103601

(10-31-75) 103601

EEE BRANCH REVIEW

DATE: IN 10-15-75 OUT 10/31/75 IN _____ OUT _____ IN _____ OUT _____

FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. _____

PETITION OR EXP. PERMIT NO. 524-EUP 66 1674 + 6H5106

DATE DIV. RECEIVED _____

DATE OF SUBMISSION _____

DATE SUBMISSION ACCEPTED _____

TYPE PRODUCT(S): I, D, (H), F, N, R, S _____

PRODUCT MGR. NO. Stubbs

PRODUCT NAME(S) Roundup

COMPANY NAME Monsanto

SUBMISSION PURPOSE Aquatic uses

CHEMICAL & FORMULATION N-phosphonomethylglycine
Isopropylamine salt

2009053

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100.0 Pesticidal Use

For experimental use in and around water. Program designed to develop use applications to cover a variety of special situations. Directions for use will be developed in two general categories

1) terrestrial
2) aquatic

100.1 Application Methods/Directions

For control of emerged and emersed annual and perennial weeds, terrestrial and aquatic, in, around or near water and waterways of all types, such as drainage and irrigation systems, ponds, lakes and other impounded waters.

Enough leaf foliage must be above the water to intercept sufficient chemical for control.

100.2 Rates

DO NOT exceed 2 gallons per surface acre of water in 2 months.

Use coarse sprays only. For high volume spraying utilizing handguns or other suitable nozzle arrangements, mix 4-6 quarts of formulation in 100 gallons of water and apply to foliage. Request for 3800 gallons with 2/3 for terrestrial sites and 1/3 for the true aquatics.

101.0 Chemical and Physical Properties

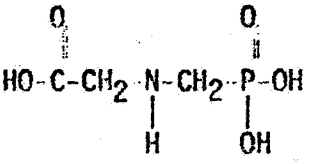
101.1 Chemical Name

N-phosphonomethylglycine

101.2 Common Name

glyphosate
formulation = Roundup (MON 2139)

101.3 Structure



101.4 Molecular Weight

101.5 Physical/Chemical

M.P. 200°C

Solubility water (1.0% @ 25°C)
Ethanol, acetone, benzene - insoluble

Formulation

Isopropylamine salt of Glyphosate
(contains 480 grams/l or 4 pounds a.i. isopropylamine salt of N(phosphonomethyl) glycine per U.S. gallon. Equivalent to 3 pounds per U.S. gallon of the acid glyphosate)

CP 67573 - N-phosphonomethylglycine
- MON 0573
- Glyphosate
MON 2139 - Roundup, which is a water based formulation of CP 70139, the isopropylamine salt of CP 67573.

CP 50435 major metabolite (aminomethylphosphonic acid)

102.0 Behavior in the Environment

Determination of residues of glyphosate and its metabolite in aquatic use of Roundup herbicide.

Studies were designed to determine residues associated with the application to control weeds on dry irrigation canals, canal ditchbanks above the water level, rice and sugarcane levees, and in or on the edge of ponds, lakes, and streams.

Summary:

1. When used to treat dry irrigation canals or ditches in the fall, the first flush of water in the spring will contain less than 0.003 ppm glyphosate or metabolite.

2. When used to treat irrigation canal banks, maximum concentration expected in the water is less than 0.1 ppm.

3. Glyphosate that enters the water in a rice field due to application to ditchbanks will dissipate to 0.015 ppm or less within 15 days and below level of detectability (0.003 ppm) by 30 days.

4. In non-flowing areas, glyphosate breaks down with half life of 14 days.

Observations appropriate for hazard evaluations

1. Pond treatment

Pond treated at 8 lbs/a to entire water surface.

Average dept = 6.3 feet. Calculated concentration in water = 0.46 ppm at complete mixing.

The half-life is about 14 days. Actual analyses show residues of < 2.5 ppb 127 days after treatment.

Concentration of glyphosate in bottom sedement remained fairly constant at about 0.25 ppm throughout the experiment.

The fact that residues of glyphosate metabolite, aminomethyl-phosphonic acid, didnot appear, indicates that the degradation of the metabolite in this environment wasmmuch more rapid than glyphosate degradation.

Studies done to date, indicate that glyphosate will not accumulate in the environment and would not be harmful to man and animals.

102.1 Soil - No specific studies submitted with application.

102.2 Water - No specific studies submitted with application.

102.3 Plants - No specific studies submitted with application.

102.4 Animals

a) Fish accumulation study - Bionomics

Rainbow trout, largemouth bass, and channel catfish were exposed to 0, 0.1, 1.0, 3.0, and 10.0 ppm glyphosate for 14 days (using the continuous flow proportional diluters),

Fish were then maintained in tanks in untreated water for an additional 35 days.

Fish analyses - At the 10 ppm exposure level, edible portions of the rainbow trout and largemouth bass reached the maximum residue level of 0.14 ppm by 7 days. Maximum levels of 0.06 ppm were reached at 3 ppm exposure in 10 days. Both species showed rapid depletion of residues upon removal of fish to untreated water. The channel catfish showed a different uptake and depletion pattern (also, a fungal infestation contributed to mortality). Maximum residues in catfish at 10 ppm exposure was 0.55 ppm (7 days).

All residues were significantly less than exposure levels. The metabolite was not detected in any of the analyses.