

PESTICIDE TYPE	FUNGICIDE
CHEMICAL GROUP	Quinone Inhibitor Frac Code: 45
COMMON TRADE NAMES	<u>Pre-Mix Combinations (a.i.)</u> Zampro and Orvego (dimethomorph)
APPLICATION RATE (lbs a.i./A)	Single: 0.273 except ornamentals grown in artificial substrate. Max Annual: 1.096 (grapes and ornamentals); 0.822 (All labeled vegetables and hops)
REGISTRATION STATUS	Registered 2012
TOXICITY PROFILE FOR APPLICATORS	Signal word- Caution Toxicity class III
BASIC MANUFACTURER	BASF
MDA LABORATORY CAPABILITIES	In discussion

HUMAN HEALTH

NON-CANCER	Acute PAD = N/A Chronic PAD = N/A
CANCER	Not Likely to Be Carcinogenic to Humans

Acute and chronic PADs are doses that include all relevant uncertainty and safety factors

ENVIRONMENTAL AQUATIC TOXICITY

FISH	Acute: >32.3 ppb Chronic: 48 ppb
INVERTEBRATE	Acute: >77.5 ppb Chronic: 44 ppb
AQUATIC PLANTS	Vascular: 132 ppb Non-vascular: 7.8 ppb

Level of Concern (LOCs) have been applied to all values

Introduction

Ametoctradin is a post emergence fungicide used to control major plant pathogens from the Oomycete class of fungi, specifically downy mildews and *Phytophthora* species on brassica leafy vegetables, bulb vegetables, cucurbit vegetables, fruiting vegetables, grapes, hops, lettuce (head and leaf), and potato. Ametoctradin represents a new class of chemistry (triazolopyrimidine) and is a strong inhibitor of mitochondrial respiration in complex III (cytochrome bc1) of Oomycetes fungi. Minnesota Department of Agriculture (MDA) extensive review of the U.S. Environmental Protection Agency (EPA) ametoctradin labels and risk assessments for issues relevant to Minnesota is summarized below.

Projected Use in Minnesota

Ametoctradin is labeled for use on potato and various other minor crops grown in Minnesota. According to Extension, ametoctradin can be used to control late blight in potato.

This fungicide is found in 3 end-use products unconditionally registered by EPA:

Zampro Fungicide (EPA Reg. No. 7969-302; Registered in MN) – Suspension concentrate co-formulation with dimethomorph for use on potatoes, grapes and a variety of vegetables.

Orvego Fungicide (EPA Reg. No. 7969-301; Registered in MN) – Suspension concentrate co-formulation with dimethomorph for use on ornamentals.

BAS 650 00 F (EPA Reg. No. 7969-300) – Suspension concentrate for use on potatoes, grapes and a variety of vegetables.

Label Environmental Hazards

Water quality:

- The label carries enforceable language related to direct application to surface waters and equipment cleaning.
- The label carries advisories for surface water and groundwater impacts, runoff reduction potential from vegetative buffers, and avoiding applications before rainfall.
- Unique mention is made of ametoctradin degradates: ametoctradin and degradates have properties and characteristics associated with chemicals detected in groundwater.

Other:

- No other specific environmental hazards are noted on the label.

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- "Not likely to be Carcinogenic to Humans." Ametoctradin showed no evidence of carcinogenicity.
- Drinking Water Guidance- High-end, screening exposure estimates for drinking water suggest that applications of ametoctradin are likely to reach in surface water; 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. No occupational exposure assessments were needed.
- Based on review of the available ametoctradin toxicological studies, no toxicological points of departure were selected for ametoctradin and thus, an additional safety factor to protect children is not needed. As a result no dietary, residential, occupational or aggregate exposure assessments for parent, metabolites or degradates are required at this time.
- Based on lack of toxicity, the EPA would typically grant ametoctradin an exemption from the requirement for tolerances. However BASF has requested that tolerances/maximum residues limits be set for international trade purposes.

Environment-Non-target Species

- Aquatic Life Exposure - High-end, screening exposure estimates for risks to aquatic vascular and non-vascular plants generated some concern; however, EPA concludes risks are mitigated by labeling requirements.
- Ametoctradin pre-mixed with dimethomorph was acutely toxic to green algae and rainbow trout within the range of concentrations tested. The increased sensitivity may be due to the presence of dimethomorph.

Environmental Fate

Soil

- Half-life- Aerobic = 11.9 days; Anaerobic = several months
- Adsorption- K_{oc} : 3,912.5 mg/L
- Persistence- Ametoctradin tends to adsorb strongly to soil and sediment

Water

- Half-life via hydrolysis- stable
- Surface water- Is slightly mobile to hardly mobile. Transport in the environment is expected to occur predominately via spray drift and runoff of dissolved degradates and parent residues sorbed to suspended sediment. Concentrations of ametoctradin in surface waters may be relatively high when significant runoff events occur after application and/or spray drift to water bodies in close proximity to the treatment area occurs.
- Groundwater- Parent ametoctradin is not likely to leach to groundwater; however, it's degradates have the potential to reach groundwater.

Air

- Volatilization- A non-volatile chemical (vapor pressure of 4.5×10^{-12} mm Hg at 25°C).

Degradates

Degradates have the potential to reach groundwater. Based on submitted data, degradates showed similar or lesser toxicity when compared to parent data, therefore there was no assessment of potential risks for organisms due to degradate exposure. At the same time, a major source of uncertainty in the drinking water assessment is the nature of the non-extractable residues formed during degradation in soils. Non-extractable residues were identified at maximums of 23.8 to 51.4% of applied radioactivity in fate studies. The non-extractable residues are uncharacterized and it is uncertain whether they consist of degradates of risk concern.