



For Chemical Emergency, Spill, Leak, Fire, Exposure, Or
Accident, Call CHEMTREC Day or Night: 1-800-424-9300.
For Medical Emergencies Only, Call 877-325-1840.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Riverdale Millennium Ultra™²
Synonyms: None
EPA Reg. No.: 228-332

Company Name: Nufarm Americas Inc.
 1333 Burr Ridge Parkway, Suite 125A
 Burr Ridge, IL 60527

Date of Issue: December 29, 2004
Sections Revised: New
Supersedes: New

2. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	% BY WEIGHT
Dimethylamine Salt of 2,4-Dichlorophenoxyacetic Acid	2008-39-1	37.32
Clopyralid: Monoethanolamine Salt of 3,6-Dichloro-2-Pyridinecarboxylic Acid	57754-85-5	2.54
Dimethylamine Salt of Dicamba (3,6-Dichloro-o-Anisic Acid)	2300-66-5	4.65
Other Ingredients		55.49

3. HAZARDS IDENTIFICATION

Emergency Overview:

Appearance and Odor:

Warning Statements: Keep out of reach of children. DANGER. Corrosive, causes irreversible eye damage. Harmful if swallowed or absorbed through skin. Do not get in eyes, on skin or on clothing.

Potential Adverse Health Effects:

Likely Routes of Exposure: Skin/eye contact and ingestion.

Eye Contact: This product causes irreversible eye damage.

Skin Contact: This product is no more than slightly toxic and no more than moderately irritating based on toxicity studies.

Ingestion: This product is no more than slightly toxic based on toxicity studies.

Inhalation: This product is no more than slightly toxic if inhaled based on toxicity studies.

Medical Conditions Aggravated by Exposure: Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.

Chronic Health Effects: Repeated overexposure to phenoxy herbicides may cause effects to liver, kidneys, blood chemistry, and gross motor function. Rare cases of peripheral nerve damage have been reported, but extensive animal studies have failed to substantiate these observations, even at high doses for prolonged periods. The International Agency for Research on Cancer (IARC) lists exposure to chlorophenoxy herbicides as a class 2B carcinogen, the category for limited evidence for carcinogenicity in humans. However, more current 2,4-D lifetime feeding studies in rats and mice did not show carcinogenic potential. The U.S. EPA has given 2,4-D and dicamba a Class D classification (not classifiable as to human carcinogenicity). No impairment of reproductive function attributable to 2,4-D has been noted in laboratory animal studies. Studies in laboratory animals with 2,4-D have shown decreased fetal body weights and delayed development in the offspring at doses toxic to mother animals. There have been some positive and some negative studies, but the weight of evidence is that 2,4-D is not a

mutagenic. Animal tests with dicamba have not demonstrated carcinogenic, teratogenic, or other reproductive effects with the exception of slightly reduced fetal body weights and post implantation losses reported at the Maximum Tolerated Dose level. Clopyralid was a teratogen at doses severely toxic to the mother, but not at doses still several times greater than those expected during normal exposure.

4. FIRST AID MEASURES

If in Eyes: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If Swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

If on Skin: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice. Do not give anything by mouth to an unconscious person.

If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

5. FIRE FIGHTING MEASURES

Flash Point: Not applicable due to aqueous formulation

Autoignition Temperature: Not determined.

Hazardous Products of Combustion: Under fire conditions, may produce gases such as hydrogen chloride, nitrogen oxides, and carbon monoxide.

Extinguishing Media: Dry chemical, foam or carbon dioxide (CO₂)

Unusual Fire or Explosion Hazards: If water is used to fight fire or cool containers, dike to prevent runoff contamination of municipal sewers and waterways.

Fire Fighting Equipment: Fire fighters and others exposed to products of combustion should wear positive-pressure, self-contained breathing apparatus and full protective equipment. Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Contain large spills with dikes and transfer the material to appropriate containers for reclamation or disposal. Absorb remaining material or small spills with an inert material and then place in a chemical waste container. Flush residual spill area with water.

Large spills that soak into the ground should be dug up, placed in metal drums and disposed of in accordance with instructions provided under DISPOSAL, Section 13 of this MSDS. Contact appropriate state agency when considering a land spreading disposal option.

Leaking containers should be separated from non-leakers and either the container or its contents transferred to a drum or other non-leaking container and disposed of in accordance with instructions provided under DISPOSAL, Section 13 of this MSDS. Any recovered spilled liquid should be collected and disposed of similarly.

7. HANDLING AND STORAGE

Handling:

Wash hands, face and harms with soap and water before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove personal protection equipment immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

If this container is over one gallon and less than five gallons, then persons engaged in open pouring of this product must also wear coveralls or a chemical resistant apron. If this container is five gallons or more in capacity, do not open pour product from this container. A mechanical system (such as a probe and pump or spigot) must be used for transferring the contents of this container. If the contents of a non-refillable pesticide container are emptied, the probe must be rinsed before removal.

Storage:

Always use original container to store pesticides in a secured warehouse or storage building. Store at temperatures above 32°F. If allowed to freeze, remix before using. This does not alter this product. Containers should be opened in well-ventilated areas. Keep container tightly sealed with not in use. Do not stack cardboard cases more than two pallets high. Do not store near open containers of fertilizer, seed or other pesticides. Do not contaminate water, food or feed by storage and disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION**Personal Protective Equipment:**

Non-WPS Turf Uses: Applicators and other handlers who handle this pesticide for any use NOT covered by the Worker Protection Standard (40 CFR Part 170) (in general only agricultural plants uses are covered by the WPS) must wear face shield, goggles, or safety glasses and long pants, long-sleeved shirt, socks, shoes and chemical-resistant gloves when mixing, loading or applying this product. It is recommended that safety glasses include front, brow, and temple protection. In addition to the clothing and eye protection listed above, commercial mixer/loaders must wear chemical resistant in place of rubber gloves except when the product is to be applied to a golf course. After using this product, rinse gloves before removing, remove clothing and launder separately before reuse, and promptly and thoroughly wash hands and exposed skin with soap and water. Remove saturated clothing as soon as possible and shower.

Non-WPS Industrial Uses: When mixing, loading or applying this product or repairing or cleaning equipment used with this product, wear face shield, goggles, or safety glasses and chemical-resistant gloves, long-sleeved shirt, long pants, socks and shoes. It is recommended that safety glasses include front, brow, and temple protection. For aerial applicators in an enclosed cockpit and applicators applying this product from a tractor that has a completely enclosed cab, eye protection is not required. Wash hands, face and arms with soap and water as soon as possible after mixing, loading or applying this product. After work, remove all clothing and show using soap and water. Do not reuse clothing worn during the previous day's mixing and loading or application of this product without cleaning first. Clothing must be kept and washed separately from other household laundry. Remove saturated clothing as soon as possible and shower.

WPS Uses: Applicators and other handlers who handle this pesticide for any use covered by the Worker Protection Standard (40 CFR Part 170) (in general, agricultural plant uses are covered) must wear: long-sleeves shirt and long pants, chemical resistant gloves and any waterproof material, shoes plus socks, and protective eyewear, when cleaning equipment, mixing or loading. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining Personal Protective Equipment (PPE). If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. After each day of use, clothing or PPE must not be reused until it has been cleaned. If this container is over one gallon and less than five gallons, mixers and loaders who do not use a mechanical system, (such as a probe and pump or spigot) to transfer contents of this container must wear coveralls or a chemical resistant apron in addition to the other required PPE.

Respiratory Protection: Not normally required. If exposure limits may exceed acceptable levels, use a NIOSH approved respirator.

Ventilation: Good local ventilation is recommended; mechanical ventilation may be used if exposure limits may be exceeded.

Airborne Exposure Limits:**Product/ Component**Riverdale Millennium Ultra²**ACGIH TLV - TWA**

Not established

OSHA PEL 8 Hour TWA

Not established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor:	Dark amber colored solution with a slight amine odor
Boiling Point:	Not established
Density:	9.50 lbs./gal
Evaporation Rate:	Not established
Freezing Point:	<32°F
pH:	8.0 @ 25 degrees C
Solubility in Water:	Dispersible
Specific Gravity:	1.140 g/cc @ 25 degrees C
Vapor Density:	Not established
Vapor Pressure:	Not established
Viscosity:	17.3 cPs @ 25 degrees C

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

10. STABILITY AND REACTIVITY**Stability:** Stable**Incompatibility:** None known**Hazardous Decomposition Products:** Under fire conditions, may produce gases such as hydrogen chloride, nitrogen oxides, and carbon monoxide.**Hazardous Polymerization:** Not known to occur.**11. TOXICOLOGICAL INFORMATION****Product:** Data from laboratory studies conducted on a similar, but not identical, formulation:

Single exposure (acute) studies indicate:

Oral: Rat LD₅₀: >500 mg/kg thru 5,000 mg/kg; FIFRA Category III**Dermal:** Rabbits LD₅₀: >2,000 thru 5,000 mg/kg; FIFRA Category III**Inhalation:** Rat 4-hr LC₅₀: >4.38 mg/l; FIFRA Category IV**Eye Irritation:** Rabbits (6): Corrosive, severe and irreversible irritation; FIFRA Category I**Skin Irritation:** Rabbits (6); Moderate or slight irritation at 72 hours; FIFRA Category IV

Not a contact sensitizer in guinea pigs following repeated skin exposure.

Assessment Carcinogenicity:

This product contains substances that are considered to be probable or suspected human carcinogens as follows:

Ingredient Name	Regulatory Agency Listing As Carcinogen			
	ACGIH	IARC	NTP	OSHA
Chlorophenoxy Herbicides	No	2B	No	No

12. ECOLOGICAL INFORMATION

This product is toxic to aquatic invertebrates. Drift or runoff may adversely affect aquatic invertebrates and non-target plants. Do not apply directly to water, or to areas where surface water is present or to

intertidal areas below the mean high water mark. When cleaning equipment, do not pour the washwater on the ground; spray or drain over a large area away from wells and other water sources. Do not contaminate water when disposing of equipment washwaters. Do not apply this product through any type of irrigation system. Do not contaminate domestic or irrigation waters.

Clopyralid, an active ingredient in this product, may leach through soil into groundwater under certain conditions of use. Use of this product where soil are permeable, particularly where the water table is shallow, may result in leaching to groundwater. Caution should be exercised when handling this product at mixing, loading, and disposal sites to prevent contamination of groundwater supplies. Use of closed systems for mixing or transferring this pesticide will reduce the probability of spills. Placement of the mixing/loading equipment on an impervious pad to contain spills will help prevent groundwater contamination.

Aquatic Toxicity:

Data on 2,4-D Dimethylamine Salt

96-hour LC ₅₀ Bluegill:	524 mg/l
96-hour LC ₅₀ Rainbow Trout:	250 mg/l
48 hour EC ₅₀ Daphnia:	184 mg/l

Avian Toxicity:

Data on 2,4-D Dimethylamine Salt

Bobwhite Quail Oral LD ₅₀ :	500 mg/kg
Mallard Duck 8 day Dietary LC ₅₀ :	>5620 ppm

Environmental Fate:

In laboratory and field studies, 2,4-D DMA salt rapidly dissociated to parent acid in the environment. The typical half-life of the resultant 2,4-D acid ranged from a few days to a few weeks.

13. DISPOSAL CONSIDERATION

Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. If container is damaged or if pesticide has leaked, contain all spillage. Absorb and clean up all spilled material with granules or sand. Place in a closed, labeled container for proper disposal. Improper disposal of excess pesticide, spray mixtures, or rinsate is a violation of Federal law and may contaminate groundwater. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

PLASTIC BOTTLES AND NON-RETURNABLE PLASTIC DRUMS: Triple rinse (or equivalent), adding rinsate to spray tank. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

14. TRANSPORTATION INFORMATION

Follow the precautions indicated in the Handling and Storage Section, Section 7 of this MSDS.

For DOT regulatory information, if required, consult transportation regulations, product-shipping papers or call Nufarm Americas Inc. at 708-756-2010, Monday through Friday, 8:00 AM to 5:00 PM Central Time.

15. REGULATORY INFORMATION

TSCA Inventory: This product is exempted from TSCA because it is solely for FIFRA regulated use.

SARA Hazard Notification/Reporting:

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370):

Immediate, Delayed

Section 313 Toxic Chemical(s):

Acetic Acid, (2,4-Dichlorophenoxy)- (CAS No. 94-75-7), 31.0% equivalent by weight in product
 Dicamba (CAS No. 1918-00-9), 3.86% by weight in product

Reportable Quantity (RQ) under U.S. CERCLA:

Acetic Acid, (2,4-Dichlorophenoxy)- (CAS No. 94-75-7) 100 pounds
 Dicamba (CAS No. 1918-00-9) 1,000 pounds

RCRA Waste Code:

Acetic Acid, (2,4-Dichlorophenoxy)- (CAS No. 94-75-7) U240

California Proposition 65: Not Listed

National Fire Protection Association (NFPA) Hazard Ratings:**Ratings for This Product**

3 Health
 1 Flammability
 0 Reactivity

Key to Ratings

0 Minimal
 1 Slight
 2 Moderate
 3 Serious
 4 Severe

16. OTHER INFORMATION

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Nufarm Americas Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Nufarm Americas Inc. be responsible for damages of any nature whatsoever resulting from the use or of reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

Millennium Ultra is a trademark of Nufarm Americas Inc.