

US EPA ARCHIVE DOCUMENT

8-21-84



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

003921

Aug 21, 1984 OFFICE OF PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Propachlor Registration Standard, Toxicology Data

TO: Robert Taylor PM-25
Registration Division (TS-767)

FROM: Alex Arce *[Signature]*
Toxicology Branch
HED (TS-769)

THROUGH: *[Signature]* 8/15/84
Robert P. Zenzian PhD, Acting head
Review Section III

William Burnam, Chief
Toxicology Branch

WAB
8-21-84

Attached is the Toxicology chapter of the Propachlor
Registration Standard.

C. S. Barry

[Handwritten initials]

PROPACHLOR

Herbicide

Contains IBT list of studies (invalid data), one-liners and additional information

VI. TOXICOLOGY

- A. Toxicity Profile
 - B. Human and Domestic Animal Hazard Evaluation
 - C. Summary of Data Gaps
-

A. Toxicology Profile:

1. Acute Effects:

Sufficient data are available to show that Technical Propachlor has a low acute oral toxicity to mammals (MRID 00104350). The acute oral LD₅₀ for rats, male and female, is 1.8 (1.5-2.1) g/kg. Toxicity Category III. There are sufficient data available to demonstrate that Technical Propachlor has a low acute dermal toxicity and does not induce severe skin irritation to mammals (MRID 00104351, acute dermal; and MRID 00104353, dermal irritation). The acute dermal LD₅₀ for rabbits is greater than 20 g/kg. Toxicity Category IV. For dermal irritation, the toxicity falls in Category III.

The product may cause allergic skin reactions. Thus, tests for dermal sensitization and photosensitization are required.

There are no available data related to the inhalation hazard of Technical Propachlor. The submitted data were classified as invalid. An acute inhalation LC₅₀ test is required. Propachlor is not related to any known group of cholinesterase inhibitors, thus acute delayed neurotoxicity testing is not required.

2. Subchronic Effects:

The subchronic oral effects of Technical Propachlor have not been evaluated. Thus, subchronic oral toxicity testing is required. No sufficient data are available to evaluate the subchronic dermal or the subchronic inhalation hazard of the product.

The intended use of the product is expected to result in subchronic dermal and respiratory contact with the user or the applicator. Thus, data gaps exist for the following studies 21-day dermal, 90-day feeding and subchronic inhalation

Note: Data submitted were classified as invalid.

The product is not a neurotoxic agent and is not related to any other product known to produce neurotoxicity. Subchronic neurotoxicity testing is not required.

3. Chronic Effects:

Chronic Toxicity:

No adequate feeding studies are available to establish the chronic toxicity potential of Technical Propachlor. Studies: 2-year chronic feeding - rats, 3-generation reproduction - rat and 2-year chronic feeding - dogs, were classified as invalid data.

No sufficient data have been submitted to satisfy the chronic toxicity requirements. Data gaps exist. Refer to tables.

Oncogenicity.

There are no acceptable data available to evaluate the oncogenicity potential of the product. The submitted data were classified as invalid. Data gaps exist for oncogenicity.

Teratogenicity:

A teratology test in rats (MRID# Not Assigned) shows that, at the highest dose level tested, the product failed to induce teratogenic, fetotoxic or maternal effects. The HDT was 200 mg/kg/day.

A second teratology study is required. If the study is accepted as core minimum or better, the requirements for teratology will be satisfied.

3-Generation Reproduction:

The submitted data were classified invalid. Data gaps for 3-generation reproduction have to be fulfilled.

Mutagenicity:

The requirements for mutagenicity testing have not been satisfied: the submitted studies were classified Not Acceptable.

Data gaps exist for mutagenicity testing in the following categories: gene mutation, structural chromosomal aberration, and other genotoxic effects.

Special Testing

General Metabolism:

Data are available to assess the ability of mammals to absorb or excrete Propachlor (MRID 0002913). The submitted data show that the soluble metabolic breakdown product is excreted via urine or feces.

The submitted data are ^{not} adequate to satisfy the reregistration requirements. The used protocol does not satisfy our guidelines

Domestic Animal Safety:

There are not data available to assess the animal safety of the product.

Data gaps exist for human and domestic animal safety.

Human Effects:

No data related to human effects are available. The product may induce sensitization, allergic skin reactions and photosensitization due to its chemical structure. Products containing aniline are known to induce photosensitivity and/or photosensitization. ~~Domestic animal safety.~~

B. Human and Domestic Animal Hazard Assessment:

Although, propachlor has a low acute toxicity to mammals via the oral and dermal routes, it does produce severe eye irritation, but it is not a severe dermal irritant. Propachlor may induce photosensitivity or photosensitization due to the presence of aniline in its composition.

The inhalation hazard has to be evaluated.

An assessment of the hazard due to long-term exposure is not feasible due to the lack of reliable data. The product failed to induce teratogenicity while tested in the rat. The oncogenic and mutagenic potential of propachlor has to be properly evaluated. Human and domestic animal hazards have to be studied.

C. Summary of Data Gaps:

Inhalation
Dermal sensitization
Photosensitization
90-day feeding
21-day subchronic dermal
90-day subchronic dermal
90-day inhalation
Oncogenicity
Teratogenicity (2 species) another species (rabbit)
Chronic toxicity - 2 species
Gene Mutation
Chromosomal aberration
Other genotoxic effects as appropriate for the test
substance, e.g., numerical chromosome aberration, direct
DNA damage and repair.
Animal safety
General metabolism

The data submitted on behalf of the registration of Propachlor has been reviewed previously and found to be "Not Acceptable." Most of the submitted data was found to be invalid (I B T) . A list of such studies is attached with this Generic Standard . Due to the large number of invalid studies , at this point in time, it is not possible to assess the toxicological parameters of the product.

TOLERANCE REASSESSMENT

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Tolerances have been established for propachlor on a number of food and other crops and commodities.

The Acceptable Daily intake (A D I) was set using a 90 day feeding study - rat, with a No Observable Effect Level (NOEL) of 13.3 mg/kg or 266.00 ppm . A 2000 fold safety factor was used and the A D I was calculated as 0.0067 mg/kg/ day with a Maximum Permissible intake (M P I) of 0.3990 mg/day for a 60 kg person . The latest T M R C (Theoretical maximum residue contribution) for propachlor , based on established tolerances is 0.0210 mg/-day for 1.5 kg diet . The percentage of the A D I utilized is 5.26 % .-

No new tolerances will granted for this product because of the extensive data gaps , as enumerated in the attached list .

The previous tolerances were granted because the residues were negligible or the crop in question was of minor uses and it was decided that No burden was introduced by approval of the tolerances .

It is recommended to stop granting tolerances till the problem with the large data gaps is clarified

NOTE A sample of the last " Current action is included.
The last action was not approved by the Toxicology Branch Tolerances granted using a 90 day feeding study , are subjected to re- evaluation upon submission of a chronic study.



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

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APR 17 1984

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Section 18; 84-NJ-02; Emergency request for an exemption for the use of the herbicide propachlor (EPA Reg. 524-331 and 524-152) to control grasses in cabbages in New Jersey.
CASWELL #194

TO: Don Stubbs (41)
Emergency Response Section
Registration Division (TS 767)

FROM: D. Stephen Saunders Jr., Ph.D.
Toxicologist, Review Section V
Toxicology Branch/HED TS-769C

THRU: Laurence D. Chitlik, DABT.
Section Head, Review Section V
Toxicology Branch/HED TS 769C
and
Bill Burnam, Chief
Toxicology Branch/HED TS-769C

Chemical: Propachlor, Ramrod
2-chloro-N-isopropylacetanilid

Action Requested:

An emergency exemption for the State of New Jersey for the use of the herbicide Propachlor (Ramrod 4L or Ramrod 20G) to control grasses in cabbage.

Recommendation:

This action request is not toxicologically supported because:

- 1) Extensive data gaps exist for this chemical, and structural analogues have been shown to be carcinogenic (see discussion).
- 2) The proposed use would result in an increase of 106% of the existing TMRC.

08

Proposed Use:

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This request would allow one application of 4.0-6.0 lbs a.i./acre of Ramrod 4L (EPA Reg. 524-331) or Ramrod 20G (EPA Reg. 524-152) in counties of Cumberland, Atlantic, Gloucester, Salem, Monmouth, and others in the State of New Jersey.

The total amount of pesticide to be used is 2,000 lbs a.i., and a preharvest interval of 45 days is proposed. The chemical will be used as a preemergence herbicide. A total of approximately 850 acres (25% of 3400 acres) will be treated. (Note: 4.0 lbs/acre x 850 acres = 3400 lbs which is greater than the 2000 lbs requested).

The exemption is requested from April 1, 1984 to October 1, 1984.

Discussion:

The residue level was set by Residue Chemistry Branch at 2.0 ppm (see memo of 3-28-84 from S. Malak to D. Grubbs).

Studies that were part of the data base for this chemical but were conducted by IBT and have been invalidated include:

Mouse oncogenicity	21 day dermal - rabbit
2 year chronic - dog	4 week oral - mouse
3 generation reproduction - rat	rabbit teratology
90 day dust inhalation	
2 year chronic - rat	mouse dominant lethal

These studies are now lacking, and comprise a data gap for propachlor.

A rat teratology study was recently submitted that was Core Minimum, and demonstrated a NOEL of 200 mg/kg/day (HDT) for teratogenicity, fetotoxicity, and maternal toxicity.

It is apparent that there is virtually no chronic toxicity data available from which to make a hazard evaluation. Other structural analogues of propachlor, namely Metolachlor, Alachlor, and Acetochlor have been demonstrated to be carcinogenic in chronic feeding studies.

Based on the residues set by RCB, the proposed use of propachlor would result in an addition of 0.0222 mg/day to the existing TMRC of 0.0210, which would be an increase of 106%. The ZADI would be increased from 5.26% to 10.83%.

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ACCEPTABLE DAILY INTAKE DATA

RAT, Older	NOEL	S.F.	PADI	MPI
mg/kg	ppm		mg/kg/day	mg/day (60kg)
13.300	266.00	2000	0.0067	0.3990

Published Tolerances

CROP	Tolerance	Food Factor	mg/day (1.5kg)
Sorghum(147)	0.250	0.03	0.00011
Corn, grain(68)	0.100	1.00	0.00150
Cottonseed (oil)(41)	0.100	0.15	0.00022
Corn, sweet(40)	0.100	1.43	0.00215
Eggs(54)	0.020	2.77	0.00083
Milk&Dairy Products(93)	0.020	28.62	0.00858
Meat, inc poultry(89)	0.020	13.85	0.00415
Peas(117)	0.200	0.69	0.00208

MPI 0.3990 mg/day (60kg) TMRC 0.0196 mg/day (1.5kg) % ADI 4.92

negligible Tolerances

Unpublished, Tox Approved 0E2278

CROP	Tolerance	Food Factor	mg/day (1.5kg)
Flax Seed(182)	2.000	0.03	0.00135

MPI 0.3990 mg/day (60kg) TMRC 0.0210 mg/day (1.5kg) % ADI 5.26

minor crop

Current Action 84-NJ-02 [Section 18]

CROP	Tolerance	Food Factor	mg/day (1.5kg)
Cabbage, sauerkraut(22)	2.000	0.74	0.02207

MPI 0.3990 mg/day (60kg) TMRC 0.0431 mg/day (1.5kg) % ADI 10.79

Not approved
DRAFT

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TABLE A
GENERIC DATA REQUIREMENTS FOR CHEMICAL

Data Requirement	Composition ^{1/}	Use 2/ Patterns	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)? ^{3/}
<u>§ 158.135 Toxicology</u>					
<u>ACUTE TESTING:</u>					
B1-1 - Oral LD50 - Rat	TGAI		Yes	00104350	No
B1-2 - Dermal LD50	TGAI		Yes	00104351	No
B1-3 - Inhalation LC50 - Rat	TGAI		No		Yes
B1-7 - Acute Delayed Neurotoxicity - Hen	TGAI		Not Required		No
<u>SUBCHRONIC TESTING:</u>					
B2-1 - 90-Day Feeding - Rodent, Non-rodent	TGAI		No		Yes
B2-2 - 21-Day Dermal	TGAI		No		Yes
B2-3 - 90-Day Dermal	TGAI		No		Yes
B2-4 - 90-Day Inhalation -	TGAI		No		Yes
B2-5 - 90-Day Neurotoxicity - Hen or Mammal	TGAI		Not Required		No

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1/ Composition: TGAI = Technical grade of the active ingredient.
 2/ The use pattern are coded as follows: A = Terrestrial, Food Crop; B = Terrestrial, Non-Food
 C = Aquatic, Food Crop, D = Aquatic, Non-Food; E = Greenhouse, Food Crop; F = Greenhouse, Non-Food;
 G = Forestry; H = Domestic Outdoor; I = Indoor.
 3/ Data must be submitted no later than _____.

TABLE A
 GENERIC DATA REQUIREMENTS FOR CHEMICAL

Data Requirement	Composition ^{1/}	Use 2/ Patterns	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)? ^{3/}
§ 158.135 Toxicology (continued)					
CHRONIC TESTING:					
83-1 - Chronic Toxicity - 2 species: Rodent and Non-Rodent	TGAI		No		Yes
83-2 - Oncogenicity Study - 2 species: Rat and Mouse preferred	TGAI		No		Yes
83-3 - Teratogenicity - 2 species.	TGAI		Partially		Yes
83-4 - Reproduction, 2-generation	TGAI		No		Yes
MUTAGENICITY TESTING:					
84-2 - Gene Mutation	TGAI		No		Yes
84-2 - Chromosomal Aberration	TGAI		No		Yes
84-2 - Other Mechanisms of Mutagenicity Hen or Mammal	TGAI		No		Yes

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1/ Composition: TGAI = Technical grade of the active ingredient.
 2/ The use pattern are coded as follows: A = Terrestrial, Food Crop; B = Terrestrial, Non-Food
 C = Aquatic, Food Crop, D = Aquatic, Non-Food; E = Greenhouse, Food Crop; F = Greenhouse, Non-Food;
 G = Forestry; H = Domestic Outdoor; I = Indoor.
 3/ Data must be submitted no later than _____.

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TABLE A
 GENERIC DATA REQUIREMENTS FOR CHEMICAL

Must Additional
 Data Be Submitted
 Under FIFRA Section
 3(c)(2)(B)?^{3/}

Bibliographic
 Citation

Does EPA Have Data
 To Satisfy This
 Requirement? (Yes,
 No or Partially)

Use ^{2/}
 Patterns

Composition^{1/}/

Data Requirement

§ 158.135 Toxicology.
 (continued)

SPECIAL TESTING:

85-1 - General Metabolism	PAI or PAIRA	Yes	00026913	No
85-2 - Domestic Animal Safety	Choice	No		Yes

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1/ Composition: TGAI = Technical grade of the active ingredient.
 2/ The use pattern are coded as follows; A = Terrestrial, Food Crop; B = Terrestrial, Non-Food
 C = Aquatic, Food Crop, D = Aquatic, Non-Food; E- Greenhouse, Food Crop; F = Greenhouse, Non-Food;
 G = Forestry; H = Domestic Outdoor; I = Indoor.
 3/ Data must be submitted no later than _____.

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DCR-44517:A.Arce:Raven:557-2226:tar:HED-09:6/21/84:Del.7/2/84
DCR-44521:A.Arce:Raven:557-2226:KIM:HED-09:6/27/84:Del.7/2/84

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHEMICAL

Data Requirement	1/ Composition	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)? ^{2/}
<u>§ 158.27 Toxicology</u>				
<u>ACUTE TESTING:</u>				
81-1 - Oral LD ₅₀ - Rat	MP			
81-2 - Dermal LD ₅₀	MP			
81-3 - Inhalation LC ₅₀ - Rat	MP			
81-4 - Primary Eye Irritation - Rabbit	MP			
81-5 - Primary Dermal Irritation	MP			
81-6 - Dermal Sensitization and photosensitization	MP	No		Yes=
1/ Teratology study using rabbit is required.				

1/ Composition: MP = Manufacturing-Use product.

2/ Data must be submitted no later than _____.

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TOX. Chem No. Propachlor 194

Results: LD₅₀, LC₅₀, PIS, NOEL, LEL

EPA Accession No.

Material

Study/Lab/Study #/Date

Material

Results: LD₅₀, LC₅₀, PIS, NOEL, LEL

EPA Accession No.

Tox Category

Doc. No.

Doc. No.

TOX. Chem No.	Study/Lab/Study #/Date	Material	EPA Accession No.	Results: LD ₅₀ , LC ₅₀ , PIS, NOEL, LEL	Tox Category	Doc. No.
0104350	Acute oral LD ₅₀ , rat Bio/dynamics #4887-77 8/6/79	94.5% propachlor	241292	LD ₅₀ = 1.8 (1.5-2.1) g A.I./kg	III	minimum 001387
0104351	Acute Dermal LD ₅₀ , rabbit Bio/dynamics #4887-77 12/21/78	94.5% propachlor	241292	LD ₅₀ > 20 g/kg	IV	minimum 001387
0104352	Primary eye irritation rabbit Bio/dynamics #4889-77 8/6/79	94.5% propachlor	241292	Corneal opacity with stippling and ulceration, slight iris irritation, conjunctival redness, chemosis, discharge and necrosis at 14 days.	supple- mentary 001387	
0104353	Primary Dermal irrita- tion, rabbit Bio/dynamics #4890-77 8/6/79	94.5% propachlor	241292	By 72 hr. abraded and intact sites showed erythema and slight edema.	IV	minimum 001387
0104342	Acute oral LD ₅₀ , rat Bio/dynamics #4891-77 5/16/79	propachlor 65% WP	241292	LD ₅₀ = 1.9 (1.6-2.2) g/kg	III	minimum 001386
	Acute dermal LD ₅₀ rabbit Bio/dynamics #4892-77 5/7/79	propachlor 65% WP	241292	LD ₅₀ = 4 g/kg	III	minimum 001386
	Primary eye irritation rabbit Bio/dynamics #4893-77 8/6/79	propachlor 65% WP	241292	Corneal opacity, conjunctival redness, chemosis discharge, corneal stippling, ulceration and necrosis at 24 hr. Opacity, redness, stippling and pannus at day 14.	supple- mentary 001386	

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MRID	Study/Lab/Study #/Date	Material	EPA Accession No.	Results: LD50, LC50, PIS, NOEL, LEL	Tox Category	CORE/Grade/Doc. No.
	Acute inhalation LC50 rat	65% WP		LC50 >220 mg/L for 1 hr	IV	001381
	Acute inhalation LC50 rat IBT #663-06289	65% WP		LC50 >4.13 mg/L for 6 hr	III	minimum 001384
	20 day dermal, rabbit	65% WP		LEL = 35.2 mg/kg (lowest level tested) mild hyperkeratization, mild subacute inflammation		001381
0025528	Acute oral LD50, rat, Younger Labs #Y-78-140	propachlor 42%		LD50 = 4700 (4090-5410) mg/kg	III	minimum 001385
	Acute dermal LD50 rabbit Younger Labs #Y-78-140	propachlor 42%		LD50 > 3160 mg/kg	III	minimum 001385
	Primary dermal irritation, rabbit Younger Labs #Y-78-140	propachlor 42%		PIS Index = 6.4	II	minimum 001385
	Primary eye irritation rabbit Younger Labs #Y-78-140	propachlor 42%		slight corneal dullness, severe erythema and slight edema of conjunctiva and copious discharge at 24 hr. All normal by day 14.	II	minimum 001385

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MRID	Study/Lab/Study #/Date	Material	EPA Accession No.	Results: LD50, LC50, PIS, NOEL, LEL	Tox Category	CORE Gr Doc. N
	Primary dermal irritation, rabbit Bio/dynamics #4898-77 8/6/79	propachlor 20% granular	241292	PI Index = 1.8	IV	minimum 001389
	Primary dermal irritation, rabbit	20% granular		very slight irritant		001381
	24 hr dermal, rabbit	20% granules		LEL = 3.1 g/kg body weight loss		001381
	Acute oral LD50, rat	4 lb/gal		LD50 = 4.7 g/kg	III	minimum 001388
	Acute dermal LD50 rabbit Younger Labs	4 lb/gal		LD50 = 3.16 g/kg	III	minimum 001388
	Primary eye irritation rabbit			Slight dullness and mild redness after 7 days.		001381
	Primary dermal irritation, rabbit Bio/dynamics #4894-77 8/6/79	propachlor 65% WP	241292	PIS Index = 3.4	III	minimum 001386
00093266	Acute oral LD50, rat Industrial Biology Lab, July 10, 1964	65% WP		LD50 = 1200 (1000-1440) mg/kg	III	00138
00093513	Acute dermal LD50 rabbit, Industrial Biology Laboratory, June 3, 1966	65% WP		LD50 = 380 (220-660) mg/kg	II	001381 minimum

003321

TOX Chem No. Propachlor 194

Study/Lab/Study #/Date	Material	EPA		Tox Category	CORE/Grade/ Doc. No.
		Accession No.	Results: LD ₅₀ , LC ₅₀ , PIS, NOEL, LEL		
Acute dermal LD ₅₀ rabbit Younger Labs	propachlor & atrazine WP		3160 < LD ₅₀ < 5010 mg/kg	III	supplement- ary 001383
Primary eye irritation rabbit Younger Labs	propachlor & atrazine WP		Moderate to severe erythema, slight edema and copious dis- charge within 48 hr. Normal by day 7.	II	supplement- ary 001383
Primary dermal irrita- tion rabbit Younger Labs	propachlor & atrazine WP		PIS Index = 3.3	III	supplement- ary 001383
Acute inhalation LC ₅₀ rat Younger Labs #Y-78-140	propachlor 42%		LC ₅₀ > 10.9 mg/L for 6 hr.	III	supple- mentary 001385
Acute oral LD ₅₀ , rat Bio/dynamics #4895-77 5/5/79	propachlor 20% granular	241292	LD ₅₀ = 4.0 (3.3-4.7) g/kg	III	minimum 001389
Acute dermal LD ₅₀ rabbit Bio/dynamics #4896-77 12/21/78	propachlor 20% granular	241292	LD ₅₀ > 20 g/kg	III	minimum 001389
Primary eye irritation rabbit Bio/dynamics #4897-77 8/6/79	propachlor 20% granular	241292	Corneal stippling and ulceration, iris irritation, conjunctival redness, chemosis, discharge and necrosis at 14 days.		supple- mentary 001389

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90-day feeding, dog
Waseter, F.X. et al.
International Research
Development
July 10, 1964

Acute inhalation LC₅₀
rat
Younger Labs #Y-78-139
8/14/78

Primary eye irritation
rabbit
Younger Labs #Y-78-139
8/14/78

Primary dermal irrita-
tion, rabbit
Younger Labs #Y-78-139
8/14/78

Acute oral LD₅₀, rat

65% W.P.

propachlor
31.5%
atrazine
10.5%

propachlor
31.5%
atrazine
10.5%

propachlor
31.5%
atrazine
10.5%

propachlor &
atrazine WP

NOEL = 133.3 mg/kg (highest
level tested).
Dose level 1.3, 13.3, & 133.3
mg/kg

LC₅₀ > 9.5 mg/L for 6 hr.

Slight to moderate erythema,
congested iris, slight edema,
copious discharge and corneal
dullness within 24 hr. All
eyes normal in 5-7 days.

PIS Index = 6.0
.72 hr.

LD₅₀ = 1620 (1460-1800) mg/kg

Minimum

minimum
001384

minimum
001383
001384

guideline
0001383
001384

supplement-
ary
001383

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TOX Chem No. Propachlor 194

Study/Lab/Study #/Date	Material	EPA Accession No.	Results:		Tox Category	CORE Grade/ Doc. No.
			LD ₅₀ , LC ₅₀ , PIS, NOEL, LEL			
Acute oral LD ₅₀ , rat	propachlor 48.1% atrazine 20.8%		LD ₅₀ = 1.79 (1.46-2.19) g/kg		III	001382
Acute demal LD ₅₀ rabbit	propachlor 48.1% atrazine 20.8%		LD ₅₀ > 2 g/kg		III	001382
Acute inhalation LC ₅₀ rat	propachlor 48.1% atrazine 20.8%		LC ₅₀ > 200 mg/L in 1 hr		IV	001382
Primary eye irritation rabbit	propachlor 48.1% atrazine 20.8%		irritation at 72 hr.		II	001382
Primary demal irrita- tion, rabbit	propachlor 48.1% atrazine 20.8%		erythema & severe edema at 72 hr.		II	001382
Acute oral LD ₅₀ , rat Younger Labs #Y-78-139 8/14/78	propachlor 31.5% atrazine 10.5%		LD ₅₀ = 3800 (3270-4410) mg/kg		III	minimum 001384
Acute Dermal LD ₅₀ rabbit Younger Labs #Y-78-139 8/14/83	propachlor 31.5% atrazine 10.5%		LD ₅₀ > 5010 mg/kg		III	minimum 001384
Teratology - Rat Interna- tional Research and Development IR-81-263 - 3/30/82	Technical	248368	Teratogenic NOEL >= 200 mg/ kg/day (HDT) Fetotoxic NOEL >= 200 mg/kg/ day (HDT) Maternal NOEL >= 200 mg/kg/ day (HDT)			Minimum 002402

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Entry No.		Refer to Entry No.
426	2-Chlorofluorene-9-carboxylic acid [chlorfluren (ISO)]	
427	Chloroform [CAS 67-66-3, ENT-24207] alpha-Chlorohydrin	491
428	2-Chloro-9-hydroxyfluorene-9-carboxylic acid [chlorflurecol (BSI), chlorflurenol (ISO)]	
429	2-Chloro-4-(hydroxymercuri)phenol or Hydroxymercurichlorophenol [Semesan, CAS 538-04-5]	
429.5	2-Chloro-N-(hydroxymethyl)acetamide [Grotan HDII, Grotan HD2, Grotan DF-35]	
430	2-Chloro-4-[(hydroxymethyl)amino]-6-(isopropylamino)- s-triazine [ACD 15 M]	
431	5-Chloro-7-iodo-8-quinolinol (CA) Chloro IPC	1243
	2-Chloro-N-(isobutoxymethyl)-2',6'-acetoxyldide (CA)	631
432	2-Chloro-N-isopropylacetanilide [propachlor (ISO), Ramrod, CP 31393, CAS 1918-16-7]	
	Chloromebuform	286
433	5-Chloro-2-mercaptobenzothiazole, zinc salt S-[6-Chloro-3-(mercaptomethyl)-2-benzoxazolinone] O,O-diethyl phosphorodithioate	1640
435	o-(Chloromercuri)phenol [hydroxychloromercuribenzene]	
436	3-(3-Chloro-4-methoxyphenyl)-1,1-dimethylurea [metoxuron (ISO)]	
437	3-(Chloromethoxy)propylmercuric acetate 2-Chloro-6-methoxy-4-(trichloromethyl)pyridine	1764
	4-Chloro-5-(methylamino)-2-(alpha,alpha,alpha- trifluoro-m-tolyl)-3(2H)-pyridazinone	1504
	Chloromethyl butanethiosulfonate	440
438	Chloromethyl p-chlorophenyl sulfone [lausetone neu]	

Baswell
194

IDENTIFICATION	ROUTE	SPECIES	SEX	AGE	STATUS	REMARKS
1173	Chronic Oral	Dog	♂	RI	N/A	
1174	18 month oral	Mouse	♂	RI	N/A	
J-1175	Teratology	Rabbit	♀	I	N/A	
1172	Chronic Oral	Rat	♂	RI	N/A	
1714	Dietary	Quail	♂	I	N/A	
1716	4 day toxicity	Treat & Biosill	♂	I	N/A	
1174	18 month carcinogenicity	Mouse	♂	RI	N/A	
1-2810	LC50	Duck	♂	I	N/A	
1-3021	LC50	Quail	♂	I	N/A	
A-7183	Subacute Decoral	Rabbit	♂	RI	N/A	3
A-1330	Subacute Decoral	Rabbit	♂	RI	N/A	

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CHEMICAL RECORD

Prof. ... 003321

1BT Studies

Case No.	Study Title	Species	Route	Exposure	Study Type	Results	Remarks
63-6289	Chronic Inhalation	Rat		U	RI	N/A	
E-1751	Residue	Quail		U	V	V	Replacement not needed
E-1177	Mutagenicity	Mouse		U	RI	N/A	
22-1176	Reproduction	Rat		U	RI	N/A	
0-5083	Subchronic Oral	Rat		U	I	N/A	
0-5084	Subchronic Oral	Dog		U	I	N/A	
B-5063	Chronic Oral	Rat		U	I	N/A	
B-5064	Chronic Oral	Dog		U	I	N/A	
B-5065	Reproduction	Rat		U	I	N/A	
							3

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CHEMICAL RAMROD
(CONTINUED) 003921

FICHE/MASTER ID 00065893

CONTENT CAT 01

003921

ARNOLD, D. (1968) REPORT TO ...: THREE-GENERATION REPRODUCTION STUDY IN ALBINO RATS--RAMROD METABOLITE: RESULTS OF THE SECOND GENERATION (F1 PARENTS--F2A AND F2B PROGENY): INT NO. P5065. (UNPUBLISHED STUDY RECEIVED ON UNKNOWN DATE UNDER 8F0672; PREPARED BY INDUSTRIAL BIO-TEST LABORATORIES, INC., SUBMITTED BY MONSANTO CO., WASHINGTON, D.C.; CDL:091181-A)

invalid

FICHE/MASTER ID 00065895

CONTENT CAT 02

BARAN, J. (1968) STATUS SUMMARY: TWO-YEAR CHRONIC ORAL TOXICITY OF RAMROD METABOLITE (SOYBEAN)--BEAGLE DOGS: INT NO. C5064. (UNPUBLISHED STUDY RECEIVED APR 2, 1968 UNDER 8F0672; PREPARED BY INDUSTRIAL BIO-TEST LABORATORIES, INC., SUBMITTED BY MONSANTO CO., WASHINGTON, D.C.; CDL:091181-C)

invalid

SUBST. CLASS = T: CHEM R42704 IS TRANSF.

FICHE/MASTER ID 00065894

CONTENT CAT 02

WOLF, C. (1968) STATUS REPORT: TWO-YEAR CHRONIC ORAL TOXICITY OF RAMROD METABOLITE: ALBINO RATS: INT NO. B5063. (UNPUBLISHED STUDY RECEIVED APR 2, 1968 UNDER 8F0672; PREPARED BY INDUSTRIAL BIO-TEST LABORATORIES, INC., SUBMITTED BY MONSANTO CO., WASHINGTON, D.C.; CDL:091181-H)

invalid

SUBST. CLASS = T: CHEM R42704 IS TRANSF. PRODUCT OF CHEM 019101

FICHE/MASTER ID 00064464

CONTENT CAT 01

BARAN, J. (1967) REPORT TO MONSANTO CHEMICAL COMPANY: 90-DAY SUBACUTE ORAL TOXICITY OF RAMROD METABOLITE (SOYBEAN)--BEAGLE DOGS: INT NO. C5084. (UNPUBLISHED STUDY RECEIVED OCT 5, 1967 UNDER 8F0642; PREPARED BY INDUSTRIAL BIO-TEST LABORATORIES, INC., SUBMITTED BY MONSANTO CO., WASHINGTON, D.C.; CDL:091114-E)

invalid

SUBST. CLASS = T: CHEM R77424 IS TRANSF. PRODUCT OF CHEM 019101

FICHE/MASTER ID 00075340

CONTENT CAT 01

WOLF, C. (1967) REPORT TO MONSANTO COMPANY: 90-DAY SUBACUTE ORAL TOXICITY OF RAMROD METABOLITE--ALBINO RATS: INT NO. B5083. (UNPUBLISHED STUDY RECEIVED OCT 5, 1967 UNDER 8F0642; PREPARED BY INDUSTRIAL BIO-TEST LABORATORIES, INC., SUBMITTED BY MONSANTO CO., WASHINGTON, D.C.; CDL:091114-D)

invalid

SUBST. CLASS = T: CHEM R77424 IS TRANSF. PRODUCT OF CHEM 019101

FICHE/MASTER ID 00023479

CONTENT CAT 02

MYERS, T.W. (1975) REPORT TO MONSANTO COMPANY: ACUTE DUST INHALATION TOXICITY STUDY IN RATS: INT NO. 663-06289. (UNPUBLISHED STUDY RECEIVED OCT 16, 1979 UNDER KS 79/17; PREPARED BY INDUSTRIAL BIO-TEST LABORATORIES, INC., SUBMITTED BY STATE OF KANSAS FOR MONSANTO CO., WASHINGTON, D.C.; CDL:241182-D)

invalid

SUBST. CLASS = S.

all 5573770

25

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FARM

Bill BURNAM.

**CHEMICALS
HANDBOOK**

1981

PESTICIDE DICTIONARY

BUYER'S GUIDE

PLANT FOOD DICTIONARY

FERTILIZER TRADE NAME

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OTHER NAME: GA 4+7+BA.

ACTION: Plant growth regulator.

TOXICITY: Causes eye irritation, harmful if swallowed.

SIGNAL WORD: WARNING.

APPLICATION: Apples, especially Red Delicious, to improve type (L:D ratio) and increase yield of higher grades.

FORMULATION: Liquid concentrate; 3.6% w/w.

BP: Abbott Laboratories, Chemical and Agricultural Products Div.

Promar — see Diphacin *

Promecarb — see Carbamult *

Prometon — see Pramitol *: combination Atratul 80W *

Prometrex * — see Caparol *

Prometryn — see Caparol *

Promurit — see Muritan *

Pronamide — see Kerb *

Pro-Norfish * — see Rotenone.

Propachlor

CHEMICAL NAME: 2-Chloro-N-isopropylacetanilide.

ACTION: Selective preemergence herbicide.

CHEMICAL PROPERTIES: Melting point 67-76° C.

TOXICITY: Acute oral LD₅₀ (rat), 710 mg/kg.

APPLICATIONS: For control of most annual grasses and certain broadleaf weeds.

FORMULATIONS: 20% Granules, 65% W.P.

See *Bexton* *, *Ramrod* *.

BP: Shen Hong Agricultural Chemical Co., Ltd. (Taiwan)

Propal * — see Mecoprop.

Propamocarb Hydrochloride — see Previcur-N *

Propane

APPLICATION: Used in flame control of weeds in corn, soybeans, cotton, tobacco, strawberries. Rate, 4 to 6 gallons/acre; one-tenth second flame exposure kills young weeds around corn plant.

See *Flame Cultivation, LP-Gas*.

Propanex * — see Propanil.

Propanex-4 — see Propanil.

Propanil

CHEMICAL NAME: 3',4'-Dichlorophenylpropionanilide.

COMMON NAME: *propanil* (BSI, ISO, WSSA).

OTHER NAMES: *Bay 30130, Chem Rice* *, *Crystal Propanil-4* * (discontinued by Crystal Chemical), *DPA*, *FW-734, Montrose Propanil* * (discontinued by IMC Chemical Group), *Prop-Job* * (Ansell), *Propanex* *, *Riselect* *, *Rosanil* * (discontinued by Quimica Estrella), *Stam* * F-34, *Stam* * M-4, *Stampede* * 3E, *Strel* *, *Supernox* *, *Surcopur* *, *Surpur* *, S 10165, *Vertac* *.

PRODUCTS NO LONGER ON MARKET: *DP-35, Prop-Job* *, *Rogue* *, *Plus de Riz* *, *Stam* * LV-10.

ACTION: Selective postemergence herbicide (contact type).

CHEMICAL PROPERTIES: Dark oily liquid. Melting point 90.6-91.6° C.

Ziram *
Improuturon *, Neburon *
Caracron.
Telban *
Methyl Bromide.
Chloropicrin.

COMPOSITION: 0.806% gibberellins A₁A₂.
Plant growth regulator.
Category III.

CAUTION:
Use To form male flowers for seed production
on cucumbers (which normally produce
parthenocarpic fruit).

FORMULATION: 0.806% w/w liquid.
BP: Abbott Laboratories, Chemical and Agricultural Products Div.

COMPOSITION: 10% gibberellin A₁.
Plant growth regulator.
Category III.

CAUTION:
Use To increase yield of sugarcane, to thin and
control sugarcane seedlings, and to delay harvest of
certain seedless grapes, and to delay harvest of
certain grapes.

FORMULATION: Soluble powder.
BP: Abbott Laboratories, Chemical and Agricultural Products Div.

COMPOSITION: *Wet* in combination with
lambda-cyhalothrin, *sulflur*oximeth
and *cyfluthrin* rodenticide.

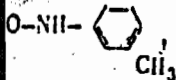
PROPERTIES: Po... concentrate or
... Acute oral LD₅₀ (rat), 325 mg/kg
... MP. (Sulflur oximeth): Lowest
... rat LD₅₀, 1000 mg/kg (NIOSH).

CAUTION:
... waiting for ingestion. Get medical
... and transfusions may be indicated for
... or repeated low doses. Do not
... or give substances by mouth to an
... animal.

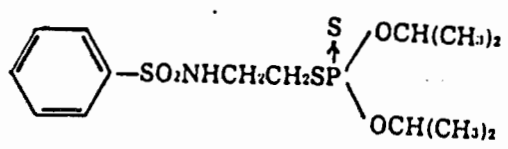
STORAGE CAUTIONS: Keep away
... animals, pets, or wildlife.
... herbicide for farms, storage areas,
... with label.

... concentrate 1% active, 0.05% bait.
... & Chemical Co.
... Agricultural Chemical Co.

... Gibberellins A₁A₂ and 6-benzyl aden...



ACTION: Selective preemergence herbicide.
CHEMICAL PROPERTIES: Viscous amber liquid above 34.4° C, solid below. Specific gravity 1.23 at 20° C.
TOXICITY: Acute oral LD₅₀ (male rat), 1082 mg/kg.
SIGNAL WORD: CAUTION.
APPLICATIONS: *Betasan* provides preemergence control of annual grasses and broadleaf weeds in dichondra and grass lawns. Especially effective for seasonal control of crabgrass and annual bluegrass in grass and dichondra lawns.
FORMULATIONS: Emulsifiable concentrate (4 pounds gallon), granules (12.5%, 7%, 3.6%).
 See *Prepar* *.



Bensulide

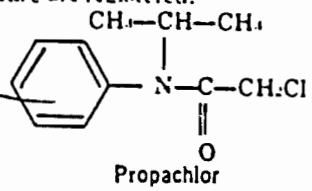
BP: Stauffer Chemical Co. (*Prepar* *)

Bethrodine — see *Balan* *.

Bexton *

CHEMICAL NAME: 2-chloro-N-isopropylacetanilide.
COMMON NAME: *propachlor* (BSI, ISO, WSSA).
OTHER NAME: *Ramrod* * (Monsanto).
ACTION: Herbicide, preemergence to early postemergence.
CHEMICAL PROPERTIES: Light tan solid, melting point at 77° C.
TOXICITY: Acute oral LD₅₀ (rat), 1200-1475 mg/kg for technical. May cause allergic skin reaction. *Bexton* * 4L is much less toxic than stated for technical, also much less toxic than 65% wettable powder.
SIGNAL WORD: WARNING.

APPLICATIONS: For control of most annual grasses and certain broadleaf weeds. Registrations include field corn, hybrid seed corn, silage corn, sweet corn, grain sorghum (milo), green peas (for processing), and soybeans (grown for seed). See label for states where *Bexton* * 4L is registered.
FORMULATIONS: Liquefied flowables containing 4 pounds *propachlor* gallon or premixed 3 pounds *propachlor* + 1 pound *atrazine* gallon; 20% granular.
COMBINATIONS: Tank mixes with *atrazine*, *cyanazine* (Shell *Bladex* *), or *propazine*. Nitrogen fertilizer solution may be used as a carrier instead of water. See Labels for states where *Bexton* * 4L and *Bexton* * *Atrazine Flowable Herbicide Mixture* are registered.



Propachlor

Farm Chemicals Handbook

CHEMICAL NAME: 1,2,3,4,5,6-H₆ also known as benzene hexachloride.
COMMON NAMES: *BHC*; *HCH* (mark), *hexachlor* (Sweden), *hexachlor*.
OTHER NAMES: 666, *Benzahex* (Chemical), *Dol* *, *Dolmix* *, *FBHC* * (Hooker Chemical), *Gammexane*, (*Gifor* *, *Hexablanc* *, *Hexamul* *, *Hexa-Hilbecch* *, *Kotol* * (Shell Chemical Submar

TOXICITY: Alpha-isomer.
SIGNAL WORD: WARNING.

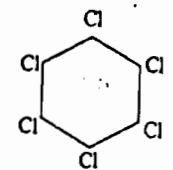
ACTION: Insecticide.
CHEMICAL PROPERTIES: Five isomers in technical *BHC*, of which the gamma isomer having more than slight activity. grade of *BHC* obtained by extraction steps to produce the gamma isomer known as *lindane*.

BHC is practically insoluble in water and chloroform. It does not have as strong fumigant action as *DDT* since it is more volatile.

APPLICATIONS: *BHC* is no longer used and cannot be sold for domestic use. *BHC* formerly had extensive use against insects.

FOREIGN APPLICATIONS: For control of stem borers, etc. in lowland rice (*MTMC*; *Agrovide 6G*, *Lindol 6G* *). liquid seed treatment for the reduction in winter and spring sown cereals.

FORMULATIONS: Dusts, wettable emulsifiable concentrates require high gamma content (high gamma, 36-45% obtain solutions of high enough gamma liquid containing 12.5% gamma *HCH*).
 See *Buntosan* *, *Gamma-BHC*, *Gamm*



BHC

BP: All India Medical Corp. (India); Diamond Shamrock de Mexico (Mexico); Hindustan Insecticides Ltd. (*Hilbecch* * 50WDP) Rhone-Poulenc (France) (*Hexa-Hexamul* *, *Hexapoudre* *); F: Devidayal (Sales) Private Ltd. Form-Chem (Pty) Ltd. (Rep.); Shell Chemicals U.K. Ltd. (*Kotol* *)

Pesticide Dictionary

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ACTION: Nonselective herbicide.

Racumin *

CHEMICAL NAME: 4-Hydroxy-3-(1,2,3,4-tetrahydro-1-naphthyl) coumarin.

COMMON NAME: *coumatetrayl* (BSI, ISO).

OTHER NAMES: *Bay 25634*.

ACTION: Rodenticide (anticoagulant).

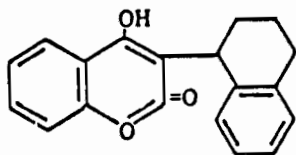
CHEMICAL PROPERTIES: Crystalline. Practically insoluble in water; slightly to difficultly soluble in ether and benzene; soluble in alcohol and acetone.

TOXICITY: Acute oral LD₅₀ (rat) 16,5 mg/kg.

ANTIDOTE: Vitamin K₁ (e.g. *Konakion ** (Hoffman-La Roche)).

APPLICATION: For control of rats and mice.

FORMULATIONS: Powder, ready-made bait, liquid.



Coumatetrayl

BP: Bayer AG (Federal Republic of Germany)
(*Racumin **)

Ragadan * — see Hostaquick *

Raid *

A line of pesticides by S.C. Johnson & Son.

Rametin * — see Maretin *

Ramik * — see Diphacin *

Rampart * — see Phorate *

Ramrod *

CHEMICAL NAME: 2-Chloro-N-isopropylacetanilide.

COMMON NAMES: *propachlor* (BSI, ISO), *propachlore* (France).

OTHER NAME: *Bexton ** (Dow Chemical Co.).

ACTION: A herbicide preemergence to early postemergence.

CHEMICAL PROPERTIES: Light tan solid. Melting point 67-76°C.

TOXICITY: Acute oral LD₅₀ (rat), 710 mg/kg. May cause allergic skin reaction.

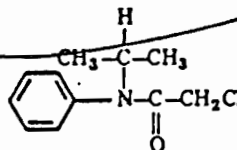
SIGNAL WORD: WARNING.

APPLICATIONS: Used for the control of many grasses and certain broadleaf weeds. Provides control on a variety of soil types. No soil carryover.

Registrations of *Ramrod ** include field corn, hybrid seed corn, silage corn, sweet corn, grain sorghum (milo), green peas (for processing), and soybeans (grown for seed).

FORMULATIONS: Wettable powder 65%, granules 20%, flowable (4 lbs./gal.).

COMBINATIONS: Package (wettable powder and flowable) or tank mix with *atrazine*. Also tank mix with *propazine*. *Ramrod* may be applied in sprayable fluid fertilizers or water.



Propachlor

BP: Monsanto Agricultural Products Co., a unit of Monsanto Co.

Ramucide * — see Chlorophacinone *

Randox *

CHEMICAL NAME: N,N-diallyl-2-chloroacetamide.

COMMON NAMES: *CDA* (WSSA); *allidochlor* (BSI, ISO).

ACTION: Selective preemergence herbicide.

CHEMICAL PROPERTIES: An amber colored oily material. Specific gravity, C: 1.09 at 25°/15.6° C.

TOXICITY: Acute oral LD₅₀ (rat), 750 mg/kg.

SIGNAL WORD: WARNING.

APPLICATIONS: Controls annual grasses and broadleaf in corn, soybeans, sorghum, lima beans, snap beans, tomato transplants, dry beans, cabbage, sweet potatoes, onions, celery, and sugarcane.

FORMULATIONS: 4 pounds/gallon EC.

COMBINATIONS: For celery, tomatoes, potatoes, *Randox* + *Vegadex ** herbicides.

CHEMICAL NAME: Methyl, 3,6-dichloro-o-anisate.

ACTION: Sugarcane ripener.

CHEMICAL NAME: Rosin amine D acetate.

ACTION: Algicide.

APPLICATION: Controls fresh water algae in irrigation systems and prevents formation of algae on surfaces of humidification systems and irrigation installations.

Bay 25634 * — see Dalapon *

Bay 25634 * — see Cacodylic Acid; Sodium Cacodylate.

Bay 25634 * — see Cacodylic Acid; Sodium Cacodylate.

COMPOSITION: A solution of 29% sodium cacodylate and cacodylic acid, with surfactant.

ACTION: Nonselective herbicide.

TOXICITY: 1250 mg/kg.

SIGNAL WORD: CAUTION.

APPLICATION: To destroy weedy sections of lawn and turf preparation for reseeding.

FORMULATION: Liquid + surfactant.

BP: *Cacodylic Acid, Sodium Cacodylate*.

BP: Vmeland Chemical Co.

CHEMICAL NAME: Naphthylindandione.

ACTION: Rodenticide.

Bay 25634 * — see Amitrole; Ammonium Thiocyanate.

*—Indicates trade name. BP—Basic Producer. F—Formulator.
•—Indicates common name. SLN—Special Local Need.