Tox BR ONE-LINER ATTACHED

122804
SHAUGHNESSEY NO.

Completed 3/13/84 John Barrett 1
revised 4/8/88 JB

CHEMICAL PROFILE

Pesticide Name: Avermectin (MK-936)

100 Fish & Wildlife Toxicolgy

Species	Test Material	Result	Category	Reference
100.1 Minimum Requirements				
100.1.1 Avian Acute LD50				
Bobwhite Quail	91% MK-936	>2000 mg/kg	Core	Beavers, 1983
Mallard duck		85 "	Supp. regurgitation	Fink & Beavers, 1981
100.1.2 Avian Dietary LC50				
Bobwhite Quail	91% MK-936	3102(2338-4393)ppm	Core	Beavers, 1983
Mallard Duck	"	383 (302-487) "	Core	"
Bobwhite	"	1417 "	Invalid	Fink & Beavers, 1981
Mallard	"	899 "	Invalid	"
100.1.3 Fish Acute LC50				
Rainbow trout	91% MK-936	3.2(2.2-6.0)ppb	Core	EG&G Bionomics, 1981(Acc. No. 246358
Bluegill Sunfish	91% MK-936	9.6 (5.8-16.0)ppb	Core	"
Bluegill Sunfish	100 mg/kg bait	260 ppm	Supp.	"
Rainbow Trout	100 mg/kg bait	23 ppm	Supp.	"
100.1.4 Aquatic Invertebrate LC50				
Daphnia magna	91% tech	0.34 (0.28-0.39) ppb	Core	"
Daphnia magna	100mg/kg bait	7.6 (5.9-9.9) ppm	Supp.	"
100.2 Additional Terrestrial Laboratory Tests				
Apis mellifera	.03 lb ai/gal water soluble liquid L-676, 863	"foliar residues"... "remain toxic to honey bees 2 days following application"	"Scientifically Sound"	Atkins, 1981. (Acc. no. 252115; EEB file DER's)
Apis millifera	L-638,384 L-640, 806 L-676,863	LD_{50} = 0.408 ug/bee LD_{50} = 0.861 " LD_{50} = 0.542 " "Avermectrin is highly toxic to honey bees"	"Scientically Sound"	Atkins 1980. (Acc. No. 252115; EEB file DER's)

100.3 Additional Aquatic Laboratory tests

Pink Shrimp (Penaeus duorarum)	90.5% tech	96-HR. LC_{50} = 1.6 (0.5-16)ppb	Invalid aeration without measurement plus additional raw data needed - obtained 3/26/85	EG&G Bionomics, 1983 Acc. No. 252115
Blue crab (Callinectes sapidus)	90.5% tech.	96-Hr. LC_{50} = 153 (119-251) ppb	Invalid " aeration without measurement plus additional raw data needed obtained 3/26/85	
Eastern oyster (Crassostrea virginica)	90.5% tech.	48-hr. EC_{50} = 430 (280-580) ppb	CORE - B ~~Invalid~~ additional raw data needed " obtained 3/20/85	
Bluegill Sunfish	MK-936	7 day Flow-through NOEL = 2.3 ppb	N/A	Acc. No. 252115 Ref. D3d

100.4 Phytoxicity Tests

Lemna gibba	91.4% tech	14-day EC_{50} = 3.9 (2.3-6.5)ppm	"Scientifically Sound"	Hollister, 1981 (Acc. No. 246358
Selanastrum capricornutum (freshwater algae)	91.4% tech.	9-day EC_{50} >100 ppm	"Scientically Sound"	"

Mysid shrimp — LC50 = 0.2 ppb — core

Sheepshead minnow — LC50 = 15 ppb — core

Oyster embryo larvae — LC50 = 430 ppb — core

Daphnia magna — MATC >0.03<0.09 ppb; 100% mort at 0.09 ppb — core

Channel catfish — LC50 = 0.024 ppm — core

Carp — LC50 = 0.042 ppm — core

Extract from 2-11-86 review

Summary of Toxicity

Species	Test Material	Results	Category
Bobwhite quail	91%	LD_{50} > 2000 mg/kg	Core
Bobwhite quail	91%	LC_{50} = 3102 ppm	Core
Mallard duck	91%	LC_{50} = 383 ppm	Core
Bluegill	91%	LC_{50} = 9.6 ppb	Core
Rainbow trout	91%	LC_{50} = 3.2 ppb	Core
Daphnia	91%	LC_{50} = 0.34 ppb	Core
Daphnia	MK-936 Tech.	LC_{50} = 0.22 ppb	Core
Daphnia	Avermectin B_{1a}	LC_{50} = 0.42 ppb	Core
Daphnia	Polar metabolite*	LC_{50} = 4.2 ppb (binomial) 21.0 ppb moving average)	Core
Daphnia	Moderately polar	6.3 ppb	Core
Daphnia	Nonpolar metabolite	25.4 ppb	Core
Daphnia	Thin film polar metabolite*	76.7 ppb	Core
Daphnia	8α-Hydroxy Avermectin B_{1a}**	LC_{50} = 25.5 ppb	Core
Daphnia	91.43%	MATC > 0.03 < 0.09 ppb	Core
Shrimp, mysid		LC_{50} = 0.2 ppb	Core
~~Fathead~~ Sheepshead minnow		LC_{50} = 15 ppb	Core
Oyster embryolarvae	48-hr	LC_{50} = 430 ppb	Core

Avermectin is highly toxic to very highly toxic to mammals (mouse LD_{50} = 13 to 23 mg/kg; rat LD_{50} = 10 to 11 mg/kg; weanling rat LD_{50}= 1.5 mg/kg). It has an effect on reproduction in rats at 0.1 to 0.5 mg/kg day.

The nonpolar metabolite has an LD_{50} of > 48 mg/kg in mice. The polar* metabolite has an LD_{50} of > 5000 mg/kg in mice.

*The polar metabolite is the last one formed and is what the parent becomes after about 27 hours.

**Major soil metabolite of Avermectin B_{1a}. This metabolite accounts for up to 20 percent of the total soil residue during the half-life of parent avermectin B_{1a} of 28 to 56 days. Also, the half-life of the metabolite is similar to that of the parent.

Abamectin (MK-936) may persist in the field with a half-life of a month. This was based on a field dissipation study reviewed by EAB (September 5, 1985 review). However, based on another EAB review (August 28, 1985), it is reported that abamectin has a photolytic half-life of 3.5 to 12 hours.

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101 General Toxicology

See attached one-liner from Tox Br.

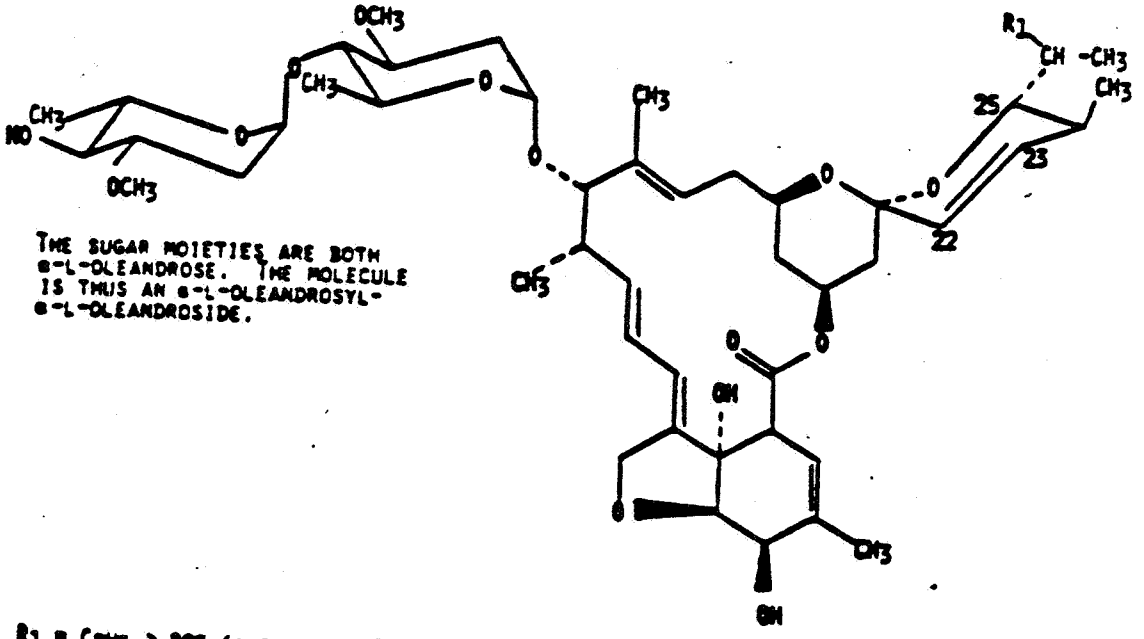
~~References from Toxicology Branch/HED are not available at this time.~~

102 Physical and Chemical Properties

102.1 Chemical Name (MK-936 is a mixture of two sugar moieties):
Avermectin B1a = (5-0-demethylavermectin A_1a)
Avermectin B_1b = (5-0-demethyl)-25-de-(1 methylpropyl) -25-(1-methylethyl) avermectin A_1a).

102.2 Structural Formula

MK-936
AVERMECTIN B_1
L-676.863



THE SUGAR MOIETIES ARE BOTH α-L-OLEANDROSE. THE MOLECULE IS THUS AN α-L-OLEANDROSYL-α-L-OLEANDROSIDE.

R_1 = C_2H_5 ≥ 80% (AVERMECTIN B_{1A}, L-676.895)
R_1 = CH_3 ≤ 20% (AVERMECTIN B_{1B})

102.3 Common Name

MK-936; L676-863; or Avermectin B_1 = (97.5% B_1a + 2.5% B_1b)
for Bla R = CH_2CH_3
for Blb R = CH_3

102.4 Trade Name

Avid 0.15 EC miticide/Insecticide
contains miimum 80% Bla

102.5 Molecular Weight

873.10 (Avermectin Bla)
859.07 (Avermectin Blb)

102.6 Physical State

Technical MK-936

An odorless, off-white to slightly yellow, crystalline solid.

Avid EC

a pale yellow to yellow liquid EC with hexanal odor

102.7 Properties

102.7.1 Solubility

Water $\leq$ 0.01 mg/ml (10 ppm)
ethanol > 3 mg/l

103 Behavior in the Environment

103.1 Soils

The following is a verbatim report of the registrant's mobility and fate in soils data (Acc. No. 252115; references D3b and D3c). EEB has not recieved EAB's review of this data as of 3-20-84. Therefore these data should not yet be considered valid nor acceptable.

The following EAB reviews are on file:

Date	Conclusions
2/5/82	½ life in sandy loam = 4 weeks ½ life in construction sand (coarse) = 10 weeks
4/18/83	Unreviewed report claimed that on soil, photolytic half life = 20 hours
3/28/84	$t_{1/2}$: Avermectin, aerobic conditions, 2 weeks - 2 months depending on soil type. Anaerobic degradation slower or non-existent. Bioaccumulation:, bluegill, 69× whole fish, 30 for filet 110 viscera, stopped accumulation after 10 days. depuration 2 weeks Photodegradation: Rapid photolysis, $t_{1/2}$ life < 12 hrs in water < 1 day in soil Mobility in soil. low tendency to leach

Avermectin science review

Page _____ is not included in this copy.

Pages 7 through 19 are not included in this copy.

The material not included contains the following type of information:

___ Identity of product inert ingredients

___ Identity of product impurities

___ Description of the product manufacturing process

___ Description of product quality control procedures

___ Identity of the source of product ingredients

___ Sales or other commercial/financial information

___ A draft product label

___ The product confidential statement of formula

___ Information about a pending registration action

X FIFRA registration data

___ The document is a duplicate of page(s) _____

___ The document is not responsive to the request

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

103.2 Water

From EAB review by C. Fletcher, 18 April 1983:

"Avermectin B1a is stable to hydrolysis over pH range of 5 to 9 at temperature of 25°C. This conclusion can be extraploated to Avermectin B1b".

4/18/83 EAB review. Unvalidated report claims poor photolytic half life of Avermectin B_{1a} in water = 18 hours.

103.3 Plant

103.4 Animal

From summary of reference D3e Acc. No. 252115 "Uptake, Depuration and Bioconcentration of ^{3}H-Avermectin B1a by Bluegill Sunfish (Lepomis macrochirus)". The following is a verbatim summary. EEB has not yet (3-20-84) received EAB's review of this data, therefore it should not be considered valid nor acceptable:

20

SUMMARY

A dynamic 42-day study was conducted to evaluate the bioconcentration of ^{3}H-Avermectin $B_{1}a$ by bluegill sunfish (Lepomis macrochirus). A flow-through proportional diluter system was used to maintain a mean water concentration of 0.099 µg/l ^{3}H-Avermectin $B_{1}a$ for a 28-day exposure period. Radioanalysis of whole fish, fillet and visceral portions throughout the exposure period indicated a gradual uptake of ^{3}H-Avermectin $B_{1}a$. Daily bioconcentration factors ranged from 19-69, 6.6-33 and 24-110 for whole fish, fillet and viscera, respectively. Uptake tissue concentrations of ^{3}H-Avermectin $B_{1}a$ ranged from 1.9-6.8 ppb for whole fish, 0.66-3.3 ppb for fillet and 2.4-11 ppb for viscera. The fish ceased accumulating ^{3}H-Avermectin $B_{1}a$ at about day 10. The compound appeared to have reached a steady-state plateau as indicated by a linear regression analysis of days 10, 14, 21 and 28 whole fish residue data.

To measure the elimination of ^{3}H-Avermectin $B_{1}a$, the test fish were placed in clean water for 14 days. Radioanalysis throughout the depuration period indicated 95, 91 and 95 percent clearance rates from whole fish, fillet and viscera, respectively. The whole fish concentration of ^{3}H-Avermectin $B_{1}a$ dropped from a day 28 uptake value of 6.8 ppb to 0.32 ppb by day 14 of the depuration period. Fillet levels decreased from 3.0 ppb on day 28 to 0.27 ppb by the end of the study; whereas, viscera concentrations dropped from 11 ppb on day 28 to 0.53 ppb by day 14 depuration.

A two-compartment kinetic model was used for analysis of the uptake-depuration whole fish data. The graphical method employed linear regression analysis and yielded an uptake rate constant (K_{1}) of 11 ppb in fish/ppb in water/day, a depuration rate constant (K_{2}) of 0.21 day^{-1}, and a calculated steady-state bioconcentration factor (BCF) of 52. This latter value was 75% of the actual day 28 whole fish bioconcentration factor of 69.

103.5 Residues

The following is taken verbatim from the registrant's submission Acc. No. 252115 reference D_2 "Residue Data on Non-food Crops and Foliage". It has not yet been reviewed by EAB/HED for validity nor acceptability (as of 3-20-84).

Section D2

Residue Data in Non-Food Crops and Foliage

Avermectin B1 (MK-936) has been found to be subject to rapid degradation under both laboratory and field conditions. Figure 1 summarizes the results of a thin film study with C^{14} avermectin B1a subject to both light (sun lamp) and darkness. The figure shows that approximately 50% of the total radioactivity (RAD) is lost after 6 days under lighted conditions, while little loss was found in similar samples during the same period in darkness. In contrast there was a complete loss of avermectin B_1a under both conditions, however, it occured much more rapidly under light.

Applied under field conditions on citrus trees, avermectin B_1 (MK-936) fruit peel residues (as avermectin B_1a) also decline rapidly to negligible levels. Figure 2 shows the degradation of avermectin B_1a residues on orange peel following the application of MK-936 to orange trees at 6ppm avermectin sprayed to run off with and without the addition of 0.20% crop oil. These data are representative of residues that have been assayed on oranges from individual treated trees in Florida. The figure shows that 4 hours after application, avermectin B1a residues were 9.3 and 21.8 ng/g of peel with and without the addition of oil, respectively. Avermectin B1a degrades in the absence of oil to 1ppb 14 days post application. At that same time, 3.5 ppb of avermectin B_1a remained on the citrus peel when the application was made with the addition of spray oil.

Only trace residues of avermectin B_1a remain 1 day after application at the maximum use rates, and, therefore, do not represent any hazard to humans upon reentry. A more complete description of avermectin B1a degradation quantitatively and qualitatively on citrus products will be included in a Petition for a Temporary Tolerance to be submitted to EPA in 1984.

831208a

Sec D2

FIGURE 1

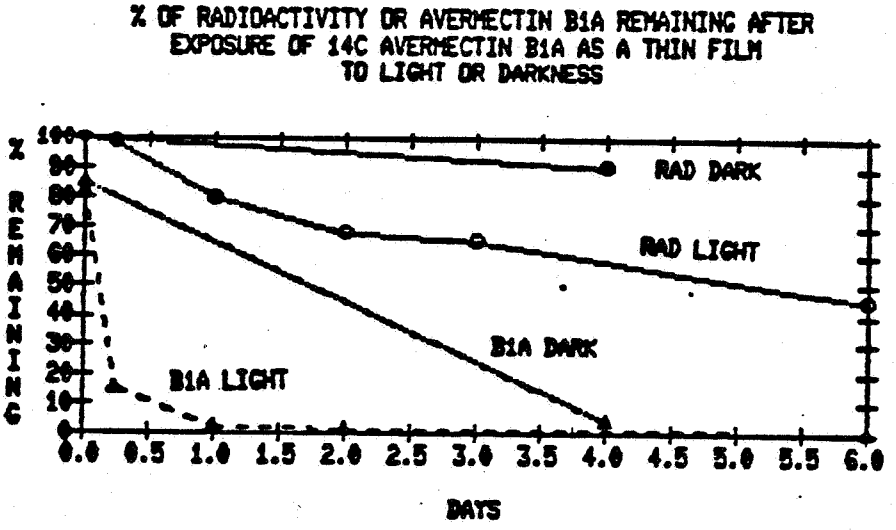
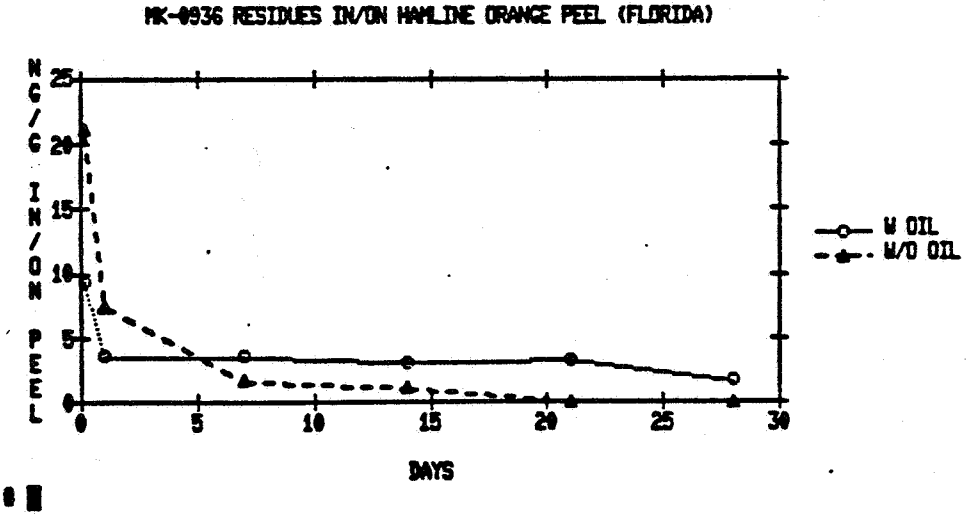


FIGURE 2



Caswell#: 63415 Avermectin lox Br. oneliners

Study/Lab/Study #/Date	Material	Accession No.	Results: LD_{50}, LC_{50}, PIS, NOEL, LEL	TOX Category	CORE Grade/ Doc. No.
Teratology - rat; Merch Institute for Therapeutic Research Studies; TT #82-705-1; 11/10/82	Tech MK-0936 94% Lot #L-676, 863-00V50	249152	Range Finding Levels tested by gavage in Sprague-Dawley strain - 0, 0.25, 0.5, 1.0, and 2.0 mg/kg/day [redacted] Maternal NOEL = 1.0 mg/kg Maternal LEL = 2.0 mg/kg/day		Supplementary 004114
Teratology - rat; Merch Institute for Therapeutic Research Studies; TT #82-705-0; 11/10/82	Tech MK-0936 94% Lot #L-676, 863-00V50	249152	Teratogenic NOEL >1.6 mg/kg/day(HDT) Maternal NOEL > 1.6 mg/kg Feto toxic NOEL > 1.6 mg/kg/day Levels tested by gavage in Sprague-Dawley strain - 0, 0.4, 0.8, and 1.6 mg/kg/day		Supplementary 004114 Minimum 004335
Teratology - rat; MS&D; TT#77-701-0	Avermectin B_{1a}	247291	PILOT STUDY Teratogenic NOEL = 1.6 mg/kg/day Teratogenic LEL = 3.2 mg/kg/day(increase in the number of visceral and skeletal malformations at 3.2 mg/kg/day) Levels tested = 0.8, 1.6, 3.2 mg/kg/day by gavage in CRCD strain		Supplementary 001815
Teratology - rabbit; Merch; TT #82-706-1	Tech MK-0936 94% pure Lot #L-767 863-00V50	249152	Range Finding Maternal NOEL = 2.0 mg/kg/day Maternal LEL = 3.0 mg/kg/day		Supplementary 004114

INERT INGREDIENT INFORMATION IS NOT INCLUDED

Study/Lab/Study #/Date	Material	EPA Accession No.	Results: LD_{50}, LC_{50}, PIS, NOEL, LEL	TOX Category	CORE Grade/ Doc. No.
Teratology - rabbit; Merch; TT #82-706-01	Tech MK-0936 94% pure Lot #L-767 863-00V50	249152	Teratogenic NOEL > 2.0 mg/kg (HDT) Feto toxic NOEL > 2.0 mg/kg/day Maternal NOEL = 1.0 mg/kg Maternal LEL = 2.0 mg/kg (decrease in body weight, food consumption and water). Levels tested by gavage in New Zealand White strain - 0, 0.5, 1.0, & 2.0 mg/kg/day		Supplementary 004114 Minimum 004335
Teratology - rabbit; MS&D; TT#76-24-A; and TT#77-702-01-1	Avermectin B_{1a}	247291	PILOT STUDY Teratogenic NOEL = 0.5 mg/kg/day Teratogenic LEL = 1.0 mg/kg/day(increase in the number of visceral malformations and skeletal variations) Levels tested = .25, .5, 1.0, 2.0, 4.0 mg/kg by gavage.		Supplementary 001815
Teratology - mice; MS&D; TT#77-705-0	C-076 (B_{1a}) Lot P 20	246894	Teratogenic NOEL < 0.4 mg/kg/day (ablepharia and cleft palate) Maternal NOEL < 0.1 mg/kg/day (mortality) Levels tested by gavage in CF strain - 0, 0.1, 0.2, 0.4 and 0.8 mg/kg/day Note fetuses at 0.1 and 0.2 mg/kg/day were not examined.		Supplementary 001535

Study/Lab/Study #/Date	Material	EPA Accession No.	Results: LD_{50}, LC_{50}, PIS, NOEL, LEL	TOX Category	CORE Grade/ Doc. No.
Teratology - mice; MS&D; TT#76-723-0	C-076 (B_{1a})	246894	Teratogenic NOEL < 0.4 mg/kg/day (cleft palate) Note - fetuses at 0.1 and 0.2 mg/kg were not examined. Maternal NOEL < 0.1 mg/kg (mortality) Levels tested by gavage = 0.1, 0.2, 0.4, 0.8 mg/kg/day		Supplementary 001535
Teratology - mice; Merck Sharp and Dohme Res Lab; TT#76-723-3	C-076 (B_2)	246894	Teratogenic NOEL < 0.2 mg/kg/day (cleft palate) Note - fetuses at 0.1 mg/kg were not examined. Maternal NOEL < 0.1 mg/kg/day (LDT) (mortality) Levels tested by gavage = 0, 0.1, 0.2, 0.4, 0.8 mg/kg/day.		Supplementary 001535
One generation reproduction - rat; MS&D; TT#77-706-0	C-076 (B_{1a})	246894	NOEL = < 0.5 mg/kg/day (LDT) (decreased pup survival and growth rate between 1 to 21 days; delay in opening of eyes) Levels tested by gavage in Charles River CD strain - 0, 0.5, 1.0 and 3.0 mg/kg/day Note only females were dosed		Supplementary 001535
One generation reproduction - rat; MS&D; TT#77-712-0	C-076 (B_{1a})	246894	NOEL = 0.1 mg/kg/day LEL = 0.2 mg/kg/day (one pup had spastic movements decreased pup weight; delayed incisor eruption) Levels tested by gavage 0, 0.1, 0.2 and 0.4 mg/kg/day This study is considered a teratology study with only postnatal evaluation and not a true reproduction study since males were not tested.		Supplementary 001535

Study/Lab/Study #/Date	Material	EPA Accession No.	Results: LD_{50}, LC_{50}, PIS, NOEL, LEL	TOX Category	CORE Grade/ Doc. No.
9-Day dermal exploratory - rabbit; MS&D; TT# 83-2967	MK-0936 EC formulation Avid		Toxicity greater in rabbits unoccluded at 1000 mg/kg than in rabbits occluded at 1000 mg/kg.		Supplementary 003967
10 Day oral - pregnant mice; MS&D; TT#77-717-1	C-076 (B_{1a}) Lot P 34	246894	Maternal NOEL = 0.05 mg/kg/day Maternal LEL = 0.075 mg/kg/day(mortality) Levels tested by gavage in CF, strain - 0.025, 0.050, 0.075 and 0.10 mg/kg/day		Minimum 001535
23-Day dermal - rabbit; MS&D; TT#83-066-0; 5/4/84	MK-0936 EC formulation Avid		NOEL < 250 mg/kg (LDT) (testicular degeneration) Levels tested: 0, 250, 500 and 1000 mg/kg		Minimum 003967
24-Day dermal - rabbit; MS&D; TT#83-2947	MK-0936 EC formulation Avid		NOEL < 125 mg/kg (LDT) (testicular degeneration) Levels tested: 0, 125, 250, 500 and 1000 mg/kg.		Minimum 003967
18 Week oral - dog; MS&D; TT#76-073-0	C-076 (B_{1a})	246895	NOEL = 0.25 mg/kg/day LEL = 0.5 mg/kg/day (body tremors, one death, pathology of liver, decreased body weight) Levels tested by gavage in beagles- 0, 0.24, 0.5, 2.0 and 8.0 mg/kg/day		Supplementary 001535 Minimum 004114
14 Week oral - rat; MS&D; TT#77-043-0	C-076 (B_{1a}) Lot P 22	246895	NOEL > 0.4 mg/kg/day (HDT) Levels tested by gavage = 0, 0.1, 0.2, 0.4 mg/kg/day. Rats used in this study had previously been exposed in utero to the test material at the respective concentrations. Levels tested = 0, 0.01, 0.2 and 0.4 mg/kg/day		Supplementary 001535 Minimum 004114

Study/Lab/Study #/Date	Material	EPA Accession No.	Results: LD_{50}, LC_{50}, PIS, NOEL, LEL	TOX Category	CORE Grade/ Doc. No.
21 - Day dermal - rabbit	Tech		requirement is waived		003252
Metabolism - rat; MS&D; No. ARM-1; 9/83	Tritium and C^{14} labeled Avermectin B_1		68.7-81.6% of label is excreted in the feces by day 7. T 1/2 is 1.2 days.		Supplementar 003967
Mutagenic - ames; MS&D; No. TT #82-8013; 8/30/83	Tech. Avermectin B_1		Not mutagenic in presence of S-9 activation. Mutagenicity without S-9 activation could not be evaluated due to absence of positive control.		Acceptable with S-9 activation Unacceptable with S-9 activation 003967
Mutagenic - in-vivo bone marrow cytogenetics - mice; MS&D; No. TT#83-900-6; 6/83	Tech. Avermectin B_1		No chromosome aberrations in male mice at doses of 1.2 and 12.0 mg/kg. Female mice not tested.		Acceptable for male mic only 003967
Mutagenic - rat hepatocyte; MS&D; Nos.: TT#82-8520; TT#82-8523; TT#82-8525; TT#82-8526; TT#8302; 4/21/83	Tech. Avermectin		*Under conditions of the study Avermectin (0.3 and 0.6 mM) caused an induction of single strand DNA breaks in rat hepatocytes in vitro; there was no effect at lower doses. No effect was observed when the assay was carried out on hepatocytes from rats dosed in vivo at the LD_{50} dose level (10.6 mg/kg).		Acceptable 003967
Mutagenic - mammalian cell; MS&D; Nos.: TT#82-8506; TT#82-8510; TT#82-8519; 3/8/83	Tech. Avermectin		*MK-0936, Avermectin, was not mutagenic for V-79 cells under the conditions of the assay, but in the presence of S-9 appeared to have a mutagenic potential, provided the test cells had an appropriate level of sensitivity.		Acceptable 003967

Study/Lab/Study #/Date	Material	EPA Accession No.	Results: LD_{50}, LC_{50}, PIS, NOEL, LEL	TOX Category	CORE Grade/ Doc. No.
Acute dermal LD_{50} - rabbit; Merch Sharp and Dohme; TT#81-3021; 3/16/83	Tech. Avermectin		LD_{50} > 1600 mg/kg Levels tested: 100, 200, 400, 800 and 1600 mg/kg.		Supplementary 003967
Dermal sensitization - guinea pig; MS&D; TT#83-2506; 4/15/83	Tech. Avermectin		Negative for skin sensitization.		Minimum 003967
Acute dermal LD_{50} - rabbit; MS&D; TT#83-031-0	MK-0936 EC formulation Avid		One death LD_{50} > 2000 mg/kg (only level tested)	III	Minimum 003967
Acute oral LD_{50} - rat; MS&D; TT#82-097-0	MK-0936 EC formulation Avid		LD_{50} = 0.7222 ml/kg Levels tested: 0, 25, 0.40, 0.64, 1.02 and 1.63 ml/kg.	II	Minimum 003967
Primary dermal irritation - rabbit; MS&D; TT#82-3036; 12/2/82	MK-0936 EC formulation Avid		Slight erythema and edema.	III	Minimum 003967
Primary eye irritation - rabbit; MS&D; TT#82-3035; 12/6/82	MK-0936 EC formulation Avid		Conjunctivitis and iritis which cleared after 8 days.	III	Minimum 003967
Acute inhalation LC_{50} - rat; Hazleton; #284-126; 5/22/79	MK-0936 EC formulation Avid		No deaths LC_{50} > 5.73 ml/kg nominal concentration only.	IV	Supplementary 003967
Acute oral LD_{50} - rat; MS&D; TT#81-2879; 8/7/81	0.022% Avermectin B_1		No deaths. LD_{50} > 5.0 gm/kg [redacted]	III	Minimum 003984
Acute dermal LD_{50} - rabbit; MS&D; TT#81-2877; 8/31/81	0.022% Avermectin B_1		No deaths. LD_{50} > 2.0 gm/kg [redacted]	III	Minimum 003984

INERT INGREDIENT INFORMATION IS NOT INCLUDED

Study/Lab/Study #/Date	Material	EPA Accession No.	Results: LD_{50}, LC_{50}, PIS, NOEL, LEL	TOX Category	CORE Grade/ Doc. No.
Primary dermal irritation - rabbit; MS & D; TT#83-2864; 2/1/84	0.022% Avermectin B_1		Slight conjunctivitis in both washed and unwashed eyes which were normal at 24 hr. [redacted]	III	Minimum 003984
Primary dermal irritation - rabbit; MS&D; TT#83-2864; 2/1/84	0.022% Avermectin B_1		No irritation. [redacted]	IV	Minimum 003984
Mutagenic - ames; MS&D; TT#76-8052	C-076 (B_{1a})	246894	Negative for mutagenicity		Acceptable 001535
Acute oral LD_{50} - mice; MS&D	C-076 (B_{1a})	246894	LD_{50} = 13.6 - 23.8 mg/kg	I	Supplementary 001535
Acute oral LD_{50} - rat; MSD	C-076 (B_{1a})	246894	LD_{50} = 10.6 (7.7 - 14.5) (M) mg/kg LD_{50} = 11.3 (7.5 - 17.1) (F) mg/kg LD_{50} = 1.5 (1.1 - 2.2) mg/kg (weanling)	I	Supplementary 001535
Acute oral - mice; MS&D; TT#76-723-1 and TT#76-723-2	C-076 (B_{1a}) C-076 (B_2)	246894	Range finding Death in mice given 0.1, 0.25, 1.0 and 8.0 mg/kg/day of C-076 (B_{1a}). No body weight decrease at 0.1, 0.25, 0.5 mg/kg/day.		Supplementary 001535
Acute inhalation LC_{50} - rat; Biodynmics; TT#83-7651; 2/24/84	MK-0936 E.C. formulation AVID™ 2.2% ai	252914	LC_{50} = 1.033 (0.634-1.683) mg/L (M) LC_{50} = 1.141 (0.594-2.193) mg/L (F) LC_{50} = 1.062 (.742-1.521) mg/L (M&F) Gravimetric Levels tested: 0.033 - 6.5 mg/L	II	Minimum 001886
Dissimilation chemicals metabolite or impurity or contaminant or salt or photodegradent or etc			#517T (L-652, 871-00N01 polar metabolite) #517U (L-652-280-00N02 non-polar metabolite)		

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Study/Lab/Study #/Date	Material	EPA Accession No.	Results: LD_{50}, LC_{50}, PIS, NOEL, LEL	TOX Category	CORE Grade/ Doc. No.
21-Day dermal - rabbit; MSD; TT-84-045-0; August 28, 1984	MK - 0936 EC based formulation	254601	NOEL for testicular effects = 125 mg/kg/day. LEL = 250 mg/kg/day (decreased testicular weight and histological seminiferous tubule degeneration.) Levels tested: 0, 31, 625, 125, 250, 1000 mg/kg in New Zealand White strain.		Minimum 004331

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Study/Lab/Study #/Date	Material	EPA Accession No.	Results: LD_{50}, LC_{50}, PIS, NOEL, LEL	TOX Category	CORE Grade/ Doc. No.
Antidote - exploratory nonspecific - dog; MSD; TT#84-085-0; December 10, 1984	MK-0936 Technical	255978	Ipecac given at 15 minutes after dose of MK-0936 induces vomiting and results in no comas or death in 21 dogs.		Acceptable 004395
Acute dermal LD_{50} - rabbit; MSD; TT#83-064-0; February 8, 1984	MK-0936 Technical	255978	LD_{50} > 2000 mg/kg; no deaths.		Minimum 004394
Antidote	Technical		Data requirement is waived for determining a specific antidote.		004395