US EPA ARCHIVE DOCUMENT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 2, 1979

SUBJECT: EPA Reg.#524-308 Roundup (Glyphosate); PP#9F2223; Request for establishment of tolerances for residues of Glyphosate in or on bananas at 0.2 ppm and olives at 0.1 ppm. CASWELL#661A

FROM: William Dykstra, Ph.D
Toxicology Branch (TS-769) WHO 8/7/79 WSV

TO: Robert Taylor & Residue Chemistry Branch
Product Manager#25 (TS-769)

Petitioner: Monsanto Agricultural Products, Inc.
800 N. Lindbergh Boulevard
St. Louis, MO. 63166

RECOMMENDATIONS:

1. The recommendations of the "free standing" summary are contained herein.

2. The requested tolerances can be toxicologically supported.

Section F - Proposed Tolerances

It is proposed that 40 CFR 180.364 be amended to include the following:

180.364 Glyphosate: Tolerances for Residues

Bananas ..... 0.2 ppm
Olives ..... 0.1 ppm

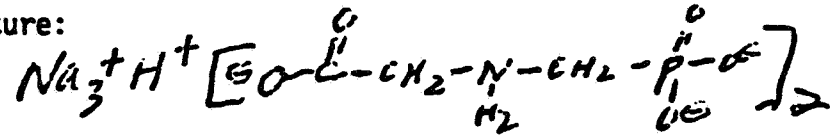
A. Substance Identification

1. Chemical Name: Sodium N-(phosphonomethyl)glycine

2. Synonyms: MON-8000, Roundup, Glyphosate

3. Purity of Technical Material: 98% pure

4. Structure:



B. Referenced Petitions: 4G1444, 5G1561, 5G1523, 5F1536, 5F1560, 6G1734, 6G1679, 6E1809, 6G1826, 6G1862, 6G1757, 6F1861, 6F1758, 6H5144, 6F1733, 7G1893, 7G1903, 7F1904, 8F2080, 8F2070, 8E2122, 9H5196

Formulation (Confidential)

Roundup

Ingredient	Percent Weight
Isopropylamine salt of glyphosate [redacted]	41.00
[redacted]	
	100.00

INERT INGREDIENT INFORMATION DELETED

Inerts cleared under 180.1001 (c) & (d).

D. Uses Proposed

1. Bananas (and Plaintains)

Roundup herbicide may be used for site preparation (pre-plant) and for weed control between rows (post-directed) in non-bearing and bearing trees. Use a 1% solution of Roundup herbicide in water for control of most annual and perennial weeds listed on the label.

Avoid contact foliage, green stems or suckers since severe injury or destruction may result.

2. Olives

Roundup herbicide may be used for site preparation (pre-plant) and for weed control between rows (post-directed) in non-bearing and bearing trees.

For specific rates of application and instructions for control of various annual and perennial weeds, see the "Weeds Controlled" section of the label. Avoid contact with foliage, green stems or suckers since severe injury or destruction may result.

Review:

A. Memo of 8/22/78 from R. Engler to R. Taylor. Toxicology Branch has reviewed the validated studies in support of Glyphosate.

1. Data Considered

°Oral LD50 Rabbit: 3.8 gm/kg (valid)
°90-day Rat Feeding: NOEL = 2000 ppm (valid)
°90-day Dog Feeding: NOEL = 2000 ppm (valid)
°Teratology (2 studies) Rabbit: negative at 30 mg/kg/day (highest dose) (repeat studies with higher dose)
°2-year Dog Feeding: NOEL = 300 ppm (valid)
°3-generation Rat Reproduction: NOEL = 100 ppm (valid)

°18-month Mouse Feeding: no carcinogenic potential at 300 ppm (highest dose Study must be repeated since too many animals are missing.
°2-year Rat Feeding: NOEL = 100 ppm (valid). Study is adequate to determin the toxic effects, but only marginal with respect to oncogenic evaluation since too few animals examined. reported the study shows no oncogenic potential.
°Neurotoxicity (hen): negative at 7.5 gm/kg (cumulative for 3 days) (valid)

°Dominant Lethal (mice): negative at 10 mg/kg. (highest dose), supplementa study, no records of positive controls.
°Host-Mediated Assay: negative (valid)
°Ames Test: negative (supplemental study), no raw data available
°Rec-Assay: negative (supplemental study), no raw data available

2. No new toxicity data were submitted with this petition.

3. Evaluation of the ADI

The ADI is based on the NOEL of 100 ppm (5 mg/kg/day) in a 2-year rat feedin study. This is the most sensitive species for which chronic toxicity data are available. A 100 fold safety factor was used to calculate the ADI.

$$ADI = NOEL \times \frac{1}{100}$$

$$ADI = 5\ mg/kg/day \times \frac{1}{100} = 0.05\ mg/kg/day$$

The MPI for a 60 kg person is 3 mg/day.

4. Tolerances have been established under 40 CFR 180.364.

5. The published tolerances utilize 6.93% of the ADI. Unpublished, TOX approved tolerances utilize the ADI to 10.78%. The current action utilizes the ADI to 10.93%. Therefore the current action utlizes 0.15% of the ADI.

6. No regulatory actions are pending against the pesticide and no RPAR criteria have been exceeded.

CONCLUSIONS & RECOMMENDATIONS

The requested tolerances for glyphosate can be toxicologically supported. One of the deficiencies in the glyphosate data base is the lack of an adequate teratology study. It is however concluded that the studies at hand together with the reproduction study show that glyphosate has low potential for showing any teratology effects. The oncogenic potential of glyphosate is not fully elucidated. The lifetime mouse and rat studies, however, provide adequate assurance that glyphosate has a relatively low oncogenic potential.

A further assurance of low risk associated with glyphosate is found in the fact that on a theoretical basis exposure via the diet is relatively low at present. The current action utlizes 0.15% of the ADI and a total of 10.93% of the ADI is utilized by all present tolerances on glyphosate.

TOX/HED:th:RD Initial WWOODROW:8-1-79

8/6/79

CFR 180.364 Glyphosate Roundup 8/2/79

File last updated 8/2/79

ACCEPTABLE DAILY INTAKE DATA

RAT,Older NOEL mg/kg	ppm	S.F.	ADI mg/kg/day	MPI mg/day/60kg
5.000	100.00	100	0.0500	3.0000

Published Tolerances

CROP	Tolerance	Food Factor	mg/day/1.5kg
Grain Crops(64)	0.100	13.79	0.02069
Avocados(6)	0.200	0.03	0.00009
Citrus Fruits(33)	0.200	3.81	0.01144
Coffee(36)	1.000	0.75	0.01119
Cottonseed(41)	6.000	0.15	0.01350
Grapes, inc raisins(60)	0.100	0.49	0.00074
Leafy Vegetables(80)	0.200	2.76	0.00828
Molasses(96)	2.000	0.03	0.00092
Nuts(101)	0.200	0.10	0.00031
Pome Fruits(126)	0.200	2.79	0.00837
Root Crop Veg(138)	0.200	11.00	0.03299
Seed&Veg(143)	0.200	3.66	0.01098
Soybeans(148)	6.000	0.92	0.08263
Palm Oil(202)	0.100	0.03	0.00005
Kidney(203)	0.100	0.03	0.00005
Pistachio nuts(210)	0.200	0.03	0.00009
Liver(211)	0.100	0.03	0.00005
Sugar,cane&beet(154)	0.100	3.64	0.00546

MPI	TMRC	% ADI
3.0000 mg/day/60kg	0.2078 mg/day/1.5kg	6.93

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Unpublished,Tox Approved PP9G2150,8L2122,9H5196

CROP	Tolerance	Food Factor	mg/day/1.5kg
Stone Fruits(151)	0.200	1.25	0.00374
Sugar,cane&beet(154)	1.900	3.64	0.10369
Molasses(96)	18.000	0.03	0.00828

MPI	TMRC	% ADI
3.0000 mg/day/60kg	0.3235 mg/day/1.5kg	10.78

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Current Action PP9F2223

CROP	Tolerance	Food Factor	mg/day/1.5kg
Bananas(7)	0.200	1.42	0.00426
Olives(104)	0.100	0.06	0.00009

MPI	TMRC	% ADI
3.0000 mg/day/60kg	0.3279 mg/day/1.5kg	10.93

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Other Pending Tolerances 8F2070/8G2051,6G1679/6H5106,8G2060,8G2(

CROP	Tolerance	Food Factor	mg/day/1.5kg
~~Asparagus(5)~~	~~0.200~~	~~0.14~~	~~0.00043~~
Fish,shellfish(59)	0.150	1.08	0.00244
~~Cucurbits(49)~~	~~0.050~~	~~2.84~~	~~0.00213~~
Fruiting Vegetables(60)	0.050	2.99	0.00225
~~Small Fruit,berries(146)~~	~~0.050~~	~~0.83~~	~~0.00062~~
Potable Water(198)	0.050	133.33	0.10000
~~Potatoes(127)~~	~~0.000~~	~~5.43~~	~~0.00000~~

~~MPI~~	~~TMRC~~	~~% ADI~~
3.0000 mg/day/60kg	0.4357 mg/day/1.5kg	14.52

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