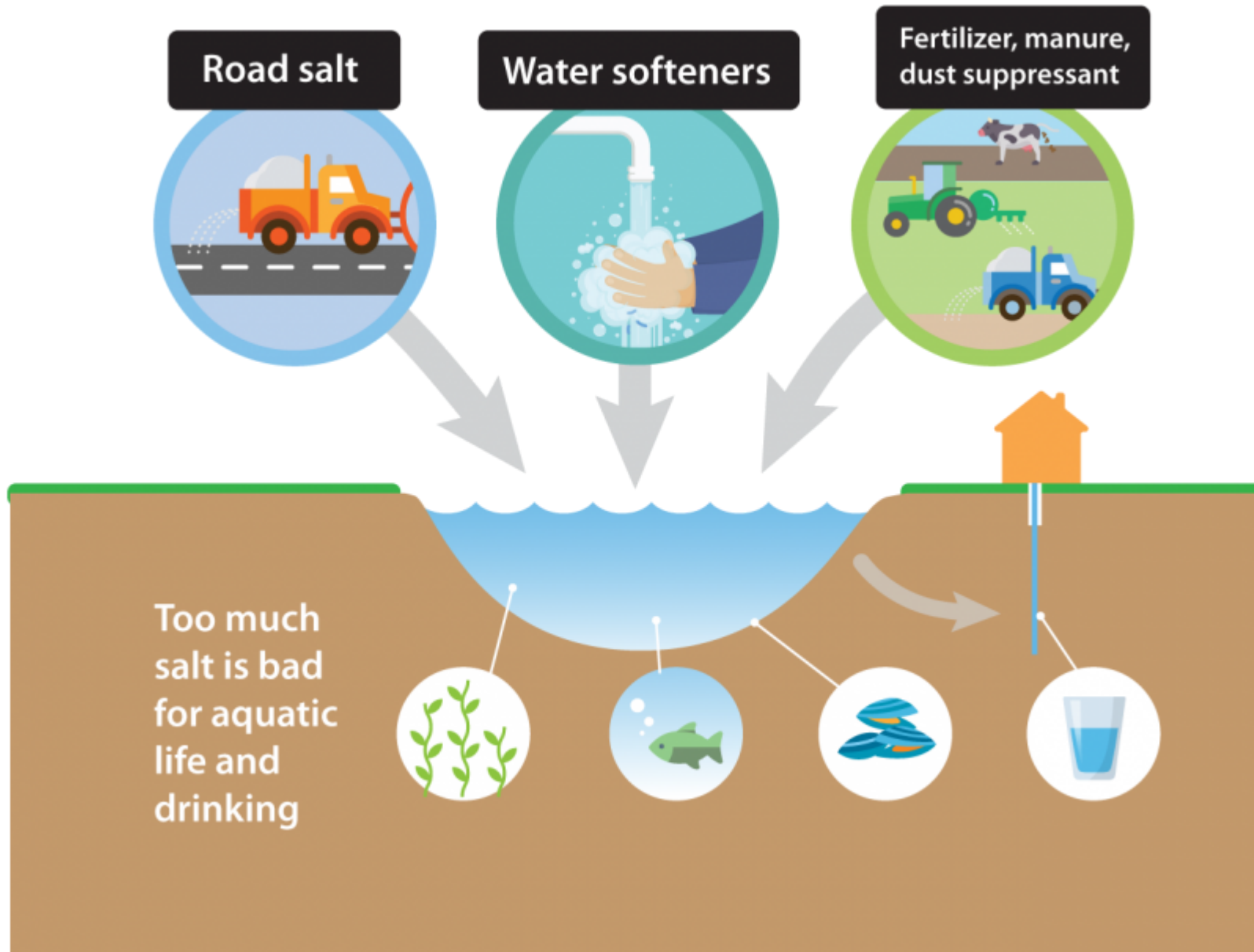




# Chloride 101

## Minnesota waters need a low-salt diet

Minnesota has a growing salty water problem that threatens its freshwater fish and other aquatic life. Chloride from both de-icing salt and water softener salt gets into lakes and streams, and groundwater that supplies drinking water. It takes only one teaspoon of salt to permanently pollute five gallons of water. Once in the water, there is no easy way to remove the chloride.



## De-icing salt

When snow and ice melts, the salt we spread on icy roads, parking lots, and sidewalks flows with it into storm drains and our lakes, streams, wetlands, and groundwater. An estimated 365,000 tons of road salt is applied in just the Twin Cities metro area each year. A study by the University of Minnesota found that about 78% of salt applied in the Twin Cities for winter maintenance is either transported to groundwater or remains in the local lakes and wetlands. In the Twin Cities and other communities across Minnesota, local partners are addressing this problem by using sand and other strategies to keep winter roads safe while using less salt as a deicer.

### **Water softener salt**

People soften their water to make water heaters operate more efficiently, prevent hard water spots on dishes, and make soaps lather more. In most communities, salty brine from water softeners drains to municipal wastewater treatment plants that aren't designed to remove salt from wastewater, so the salt passes through to a lake or stream.

## The problem with salt

### **Salt's impact on Minnesota lakes**

## MPCA: high salt levels damaging Crystal Lake



**Drinking water** — Salt has contaminated groundwater in some areas of the state; 75% of Minnesotans rely on groundwater for drinking water. Excess salt could affect the taste and healthfulness of drinking water. Twenty-seven percent of monitoring wells in the Twin Cities metro area's shallow aquifers had chloride concentrations that exceeded EPA drinking water guidelines. Thirty percent of Twin Cities wells had chloride concentrations that exceeded the water quality standard.

**Fish and aquatic bugs** — High amounts of chloride are toxic to fish, aquatic bugs, and amphibians. Chloride can negatively affect the fish and insect community structure, diversity and productivity, even at lower levels

**Plants** — Road salt splash can kill plants and trees along the roadside; plants that take up salty water through their roots can also suffer. Chloride in streams, lakes, and wetlands harms aquatic vegetation and can change the plant community structure.

**Soil** — Salt-laden soil can lose its ability to retain water and store nutrients and be more prone to erosion and sediment runoff (which also harms water quality).

**Pets** — Salt can sicken pets that consume it, lick it off their paws, or drink salty snow melt/runoff. It can also irritate their paw pads.

**Wildlife** — Some birds, like finches and house sparrows, can die from ingesting deicing salt. Some salt-sensitive species are particularly at risk.

**Infrastructure** — Chloride corrodes road surfaces and bridges and damages reinforcing rods, increasing maintenance and repair costs.

## Where is the problem?

Road salt runoff tends to be a problem in developed areas where there are many roads and other paved surfaces. Chloride in wastewater appears to be a problem in almost 90 Minnesota communities, most in the southern and western parts of the state. MPCA water monitoring shows that salt concentrations are increasing in lakes, streams, and groundwater around the state.

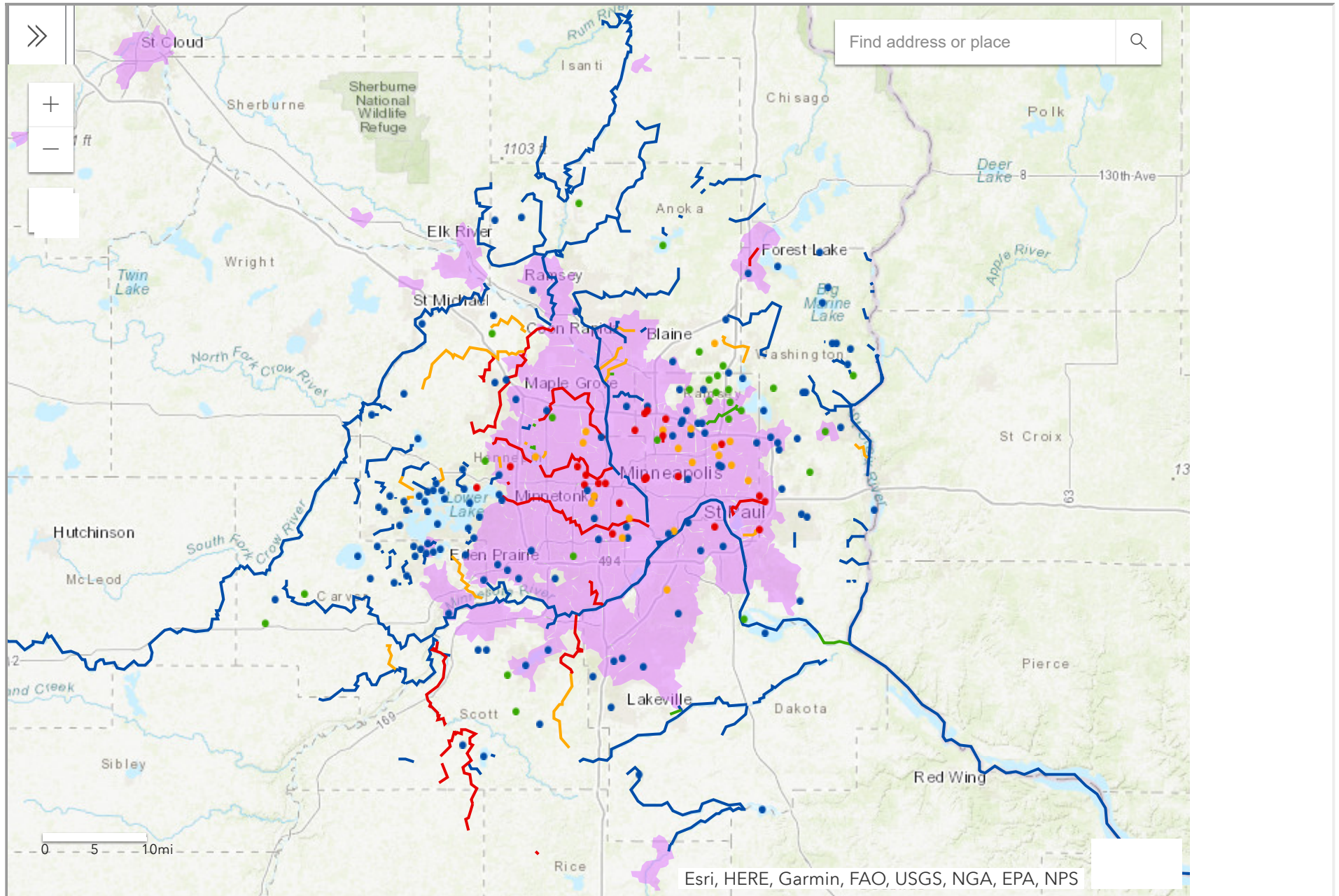
Fifty Minnesota lakes and streams have chloride levels too high to meet the standard designed to protect fish and other aquatic life. An additional 120 water bodies have chloride levels near the standard. Chloride toxicity is a suspected stressor to aquatic life in many waterways, including two trout streams in the Duluth area. Chloride is stressing aquatic life in a stream in the Cannon River Watershed in southern Minnesota; an upstream wastewater treatment facility is the likely source.

Minnesota has **water quality standards** to protect fish and other aquatic life from the effects of chloride in water.

### Chloride in Minnesota waters

This map shows only waters in the state that have been evaluated for chloride by the MPCA. Bodies of water without a colored label do not have chloride data available.

[View larger map](#)



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