UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 28 1996

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OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Registration of Foli-R-Fos 400 (EPA Reg. No. 069579-R) containing 45.5% potassium salts (mono- and di) of Phosphorous Acid to be used as Fungicide to control Phytophtora and Pythium of Ornamentals. Review of Acute Toxicology Data. MRID No. 439058-04, -05, -06, -07, -08, -09, and 439058-11; Submission No. S505790; PD Barcode D226397

FROM: Freshteh Toghrol, Ph.D., Chemist F. Toghrol 10/22/96
Biopesticides & Pollution Prevention Division (7501W)

THRU: James Thomas McClintock, Ph.D., Team Leader
Biopesticides & Pollution Prevention Division (7501W) 10/28/96

TO: Rita Kumar, Regulatory Action Leader
Biopesticides & Pollution Prevention Division (7501W)

Action

U.I.M. Agrochemicals (Aust.) PTY, LTD, requests registration of the Foli-R-Fos 400 (EPA Reg. No. 069579-R) containing 45.5% potassium salts (mono- and di) of phosphorous acid as its active ingredient to be used as fungicide to control Phytophtora and Pythium of Ornamentals.

To support this registration, U.I.M. Agrochemicals (Aust.) PTY, LTD has submitted the acute mammalian toxicity data (MRID No. 439058-04, -05, -06, -07, -08, -09, and 439058-11) for oral in rats, dermal in rabbits, inhalation in rats, eye irritation in rabbits, primary skin irritation in rabbits. The registrant has requested data waiver for dermal sensitization in guinea pig and cellular immune response.

Conclusions and Discussion

1. The submitted data indicates that the product has an acute oral LD_{50} greater than 3816 mg/kg in male rats, 3445 mg/kg in female rats and an average of 3624 in male and female rats (Toxicity category III), an acute dermal LD_{50} greater than 2000 mg/kg in rabbits (Toxicity category III), an inhalation LC_{50} greater than 6.14 mg/l in rats (Toxicity category IV). Additionally, primary skin irritation studies reveal that the product is a none irritant (toxicity category IV), and primary eye irritation studies reveal that it is a slightly eye irritant (toxicity category III).

2. BPPD would support the data waiver request for dermal sensitization study (guinea pig) and cellular immune response, based on low toxicity and the fact that the product has been registered and used in Australia since 1985 and no incident has been reported after approximately 10 years of commercial use. Additionally, the active ingredients potassium salt of phosphorous acid KH_2PO_3 and K_2HPO_3 in the product are structurally similar to naturally occurring substances KH_2PO_4 and K_2HPO_4.

3. These data support the registration of the product Foli-R-Fos 400 (EPA Reg. No. 069579-R).

cc: James Thomas McClintock, Rita Kumar, F. Toghrol, BPPD Subject file.
F.Toghrol:F.T.:CS#1:(703)308-7014:10/21/96.

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EPA Reviewer: Freshteh Toghrol, Ph.D. F. Toghrol Date: 10/22/96
Biopesticides and Pollution Prevention Division

DATA EVALUATION REPORT

STUDY TYPE: Acute Oral Toxicity - Rat (152-10)

PC CODE: 076416

DP BARCODE: D226397

CASE: 046750

SUBMISSION: S505790

MRID NO.: 439058-04

TEST MATERIAL: Potassium salts of phosphorous acid

SYNONYMS: Foli-R-Fos 400, mono- and di-potassium salts of phosphorous acid

STUDY NUMBER: 10759

SPONSOR: UIM Agrochemicals (Aust.) Pty Limited, PO Box 72, Brisbane Markets, Queensland 4106, Australia

TESTING FACILITY: Iveresk Research International, Tranent, EH33 2NE, Scotland

TITLE OF REPORT: Potassium salts of phosphorous acid acute oral toxicity (LD_{50}) test in rats

AUTHOR: J.A. Wilson

REPORT ISSUED: January 16, 1995

EXECUTIVE SUMMARY: Groups of five male and five female Sprague Dawley rats were given a single oral gavage dose of 2500, 3250, 4000, or 5000 mg/kg potassium salts of phosphorous acid. The animals were observed for clinical signs of toxicity frequently on the day of treatment and daily thereafter for 14 days. Body weights were recorded immediately before dosing and on study days 7 and 14. Clinical signs of toxicity observed in all rats included piloerection, decreased activity, and increased urination. In addition, rats treated with $\geq$4000 mg/kg developed subdued behavior, prostration, tremors, and had increased salivation. All deaths following treatment occurred within 24 hours. Mixed observations were recorded at necropsy. While some rats treated with >3250 mg/kg test material had fluid filled stomachs with reddened glandular mucosas, nothing abnormal was

found in others. No abnormal necropsy finds were recorded for rats that survived the study or in rats treated with ≤3250 mg/kg test material.

Based on the study results **the oral male and female Sprague Dawley rat LD_{50} are:**

Males	**3816 mg/kg (95% CI = 2864-5143 mg/kg)**
Females	**3445 mg/kg (95% CI = 2396-4322 mg/kg)**
Males and females	**3624 mg/kg (95% CI = 3082-4186 mg/kg).**

This places the test material in **Toxicity Category III.** The study is classified as **Acceptable** and meets the requirement of §152-10 for an acute oral toxicity study in rats. Signed and dated Quality Assurance and Good Laboratory Practice statements were present.

A. MATERIALS

1. Test material: Potassium salts of phosphorous acid

Description: colorless liquid
Composition: supplied as 410 mg/mL phosphorous acid present as 668.9 mg/mL mono- and di-potassium phosphate (41% H_2PO_3, a.i.)
Lot/Batch No.: 2244-3
Stability: stable
Storage: in dark under ambient conditions
pH: 5.7

2. Test animals

Species: rat
Strain: Sprague-Dawley
Age: 6-8 weeks
Weight: 151-227 g (males); 139-173 g (females) on day of dosing
Source: Harlan Olac Limited, Shaw's Farm, Blackthorn, Bicester, OX6 OTP

3. Animal care

Housing: 5/cage/sex in suspended polypropylene cages with mesh floors
Food: Rat and Mouse No. 1 Maintenance Diet (Special Diets Services, Ltd.), *ad libitum*
Water: tap water, *ad libitum*
Acclimation period: 7 days
Temperature: 18-21°C
Humidity: average 61%
Air changes: 15-20/hour
Photoperiod: 12 hour light/dark cycle

B. METHODS

Although initially done as a limit test, the results required a complete LD_{50} study. When the study had been completed, groups of five male and five female rats had been given a single 2500, 3250, 4000, or 5000 mg/kg dose of test material by gavage. The test material was given undiluted at a volume calculated from a nominal concentration of 668.9 mg/mL potassium salts of phosphorous acid. Clinical observations were done frequently on the day of treatment and daily thereafter for the remainder of the study. Body weights were recorded immediately before dosing and on study days 7 and 14. All rats were necropsied and discarded upon death or following sacrifice by CO_2 inhalation at the end of the observation period. LD_{50}s were calculated according to the method of Finney (1971, Probit Analysis, 3rd Edition, Cambridge University Press) and when required, fractional mortalities were adjusted according to Berkson (1953, Journal of American Statistical Association, 48, 565-599).

C. RESULTS

1. Mortality

Table 1 shows the mortality recorded for the study. All deaths occurred within 24 hours of treatment.

Table 1. Incidence of rat mortality following oral treatment with potassium salts of phosphorous acid

Dose (mg/kg)	Males	Females	Total
2500	0/5	0/5	0/10
3250	1/5	3/5	4/10
4000	5/5	4/5	9/10
5000	3/5	4/5	7/10

Data taken from page 15 of MRID 439058-04

2. Clinical observations

Within 24 hours, all rats treated with 2500 mg/kg test material developed piloerection, had decreased activity, and increased urination. In addition, all female rats developed diarrhea. These resolved in all animals by study day 4. All animals in the 3250 mg/kg group also developed piloerection, decreased activity, and increased urination. These resolved by study day 4 in surviving animals. All animals in the 4000 mg/kg and 5000 mg/kg groups developed piloerection, subdued behavior, prostration, tremors, increased salivation, and had reduced activity. These conditions persisted for two days following

treatment in surviving animals treated with 5000 mg/kg and seven days in the surviving female rat treated with 4000 mg/kg test material.

3. Body weight

All rats that survived the study gained weight.

4. Necropsy

No abnormal results were found in rats of all groups that survived the study period or in rats dying prematurely in the 3250 mg/kg group. No abnormalities were found in four rats treated with 4000 mg/kg test material that died shortly after treatment. Two male and two female rats that died prematurely after treatment with 4000 mg/kg test material had intestines distended with gas while one other male had a brown fluid in the stomach and cecum. The stomachs of rats dying prematurely after treatment with 5000 mg/kg had reddened glandular mucosa and were filled with a clear fluid.

5. LD_{50}

Based on the results, the study author reported the oral Sprague Dawley rat LD_{50} for potassium salts of phosphorous acid as:

Males	3816 mg/kg (95% CI = 2864-5143 mg/kg)
Females	3445 mg/kg (95% CI = 2396-4322 mg/kg)
Males and females	3624 mg/kg (95% CI = 3082-4186 mg/kg)

This places the test material in Toxicity Category III.

EPA Reviewer: Freshteh Toghrol, Ph.D. F. Toghrol Date: 10/22/96
Biopesticides and Pollution Prevention Division

DATA EVALUATION REPORT

STUDY TYPE: Acute Dermal Toxicity - Rabbit (152-11)

PC CODE: 076416

DP BARCODE: D226397

CASE: 046750

SUBMISSION: S505790

MRID NO.: 439058-05

TEST MATERIAL: Potassium salts of phosphorous acid

SYNONYMS: Foli-R-Fos 400, mono- and di-potassium salts of phosphorous acid

STUDY NUMBER: 10632

SPONSOR: UIM Agrochemicals (Aust) Pty Limited, PO Box 72, Brisbane Markets, Queensland 4106, Australia

TESTING FACILITY: Iveresk Research International, Tranent, EH33 2NE, Scotland

TITLE OF REPORT: Potassium salts of phosphorous acid acute dermal toxicity (limit) test in rabbits

AUTHOR: J.A. Wilson

REPORT ISSUED: October 20, 1994 (Study completion date)

EXECUTIVE SUMMARY: Potassium salts of phosphorous acid, 2000 mg/kg, was applied to the shaved skin of five male and five female rabbits for 24 hours and the animals observed for 14 days for clinical signs of toxicity and mortality. No clinical signs of toxicity or effects on body weight were found and no animals died during the study. No treatment-related effects were found at necropsy. Based on the study results **the dermal male and female New Zealand white rabbit LD_{50} for Potassium salts of phosphorous acid is > 2000 mg/kg.** This places the test material in **Toxicity Category III.** The study is classified as **Acceptable** and meets the requirement of §152-11 for an acute dermal toxicity study in

rabbits. Signed and dated Quality Assurance and Good Laboratory Practice statements were present.

A. MATERIALS

1. Test material: Potassium salts of phosphorous acid

Description: colorless liquid
Composition: supplied as 410 mg/ml phosphorous acid present as 668.9 mg/ml mono- and di-potassium phosphate (41% H_2PO_3, a.i.)
Lot/Batch No.: 2244-3
Stability: stable
Storage: in dark under ambient conditions
pH: 5.7

2. Test animals

Species: rabbit
Strain: New Zealand white
Age: young adult
Weight: 2.34-2.59 kg (males); 2.46-2.58 kg (females) on day of dosing
Source: Harlan Olac Limited, Shaw's Farm, Blackthorn, Bicester, OX6 OTP

3. Animal care

Housing: individually in aluminum cages with grid floors
Food: Standard Rabbit Diet (Special Diets Services, Ltd.), *ad libitum*
Water: tap water, *ad libitum*
Acclimation period: 9 days
Temperature: 19-22°C
Humidity: average 55%
Air changes: 15-20/hour
Photoperiod: 12 hour light/dark cycle

B. METHODS

The study was done as a limit test. On the day before treatment, the dorsal area of five male and five female rabbits was shaved. The following day, a volume of the test material equivalent to 2000 mg/kg was applied evenly on a 10×10 cm gauze patch which was then applied to the back of the rabbit. The patch and entire trunk of each animal were then wrapped with Leukoflex tape held in place with Elastoplast Elastic dressing. Twenty-four hours later, the patches were removed and the test site wiped with damp tissue to remove residual material. The rabbits were observed for morbidity and mortality frequently on the day of treatment and daily thereafter for the remainder of the observation period. Body

weights were recorded immediately before dosing and on study days 7 and 14. At the end of the study, the rabbits were killed by an overdose of pentobarbital and necropsied.

C. RESULTS

1. Mortality

No rabbits died during the study.

2. Clinical observations

The study author reports there were no abnormal clinical observations. Clinical observations were not included with the study report.

3. Body weight

No treatment-related effects on body weight were found.

4. Necropsy

The study author reports there were no abnormal necropsy results. Necropsy results were not included with the study report.

5. LD_{50}

Based on the results, the dermal LD_{50} of potassium salts of phosphorous acid is > 2000 mg/kg for male and female New Zealand white rabbits. This places the test material in Toxicity Category III.

EPA Reviewer: Freshteh Toghrol, Ph.D. F. Toghrol Date: 10/22/96
Biopesticides and Pollution Prevention Division

DATA EVALUATION REPORT

STUDY TYPE: Acute Inhalation Toxicity - Rat (152-12)

PC CODE: 076416

DP BARCODE: D226397

CASE: 046750

SUBMISSION: S505790

MRID NO.: 439058-06

TEST MATERIAL: Potassium salts of phosphorous acid

SYNONYMS: Foli-R-Fos 400, mono- and di-potassium salts of phosphorous acid

STUDY NUMBER: 10595

SPONSOR: UIM Agrochemicals (Aust) Pty Limited, PO Box 72, Brisbane Markets, Queensland 4106, Australia

TESTING FACILITY: Iveresk Research International, Tranent, EH33 2NE, Scotland

TITLE OF REPORT: Potassium salts of phosphorous acid acute inhalation study in rats

AUTHORS: P.C. Kieran, M.J. Punler, S.A. Walker

REPORT ISSUED: December 8, 1994 (Study completion date)

EXECUTIVE SUMMARY: Conducted as a limit test, five male and five female Sprague Dawley rats were exposed nose-only to 6.14 mg/l potassium salts of phosphorous acid for 4 hours and observed for 14 days. None of the rats died during the study period and no clinical effects attributable to the test material toxicity were observed. The body weight of one male and three female rats decreased slightly on study day 4, however, it recovered by study day 7. No other effects on body weight were found. At necropsy, two male and three female rats had pale lungs while the lungs of a third male were small. All lung to body weight ratios were considered normal except for a slight elevation in one female.

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Based on the study results, the **Sprague Dawley rat LC_{50} for Potassium Salts of Phosphorous Acid is >6.14 mg/l** which places the test material in **Toxicity Category IV**. The study is classified as **Acceptable** and meets the requirements of § 152-12 for an acute inhalation study in the rat.

Signed and dated Quality Assurance and Good Laboratory Practice statements were present.

A. MATERIALS

1. Test material: Potassium salts of phosphorous acid

   Description: colorless liquid
   Composition: supplied as 410 mg/ml phosphorous acid present as 668.9 mg/ml mono- and di-potassium phosphate (41% H_2PO_3, a.i.)
   Lot/Batch No.: 2244-3
   Stability: stable
   Storage: in dark under ambient conditions
   pH: 5.7

2. Test animals

   Species: rat
   Strain: Sprague Dawley
   Age: 5-6 weeks on arrival
   Weight: 190-207 g males; 165-184 g females (at time of dosing)
   Source: Charles River (UK) Limited, Manston Road, Margate, Kent, England

3. Animal care

   Housing: 5/sex in suspended polypropylene cages with detachable stainless steel tops and bottoms
   Food: Rat and Mouse (Modified) No. 1 Diet SQC Expanded, Special Diet Services, Ltd., *ad libitum*
   Water: tap water, *ad libitum*
   Acclimation period: 1-2 weeks
   Temperature: 18-23°C
   Humidity: 46-68%
   Air changes: 15-20/hour
   Photoperiod: 12 hour light/dark

B. METHODS

1. Exposure atmosphere generation

The atmosphere was generated as a liquid aerosol using a Braun syringe pump to continuously meter the test material through a Schlick atomizer. The atmospheric concentration was controlled by adjusting the rate of feed of test material and the air flow through the atomizer.

2. Exposure chamber

The cylindrical aluminum exposure chamber (ADG Instruments Limited) had an internal volume of 45l. Airflow through the chamber was approximately 33 air changes/hour and contained 19-21% oxygen. Temperature and humidity were recorded at 30 minute intervals throughout exposure. The exposure concentration of the test material at the breathing zone of the animals was determined twice per hour and nominally at the end of exposure. The nominal concentration was determined by dividing the decrease in weight of test material after exposure by the total volume of air passed through the chamber. Particle size distribution of the test atmosphere was determined twice during exposure with an Marple cascade impactor.

3. Experimental protocol

Five male and five female Sprague Dawley rats were placed into the chamber and exposed nose-only to 6.14 mg/l potassium salts of phosphorous acid for four hours. The animals were observed continuously during exposure and were checked for mortality and clinical signs of toxicity immediately and for 1-2 hours after exposure and at least once daily thereafter for the 14-day study. Body weights were recorded just before exposure and on study days 2, 3, 4, 7, 10, and 14. At the end of the study, the animals were killed by CO_2 asphyxiation and necropsied.

C. RESULTS

1. Exposure conditions

The exposure conditions are summarized below.

Exposure concentration (mg/l):	6.14
Nominal exposure concentration (mg/l):	4.77
Chamber air flow (l/min):	25
Average chamber temperature (°C):	21
Average chamber humidity (%):	45

2. Particle size distribution

The average particle size distribution for the study is summarized in Table 1. The average percent of particles $<3.5\mu$ was 89.2%.

TABLE 1. Particle size distribution of potassium salts of phosphorous acid exposure to rats

Range (μm mg/L)	Sample 1		Sample 2		Average Cumulative %
	% in range	Cumulative %	% in range	Cumulative %	
>10.0	0	100	0	100	100
6.0-9.9	10.7	100	2.6	100	100
3.5-5.9	2.7	89.4	5.8	97.5	93.5
2.0-3.4	4.0	86.7	4.5	91.7	89.2
0.90-1.90	0.0	82.7	5.8	87.2	85.0
0.50-0.89	8.0	82.7	3.2	81.4	82.1
0.25-0.49	18.7	74.7	6.4	78.2	76.5
<0.25	56.0	56.0	71.8	71.8	63.9

Data from page 26 of MRID 43905806.

3. Clinical observations

All animals appeared normal during exposure. Immediately after exposure several of the animals had wet fur and red staining around the eyes and snout. These were attributed to the exposure procedure and not to test material toxicity. No clinical signs of toxicity were observed during the remainder of the study.

4 Body weight

One male and three female rats had slightly decreased body weights of day four after exposure but had recovered the weight loss by day 7. No other effects were observed for the remainder of the study.

5. Necropsy

At necropsy, two male and three female rats had pale lungs while the lungs of a third male were small. All lung to body weight ratios were considered normal except for one female where it was slightly elevated.

6. $\underline{LC_{50}}$

Based on the results, the Sprague Dawley rat LC_{50} for potassium salts of phosphorous acid is >6.14 mg/l. This places the test material in Toxicity Category IV. The study meets the requirements for the determination of an LC_{50} in the rat and is classified as acceptable.

EPA Reviewer: Freshteh Toghrol, Ph.D. F. Toghrol Date: 10/22/96
Biopesticides and Pollution Prevention Division

DATA EVALUATION REPORT

STUDY TYPE: Primary Eye Irritation - Rabbit (152-13)

PC CODE: 076416

DP BARCODE: D226397

CASE: 046750

SUBMISSION: S505790

MRID NO.: 439058-07

TEST MATERIAL: Potassium salts of phosphorous acid

SYNONYMS: Foli-R-Fos 400, mono- and di-potassium salts of phosphorous acid

STUDY NUMBER: 10633

SPONSOR: UIM Agrochemicals (Aust) Pty Limited, PO Box 72, Brisbane Markets, Queensland 4106, Australia

TESTING FACILITY: Iveresk Research International, Tranent, EH33 2NE, Scotland

TITLE OF REPORT: Potassium salts of phosphorous acid primary eye irritation test in rabbits

AUTHOR: J.A. Wilson

REPORT ISSUED: October 20, 1994 (Study completion date)

EXECUTIVE SUMMARY: In a primary eye irritation study, 0.1 ml potassium salts of phosphorous acid was instilled into the right eye of six male New Zealand white rabbits. The contralateral eye served as control. Each rabbit was examined for ocular irritation 1, 24, 48, and 72 hours postinstillation.

No corneal or iridal effects were found. All eyes developed slight to moderate conjunctival erythema and had slight to moderate ocular discharges one hour after instillation. These had resolved within 24 hours. The highest mean ocular irritation score was 4.3.

Based on the study results, **potassium salts of phosphorous acid is classified as slightly irritating** to the eyes of male New Zealand white rabbits and is placed in **Toxicity Category III.** The study is classified as **Acceptable** and **meets** the requirement of §152-13 for a primary eye irritation study in rabbits.

Signed and dated Quality Assurance and Good Laboratory Practice statements were present.

A. MATERIALS

1. Test material: Potassium salts of phosphorous acid

Description: colorless liquid
Composition: supplied as 410 mg/ml phosphorous acid present as 668.9 mg/ml mono- and di-potassium phosphate (41% H_2PO_3, a.i.)
Lot/Batch No.: 2244-3
Stability: stable
Storage: in dark under ambient conditions
pH: 5.7

2. Test animals

Species: rabbit
Strain: New Zealand white
Age: young adult
Weight: 2.22-2.52 kg (at time of dosing)
Source: Harlan Olac Limited, Shaw's Farm, Blackthorn, Bicester, OX6 OTP

3. Animal care

Housing: individually in aluminum cages with grid floors
Food: Standard Rabbit Diet (Special Diets Services, Ltd.), *ad libitum*
Water: tap water, *ad libitum*
Acclimation period: 14 days
Temperature: 18-21°C
Humidity: average 58%
Air changes: 15-20/hour
Photoperiod: 12 hour light/dark cycle

B. METHODS

The eyes of six male rabbits were examined for gross anomalies one day prior to treatment. On the day of treatment, the undiluted test material, 0.1 ml, was instilled into the conjunctival sac of the right eye and the upper and lower lids held together for approximately one second. The untreated contralateral eye served as control. Each rabbit was examined for ocular irritation by using a hand held magnifier and pen torch and the

ocular reactions scored according to the Draize method 1, 24, 48, and 72 hours postinstillation. Disposition of the animals after the study was not reported.

C. RESULTS

Within one hour of instillation, slight conjunctival erythema and slight to moderate ocular discharges were noted from all rabbits. These conditions resolved and were no longer present 24 hours after treatment. No ocular or iridal effects were found. The highest mean ocular irritation score (4.3) occurred one hour after treatment.

Based on the study results, potassium salts of phosphorous acid are classified as slight irritants to the eyes of male New Zealand white rabbits. It is placed in Toxicity Category III.

EPA Reviewer: Freshteh Toghrol, Ph.D. F. Toghrol Date: 10/22/96
Biopesticides and Pollution Prevention Division

DATA EVALUATION REPORT

STUDY TYPE: Primary Skin Irritation - Rabbit (152-14)

PC CODE: 076416

DP BARCODE: D226397

CASE: 046750

SUBMISSION: S505790

MRID NO.: 43905808

TEST MATERIAL: Potassium salts of phosphorous acid

SYNONYMS: Foli-R-Fos 400, mono- and di-potassium salts of phosphorous acid

STUDY NUMBER: 10631

SPONSOR: UIM Agrochemicals (Aust) Pty Limited, PO Box 72, Brisbane Markets, Queensland 4106, Australia

TESTING FACILITY: Iveresk Research International, Tranent, EH33 2NE, Scotland

TITLE OF REPORT: Potassium salts of phosphorous acid primary skin irritation test in rabbits

AUTHOR: J.A. Wilson

REPORT ISSUED: October 20, 1994 (Study completion date)

EXECUTIVE SUMMARY: In a primary skin irritation study, 0.5 ml potassium salts of phosphorous acid was applied to the shaved trunk of six male rabbits. Four hours later, the patches containing the test material were removed and the skin washed. The skin was examined for erythema and edema 1, 24, 48, and 72 hours after patch removal. No erythema or edema was found up to 72 hours after application of the test material.

Based on the study results, **Potassium Salts of Phosphorous Acid is nonirritating to the skin of male New Zealand white rabbits** and is placed in **Toxicity Category IV**. The study is classified as **Acceptable** and meets the requirement of §152-14 for a primary skin irritation study in rabbits.

Signed and dated Quality Assurance and Good Laboratory Practice statements were present.

A. MATERIALS

1. Test material: Potassium salts of phosphorous acid

Description: colorless liquid
Composition: supplied as 410 mg/ml phosphorous acid present as 668.9 mg/ml mono- and di-potassium phosphate (41% a.i.)
Lot/Batch No.: 2244-3
Stability: stable
Storage: in dark under ambient conditions
pH: 5.7

2. Test animals

Species: rabbit
Strain: New Zealand white
Age: young adult
Weight: 1.92-2.33 kg (at time of dosing)
Source: Harlan Olac Limited, Shaw's Farm, Blackthorn, Bicester, OX6 OTP

3. Animal care

Housing: individually in aluminum cages with grid floors
Food: Standard Rabbit Diet (Special Diets Services, Ltd.), *ad libitum*
Water: tap water, *ad libitum*
Acclimation period: 7 days
Temperature: 18-21°C
Humidity: average 50%
Air changes: 15-20/hour
Photoperiod: 12 hour light/dark cycle

B. METHODS

Before application of the test material, the dorsal trunk of six male rabbits was clipped free of hair. The shaved area was inspected for abnormalties. Undiluted test material, 0.5 ml, was applied to an area of 6 cm^2 intact skin and covered with a 2.5×2.5 cm gauze patch. The patch was wrapped with Micropore tape and the trunk bound with Elastoplast Elastic Bandage. Four hours after application, the wrappings were removed and the skin wiped with damp tissues. The animals were observed and scored for skin irritation according to the Draize method 1, 24, 48, and 72 hours after patch removal.

C. RESULTS

There was no evidence of erythema or edema on any of the six rabbits up to 72 hours after treatment. Potassium salts of phosphorous acid is classified as nonirritating to the skin of male New Zealand white rabbits and is placed in Toxicity Category IV. The study meets the requirements for the determination of skin irritation and is classified as acceptable.

EPA Reviewer: Freshteh Toghrol, Ph.D. F. Toghrol Date: 10/22/96
Biopesticides and Pollution Prevention Division

DATA EVALUATION REPORT

STUDY TYPE: Hypersensitivity Incidents - Tier 1 (152-16)

PC CODE: 076416

DP BARCODE: D226397

CASE: 046750

SUBMISSION: S505790

MRID NO.: 43905809

TEST MATERIAL: Potassium salts of phosphorous acid

SYNONYMS: Foli-R-Fos 400, mono- and di-potassium salts of phosphorous acid

SPONSOR: UIM Agrochemicals (Aust) Pty Limited, PO Box 72, Brisbane Markets, Queensland 4106, Australia

TESTING FACILITY: Compliance Services International, 1112 Alexander Ave., Tacoma, WA 98421

TITLE OF REPORT: Potassium salts of phosphorous acid: Hypersensitivity incidents

AUTHOR: L.L. Carlock

REPORT ISSUED: January 3, 1996

RESULTS: The marketing of potassium salts of phosphorous acid by UIM Agrochemicals (Aust.) Pty Ltd., as 20% (Foli-R-Fos 200) or 40% (Foli-R-Fos 400) preparations began in 1985. The products are registered for use in Australia, New Zealand, Papua New Guinea, Thailand, Indonesia, and Malaysia. In addition, they have been shipped to and used experimentally in the following countries: Colombia, the Philippines, Costa Rica, Taiwan, Israel, Ghana, and Austria. In over ten years of commercial application, no reports of skin irritation or repeated use resulting in hypersensitization to potassium salts of phosphorous acid have been received by the Sponsor.

The study is classified as **Acceptable** and meets the requirement of §152-16 for a report on Hypersensitivty Incidents - Tier 1. The data waiver request is acceptable.

EPA Reviewer: Freshteh Toghrol, Ph.D. F. Toghrol Date: 10/22/96
Biopesticides and Pollution Prevention Division

DATA EVALUATION REPORT

STUDY TYPE: Cellular Immune Response (152-18) - Waiver Request

TOX. CHEM. NO: 076416

DP BARCODE: D226397

CASE: 046750

SUBMISSION: S505790

MRID NO.: 439058-11

TEST MATERIAL: Potassium salts of phosphorous acid

SYNONYMS: Foli-R-Fos 400, mono- and di-potassium salts of phosphorous acid

SPONSOR: UIM Agrochemicals (Aust) Pty Limited, PO Box 72, Brisbane Markets, Queensland 4106, Australia

TESTING FACILITY: Compliance Services International, 1112 Alexander Ave., Tacoma, WA 98421

TITLE OF REPORT: Potassium salts of phosphorous acid: Cellular immune response - Tier 1

AUTHOR: L.L. Carlock

REPORT ISSUED: October 11, 1995

DISCUSSION: The study author provided the salient results of studies conducted to satisfy guideline requirements 152-10 through 152-14 (MRID Nos. 43905804-43905808), 152-17 (MRID No. 43905810), and 154-6 through 154-9 (MRID Nos. 43905812-43905814 and 43905816-43905817). These studies show the test material to have low toxicity, but do not support the decision whether a waiver should be granted for the guideline requirements for cellular immune response (152-18). Also included with the report were several internal and external US EPA communications stating that the test material is structurally similar and functionally identical to naturally occurring plant substances and that the test material has a nontoxic mode of action for the control of downey mildew and root fungi. An additional

document (MRID No. 43905809), stated that after approximately 10 years of commercial use, no incidences of hypersensitization induced by the test material have been reported.

Based on the test material being structurally similar and functionally identical to naturally occurring substances and because no instances of hypersensitization have been reported, the reviewer recommends that a conditional waiver be granted for Cellular Immune Response (152-18) studies. Should the Sponsor receive reports showing that the immune system of humans or animals has become sensitized and/or become compromised from exposure to the test material, the need for studies on cellular immune response will need to be reevaluated.