



## II. HERBICIDE USES

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**REGISTERED FORESTRY, RANGELAND AND RIGHT-OF-WAY USES:** Oxadiazon is registered for weed control by commercial nursery, turf, and landscape personnel only. For terrestrial use only.

### OPERATIONAL DETAILS:

**TARGET PLANTS:** selective pre-emergent herbicide for control of annual grasses, broadleaf weeds, vines, and brambles.

**MODE OF ACTION:** Inhibits enzyme protoporphyrinogen oxidase.

**METHOD OF APPLICATION AND RATES:** Ground application via granular applicator. Rates adjustable between 2.25 lb and 4.5 lb per 1000 sq ft..

### SPECIAL PRECAUTIONS:

**TIMING OF APPLICATION:** Timing is dependent on the target plant and desired results. Weed management is best obtained with late summer to early spring applications.

**DRIFT CONTROL:** Care should be exercised not to over-apply or apply the herbicide to adjacent non-target areas. Drift control is achieved by observing weather conditions and following label and granulator applicator instructions.

#### **Restrictions/Warnings/Limitations:**

T&E toxicity warning for ALL plants.

T&E toxicity warning for aquatic species.

Surface water warning.

Do not use on food or feed crops.

Do not use on areas to be grazed or cut for hay.

Do not use the product to treat irrigation ditches or other channels used for either agricultural or domestic purposes

Do not apply this herbicide via any type of irrigation system.

Do not apply to the foliage of desirable trees or ornamental plants.

### III. ENVIRONMENTAL EFFECTS/FATE

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**SOLUBILITY:** 0.7 mg/l in water (pH 7 at 20° C).

**VAPOR PRESSURE:**  $7.76 \times 10^{-7}$  mm Hg.

**HYDROLYSIS:** Stable.

**PHOTOLYSIS IN WATER:** 3 days.

**PHOTOLYSIS ON SOIL:** NA.

**AEROBIC SOIL METABOLISM: AVERAGE:** 60 days.

**ANAEROBIC SOIL METABOLISM:** Information not available.

**K<sub>OC</sub>:** 1409-3268 depending on soil

**PERSISTENCE AND AGENTS OF DEGRADATION/DISSIPATION:** The primary route of dissipation is photolysis.

**METABOLITES/DEGRADATION PRODUCTS AND POTENTIAL ENVIRONMENTAL EFFECTS:** None

**POTENTIAL FOR LEACHING INTO SURFACE AND GROUND WATER:** There is moderate potential for surface water leaching due to the high KOC and moderate half-life. There is low potential to leach into ground water for the same reasons.

**POTENTIAL FOR BYPRODUCTS FROM BURNING OF TREATED VEGETATION:** Information not available.

### IV. ECOLOGICAL TOXICITY EFFECTS ON NON-TARGET SPECIES

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#### TERRESTRIAL:

**AVIAN ACUTE ORAL TOXICITY:** LD<sub>50</sub> (mallard duck) >1040 mg/kg

**AVIAN SUBACUTE DIETARY TOXICITY:** LC<sub>50</sub> (mallard duck) >5000 mg/kg  
LD<sub>50</sub> (bobwhite quail) >5000 mg/kg

**SMALL MAMMAL ACUTE ORAL TOXICITY:** LD<sub>50</sub> (rat) 3500 to >5000 mg/kg

**OVERALL TERRESTRIAL TOXICITY: Slightly Toxic**

**PLANTS:** Contact will injure or kill target and non-target plants.

#### **FRESHWATER AQUATIC SPECIES:**

**ACUTE TOXICITY:** LC<sub>50</sub> (rainbow trout 96-hour) 0.88 mg/l

**ACUTE TOXICITY:** LC<sub>50</sub> (bluegill sunfish 96-hour) 0.88mg/l

**ACUTE TOXICITY:** EC<sub>50</sub> (Daphnia 48-hour) 2.2 mg/l

**OVERALL FRESHWATER AQUATIC TOXICITY: Highly Toxic**

#### **ESTUARINE/MARINE AQUATIC SPECIES:**

**ACUTE TOXICITY:** LC<sub>50</sub> (sheepshead minnow 96-hour) 1.5 mg/l

**ACUTE TOXICITY:** LC<sub>50</sub> (mysid shrimp 96-hour) 2.7 mg/l

**OVERALL ESTUARINE/MARINE TOXICITY: Moderately Toxic**

**BIOACCUMULATION POTENTIAL:** Very low to none.

**THREATENED AND ENDANGERED SPECIES:** Federally listed terrestrial and aquatic plants, as well as, freshwater and marine aquatic species may be adversely affected if the product is applied directly to plants and surface water.

## **V. TOXICOLOGICAL DATA**

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#### **ACUTE TOXICITY:**

**ACUTE ORAL TOXICITY:** LD<sub>50</sub> (rat) >5000 mg/kg

**ACUTE DERMAL TOXICITY:** LD<sub>50</sub> (rabbit) >2000 mg/kg

**ACUTE INHALATION:** LC<sub>50</sub> (rat 4-hour) >2000 mg/l

**OVERALL TOXICITY: Category III – Slightly Toxic**

#### **CHRONIC TOXICITY:**

**CARCINOGENICITY:** Positive (CA Prop 65 List).

**DEVELOPMENTAL/REPRODUCTIVE:** Positive (CA Prop 65 List).

**MUTAGENICITY:** Negative.

**HAZARD:** The end-use product labels for the oxadiazon formulation Ronstar<sup>®</sup> AC and Ronstar<sup>®</sup> G herbicide carries the *Warning* signal word due to moderate eye and skin irritation.

## VI. HUMAN HEALTH EFFECTS

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### ACUTE TOXICITY (POISONING):

REPORTED EFFECTS: None reported.

### CHRONIC TOXICITY:

REPORTED EFFECTS: None reported.

**POTENTIAL FOR ADVERSE HEALTH EFFECTS FROM CONTACTING OR CONSUMING TREATED VEGETATION, WATER OR ANIMALS:** Listed on CA Prop 65 List for carcinogenic and developmental toxicity.

**POTENTIAL FOR ADVERSE HEALTH EFFECTS FROM INERT INGREDIENTS CONTAINED IN THE FORMULATED PRODUCTS:** Listed on CA Prop 65 List for carcinogenic and developmental toxicity.

**HEALTH EFFECTS OF EXPOSURE TO FORMULATED PRODUCTS:** None reported.

**HEALTH EFFECTS ASSOCIATED WITH CONTAMINANTS:** None reported.

**HEALTH EFFECTS ASSOCIATED WITH OTHER FORMULATIONS:** None reported.

## VII. SAFETY PRECAUTIONS

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### SIGNAL WORD AND DEFINITION:

OXADIAZON (*Ronstar*<sup>®</sup> AC and G Herbicide) - **Warning** – HARMFUL IF INHALED, CAUSES SKIN AND EYE IRRITATION

**PROTECTIVE PRECAUTIONS FOR WORKERS:** Applicators and other handlers must wear long-sleeved shirt and long pants, shoes plus socks and gloves.

### MEDICAL TREATMENT PROCEDURES (ANTIDOTES):

**EYES:** Flush eyes with water for 15 to 20 minutes. Call physician.

**SKIN:** Wash all exposed areas with soap and water, call physician if irritation is present.

**INGESTION:** Rinse mouth thoroughly with water. Do not induce vomiting. Call physician.

**INHALATION:** Remove to fresh air. Call a physician if breathing difficulty persists.

**HANDLING, STORAGE AND DISPOSAL:** Store at room temperature or cooler. Do not reuse container. Rinse container and dispose accordingly. Do not store at home. Do not store around food or feed.

**EMERGENCY SPILL PROCEDURES AND HAZARDS:** Contain and sweep up material of small spills and dispose as waste. Do not contaminate water, food, or feed by storage or disposal.

## VIII. DEFINITIONS

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**adsorption** – the process of attaching to a surface

**avian** – of, or related to, birds

**CAEPA** – California Environmental Protection Agency

**carcinogenicity** – ability to cause cancer

**CHEMTREC** – Chemical Transportation Emergency Center

**dermal** – of, or related to, the skin

**EC<sub>50</sub>** - median effective concentration during a bioassay

**ecotoxicological** – related to the effects of environmental toxicants on populations of organisms originating, being produced, growing or living naturally in a particular region or environment

**FIFRA** – Federal Insecticide, Fungicide and Rodenticide Act

**formulation** – the form in which the pesticide is supplied by the manufacturer for use

**half-life** – the time required for half the amount of a substance to be reduced by natural processes

**herbicide** – a substance used to destroy plants or to slow down their growth

**Hg** – chemical symbol for mercury

**IARC** – International Agency for Research on Cancer

**K(oc)** – the tendency of a chemical to be adsorbed by soil, expressed as:  $K(oc) = \text{conc. adsorbed}/\text{conc. dissolved}/\% \text{ organic carbon in soil}$

**LC<sub>50</sub>** – the concentration in air, water, or food that will kill approximately 50% of the subjects

**LD<sub>50</sub>** – the dose that will kill approximately 50% of the subjects

**leach** – to dissolve out by the action of water

**LOEC** – lowest observed effect concentration

**mg/kg** – weight ratio expressed as milligrams per kilogram

**mg/l** – weight-to-liquid ratio expressed as milligrams per liter

**microorganisms** – living things too small to be seen without a microscope

**mPa** – milli-Pascal (unit of pressure)

**mutagenicity** – ability to cause genetic changes

**NFPA** – National Fire Protection Association

**NIOSH** - National Institute for Occupational Safety and Health

**NOEL** - no observable effect level

**non-target** – animals or plants other than the ones that the pesticide is intended to kill or control

**OSHA** - Occupational Safety and Health Administration

**Pa – Pascal (unit of pressure)**

**persistence** – tendency of a pesticide to remain to remain in the environment after it is applied

**pesticides** – substances including herbicides, insecticides, rodenticides, fumigants, repellents, growth regulators, etc., regulated under FIFRA

**PPE** – personal protective equipment

**ppm** – weight ratio expressed as parts per million

**residual activity** – the remaining amount of activity as a pesticide

**T&E** – Threatened and Endangered Species (from the Endangered Species Act)

**µg** – micrograms

**volatility** – the tendency to become a vapor at standard temperatures and pressures

## **IX. INFORMATION SOURCES**

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Bayer Environmental Science, Ronstar® G Herbicide, Specimen Product Label, Ron G-SL-081303B, July 1998

Bayer Environmental Science, Ronstar® G Herbicide, Material Safety Data Sheet, MSDS Number 181, Version 2.2, December 2002

California State, Environmental Protection Agency, Chemicals Known to the State to Cause Cancer or Reproductive Toxicity, August 11, 2006

United States, Environmental Protection Agency, Reregistration Eligibility Decision for Oxadiazon, EPA 738-R-04-003, September 2003

Washington State, Department of Transportation, Oxadiazon Roadside Vegetation Management Herbicide Fact Sheet, February 2006

## X. TOXICITY CATEGORY TABLES

TABLE I: HUMAN HAZARDS

Category	Signal Word	Route of Administration			Hazard	
		Acute Oral LD <sub>50</sub> (mg/kg)	Acute Dermal LD <sub>50</sub> (mg/kg)	Acute Inhalation LC <sub>50</sub> (mg/l)	Eye irritation	Skin irritation
I (Highly Toxic)	<b>DANGER</b> (poison)	0-50	0-200	0-0.2	corrosive: corneal opacity not reversible within 7 days	corrosive
II (Moderately Toxic)	<b>WARNING</b>	>50-500	>200-2000	>0.2-2	corneal opacity reversible within 7 days; irritation persisting for 7 days	severe irritation at 72 hours
III (Slightly Toxic)	<b>CAUTION</b>	>500-5000	>2000-20.000	>2-20	no corneal opacity; irritation reversible within 7 days	moderate irritation at 72 hours
IV (Practically Non-toxic)	<b>NONE</b>	>5000	>20,000	>20	no irritation	moderate irritation at 72 hours

After *Pesticide User's Guide*, Ohio State University, Extension Bull. No. 745, 1998.

TABLE II: ECOTOXICOLOGICAL RISKS TO WILDLIFE (TERRESTRIAL AND AQUATIC)

Risk Category	Mammals	Avian	Avian	Fish or Aquatic Invertebrates
	Acute Oral LD <sub>50</sub> (mg/kg)	Acute Oral LD <sub>50</sub> (mg/kg)	Acute Dietary LC <sub>50</sub> (mg/kg)	Acute Concentration LC <sub>50</sub> (mg/l)
Very Highly Toxic	<10	<10	<50	<0.1
Highly Toxic	10-50	10-50	50-500	0.1 – 1
Moderately Toxic	51-500	51-500	501-1,000	>1 – 10
Slightly Toxic	501-2,000	501-2,000	1,001-5,000	>10 – 100
Practically Non-toxic	>2,000	>2,000	>5,000	>100

Table II created from information contained in *Pesticides and Wildlife*, Whitford, Fred, et al., Purdue University Cooperative Extension Service PPP-30, 1998.

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