Pyroxasulfone and Water

Pyroxasulfone is an herbicide used to control a broad spectrum of weeds and grasses, including glyphosate-resistant species. Pyroxasulfone products in Minnesota are primarily used on corn and soybeans, among other crops, and on fallow land. Products containing pyroxasulfone are not registered for homeowner use or for application to residential areas. In the environment, pyroxasulfone breaks down into several degradates, including pyroxasulfone M1 and M3.

The Minnesota Department of Health (MDH) Risk Assessment Unit evaluates health risks for contaminants in drinking water and develops health-based guidance values for groundwater. The toxicological summaries for pyroxasulfone, pyroxasulfone M1, and pyroxasulfone M3 can be found at the MDH Human Health-Based Water Guidance Table website.[1] MDH works in collaboration with the Minnesota Pollution Control Agency (MPCA) and the Minnesota Department of Agriculture (MDA) to understand the occurrence and environmental effects of these contaminants.

Pyroxasulfone in Minnesota waters

Pyroxasulfone has been detected in 20 percent of Minnesota river and stream samples collected in 2024 (maximum concentration 0.87 µg/L)[2]. It has been tested in Minnesota groundwater since 2013 but has not been detected. Pyroxasulfone M1 has been detected in 46% of Minnesota river and stream samples collected in 2024 (maximum 0.41 µg/L), and 4% of Minnesota groundwater samples collected in 2024 (maximum 0.56 µg/L). Pyroxasulfone M3 has not been detected in Minnesota surface water but was detected in 1% of Minnesota groundwater samples collected in 2024. One microgram per liter (µg/L) is the same as one part per billion (ppb).

MDH Guidance value

Based on available information, MDH developed a guidance value of 40 µg/L (or ppb) for pyroxasulfone and its degradates M1 and M3 in drinking water. MDH does not use health-based guidance values to regulate water quality, but they may be useful for situations where federal regulations do not exist. MDH develops guidance values to protect people who are most highly exposed and people who are most sensitive to the potentially harmful effects of a contaminant, including pregnant people, fetuses, infants, and children. A person drinking water at or below the guidance value would be at little or no risk for harmful health effects.

Potential health effects

Exposure to pyroxasulfone has effects on the cardiovascular, nervous, skeletal, and renal (kidney) systems.[3] People with questions about their personal risk of health impacts from pyroxasulfone exposure should consult with their physician.

Potential exposure to pyroxasulfone

Many people are exposed to small amounts of pyroxasulfone through their diet. People who work in agriculture may be exposed to pyroxasulfone through direct contact with the chemical during mixing/loading and after it is applied to crops. We recommend that all users of farm chemicals carefully follow application and safety instructions.

Pyroxasulfone in the environment

Pyroxasulfone continues to be manufactured and used in agriculture, so releases to the environment are ongoing. In soil and groundwater, pyroxasulfone is mobile and does not break down or migrate to the air easily. Pyroxasulfone is not expected to build up inside the bodies of animals or humans.

References

1. Minnesota Department of Health (MDH). (January 2026). Human Health-Based Water Guidance Table. "Toxicological Summary for: pyroxasulfone." https://www.health.state.mn.us/communities/environment/risk/docs/guidance/gw/pyroxasulfone.pdf.
2. Minnesota Department of Agriculture (2025). 2024 Water Quality Monitoring Report: January through December 2024. https://wrl.mnpals.net/node/4355.
3. United States Environmental Protection Agency (EPA). (2025). Pyroxasulfone: Human Health Risk Assessment for the New Section 3 Uses on Fruit, Small, Vine Climbing, Except Fuzzy Kiwifruit, Subgroup 13-07F and Nut, Tree, Group 14-12. EPA-HQ-OPP-2024-0212-0005. Washington, D.C. https://www.regulations.gov/document/EPA-HQ-OPP-2024-0212-0005.

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January 2026

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