

Isoxaflutole Diketonitrile | 2019 Cycle 10

Substance Overview

Isoxaflutole diketonitrile is a breakdown product of the pro-herbicide isoxaflutole. Isoxaflutole diketonitrile is the active herbicide of the formulation and is used to control certain broadleaf and grass weeds in field corn and soybeans.¹ In the environment, isoxaflutole quickly breaks down into isoxaflutole diketonitrile, which then further degrades into benzoic acid derivatives.

This document provides the recommended Public Health Enforcement Standard for isoxaflutole diketonitrile.

Recommendations

Wisconsin does not currently have an NR140 Groundwater Quality Public Health Enforcement Standard for isoxaflutole diketonitrile.

DHS recommends a combined enforcement standard of 3 micrograms per liter ($\mu\text{g/L}$) for isoxaflutole and isoxaflutole diketonitrile. This standard is based on the United States Environmental Protection Agency's (EPA's) cancer slope factor for isoxaflutole.¹ Because we cannot exclude the possibility that isoxaflutole diketonitrile is contributing to toxicity observed in animals dosed with isoxaflutole, DHS recommends a combined enforcement standard for isoxaflutole and isoxaflutole diketonitrile.

DHS recommends that the NR140 Groundwater Quality Public Health Preventive Action Limit for isoxaflutole and isoxaflutole diketonitrile be set at 10% of the enforcement standard because the EPA has classified isoxaflutole as a likely human carcinogen and the likelihood that isoxaflutole diketonitrile contributes to these effects.

Health Effects

Rats that ate large amounts of isoxaflutole for two years experienced liver, thyroid, eye, nerve, and muscle problems.¹⁻³ Some rats also had tumors in their liver after eating isoxaflutole for several months to years. In these studies, scientists were not able to determine whether the effects were caused by isoxaflutole or isoxaflutole diketonitrile due to the fast conversion from isoxaflutole to isoxaflutole diketonitrile in the body.

The EPA has classified isoxaflutole as a likely human carcinogen.¹ Isoxaflutole has not been shown to cause mutagenic, teratogenic, or interactive effects.¹⁻³

Current Standards

Enforcement Standard:	N/A
Preventive Action Limit:	N/A
Year:	N/A

Recommended Standards

Enforcement Standard:	3 $\mu\text{g/L}$
Preventive Action Limit:	0.3 $\mu\text{g/L}$

(Applies to isoxaflutole and isoxaflutole diketonitrile)

References

1. USEPA. Isoxaflutole. Section 3 Registration for Use on Soybeans. Human-Health Risk Assessment. In: Prevention OoCSaP, ed. Vol EPA-HQ-OPP-2010-08452011.
2. JMPR. Isoxaflutole - Tox Monograph. In: Residues JFWMoP, ed2013.
3. JMPR. Isoxaflutole. In: (JMPR) JFWMoPR, ed2013.

This document is a summary of the Scientific Support Document for the Cycle 10 Recommended Groundwater Standard for this substance. The recommendations in this summary were developed in accordance with [Chapter 160](#), Wis. Stats.

