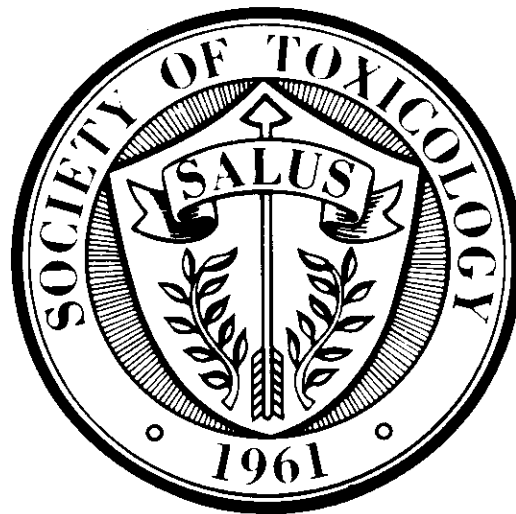


**PROGRAM**

**17th ANNUAL  
MEETING**



**March 12-16, 1978**

**Hyatt Regency Hotel  
San Francisco, California**

**SEVENTEENTH ANNUAL  
MEETING**

sponsored by

**Society  
of  
Toxicology**

**Hyatt Regency Hotel - San Francisco, California**

**March 12 - 16, 1978**

=====**REGISTRATION FEES**=====

	<u>Member</u>	<u>Non- Member</u>	<u>Student, Full-time, Predoctoral</u>
<b>Preregistration*</b>	<b>\$30.00</b>	<b>\$40.00</b>	<b>\$ 5.00</b>
<b>At Conference</b>	<b>35.00</b>	<b>45.00</b>	<b>10.00</b>
<b>Banquet</b>	<b>17.50</b>	<b>17.50</b>	<b>17.50</b>

\*Payable in U.S. funds only. Return form with payment to:  
Executive Secretary, Society of Toxicology  
66 South Miller Road  
Akron, OH 44313    Tel: 216/867-3755

## Sessions Summary

	Platform	ROOM	Page for Details
Monday Morning	Mutagenesis	Golden Gate Ballroom A	14
	Metabolism I	Golden Gate Ballroom B	15
Tuesday Morning	Metabolism II	Golden Gate Ballroom A	20
	General Toxicology I Industrial and Environmental Toxicology	Golden Gate Ballroom B San Francisco Room A	21 22
Tuesday Afternoon	General Toxicology II	Golden Gate Ballroom A	27
	Nervous System	San Francisco Room A	33
	Mycotoxins	San Francisco Room B	34
Wednesday Morning	Reproduction & Development I	Golden Gate Ballroom A	40
	Halogenated Hydro- carbons I	Golden Gate Ballroom B	41
	Lung and Respiratory Tract II	San Francisco Room A	42
Wednesday Afternoon	Drug Toxicology I	San Francisco Room A	48
	Agricultural Chemicals II	San Francisco Room B	49
	Oncogenesis	Golden Gate Ballroom A	50
Thursday Morning	Teratogenesis (Jointly with Teratology Society)	Golden Gate Ballroom A	55
	Metals II	Golden Gate Ballroom B	56

## Plenary - Symposia

Sunday Afternoon	Industrial Symposium (Environmental Mutagen Society)	Sheraton Palace - Gold Ballroom	12
Monday Morning	Inhalation Toxicology Educational Symposium (Div. Research Grants, NIH)	San Francisco Room B	13
Monday Afternoon	What is a Toxicologist?	Golden Gate Ballroom A & B	19
Monday Evening	Current Status of Short- Term Tests for Mutagenesis and Carcinogenesis (Jointly with Environmental Mutagens Society)	Golden Gate Ballroom A & B	19
Tuesday Afternoon	Unresolved Mechanisms of Toxicity	Golden Gate Ballroom B	27
Wednesday Afternoon	1. Toxicology and Teratology	Golden Gate Ballroom B	47
	2. Contributions of Agriculture Research Service - Field of Toxicology	Golden Gate Ballroom B	47

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**Poster**

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		<u>ROOM</u>	<u>Page for Details</u>
Monday Morning	Cardiovascular, Renal, Pulmonary Toxicology	Embarcadero	16
	Agricultural Chemicals I	Embarcadero	17
Tuesday Morning	General Chemical Toxicology	Embarcadero	24
	Hepatic and Gastro- intestinal Toxicology	Embarcadero	25
Tuesday Afternoon	Metabolism III	Embarcadero	35
	Lung and Respiratory Tract I	Embarcadero	37
Wednesday Morning	Metals I	Embarcadero	43
	General Toxicology III	Embarcadero	45
Wednesday Afternoon	Halogenated Hydro- carbons II	Embarcadero	51
	Halogenated Hydro- carbons III	Embarcadero	53
Thursday Morning	Drug Toxicology II	Embarcadero	57
	General and Behavioral Toxicology	Embarcadero	59
	Reproduction and Development II	San Francisco Room	60

# — GENERAL MEETING INFORMATION —

## **Sessions and Locations**

All meetings will be held on the street level and intermediate level Hyatt Regency Hotel (See Page 32).

## **Abstracts of Papers**

Distributed without charge to all members of the Society of Toxicology and to all preregistrants in advance of the meeting. Those registering at the meeting will be given the abstracts with their registration. Additional copies available at conference registration desk (Street Level Floor) at \$2 each.

## **Hotel Accomodations**

The Hyatt Regency Hotel is Conference headquarters. The following guaranteed guest room rates apply when reservations are made on the printed form accompanying the Pre-conference mailing:

Single	\$30-\$60
Twin	\$45-\$75

Additional guest rooms, as needed, will be available at the Hyatt Union Square Hotel at the same guaranteed rates.

Both hotels accept the following credit cards:

American Express, Bank Americard, Carte Blanche, Diners Club, Master Charge

## **Snack Bar**

A snack bar will be open Monday, Tuesday, Wednesday in the Ballroom Foyer, Hyatt Regency (Exhibit Area) 7:45 a.m. - 4:30 p.m.

**Conference Office - Hyatt Regency**  
Seacliff Room A

## — SPECIAL EVENTS AND SERVICES —

### **Annual Banquet**

Golden Gate Ballroom 7:30 P.M., Tuesday. \$17.50. See Page 39 of program for menu. Complimentary wine, courtesy, Charles River Breeding Laboratories.

### **Annual Business Meeting**

Golden Gate Ballroom, 3:15 P.M. Monday. Open to all Society of Toxicology members.

### **“Issues” Session**

Golden Gate Ballroom A, Tuesday, 12:00 - 1:15 P.M. The officers and Councilors will be available for discussions of pertinent questions with the membership in an open forum. Bring your sandwich, etc., from the Snack Bar and participate in a stimulating discussion of SOT affairs.

### **Ladies Hospitality**

Regency Room 9 A.M. - 4 P.M., Monday, Tuesday and Wednesday, 9 A.M. - Noon, Thursday.

### **Mixer and Reception**

Golden Gate Ballroom, 6:30 - 8 P.M. Sunday, Cash Bar. Jointly with Environmental Mutagens Society.

### **Placement Service**

Bayview Room,

10 A.M. - Noon, Monday, Tuesday and Wednesday

2 P.M. - 4 P.M., Monday, Tuesday

Co-chairmen: Mark Hite, W.E. Rinehart

### **Press Room**

Seacliff Room B. 8 A.M. - 9 P.M., Monday, Tuesday and Wednesday 8 A.M. - Noon, Thursday

### **NOTE**

The Environmental Mutagens Society Industrial Symposium Sunday afternoon, March 12, in the Sheraton Palace Gold Ballroom is open to all SOT members provided you wear your registration badge. The members of EMS are invited to participate in our Monday morning session on Mutagenesis. The Wednesday afternoon symposium is a joint activity with the Society of Teratology, as is the Thursday morning platform session.

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**COUNCIL (1977-78)**  
**(Composed of the Officers and four elected councilors)**

**Officers**

Harold M. Peck President  
Leon Golberg President-Elect  
Robert A. Scala Past President  
Gale C. Boxill Secretary  
Harold N. MacFarland Treasurer

**Councilors**

Herbert A. Cornish (1977-1979)  
Robert L. Dixon (1976-1978)  
Robert A. Neal (1977-1979)  
Frederick W. Oehme (1976-1978)

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**Executive Secretary**

William E. McCormick  
Society of Toxicology  
66 South Miller Road  
Akron, Ohio 44313  
216/867-3755

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**Local Conference**

Arthur Furst, Chairman  
Robert Hill  
Charles H. Hine  
Wendell W. Kilgore  
Jiro K. Kodama  
Gordon W. Newell  
Jean Schollier

# COMMITTEES 1977-1978

## ELECTED COMMITTEES

### **Educational Committee**

Stata Norton (1976-1978), Chairman  
Andrew L. Reeves (1976-1978)  
James E. Gibson (1977-1979)  
Joseph C. Street (1977-1979)

### **Finance Committee**

Harold N. MacFarland, Chairman  
Thomas D. Darby (1976-1978)  
Margaret Hitchcock (1976-1978)  
Wayland J. Hayes, Jr. (1977-1979)  
Dorothy B. Hood (1977-1979)

### **Membership Committee**

George Levinkas (1975-1978), Chairman  
Jiro K. Kodama (1976-1979)  
Joseph F. Borzelleca (1977-1980)

## APPOINTED COMMITTEES

### **Awards Committee**

Robert A. Scala, Chairman  
Robert A. Neal  
Herbert A. Cornish

### **Nominating Committee**

Seymour L. Friess, Chairman  
Robert J. Weir  
Torbjorn Malmfors  
Gabriel L. Plaa  
Jane Robens



### **Program Committee**

Leon Golberg, Chairman  
Gale C. Boxill, Secretary  
Steven D. Cohen (1975-1978)  
Robert T. Drew (1975-1978)  
Morris M. Joselow (1976-1979)  
K.S. Khera (1975-1978)  
James J. Kocsis (1977-1980)  
James M. McNerney (1976-1979)  
Joseph J. McPhillips (1976-1979)  
John H. Mennear (1976-1979)  
James S. Woods (1977-1980)

### **Technical Committee**

Robert G. Tardiff, Chairman  
A. Wallace Hayes, Co-chairman  
Martin R. Gilman  
Irwin A. Heyman  
Benjamin A. Jackson  
Gerald L. Kennedy, Jr.  
Henry M. Kissman  
Gabriel L. Plaa  
Charles F. Reinhardt  
Carl S. Smith  
Carrol S. Weil

### **Consultants**

Tobor Balazs  
Evelyn G. Burtis  
Stanley M. Kurtz  
Raymond E. Shapiro

**Advisory Committee on  
Acquisition of Toxicological  
Data on Pesticides for Food  
Additives Unit, World Health  
Organization**

Harold C. Grice, Chairman  
Sheldon D. Murphy, Co-chairman  
John W. Daniel  
William Durham  
Milton Eisler  
Donald D. McCollister  
Emil Poulsen  
Gaston Vettorazzi

**Committee for Legislative Assistance**

Seymour L. Friess, Chairman  
Victor A. Drill  
Ted A. Loomis  
Verald K. Rowe

**Board of Publications**

H.P.K. Agersborg, Jr. (1975-1978), Chairman  
William D'Aguzzo (1977-1980)  
Robert E. Menzer (1976-1979)  
Gabriel L. Plaa, Editor, Toxicology and Applied  
Pharmacology  
Harold M. Peck, President  
Leon Golberg, Auditor

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**APPOINTMENTS**

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**Historian\*\***

Harry W. Hays

**Placement**

Mark Hite, Director†  
William E. Rinehart, Co-director

**Representative to the Steering Committee of the  
International Congress of Toxicology**

Seymour L. Friess

**Representative to Scientific Advisory Board,  
National Center for Toxicological Research**

Robert A. Nealt†

**Liaison with European Society of Toxicology††**

Robert A. Scala  
Bo Holmstedt

**Liaison with American Industrial Hygiene Association\***

Gale C. Boxill  
Leon Golberg  
Harold M. Peck

**Liaison with Environmental Mutagen Society†**

Gordon W. Newell

**Liaison with National Society for Medical Research†**

Paul J. Garvin

**Liaison with Teratology Society**

Robert E. Staples

\* Appointment for 1 year, ends April 30, 1978

\*\* Appointment for 5 years, ends April 30, 1979

† Continuing appointment

†† Annual reappointment on a continuing basis

**———— FUTURE MEETINGS—SOCIETY OF TOXICOLOGY ————**

<b>Meeting</b>	<b>Year</b>	<b>Dates</b>	<b>Location</b>
18	1979	March 11-15	Marriott New Orleans, LA
19	1980	March 9-13	Sheraton Hotel Philadelphia, PA
20	1981	March 8-12	Washington Hilton Washington, D.C.
21	1982	March 7-11	Sheraton Boston Boston, MA
22	1983	March 13-17	Hyatt Regency (Embarcadero) San Francisco, CA
23	1984	March 11-15	Atlanta Hilton, Atlanta, GA

———— PAST PRESIDENTS—SOCIETY OF TOXICOLOGY ————

Harold C. Hodge .....	1961-1962
C. Boyd Shaffer .....	1962-1963
Paul S. Larson .....	1963-1964
Harry W. Hays .....	1964-1965
Frederick Coulston .....	1965-1966
Verald K. Rowe .....	1966-1967
John A. Zapp, Jr. ....	1967-1968
Carrol S. Weil .....	1968-1969
Ted A. Loomis .....	1969-1970
Robert L. Roudabush .....	1970-1971
Wayland J. Hayes, Jr. ....	1971-1972
Victor A. Drill .....	1972-1973
Joseph F. Borzelleca .....	1973-1974
Sheldon D. Murphy .....	1974-1975
Seymour L. Friess .....	1975-1976
Robert A. Scala .....	1976-1977

———— SOCIETY OF TOXICOLOGY AWARDS ————

**Merit**

1966 .....	H.F. Smyth, Jr.
1967 .....	A.J. Lehman
1968 .....	R.T. Williams
1969 .....	H.C. Hodge
1970 .....	D.D. Irish
1971 .....	K.P. DuBois
1972 .....	O.G. Fitzhugh
1973 .....	H.E. Stokinger
1974 .....	W.B. Deichmann
1975 .....	F. Coulston
1976 .....	V.K. Rowe
1977 .....	H.W. Hays

### Achievement

1967	.....	G.L. Plaa
1968	.....	A.H. Conney
1969	.....	S.S. Epstein
1970	.....	S.D. Murphy
1971	.....	Y. Alarie
1972	.....	R.L. Dixon
1973	.....	No Award
1974	.....	M.F. Cranmer
1975	.....	I.C. Munro
1976	.....	C.D. Klaassen
1977	.....	J.E. Gibson

### Frank R. Blood

1974	.....	Y. Alarie
1975	.....	D.J. Ecobichon G.J. Johnstone O. Hutzinger
1976	.....	R.D. Brown
1977	.....	J. Dedinas G.D. DiVencenzo C.J. Caplan

## Industrial Symposium

Sunday, March 12, 1978

2:00 - 5:00 p.m.

*Gold Ballroom, Sheraton-Palace Hotel*

*639 Market Street, San Francisco*

**(SOT Members invited to participate)**

### Environmental Mutagen Society

"Comparative Mutagenesis Results for Three Types of Industrial Chemicals: Tris (2,3-dibromopropyl) phosphate, Saccharin and Captan"

**Chairman:** G.W. Newell, Stanford Research Institute International, Menlo Park, CA

D.W. Matheson, Litton Bionetics, Inc., Kensington, MD

D.R. Stoltz, Bureau of Chemical Safety, Ottawa, Ont., Canada

R. Pertel, US Environmental Protection Agency, Washington, DC

## **Mixer and Reception**

Sunday, March 12, 1978

6:30 - 8:00 p.m.

Golden Gate Ballroom

Cash Bar

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## **Educational Symposium**

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(Sponsored and Organized by the Toxicology Study Section,  
Division of Research Grants, NIH)

Monday Morning, March 13, 1978

8:30-11:30 a.m.

San Francisco Room B

### **"Basics in Inhalation Toxicology"**

**Chairman:** Yves Alarie, Univ. of Pittsburgh, Pittsburgh, PA  
"Introduction"

**Participants:**

"Problems of Exposure Technology"

R.T. Drew, Brookhaven National Laboratory, Upton, Long  
Island, NY

"Problems with Exposures to Gases"

D.B. Menzel, Duke Univ. Medical Center, Durham, NC

"Problems with Exposures to Aerosols"

P.E. Morrow, Univ. of Rochester Medical Center,  
Rochester, NY

# SESSION #1

March 13, 1978 - Monday Morning

Golden Gate Ballroom A

**Platform I: "Mutagenesis"**

**Co-chairmen: S.Green, USFDA, Washington, DC**

**D.C. Villeneuve, Health and Welfare, Canada  
Ottawa, Ont., Canada**

Paper No.	Time (A.M.)	
1	8:20	<b>Detection of Chemical Mutagens Using Concentration Gradient Plates, Observations on Results with 414 Compounds.</b> R.E. McMahon, J.C. Cline and C.Z. Thompson, The Lilly Research Laboratories, Indianapolis, IN.
2	8:40	<b>Dominant Lethal Studies in Rats of Five Hair Dye Components: 2-nitro-p-phenylene-diamine, 4-nitro-o-phenylenediamine, m-phenylenediamine, 2,4-diaminoanisole sulfate and 2,5-diaminoanisole sulfate.</b> C.W. Sheu and S. Green, Food and Drug Administration, 200 C., SW, Washington, DC.
3	9:00	<b>Evaluation of Unscheduled DNA Synthesis in Germ Cells of Male Mice as an In Vivo Mutagenic Assay.</b> R.T. Robertson, Merck Institute, West Point, PA.
4	9:20	<b>Mutagen(s) in Human Feces: Reduction of Mutagenic Capacity by Fecal Components.</b> J.E. Aswell, M. Ehrich, and T.D. Wilkins, Anaerobe Laboratory, Virginia Polytechnic Institute and State Univ., Blacksburg, VA (S.D. Cohen).
	9:40	Break - 20 minutes
5	10:00	<b>Triethylenemelamine (TEM) Induced Gene Mutations at Biochemical Loci in the Mouse.</b> E.R. Soares, Chemical Industry Institute of Toxicology, Research Triangle Park, NC (L. Golberg).
6	10:20	<b>The Selective Use of In Vitro Tests to Detect Potential Carcinogenicity within Several Classes of Organic Chemicals.</b> J. Ashby, J.A. Styles and E. Longstaff, Central Toxicology Laboratory, Imperial Chemical Industries, Ltd., Cheshire, England. (L. Golberg).
7	10:40	<b>Determination of Differential DNA Damage Induced by Several Classes of Chemical Mutagens in Modified Selye's Granuloma Pouch Cells.</b> I.P. Lee and G. Zbinden, National Institute of Environmental Health Sciences, Research Triangle Park, NC and ETH and Univ. of Zurich, Schwerzenbach, Switzerland.

**Note:**

- 1) Names in parenthesis are sponsors of presentations, of which the authors are not members of SOT.
- 2) Platform presentations are intended to be 15 minutes in length, with 5 minutes for discussion.

8	11:00	<b>Enhancement of Chemically-Induced Mutagenesis in Cultured V79 Chinese Hamster Cells by Alkane Tumor-Promoting Agents.</b> G.R. Lankas, C.S. Baxter and R.T. Christian, Univ. of Cincinnati Medical School, Cincinnati, OH (C.C. Smith).
9	11:20	<b>Assessment of the Reproducibility of the Mammalian Cell Transformation Test for Chemical Carcinogens.</b> J.A. Styles, Central Toxicology Laboratory, Imperial Chemical Industries, Ltd., Alderley Park, Near Macclesfield, Cheshire, England (I.F.H. Purchase).
10	11:40	<b>Mutagens in the Nigerian Environment.</b> A.O. Uwaifo, G.O. Emerole, E.A. Bababunmi and O. Bassir, Univ. of Ibadan, Ibadan, Nigeria.

## SESSION #2

March 13, 1978 - Monday Morning

Golden Gate Ballroom B

*Platform II: "Metabolism I"*

**Co-Chairmen:** *P.G. Watanabe, Dow Chemical Co., Midland, MI*  
*M. Vore, San Francisco, CA*

Paper No.	Time (A.M.)	
11	8:20	<b>The Fate of Phenol, O-Phenylphenol and Disophenol in Rats.</b> T.A. Gbodi and F.W. Oehme, Comparative Toxicology Laboratory, Kansas State Univ., Manhattan, KS.
12	8:40	<b>Metabolism of Benzo(a)Pyrene. Binding to Nucleic Acids Activated by Microsomal Preparations and Highly Purified Ayl Hydrocarbon Hydroxylase.</b> H.A. Siefried, A.Y.H. Lu, W. Levin and D.M. Jerina, Tracor Jitco Inc., 1776 East Jefferson Street, Rockville, MD; Dept. of Biochemistry and Drug Metabolism, Hoffman LaRoche, Inc., Nutley, NJ; NIAMDD, National Institutes of Health, Bethesda, MD (M. Steinberg).
13	9:00	<b>Studies on the Respiratory Uptake, Excretion and the Skin Absorption of Methyl n-Butyl Ketone in Humans and Dogs.</b> G.D. DiVencenzo, M.L. Hamilton, C.J. Caplan, W.J. Krasavage and J.L. O'Donoghue, Health, Safety, and Human Factors Laboratory, Eastman Kodak Co., Rochester, NY.
14	9:20	<b>Fate of Inhaled Ethylene Dibromide in Rats.</b> P.G. Watanabe, J.D. Young, M.M. Schlachter, J.A. Zempel and R.J. Karbowski, Toxicology Research Laboratory, The Dow Chemical Co., Midland, MI.
	9:40	Break - 20 minutes



15	10:00	<b>Resolution of Dose Response Toxicity Data for Chemicals Requiring Metabolic Activation; Using as Example-Vinyl Chloride.</b> P.J. Gehring, P.G. Watanabe and C.N. Park, Toxicology Research Laboratory, The Dow Chemical Co., Midland, MI.
16	10:20	<b>Studies of the Vitro Metabolism of Thioacetamide and Thioacetamide Sulfine.</b> W.R. Porter and R.A. Neal, Department of Biochemistry, Vanderbilt Univ. School of Medicine, Nashville, TN.
17	10:40	<b>Ethylene Thiourea (C<sup>14</sup>) Metabolism in the Cat. Blood Decay Profile and Urinary Metabolites.</b> F. Iverson, K. Khera, Food Directorate, Health Protection Branch, Ottawa, Canada.
18	11:00	<b>Disposition of Zinc Pyrithione in the Rat.</b> J.H. Wedig, R. Wentworth, M. Gallo and J. Bavish, Olin Corp., New Haven, CT; Cornell Univ., Ithaca, NY; and Food and Drug Research Labs., Inc., Waverly, NY
19	11:20	<b>Alterations in Rat Liver Mitochondrial Urea Cycle Enzymes Following in Vivo Treatment with Aroclor 1254.</b> K.V. Ebner and D. Couri, Dept. of Pharmacology, The Ohio State Univ. College of Medicine, Columbus, OH

### SESSION #3

March 13, 1978 - Monday Morning

Embarcadero Room

**Poster I: "Cardiovascular, Renal and Pulmonary Toxicology"**  
**Responsibility: K.S. Khera, Food and Drug Directorate,**  
**Ottawa, Ont., Canada**

Paper No.	Time (A.M.)	
20	8:45-10:15	<b>The Effects of Bromochlorodifluoromethane (BCF) and Mn<sup>++</sup> on Rate Dependent Changes in Contractility of Isolated Atria.</b> R.A. Davis and D.C. Back, 6570th Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, OH
21		<b>The Effect of Paraquat and Diquat on Rat Kidney.</b> E.A. Lock and J. Ishmael, Imperial Chemical Industries, Ltd., Alderley Park, Nr Macclesfield, Central Toxicology Laboratories, Cheshire, England
22		<b>Chemically-induced modification of chlorinated hydrocarbon solvent nephro-toxicity.</b> W.M. Kluwe and J.B. Hook, Dept. of Pharmacology, Michigan State Univ., Lansing, MI.
23		<b>Postnatal Renal Function in Rats Exposed to Environmental Contaminants Prenatally.</b> K.M. McCormack J.B. Hook, Dept. of Pharmacology, Michigan State Univ., Lansing, MI.

- 24 **A Comparison of the Toxicity of Four Inotropic Catechol Amines Given by Continuous Intravenous Infusion to Dogs.** D.B. Meyers, J.R. Shoufler, G.C. Todd and W.R. Gibson, Toxicology Division, Lilly Research Laboratories, Greenfield, IN.
- 25 **Role of Renal Metabolism in the Pathogenesis of Renal Cortical Necrosis Produced by 4-Ipomeanol in the Mouse.** M.R. Boyd and J.S. Dutcher, Clinical Pharmacology Branch, National Cancer Institute, Bethesda, MD
- 26 **Response of Rats to Intratracheally Administered Oil Shale Dusts.** A.J. Gandolfi, J.E. Lund, R.E. Renne, K.E. McDonald, C.A. Shields, Battelle Pacific Northwest Laboratories, Richland, WA
- 27 **Effect of the Intravenous Administration of the Solubilized Plasticizer, Di(2-ethylhexyl) phthalate (DEHP) on the Lung and Survival of Transfused Rats.** R.J. Rubin and J.C.F. Chang, Dept. of Environmental Health Sciences, Johns Hopkins School of Hygiene and Public Health, Baltimore, MD.
- 28 **Early Damage Indicators of Lung Injury—Enzymatic Activity in the Airways.** R.F. Henderson, A.R. Rebar and J.A. Pickrell, Lovelace Biomedical and Environmental Research Institute, Albuquerque, NM. (J. Doull).
- 29 **Proliferative Response of Lung to Triton-X 100 Lavage.** N.A. Hackett and R.F. Henderson, Lovelace Biomedical and Environmental Research Institute, Albuquerque, NM (R.O. McClellan).
- 30 **Comparative Effects of Nitrogen and Carbon Monoxide on the Isolated Rat Heart.** J.J. McGrath and K.C. Chen. (J.J. Vostal), General Motors Research Laboratories, Biomedical Science Dept., Warren, MI.

## SESSION #4

Monday Morning - March 13, 1978

Embarcadero Room

*Poster II: "Agricultural Chemicals I"*

*Responsibility: S.D. Cohen, Univ. of Connecticut, Storrs, CT*

Paper No.	Time	
	10:30-12:00 N	
31		<b>Studies on the Inhalation Toxicity of Two Phosphoramidothioate Insecticides to Rodents and Quail.</b> P.E. Berteau and R.E. Chiles, Univ. of California, Naval Biosciences Laboratory, Oakland, CA (W.F. Durham).

- 32 **A Comparative *In vitro* Bioassay Study of the Toxicity of Aldrin, Parathion, and Paraoxon in Five Mammalian Cell Lines.** D.P. DeVore, W.L. Margard, A.J. Dennis and T.B. Hutson, Battelle, Columbus Laboratories, Columbus, OH (R.I. Freudenthal).
- 33 **Effects of Selected Organophosphorus Compounds on Protein Synthesis in a Serially Cultured Neuroblastoma Cell Line.** M.J. Harvey and P. Sharma, Toxicology Program, Utah State Univ., Logan, UT.
- 34 **Toxicity of Maneb as a Function of Age and Sex with Special Emphasis on the Peripheral Nervous System.** L. Rosenstein, J. Lowder, R. Deskin, N. Rogers, K. Jenkins and B. Westbrook. US Environmental Protection Agency, Health Effects Research Laboratory, Research Triangle Park, NC (W.F. Durham).
- 35 **Toxicity of Paraquat and Other Selected Viologens in Rats.** J.H. Ross and R.I. Krieger, Dept. of Environmental Toxicology, Univ. of California, Davis, CA.
- 36 **Development of an Animal Model for Prediction of Agricultural Field Re-Entry Hazard.** C. Skinner and W. Kilgore, Dept. of Environmental Toxicology, Univ. of California, Davis, CA.
- 37 **Immunesuppression in Mice Administered Methyl Parathion and Carbofuran by Diet.** A. Fan, J.C. Street, and R.M. Nelson, Toxicology Program, Utah State Univ., Logan, UT.
- 38 **The Metabolism and Excretion of Toxaphene and Selected Toxaphene Fractions.** G.A. Pollock and W.W. Kilgore, Dept. of Environmental Toxicology, Univ. of California, Davis, CA.
- 39 **Subchronic and Reproductive Toxicity of DINOSEB (DNBP).** L. Hall, R. Linder, T. Scotti, R. Bruce, R. Moseman, T. Heiderscheit, D. Hinkle, T. Edgerton, S. Chaney, J. Goldstein, M. Gage, J. Farmer, L. Bennett, J. Stevens, W. Durham and A. Curley, USEPA, Health Effects Research Laboratory, Research Triangle Park, NC.
- 40 **Tests for Possible Carcinogenicity of 20 Pesticides in Osborne-Mendel Rats and B6C3F1 Mice.** J.F. Robens, Tracor Jitco, Inc., Rockville, MD.
- 41 **Excretion of Carbaryl into the Saliva of the Rat.** M.L. Zimmerman, R.G. May and J.F. Borzelleca, Medical College of Virginia, Virginia Commonwealth Univ., Richmond, VA.
- 42 **Relative Sensitivities of Various Biochemical, Toxicological and Pathological Techniques in Demonstrating Sub-Lethal Lesions in the Rat Following Oral Administration of Low Levels of Methoxychlor.** J.M. Morgan and J.P. Hickenbottom, Dept. of Pharmacology, Univ. of Mississippi, University, MS (W.M. Davis).

## **Plenary Session**

Monday, March 13, 1978

1:00 - 3:00 p.m.

Golden Gate Ballroom

***“What is a Toxicologist?”***

**Moderator:** Joseph J. McPhillips, Astra Pharmaceutical Products, Inc., Framingham, MA

**Participants:**

*“What Have We Accomplished in Developing Toxicology as a Science?”*

T. Malmfors, Astra Pharmaceuticals AB, Sodertelje, Sweden

*“What Have We Accomplished as a Professional Society?”*

S.D. Murphy, Univ. of Texas Health Science Center, Houston, TX

*“What Have We Accomplished in the Training of Toxicologists?”*

M. Hitchcock, John B. Pierce Foundation, New Haven, CT.

*“What Have We Accomplished for the Environment?”*

L.B. Tepper, Air Products and Chemicals, Inc., Allentown, PA

## **ANNUAL BUSINESS MEETING**

Monday, March 13, 1978

Golden Gate Ballroom

3:15 p.m.

Harold M. Peck, Presiding

## **JOINT SYMPOSIUM**

with

Environmental Mutagen Society

Monday, March 13, 1978

8:00-10:30 p.m.

Golden Gate Ballroom

***“Scientific and Regulatory Aspects of Short-term Mutagensis/  
Carcinogenesis Assays”***

**Moderator:** David J. Brusick, Dept. of Molecular Toxicology, Litton Bionetics, Inc., Kensington, MD.

**Participants:**

*"Background and Introduction to Short-Term Tests"*

V.A. Ray, Medical Research Laboratories, Pfizer Pharmaceuticals, Groton, CT.

*"Regulatory Aspects of Short-Term Tests"*

E. Bingham, U.S. Dept. of Labor/OSHA, Washington, D.C.

R.M. Hehir, Consumer Product Safety Commission, Washington, DC

A.C. Kolbye, Jr., Food and Drug Administration, Washington, DC.

C.R. Morris, Environmental Protection Agency, Washington, DC

*"Validation Programs for Short-Term Tests"*

V.C. Dunkel, National Cancer Institute, Bethesda, MD

Open Discussion with Panelists and Audience

## **SESSION #5**

Tuesday Morning - March 14, 1978

Golden Gate Ballroom A

*Platform III: "Metabolism II"*

**Co-Chairmen: M.G. Horning, Baylor College of Med., Houston, TX**

**M.W. Anders, Univ. of Minnesota, Minneapolis, MN**

<b>Paper No.</b>	<b>Time (A.M.)</b>	
43	8:20	<b>Comparison of the Metabolism of Biphenyl, 4-Chlorobiphenyl and 4-Fluorobiphenyl.</b> K. Halpaap, E.C. Horning and M.G. Horning, Baylor College of Medicine, Houston, TX.
44	8:40	<b>Isolation and Identification of the Major Metabolite of Nitrofurantoin.</b> M.B. Aufrere, B. Hoener, J.L. D'Angona and M. Vore, Univ. of California, San Francisco, CA.
45	9:00	<b>Mechanism of the Metabolic Activation of Chloroform.</b> L.R. Pohl, B. Bhooshan and G. Krishna, Nat'l. Institutes of Health, Bethesda, MD (L.Golberg).
46	9:20	<b>Cyanuric Acid - Absorption, Distribution and Excretion Studies with (<sup>14</sup>C) Labeled Cyanuric Acid (S-Triazine Trione) in Rats.</b> D.G. Mackellar and G.L. Kennedy, FMC Corporation, Princeton, NJ and Industrial Bio Test Labs., Northbrook, IL (R.J. Fogleman).
	9:40	Break - 20 minutes
47	10:00	<b>Continual Assessment of Liver Enzyme Induction Following Low-Level Feeding of DDT to Rhesus Monkeys.</b> S.J. Gee, C.R. Clark, R.I. Krieger and J.L. Miller, Dept. of Environmental Toxicology, Univ. of California, Davis, CA.

48	10:20	<b>Butylated Monochlorinated Diphenyl Oxides: Rat and Monkey Pharmacokinetic Profile of <sup>14</sup>C-p-Chlorodiphenyl Oxide and its Mono and Dibutylated Derivatives.</b> R.J. Nolan, F.A. Smith, G.U. Boggs and B.A. Schwetz. Toxicology Research Laboratory Dow Chemical Co., Midland, MI
49	10:40	<b>Metabolism of <sup>14</sup>C-Ethylenediamine in Animals Following Various Routes of Administration.</b> R.S.H. Yang, M.J. Tallant, D.N. O'Malley and L.J. Sullivan, Carnegie-Mellon Institute of Research, 4400 Fifth Ave., Pittsburgh, PA (C.P. Carpenter).
50	11:00	<b>Excretion and Urinary Metabolic Profiles of Ethylbenzene, Ethylcyclohexane and Methylstyrene in Rats and Dogs.</b> B.H. Chin, L.J. Sullivan, S.J. Kozbelt and L.J. Calisti, Carnegie-Mellon Institute of Research, 4400 Fifth Ave., Pittsburgh, PA.
51	11:20	<b>The Metabolism and Distribution of 2,4,5-Trichlorophenoxyacetic Acid (2,4,5-T) in Pregnant Mice.</b> R.P. Koshakji, M.A. Asmed, R.D. Harbison, and M.T. Bush, Dept. of Pharmacology, Vanderbilt Univ., School of Medicine, Nashville, TN.
52	11:40	<b>The Protective Role of Methionine and Glutathione Biosynthesis During Drug Metabolism by Isolated Hepatocytes.</b> D.J. Reed and S. Orrenius, Dept. of Biochemistry and Biophysics, Oregon State Univ., Corvallis, OR and the Dept. of Forensic Medicine, Karolinska Institute, Stockholm, Sweden.

## SESSION #6

Tuesday Morning - March 14, 1978

Golden Gate Ballroom B

**Platform IV: "General Toxicology I"**

**Co-chairmen: J.S. Woods, NIEHS, Research Triangle Park, NC  
R.S. Chhabra, NIEHS, Research Triangle Park, NC**

Paper No.	Time (A.M.)	
53	8:20	<b>Six Month Oral Toxicity Studies in Rats and Dogs with Calcitriol.</b> E.A. Pfitzer, S.E. Sadek, W. Dairman and W.R. Pool.* Research Division, Hoffman-LaRoche, Inc., Nutley, NJ; *Present address: G.D. Searle & Co., Chicago, IL.
54	8:40	<b>Reproduction Studies with Calcitriol (Dihydroxyvitamin D<sub>3</sub>).</b> R.M. McClain, R.M. Hoar and E.A. Pfitzer, Research Division, Hoffman LaRoche, Inc., Nutley, NJ.

55	9:00	<b>Safety Evaluation of the Synthetic Pyrethroid Insecticide, Resmethrin, as a Clothing Impregnant.</b> K.C. Swentzel, R.A. Angerhofer, E.A. Haight, A.H. McCreesh and M.H. Weeks, U.S. Army Environmental Hygiene Agency, Aberdeen Proving Ground, MD.
56	9:20	<b>The Pathogenesis in Guinea Pigs of Cecal and Colonic Ulceration Induced by Two Sulfated Polysaccharides.</b> T. Barbolt, G. Estel, R. Abraham and F. Coulston, Institute of Comparative and Human Toxicology, Albany Medical College, Albany, NY.
	9:40	Break - 20 minutes
57	10:00	<b>Lysosomal Mechanisms in Experimental Hepatic Porphyria in Rats.</b> R. Abraham and N. Ringwood, Institute of Comparative and Human Toxicology, Albany Medical College, Albany, NY.
58	10:20	<b>Inhibition of Hepatic Mitosis by Myrex in Mice: Influence of Cortisone and Azothioprine.</b> B. Mayes and R. Abraham, Institute of Comparative and Human Toxicology, Albany Medical College, Albany, NY.
59	10:40	<b>Results of Two-year Toxicological Studies in Rats of Vinylidene Chloride Incorporated in the Drinking Water or Administered by Repeated Inhalation.</b> L.W. Rampy, J.F. Quast, C.G. Humiston, M.F. Balmer and B.A. Schwetz, Toxicology Research Laboratory, Dow Chemical Co., Midland, MI.
60	11:00	<b>Butylated Monochlorinated Diphenyl Oxide: Toxicity and Tissue Concentrations in Rats Following Sub-chronic Exposures.</b> D.R. Branson, C.G. Humiston, G.C. Jersey, G.U. Boggs and B.A. Schwetz, Toxicology Research Laboratory, Dow Chemical Co., Midland, MI.
61	11:20	<b>Chronic Toxicity of 2,4-Dinitrotoluene in the Rat.</b> H.V. Ellis, III, C.B. Hong, J.C. Dacre and C.C. Lee, Midwest Research Institute, Kansas City, MO, and U.S. Army Medical Bioengineering Research and Development Laboratory, Fort Detrick, MD.

## SESSION #7

Tuesday Morning - March 14, 1978

San Francisco Room A

**Platform V: "Industrial and Environmental Toxicology"**

**Co-Chairmen: M.M. Joselow, College of Medicine of New Jersey  
Newark, NJ**

**M. Gallo, Food and Drug Research Laboratories,  
East Orange, NJ**

Paper No.	Time (A.M.)	
62	8:20	<b>Inhalation of Sulfate Particulates I: Effects on Growth, Pulmonary Function and Locomotor Activity.</b> J.P. Lewkowski, L. Hastings, A. Vinegar, J. Leng, and G.P. Cooper, Dept. of Environmental Health, Univ. of Cincinnati, College of Medicine, and Health Effects Research Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH.
63	8:40	<b>Inhalation of Sulfate Particulates II: Pulmonary Biochemical Effects.</b> V.N. Finelli, S.D. Lee, R.M. Danner, J. Boiano, L. McMillan and G.P. Cooper, Dept. of Environmental Health, Univ. of Cincinnati College of Medicine and Health Effects Research Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH.
64	9:00	<b>Maturation of Sulfite Oxidase Activity in the Rat and Rabbit.</b> R.E. Gregory and A.F. Gunnison, Institute of Environmental Medicine, New York Univ. Medical Center, New York, NY (E.D. Palmes).
65	9:20	<b>S-sulfonates in Elastic Tissues Following <i>In vivo</i> Exposure to Sulfite.</b> A.F. Gunnison and E.D. Palmes, Institute of Environmental Medicine, New York Univ. Medical Center, New York, NY.
	9:40	Break - 20 minutes
66	10:00	<b>Alteration of the Toxicity of Oxidizing Air Pollutants: The Role of Dietary Fat and Vitamin E.</b> D.B. Menzel, D.H. Donovan and M. Sabransky, Depts. of Pharmacology and of Medicine, Duke Univ. Medical Center, Durham, NC.
67	10:20	<b>A Rapid and Specific Gas Chromatographic Analysis for Cysteine-S-Sulfonate in Hydrolyzates of Sulfonated Proteins.</b> J.D. de Bethizy and J.C. Street, Toxicology Program, Utah State Univ., Logan, UT.
68	10:40	<b>The Effects of Long-term Exposure to Concentrated Recycled Water.</b> N. Gruener, Gulf South Research Institute, New Orleans, LA.
69	11:00	<b>Rate of Bis (1-Chloroethyl) Ether in Rats After Acute Oral Administration.</b> R.D. Lingg, W.H. Kaylor, J.W. Glass, S.M. Pyle and R.G. Tardiff, Environmental Protection Agency, Cincinnati, OH.
70	11:20	<b>Results of a 90-Day Inhalation Toxicity Study of 1,2,3-Trichloropropene in Laboratory Animals.</b> M.J. McKenna, J.F. Quast and G.A. Stevens, Dow Chemical Co., Toxicology Research Laboratory, Midland, MI.
71	11:40	<b>The Toxicity of Butadiene to Rats by Inhalation.</b> C.N. Crouch, D.H. Pullinger, Hazleton Laboratories Europe Ltd., Harrogate, England (R.A. Scala).



## SESSION #8

Tuesday Morning - March 14, 1978

Embarcadero Room

*Poster III: "General Chemical Toxicology"*

*Responsibility: R.C. Schnell, Purdue Univ., West Lafayette, IN*

*A.W. Hayes, Univ. of Mississippi Med. Ctr., Jackson, MS*

Paper No.	Time (A.M.)	
72	8:45 - 10:15	<b>Fetal Distribution of Radio-Krypton Following Inhalation Exposure to Gravid Sheep.</b> F.D. Andrew, M.R. Sikov, D.H. Willard and J.E. Ballou, Biology Dept., Battelle Pacific Northwest Laboratories, Richland, WA.
73		<b>Toxicity Studies on Mono-2-ethylhexylphthalate (MEHP).</b> D.C. Villeneuve, C.A. Franklin, I. Chu, A. Yagminas, I.A. Marino, L. Ritter and J.A. Ruddick, Environmental Health Directorate, and Toxicology Research Division, Food Directorate, Ottawa, Canada.
74		<b>Effects of Low Level Exposure to Acrylamide in Water on Spontaneous Locomotor Activity.</b> J.P. Lewkowski, Y.Y. Yang, J.G. Orthofer, D.A. Fox, and R.G. Tardiff, Health Effects Research Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH.
75		<b>The Relative Neurotoxicity of Methyl n-Butyl Ketone and its Metabolites.</b> W.J. Krasavage, J.L. O'Donoghue and C.J. Terhaar, Health, Safety and Human Factors Laboratory, Eastman Kodak Co., Rochester, NY.
76		<b>The Oral and Dermal Uptake of Radiolabelled Tris (2,3-Dibromopropyl) Phosphate by Rats and Rabbits.</b> A.G. Ulsamer, W.J. Porter, Jr., and R.E. Osterberg, Consumer Product Safety Commission, Washington, DC.
77		<b>Behavioral Toxicology in Rats of a Mixture of Solvents Containing Substances Subject to Inhalation Abuse by Humans.</b> G.T. Pryor, L.R. Bingham and R.A. Howd, Life Sciences Division, SRI International, Menlo Park, CA (G.W. Newell).
78		<b>Changes in Serum Enzymes in Rats After Inhalation of Organic Solvents Singly and in Combination.</b> R.T. Drew, J.M. Patel and Fan-Nan Lin, National Institute of Environmental Health Sciences, Research Triangle Park, NC.
79		<b>Application of Flow Cytometry for the Evaluation of Myelotoxicity in Experimental Animals.</b> R.D. Irons, Chemical Industry Institute of Toxicology, Research Triangle Park, NC and P.K. Horan, Univ. of Rochester, School of Medicine & Dentistry, Rochester, NY (J.E. Gibson).

- 80 **A Sub-Acute Study in the Rat on Graded Levels of Restricted Food Consumption and its Effect on Tissues to Body Weight Ratios, Serum Clinical Chemistry and Hematological Parameters.** W. Dairman, Dept. of Toxicology, Hoffmann-LaRoche, Inc., Nutley, NJ (E.A. Pfitzer).
- 81 **Liver and Lung Toxicity of Diallylphthalate.** D.E. Carter, B. Feldman and I.G. Sipes, Toxicology Program, Univ. of Arizona, Tucson, AZ.
- 82 **The Comparative Toxicity of the Flame Retardant TRIS (2,3-Dibromopropyl) Phosphate and the Metabolite (2,3-Dibromopropanol) in the Rat.** R.E. Osterberg, G.W. Bierbower, A.G. Ulsamer, W.K. Porter, Jr., and S. Jones, Consumer Product Safety Commission, Washington, DC.
- 83 **The Influence of Concentration, Exposure, and Patch Occlusivity Upon Rabbit Primary Dermal Irritation Indices.** M.R. Gilman, R.A. Evans, S.J. De Salva, Dept. of Pharmacology & Toxicology, Colgate-Palmolive Company, Piscataway, NJ.
- 84 **The Determination of the Irritancy Potential of Surfactants Using Various Methods of Assessment.** H.P. Ciuchta and K.T. Dodd, Toxicology Research Unit, Gillette Medical Evaluation Laboratories, Rockville, MD.
- 85 **The Pharmacokinetics and Metabolism of Aniline Hydrochloride in Fischer 344 Rats.** J.S. Bus, D.E. Rickert, R.M. Norton and J.E. Gibson, Chemical Industry Institute of Toxicology, Research Triangle Park, NC.
- 86 **Subacute Oral Toxicity of TNT and a TNT/RDX Mixture to Dogs and Rodents.** J.V. Dilley, C.A. Tyson, D.P. Sasmore, R.J. Spanggord, G.W. Newell and J.C. Dacre, SRI International, Menlo Park, CA., and U.S. Army Medical Bioengineering Research and Development Laboratory, Fort Detrick, MD.

## SESSION #9

Tuesday Morning - March 14, 1978

Embarcadero Room

**Poster IV: "Hepatic and Gastrointestinal Toxicology"**

**Responsibility: M.W. Sauerhoff, Stauffer Chem. Co. Westport, CT**

Paper No.	Time (A.M.)	
87	10:30 - Noon	<b>Covalent Binding and Glutathione Depletion in Hepatic Tissue after Inhalation Exposure to <sup>14</sup>C-Vinylidene Chloride.</b> M.J. McKenna, J.A. Zempel and P.J. Gehring, Toxicology Research Laboratory, Dow Chemical U.S.A., Midland, MI.

- 88 **Effect of Hypoxia on the Toxicity of 1,1-Dichloroethylene or Acrylonitrile.** R.J. Jaeger, Harvard School of Public Health, Boston, MA.
- 89 **Increased Biliary Tree Permeability Produced by Bile Salt Treatment of Rats.** J.R. Olson and J.M. Fujimoto, Dept. of Pharmacology, Medical College of Wisconsin, Milwaukee, WI.
- 90 **Antimuscarinic Activity of the 8-Aminoquinoline Antimalarial Drug, Primaquine.** E.R. Seidel, R.L. Mundy and R.S. Teague, Dept. of Pharmacology, Univ. of Alabama in Birmingham, Birmingham, AL.
- 91 **Effect of Thioacetamide Pretreatment on the Hepatic Transport of Organic Anions.** A. Hunter, Dept. of Pharmacology, East Carolina Univ., School of Medicine, Greenville, NC (J.P. DaVanzo).
- 92 **The Effect of Diquat Dichloride on the Histology and Ultrastructure of Rat Stomach.** I. Pratt, H.C. Crabtree and M.S. Rose. Imperial Chemical Industries, Ltd., Central Toxicology Laboratories, Alderley Park, Nr. Macclesfield, Cheshire, England.
- 93 **Effect of Diquat Dichloride on Gastric Emptying and Fluid Accumulation in the Rat Stomach.** H.C. Crabtree and M.S. Rose, Imperial Chemical Industries, Ltd., Central Toxicology Laboratories, Alderley Park, Nr. Macclesfield, Cheshire, England.
- 94 **Covalent Binding to Colon Tissue and its Inhibition by Fecal Material.** M. Ehrich, R.L. Van Tassell and T.D. Wilkins, Anaerobe Laboratory, Virginia Polytechnic Institute and State Univ., Blacksburg, VA (S.D. Cohen).
- 95 **Interaction of Carrageenan (CG) with Some Dietary Nutrients in Relation to Their Absorption from the Gastrointestinal (GI) Tract of Rats.** M. Rhee, E.P. Pittz, R. Abraham, D. Rourke and F. Coulston, Institute of Comparative and Human Toxicology, Albany Medical College, Albany, NY.
- 96 **The Effects of Dietary Protein, Corn Oil and 2AAF on the Activities of Liver and Brain Enzymes in BALB/c Mice.** R.J. Feuers, D.A. Casciano, R.R. DeLongchamp, J.E. McAninch, J.B. Mays and M.J. Norvell, National Center for Toxicological Research, Jefferson, AR (T.E. Shellenberger)
- 97 **Induction of Mixed Function Oxidase in Primary Cultures of Mouse Hepatocytes.** K.K. Dougherty and J.L. Byard, Dept. of Environmental Toxicology, Univ. of California, Davis, CA.
- 98 **The Effect of Polymer Pyrolysis Fumes on the Activity of Rat Hepatic Cytochrome c Oxidase.** W.C. Thomas, Jr., E.J. O'Flaherty, R.H. Bell and K.L. Stemmer, Dept. of Environmental Health, Univ. of Cincinnati, Cincinnati, OH (P.B. Hammond).

- 99                    **Lymphatic Absorption of Benzo(a)Pyrene from the Intestinal Tract of the Unanesthetized Rat.** J.B. Reid and E. Bingham, Carnegie-Mellon Institute of Research, Pittsburgh, PA and Univ. of Cincinnati, Cincinnati, OH.
- 100                   **The Use of Primary Liver Cell Cultures to Study Hepatoxic Agents.** D. Acosta, D. Anufuro and R.V. Smith, College of Pharmacy, Univ. of Texas, Austin, TX (J.V. Bruckner).
- 101                   **Effect of Cholestatic Agent on Isolated Rat Hepatocyte Function.** J. Lavigne, G.B. Priestly and G.L. Plaa, Departement de Pharmacologie, Univ. de Montreal, Montreal, Canada and Dept. of Human Physiology and Pharmacology, Univ. of Adelaide, Adelaide, Australia.
- 102                   **Effects of  $\Delta^8$  and  $\Delta^9$ -Tetrahydrocannabinol ( $\Delta^8$ - and  $\Delta^9$ - THC) on Murine Hepatic RNA Polymerase Systems.** J.M. Wrenn, M.A. Friedman and L.S. Harris, Dept. of Pharmacology, Medical College of Virginia, Richmond, VA.

## SYMPOSIUM

Tuesday Afternoon, March 14, 1977

1:30 P.M. - 4:30 P.M.

Golden Gate Ballroom B

*"Unresolved Mechanisms of Toxicity"*

**Chairman: S.L. Friess, U.S. Naval Medical Research Inst.  
Bethesda, MD**

### Participants

**"Mechanisms of Oxidant Toxicity"**

J.E. Gibson, Chemical Industry Inst. of Toxicology, Research Triangle Park, NC

**"The Disposition of Chemicals in the Fetus and Mechanisms of Teratogenic Action"**

W.J. Waddell, School of Medicine, Univ. of Louisville, Louisville, KY

**"Pathological Mechanisms Operant in Hexacarbon Neurotoxicity"**

H.H. Schaumburg, P.S. Spencer, Albert Einstein College of Medicine, Bronx, NY

## SESSION #10

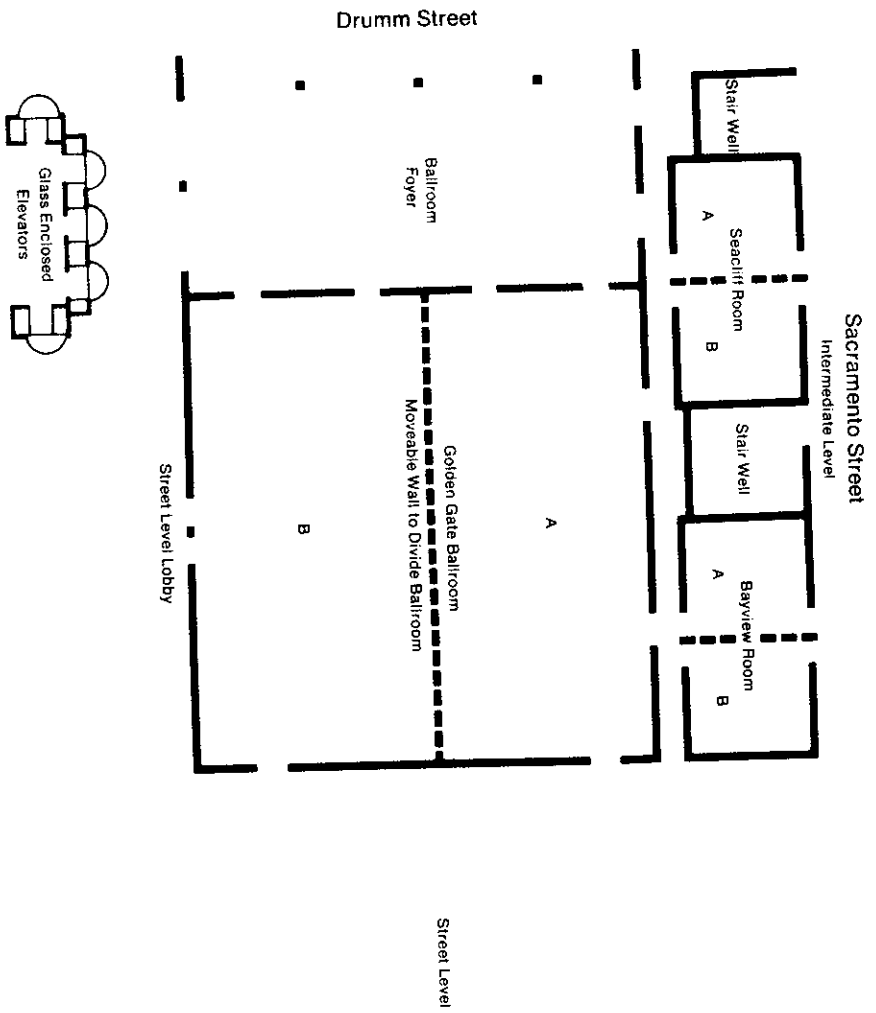
Tuesday Afternoon - March 14, 1978

Golden Gate Ballroom A

*Platform VI: "General Toxicology II"*

**Co-Chairmen: H.B. Matthews, NIEHS, Research Triangle Park, NC  
H.M. Mehendale, Univ. of Mississippi Med. Ctr., Jackson, MS**

Paper No.	Time (P.M.)	
103	1:30	<b>Decreasing Oral Toxicity of an Essential Oil from Myrtle by Adaptive Liver Stimulation.</b> H. Uehleke* and M. Brinkschulte-Freitas, Dept. of Pharmacology, Univ. of Tübingen, D-74 Tübingen, W. Germany, *Present address: Dept. of Toxicology, German Health Office Bundesgesundheitsamt, D-1, Berlin 33, Germany.
104	1:50	<b>Percutaneous Absorption of Cyanide from Aqueous Sodium Cyanide,</b> P.H. Dugard and S.J. Mawdsley, Central Toxicology Laboratory, Imperial Chemical Industries, Ltd., Alderley Park, Cheshire, England (A.A.B. Swan)
105	2:10	<b>Evidence for <i>in vivo</i> formation of a reactive metabolite of <sup>3</sup>H-benzene,</b> R. Snyder, E.W. Lee and J.J. Kocsis, Dept. of Pharmacology, Thomas Jefferson Univ., Philadelphia, PA.
106	2:30	<b>The Toxicity of Inhaled Benzene,</b> C.A. Snyder, B.D. Goldstein, A. Sellakumar, R.E. Albert and S. Laskin*, New York Univ. Medical Center, Tuxedo, NY * Deceased
107	2:50	<b>Effects of Diethylnitrosamine on Murine Hepatic Mixed Function Oxidase Activities.</b> A.N. Tucker, T. Tang and M.A. Friedman, Depts. of Pharmacology and Microbiology, Medical College of Virginia, Richmond, VA.
	3:10	Break- 20 minutes
108	3:30	<b>Enhanced Microsomal Bioactivation of Dimethylnitrosamine by Pretreatment of Mice with Acetone,</b> I.G. Sipes, M.L. Slocumb, G. Holtzman, Toxicology Program, Univ. of Arizona, Tucson, AZ.
109	3:50	<b>Alterations in Human Erythrocyte Osmotic Permeability Due to <i>In Vitro</i> Interaction with Neutral, Cationic and Anionic Polymers.</b> E.P. Pittz, P. Stankavich, L. Golberg and F. Coulston, Institute of Comparative and Human Toxicology, Albany Medical College, Albany, NY.
110	4:10	<b>Species and Strain Differences in Tissue Alkylation and Toxicity by 4-Ipomeanol: Predictive Value of Covalent Binding in the Study of Target Organ Toxicity.</b> J.S. Dutcher and M.R. Boyd, Clinical Pharmacology Branch, National Cancer Institute, Bethesda, MD.
111	4:30	<b>Pulmonary Bronchiolar Alkylation and Necrosis by 3-Methylfuran, A Potential Atmospheric Contaminant Derived From Natural Sources,</b> C.N. Statham, R.B. Franklin and M.R. Boyd, Clinical Pharmacology Branch, National Cancer Institute, Bethesda, MD.



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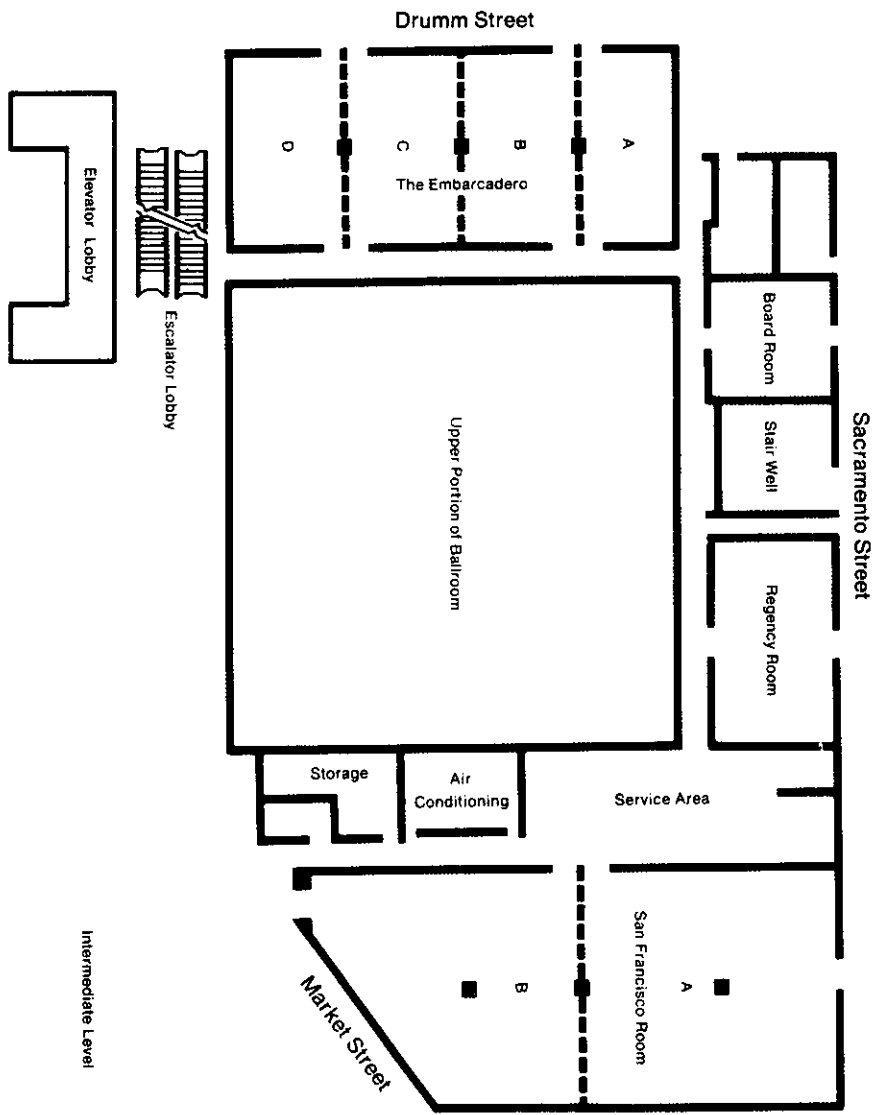
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# SESSION # 11

Tuesday Afternoon - March 14, 1978

San Francisco Room A

**Platform VII: "Nervous System"**

**Co-Chairmen: R.B. Forney, Indiana Univ. School of Medicine,  
Indianapolis, IN**

**D.G. George, Univ. of Utah, Salt Lake City, UT**

Paper No.	Time (P.M.)	
112	1:30	<b>Acute and Delayed Neuronal Toxicity in Rat and Chick Brains After Embryonic X-Irradiation.</b> F. Schneider and S. Norton, Dept. of Pharmacology, Univ. of Kansas Med. Ctr., Kansas City, KS.
113	1:50	<b>The Use of Biochemical Markers in the Study of Chemically-Induced Peripheral Neuropathy.</b> A.J. Dewar, B.J. Moffett and D.E. Stevenson, Shell Toxicology Laboratory (Tunstall), Shell Research, Ltd., Sittingbourne, Kent, England.
114	2:10	<b>Kepona Inhibition of Mouse Brain Synaptosomal ATPase Activities,</b> D. Desai, H.M. Mehendale and I.K. Ho, Dept. Pharmacology and Toxicology, The Univ. of Mississippi Medical Center, Jackson, MS.
115	2:30	<b>Toxic Effects of 2,5-Hexanedione.</b> J.L. O'Donoghue, W.J. Krasavage and C.J. Terhaar, Health, Safety and Human Factors Laboratory, Eastman Kodak Co., Rochester, NY.
116	2:50	<b>Occurrence of Neurotoxic Esterase in Various Tissues of the Hen,</b> R. J. Richardson and B.R. Dudek, Toxicology Research Laboratory, School of Public Health, The Univ. of Michigan, Ann Arbor, MI (H.H. Cornish).
	3:10	Break - 20 minutes
117	3:30	<b>Hallucinogen Effects on Cyclic GMP Levels in Newborn Rat Colliculus.</b> M.S. Rappaport and H. Cornish, Interdepartmental Toxicology Program and Dept. of Environmental and Industrial Health, The Univ. of Michigan, Ann Arbor, MI.
118	3:50	<b>Early Lead Exposure and Ontogeny of Seizure Responses in the Rat,</b> D.A. Fox, S.R. Overman and D.E. Wooley, Depts. of Animal Physiology and Environmental Toxicology, Univ. of California, Davis, CA.
119	4:10	<b>Persistent Neurotoxic Effects of Mild Prenatal Carbon Monoxide Exposure.</b> L. Fechter, Dept. of Environmental Health Sciences, Johns Hopkins Univ., School of Hygiene and Public Health, Baltimore, MD. (R.J. Rubin).

- 120 4:30 **Studies on Delayed Neurotoxicity Produced by Oral Administration of EPN in the Hen.** M.B. Abou-Donia and D.G. Graham, Depts. of Pharmacology and Pathology, Duke Univ. Medical Center, Durham, NC.
- 121 4:50 **Mechanisms of Organophosphate Axonopathy in Hens.** E. Olajos and I. Rosenblum, Institute of Comparative and Human Toxicology, Albany Medical College of Union Univ., Albany, NY.

## SESSION #12

Tuesday Afternoon - March 14, 1977

San Francisco Room B

*Platform VIII: "Mycotoxins"*

*Co-Chairmen: A.W. Hayes, Univ. of Mississippi Medical Center  
Jackson, MS*

*T. Phillips, Univ. of Mississippi Medical Center,  
Jackson, MS*

Paper No.	Time (P.M.)	
122	1:30	<b>Comparative Metabolism and Toxicokinetics of Aflatoxin B<sub>1</sub>—An Overview.</b> D.P. Hsieh, Dept. of Environmental Toxicology, Univ. of California, Davis, CA (G.L. Henderson).
123	1:50	<b>The Effects of Phenobarbital Pretreatment on the Metabolism and Toxicokinetics of Aflatoxin B<sub>1</sub> in the Rhesus Monkey.</b> Z.A. Wong and D.P.H. Hsieh, Dept. of Environmental Toxicology, Univ. of California, Davis, CA (J.J. Menn)
124	2:10	<b>Strain Dependent Toxicokinetics of Aflatoxin B<sub>1</sub> in the Rat.</b> J.J. Wong and D.P.H. Hsieh, Dept. of Environmental Toxicology, Univ. of California, Davis, CA (J.J. Menn).
125	2:30	<b>Comparative Metabolism of Aflatoxin B<sub>1</sub> in Mouse and Rat Primary Hepatocyte Cultures.</b> G.M. Decad, K.K. Dougherty, D.P.H. Hsieh and J.L. Byard, Dept. of Environmental Toxicology, Univ. of California, Davis, CA.
126	2:50	<b>Characterization and Mutagenicity of Water-Soluble Conjugates of Aflatoxin B<sub>1</sub>.</b> Cheng-i Wei, G.M. Decad, Z.A. Wong, J.L. Byard and D.P.H. Hsieh, Dept. of Environmental Toxicology, Univ. of California, Davis, CA (G.L. Henderson)
	3:10	Break - 20 minutes
127	3:30	<b>Comparative Toxicokinetics of AFB<sub>1</sub> in the Rhesus Monkey, Rat and Mouse.</b> Z.A. Wong, D.W. Rice and D.P.H. Hsieh, Dept. of Environmental Toxicology, Univ. of California, Davis, CA (J.J. Menn).

128	3:50	<b>Acute Toxicity of Patulin</b> , A.W. Hayes, T.D. Phillips and W.L. Williams, Depts. of Pharmacology and Toxicology and Anatomy, Univ. of Mississippi Med. Ctr., Jackson, MS.
129	4:10	<b>Distribution and Excretion of <sup>14</sup>C-Citrinin in Rats</b> . R.D. Phillips, W.O. Berndt and A.W. Hayes. Dept. of Pharmacology and Toxicology, Univ. of Mississippi Med. Ctr., Jackson, MS.
130	3:30	<b>In Vitro Binding of Rubratoxin B and Its Hydrogenated Analog to Mouse Hepatic Microsomes</b> , S.A. Watson and A. W. Hayes, Dept. of Pharmacology and Toxicology, Univ. of Mississippi Med. Ctr., Jackson, MS.

## SESSION #13

Tuesday Afternoon - March 14, 1977

Embarcadero Room

*Poster V: "Metabolism III"*

*Responsibility: J.J. Kocsis, Thomas Jefferson Univ.,  
Philadelphia, PA*

Paper No.	Time (P.M.)	
131	1:15-2:45	<b>Disposition of (<sup>14</sup>C) Tetrachloroethylene Following Oral and Inhalation Exposure in Rats</b> , D.G. Pegg,* J.A. Zempel, W.H. Braun and P.J. Gehring, Toxicology Research Laboratory, Dow Chemical U.S.A., Midland, MI, *Present address: Biomedical Science Dept., General Motors Technical Center, Warren, MI.
132		<b>Pharmacokinetics of Hexachlorophene in Rat after Intravenous and Intravaginal Administration</b> . C.P. Chow, H.S. Buttar and R.H. Downie, Drug Research Laboratories, Health Protection Branch, Health and Welfare Canada, Ottawa, Ont., Canada (B.B. Coldwell).
133		<b>Effect of Salicylate on the Fate of <sup>14</sup>C-sulfinpyrazone (Anturan) in Rats</b> . L.T. Wong, G. Solomonraj, H.S. Buttar and B.H. Thomas, Drug Research Laboratories, Health Protection Branch, Health and Welfare Canada, Ottawa, Ont., Canada (B.B. Coldwell).
134		<b>Characterization of Normal and Induced Cytochrome(s) P-450 of Rainbow Trout</b> , C.R. Elcombe and J.J. Lech, Dept. of Pharmacology, Medical College of Wisconsin, Milwaukee, WI.
135		<b>The Metabolism/Pharmacokinetics of Pentachlorophenol in Man, and a Comparison with the Rat and Monkey Model</b> , W.H. Braun, G.E. Blau and M.B. Chenoweth, Toxicology Research Laboratory, Dow Chemical U.S.A., Midland, MI (B.A. Schwetz).

- 136 **Comparative *In Vivo* and *In Vitro* Metabolism of p-Nitroanisole in Mice**, T.D. Trautman and R.I. Krieger, Dept. of Environmental Toxicology, Univ. of California, Davis, CA.
- 137 **Studies on Toxic, Alkylating Metabolites of 2-Methylfuran**. R.B. Franklin, Dept. of Pharmacology, Medical College of Wisconsin, Milwaukee, WI, and M.R. Boyd, Clinical Pharmacology Branch, National Cancer Institute, Bethesda, MD.
- 138 **NADH-Supported Oxidations of Foreign Compounds by Rhesus Monkey (*Macca mulatta*) Liver**. D.R. Dohn, S.J. Gee, R.I. Krieger, Dept. of Environmental Toxicology, Univ. of California, Davis, CA.
- 139 **Pharmacokinetics and Metabolism of an Oral Dose of Leptophos in the Cat**, M.B. Abou-Donia and M.A. Ashry, Dept. of Pharmacology, Duke Univ. Med. Ctr., Durham, NC.
- 140 **Pharmacokinetics and Metabolism of (Methyl-<sup>14</sup>C) Paraquat Chloride in Syrian Golden Hamster Following Intratracheal Instillation**. M.B. Abou-Donia and A.A. Komeil, Dept. of Pharmacology, Duke Univ. Med. Ctr., Durham, NC.
- 141 **Selective Changes in the Hepatic Microsomal Electron Transport System Following Repeated Oral 1- $\alpha$ -Acetylmethanadol Administration in the Mouse**, T.B. Barnes and L.W. Masten, Dept. of Pharmacology, Univ. of Mississippi, University, MS (W.M. Davis).
- 142 **Toxicokinetics of Intravenously Administered Bumetanide in Beagles**. J.E. Manno, R.D. Brown, B.R. Manno, J.A. Sterling and J.W. Landreneau, Dept. of Pharmacology and Therapeutics, Louisiana State Univ., Med. School, Shreveport, LA.
- 143 **Effects of Dietary Protein, Fat and 2-Acetylaminofluorene (2-AAF) on Liver Mixed Function Oxidase Activity in BALB/c Mice**. S. Louie, E. Lazear, P. Barren, J. Shaddock and M.J. Norvell, National Center for Toxicological Research, Jefferson, AR (T.E. Shellenberger).
- 144 **Comparison of Effects on Hepatic Microsomal Mixed Function Oxidases (MFO) After Dietary Administration of Butylated Hydroxytoluene (BHT) and a New Polymeric Antioxidant, Poly AO<sup>TM</sup>-79, to Rats**, S.C. Halladay and B.A. Ryerson, Dynapol, 1454 Page Mill Rd., Palo Alto, CA (I.G. Sipes).
- 145 **Comparison of the Kinetics, Body Distribution and Metabolism in the Rat and Rhesus Monkey of Low to Moderately Chlorinated Biphenyls**. G.R. Felt, W.F. Mueller, M.J. Iatropoulos, F. Coulston and F. Korte, International Center of Environmental Safety, Albany Medical College, Holloman AFB, NM and Institut fuer Oekologische Chemie, Gesellschaft fuer Strahlen-und Umweltforschung mbH, Muenchen, D-8051, Germany.

- 146                    **Metabolism and Body Distribution of Pentachloro-Benzene After Single Oral Dose in Rhesus Monkeys.** K. Rozman, W.F. Mueller, F. Coulston and F. Korte, International Center of Environmental Safety, Albany Medical College, Holloman Air Force Base, NM and Institut fuer Oekologische Chemie, Gesellschaft fuer Strahlen-und Umweltforschung mbH, Muenchen, D-8051, Germany.
- 147                    **Metabolism, Body Distribution and Histopathology of Pentachloronitrobenzene in Rhesus Monkeys.** W. Koegel, M.J. Iatropoulos, W.F. Mueller, F. Coulston and F. Korte, Institut fuer Oekologische Chemie, Gesellschaft fuer strahlen-und Umweltforschung, mbH, Muenchen D8051, International Center of Environmental Safety, Albany Medical College, Holloman AFB, NM.
- 148                    **Comparative Kinetic, Metabolic, and Histopathologic Effects of Chlorinated Hydrocarbon Pesticides in Rhesus Monkeys.** W.F. Mueller, M.J. Iatropoulos, K. Rozman, F. Korte and F. Coulston, Institut fuer Oekologische Chemie, Gesellschaft fuer Strahlen-und Umweltforschung, mbH, Muenchen D-8051, Germany and International Center of Environmental Safety, Medical College, Holloman AFB, NM.

## SESSION #14

Tuesday Afternoon, March 14, 1977

Embarcadero Room

*Poster VI: "Lung and Respiratory Tract I"*

*Responsibility: R.O. McClellan, Lovelace Foundation for Medical Research, Albuquerque, NM*

Paper No.	Time (P.M.)	
149	3:00-4:30	<b>A Comparison of the Acute Inhalation Toxicity of Hydrogen Chloride Versus the Thermal Decomposition Products of Polyvinyl Chloride.</b> C.S. Barrow, H. Lucia and Y. Alarie, Dept. of Industrial Environmental Health Sciences, Univ. of Pittsburgh, Pittsburgh, PA.
150		<b>Ninety Day Subacute Inhalation Study with Toluene in Albino Rats.</b> R.L. Rhudy, D.C. Lindberg, J.W. Goode, D.J. Sullivan and E.J. Gralla, Industrial Bio-Test Laboratories, Decatur IL and Chemical Industry Institute of Toxicology, Research Triangle Park, NC.
151		<b>Ninety Day Subacute Inhalation Study with Ethylene in Albino Rats.</b> R.L. Rhudy, D.C. Lindberg, J.W. Goode, D.J. Sullivan and E.J. Gralla, Industrial Bio-Test Laboratories, Decatur, IL and Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

- 152                    **The Role of Saturable Enzymatic Activation in the Expression of the Inhalation Toxicity of 1,1-Dichloroethylene**, M.E. Anderson, M.L. Gargas and L.J. Jenkins, Jr., Tox. Detachment, Naval Medical Research Institute, Wright-Patterson AFB, OH.
- 153                    **Sulfuric Acid Mist: A Pulmonary Irritant in Guinea Pigs**, F.L. Cavender, W.M. Busey and B.Y. Cockrell, Becton, Dickinson Research Center, Research Triangle Park, NC and Experimental Pathology Laboratories, Inc., Herndon, VA.
- 154                    **Subchronic Inhalation Toxicity of 2-Nitropropane in Rats and Rabbits**, W.M. Busey, C.E. Ulrich and T.R. Lewis, Experimental Pathology Laboratories, Inc., Herndon, VA; Huntingdon Research Center, New City, NY and National Institute for Occupational Safety and Health, Cincinnati, OH.
- 155                    **Motor Oil Antagonism of the Effects of SO<sub>2</sub> on Pulmonary Function in the Guinea Pig**, D.L. Costa and M.O. Amdur,\* Harvard School of Public Health, Boston, MA; \*Present address: Massachusetts Institute of Technology, Cambridge, MA.
- 156                    **Cigarette Smoke Inhalation Studies in Inbred Syrian Hamsters. I. Methods and Dosimetry**, P. Bernfeld and F. Homburger, Bio-Research Consultants, Cambridge, MA.
- 157                    **Cigarette Smoke Inhalation Studies in Inbred Syrian Hamsters. II. Histopathological Lesions in the Respiratory Tract**, F. Homburger, K.J. Pai, E. Soto and P. Bernfeld, Bio-Research Consultants, Cambridge, MA and Boston Univ. Medical School, Boston, MA.
- 158                    **Pulmonary Pathology in Rats Exposed to Marijuana Smoke for One-Year**, H. Rosenkrantz, R.W. Fleischman and J.R. Baker, Mason Research Institute, Worcester, MA.
- 159                    **Studies on the Pulmonary Uptake of Paraquat**, A.G.E. Wilson, J.J. O'Neil and F.M. Engelbrecht, National Institute of Environmental Health Sciences, Research Triangle Park, NC (E.W. Van Stee).
- 160                    **Lipid Requirement of the Rabbit Lung Mixed Function Oxidase System**, P.J. Hakkinen and M. Vore, Department of Pharmacology and Toxicology, Univ. of California Med. Ctr., San Francisco, CA.
- 161                    **Metabolism of Xenobiotic Compounds by Isolated Lung Cells**, T.R. Devereux, G.E.R. Hook and J.R. Fouts, National Institute of Environmental Health Sciences, Research Triangle Park, NC.
- 162                    **A Thirty-Day Inhalation Toxicity Study of Chlorine in Fischer 344 Rats**, C.S. Barrow, R.J. Kociba and L.W. Rampy, Chemical Industry Institute of Toxicology, Research Triangle Park, NC and Toxicology Research Laboratory, Dow Chemical U.S.A., Midland, MI.

**Inhalation Toxicology of Airborne Particulate Manganese in Rats and Rhesus Monkeys.** T.B. Griffin and F. Coulston, International Center of Environmental Safety, Albany Medical College, Holloman AFB, NM.

## **ANNUAL BANQUET**

Tuesday Evening, March 14, 1977

7:30 p.m.

Golden Gate Ballroom

### **Menu**

*Hearts of Romaine Mimosa  
Tomato and Cucumber Slices*

*Sauce Vinaigrette*

*Brochette of Beef*

*Rice Pilaf*

*Stringbeans Lyonnaise*

*Tomato Provencale*

*Manhattan Rocher*

*Sauce Melba*

*Choice of Coffee, Tea or Sanka*

*\$17.50*



## SESSION # 15

Wednesday Morning, March 15, 1977

Golden Gate Ballroom A

*Platform IX: "Reproduction and Development I"*

*Co-Chairmen: B.A. Becker, Abbot Laboratories, Chicago, IL*

*B.A. Schwetz, Dow Chemical U.S.A., Midland, MI*

Paper No.	Time (A.M.)	
164	8:20	<b>Toxicity of Ethylenethiourea in the Pregnant Cat Following Oral Administration at Low Dosage.</b> K.S. Khera and E. Iverson, Bureau of Chemical Safety, Directorate of National Health and Safety, Tunney's Pasture, Ottawa, Canada.
165	8:40	<b>A Biochemical Basis for Insecticide-induced Changes in the Male Reproductive System.</b> J.A. Thomas, M.P. Donovan and L.G. Schein, Dept. of Pharmacology, West Virginia Univ. Med. Ctr., Morgantown, WV.
166	9:00	<b>Monofluoroacetate and Trifluoroethanol as Testicular Poisons in the Rat.</b> J.L. Sullivan, F.A. Smith, R.M. Wilkenfeld, R.H. Garman and P.J. Kostyniak, Univ. of Rochester School of Medicine and Dentistry, Rochester, NY.
167	9:20	<b>Inhalation Teratology Studies with Captan and Folpet.</b> K.D. Courtney, J.E. Andrews and J.T. Stevens, Environmental Protection Agency, Research Triangle Park, NC.
	9:40	Break - 20 minutes
168	10:00	<b>Reproduction Studies on Cefaclor (Lilly Cephalosporin in 99638) In Four Species.</b> J.K. Markham, G.K. Hanasono, E.R. Adams and N.V. Owen, Lilly Research Laboratories, Greenfield, IN (J.L. Emmerson).
169	10:20	<b>Three-Generation Reproduction Study of Rats Ingesting 2,4,5-Trichlorophenoxyacetic Acid in the Diet.</b> F.A. Smith, B.A. Schwetz, F.J. Murray, A.A. Crawford, J.A. John, R.J. Kociba and C.G. Humiston, Toxicology Research Laboratory, Dow Chemical U.S.A., Midland, MI.
170	10:40	<b>Inhalation Teratology Studies on Three Fluoro-Carbons:</b> D.P. Kelly, R. Culik, H.J. Trochimowicz, W.E. Fayerweather, E.I. DuPont de Nemours and Company, Haskell Laboratory for Toxicology and Industrial Medicine, Newark, DE.
171	11:00	<b>Results of a Toxicity Study in Dogs and Teratogenicity Studies in Rabbits and Rats Administered Monomeric Styrene.</b> J.F. Quast, R.P. Kalnins, K.J. Olson, C.G. Humiston, F.J. Murray, J.A. John and B.A. Schwetz, Toxicology Research Laboratory, Dow Chemical U.S.A., Midland, MI.

172	11:20	<b>2-Benzoyl ethyltrimethylammonium, a New Potent Inhibitor of Choline Acetyltransferase and Sperm Motility.</b> B.V. Rama Sastry, A.K. Chaturvedi, V. Janson, M.L. Anderson and P. Soupart, Depts. of Pharmacology, and Obstetrics and Gynecology, Vanderbilt Univ., School of Medicine, Nashville, TN.
173	11:40	<b>Fetotoxic Potential of Durham, North Carolina, Municipal Drinking Water.</b> N. Chernoff, U.S. Environmental Protection Agency, Research Triangle Park, NC (L. L. Hall).

## SESSION #16

Wednesday Morning, March 15, 1977

Golden Gate Ballroom B

*Platform X: "Halogenated Hydrocarbons I"*

**Co-Chairmen: R.J. Jaeger, Harvard School of Public Health  
Boston, MA**

**L.J. Jenkins, Naval Medical Research Institute,  
Wright-Patterson AFB, OH**

Paper No.	Time (A.M.)	
174	8:20	<b>Acute and Sub-acute Toxicity of Chlorinated Guaiacols in the Rat.</b> D.C. Villeneuve, L. Ritter, I.A. Marino and I. Chu, Environmental Health Directorate, Health Protection Branch, Ottawa, Ont., Canada.
175	8:40	<b>Aldrin Epoxidase Activity in the Developing Rabbit Lung.</b> H.M. Mehendale, Dept. of Pharmacology and Toxicology, Univ. of Mississippi Med. Ctr., Jackson, MS.
176	9:00	<b>Toxicological and Immunological Effects of a Commercial Polybrominated Biphenyl Mixture (Firemaster FF-1).</b> J.A. Moore, M.I. Luster, B.N. Gupta, and E.E. McConnell, National Institute of Environmental Health Sciences, Research Triangle Park, NC.
177	9:20	<b>Comparison of a Commercial Polybrominated Mixture (Firemaster BP-6) with 2,4,5,2'4'5'-Hexachlorobiphenyl and a Tetrabromonaphthalene as Inducers of Hepatic Mixed-Function Oxidases.</b> J.A. Goldstein and P. Hickman, National Institute of Environmental Health Sciences, Research Triangle Park, NC.
178	9:40	<b>Effect of Hexachlorobutadiene (HCB) on Renal Function in the Rat.</b> W.O. Berndt and H.M. Mehendale, Dept. Pharmacology and Toxicology, Univ. of Mississippi Med. Ctr., Jackson, MS.

	10:00	Break - 20 minutes
179	10:20	<b>2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) Induction of Aryl Hydrocarbon Hydroxylase (AHH) in Hepatic Microsomes from Female Rats</b> , K.T. Kitchin and J.S. Woods, National Institute of Environmental Health Sciences, Research Triangle Park, NC.
180	10:40	<b>Studies on the Mechanism of the Metabolism of Haloforms to Carbon Monoxide</b> , J.L. Stevens and M.W. Anders, Dept. of Pharmacology, Univ. of Minnesota, Minneapolis, MN.
181	11:00	<b>Results of a Two-Year Chronic Toxicity and Oncogenicity Study of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) in Rats</b> , R.J. Kociba, D.G. Keyes, R.M. Carreon, C.E. Wade, D.A. Dittenber, R.P. Kalnins, L.E. Frauson, C.N. Park, R.A. Hummel and C.G. Humiston, Toxicology Research Laboratory, Dow Chemical U.S.A., Midland, MI.
182	11:20	<b>Exquisite Toxicity in the Guinea Pig to Structurally Similar Halogenated Dioxins, Furans, Biphenyls and Naphthalenes</b> , E.E. McConnell and J.D. McKinney, National Institute of Environmental Health Sciences, Research Triangle Park, NC (J.A. Goldstein).

## SESSION #17

Wednesday Morning, March 15, 1977

San Francisco Room

*Platform XI: "Lung and Respiratory Tract II"*

**Co-Chairmen: M. Steinberg, Tracor-Jitco, Inc., Rockville, MD  
A.H. McCreesh, U.S.A.E.H.A., Aberdeen Proving Ground, MD**

Paper No.	Time (A.M.)	
183	8:20	<b>Biochemical Changes Seen in Guinea Pigs After Inhalation of Formaldehyde and Nitrogen Dioxide</b> , F.J. Mecler, Harvard School of Public Health, Boston, MA (M.O. Amdur).
184	8:40	<b>Acute Effects of Paraquat and Ozone on Cytochrome Dependant Enzyme Systems in the Lung</b> , M.R. Montgomery, P.J. Casey and D.E. Niewoehner, Veterans Administration Hospital and Univ. of Minnesota, Minneapolis, MN.
185	9:00	<b>Effects of Chlorphentermine on Properties of the Alveolar Macrophage</b> , M.J. Reasor and E.R. Walker, West Virginia Univ. Med. Ctr., Morgantown, WV (J.U. Bell).

186	9:20	<b>Induction of Aryl Hydrocarbon Hydroxylase in Rodent Tissues Following Intratracheal Instillation or Intraperitoneal Administration of Benzo(a)pyrene</b> , C.E. Mitchell, Lovelace Biomedical and Environmental Research Institute, Albuquerque, NM (F.W. Oehme).
187	9:40	<b>Pulmonary Toxicity of 3-Substituted Furans from the Mint Plant <i>Perilla Frutescens</i></b> Britton, B.J. Wilson, J.E. Garst and R.D. Linnabary, School of Medicine, Vanderbilt University, Nashville, TN.
	10:00	Break - 20 minutes
188	10:20	<b>Assessment of Ozone Toxicity Using a Biomathematical Model</b> , F.J. Miller, Environmental Protection Agency, Research Triangle Park, NC (D.B. Menzel).
189	10:40	<b>Factors Affecting the Efflux of Paraquat from the Lung</b> , L.L. Smith, I.Wyatt and M.S. Rose, Imperial Chemical Industries Limited, C.T.L., Alderley Park Nr. Macclesfield, Cheshire, England.
190	11:00	<b>Experimental Respiratory Hypersensitivity to a Toluene Isocyanate Hapten</b> , M. Karol, E.J. Riley, H. Ioset, Y. Alarie, Dept. of Industrial Environmental Health Sciences, Univ. of Pittsburgh, Pittsburgh, PA.
191	11:20	<b>Nickel Chloride: Kinetics of Removal from the Airway and Potential Accumulation in the Rat Lung</b> , J.M. Charles, S.J. Williams and D.B. Menzel, Dept. of Pharmacology and of Medicine, Duke Univ. Med. Ctr., Durham, NC and Environmental Protection Agency, Research Triangle Park, NC.

## SESSION #18

Wednesday Morning, March 15, 1977

Embarcadero Room

*Poster VII: "Metals I"*

**Responsibility:** *B.A. Fowler, NIEHS, Research Triangle Park, NC  
G.Cherian, Univ. Western Ontario, London, Ont.,  
Canada*

Paper No.	Time (A.M.)	
	8:45-10:15	
192		<b>The Effect of Cadmium on Calcium Absorption from the Rat Intestine</b> , E.M. Yuhas, T.S. Miya* and R.C. Schnell, Dept. of Pharmacology and Toxicology, Purdue University, West Lafayette, IN; *Present Address: School of Pharmacy, Univ. of North Carolina, Chapel Hill, NC.

- 193 **Role of Hepatic Metallothionein in the Tolerance to Cadmium Induced Inhibition of Drug Metabolism in the Rat**, S.A. Roberts, G.S. Probst and R.C. Schnell, Dept. of Pharmacology and Toxicology, Purdue University, West Lafayette, IN.
- 194 **Cadmium-Induced Alteration in Hepatic Microsomal Drug Metabolism: Sex-Related Differences in the Rat**, D.H. Pence and R.C. Schnell, Dept. of Pharmacology and Toxicology, Purdue University, West Lafayette, IN.
- 195 **Role of Metallothionein in Accumulation, Transport and Excretion of Cadmium in Rats**, K. Hirayama and Z.A. Shaikh, Univ. of Rochester Medical School, Rochester, NY (T.W. Clarkson).
- 196 **Increase in Metal-Binding by Hepatic Metallothionein after Treatment with Alkylating Agents**, F.N. Kotsonis and C.D. Klaassen, Univ. of Kansas Med. Ctr., Kansas City, KS.
- 197 **Residues of Cadmium in Edible Tissues or Products of Lactating Cows, Swine and Layer Hens After Low Level Dietary Exposures**, J.C. Street, R.P. Sharma, J.L. Shupe and D.J. Wagstaff, Utah State Univ., Logan, UT and Bureau of Veterinary Medicine, Food and Drug Administration, Rockville, MD.
- 198 **Castration Fails to Prevent Cadmium Carcinogenesis**, Arthur Furst, Inst. of Chemical Biology, Univ. of San Francisco, CA.
- 199 **Effect of Cadmium on the Biochemical Components of the Hepatic Microsomal Mono-oxygenase System of the Male Rat**, J.R. Means, G.P. Carlson, R.C. Schnell, Dept. of Pharmacology and Toxicology, Purdue University, West Lafayette, IN.
- 200 **Absorption and Retention of Orally Administered <sup>109</sup>Cd in Humans**, Z.A. Shaikh and J.C. Smith, Univ. of Rochester School of Medicine, Rochester, NY (T.W. Clarkson).
- 201 **The Distribution of Vanadium in Rat Tissues Following Continuous Ingestion of Vanadyl Sulfate and Sodium Orthovanadate**, R.D.R. Parker and R.P. Sharma, Dept. of Biology and Toxicology Program, Utah State Univ., Logan, UT.
- 202 **Toxicodynamics of Intratracheally Administered Vanadium in Rats**, S.G. Oberg, R.D.R. Parker and P. Sharma, Dept. of Biology and Toxicology Program, Utah State Univ., Logan, UT.
- 203 **Evidence For Specific Lead-Δ -Aminolevulinatone Complex Formation by C-13 Nuclear Magnetic Resonance Spectroscopy**, C.S. Baxter, H.E. Wey, and A.B. Cardin, Univ. of Cincinnati College of Medicine, Cincinnati, OH (P.B. Hammond).

- 204                    **Mercury Exhalation in Mice Given Mercuric Chloride (HgCl<sub>2</sub>)**, J.D. Dunn, T.W. Clarkson, and L. Magos, Univ. of Rochester School of Medicine, Rochester, NY and Medical Research Council Laboratories, Woodmansterne Road, Carshalton, Surrey, England.
- 205                    **Synthesis and Study of Some New Chelating Agents Which Stimulate the Biliary Excretion of Methyl Mercury**, B.L. Rubel, J.S. MacDonald, R.D. Harbison, M.M. Jones, T. Pratt and W. Mitchell, Dept. of Pharmacology and Chemistry, Vanderbilt Univ., Nashville, TN.
- 206                    **Effects of Arsenic on Mitochondrial and Microsomal Oxidative Interactions**, B.A. Fowler, J.S. Woods and C.M. Schiller, National Institute of Environmental Health Sciences, Research Triangle Park, NC.
- 207                    **Perturbation of Hepatic Heme Biosynthesis and Urinary Porphyrin Levels as an Early Response to Prolonged Arsenic Exposure**, J.S. Woods and B.A. Fowler, National Institute of Environmental Health Science, Research Triangle Park, NC.
- 208                    **Heavy Metals in Dairy Products**, D.J. Wagstaff, K. Mahaffey, and J.C. Street, Food and Drug Administration, Washington, DC and Cincinnati, OH and Utah State Univ., Logan, UT.
- 209                    **Effects of Zinc and Other Metal Ions on the *in vitro* Binding of Androgens to Cytoplasmic Proteins of Mouse Prostate Gland**, M.P. Donovan, L.G. Schein and J.A. Thomas, Dept. of Pharmacology, West Virginia Univ. Med. Ctr., Morgantown, WV

## SESSION #19

Wednesday Morning, March 15, 1977

Embarcadero Room

**Poster VIII: "General Toxicology III"**

**Responsibility: Mary Vore, San Francisco, California**

Paper No.	Time (A.M.)	
	10:30-12:00	
210		<b>Isopropylphenyl Phosphate Esters: Subacute Dermal Toxicity Study</b> , T. Cascieri and D.G. MacKellar, FMC Corporation, Princeton, NJ (A.J. LeBrun).
211		<b>Results of a Two-year Inhalation Toxicity Study of Hydroxyethyl Acrylate (HEA) in Rats</b> , L.W. Rampy, R.J. Kociba, M.F. Balmer, D.G. Keyes, J.D. Schuetz, and H.O. Yakei, Toxicology Research Laboratory, Dow Chemical Company, Midland, MI.

- 212 **Toxicity Studies of Carnuba Wax Consumption in Rats and Dogs**, J.G. Babish, K.R. Stevens, G.E. Cox, and M.A. Gallo, Food and Drug Research Laboratories, Inc., Waverly, NY.
- 213 **A Static Chronic Bioassay Conducted with an Organosilicon Chemical, TX-1319, in Daphnia Magna**, G.A. Rausina, L.R. Willis, J.W. Goode, B.M. Phillips, R. Annelin and E. Hobbs, Industrial Bio-Test Laboratories, Decatur, IL and Dow Corning Corporation, Midland, MI.
- 214 **A Flowthrough Chronic Bioassay Conducted with an Organosilicon Chemical, TX-1319, in Fathead Minnows**, G.A. Rausina, L.R. Willis, J.W. Goode, B.M. Phillips, R. Annelin and E. Hobbs, Industrial Bio-Test Laboratories, Decatur, IL and Dow Corning Corporation, Midland, MI.
- 215 **Neurotoxic Evaluation of Some Aliphatic Ketones**, E.R. Homan and R.R. Maronpot, Carnegie-Mellon Inst. of Research, Chemical Hygiene Fellowship, Pittsburgh, PA.
- 216 **The Effect of Carboxylesterase Inhibition on the Toxicity of Methyl Acrylate, Ethyl Acrylate and Acrylic Acid**, E.H. Silver and S.D. Murphy\*, Harvard School of Public Health, Boston, MA and University of Texas Medical School, Houston, TX; \*Present Address: Univ. of Texas Health Science Ctr., Houston, TX.
- 217 **Species-Dependent Toxicity of a Thiourea Derivative in Rats and Monkeys**, S.D. Warner and J.E. LeBeau, Toxicology Laboratory, Health and Consumer Products Department, Dow Chemical U.S.A., Indianapolis, IN (D.J. Thompson).
- 218 **The Disposition of <sup>14</sup>C-RH-787 (Vacor® Rodenticide) in Rodents and Dogs**, F.W. Deckert, L.M. Hagerman, D.C. Lisk, R.B. Steigerwalt, and J.R. Udinsky, Rohm and Haas Company Research Laboratories, Spring House, PA (J.M. Smith).
- 219 **An Attempt to Correlate the Calculated Stability of a Series of Epoxides with the Known Genotoxic Properties of Their Alkene Precursors**. W.C. Mackrodt, R.B. Jones, A.G. Salmon and J. Ashby, The Corporate Laboratory, Runcorn Health and Central Toxicology Laboratory, Imperial Chemical Industries, Ltd., Cheshire, England, UK.
- 220 **Response of Rats to Repeated Administration of  $\Delta^9$ Tetrahydrocannabinol: Serum Protein, Lipoprotein and LDH-Isozyme Electrophoretic Patterns**. B.R. Manno, J.E. Manno, C.S. Kaga and J.L. Schaller, Louisiana State Univ. Medical School, Shreveport, LA.
- 221 **Interaction of Diethanolamine with Phospholipid Metabolism *In Vitro* and *In Vivo***, S.J. Barbee and R. Hartung, School of Public Health, Univ. of Michigan, Ann Arbor, MI.

- 222                    **Prevention of Carbon Tetrachloride Induced Early Ultrastructural Changes in Rat Liver by Pyrazole Administration**, A.S. Bernacchi, C.R. de Castro, E.C. de Ferreyra; O.M. de Fenos and J.A. Castro, Laboratorio de Quimica Biotoxicologica, CITEFA, Villa Martelli, Buenos Aires, Argentina.
- 223                    **Covalent Binding of Carbon Tetrachloride Metabolites to Liver Nuclear DNA, Proteins and Lipids**, M.I. Diaz Gomez and J.A. Castro, Laboratorio de Quimica Biotoxicologica, CITEFA, Villa Martelli, Buenos Aires, Argentina

## **JOINT SYMPOSIUM**

with

**Teratology Society**

Wednesday, March 15, 1978

1:30 - 4:30 p.m.

Golden Gate Ballroom B

**"Teratology and Toxicology: A Marriage of Necessity"**

Moderator: Eugene V. Perrin, Depts. of Pathology and Pediatrics, Wayne State University, Detroit, MI

**"The Teratology of Toxicology - the Onus and the Hope"**

**Participants:**

**"Newer Techniques and Tactics, or Teratology Enters the Twentieth Century"**

D.W. Nebert, Developmental Pharmacology Branch, National Institute of Child Health and Human Development, Bethesda, MD

**"Dilemmas in Teratology Screening and Testing"**

R.M. Hoar, Hoffman-LaRoche, Inc., Nutley, NJ

**"How Not to Solve an Environmental Crisis - the PBB Mess"**

M. Barr, Jr., Department of Pediatrics, Univ. of Michigan, Ann Arbor, MI

**4:30 P.M.**

**"Contributions of the Agricultural Research Service in the Field of Toxicology"**

H.E. Smalley, Agricultural Research Service, USDA, College Station, TX.



## SESSION #20

Wednesday Afternoon, March 15, 1977

San Francisco Room A

*Platform XII: "Drug Toxicology I"*

*Co-Chairmen: T. Balazs, FDA, Drug Toxicology Branch,  
Washington, DC*

*R.A. Nelson, 3M Corp., St. Paul, MN*

Paper No.	Time (P.M.)	
224	1:10	<b>SQ 14, 225, an Orally Active Inhibitor of Angiotensin-Converting Enzyme: Acute and Subacute Toxicity in Animals</b> , P.L. Sibley, G.R. Keim, C.H. Keysser, J.S. Kulesza, M.M. Miller and I.H. Zaidi, The Squibb Inst. for Medical Research, New Brunswick, NJ.
225	1:30	<b>Modulation of Pulmonary Drug Uptake by Pre-exposure to Xenobiotics</b> , H.M. Mehendale, Univ. of Mississippi Medical Center, Jackson, MS.
226	1:50	<b>Studies on the Effect of Sulfhydryl Reagents on the Antitumor Effect of Adriamycin</b> , R.W. Freeman, J.S. Macdonald, R.C. Boerth, R.D. Harbison and J.A. Oates, Vanderbilt Univ. Medical Center, Nashville, TN.
227	2:10	<b>Effect of Nonsteroidal Anti-Inflammatory Agents on Toxicity of Retinoic Acid in Mice</b> , E.Jane Hixson and E. Paul Denine, Southern Research Inst., Birmingham, AL.
228	2:30	<b>The Effect of Organophosphate Insecticides on the Action and Metabolism of Local Anesthetic Esters</b> , R.E. Ouellette, B.T. Laplante and S.D. Cohen, School of Pharmacy, Univ. of Connecticut, Storrs, CT.
	2:50	Break - 20 minutes
229	3:10	<b>Drug-Induced Hepatotoxicity in Rats: Correlation of Clinical Chemistry, Enzyme Histochemistry and Light Microscopic Changes</b> , D.E. Johnson, J.L. Robertson, E. Richardson and B.I. Doerr, Hoechst-Roussel Pharmaceuticals, Inc., Somerville, NJ (H.H. Cornish).
230	3:30	<b>Interactions of Sodium Dichloroacetate and Phenformin in Normoglycemic Dogs</b> , V.M. Traina, R.M. Diener and R.L. Provost, Subdivision of Toxicology and Pathology, Ciba-Geigy Corporation, Summit, NJ.
231	3:50	<b>Studies on Cefazolin-Induced Depression of Amino-transferase Activity in Laboratory Animals</b> , S.A. Turnipseed, J.S. Wold and J.S. Welles, Toxicology Division, Lilly Research Laboratories, Greenfield, IN.
232	4:10	<b>The Mechanism of Enhanced Cephaloridine Nephrotoxicity After Inhibition of Cation Transport</b> , J.S. Wold, S.A. Turnipseed and B.L. Miller, Toxicology Division, Lilly Research Laboratories, Greenfield, IN (J.L. Emerson).

## SESSION #21

Wednesday Afternoon, March 15, 1977

San Francisco Room B

### *Platform XIII: "Agricultural Chemicals II"*

**Co-chairmen: R.I. Krieger, Univ. of California, Davis, CA**  
**R.P. Sharma, Dow Chemical, U.S.A., Midland, MI**

Paper No.	Time (P.M.)	
233	1:10	<b>Toxicology of Glyphosate in Rats and Mice</b> , E.A. Bababunmi, O.O. Olorunsogo and O. Bassir, Univ. of Ibadan, Dept. of Biochemistry, Ibadan, Nigeria.
234	1:30	<b>The Acute Inhalation Toxicity of Technical Captan and Folpet</b> , J.T. Stevens, J.D. Farmer and L.C. DiPasquale, USEPA, Health Effects Research Laboratory, Research Triangle Park, NC.
235	1:50	<b>Comparative Penetration (<i>in vivo</i>) of Insecticides Through the Skin and Gastrointestinal Tract of Mice</b> , S.M. Ahdaya, P.V. Shah and F.E. Guthrie, Toxicology Program, North Carolina State Univ., Raleigh, NC.
236	2:10	<b>Induction of Hepatic Xenobiotic Metabolizing Enzymes by Pesticides. I. Microsomal Enzymes</b> , D.L. Fabacher, A.P. Kulkarni and Earnest Hodgson, Dept. of Entomology, North Carolina State Univ., Raleigh, NC.
237	2:30	<b>Induction of Hepatic Xenobiotic Metabolizing Enzymes by Pesticides. 2. Glutathione S-transferase</b> , A.P. Kulkarni, D.L. Fabacher and Ernest Hodgson, Dept. of Entomology, North Carolina State Univ., Raleigh, NC.
	2:50	Break - 20 minutes
238	3:10	<b>The Metabolism and Disposition of Ethalfluralin, A Dinitroaniline Herbicide, in Male Rats</b> , G.K. Hanasono, J.L. Ocolowitz and R.L. Wolen, Toxicology Division, Lilly Research Laboratories, Greenfield, IN (J.L. Emmerson).
239	3:30	<b>Disposition of Tricyclazole, A Rice Blasticide, in the Rat</b> , C.L. Pierson, L.C. Howard, Toxicology Division, Lilly Research Laboratories, Greenfield, IN (L. Golberg).
240	3:50	<b>A Two-year Chronic Toxicity Study with Tricyclazole, A Rice Blasticide, in Rats</b> , L.C. Howard, H.M. Worth, N.V. Owen, S.S. Young, D.M. Morton and L. Golberg, Toxicology Division, Lilly Research Laboratories, Greenfield, IN and Chemical Industry Inst. of Toxicology, Research Triangle Park, NC.
241	4:10	<b>Parathion Toxicity in Perinatal Rats Born to Spontaneously Hypertensive Dams Following Exposure During Gestation and Lactation</b> , R. Deskin, L. Rosenstein and N. Rogers, U.S. Environmental Protection Agency, Health Effects Research Laboratory, Research Triangle Park, NC (W.F. Durham).

## SESSION #22

Wednesday Afternoon, March 15, 1977

Golden Gate Ballroom A

### *Platform XIV: "Oncogenesis"*

**Co-chairmen:** *J.A. Goldstein, NIEHS, Research Triangle Park, NC*

*J.P. Gibson, Merrell-National Laboratories,*

*Cincinnati, OH*

Paper No.	Time (P.M.)	
242	1:10	<b>Carcinogenesis Study in Mice with Hexachlorobenzene</b> , J.H.P. Cabral, T. Mollner, F. Raitano and P. Shubik, Univ. of Nebraska Medical Center, Omaha, NB.
243	1:30	<b>Long-term Study of Potential Carcinogenicity of Inorganic Arsenic Aerosols to Mice</b> , P.E. Berteau, J.O. Flom, R.L. Dimmick and A.R. Boyd, Univ. of California, School of Public Health, Naval Biosciences Laboratory, Naval Supply Center, Oakland, CA (W.F. Durham).
244	1:50	<b>Analytical Studies on the In Vitro Effects of Chemicals on Ribosome-Membrane Interactions</b> , T.D. Prospero, R.W. Loose, D.E. Stevenson and A.S. Wright, Shell Toxicology Laboratory (Tunstall), Shell Research Ltd., Sittingbourne, Kent, England.
245	2:10	<b>Chemical Modification of DNA in Rats Treated with Hydrazine</b> , L.R. Barrows and R.C. Shank, Dept. of Medical Pharmacology and Therapeutics and Dept. of Community and Environmental Medicine, Univ. of California at Irvine, Irvine, CA.
246	2:30	<b>The Effect of Disulfiram on Vinyl Chloride-Induced Carcinogenesis in Mice</b> , J.M. Winston, J.C. Bhandari, A.M. El-hawari, R.D. Short, Jr., and C.C. Lee, Pharmacology-Toxicology, Midwest Research Institute, Kansas City, MO.
	2:50	Break - 20 minutes
247	3:10	<b>Pathologic Effects of Continuously Feeding Female C3H Mice Diets Containing Diethylstilbestrol or 17<math>\beta</math>-Estradiol</b> , B. Highman, M.J. Norvell and T.E. Shellenberger, Univ. of Arkansas for Medical Sciences, Little Rock, AR and the National Center for Toxicological Research, Jefferson, AR.
248	3:30	<b>On the Carcinogenic Activity of Nitrosodiethanolamine in the Syrian Golden Hamster</b> , I. Schmeltz, J. Hilfrich and D. Hoffman, Naylor Dana Inst. for Disease Prevention, American Health Foundation, Valhalla, NY.

- 249 3:50 **Chemical Carcinogenesis in Non-Human Primates**, R.H. Adamson, S.M. Sieber, P. Correa and D.W. Dalgard, Laboratory of Chemical Pharmacology, National Cancer Inst., Bethesda, MD; Louisiana State Univ. Medical Center, New Orleans, LA and Hazleton Laboratories, Vienna, VA.
- 250 4:10 **DNA Repair in Primary Rat Hepatocytes Induced by 2-Acetyaminofluorene and N-Hydroxy-2-Acetylamino-fluorine**, J.W. Oldham, D.A. Casciano and M.D. Cave, The National Center for Toxicological Research, Jefferson, AR and the Interdisciplinary Toxicology Graduate Training Program, Univ. of Arkansas for Medical Sciences, Little Rock, AR (T.J. Haley).

## SESSION #23

Wednesday Afternoon, March 15, 1977

Embarcadero Room

*Poster IX: "Halogenated Hydrocarbons II"*

*Responsibility: H. Shah, Equitable Environmental Insurance, Rockville, MD.*

- | Paper No. | Time (P.M.) |   |
|-----------|-------------|---|
|           | 1:15 - 2:45 |   |
| 251       |             | <b>Cell-Mediated Immunity in Mice Fed Either Aroclor 1016 or Hexachlorobenzene</b> , J.B. Silkworth and L.D. Loose, Inst. of Comparative and Human Toxicology, Albany Medical College, Albany, NY.  |
| 252       |             | <b>Toxic Evaluation of Inhaled Chlorobenzene</b> , J.V. Dilley and T.R. Lewis, SRI International, Menlo Park, CA and National Institute for Occupational Safety and Health, Cincinnati, OH.   |
| 253       |             | <b>An Investigation of the Dechlorination of a Series of Haloalkanes by Rat Liver Microsomes and its Possible Role in the Expression of Toxic Phenomenon</b> , A.G. Salmon, W.C. Mackrodt, R.B. Jones, S.K. Basu and J. Ashby, Central Toxicology Laboratory and The Corporate Laboratory, Imperial Chemical Industries, Ltd., Cheshire, England. |
| 254       |             | <b>Effect of Acute and Sub-Chronic Chloroform Exposure on Cholinergic Parameters in Mouse Brain</b> , F.J. Vocci, B.R. Martin, S. Petty and W.L. Dewey, Dept. of Pharmacology, Medical College of Virginia, Richmond, VA (J. Borzelleca).   |
| 255       |             | <b>The Effects of Organic Water Contaminants on Catecholaminergic Neurons in Mouse Brain</b> , W.L. Dewey, B.R. Martin, B. Bagshaw, A. Marston and J. Montgomery, Dept. of Pharmacology, Medical College of Virginia, Richmond, VA (J. Borzelleca).   |

- 256           **Synthesis and Metabolism of Brain Serotonin in Mice Following Acute Exposure to Several Haloalkanes**, B.R. Martin, W.L. Dewey, J.S. Beckner and J.F. Borzelleca, Dept. of Pharmacology, Medical College of Virginia, Richmond, VA.
- 257           **Effect of Four Haloalkanes on Humoral and Cell Mediated Immunity in Mice**, G.B. Schuller, B.M. Kaufman, J.F. Borzelleca, V.M. Sanders and A.E. Munson, Depts. of Pharmacology and Microbiology, Medical College of Virginia, Richmond, VA.
- 258           **Reticuloendothelial System Function in Mice Exposed to Four Haloalkanes: Drinking Water Contaminants**, A.E. Munson, V.M. Sanders, J.F. Borzelleca, R.G. Tardiff and B.A. Barrett, Dept. of Pharmacology, Medical College of Virginia, Richmond, VA and Health Effects Laboratory, Environmental Protection Agency, Cincinnati, OH.
- 259           **Immuno-Toxicological Evaluation on Mice Exposed to Polychlorinated Biphenyls**, S.H. Smith, V.M. Sanders, B.A. Barrett, J.F. Borzelleca and A.E. Munson, Dept. of Pharmacology and MCV/VCU Cancer Center, Medical College of Virginia, Richmond, VA.
- 260           **Failure of Kepone and Hexachlorobenzene to Induce Dominant Lethal Mutations in the Rat**, G.S. Simon, B.R. Kipps, R.G. Tardiff and J.F. Borzelleca, Dept. of Pharmacology, Medical College of Virginia, Richmond, VA and Health Effects Laboratory, Environmental Protection Agency, Cincinnati, OH.
- 261           **Metabolic Study of 2,4,5,2',4',5'-Hexachlorobiphenyl in Rhesus Monkeys**, D.H. Norback, E. Mack, K.A. Blomquist and J.R. Allen, Dept. of Pathology, Dept. Surgery and Regional Primate Research Center, Univ. of Wisconsin, Madison, WI.
- 262           **Acute, Subchronic and Chronic Toxicological Studies with Kepone**, P.S. Larson, G.R. Hennigar, R.W. Lane and J.F. Borzelleca, Dept. of Pharmacology, Medical College of Virginia, Richmond, VA.
- 263           **Short-term Toxicity of Photomirex in the Rat**, L. Ritter, R. Norstrum, G. Flesky, I. Chu, I.A. Marino, V.E. Valli and D.C. Villeneuve, Environmental Health Directorate, Ottawa, Ont., Canada; Canadian Wildlife Service, Ottawa, Ont., Canada and Bow Valley Holdings, Ltd., Guelph, Ont., Canada.
- 264           **Teratogenicity and Placental Transfer of Photomirex in the Rabbit**, D.C. Villeneuve, K.S. Khera, G. Trivett, R. Norstrum, G. Felsky and I. Chu, Environmental Health Directorate, Food Directorate and Canadian Wildlife Service, Ottawa, Ont., Canada.
- 265           **Subchronic Toxicity Studies of 1,2,4-Trichlorobenzene (TCB) in Experimental Animals**, P.G. Watanabe, R.J. Kociba, R.E. Hefner, Jr., H.O. Yapel and B.K.J. Leong, Toxicology Research Laboratory, The Dow Chemical Company, Midland, MI.

- 266                    **Immunotoxicologic Effects of 2,3,7,8-Tetrachloro-dibenzo-p-Dioxin in Laboratory Animals**, R.P. Sharma, R.J. Kociba and P.J. Gehring, The Dow Chemical Company, Midland, MI.
- 267                    **Influence of Alterations in Drug Metabolism on Trichloroethylene Induced Cardiac Arrhythmias**, J.F. White and G.P. Carlson, Dept. of Pharmacology and Toxicology, Purdue Univ., West Lafayette, IN.
- 268                    **Behavioral Toxicologic Effects of Polybrominated Biphenyl Compounds in Rodents**, H.A. Tilson and P.A. Cabe, Laboratory of Behavioral and Neurological Toxicology, National Inst. of Environmental Health Sciences, Research Triangle Park, NC (J.A. Moore).
- 269                    ***In Vivo* Binding of PCBs to Hepatic Macromolecules in Mice**, N.M. Morales and H.B. Matthews, Laboratory of Pharmacology, National Inst. of Environmental Health Sciences, Research Triangle Park, NC.
- 270                    **The Effect of Chlorine Position on the Metabolism of Hexachlorobiphenyl Isomers by the Rat**, S. Kato, J.D. McKinney and H.B. Matthews, National Inst. of Environmental Health Sciences, Research Triangle Park, NC.

## SESSION #24

Wednesday Afternoon - March 15, 1977

Embarcadero Room

**Poster X: "Halogenated Hydrocarbons III"**

**Responsibility: R.G. Tardiff, Environmental Protection Agency  
Cincinnati, OH**

Paper No.	Time (P.M.)	
271	3:00-4:30	<b>Effect of Polychlorinated Biphenyl and Other Inducing Agents on the Microsomal Cytochrome P-448 Mediated Reaction, Ethoxyresorufin o-Deethylation</b> , T.C. Orton and J.E. Higgins, Drug Metabolism Section, ICI Pharmaceuticals Div., Alderley Park, Macclesfield, Cheshire, U.K. (M.S. Rose).
272		<b>Effect of Oral Administration to Mice of 30 ppm Mirex on the Sodium Dodecyl Sulfate Polyacrylamide Gel Electrophoretic (SDS-PAGE) Patterns of Hepatic Microsomal Proteins</b> . E.P. Pittz, R. Abraham, D. Rourke and F. Coulston, Inst. of Comparative and Human Toxicology, Albany Medical College, Albany, NY.
273		<b>Chlorohydrocarbon Excretion and Liver Mono-oxygenases in Rhesus Monkeys Following Chronic DDT Exposure and SKF 525-A Treatment</b> , C.R. Clark, P.W. Ferguson, S.J. Gee and R.I. Krieger, Dept. of Environmental Toxicology, Univ. of California, Davis, CA.

- 274 **The Effects of Bromochlorodifluoromethane (BCF) on Contractility and Cardiac Tissue Levels of High Energy Metabolites**, R.N. Terpolilli, R.A. Davis, G.R. Peterson and K.C. Back, Toxic Hazards Division, Wright-Patterson AFB, OH and Dept. of Biological Chemistry and Pharmacology, Wright State Univ., Dayton, OH.
- 275 **Pharmacokinetics of Hexabromobiphenyl Disposition in the Rat**, D.B. Tuey and H.B. Matthews, National Inst. of Environmental Health Sciences, Research Triangle Park, NC.
- 276 **Reductive Biotransformation of Chlordecone in Man and Rat**, M.W. Fariss, R.V. Blanke, J.J. Boylan, S.T. King and P.S. Guzelian, Dept. of Pathology and Medicine, Medical College of Virginia, Richmond, VA.
- 277 **Morphologic Effects of 2,5,4'-Trichlorobiphenyl and 2,4,6,2',4'-Pentachlorobiphenyl in Rhesus Monkeys**, M.J. Iatropoulos, G.R. Felt, W.F. Mueller, F. Korte and F. Coulston, International Center of Environmental Safety, Albany Medical College, Holloman AFB, NM, Institute fuer Oekologische Chemie, Gesellschaft fuer Strahlen und Umweltforschung, mBH, Muenchen D-8051, Germany.
- 278 **Effects of Cysteine, Diethylmaleate and Trichloropropane Oxide on Acute Vinyl Chloride Hepatotoxicity**, R.B. Conolly and R.J. Jaeger, Harvard School of Public Health, Boston, MA
- 279 **Effects of 2,2'-Dibromobiphenyl (DBB) and 2,2',3,4,4',5,5'-Heptabromobiphenyl (HBB7) on Microsomal Drug Metabolizing Enzymes**, R.W. Moore S.D. Aust, Dept. of Biochemistry, Michigan State Univ., East Lansing, MI.
- 280 **Neurotoxic Effects of Dieldrin**, K. Swanson and D. Wooley, Dept. of Animal Physiology and Environmental Toxicology, Univ. of California, Davis, CA.
- 281 **Effects of Bromobenzene and Chlorinated Benzenes on Rat Pancreatic Excretory Function**, K.H. Yang and R.E. Peterson, Univ. of Wisconsin, Madison, WI.
- 282 **Effects of Pregnenolone-16 $\alpha$ -Carbonitrile and Spironolactone on Biliary Excretion of Ouabain in 2,3,7,8-Tetrachlorodibenzo-p-dioxin Treated Rats**, R.E. Peterson and N. Hamada, Univ. of Wisconsin, Madison, WI.
- 283 **Toxicity of 1,2,4-Trichlorobenzene in Rhesus Monkeys; Comparison of Two *In Vivo* Methods for Estimating P-450 Activity**, S.T. Cragg, G.F. Wolfe and C.C. Smith, Dept. of Environmental Health, Univ. of Cincinnati, College of Medicine, Cincinnati, OH.
- 284 **Responses of Rhesus Monkeys to Polybrominated Biphenyls**, J.R. Allen and L. Lambrecht, Dept. of Pathology and Regional Primate Research Center, Univ. of Wisconsin, Madison, WI.

- 285                    **Teratology and Reproduction Studies of Vinylidene Chloride in Rats and Rabbits**, F.J. Murray, K.D. Nitschke, F.A. Smith, J.A. John, C.G. Humiston, J.F. Quast and B.A. Schwetz, Toxicology Research Laboratory, Dow Chemical U.S.A., Midland, MI.
- 286                    **Combined Effect of Food Deprivation and Hexachlorobenzene Feeding in Female Rats: A Ninety-Day Study**, D.C. Villeneuve, G.J.A. Speijers, E.M. den Tonkelaar, M.J. van Logten, J.G. Vos, P.A. Greve and G.J. Van Esch, Environmental Health Directorate, Ottawa, Ont., Canada and Laboratory for Toxicology, National Institute of Public Health, Bilthoven, The Netherlands.
- 287                    **Effect of Acute and Chronic Cd Exposure on Lindane Metabolism**, R.W. Chadwick, E.J. Faeder, L.C. King, M.F. Copeland, K. Williams and L. Chuang, Environmental Protection Agency, Research Triangle Park, NC.
- 288                    **Effects of Subacute Dosing of Cadmium on Rats Given a Delayed Exposure to Lindane**, L.C. King, K. Williams, E.J. Faeder and R.C. Chadwick, Environmental Protection Agency, Research Triangle Park, NC.
- 289                    **Long-term Turnover and Stability of Cd-Metallothionein and Translocation of Cd Following an Initial Low Cd Dose in Rats**, J.W. Ridlington, D.R. Winge and B.A. Fowler, National Institute of Environmental Health Sciences, Research Triangle Park, NC and Biochemistry Dept., Duke Univ., Durham, NC.
- 290                    **Effect of Polybrominated Biphenyls (FireMaster BP-6) on the Immunologic System of the Beagle Dog**, T. Farber, L. Kasza, A. Giovetti, C. Carter, F. Earl and T. Balazs, Food and Drug Administration, Washington, DC.

## SESSION #25

Thursday Morning, March 16, 1977

Golden Gate Ballroom A

***Platform XV: "Teratogenesis"***

***(Jointly with Teratology Society)***

***Co-Chairmen: B.B. Coldwell, Food and Drug Directorate, Ottawa, Ont., Canada***

***B.N. Banerjee, Wallace Laboratories, Cranbury, NJ***

Paper No.	Time (A.M.)	
291	8:20	<b>Determination of the Teratogenic and Mutagenic Potential of Griseofulvin</b> , R.L. Steelman and J.J. Kocsis, Pathology/Toxicology Dept., McNeil Laboratories and Pharmacology Dept., Thomas Jefferson Univ., Philadelphia, PA.



292	8:40	<b>Teratogenicity Studies on Linuron, Malathion and Methoxy-chlor in Rats</b> , K.S. Khera, C. Whalen and G. Trivett, Food Directorate, National Health and Welfare, Ottawa, Ont., Canada.
293	9:00	<b>Development of a Mouse [Upj:TUC(ICR)spf] for Use in Drug Safety Evaluation Tests</b> , S.B. Harris, G.M. Szczech, J.L. Stuckhardt, K. Kiley, B.P. Purmalis and M. Brunden; Pathology & Toxicology Research Unit, The Upjohn Company, Kalamazoo, MI.
294	9:20	<b>Effects of Prostaglandin E<sub>2</sub> on Fetal Development in Rabbits</b> , G.M. Szczech, J.L. Stuckhardt, B.P. Purmalis and S.B. Harris, The Upjohn Company, Kalamazoo, MI.
	9:40	Break - 20 minutes
295	10:00	<b>Embryotoxicity and Teratogenicity of Nickel Carbonyl in Rats</b> , F.W. Sunderman, Jr., J. Mitchell, P. Allpass and R. Baselt, Univ. of Connecticut School of Medicine, Farmington, CT.
296	10:20	<b>The Effect of Ethylenethiourea on the Developing Central Nervous System of the Rat</b> , P. Mungkornkarn and H.S. Bal, Iowa State Univ. of Science & Technology, Ames, IA.
297	10:40	<b>Teratology Studies of Quaternary Ammonium Compounds in the Rat</b> , K.R. Stevens, M. Knickerbocker and M.A. Gallo, Food and Drug Research Laboratories, Inc., East Orange, NJ.
298	11:00	<b>A Teratology Study of ORF 5656 in Rats and Rabbits</b> , L.C.K. Wong, N. Nadaskay, S. Senkbeil, D. Maggio and C.D. King, Ortho Pharmaceutical Corp., Raritan, NJ.
299	11:20	<b>Effects of Ethylene Dibromide Inhaled by Rats and Mice During Gestation</b> , J.L. Minor, R.D. Short, J. Seifter and C.C. Lee, Midwest Research Institute, Kansas City, MO and Environmental Protection Agency, Washington, DC.

## SESSION #26

Thursday Morning, March 16, 1977

Golden Gate Ballroom B

*Platform XVI: "Metals II"*

**Co-Chairmen:** *B.A. Fowler, NIEHS, Research Triangle Park, NC*  
*G.M. Cherian, Univ. Western Ontario, London, Ont., Canada*

Paper No.	Time (A.M.)	
300	8:20	<b>Toxicological Interactions of Mercury and Selenium</b> , T.J. Taylor, F. Rieders and J.J. Kocsis, Dept. of Pharmacology, Thomas Jefferson Univ., Philadelphia, PA.

301	8:40	<b>Metabolism of Intravenously Injected Renal Mercury-thionein in Rats</b> , K. Hirayama and Z.A. Shaikh, Dept. of Pharmacology & Toxicology, Univ. of Rochester, School of Medicine, Rochester, NY (T.W. Clarkson).
302	9:00	<b>Comparative Studies on the Gastrointestinal Absorption and Metabolism of Cadmium-Thionein in Mice</b> , M.G. Cherian, R.A. Goyer and L.S. Valberg, Departments of Pathology and Medicine, Health Sciences Centre, University of Western Ontario, London, Ontario, Canada.
303	9:20	<b>Induction of Hepatic and Renal Metallothionein in Cows, Pigs and Chickens During Low Level Cadmium Ingestion</b> , M.P. Verma, R.P. Sharma and J.C. Street, Toxicology Program, Utah State Univ., Logan, UT.
	9:40	Break - 20 minutes
304	10:00	<b>Inhibition by Lead and Cadmium of Human Na<sup>+</sup> + K<sup>+</sup> Atpase Activity</b> , B.R. Nechay and J.P. Saunders, Dept. of Pharmacology and Toxicology, Univ. of Texas Medical Branch, Galveston, TX.
305	10:20	<b>Kinetics of Cadmium and Zinc Competition in the Isolated Perfused Rat Liver</b> , B.S. Kingsley and J.M. Frazier, Dept. of Environmental Health Sciences, Johns Hopkins Univ. School of Hygiene and Public Health, Baltimore, MD (R.J. Rubin).
306	10:40	<b>Cadmium-Induced Suppression of Cellular Immunity in Mice</b> , D.W. Barnes and A.E. Munson, East Carolina Univ., School of Medicine, Greenville, NC and Medical College of Virginia, Richmond, VA (J.P. DaVanzo).
307	11:00	<b><i>In Vitro</i> Effects of Dialkyltin Compounds on Suspended Rat Thymocytes</b> , R.R. Miller, R. Hartung and H.H. Cornish, School of Public Health, Univ. of Michigan, Ann Arbor, MI.
308	11:20	<b>Effects of Certain Diets on Mercury Excretion after Methylmercury Administration</b> , T.D. Landry, R.A. Doherty, A.H. Gates; Environmental Health Science Center, Depts. Pediatrics, Obstetrics, Radiation Biology/Biophysics, Univ. of Rochester, Rochester, NY (T.W. Clarkson).

## SESSION #27

Thursday Morning, March 16, 1977

Embarcadero Room

**Poster XI: "Drug Toxicology II"**

**Responsibility:** *G.P. Carlson, Purdue Univ., West Lafayette, IN*  
*A.M. Wolven, Syntex Corp., Palo Alto, CA*

Paper No.	Time (A.M.)	
	8:45 - 10:15	
309		<b>Isoniazid Toxicity Alone and In Combination with Ethanol in the Rabbit. I. Pathologic and Biochemical Factors.</b> L.W. Whitehouse, L. Tryphonas, B.H. Thomas and C.P. Paul, Health Protection Branch, Health and Welfare Canada, Ottawa, Ont., Canada (B.B. Coldwell).
310		<b>Isoniazid Toxicity Alone and in Combination with Ethanol in the Rabbit. II. Pharmacokinetic Factors.</b> B.H. Thomas, L.W. Whitehouse and W. Zeitz, Health Protection Branch, Health and Welfare Canada, Ottawa, Ont., Canada (B.B. Coldwell).
311		<b>Response of Anti-inflammatory and Immunosuppressive Agents in a Standard Experimental Regimen for Early Assessment of Hematologic or Gastrointestinal Toxicity.</b> R.D. Hemm, Ayerst Research Laboratories, Chazy, NY (J.J. Pollock).
312		<b>Salicylate-induced Hypothermia of the Rat.</b> H.W. McCain, R.S. Teague and R.L. Mundy, Dept. of Pharmacology, University of Alabama in Birmingham, Birmingham, AL.
313		<b>The Effects of Protein Deficiency on Drug Toxicity in the Neonate Rat.</b> J.P. Hanig, P.D. Yoder and S.Krop, Food and Drug Administration, Washington, DC.
314		<b>Differential Sensitivity of the Rat and Rabbit to the Teratogenic and Embryo-Toxic Effects of Eleven Antineoplastic Drugs.</b> D.J. Thompson, J.A. Molello and J.E. LeBeau, Toxicology Laboratory, Dow Chemical U.S.A., Indianapolis, IN.
315		<b>Liver Heme Metabolism: Toxic Effect of Morphine in Rats.</b> D. Gurantz and M.A. Correia, Dept. of Medicine, Pharmacology and Toxicology, Univ. of California Medical Center, San Francisco, CA (M. Vore).
316		<b>Age-Related Tricyclic Antidepressant Toxicity in Man: An Analysis.</b> L.R. Weiss, W. Tubner, A. Ruskin and S. Krop, Bureau of Drugs, Food and Drug Administration, Washington, DC.
317		<b>Hematologic and Histopathologic Evaluation of N-(Phosphonacetyl)-L-Aspartic Acid in BDF<sub>1</sub> Mice.</b> S.D. Harrison, Jr., E.P. Denine, H.D. Giles and F.M. Schabel, Jr., Southern Research Inst., Birmingham, AL.
318		<b>Enhancement of Hexobarbital and Barbital Hypnosis by Diphenhydramine.</b> R.T. Louis-Ferdinand, F. Beuthin and M. Stout, Pharmacology Division, Wayne State Univ., Detroit, MI.
319		<b>The Effect of Propranolol, Diazepam and Chlorpromazine Administration on the Response to Lethal Levels of Intravenous Cocaine in the Cynomolgus Monkey (MACACA FASCICULARIS).</b> M.M. Guinn, M.C. Wilson and J.A. Bedford, Dept. of Pharmacology, Univ. of Mississippi, University, MS (W.M. Davis).

- 320                    **Cocaine-Induced Hepatic Necrosis**, R.W. Freeman and R.D. Harbison, Dept. of Pharmacology, Vanderbilt Medical Center, Nashville, TN.
- 321                    **Comparison of the Effects of Quinidine and Dihydroquinidine on the Canine Heart**, T. Balazs, E. Herman and J. Atkinson, Food and Drug Administration, Washington, DC

## SESSION #28

Thursday Morning, March 16, 1977

Embarcadero Room

**Poster XII: "General and Behavioral Toxicology**

**Responsibility: H.M. Mehendale, Univ. Mississippi Medical Center, Jackson, MS.**

Paper No.	Time (A.M.)	
	10:20 - 12:00	
322		<b>The Effects of Manganese (Mn<sub>3</sub>O<sub>4</sub>) Administration on the Spontaneous Behavior of Male and Female Rats</b> , L.E. Gray, Jr., M. Kutzman, J. Laskey and L. Reiter, US Environmental Protection Agency, Research Triangle Park, NC and Dept. of Pharmacology, Duke Univ. Medical Ctr. Durham, NC (D. Menzel).
323		<b>The Behavioral Effects of Subacute Exposure to Kepone or Mirex on the Weanling Rat</b> , L.Reiter and K. Kidd, US Environmental Protection Agency, Research Triangle Park, NC (D. Menzel).
324		<b>Comparison of Conditioned Avoidance and Unconditioned Reflex Tests in Rats Exposed by Inhalation to Carbon Monoxide, 1,1,1-Trichloroethane, Toluene or Ethanol</b> , N. Krivanek and L.S. Mullin, Haskell Laboratory for Toxicology and Industrial Medicine, E.I. duPont de Nemours and Company, Wilmington, DE (C.F. Reinhardt).
325		<b>Postnatal Toxicity of Maneb, EBIS and ETU in Rats</b> , R. Kavlock and N. Chernoff, U.S. Environmental Protection Agency, Research Triangle Park, NC (R.W. Chadwick).
326		<b>The Interactions of Sensory Irritants with a Glutathione S-Transferase Activity from Bovine Corneal Epithelium</b> , J.Wallace and Y. Alarie, Graduate School of Public Health, Univ. of Pittsburgh, Pittsburgh, PA.
327		<b>Effects of Chronic Lead Administration on Acquisition and Performance of Serial Position Sequences by Pigeons</b> , D.D. Dietz, D.E. McMillan and P. Mushak, Univ. of North Carolina, School of Medicine, Chapel Hill NC (H.B. Matthews).

328 **Effect of Repeated Exposure of Mice and Rats to Concentrated Toluene and Acetone Vapors**, J.V. Bruckner and R.C. Peterson, Univ. of Texas Medical School, Houston, TX and Indiana Univ. School of Medicine, Indianapolis, IN.

329 **Antagonism of Cyanide Toxicity in Sheep**, G.E. Burrows, C.E. Williams and J.L. Way, Dept. of Veterinary Science, Univ. of Idaho, Moscow, ID and the College of Veterinary Medicine, Washington State Univ., Pullman, WA.

## SESSION #29

Thursday Morning, March 16, 1977

Embarcadero Room

**Poster XIII: "Reproduction and Development II"**

**Responsibility: K.S. Khera, Food and Drug Directorate,  
Ottawa, Ont., Canada**

**K.D. Courtney, USEPA, Research Triangle  
Park, NC**

Paper No. Time (A.M.)

10:30 - 12:00

330 **The Effect of TOK® on Pulmonary Surfactant Production in the Rat Fetus**, L.C. Stone and J.M. Manson, Univ. of Cincinnati College of Medicine, Cincinnati, OH (P.B. Hammond).

331 **In Vitro Teratogenic Assay System with P-450 Metabolism**, J. Manson and R. Simons, College of Medicine, Univ. of Cincinnati, Cincinnati, OH (P.B. Hammond).

332 **Metabolism of Benzo(a)pyrene-4,5-oxide by the Isolated Perfused Rat Testis**, I.P. Lee, K. Suzuki, H. Mukhtar, J.R. Bend and R.L. Dixon, National Institute of Environmental Health Sciences, Research Triangle Park, NC.

333 **The Relationship Between Acylating Ability and Teratogenicity of Selected Anhydrides and Imides**, N.A. Brown, G.E. Shull, R.L. Dixon and S.E. Fabro, National Institute of Environmental Health Sciences, Research Triangle Park, NC and Columbia Hospital for Women, George Washington Univ., Washington, DC.

334 **Rat Teratology Study of Orally Administered Tris (2,3-Dibromopropyl) Phosphate**, V.M. Seabaugh, C.A. Hoheisel, G.W. Bierbower, T.F.X. Collins and J. McLaughlin, Jr., Consumer Product Safety Commission and Food and Drug Administration, Washington, DC.

335 **Effects of Hormones on the Development of Enzymes Associated with Drug Metabolism**, J.E.A. Leakey and J.R. Fouts, National Institute of Environmental Health Sciences, Research Triangle Park, NC.