

PESTICIDE TYPE	FUNGICIDE
CHEMICAL CLASS	Strobilurin (QoI) FRAC Code 11
COMMON TRADE NAMES	Approach
APPLICATION RATE (lbs a.i./A)	Single: 0.05 – 0.2 Max Annual: 0.4 – 0.6
REGISTRATION STATUS	EPA: Registered: 2012
TOXICITY PROFILE FOR APPLICATORS	Signal word: CAUTION Toxicity II – IV
BASIC MANUFACTURER	DuPont
MDA LABORATORY CAPABILITIES	In discussion
HUMAN HEALTH	
NON-CANCER	Acute PAD = 0.2 mg/kg/day Chronic PAD = 0.046 mg/kg/day
CANCER	Suggestive evidence of carcinogenicity
<i>Acute and chronic PADs are doses that include all relevant uncertainty and safety factors</i>	
ENVIRONMENTAL AQUATIC TOXICITY	
FISH	Acute: 32.5 ppb Chronic: 36 ppb
INVERTEBRATE	Acute: 12 ppb Chronic: 1 ppb
AQUATIC PLANTS	Vascular: 210 ppb Non-vascular: 26 ppb
<i>Level of Concern (LOC) has been applied to all values</i>	

Introduction

Picoxystrobin is a systemic and trans-laminar, Quinone outside Inhibitor (QoI) fungicide with preventive, curative and systemic activity for use on canola, cereal grains (no rice), dried peas, corn and soybeans. It is applied by ground equipment, aerially or via chemigation methods for control of foliar and soil-borne plant diseases. It inhibits mitochondrial respiration by blocking electron transfer at the Qo center of cytochrome bcl. The formulated product is a suspension concentrate (SC). Minnesota Department of Agriculture (MDA) extensive review of the U.S. Environmental Protection Agency (EPA) flutriafol labels and risk assessments for issues relevant to Minnesota is summarized below.

Projected New Use in Minnesota

Picoxystrobin is labeled for use on the following major crops in Minnesota: corn, soybean, wheat, canola, and oats. According to extension it seemed to be effective against eyespot of corn (*Aureobasidium zeae*), which was the only disease in the study. It is not labeled for residential uses.

This fungicide is found in 1 end-use unconditionally registered product currently registered in Minnesota:

- **Approach** (EPA Reg. No. 352-840; Registered in MN) – a suspension concentrate for foliar application to all approved crops.

Label Environmental Hazards

Water Quality:

- Labels for crop applications carry advisories for surface water and groundwater impacts, runoff reduction potential from vegetative buffers, and avoiding applications before rainfall.
- Picoxystrobin is toxic to fish and aquatic invertebrates. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.



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**- Classified as "Suggestive Evidence of Carcinogenic Potential." EPA has determined the chronic population adjusted dose (PAD) is protective of all long-term effects, including potential carcinogenicity. As a result, a separate dietary exposure assessment for the purpose of assessing cancer risk was not necessary.
- **Drinking Water Guidance**- High-end, screening exposure estimates for drinking water suggest that applications of picoxystrobin may result in surface water and groundwater detections; however, EPA concludes that conservative exposure estimates are below levels of concern for the general population and all population subgroups.
- **Occupational Exposure**- Low acute toxicity. Because picoxystrobin is a Toxicity Category I for eye irritation, goggles must be included as personal protection equipment (PPE) and the restricted entry interval (REI) must be increased from 12 hours to 48 hours. No hazard was identified for the dermal or inhalation routes of exposure, so there are no dermal or inhalation risks associated with the proposed uses.

Environment- Non-target Species

- **Aquatic Life Exposure** – High-end, screening exposure estimates for risks to fish and invertebrates generated some concern and picoxystrobin is classified as highly to very highly toxic to fish and invertebrates; however, EPA concludes risks are mitigated by labeling requirements. Nevertheless, estimates suggest that surface water concentrations could exceed 50% of the acute freshwater fish aquatic toxicity benchmark.
- **Terrestrial Life Exposure** – High end, screening exposure estimates for risk to birds is uncertain based on the lack of definitive endpoint and additional studies are requested from the registrant.

Environmental Fate

Soil

- **Half-life**- Aerobic = 29-73 days
- **Adsorption**- 741 to 1089 L/kg-organic carbon
- **Persistence**- Picoxystrobin is moderately persistent in soils. Bioaccumulation is not expected.

Water

- **Half-life via hydrolysis**- None.
- **Surface water**- Picoxystrobin is moderately mobile and may reach surface water through runoff and drift.
- **Groundwater**- Picoxystrobin is moderately persistent and has the potential to leach into groundwater with K_{oc} values below 500 L/kg-OC.

Air

- **Volatilization**- The vapor pressure (4.14×10^{-8} Torr) of picoxystrobin indicates that volatility is not a major route of dissipation for this chemical in the environment.

Degradates

There were 6 major degradates of picoxystrobin and carbon dioxide. Degradate toxicity data on fish, aquatic invertebrates and green algae indicate that picoxystrobin degradates are less toxic than the parent and effects are not expected at environmentally relevant concentrations.