

US EPA ARCHIVE DOCUMENT

Shaughnessey Number

Completed: 1-16-84

Revised:

*DM*  
                      
                    

EEB CHEMICAL PROFILE

Pesticide Name Azadirachtin (Margosan-0)

100 Fish and Wildlife Toxicology

100.1 Minimum Requirements

100.1.1 Avian Acute Oral LD50

Species	Test Material	Result	Category	Reference (Acc. No.)
Mallard Duck	Margosan-0 Concentrate	49.92 mg/kg	Core	252097

100.1.2 Avian Dietary LC50

Species	Test Material	Result	Category	Reference (Acc.No.)
Bowhite Quail	Margosan-0 Concentrate (containing 0.3% azadirachtin, [redacted])	>21 ppm a.i. (the highest level tested)	Core*	252097

Mallard Duck	"	>21 ppm a.i. (The highest level tested)	Core*	252097
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\*This study does fulfill the requirement for an LC50 to waterfowl where the estimated environmental concentration of azadirachtin in avian feed from the use of Margosan-0 is less than or equal to 21 ppm.

100.1.3 Fish Acute LC50

Species	Test Material	Result	Category	Reference (Acc. No.)
Rainbow Trout	Margosan-0 Concentrate (containing 0.3% azadirachtin, [redacted])	<del>0.26</del> .022 mg/l a.i. (C.L. <del>0.02-0.04</del> mg/l a.i.) .015-.036 <i>RMS</i>	Core*	252097

Bluegill Sunfish	"	(0.12 mg/l a.i. <del>(C.L. 20-60 mg/l a.i.)</del> (C.L. .06 and .18 mg/l a.i.) <i>RMS</i>	Core*	252091
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\*If the technical grade of the active is declared to contain 0.3% azadirachtin

INERT INGREDIENT INFORMATION IS NOT INCLUDED

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100.1.4 Aquatic Invertebrate LC50

<u>Species</u>	<u>Test Material</u>	<u>Result</u>	<u>Category</u>	<u>Reference</u> (Acc. No.)
<u>Daphnia magna</u>	Margosan-0 Concentrate (Containing 0.3% azadirachtin, [REDACTED])	<del>0.43</del> <sup>0.032</sup> mg/l a.i. (C.L. <del>0.026-0.057</del> mg/l a.i.) 0-0.18 <i>RAT</i>	Core	252097

\*If the technical grade of the active is declared to contain 0.3% azadirachtin.

100.2 Additional Terrestrial Laboratory Tests

-None-

100.3 Additional Aquatic Laboratory Tests

-None-

100.4 Field Test

-None-

101 General Toxicology

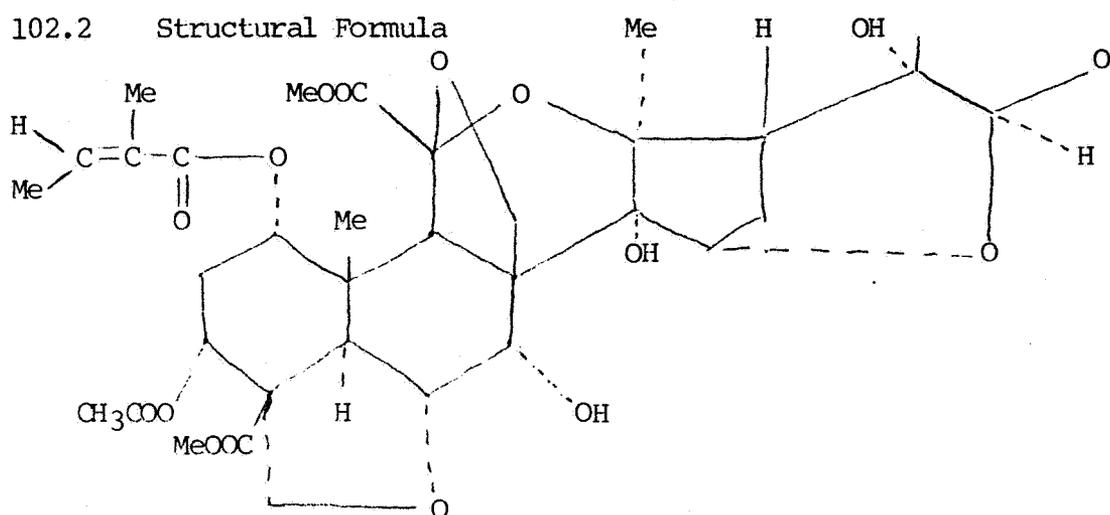
<u>Species</u>	<u>Test Material</u>	<u>Result</u>	<u>Category</u>	<u>Reference</u> (Acc. No)
Albino rats (both sexes)	A charcoal-brown liquid identified as Margosan-0 concentrate [REDACTED] and has a density of 1.04 grams/ml	Oral LD50 >5.0 mg/kg of test material or >.015 mg/kg ai.	Unknown	252097
New Zealand Albino Rabbits	"	Dermal LD50 >2.0 ml/kg product or >.006 ml/kg a.i.	"	"
Wistar Albino Rats	Margosan T-20 Concentrate	Inhalation LC50 >43.9 mg/hr. of test material (percent active ingredient of Margosan T-20 not given.	"	"

102 Physical and Chemical Properties

102.1 Chemical Name

-None-

102.2 Structural Formula



102.3 Common Name

Azadirachtin

102.4 Trade Name

Margosan

102.5 Molecular Weight

NA

102.6 Physical State

Margosan-0 (concentrate) is a brown semi-viscous liquid

102.7 Properties

102.7.1 Solubility

- Not submitted -

102.7.2 Octanol/Water Partition COefficient

- Not submitted -

102.7.3 Soil Adsorption Coefficient Kd

102.7.4 Vapor Pressure

- Not submitted -

103 Behavior in the Environment

103.1 Soil

- Not submitted -

103.2 Water

- Not submitted -

103.3 Plant

- Not submitted -

103.4 Animal

- Not submitted -

103.5 Estimated Environmental Concentrations

- Not requested due to the  
lack of physical and chemical  
properties data and environmental  
fate data.

104 Uses and Special Concerns

This is a biological insecticide derived from the seed of a tree as reported by Vikwood Ltd in Acc. No. 2523097:

The Neem seed of the Indian tree named Azadirachta indica, an indigenous species of India and of the tropical regions of that area, as well as Africa, yields a natural product whose essence repels insects by smell or taste, and also acts as a growth modifier by inducing hormonal change in various insects in their larval stages.

Dennis J. McLane, Wildlife Biologist  
Ecological Effects Branch  
Hazard Evaluation Division (TS-769)

*Dennis J. McLane*

Date: 1-17-84

Raymond W. Matheny  
Head, Review Section No. 1  
Ecological Effects Branch  
Hazard Evaluation Division (TS-769)

*Raymond W. Matheny*

Date: 1/18/84

Clayton Rushong, Chief  
Ecological Effects Branch  
Hazard Evaluation Division (TS-769)

*Norman Cook*  
*for*

1-19-84  
Date:

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PILSUCKI MARGOSAN-0 DAPHNIA MAGNA

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
.3	20	20	100	9.53674E-05
.18	20	20	100	9.53674E-05
.099	20	14	70	5.76592
.054	20	13	65	13.1588
.03	20	8	40	25.1722

THE BINOMIAL TEST SHOWS THAT 0 AND .18 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS .0379089

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS
1	1.61325	.0379089	0 +INFINITY

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
5	.170986	1	.232563

SLOPE = 2.57822  
 95 PERCENT CONFIDENCE LIMITS = 1.51212 AND 3.64433

LC50 = .041061  
 95 PERCENT CONFIDENCE LIMITS = .0257437 AND .0546364

LC10 = .0132081  
 95 PERCENT CONFIDENCE LIMITS = 4.11206E-03 AND .0221679

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PILSUCKI MARGOSAN-0 SALMO GAIRDNERI

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
.06	10	10	100	.0976563
.036	10	10	100	.0976563
.024	10	3	30	17.1875
.015	10	0	0	.0976563
.009	10	0	0	.0976563

THE BINOMIAL TEST SHOWS THAT .015 AND .036 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS .0263274

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

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PILSUCKI MARGOSAN-0 LEPOMIS MAROCHIRUS

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
.3	10	10	100	.0976563
.18	10	10	100	.0976563
.105	10	2	20	5.46875
.06	10	0	0	.0976563
.036	10	0	0	.0976563

THE BINOMIAL TEST SHOWS THAT .06 AND .18 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS .124413

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

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