

PESTICIDE TYPE	FUNGICIDE
CHEMICAL CLASS FRAC Code	Organophosphate 14
COMMON TRADE NAMES	Rizolex
APPLICATION RATE Max. SEEDING RATE	0.3 – 1.5 fl oz/100 lb seeds 40 lb/acre ^{tubers} – 200 lb/acre ^{grain}
REGISTRATION STATUS	EPA: Registered 2013
TOXICITY PROFILE FOR APPLICATORS	Signal word: Caution Toxicity III and IV
BASIC MANUFACTURER	Valent
MDA LABORATORY CAPABILITIES	In discussion

HUMAN HEALTH

NON-CANCER	Acute PAD = N/A ¹ Chronic PAD = N/A ¹
CANCER	N/A ¹

¹ This seed treatment considered by EPA to be a non-food use, therefore studies and tolerances not required.

ENVIRONMENTAL AQUATIC TOXICITY

FISH	Acute: 345 ppb Chronic: <12 ppb
INVERTEBRATE	Acute: 350 ppb Chronic: 26 ppb
AQUATIC PLANTS	Vascular: N/A Non-vascular: 780 ppb

Level of Concern (LOC) has been applied to all values

Introduction

Tolclofos-methyl is a broad-spectrum aromatic hydrocarbon fungicide that is used as a seed treatment for protection against soil-borne and seed borne fungal pathogens that cause seed decay and seedling blights. It is registered for use on variety of crops including, corn, soybean, potato, sugar beet and wheat. Tolclofos-methyl inhibits the biosynthesis of phospholipids. It is formulated as a flowable liquid and is labeled for both commercial and on-farm seed treatment. The proposed use of tolclofos-methyl is a non-food/feed use and does not require the establishment of tolerances. Minnesota Department of Agriculture (MDA) extensive review of the U.S. Environmental Protection Agency (EPA) tolclofos-methyl labels and risk assessments for issues relevant to Minnesota is summarized below.

Projected Use in Minnesota

Tolclofos-methyl is registered for use as a seed treatment on the following crops: root and tuber vegetables; bulb vegetables; leafy vegetables; brassica leafy vegetables; legume vegetables; fruiting vegetables; cucurbit vegetables; cereal grains; grasses and non-grass animal feeds; herbs; spices; oilseeds; ornamental flowers; and conifers. The product may only be applied to “true seed” and is not to be applied on other plant propagation parts. Extension has had minimal experience with the use of tolclofos-methyl and therefore cannot address projected use. It is not registered for any residential uses. This fungicide is registered in one end-use product:

- **Rizolex™ Flowable Fungicide (EPA Reg. No. 59639-178; Registered in MN)** – a flowable liquid containing 42% a.i. (4.17 lbs a.i./gallon). Labeled for all registered uses.

Label Environmental Hazards

Water Quality

- Labels for crop applications carry advisories for surface water and disposal of equipment washwater.
- This pesticide is toxic to aquatic organisms.

Other

- DO NOT apply this product in hopper box or planter box at planting time
- DO NOT plant treated seed by broadcast application
- Treated seed has similar label restrictions to other treated seed products



Toxicology and Exposure

EPA's screening models generate high-end, conservative exposure estimates for active ingredients and toxicologically significant degradates. Model inputs include annual usage at maximum use rates, maximum treated acres, maximum food residues, peak runoff and drift scenarios, etc. Some proposed products, application rates and use scenarios are not relevant to Minnesota. EPA's estimates, therefore, may not reflect future use and impacts in Minnesota.

Human Health

- **Carcinogenic Effects**- No determination. Carcinogenicity studies and tolerances were not required for these seed treatments.
- **Drinking Water Guidance**- For these seed treatments, considered by EPA to be non-food/feed use, and which do not result in residential exposures, points of departure are not selected for dietary exposure; therefore, surface and groundwater estimates cannot be evaluated at this time. MDA will monitor future use and exposure concerns for tolclofos-methyl and consult the Minnesota Department of Health for guidance on dietary endpoints if necessary.
- **Occupational Exposure**- Low Acute Toxicity. Based on occupational handler scenarios for the proposed uses baseline personal protective equipment level is necessary.

Environment- Non-target Species

- **Aquatic Life Exposure** – High end, screening exposure estimates for risk to fish and invertebrates generated some concern and tolclofos-methyl is classified as highly toxic to freshwater fish and moderately toxic to freshwater invertebrates, however, EPA concludes risks are mitigated by lack of exposure concern in surface water. Surface water estimates are not available, but potential for tolclofos-methyl to reach surface water is low because it is only registered for use as a seed treatment, with little potential for exposure to rainfall and related field runoff concerns.
- **Bioaccumulation** – Bioaccumulation is not considered a concern.

Environmental Fate

Soil

- **Half-life**- Aerobic: 40 days tolclofos-methyl alone; 171 days with degradates included
- **Adsorption**- Slightly Mobile (L/kg_{oc} 1600-6100).
- **Persistence**- Moderately persistent. Three main processes affect the chemical namely: mineralization to CO₂, formation of persistent bound residues and degradation into few major and many minor degradates.

Water

- **Half-life via hydrolysis**- 153 days.
- **Surface water**- Not expected to adversely impact surface water.
- **Groundwater**- Not expected to adversely impact groundwater.
- **Sediment**- Will rapidly partition to benthic sediment if it reaches surface water.

Air

- **Volatilization**- Semi-volatile with vapor pressure of 1.38×10^{-5} torr and a Henry's law constant of 3.68×10^{-6} atm m³ mole⁻¹

Degradates

A major process in the degradation of tolclofos-methyl is the formation of significant quantities of bound residues that showed relatively high resistance to degradation. These residues were included in the risk assessment. Tolclofos-methyl is broken down into many degradates but at relatively low concentrations. Only one of these degradates (DM-TM) is considered a major degradate and available data indicate it is practically non-toxic to aquatic organisms. Oxons were identified in fate studies, but were present in minor amounts and were not persistent.