Industrial **BIO-TEST** *Laboratories, Inc.*
1810 FRONTAGE ROAD
NORTHBROOK, ILLINOIS 60062

REPORT TO

MONSANTO COMPANY

ACUTE TOXICITY STUDIES WITH AROCLOR 1221, AROCLOR 5442, AND MCS 1016

MARCH 25, 1971

IBT NO. A9378

0289897

TOXSTUDIES1008

Industrial **BIO-TEST** *Laboratories, Inc.*
1810 FRONTAGE ROAD
NORTHBROOK, ILLINOIS 60062

March 25, 1971

Dr. Elmer P. Wheeler
Manager, Environmental Health
Monsanto Company
800 North Lindbergh Boulevard
St. Louis, Missouri 63166

Dear Dr. Wheeler:

Re: IBT No. A9378 - Acute Toxicity Studies with
Aroclor 1221, Aroclor 5442 and MCS 1016

We are submitting herewith our laboratory report dated March 25, 1971, prepared in connection with the above study.

Very truly yours,

J. C. Calandra
President

JCC/kjl

cc: Dr. William H. Hunt

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REPORT TO

MONSANTO COMPANY

ACUTE TOXICITY STUDIES WITH
AROCLOR 1221, AROCLOR 5442, AND MCS 1016

MARCH 25, 1971

IBT NO. A9378

I. Introduction

Two liquids and a thick gel identified as Aroclor 1221, MCS 1016, and Aroclor 5442 respectively were received from Monsanto Company for toxicological evaluation. The following studies were conducted:

Acute Oral Toxicity Study - Albino Rats

Acute Dermal Toxicity Study - Albino Rabbits

Eye Irritation Test - Albino Rabbits

Primary Skin Irritation Test - Albino Rabbits

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II. Summary

The results of the acute toxicity studies with Aroclor 1221, Aroclor 5442, and MCS 1016 are summarized in Table I.

Respectfully submitted,

INDUSTRIAL BIO-TEST LABORATORIES, INC.

Report prepared by: Carmen Mastri

Carmen Mastri, B.S.
Senior Group Leader
Acute Toxicity

Report approved by: M. L. Keplinger

M. L. Keplinger, Ph.D.
Manager, Toxicology

Otis E. Fancher

Otis E. Fancher, Ph.D.
Scientific Director

March 25, 1971

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— Monsanto Company

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TABLE I

Results

Test	Test Material Aroclor 1221	Aroclor 5442	MCS 1016
Acute Oral Toxicity Study - Albino Rats	LD_{50} = 2.0 g/kg	LD_{50} = 8.4 g/kg	LD_{50} = 6.8 g/kg
Acute Dermal Toxicity Study - Albino Rabbits	LD_{50} = 5.0 g/kg	LD_{50} > 10.2 g/kg	LD_{50} = 6.0 g/kg
Eye Irritation Test - Albino Rabbits	Minimally Irritating (8.0/110.0)	Non-Irritating (0.0/110.0)	Non-Irritating (0.0/110.0)
Primary Skin Irritation Test - Albino Rabbits	Moderately Irritating (3.8/8.0)	Moderately Irritating*	Moderately Irritating (4.0/8.0)

* Aroclor 5442 could not be removed from the test sites at 24 hours. By 72 hours, red, well-defined erythema and moderate to severe edema of the skin at the site of contact were noted.

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III. Investigational Procedures

A. Acute Oral Toxicity Studies - Albino Rats

Young albino rats of the Charles River strain (COBS)* ranging in body weight from 152-220 grams were used as test animals. All animals were kept under observation for five days prior to experimental use, during which period they were checked for general physical health and suitability as test animals. The animals were housed in stock cages and permitted a standard laboratory diet plus water ad libitum, except during a 16-hour period immediately prior to oral intubation when food was withheld.

Initial screening was conducted in order to determine the general levels of toxicity of Aroclor 1221, Aroclor 5442, and MCS 1016. Selected groups of four rats each (two males and two females) were then intubated with the respective test materials at dose levels ranging from 1.4-15.4 g/kg. All doses were administered directly into the stomachs of the rats using a hypodermic syringe equipped with a ball-tipped intubating needle.

Following oral administration of the test materials, the rats were housed individually in suspended, wire-mesh cages and observed for the succeeding 14 days. Initial and final body weights as well as all mortalities and/or reactions were recorded. A necropsy was conducted on any animal which died during the study as well as on all surviving animals sacrificed at the end of the 14 days.

* Charles River Breeding Laboratories, Inc., North Wilmington, Mass.

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At the end of the observation period, the acute oral median lethal dose (LD_{50}) of each test material was calculated, if possible, using the techniques of Weil*, Thompson**, and Thompson and Weil***.

* Weil, Carrol S.: Tables for Convenient Calculation of Median-Effective Dose (LD_{50} or ED_{50}) and Instructions in Their Use. Biometrics, Sept. 1952.

** Thompson, William R.: Use of Moving Averages and Interpolation to Estimate Median-Effective Dose. Bact. Rev., Nov. 1947.

*** Thompson, William R. and Weil, Carrol S.: On the Construction of Tables for Moving Average Interpolation. Biometrics, March 1952.

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B. Acute Dermal Toxicity Studies - Albino Rabbits

Young adult, albino rabbits of the New Zealand strain ranging in body weight from 2.32-3.20 kilograms were used as test animals. All rabbits had been maintained under observation in the laboratory for at least seven days prior to testing. During the pretest period the animals were examined with respect to their general health and suitability as test animals. The rabbits were housed individually in suspended, wire-bottomed cages and maintained on a standard laboratory ration. Food and water were offered ad libitum.

Twenty-four hours prior to the dermal applications, the backs of the rabbits were shaved free of hair with electric clippers. The shaved area on each animal constituted about 30 percent of the total body surface area. The animals were then returned to their cages to await testing on the following day. The 24-hour waiting period allowed recovery of the stratum corneum from the disturbance which accompanied the close-clipping procedure and also permitted healing of any microscopic abrasions possibly produced during the process.

On the testing day, the rabbits received skin applications of undiluted Aroclor 1221, Aroclor 5442, or MCS 1016 at dose levels ranging from 3.0-10.2 g/kg. A group of four rabbits (two males and two females) was tested at each level. The exposure site was covered by wrapping the trunk of the animal with an impervious plastic sheeting which was securely taped in place. This plastic wrap insured intimate contact of epidermis and test material. To further prevent oral ingestion of the test material,

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each animal was fitted with a light-weight, flexible plastic collar which was worn throughout the observation period.

The test material remained in contact with the skin for 24 hours. At the end of this period the plastic sheeting was taken off each rabbit and as much residual test material as possible removed. The exposure sites were examined for local skin reactions and the animals returned to their cages. Observations for mortality, local skin reactions, and behavioral abnormalities were continued for a total of 14 days following the skin applications. Initial and final body weights were also recorded. A necropsy was conducted on any animal which died during the study and on all surviving animals sacrificed at the end of the observation period.

At the end of the observation period, the acute dermal median lethal dose (LD_{50}) of each test material was calculated, if possible, using the techniques of Weil*, Thompson**, and Thompson and Weil***.

* Weil, op. cit., p. 5.
** Thompson, op. cit., p. 5.
*** Thompson and Weil, op. cit., p. 5.

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C. Eye Irritation Tests - Albino Rabbits

Fifteen albino rabbits of the New Zealand strain, five per sample, were used to evaluate the eye irritating properties of Aroclor 1221, Aroclor 5442, and MCS 1016. The test method was patterned after that of Draize et al.*

Exactly 0.1 ml of an undiluted test material was instilled into the conjunctival sac of the right eye of each of five rabbits. The left eye of each animal served as a scoring control. One minute, one, 24 and 72 hours, and 7 days following instillation, the cornea, iris, and palpebral conjunctiva were examined and graded for irritation and injury according to a standard scoring system*. The maximum possible score at any one examination and scoring period is 110 points which indicates maximal irritation and damage to all three ocular tissues. Zero score indicates no irritation. The scoring system is presented in Table II.

After the completion of the test, the scores were analyzed and a descriptive eye irritation rating was assigned to each test material. The criteria used for assignment of the descriptive ratings were the frequency, the extent, and the persistence of irritation or damage which occurred to the three ocular tissues. In the classification system used, special emphasis was placed upon irritation or damage to the cornea.

* "Methods for the Study of Irritation and Toxicity of Substances Applied Topically to the Skin and Mucous Membranes," Draize, John H., Woodard, Geoffrey, and Calvery, Herbert O., J. Pharm. & Exp. Ther., 82, 4, December 1944.

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TABLE II

Eye Irritation Test - Albino Rabbits

Scale of Weighted Scores for Grading the Severity of Ocular Lesions

I.	Cornea	
	A. Opacity - Degree of Density (area which is most dense is taken for reading)	
	Scattered or diffuse area - details of iris clearly visible	1
	Easily discernible translucent areas, details of iris slightly obscured	2
	Opalescent areas, no details of iris visible, size of pupil barely discernible	3
	Opaque, iris invisible	4
	B. Area of Cornea Involved	
	One quarter (or less) but not zero	1
	Greater than one quarter but less than one-half	2
	Greater than one-half but less than three quarters	3
	Greater than three quarters, up to whole area	4
II.	Iris	
	A. Values	
	Folds above normal, congestion, swelling, circumcorneal injection (any or all of these or combination of any thereof), iris still reacting to light (sluggish reaction is positive)	1
	No reaction to light, hemorrhage, gross destruction (any or all of these)	2
	Score equals A x 5 Total maximum = 10	
III.	Conjunctiva	
	A. Redness (refers to palpebral conjunctiva only)	
	Vessels definitely injected above normal	1
	More diffuse, deeper crimson red, individual vessels not easily discernible	2
	Diffuse beefy red	3

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TABLE II continued

Eye Irritation Test - Albino Rabbits

Scale of Weighted Scores for Grading the Severity of Ocular Lesions

III. Conjunctiva (continued)	
B. Chemosis	
Any swelling above normal (inclues nictitating membrane)	1
Obvious swelling with partial eversion of the lids	2
Swelling with lids about half closed	3
Swelling with lids about half closed to completely closed	4
C. Discharge	
Any amount different from normal (does not include small amount observed in inner canthus of normal animals)	1
Discharge with moistening of the lids and hairs just adjacent to the lids	2
Discharge with moistening of the lids and hairs just considerable area around the eye	3
Score (A + B + C) x 2	Total Maximum = 20

Note: The maximum total score is the sum of all scores obtained for the cornea, iris and conjunctiva.

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Correspondingly less stress was placed upon conjunctival and iridal effects.

The descriptive rating assigned was one of the following, each of which characterizes a particular level of ophthalmic irritation and damage:

Non-Irritating
Practically Non-Irritating
Minimally Irritating
Mildly Irritating
Moderately Irritating
Severely Irritating
Extremely Irritating

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D. Primary Skin Irritation Tests - Albino Rabbits

Twelve albino rabbits of the New Zealand strain, four per sample, were used in the evaluation of primary skin irritating properties of Aroclor 1221, Aroclor 5442, and MCS 1016. The test procedure was modeled after that of Draize et al.*

Prior to the application of the test material, the hair was clipped from the back and flanks of each rabbit. Two test sites located at the midline of the back approximately ten centimeters apart were then selected. One of the two sites was abraded by making four epidermal incisions, two perpendicular to the other two, while the other skin site remained intact.

Exactly 0.5 ml of an undiluted test material was applied to each of the test sites on four rabbits and immediately occluded with two-inch square gauze patches. The patches were affixed directly over the skin test sites and secured in place with masking tape. The entire trunk of each test animal was then wrapped in an impervious plastic sheeting. The wrap helped to hold the patches in position and retarded evaporation during the 24-hour exposure period.

* Draize et al., op. cit., p. 8.

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At the end of 24 hours, the plastic wrappings and patches were removed. The intact and abraded skin sites were then examined and scored separately for both erythema and edema on a graded scale of 0 to 4. After 72 hours had elapsed, the sites were reexamined and re-scored.

In evaluating the average irritation present, the mean scores for erythema and edema of the intact skin sites at the 24- and 72-hour reading intervals were added. Similarly the mean scores for erythema and edema of the abraded skin sites at the 24- and 72-hour reading intervals were added. These two values were then totaled and divided by four to obtain the mean primary irritation score. The scoring criteria for erythema and edema are shown in Table III.

The following grading system was used to arrive at a descriptive primary skin irritation rating:

Mean Primary Irritation Score (Range of Values)	Descriptive Rating
0	Non-Irritating
0.1 - 0.5	Minimally Irritating
0.6 - 1.5	Slightly Irritating
1.6 - 3.0	Mildly Irritating
3.1 - 5.0	Moderately Irritating
5.1 - 6.5	Severely Irritating
6.6 - 8.0	Extremely Irritating

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TABLE III

Primary Skin Irritation Test - Albino Rabbits

Scoring Criteria for Skin Reactions

Reaction	Description	Score
Erythema	Barely perceptible (Edges of area not defined)	1
	Pale red in color and area definable	2
	Definite red in color and area well defined	3
	Beet or crimson red in color	4
Edema	Barely perceptible (Edges of area not defined)	1
	Area definable but not raised more than 1 mm	2
	Area well defined and raised approximately 1 mm	3
	Area raised more than 1 mm	4
Injury in Depth	Escharosis, Necrosis	8
	Maximum Primary Irritation Score =	8

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IV. Results

A. Acute Oral Toxicity Studies - Albino Rats

1. Mortality and Body Weights

Individual mortality and body weight data are presented in Tables IV-VI.

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TABLE IV

TEST MATERIAL: Aroclor 1221

Acute Oral Toxicity Study - Albino Rats

Mortality and Body Weight Data

Dose* (g/kg)	Animal Number and Sex	Individual Body Weights (grams) Test Day Number: 0	14	Number Dead / Number Tested	Percent Dead
1.4	1-M	191	290	0/4	0
	2-M	209	308		
	3-F	156	196		
	4-F	164	216		
2.0	5-M	167	(3 days)	3/4	75
	6-M	184	(3 days)		
	7-F	160	(2 days)		
	8-F	162	196		
3.0	9-M	212	298	3/4	75
	10-M	206	(3 days)		
	11-F	172	(3 days)		
	12-F	162	(3 days)		
4.6	13-M	162	(6-22 hours)	4/4	100
	14-M	183	(6-22 hours)		
	15-F	208	(1 day)		
	16-F	178	(6-22 hours)		

Note: Figures in parentheses indicate time of death.

Acute Oral LD_{50} = 2.0 g/kg
Standard Deviation of LD_{50} = ± 0.3 g/kg

* The test material was administered undiluted.

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TABLE V

TEST MATERIAL: Aroclor 5442

Acute Oral Toxicity Study - Albino Rats

Mortality and Body Weight Data

Dose* (g/kg)	Animal Number and Sex	Individual Body Weights (grams) Test Day Number: 0	14	Number Dead Number Tested	Percent Dead
4.6	1-M	186	242	0/4	0
	2-M	190	280		
	3-F	215	272		
	4-F	213	240		
6.8	5-M	204	264	1/4	25
	6-M	208	(3 days)		
	7-F	208	242		
	8-F	220	244		
10.2	9-M	196	232	3/4	75
	10-M	185	(6 days)		
	11-F	177	(2 days)		
	12-F	188	(2 days)		
15.4	13-M	210	(3 days)	4/4	100
	14-M	182	(2 days)		
	15-F	192	(1 day)		
	16-F	168	(2 days)		

Note: Figures in parentheses indicate time of death.

Acute Oral LD_{50} = 8.4 g/kg
Standard Deviation of LD_{50} = ± 1.2 g/kg

* The test material was heated to form a flowable liquid and was administered in the form of a 50.0% (w/v) corn oil solution. Doses are expressed in terms of actual Aroclor 5442.

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TABLE VI

TEST MATERIAL: MCS 1016

Acute Oral Toxicity Study - Albino Rats

Mortality and Body Weight Data

Dose* (g/kg)	Animal Number and Sex	Individual Body Weights (grams) Test Day Number: 0	14	Number Dead / Number Tested	Percent Dead
2.0	1-M	200	298	0/4	0
	2-M	164	260		
	3-F	164	226		
	4-F	164	212		
3.0	5-M	178	(6-22 hours)	1/4	25
	6-M	173	260		
	7-F	194	256		
	8-F	174	218		
4.6	9-M	164	244	1/4	25
	10-M	174	260		
	11-F	182	222		
	12-F	168	(3 days)		
6.8	13-M	210	312	1/4	25
	14-M	192	274		
	15-F	176	232		
	16-F	191	(3 days)		
10.2	17-M	152	(2 days)	4/4	100
	18-M	154	(1 day)		
	19-F	180	(1 day)		
	20-F	152	(1 day)		

Note: Figures in parentheses indicate time of death.

Acute Oral LD_{50} = 6.8 g/kg
Standard Deviation of LD_{50} = ± 1.3 g/kg

* The test material was administered undiluted.

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2. Reactions

The untoward behavioral reactions exhibited by the rats after oral administration of Aroclor 1221, Aroclor 5442, and MCS 1016 are presented in Tables VII-IX.

Necropsy did not reveal any gross pathologic alterations.

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TABLE VII

TEST MATERIAL: Aroclor 1221

Acute Oral Toxicity Study - Albino Rats

Summary of Reactions

Dose (g/kg)	Reaction	Time of Onset Following Dose Administration	Duration of Reaction	Time of Death Following Dose Administration
1.4	Hypoactivity	1 hour	4 days	-
	Ruffed fur	1 hour	4 days	
	Muscular weakness	6-22 hours	2 days	
2.0	Hypoactivity	1 hour	4 days	2-3 days
	Ruffed fur	1 hour	4 days	
	Muscular weakness	1 hour	3 days	
3.0	Hypoactivity	1 hour	4 days	3 days
	Ruffed fur	1 hour	4 days	
	Muscular weakness	1 hour	3 days	
4.6	Hypoactivity	1 hour	Until death	6 hours - 1 day
	Ruffed fur	1 hour		
	Muscular weakness	1 hour		
	Tremors	1 hour		

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TABLE VIII

TEST MATERIAL: Aroclor 5442

Acute Oral Toxicity Study - Albino Rats

Summary of Reactions

Dose (g/kg)	Reaction	Time of Onset Following Dose Administration	Duration of Reaction	Time of Death Following Dose Administration
4.6	Hypoactivity	1/2 hour	5 days	-
	Ruffed fur	1 hour	5 days	
6.8	Hypoactivity	1/2 hour	6 days	3 days
	Ruffed fur	1 hour	6 days	
	Diarrhea	1 hour	2 days	
	Muscular weakness	1 hour	5 days	
10.2	Hypoactivity	1/2 hour	6 days	2-6 days
	Ruffed fur	1 hour	6 days	
	Diarrhea	1 hour	6 days	
	Muscular weakness	1 hour	6 days	
	Emaciation	3 days	3 days	
15.4	Hypoactivity	1/2 hour	Until death	1-3 days
	Ruffed fur	1 hour		
	Diarrhea	1 hour		
	Muscular weakness	1 hour		
	Emaciation	3 hours		
	Prostration	3 hours		

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TABLE IX

TEST MATERIAL: MCS 1016

Acute Oral Toxicity Study - Albino Rats

Summary of Reactions

Dose (g/kg)	Reaction	Time of Onset Following Dose Administration	Duration of Reaction	Time of Death Following Dose Administration
2.0	Hypoactivity	1/2 hour	3 days	-
	Ruffed fur	1 hour	3 days	
	Muscular weakness	1 hour	3 days	
3.0	Hypoactivity	1/2 hour	3 days	6-22 hours
	Ruffed fur	1 hour	3 days	
	Muscular weakness	1 hour	3 days	
4.6 and 6.8	Hypoactivity	1/2 hour	5 days	3 days
	Ruffed fur	1 hour	5 days	
	Muscular weakness	1 hour	4 days	
	Tremors	1 hour	3 days	
10.2	Hypoactivity	1/2 hour	Until death	1-2 days
	Ruffed fur	1 hour		
	Muscular weakness	1 hour		
	Tremors	1 hour		

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B. Acute Dermal Toxicity Studies - Albino Rabbits

1. Mortality and Body Weights

Individual mortality and body weight data are presented in Tables X-XII.

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TABLE X

TEST MATERIAL: Aroclor 1221

Acute Dermal Toxicity Study - Albino Rabbits

Mortality and Body Weight Data

Dose* (g/kg)	Animal Number and Sex	Individual Body Weights (kg) Test Day Number: 0	14	Number Dead Number Tested	Percent Dead
3.0	1-M	2.92	3.08	0/4	0
	2-M	3.10	3.40		
	3-F	3.12	2.82		
	4-F	2.80	2.56		
4.6	5-M	2.88	2.90	2/4	50
	6-M	2.50	2.60		
	7-F	2.54	(8 days)		
	8-F	2.72	(5 days)		
6.8	9-M	3.14	(5 days)	3/4	75
	10-M	2.54	2.70		
	11-F	2.36	(9 days)		
	12-F	2.88	(5 days)		
10.2	13-M	2.58	(3 days)	4/4	100
	14-M	2.68	(3 days)		
	15-F	2.40	(3 days)		
	16-F	2.62	(3 days)		

Note: Figures in parentheses indicate time of death.

Acute Dermal LD_{50} = 5.0 g/kg
Standard Deviation of LD_{50} = ± 1.0 g/kg

* The test material was applied undiluted.

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TABLE XI

TEST MATERIAL: Aroclor 5442

Acute Dermal Toxicity Study - Albino Rabbits

Mortality and Body Weight Data

Dose* (g/kg)	Animal Number and Sex	Individual Body Weights (kg) Test Day Number: 0	14	Number Dead Number Tested	Percent Dead
3.0	1-M	2.62	2.60	0/4	0
	2-M	2.74	3.00		
	3-F	3.20	3.28		
	4-F	2.54	3.28		
10.2	5-M	2.74	2.70	0/4	0
	6-M	2.62	3.08		
	7-F	2.90	3.14		
	8-F	2.84	3.18		

Acute Dermal LD_{50} > 10.2 g/kg

* The test material was heated to form a flowable liquid. It hardened upon application.

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TABLE XII

TEST MATERIAL: MCS 1016

Acute Dermal Toxicity Study - Albino Rabbits

Mortality and Body Weight Data

Dose* (g/kg)	Animal Number and Sex	Individual Body Weights (kg) Test Day Number: 0	14	Number Dead / Number Tested	Percent Dead
3.0	1-M	2.32	2.00	0/4	0
	2-M	2.62	2.80		
	3-F	2.42	1.60		
	4-F	2.62	2.62		
4.6	5-M	2.72	2.80	2/4	50
	6-M	2.74	(7 days)		
	7-F	2.64	2.50		
	8-F	3.16	(10 days)		
6.8	9-M	3.00	(5 days)	2/4	50
	10-M	2.64	(6 days)		
	11-F	2.86	2.36		
	12-F	3.06	2.64		
10.2	13-M	2.42	(10 days)	3/4	75
	14-M	2.78	(11 days)		
	15-F	2.82	2.10		
	16-F	3.14	(10 days)		

Note: Figures in parentheses indicate time of death.

Acute Dermal LD_{50} = 6.0 g/kg
Standard Deviation of LD_{50} = ± 1.4 g/kg

* The test material was applied undiluted.

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2. Reactions

No untoward behavioral reactions were observed among any of the rabbits after dermal application of Aroclor 1221, Aroclor 5442, and MCS 1016.

All of the test materials were irritating to the skin of the albino rabbit. The irritation data are presented in Table XIII.

Necropsy of all animals did not reveal any gross pathologic alterations other than dermal alterations as described in Table XIII.

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TABLE XIII

TEST MATERIALS: Aroclor 1221, Aroclor 5442, and MCS 1016

Acute Dermal Toxicity Studies - Albino Rabbits

Local Skin Irritation Data

Test Material	Local Skin Reactions At: 24 Hours	7 Days	14 Days
Aroclor 1221	Red, well-defined erythema, moderate edema	Dryness and desquamation	Dryness and desquamation
Aroclor 5442	-	-	Superficial eschar
MCS 1016	Red, well-defined erythema, moderate edema	Dryness and desquamation	Dryness and desquamation

- = Test material adhered to the skin precluding a valid evaluation of irritation. The skin at the periphery of the test site appeared normal at this time.

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C. Eye Irritation Tests - Albino Rabbits

The results of the eye irritation tests are presented in Tables XIV-XVI.

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TABLE XIV

TEST MATERIAL: Aroclor 1221

Eye Irritation Test - Albino Rabbits

Results

Tissue	Rabbit Number	1 Minute	1 Hour	24 Hours	72 Hours	7 Days
Cornea	1	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		5	5	0	0	0
Conjunctiva		6	6	0	0	0
(R-S-D)		(2-0-1)	(2-0-1)	-	-	-
Total		11	11	0	0	0
Cornea	2	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		0	5	0	0	0
Conjunctiva		6	4	0	0	0
(R-S-D)		(2-0-1)	(2-0-0)	-	-	-
Total		6	9	0	0	0
Cornea	3	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		0	0	0	0	0
Conjunctiva		6	6	0	0	0
(R-S-D)		(2-0-1)	(2-0-1)	-	-	-
Total		6	6	0	0	0

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TOXSTUDIES1039

TABLE XIV continued

TEST MATERIAL: Aroclor 1221

Eye Irritation Test - Albino Rabbits

Results

Tissue	Rabbit Number	1 Minute	1 Hour	24 Hours	72 Hours	7 Days
Cornea	4	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		0	0	0	0	0
Conjunctiva		6	4	0	0	0
(R-S-D)		(2-0-1)	(2-0-0)	-	-	-
Total		6	4	0	0	0
Cornea	5	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		5	0	0	0	0
Conjunctiva		6	4	0	0	0
(R-S-D)		(2-0-1)	(2-0-0)	-	-	-
Total		11	4	0	0	0
Averages						
Cornea		0.0	0.0	0.0	0.0	0.0
Iris		2.0	2.0	0.0	0.0	0.0
Conjunctiva		6.0	4.8	0.0	0.0	0.0
Total		8.0	6.8	0.0	0.0	0.0

Cornea:
D = Density
A = Area
Corneal Score = D x A x 5
Maximum Score = 80

Iris:
Iris Score = Value x 5
Maximum Score = 10

Conjunctiva:
R = Redness
S = Swelling
D = Discharge
Conjunctival Score = (R + S + D) x 2
Maximum Score = 20

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TOXSTUDIES1040

TABLE XV

TEST MATERIAL: Aroclor 5442

Eye Irritation Test - Albino Rabbits

Results

Tissue	Rabbit Number	1 Minute	1 Hour	24 Hours	72 Hours	7 Days
Cornea	1	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		0	0	0	0	0
Conjunctiva		0	0	0	0	0
(R-S-D)		-	-	-	-	-
Total		0	0	0	0	0
Cornea	2	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		0	0	0	0	0
Conjunctiva		0	0	0	0	0
(R-S-D)		-	-	-	-	-
Total		0	0	0	0	0
Cornea	3	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		0	0	0	0	0
Conjunctiva		0	0	0	0	0
(R-S-D)		-	-	-	-	-
Total		0	0	0	0	0

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TOXSTUDIES1041

TABLE XV continued

TEST MATERIAL: Aroclor 5442

Eye Irritation Test - Albino Rabbits

Results

Tissue	Rabbit Number	1 Minute	1 Hour	24 Hours	72 Hours	7 Days
Cornea	4	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		0	0	0	0	0
Conjunctiva		0	0	0	0	0
(R-S-D)		-	-	-	-	-
Total		0	0	0	0	0
Cornea	5	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		0	0	0	0	0
Conjunctiva		0	0	0	0	0
(R-S-D)		-	-	-	-	-
Total		0	0	0	0	0
Averages						
Cornea		0.0	0.0	0.0	0.0	0.0
Iris		0.0	0.0	0.0	0.0	0.0
Conjunctiva		0.0	0.0	0.0	0.0	0.0
Total		0.0	0.0	0.0	0.0	0.0

Cornea:
D = Density
A = Area
Corneal Score = D x A x 5
Maximum Score = 80

Iris:
Iris Score = Value x 5
Maximum Score = 10

Conjunctiva:
R = Redness
S = Swelling
D = Discharge
Conjunctival Score = (R + S + D) x 2
Maximum Score = 20

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Note: The test material was heated to form a flowable liquid. It

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TOXSTUDIES1042

TABLE XVI

TEST MATERIAL: MCS 1016

Eye Irritation Test - Albino Rabbits

Results

Tissue	Rabbit Number	1 Minute	1 Hour	24 Hours	72 Hours	7 Days
Cornea	1	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		0	0	0	0	0
Conjunctiva		0	0	0	0	0
(R-S-D)		-	-	-	-	-
Total		0	0	0	0	0
Cornea	2	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		0	0	0	0	0
Conjunctiva		0	0	0	0	0
(R-S-D)		-	-	-	-	-
Total		0	0	0	0	0
Cornea	3	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		0	0	0	0	0
Conjunctiva		0	0	0	0	0
(R-S-D)		-	-	-	-	-
Total		0	0	0	0	0

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TOXSTUDIES1043

TABLE XVI continued

TEST MATERIAL: MCS 1016

Eye Irritation Test - Albino Rabbits

Results

Tissue	Rabbit Number	1 Minute	1 Hour	24 Hours	72 Hours	7 Days
Cornea	4	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		0	0	0	0	0
Conjunctiva		0	0	0	0	0
(R-S-D)		-	-	-	-	-
Total		0	0	0	0	0
Cornea	5	0	0	0	0	0
(D-A)		-	-	-	-	-
Iris		0	0	0	0	0
Conjunctiva		0	0	0	0	0
(R-S-D)		-	-	-	-	-
Total		0	0	0	0	0
Averages						
Cornea		0.0	0.0	0.0	0.0	0.0
Iris		0.0	0.0	0.0	0.0	0.0
Conjunctiva		0.0	0.0	0.0	0.0	0.0
Total		0.0	0.0	0.0	0.0	0.0

Cornea:
D = Density
A = Area
Corneal Score = D x A x 5
Maximum Score = 80

Iris:
Iris Score = Value x 5
Maximum Score = 10

Conjunctiva:
R = Redness
S = Swelling
D = Discharge
Conjunctival Score = (R + S + D) x 2
Maximum Score = 20

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D. Primary Skin Irritation Tests - Albino Rabbits

The results of the primary skin irritation tests are presented in Tables XVII-XIX.

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TABLE XVII

TEST MATERIAL: Aroclor 1221

Primary Skin Irritation Test - Albino Rabbits

Results

Animal Number	Irritation Scores for Abraded Skin Sites At: 24 Hours Er.	24 Hours Ed.	72 Hours Er.	72 Hours Ed.	Irritation Scores for Intact Skin Sites At: 24 Hours Er.	24 Hours Ed.	72 Hours Er.	72 Hours Ed.
1	3	1	2	1	3	1	2	1
2	2	3	2	1	2	3	2	1
3	2	4	2	1	2	4	2	1
4	2	2	2	0	2	2	2	0
Mean	2.2	2.5	2.0	0.8	2.2	2.5	2.0	0.8
Subtotal		7.5				7.5		

Primary Irritation Score = 3.8

Key:

Er. = Erythema
Ed. = Edema

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TABLE XVIII

TEST MATERIAL: Aroclor 5442

Primary Skin Irritation Test - Albino Rabbits

Results

Animal Number	Irritation Scores for Abraded Skin Sites At: 24 Hours Er.	24 Hours Ed.	72 Hours Er.	72 Hours Ed.	Irritation Scores for Intact Skin Sites At: 24 Hours Er.	24 Hours Ed.	72 Hours Er.	72 Hours Ed.
1	-	-	3	2	-	-	3	2
2	-	-	3	3	-	-	2	2
3	-	-	3	2	-	-	3	2
4	-	-	3	4	-	-	3	3
Mean	-	-	3.0	2.8	-	-	2.8	2.2

Subtotal - -

Primary Irritation Score = -

Key:

Er. = Erythema
Ed. = Edema

Note: The test material was heated to form a flowable liquid. It hardened upon application precluding evaluation of irritation at 24 hours. Residual test material was present at 72 hours but evaluation was possible.

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TOXSTUDIES1047

TABLE XIX

TEST MATERIAL: MCS 1016

Primary Skin Irritation Test - Albino Rabbits

Results

Animal Number	Irritation Scores for Abraded Skin Sites At: 24 Hours Er.	24 Hours Ed.	72 Hours Er.	72 Hours Ed.	Irritation Scores for Intact Skin Sites At: 24 Hours Er.	24 Hours Ed.	72 Hours Er.	72 Hours Ed.
1	3	4	3	1	3	4	3	1
2	3	2	0	0	3	1	0	0
3	4	4	4	2	4	4	4	2
4	2	0	0	0	2	0	0	0
Mean	3.0	2.5	1.8	0.8	3.0	2.2	1.8	0.8
Subtotal		8.1				7.8		

Primary Irritation Score = 4.0

Key:

Er. = Erythema
Ed. = Edema

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