmont Station meet the federal groundwater protection standard and drinking water standard of 0.050 mg/L (parts per million) (or 50 µg/L (parts per billion)) for selenium.

**How are Valmont's groundwater protection standards for selenium set?**

The U.S. Environmental Protection Agency's Coal Combustion Residuals rule has set groundwater protection standards to guide clean-up activities at sites that stored coal ash. The groundwater protection standard for selenium is 0.05 mg/L (or 50 µg/L).