Society of Toxicology

29th Annual Meeting
Program

February 12-16, 1990
Fontainebleau Hilton
Resort and Spa
Miami Beach, Florida
SPECIAL EVENTS

EDUCATION PROGRAM FOR MINORITY STUDENTS
Monday, February 12
3:00 p.m.-6:00 p.m.
Imperial I Room
Sponsored by the SOT Education Committee.
Open to all registrants.

PLACEMENT SERVICE SEMINAR
Monday, February 12
3:30 p.m.-6:30 p.m.
Imperial II Room
Sponsored by the SOT Placement Service.
Open to all registrants.

SOT WELCOMING RECEPTION
Monday, February 12
6:30 p.m.-8:00 p.m.
Grand Ballroom
Open to all registrants and guests.

GRADUATE STUDENT BREAKFAST
Tuesday, February 13
7:30 a.m.-8:30 a.m.
Fleur de Lis Room
Sponsored by the SOT Education Committee.
Open to all graduate student registrants.

TOXICOLOGY, TOXIC SUBSTANCES AND THE PUBLIC—WORKSHOP
Tuesday, February 13
9:00 a.m.-12:00 Noon
LeMario Room
Sponsored by the SOT Committee on Public Communications.

PREDICTIVE VALUE OF ANIMAL STUDIES IN TOXICOLOGY—LECTURE
by Professor Gerhard Zbinden, M.D.
Tuesday, February 13
12:00 Noon-1:00 p.m.
Fontaine Room
Sponsored by the SOT Committee on Animals in Research.

MECHANISMS SPECIALTY SECTION MEETING
Tuesday, February 13
5:00 p.m.-6:30 p.m.
Scituate Room
Shawnee Hotel

RISK ASSESSMENT SPECIALTY SECTION MEETING
Tuesday, February 13
5:00 p.m.-6:30 p.m.
Posteur Room

LATIN FIESTA IN LITTLE HAVANA
Tuesday, February 13
6:30 p.m.-11:00 p.m.
Buses leave from the Fontainebleau Hotel at 6:30 p.m. and return by 11:30 p.m.
Pre-registration only. $32 per person.

POSTER SESSION FOR MINORITY STUDENTS
Wednesday, February 14
10:00 a.m.-11:30 a.m.
Imperial I Room
Sponsored by the SOT ad hoc tox 90s Educational Issues Task Force.

SOT ISSUES SESSION
Wednesday, February 14
12:00 Noon-1:00 p.m.
Fontaine Room
Chaired by SOT President Roger O. McClellan, DVM
Bring your lunch and participate in an open forum discussion of SOT affairs.
Open to all registrants.
Robert C. Barnard, Esq., Cleary, Gottlieb, Steen and Hamilton, will give a presentation on government conflict of interest guidelines and their impact on toxicologists. This will be followed by a discussion.

SOT ANNUAL BUSINESS MEETING
Wednesday, February 14
4:00 p.m.-5:30 p.m.
Fontaine Room
Chaired by SOT President Roger O. McClellan, DVM
Open to SOT members only.

FORUM FOR NEW INVESTIGATORS
Wednesday, February 14
4:30 p.m.-6:30 p.m.
Brittany Room
Sponsored by the SOT Education Committee.

REGIONAL CHAPTER MEETINGS
Wednesday, February 14
5:30 p.m.-7:00 p.m.
Many SOT Regional Chapters will be sponsoring meetings and/or receptions at this time. Please check the hotel lobby board for room assignments.

SOT ANNUAL BANQUET AND AWARDS PRESENTATION
Wednesday, February 14
7:00 p.m.-10:00 p.m.
Fontaine Room
Pre-registration only. $32.00 per person.

5TH ANNUAL BURROUGHS WELLCOME TOXICOLOGY SCHOLAR AWARD LECTURE
by J. Glenn Sipes, Ph.D.
Chaired by Tom S. Miyai, Ph.D.
Thursday, February 15
12:00 Noon-1:00 p.m.
Fontaine Room
Open to all registrants.

SPECIALTY SECTION MEETINGS (EXCEPT MECHANISMS AND RISK ASSESSMENT)
Thursday, February 15
5:00 p.m.-6:30 p.m.
Please check the hotel lobby board for room assignments.
Society of Toxicology

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Program

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Fontainebleau Hilton
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# FUTURE MEETINGS

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Year</th>
<th>Date</th>
<th>Location</th>
</tr>
</thead>
</table>
| 30      | 1991 | February 25-March 1 | Loews Anatole Hotel  
|         |      |                  | Dallas, Texas                                      |
| 31      | 1992 | February 22-27   | Seattle Convention Center  
|         |      |                  | Seattle, Washington                                |
| 32      | 1993 | February 16-20   | Fontainebleau Hilton Hotel  
|         |      |                  | Miami Beach, Florida                               |
GENERAL INFORMATION

ANNUAL MEETING REGISTRATION FEES

<table>
<thead>
<tr>
<th></th>
<th>Received Before January 12</th>
<th>Received After January 12</th>
<th>Continuing Education Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member or Post-Doctoral in Training</td>
<td>$90.00</td>
<td>$115.00</td>
<td>$60.00</td>
</tr>
<tr>
<td>Non-Member</td>
<td>$150.00</td>
<td>$175.00</td>
<td>$75.00</td>
</tr>
<tr>
<td>Student or Full-Time Pre-Doctoral</td>
<td>$15.00</td>
<td>$30.00</td>
<td>$25.00</td>
</tr>
<tr>
<td>*Guest</td>
<td>$15.00</td>
<td>$15.00</td>
<td>---</td>
</tr>
</tbody>
</table>

*Guests must be registered and have a badge in order to be admitted to the Guest Hospitality Center.

Advance registration closes January 12, 1990. After January 12, any registrations received will be charged the additional fee of $25.

Refunds for cancellation of registration will be made, less a $25 processing charge, only if a written request is received at SOT headquarters by FEBRUARY 2, 1990. NO REFUNDS WILL BE MADE FOR CANCELLATIONS RECEIVED AFTER FEBRUARY 2, 1990. There are no refunds for Continuing Education courses, the Banquet, or the social evening in Little Havana.

ENJOY A FIESTA IN LITTLE HAVANA

On Tuesday, February 13, 1990, at 6:30 pm, the Society of Toxicology will "rumba" into the historic, cultural district of Little Havana. The evening will include roundtrip transportation to the authentic Latin enclave. Once there, you will be greeted by rumba and conga dancers and a variety of Latin music, including Nestor Torres, a national favorite, who has recently produced an album. There will also be a super all-you-can-eat Cuban dinner. Tickets are $32.00 per person, which includes transportation, dinner, sangria, beer, soft drinks and entertainment. Pre-registration only, using the attached form. Sorry, no refunds or exchanges.

SOT ANNUAL BANQUET AND AWARDS PRESENTATION

The Society of Toxicology Annual Banquet and Awards Presentation will be held on Wednesday, February 14, 1990, from 7:00 pm until 10:00 pm at the Fontainebleau Hilton. Tickets are $32.00 per person. Meeting registrants may sponsor and prepay for tables of 10. Registrants who purchase a table are able to choose their seating arrangement prior to the banquet by stopping by the SOT headquarters office at the Fontainebleau. Requests will be honored on a first-come, first-served basis. Sorry, no refunds or exchanges.

REGISTRATION DESK--GRAND GALLERIE

Sunday ......................................... 4:00 p.m.-10:00 p.m.*
Monday ......................................... 7:00 a.m.-6:30 p.m.
Tuesday ........................................ 7:30 a.m.-4:00 p.m.
Wednesday-Thursday ............................. 8:00 a.m.-4:00 p.m.

*You are encouraged to register Sunday in order to avoid delays prior to the Continuing Education courses on Monday morning.

HOTEL ACCOMMODATIONS

The Society of Toxicology 29th Annual Meeting is headquartered at the Fontainebleau Hilton Resort and Spa. The Fontainebleau Hilton is located on beautiful Miami Beach, overlooking the Atlantic Ocean, with its white sandy beaches and boardwalk. SOT has reserved blocks of rooms at other nearby properties; most are within a two block walk. For more information regarding housing, please contact the SOT headquarters office, (202) 293-5935.

AIR TRANSPORTATION

Please make your air reservations as soon as possible.

CONTINENTAL AIRLINES AND EASTERN AIRLINES, in cooperation with the Society of Toxicology, are offering meeting registrants special discounts: 50% discount off Continental's and 55% discount off Eastern's roundtrip coach and first class fares, both with no restrictions, penalties or advance booking; and 5% discount off any promotional fares offered by either airline (rules and restrictions apply).

A PRIZE DRAWING WILL BE HELD FOLLOWING THE MEETING. An individual who books a ticket through the Continental/Eastern Convention Desk will receive two round-trip coach tickets anywhere Continental or Eastern flies in the continental United States, Bahamas or Puerto Rico. To make reservations call the Continental/Eastern reservation desk at 1-800-468-7022 and refer to EZ ACCESS #211.

DELTA AIRLINES is also offering special discounts to SOT meeting attendees: a 10% discount off the coach fare with some restrictions. There is also a 35% discount off of fares from Canada. To make reservations call the Delta reservation desk at 1-800-241-6760 and refer to file J0831.

AMERICAN AIRLINES is offering special discounts from 40% to 70% off coach air fares to SOT meeting attendees. To make reservations call American's Meeting Services desk at 1-800-433-1790 and refer to file 510Z9QS.

AIRPORT TRANSFERS

Miami Beach is located 11 miles from the Miami International Airport, about a 15 minute ride. A taxi costs approximately $18. SOT recommends the SuperShuttle, which will transport you to your hotel for $8 each way (a $1 discount coupon will be enclosed with your meeting registration confirmation).

CAR RENTAL

Budget Rent-A-Car is offering a special discount to attendees during the SOT meeting. Rates start at $22 daily for an economy class car, up to $34 daily for a luxury car. To make your reservations, call 1-800-772-3773, and identify yourself as an SOT meeting attendee.

GUEST HOSPITALITY CENTER AND PROGRAM--CLUB ATLANTIC

A special program has been coordinated for the guests of registrants. Guests will have a hospitality room overlooking the ocean in which to relax and meet other guests, as well as have the opportunity to take part in specially discounted tours of the Miami area. A representative of All Florida Adventure Tours will be available Sunday through Wednesday to provide you with information about the city, register you for tours offered through the Society and distribute tour tickets purchased in advance of the meeting. For information
regarding the tours, contact All Florida Adventure Tours, 11137 N. Kendall Drive, #D105, Miami, FL 33176, 1-800-33-TOUR-3.

Sunday ........................................... 4:00 p.m.-8:00 p.m.
Monday-Wednesday ............................... 9:00 a.m.-4:00 p.m.
Thursday ........................................... 9:00 a.m.-12:00 Noon

SOT HEADQUARTERS--CONFERENCE
ROOM 2/LEVEL III

Sunday ........................................... 1:00 p.m.-8:00 p.m.
Monday ........................................... 7:00 a.m.-4:00 p.m.
Tuesday-Thursday ................................ 7:30 a.m.-4:00 p.m.
Friday ........................................... 7:30 a.m.-11:00 a.m.

PLACEMENT SERVICE/LEVEL III

Monday:
Louis Philippe Room ......................... 10:00 a.m.-3:30 p.m.
(Registration only for Candidates and Employers--no searches, messages or interviews)

Tuesday-Thursday:
Louis Philippe Room ......................... 9:00 a.m.-4:00 p.m.
(All services available)

PRESS ROOM--CONFERENCE ROOM G,
MAIN FLOOR

Monday-Thurday ................................. 8:00 a.m.-5:00 p.m.
Friday ........................................... 8:00 a.m.-12:00 Noon

SPEAKERS' SLIDE PREVIEW ROOM--CONFERENCE ROOM D, MAIN FLOOR

Sunday ........................................... 4:00 p.m.-10:00 p.m.
Monday ........................................... 7:00 a.m.-4:00 p.m.
Tuesday-Thursday ................................ 8:00 a.m.-4:00 p.m.
Friday ........................................... 8:00 a.m.-9:00 a.m.

EXHIBITS--GRAND BALLROOM, MAIN FLOOR

Monday ........................................... 6:30 p.m.-8:00 p.m.
Tuesday-Thursday ............................... 8:30 a.m.-4:30 p.m.

RECEIPT OF PROGRAM AND THE
TOXICOLOGIST

1. SOT members in the U.S. and Canada will receive the Program and the Toxicologist prior to the meeting.

2. Non-members in the U.S. and Canada who are pre-registered by January 12 will receive the Program and the Toxicologist prior to the meeting.

NOTE: Please bring your copy of the Toxicologist with you to the meeting. Additional copies are available on-site for $10.00.

3. Due to slow postal delivery, SOT members and non-members outside of the U.S. and Canada who are registered for the meeting will receive the Program and Toxicologist at the registration desk.

4. SOT members outside of the U.S. and Canada who do not attend the meeting will receive their copies of the Program and the Toxicologist after the meeting.
PROGRAM SUMMARY

Continuing Education Courses
(Pre-Registration Only)

All courses are held on Monday, February 12, 1990
Please check the hotel lobby board for room assignments.

8:00 a.m.-12:00 noon
1. Target Organ Toxicity: Cardiovascular Toxicity
2. Developmental Toxicity: Changing Factors in Embryonic Susceptibility
3. Advanced Metabolism
4. Advanced Hepatotoxicity (repeated in the afternoon)
5. Concepts in Cell Biology (repeated in the afternoon)
6. Carcinogen Risk Assessment (repeated in the afternoon)

1:30 p.m.-5:30 p.m.
7. Advanced Hepatotoxicity (also offered in the morning)
8. Free Radical Toxicology
9. Target Organ Toxicity: Respiratory Tract Toxicology
10. Toxicity of Agents: Pesticides
11. Concepts in Cell Biology (also offered in the morning)
12. Carcinogen Risk Assessment (also offered in the morning)

Symposia—Fontainebleau Ballroom

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<th>Day/Time</th>
<th>Topic/Abstract #</th>
<th>Room</th>
<th>Page</th>
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<tbody>
<tr>
<td>Tuesday 8:30 a.m.</td>
<td>Comparative Dosimetry of Inhaled Materials: Differences Among Animal Species and Extrapolation to Man # 1-5</td>
<td>Ballroom A</td>
<td>15</td>
</tr>
<tr>
<td>Tuesday 8:30 a.m.</td>
<td>Cellular and Molecular Mechanisms of Learning and Memory: Interactions with Neurotoxic Chemicals # 6-10</td>
<td>Ballroom B</td>
<td>16</td>
</tr>
<tr>
<td>Tuesday 1:30 p.m.</td>
<td>Glutathione-Conjugate Mediated Toxicities # 11-16</td>
<td>Ballroom A</td>
<td>29</td>
</tr>
<tr>
<td>Tuesday 1:30 p.m.</td>
<td>Application of Pharmacokinetics in Developmental Toxicity Risk Assessment # 17-22</td>
<td>Ballroom B</td>
<td>29</td>
</tr>
<tr>
<td>Wednesday 8:30 a.m.</td>
<td>Genetic Determinants of Carcinogen Susceptibility in Rodents and Man # 23-28</td>
<td>Ballroom A</td>
<td>43</td>
</tr>
<tr>
<td>Wednesday 8:30 a.m.</td>
<td>Inhalation Risk Assessment: State-of-the-Art # 29-34</td>
<td>Ballroom B</td>
<td>44</td>
</tr>
<tr>
<td>Wednesday 1:30 p.m.</td>
<td>Macrophage-Xenobiotic Interactions: Modulation of Toxicity and Macrophage Functions # 35-39</td>
<td>Ballroom A</td>
<td>58</td>
</tr>
<tr>
<td>Wednesday 1:30 p.m.</td>
<td>Metal-Induced Alterations in Gene Expression 40-44</td>
<td>Ballroom B</td>
<td>58</td>
</tr>
<tr>
<td>Thursday 8:30 a.m.</td>
<td>Mechanisms of Hypoxic Cell Injury 45-49</td>
<td>Ballroom A</td>
<td>70</td>
</tr>
<tr>
<td>Thursday 8:30 a.m.</td>
<td>Transplacental Transport of Toxic Metals and Fetal Effects 50-54</td>
<td>Ballroom B</td>
<td>71</td>
</tr>
<tr>
<td>Thursday 1:30 p.m.</td>
<td>New Directions in Cancer Risk Assessment: Modifying the EPA Guidelines 55-59</td>
<td>Ballroom A</td>
<td>85</td>
</tr>
<tr>
<td>Thursday 1:30 p.m.</td>
<td>New Advances in Chemically-Induced Dysfunction: Relationships to Toxicity 60-65</td>
<td>Ballroom B</td>
<td>85</td>
</tr>
<tr>
<td>Friday 8:30 a.m.</td>
<td>Health Effects of Inhaled Fibrous Materials 66-71</td>
<td>Ballroom A</td>
<td>97</td>
</tr>
<tr>
<td>Friday 8:30 a.m.</td>
<td>Peroxisome Proliferation and Nongenotoxic Carcinogenesis 72-76</td>
<td>Ballroom B</td>
<td>97</td>
</tr>
</tbody>
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Workshop

<table>
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<tr>
<th>Day/Time</th>
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<th>Room</th>
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</thead>
<tbody>
<tr>
<td>Tuesday 9:00 a.m.</td>
<td>Toxicology, Toxic Substances and the Public</td>
<td>Le Mans</td>
<td>28</td>
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</tbody>
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Platform Sessions

<table>
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<tr>
<th>Day/Time</th>
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<tbody>
<tr>
<td>Tuesday 8:30 a.m.</td>
<td>Metal Toxicology #77-88</td>
<td>Brittany</td>
<td>17</td>
</tr>
<tr>
<td>Tuesday 8:30 a.m.</td>
<td>Oxidative Stress #89-99</td>
<td>Champagne</td>
<td>17</td>
</tr>
<tr>
<td>Tuesday 1:30 p.m.</td>
<td>Fiber Toxicity #275-283</td>
<td>Brittany</td>
<td>30</td>
</tr>
<tr>
<td>Tuesday 1:30 p.m.</td>
<td>Risk Assessment #284-297</td>
<td>Champagne</td>
<td>31</td>
</tr>
<tr>
<td>Wednesday 8:30 a.m.</td>
<td>Developmental #490-503</td>
<td>Brittany</td>
<td>45</td>
</tr>
<tr>
<td>Wednesday 8:30 a.m.</td>
<td>Biotransformation #504-515</td>
<td>Champagne</td>
<td>45</td>
</tr>
<tr>
<td>Wednesday 1:30 p.m.</td>
<td>Environmental/Aquatic Toxicology #699-706</td>
<td>Brittany</td>
<td>59</td>
</tr>
<tr>
<td>Wednesday 1:30 p.m.</td>
<td>Renal Toxicology #707-715</td>
<td>Champagne</td>
<td>59</td>
</tr>
<tr>
<td>Thursday 8:30 a.m.</td>
<td>Immunotoxicology #877-887</td>
<td>Brittany</td>
<td>71</td>
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**Poster/Discussion Sessions**

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<tr>
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<th>Page</th>
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</thead>
<tbody>
<tr>
<td><strong>Tuesday</strong></td>
<td>8:30 a.m.</td>
<td>Reproductive Toxicology #888-899</td>
<td>Champagne</td>
<td>72</td>
</tr>
<tr>
<td><strong>Tuesday</strong></td>
<td>8:30 a.m.</td>
<td>Oncogenes/Growth Factors #100-111</td>
<td>Bordeaux</td>
<td>18</td>
</tr>
<tr>
<td><strong>Tuesday</strong></td>
<td>1:30 p.m.</td>
<td>Dioxin and Gene Expression #112-123</td>
<td>Burgundy</td>
<td>19</td>
</tr>
<tr>
<td><strong>Tuesday</strong></td>
<td>1:30 p.m.</td>
<td>Gap Junctions #298-309</td>
<td>Le Mans</td>
<td>31</td>
</tr>
<tr>
<td><strong>Tuesday</strong></td>
<td>1:30 p.m.</td>
<td>In Vitro Models of Skin Toxicity #310-319</td>
<td>Bordeaux</td>
<td>32</td>
</tr>
<tr>
<td><strong>Tuesday</strong></td>
<td>1:30 p.m.</td>
<td>Metallothionein #320-331</td>
<td>Burgundy</td>
<td>33</td>
</tr>
<tr>
<td><strong>Tuesday</strong></td>
<td>1:30 p.m.</td>
<td>Toxicity of Mixtures #332-343</td>
<td>Lorraine</td>
<td>34</td>
</tr>
<tr>
<td><strong>Wednesday</strong></td>
<td>8:30 a.m.</td>
<td>Calcium and Cytotoxicity #516-527</td>
<td>Le Mans</td>
<td>46</td>
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<tr>
<td><strong>Wednesday</strong></td>
<td>8:30 a.m.</td>
<td>Immuno toxicity of Drugs #520-539</td>
<td>Bordeaux</td>
<td>47</td>
</tr>
<tr>
<td><strong>Wednesday</strong></td>
<td>8:30 a.m.</td>
<td>Methylmercury Toxicity #540-550</td>
<td>Burgundy</td>
<td>48</td>
</tr>
<tr>
<td><strong>Wednesday</strong></td>
<td>8:30 a.m.</td>
<td>Peroxisome Proliferation #551-561</td>
<td>Lorraine</td>
<td>48</td>
</tr>
<tr>
<td><strong>Wednesday</strong></td>
<td>1:30 p.m.</td>
<td>Cell Proliferation #716-726</td>
<td>Le Mans</td>
<td>60</td>
</tr>
<tr>
<td><strong>Wednesday</strong></td>
<td>1:30 p.m.</td>
<td>Peripheral Neuropathies #727-737</td>
<td>Bordeaux</td>
<td>61</td>
</tr>
<tr>
<td><strong>Thursday</strong></td>
<td>8:30 a.m.</td>
<td>Methodologies and Approaches to Risk Assessment #900-912</td>
<td>Le Mans</td>
<td>73</td>
</tr>
<tr>
<td><strong>Thursday</strong></td>
<td>8:30 a.m.</td>
<td>Reactive Intermediates #913-924</td>
<td>Bordeaux</td>
<td>74</td>
</tr>
<tr>
<td><strong>Thursday</strong></td>
<td>8:30 a.m.</td>
<td>Tumor Promotion and Progression #925-935</td>
<td>Burgundy</td>
<td>75</td>
</tr>
<tr>
<td><strong>Thursday</strong></td>
<td>1:30 p.m.</td>
<td>Chelation of Metals #1076-1086</td>
<td>Le Mans</td>
<td>86</td>
</tr>
<tr>
<td><strong>Thursday</strong></td>
<td>1:30 p.m.</td>
<td>In Vitro Systems for Evaluation of Developmental Toxicity #1087-1098</td>
<td>Bordeaux</td>
<td>86</td>
</tr>
<tr>
<td><strong>Thursday</strong></td>
<td>1:30 p.m.</td>
<td>Phagocytic Cells and Tissue Injury #1099-1109</td>
<td>Burgundy</td>
<td>87</td>
</tr>
<tr>
<td><strong>Friday</strong></td>
<td>8:30 a.m.</td>
<td>Assessment of Chemical Interactions with DNA #1261-1271</td>
<td>Le Mans</td>
<td>98</td>
</tr>
<tr>
<td><strong>Friday</strong></td>
<td>8:30 a.m.</td>
<td>Glutathione #1272-1283</td>
<td>Burgundy</td>
<td>99</td>
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</tbody>
</table>

**Poster Sessions**

Sessions indicated by an asterisk (*) will be attended from 8:30 a.m. to 10:00 a.m. or 1:30 p.m. to 3:00 p.m. Those without an asterisk will be attended from 10:00 a.m. to 11:30 a.m. or 3:00 p.m. to 4:30 p.m.

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<tr>
<td><strong>Tuesday</strong></td>
<td>8:30 a.m.</td>
<td>*Cardiovascular Toxicology #124-142</td>
<td>Grand Ballroom</td>
<td>20</td>
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<tr>
<td><strong>Tuesday</strong></td>
<td>8:30 a.m.</td>
<td>Developmental Toxicology #143-165</td>
<td>Grand Ballroom</td>
<td>21</td>
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<tr>
<td><strong>Tuesday</strong></td>
<td>8:30 a.m.</td>
<td>*Drug Toxicology #166-197</td>
<td>Grand Ballroom</td>
<td>22</td>
</tr>
<tr>
<td><strong>Tuesday</strong></td>
<td>8:30 a.m.</td>
<td>Halogenated Hydrocarbons I #198-223</td>
<td>Fontainebleau Ballroom D</td>
<td>24</td>
</tr>
<tr>
<td><strong>Tuesday</strong></td>
<td>8:30 a.m.</td>
<td>*Hematotoxicology #224-235</td>
<td>Fontainebleau Ballroom D</td>
<td>25</td>
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<tr>
<td><strong>Tuesday</strong></td>
<td>8:30 a.m.</td>
<td>Hepatotoxicity I #256-265</td>
<td>Fontainebleau Ballroom D</td>
<td>26</td>
</tr>
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<td><strong>Tuesday</strong></td>
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<td>*Biotransformation I #738-758</td>
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**Poster/Demonstration Session**

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This listing is a courtesy to exhibiting companies. All booth assignments are tentative. For final booth location and final list of exhibitors, please see the on-site Guide to Exhibits to be distributed at the Miami program.
CONTINUING EDUCATION COURSES

All courses are held on Monday, February 12, 1990 (Pre-Registration Only)

8:00 a.m. - 12:00 noon

1. Target Organ Toxicity: Cardiovascular Toxicity

Chairperson: Daniel Acosta, University of Texas, Austin, TX

The purpose of this course is to provide a foundation by which toxicologists and other scientists can better understand how the cardiovascular system responds to the toxic effect of xenobiotics. Lectures will be given on the normal physiology, as well as the pathophysiology, of the cardiovascular system. With these basic lectures as a foundation, an overview on the basic principles and mechanisms mediating cardiac toxicology and vascular toxicology will be given as individual lectures.

General Principles of Cardiovascular Physiology. Nicholas Sperkakis, University of Cincinnati, Cincinnati, OH.
Pathophysiology of the Cardiovascular System. Maximilian Buja, University of Texas, Dallas, TX.
Overview of Cardiac Toxicology. Eugene Herman, USFDA, Washington, D.C.
Basic Concepts of Vascular Toxicology. Paul Boor, University of Texas, Galveston, TX.

2. Developmental Toxicity: Changing Factors in Embryonic Susceptibility

Chairperson: Jeanne M. Manson, Merck Sharp & Dohme, West Point, PA

This course will emphasize general principles of Developmental Toxicology with specific emphasis on the rapid changes in embryonic susceptibility to prenatal insult. A unique characteristic of the field of Developmental Toxicity is that substantial qualitative and quantitative changes in embryonic susceptibility occur within relatively discrete time intervals, sometimes as short as a few hours to a single day. In the first lecture, a general overview of changing susceptibility with time and patterns of dose-response will be given. The second lecturer will provide a mechanistic underpinning for some of the changes in susceptibility, based on major shifts in intermediary metabolism during the organogenesis period of embryonic development. The third lecturer will describe these principles as they operate within craniofacial development and describe the underlying cellular and molecular processes that control palatal morphogenesis. The final presenter will review the underlying principles of developmental neurobiology, with emphasis on the rapid changes in cell interaction and cell survival in the CNS during the perinatal period.

General Principles and Patterns of Dose-Response. Jeanne M. Manson, Merck Sharp & Dohme, West Point, PA.
Changes in Intermediary Metabolism During the Organogenesis Period. Thomas W. Sadler, University of North Carolina, Chapel Hill, NC.

Developmental Neurobiology: Changing Factors Determining Susceptibility to Maturation of the CNS. Patricia M. Rodier, University of Rochester, Rochester, NY.

3. Advanced Metabolism

Chairperson: J. Donald deBethizy, R.J. Reynolds Tobacco Co., Winston-Salem, NC

Metabolism: A Determinant of Toxicity

New insights continue to develop on how the balance between detoxication and metabolic activation determines the toxicity of most xenobiotics. This course will provide updates in three rapidly developing areas in xenobiotic metabolism: Glutathione-dependent toxicity, the kinetics of metabolite formation and inactivation, and cytochrome P-450. The first lecture will discuss the role of glutathione conjugation reactions in the bioactivation of several classes of xenobiotics including vicinal dihaloethanes, haloalkenes, and bromobenzene. The second speaker will describe the rate limiting steps that are involved in the processing of xenobiotics and metabolites by the liver and kidney. This talk will emphasize the role that heterogeneity in enzymic distribution, membrane barriers, and organ perfusion play in creating a concentration-in-space phenomenon that occurs in the direction of flow within the organ. The third presentation will continue to discuss the kinetics of metabolites by describing pharmacokinetic approaches used to classify metabolites according to their ability to leave the enzyme that generates their formation, and to leave the cells, the organ and the body in which they are formed. Procedures to relate blood concentrations of precursors of metabolites that fail to leave organs to enzyme activities in organs will also be described. The final lecture will provide an overview of the current understanding of the so-called super gene family, cytochrome P-450. The lecture will cover the multiplicity of P-450 genes and their products, mechanisms of induction and suppression, catalytic specificity and the relevance of these topics to metabolism and toxicity.

Overview. J. Donald deBethizy, R.J. Reynolds Tobacco Co., Winston-Salem, NC.
Glutathione-dependent Toxicity. Marion W. Anders, University of Rochester Medical Center, Rochester, NY.
Determinants of Metabolite Kinetics. K. Sandy Pang, University of Toronto, Toronto, Canada.
Methods Based on the Kinetics of Inactivation of Short-lived Metabolites. James R. Gillette, National Heart, Lung, and Blood Institute, Bethesda, MD.
Cytochrome P-450 Enzymes: Current Understanding of Basic Principles with Relevance to Metabolism and Toxicity. F. Peter Guengerich, Vanderbilt University, Nashville, TN.
4. Advanced Hepatotoxicity
(repeated in the afternoon)

Chairperson: James A. Poppe, CIIT, Research Triangle Park, NC

Hepatotoxicity is a frequent response in rodents following exposure to xenobiotics. While entire textbooks are available on the subject, new advances are being routinely published. The purpose of this course is to provide the attendee with in-depth information on selected topics in hepatotoxicity. These topics have been chosen based on significant advances in recent years. Studies of hepatotoxicity frequently consider only the role of hepatocytes in the toxic response. In contrast, the first speaker will provide an overview of the role of the non-parenchymal cell in hepatotoxicity. Although the mechanism of hepatocyte toxicity has been evaluated for many years, our understanding of the biochemical mechanism of hepatocyte toxicity is continuing to evolve. The second speaker will describe the current and changing concepts in hepatocyte toxicity. Chemically induced hepatocyte proliferation is frequently suggested as an important toxic response in the liver. The third speaker will describe the current state of knowledge of the hepatocyte growth regulatory system and indicate how chemicals may alter this regulation to induce toxicity, including the development of cancer. The origin and lineage of the various liver cells are important in understanding the response of the liver to toxic agents. The function of hepatic oval cells and their response to toxic insults will be discussed.

Introduction. James A. Poppe, Chemical Industry Institute of Toxicology, Research Triangle Park, NC.
Role of Non-parenchymal Cells in Hepatotoxicity. Debra Laskin, Rutgers University, NJ.
Mechanisms of Hepatocyte Toxicity. Gregory L. Kedderis, Chemical Industry Institute of Toxicology, Research Triangle Park, NC.
Regulation of Hepatocyte Proliferation. Randy Jirtle, Duke University, NC.

5. Concepts In Cell Biology
(repeated in the afternoon)

Chairperson: Glenn F. Rush, Toxicology Division, Eli Lilly and Co., Greenfield, IN

This will cover a few selective topics that relate to the study of cell biology from a toxicologist's perspective. Thus, the course will be composed of sessions describing some of the fundamental biochemical and physiological processes that are often targets for a variety of drugs and chemicals as well as discussions on some of the new techniques available for studying these changes. To this end, five topics have been chosen. Cellular Energetics: This session will be focused on intermediary metabolism of the cell and how this function may be adversely affected by a variety of toxicants. In particular, the techniques used to detect metabolic changes as well as the consequences of disruption of intermediary metabolism will be discussed. Cell Growth and Differentiation: This session will cover how cells repair and regenerate from toxicant-induced damage. The majority of the discussion will be centered on the repair and differentiation of renal cells following proximal tubular injury. Signal Transduction and Control: In this session, new developments in our understanding of cellular signal transduction and control will be discussed. Emphasis will be placed on the role of phosphoinositide metabolism and protein kinase-C. Membrane Transport: This session will be focused on the different mechanisms involved in membrane transport and how changes in toxicological consequences of transport of drugs and chemicals will also be discussed. Fluorescence Image Analysis and Flow Cytometry: This session will describe the new techniques in flow and anchored flow analysis and fluorescence-activated cell sorting and how these techniques may be used to increase our understanding of the mechanisms of toxicant-induced injury.

Cellular Energetics. Glenn Rush, Eli Lilly and Co., Greenfield, IN.
Cell Growth and Differentiation. James Stevens, W. Alton Jones Cell Science Center, Lake Placid, NY.
Signal Transduction and Control. Susan Jaken, W. Alton Jones Cell Science Center, Lake Placid, NY.
Membrane Transport. Jeff Kasher, Eli Lilly and Co., Indianapolis, IN.
Fluorescence Image Analysis and Flow Cytometry. Debra Laskin/Jeffrey Laskin, Rutgers University/RWJ Medical School, Piscataway, NJ.

6. Carcinogen Risk Assessment
(repeated in the afternoon)

Chairperson: Robert J. Moolenaar, Health and Environmental Sciences, The Dow Chemical Company, Midland, MI

The course is devoted to discussing the use of experimental data for the assessment of risk to humans from exposure to chemical carcinogens. Various schemes devised to classify chemicals according to their potential to induce cancer will be presented and the rationale for selecting the preferred scheme discussed. Procedures for linearizing multistage dose-response relationships will be presented with emphasis given to the assumptions inherent to the model and examples of including experimental data in place of default assumptions. The session will conclude with detailed discussions of two modeling techniques for quantitative risk assessment. The purpose, design, and methods for constructing physiologically based pharmacokinetic models will be presented along with examples of the usefulness for certain aspects of risk assessment. The advantages of biologically motivated models for incorporating considerations of target organ growth and development, cytotoxicity, regenerative hyperplasia, and selective clonal expansion or regression in accounting for irreversible transformations will be discussed with emphasis on the high-dose carcinogenicity of non-genotoxic agents. The focus of the course will be to define the important considerations in assessing human carcinogenic risk and to discuss the various modeling techniques available. Emphasis will be given to the assumptions and limitations inherent to the model design, data requirements and parameter estimation techniques. Examples will be included to demonstrate the utility and limitations of the various models presented.

Carcinogen Classification. Robert J. Moolenaar, Health and Environmental Sciences, The Dow Chemical Company, Midland, MI.
Quantitative Dose Response Assessment. Colin N. Park, Health and Environmental Sciences, The Dow Chemical Company, Midland, MI.
Physiologically Based Pharmacokinetic Modeling. Kenneth B. Bischoff, Department of Chemical Engineering, University of Delaware, Newark, DE.

Biologically Motivated Models. Thomas B. Starr, Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

1:30 p.m. - 5:30 p.m.

7. Advanced Hepatotoxicity (also offered in the morning)

Chairperson: James A. Popp, CIIT, Research Triangle Park, NC.

Hepatotoxicity is a frequent response in rodents following exposure to xenobiotics. While entire textbooks are available on the subject, new advances are being routinely published. The purpose of this course is to provide the attendee with in-depth information on selected topics in hepatotoxicity. These topics have been chosen based on significant advances in recent years. Studies of hepatotoxicity frequently consider only the role of hepatocytes in the toxic response. In contrast, the first speaker will provide an overview of the role of the non-parenchymal cell in hepatotoxicity. Although the mechanism of hepatocyte toxicity has been evaluated for many years, our understanding of the biochemical mechanism of hepatocyte toxicity is continuing to evolve. The second speaker will describe the current and changing concepts in hepatocyte toxicity. Chemically induced hepatocyte proliferation is frequently suggested as an important toxic response in the liver. The third speaker will describe the current state of knowledge of the hepatocyte growth regulatory system and indicate how chemicals may alter this regulation to induce toxicity, including the development of cancer. The origin and lineage of the various liver cells are important in understanding the response of the liver to toxic agents. The function of hepatic oval cells and their response to toxic insults will be discussed.

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Role of Non-parenchymal Cells in Hepatotoxicity. Debra Laskin, Rutgers University, NJ.

Mechanisms of Hepatocyte Toxicity. Gregory L. Kedderis, Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

Regulation of Hepatocyte Proliferation. Randy Jirtle, Duke University, NC.

8. Free Radical Toxicology

Chairpersons: James P. Kehrer and Terrence J. Monks, Division of Pharmacology and Toxicology, College of Pharmacy, University of Texas at Austin.

A free radical is any molecule that contains an odd (unpaired) number of electrons. Free radicals are generated in many metabolic pathways and the potential role of oxygen-centered free radicals in the pathology of several human diseases has stimulated extensive research. This course will review several important contemporary issues in free radical toxicology. The chemistry and reactivity of free radicals in biological systems will be introduced. The normal cellular sources of reactive oxygen species will be described and their reaction with vital cellular constituents presented. Current methods for detecting radicals and oxidative injury in biological systems will be discussed. Fortunately, through scientific ingenuity, many of these methods are relatively simple and straightforward. However, sophisticated instrumentation is required for the direct observation of free radicals. The mechanisms by which free radicals interact with biological systems and cause tissue injury will be detailed. An elaborate arsenal of cellular defense mechanisms have evolved that permit cells to thrive despite their continuous bombardment by reactive oxygen species. Despite these defenses, free radicals have been implicated in the injury produced by various xenobiotics (carbon tetrachloride, paraquat, quinones, etc.) and in the pathology of a variety of human diseases including rheumatoid arthritis (inflammation), atherosclerosis, reperfusion injury, cancer (initiation and promotion) and pulmonary oxygen toxicity. However, because of the inherent reactivity of free radicals, the question of whether such species are a major cause of tissue injury and human disease remains equivocal. Much work remains to be done. Free radical toxicology remains a fertile field for radical-minded scientists.

Overview. Terrence J. Monks, Division of Pharmacology and Toxicology, College of Pharmacy, University of Texas at Austin.

Chemistry of Free Radicals. Craig E. Thomas, Toxicology Department, Rohm and Haas Company, Spring House, PA.

Methodology for Detecting Radicals and Oxidative Injury in Biological Systems. Henry J. Forman, Division of Neonatal/Pediatric Pulmonology, Children's Hospital of Los Angeles, Los Angeles, CA.

Mechanisms of Tissue Injury and Protection. Charles V. Smith, Department of Pediatrics, Baylor College of Medicine, Houston, TX.

Current Topics in Free Radical Mediated Tissue Injury. James P. Kehrer, Division of Pharmacology and Toxicology, College of Pharmacy, University of Texas at Austin.

9. Target Organ Toxicity: Respiratory Tract Toxicology

Chairperson: James A. Bond, CIIT, Research Triangle Park, NC.

The respiratory tract is an important portal of entry for inhaled toxicants and carcinogens and is also a target organ for non-inhaled materials. This course will provide an overview of the various mechanisms responsible for toxicant-induced injury in the respiratory tract. The first lecture will focus on cellular responses of the nasal tissue to inhaled toxicants. This presentation will address the morphologic responses, both neoplastic and non-neoplastic, or nasal airway cells to a variety of chemical agents. In addition to providing a brief overview of the structure, function and cell biology of the upper airway in laboratory animals and humans, there will be a discussion of the intranasal sites of toxicant-induced lesions, emphasizing the nasal cells at risk. The second presenter will provide a brief overview of the structure and cell biology of the lung. Mechanisms of xenobiotic-induced lung injury, including direct and indirect injury, metabolic activation, and cyclic oxidation will be addressed. The major pathophysiologic responses of the lung will be covered, including edema, necrosis, inflammation, regeneration, fibrosis and emphysema. The third
speaker will discuss the role of particles and fibers in including toxic responses in the respiratory tract. Mechanisms of particle translocation to the pulmonary interstitium, as well as mechanisms of lung inflammation and pulmonary macrophage clearance responses following particle deposition, will be reviewed. The role of cytokines and growth factors in the development of particulate-induced pulmonary fibrosis will also be discussed. The final presenter will focus on the neoplastic responses of the lung. Species differences in the carcinogenic response of the lung to carcinogens will be addressed, with particular emphasis on differences between animal models for lung cancer and human lung cancer.

Overview. James A. Bond, CIIT, Research Triangle Park, NC.

Cellular Response of Nasal Tissue to Inhaled Toxicants. Jack R. Harkema, Inhalation Toxicology Research Institute, Albuquerque, NM.

Xenobiotic-Induced Lung Injury. Wanda M. Haschek-Huck, University of Illinois, Urbana, IL.

Current Concepts in the Pathogenesis of Particulate-Induced Lung Injury. David B. Warheit, Haskell Laboratory, DuPont, Newark, DE.

The Nature of Lung Tumors in Man and Animals: Implications for Toxicology. Hanspeter R. Witschi, University of California-Davis, Davis, CA.

10. Toxicity of Agents: Pesticides

Chairperson: James T. Stevens, CIBA-GEIGY Corp., Greensboro, NC.

This course will emphasize several aspects of pesticide toxicology, including toxicity to humans, the environment, and the regulation and risk management of pesticides. The first lecture will provide an overview of the early use of chemical agents to control insect and weed pests, continue with the advent of organochlorine insecticides, and close with a discussion of more recent agents with pharmaceutical-like efficacy in the gram per acre range. The second lecturer will review the toxicology of pesticides, emphasizing the mechanism of toxicity for the different chemical classes. The third speaker will profile studies ranging from acute tests in marine and aquatic organisms, bees, non-target plants and birds, through mesocosm and avian field studies. The fourth session will evaluate the potential human exposure in food and drinking water following the application of pesticides to crops. A review of the Pesticide Tolerance Assessment system used by the Office of Pesticides Program, as well as procedures used by the Office of Drinking Water for calculation of HALS will be discussed. The final presenter will review the extent of toxicological testing required prior to registration of a new pesticide in the Federal Insecticide, Fungicide, and Rodenticide Act, as well as the requirements for the re-registration of older products. There will also be a discussion of the generation of new and revised guidelines for effecting the direction of toxicology testing under the guidance of the EPA.

Agricultural Chemicals: The Evolution of Pesticides. Wayland J. Hayes, Jr., Vanderbilt University, Nashville, TN.

Hazard Identification: Pesticide Toxicity to Humans. Donald J. Ecobichon, McGill University, Montreal, Canada.

Hazard Identification: Ecotoxicity. Ronald Kendall, Clemson University, Clemson, SC.

Exposure Assessment: Quality of Food and Water Supply in the U.S., Christopher E. Wilkinson, Varvar, Inc., Springfield, VA.

The Regulatory and Risk Management Process. Penelope Fenner-Crisp, U.S. Environmental Protection Agency, Wilmington, DE.

11. Concepts in Cell Biology
(also offered in the morning)

Chairperson: Glenn F. Rush, Toxicology Division, Eli Lilly and Co., Greenfield, IN.

This will cover a few selective topics that relate to the study of cell biology from a toxicologist's perspective. Thus, the course will be composed of sessions describing some of the fundamental biochemical and physiological processes that are often targets for a variety of drugs and chemicals as well as discussions on some of the new techniques available for studying these changes. To this end, five topics have been chosen. Cellular Energetics: This session will be focused on intermediary metabolism of the cell and how this function may be adversely affected by a variety of toxicants. In particular, the techniques used to detect metabolic changes as well as the consequences of disruption of intermediary metabolism will be discussed. Cell Growth and Differentiation: This session will cover how cells repair and regenerate from toxicant-induced damage. The majority of the discussion will be centered on the repair and differentiation of renal cells following proximal tubular injury. Signal Transduction and Control: In this session, new developments in our understanding of cellular signal transduction and control will be discussed. Emphasis will be placed on the role of phosphoinositide metabolism and protein kinase-C. Membrane Transport: This session will be focused on the different mechanisms involved in membrane transport and how changes in toxicological consequences of transport of drugs and chemicals will also be discussed. Fluorescence Image Analysis and Flow Cytometry: This session will describe the new techniques in flow and anchored flow analysis and fluorescence-activated cell sorting and how these techniques may be used to increase our understanding of the mechanisms of toxicant-induced injury.

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12. Carcinogen Risk Assessment
(also offered in the morning)

Chairperson: Robert J. Moolenaar, Health and Environmental Sciences, The Dow Chemical Company, Midland, MI.

The course is devoted to discussing the use of experimental data for the assessment of risk to humans from exposure to chemical carcinogens. Various schemes devised to classify chemicals according to their potential to induce cancer will
be presented and the rationale for selecting the preferred scheme discussed. Procedures for linearizing multistage dose-response relationships will be presented with emphasis given to the assumptions inherent to the model and examples of including experimental data in place of default assumptions. The session will conclude with detailed discussions of two modeling techniques for quantitative risk assessment. The purpose, design, and methods for constructing physiologically based pharmacokinetic models will be presented along with examples of the usefulness for certain aspects of risk assessment. The advantages of biologically motivated models for incorporating considerations of target organ growth and development, cytotoxicity, regenerative hyperplasia, and selective clonal expansion or regression in accounting for irreversible transformations will be discussed with emphasis on the high-dose carcinogenicity of non-genotoxic agents. The focus of the course will be to define the important considerations in assessing human carcinogen risk and to discuss the various modeling techniques available. Emphasis will be given to the assumptions and limitations inherent to the model design, data requirements and parameter estimation techniques. Examples will be included to demonstrate the utility and limitations of the various models presented.

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**Physiologically Based Pharmacokinetic Modeling.** Kenneth B. Bischoff, Department of Chemical Engineering, University of Delaware, Newark, DE.

**Biologically Motivated Models.** Thomas B. Starr, Chemical Industry Institute of Toxicology, Research Triangle Park, NC.
MONDAY, FEBRUARY 12
4:00 p.m.-6:00 p.m.

EDUCATION PROGRAM FOR MINORITY STUDENTS

Chairperson: Marion Ehrich, Chairperson, SOT Education Committee

SOT members, undergraduate and graduate students, and others interested in toxicology education and early recruitment of minorities are invited to attend this program, which is sponsored by the SOT Education Committee.

4:00 Welcome and Introduction—Marion Ehrich
4:05 Introduction to Toxicology, a Scientific Discipline of Great Diversity. Harihara Meherdade, University of Mississippi.
4:20 Opportunities for Minorities in Toxicology. Faye Calhoun, National Institutes of Health.
4:35 Break
4:45 Perspectives from Graduate Students and Recent Graduates. Dwayne Hill, University of West Virginia; Claude McCowan, Exxon Biomedical Services; Richard Rodriguez, National Cancer Institute.
5:05 Comments from an Employer of Minorities—Robert D’Amato, Procter & Gamble.
5:20 General Discussion and Refreshments.

MONDAY, FEBRUARY 12
5:30 p.m.-6:30 p.m.

PLACEMENT SERVICE SEMINAR

Chairperson: Rudolph V. Von Burg, Co-Director, SOT Placement Service

A panel of guest speakers will present their views on the present and future career opportunities and necessary requirements for entry into the areas of academic, industrial or governmental toxicology. The speakers will also present an overview on what an employer looks for in a candidate interview, an employer’s expectations of job performance and the potential financial remunerations. A professional career planner will discuss strategies and approaches for seeking and obtaining the job for which you are best suited.

Speakers include Frank N. Dost, DVM, Academia; Robert A. Scala, Sc.D., Industry; Penelope Fenner-Crisp, Ph.D., Government; and Terry Leyden, Career Marketing Associates.

MONDAY, FEBRUARY 12
6:30 p.m.-6:00 p.m.
GRAND BALLROOM

SOT WELCOMING RECEPTION

Open to all registrants and guests. Drink tickets for the reception will be available for purchase outside of the Grand Ballroom at 5:30 pm. Additional tickets will be sold during the reception at booths next to each bar throughout the Grand Ballroom.

TUESDAY, FEBRUARY 13
7:30 a.m.-8:30 a.m.
FLEUR DE LIS ROOM

GRADUATE STUDENT BREAKFAST

Sponsored by the SOT Education Committee. Open to all graduate student registrants.

TUESDAY MORNING, FEBRUARY 13
8:30 a.m.-11:30 a.m.
FONTAINEBLEAU BALLROOM A

SYMPOSIUM: COMPARATIVE DOSIMETRY OF INHALED MATERIALS:
DIFFERENCES AMONG ANIMAL SPECIES AND EXTRAPOLATION TO MAN

Chairperson: Alan R. Dahl, Inhalation Toxicology Institute, Albuquerque, NM
Sponsored by the Inhalation Specialty Section

Dose is a fundamental concept in the science of toxicology; yet, for all of its importance, the determination of dose for inhaled materials presents issues with which inhalation toxicologists are still grappling. Amid a myriad of lesser factors, the two major factors influencing dose for inhalants are the physicochemical properties of the inhaled materials and the animal species doing the inhaling. The speakers in this symposium will present the most recent advances in research describing dose for inhaled particles, particle-associated organic compounds, reactive vapors and metabolizable vapors. They will also discuss state-of-the-art methods for extrapolating to man inhaled doses measured in test animals and advances in the search for biomarkers for inhaled carcinogens.

The factors that affect the fate of inhaled particles will be reviewed and particle deposition and clearance patterns will be compared between experimental animals and man. Advances in determining dose for reactive vapors largely absorbed in the nose (exemplified by formaldehyde) and in the lung (exemplified by ozone) will be discussed in terms of relating experimental data to predictive models. The uptake of metabolizable vapors as affected by both the physicochemical properties of the vapors and the metabolic capacities of test animals and man will be explored using specific examples of vapors commonly encountered in the environment. Problems in making interspecies comparisons will be addressed. Finally, methods for indexing dose of inhaled carcinogens using toxic metabolites, DNA adducts, hemoglobin adducts, oncogene activation, gene mutations and chromosomal changes as biomarkers will be reviewed with an emphasis on the use of such markers in risk assessment.

8:30 Introduction. Alan R. Dahl, Inhalation Toxicology Research Institute, Albuquerque, NM.
8:40 Comparative Deposition, Clearance and Retention of Particle-Borne Toxicants. Richard B. Schlesinger, New York University Medical Center, New York, NY.
9:50 Comparative Uptake and Fate of Inhaled Metabolizable Vapors. Michele A. Medinsky, CIIT, Research Triangle Park, NC.
10:25 Molecular Dosimetry of Inhaled Carcinogens: Implications for Epidemiology-Risk Assessment. George W. Lucier, National Institute of Environmental Health Sciences, Research Triangle Park, NC.
11:00 Discussions.

TUESDAY MORNING, FEBRUARY 13
8:30 a.m.-11:30 a.m.
FONTAINEBLEAU BALLROOM B

SYMPOSIUM: CELLULAR AND MOLECULAR MECHANISMS OF LEARNING AND MEMORY: INTERACTIONS WITH NEUROTOXIC CHEMICALS

Chairperson: Hugh A. Tilson, USEPA, Research Triangle Park, NC
Sponsored by the Neurotoxicology Specialty Section

The advances made in the basic neurosciences in the last decade have provided a basis for understanding the mechanisms by which neurotoxicants adversely affect the structure and/or function of sensory, motor, and autonomic systems. Much less is known, however, about how neurotoxicants can affect cognitive processes such as memory and learning. This latter area is of great importance since it is well known that one of the frequent initial complaints following exposure to some neurotoxicants includes difficulty in remembering and confusion in thinking. It also has been suggested that a complete risk assessment of neurotoxicants should include an evaluation of cognitive processes, including learning and memory. The purpose of this symposium is to review, at four levels of neural organization, the processes of learning and memory. The talks will cover: 1) the cellular and molecular mechanisms of learning; 2) the location of the regions in the central nervous system associated with the storage, retrieval and processing of different types of memory; 3) the relative importance of specific neurotransmitter pathways in mediating learning and memory; and 4) measurement and quantification of learning and memory in humans. Speakers will not only explain basic principles involved at each level of neural organization, but also discuss potential sites of action for neuroactive chemicals. In this way, the symposium will provide a systematic presentation of material concerning this complex area of research. The fundamental information concerning the mechanisms by which learning and memory occur should help provide insight into potentially vulnerable sites of attack at which toxic chemicals may act.

8:30 Introduction. Hugh A. Tilson, USEPA, Research Triangle Park, NC.
8:40 The Cellular and Molecular Basis of Learning and Memory. Arvyen Routtenberg, Northwestern University, Evanston, IL.
9:50 The Neurochemical Substrate of Learning and Memory. Hugh A. Tilson, U.S. Environmental Protection Agency, Research Triangle Park, NC.
10:25 Cognitive Effects of Neurotoxicants in Humans. W. Kent Anger, Oregon Health Sciences University, Portland, OR.
11:00 Discussion.
PLATFORM SESSION: METAL TOXICOLOGY

Chairpersons: William H. Benson, University of Mississippi, University, MS and Arthur Furst, Palo Alto, CA.


#79 9:00  MULTI-MEDIA LEAD EXPOSURE IN CHILDREN: BIOLOGICAL BASIS FOR AN EXPANDED UPTAKE/BIOKINETIC MODEL. A H Marcus, R Elias, J Cohen. Battelle Memorial Institute, US EPA, RTP. NC.

#80 9:15  CADMIUM-INDUCED FORMATION OF MULTINUCLEATED OSTEOCLAST-LIKE CELLS IN VITRO. M H Bhattacharyya, R P Konz, T T Choi, and T M Seed. Argonne National Laboratory, Argonne, IL.

#81 9:30  LEAD IMPAIRS CLEARANCE BUT NOT GENERATION OF 1,25-DIHYDROXYVITAMIN D3-INDUCED [Ca2+] SIGNALS IN OSTEOBLASTIC BONE CELLS. J G Founds. Institute of Chemical Toxicology. Wayne State University. Detroit MI.

#82 9:45  LEAD EXPOSURE DURING ADVANCED AGE: ALTERATIONS IN KINETICS AND BIOCHEMICAL EFFECTS. D A Cory-Slechta. Environmental Health Sciences Center, University of Rochester School of Medicine, Rochester, NY.

#83 10:00  NICKEL INTERACTION WITH CATALASE AND SUPEROXIDE DISMUTASE IN THE FISCHER RAT. R E Rodriguez, M Misra, S L North and K S Kasprzak. National Cancer Institute-FCRF, Frederick, MD.

#84 10:15  DECREASED PULMONARY CLEARANCE OF 239PuO2 AND LUNG TOXICITY INDUCED BY INHALED BERYLLIUM METAL IN RATS. G L Finch, M D Hoover, P J Haley, A F Edson, J A Mewhinney, and R G Cuddy. Inhalation Toxicology Research Institute, Albuquerque, NM.

#85 10:30  CARCINOGENIC EFFECTS OF REPEATED INJECTIONS OF CADMIUM IN WISTAR AND FISCHER RATS. M P Waalkes, N Konishi, S Rehm, R M Bare, and J M Ward. Nat'l Cancer Institute-FCRF, Frederick, MD.


TUESDAY MORNING, FEBRUARY 13

8:30 a.m. - 11:15 a.m.

CHAMPAGNE ROOM

PLATFORM SESSION: OXIDATIVE STRESS

Chairpersons: George B. Corcoran III, University of New Mexico College of Pharmacy, Albuquerque, NM and Gregory Allen Reed, University of Kansas Medical Center, Kansas City, KS.

#89 8:30  EFFECTS OF ACETAMINOPHEN AND 3-HYDROXYACETANILIDE ON MOUSE LIVER ADENINE NUCLEOTIDE METABOLISM AND PROTEIN THIOLS. M A Timrenstein and S D Nelson. Dept. of Med. Chem., University of Washington, Seattle, WA.

#90 8:45  IDENTIFICATION OF CYSTEINYLGLYCINE-GLUTATHIONE DISULFIDE (Cys-Gly-GS-DS) IN BILE. C Madhu and O D Kaasen. Univ. of Kansas Med. Ctr., Kansas City, KS.

#91 9:00  PHENOBARBITAL-MEDIATED INCREASES IN GSH SYNTHESIS IN ISOLATED HEPATOCEYES INCUBATED WITH MENADIONE. W S Utey and H M Mehendale. Training Program in Toxicology, Dept. Pharmacol. & Toxicol., Univ. Miss. Med. Ctr., Jackson, MS.

#92 9:15  EFFECT OF HALOTHANE ON HEPATOCYTE GLUTATHIONE AND VIABILITY DURING HYPOXIA. M E Johnson and R A Van Dyke. Department of Anesthesiology, Mayo Clinic, Rochester, MN. Sponsor: G Powis.
#93 9:30 SUPPRESSION OF HORMONE AGONIST-INDUCED Ca^{2+} OSCILLATIONS IN CULTURED HEPATO- CYTES BY CHEMICAL HYPOXIA. T Kawanishi, A L Nieminen, B Herman and J J Lemasters. Dept. of Cell Biology & Anatomy, Univ. of North Carolina, Chapel Hill, NC. Sponsor: R G Thurman.

#94 9:45 PROTECTIVE EFFECTS OF ACIDOTIC pH AND FRUCTOSE AGAINST LETHAL INJURY TO RAT HEPATOCYTES BY MITOCHONDRIAL INHIBITORS, OXIDATIVE STRESS AND IONOPHORES. A L Nieminen, G J Gores, T L Dawson, B Herman and J J Lemasters. Department of Cell Biology & Anatomy, University of North Carolina, Chapel Hill, NC. Sponsor: R G Thurman.

#95 10:00 THE ANTIOXIDANT ACTIVITY OF b-CAROTENE (BC) IN LIPOSOMES. T A Kennedy, D Ritenbery and D C Lobenthal. Dept. of Pharmacology & Toxicology, University of Arizona, Tucson, AZ.

#96 10:15 INHIBITION OF LIPID AND PROTEIN OXIDATION IN RAT LIVER MICROSONES BY GLUTATHIONE. J Palamanda and J P Kehrer. Division of Pharmacology and Toxicology, College of Pharmacy, University of Texas at Austin, TX.

#97 10:30 METHYL MERCURY INDUCES PARADOXICAL INCREASE IN REDUCED GLUTATHIONE (GSH) IN CEREBELLAR GRANULE CELL CULTURE. K Weer, T Sarafian and M A Ventity. Division of Neuropathology and Brain Research Institute, UCL/A Medical Center, LA, CA. Sponsor: A Cho.

#98 10:45 GLUTATHIONE CONJUGATES STIMULATE ATP HYDROLYSIS IN MEMBRANE VESICLES PREPARED FROM HUMAN ERYTHROCYTES. R Sharma, S Gupta, H Ahmad, G A S Ansari, and Y C Awasthi, The Univ. of Texas Med. Br., Galveston, TX. Sponsor: Y Awasthi.

#99 11:00 COMPARISON OF ORGANIC HYDROPEROXIDE AND HYDRAZINE EFFECTS ON MEMBRANE PROTEINS IN HUMAN RED BLOOD CELLS: CORRELATION WITH PROTEOLYSIS. A M Mortensen and R F Novak. Institute of Chemical Toxicology, Wayne State University, Detroit, MI.

TUESDAY MORNING, FEBRUARY 13
BORDEAUX ROOM

POSTER/DISCUSSION SESSION: ONCOGENES/GROWTH FACTORS

Chairpersons: Jay I. Goodman, Michigan State University, East Lansing, MI and Gary David Stoner, Medical College of Ohio, Toledo, OH.

Displayed 8:30 a.m.-11:30 a.m.

Discussion 9:30 a.m.-11:30 a.m.

#100 TOXICITY OF SELECTED CARCINOGENIC CHEMICALS IN ONCOGENE CARRIER TRANSGENIC MICE AND CONTROL MICE. G N Raig, R W Tennant, A Braun*, L R Boone, and P Leder*. National Toxicology Program, NIEHS, Research Triangle Park, NC; *EG&G Mason Research Institute, Worcester, MA; and *Harvard Medical School, Boston, MA.


#102 MUTATIONAL ACTIVATION OF THE H-ras GENE IN RAT ESOPHAGEAL PAPILLOMAS INDUCED BY METHYLBENZYL-NITROSAMINE. Y Wang, M You, S Reynolds, M Anderson and G Stoner. Dept. of Path. Medical Coll. of Ohio, OH & LMT, NIEHS, RTP, NC.

#103 ACTIVATION OF HA-ras IN THE LIVER OF C3H/He MICE TREATED WITH DIETHYLNITROSAMINE OR PHENOBARBITONE. P C Rumsby, N C Barrass, J C Wright and J G Evans. BIBRA, Carshalton, Surrey, UK. Sponsor: S D Gargioli.

#104 HYPOMETHYLATION OF THE Ha-ras ONCOGENE IS ASSOCIATED WITH TUMORIGENICITY. J S Ray and J J Goodman. Dept. Pharmacology & Toxicology, Center Environmental Toxicology, Michigan State University, E. Lansing, MI.

#105 IMMUNOHISTOCHEMICAL DETECTION OF RAS P21 PROTEIN IN PRENEOPLASTIC AND NEO- PLASTIC LESIONS DURING CHEMICALLY INDUCED HEPATOCARCINOGENESIS. R C Stills and S D Sleight. Michigan State University, Dept. Pathology, East Lansing, MI.

#106 CORRELATION BETWEEN THE REDUCTION OF GAP JUNCTIONAL COMMUNICATION AND TUMORIGENESIS IN RAT GLIAL AND LIVER EPITHELIAL CELLS CONTAINING THE EXPRESSED NUE ONCOGENE. J E Trosko, J E Klaunig, M Yager, A Koestner, M El-Fouly, J Buikots, B Cool, and C C Chang. Michigan State University, E. Lansing, MI, and Department of Pathology, Medical College of Ohio, Toledo, OH.


DIFFERENTIATION-RELATED EXPRESSION OF PROTO-ONCOGENE src IN CNS MICROMASS CULTURES: EFFECTS OF CHEMICAL EXPOSURE. C Sweeney, and R Faustman. Department of Environmental Health, University of Washington, Seattle, WA.

PROTO-ONCOGENE EXPRESSION DURING THE LATE STAGES OF DICHLOROACETATE AND TRICHLOROACETATE-INDUCED HEPATOCARCINOGENESIS IN B6C3F1 MICE.  *M A Nelson, LM Sanchez, R J Bud, and S R Sylvester. Pharmacology/Toxicology Program, Washington State University, Pullman, WA; *Pharmacology/Toxicology Program, University of Arizona, Tucson, AZ.

TRANSFECTION OF NON-TUMORIGENIC, SLOW-GROWING POSTATE TUMOR CELLS WITH HEPARIN-BINDING GROWTH FACTOR-2 INCREASES MALIGNANT PHENOTYPE. G C Yan and W McKeegan. W Alton Jones Cell Science Center, Lake Placid, NY. Sponsor: J L Stevens.

TUESDAY MORNING, FEBRUARY 13
BURGUNDY ROOM

POSTER/DISCUSSION SESSION: DIOXIN AND GENE EXPRESSION

Chairpersons: Linda S. Birnbaum, USEPA, Research Triangle Park, NC and Michael Steven Denison, Michigan State University, East Lansing, MI.

Displayed 8:30 a.m.-11:30 a.m.
Discussion 9:30 a.m.-11:30 a.m.

SUSTAINED INDUCTION OF CYTOCHROME P450IA1 mRNA, PROTEIN, AND CATALYTIC ACTIVITY BY 2,3,7,8-TETRACHLORODIBENZOFURAN (2,3,7,8-TCDF) IN THE MARINE TELEOST TENOMUS CHRYSPS. H Hahn and J J Stegeman. Biology Department, Woods Hole Oceanographic Institute, Woods Hole, MA.

EVALUATION OF THE 4S POLYCYCLIC AROMATIC HYDROCARBON BINDING PROTEIN IN HARLAN SPRAGUE-DAWLEY RATS. W H Houser and K A Woodford, Dept. of Pharm & Tox., W. Virginia University, Morgantown, WV. Sponsor: M J Reeser.


COMPARATIVE IN VITRO EFFECTS OF 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN AND SELECTED POLYNUCLEAR AROMATIC HYDROCARBONS ON CYP1A1 GENE TRANSCRIPTION IN CELLS WHICH CONTAIN OR ARE DEFICIENT IN THE 4S BINDING PROTEIN. C Kamps and S Safe. Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

KINETICS OF THE ASSOCIATION OF SEVERAL TRITIATED PCDD AND PCDF CONGENERS WITH THE CYTOSOLIC Ah RECEPTOR FROM THE WISTAR RAT. R Rosengren, N J Bunce and S Safe. Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX and Department of Chemistry and Biochemistry, University of Guelph; Guelph, Ontario, Canada.

ISOLATION AND CHARACTERIZATION OF A NOVEL DIOXIN-RESPONSIVE GENE. K W Gaido, D Simpson, L Recio, L Ross, T R Skopek and W F Greenlee. CIIT, Research Triangle Park, NC.

ISOLATION OF TCDD-RESPONSIVE GENES BY DIFFERENTIAL HYBRIDIZATION. T R Sutter, K M Dold, K Guzman and W F Greenlee. CIIT, Research Triangle Park, NC.

CHARACTERIZATION OF THE BINDING OF IN VITRO TRANSFORMED Ah RECEPTOR TO A DIOXIN REACTIVE ENHANCER. M S Denison, C L Phelps and E F Yao. Department of Biochemistry, Michigan State University, East Lansing, MI.

CHARACTERIZATION OF THE BINDING OF IN VITRO TRANSFORMED Ah RECEPTOR TO A DIOXIN REACTIVE ENHANCER. M S Denison, C L Phelps and E F Yao. Department of Biochemistry, Michigan State University, East Lansing, MI.

INTERACTION AND TRANSFORMATION OF THE Ah RECEPTOR BY UV PHOTOPRODUCTS OF TRYPтопHAN. W G Hellerich, E Braselton and M S Denison. Departments of Food Science and Human Nutrition, Biochemistry and Pharmacology, Michigan State University, East Lansing, MI.

PURIFICATION OF THE Ah-RECEPTOR TO HOMOGENEITY. C A Bradfield and A Poland. McArble Laboratory for Cancer Research, University of Wisconsin Medical School, Madison, WI.

THE Ah LOCUS MEDIATES THE EFFECTS OF 2,3,7,8-TECHLORODIBENZO-P-DIOXIN (TCDD) ON THE EPIDERMAL GROWTH FACTOR RECEPTOR (EGFR) THROUGH A MECHANISM WHICH DOES NOT INVOLVE EGFR mRNA. F H Lin, G Clark, S Stohs, L S Birnbaum, G Lucier and J A Goldstein. NIEHS, RTP, NC.

TUESDAY MORNING, FEBRUARY 13
GRAND BALLROOM
#124 METHYLAMINE METABOLISM TO FORMALDEHYDE BY A VASCULAR ENZYME. P J Boor, M B Trent, G A Lyles, G A S Ansari. University of Texas Medical Branch, Galveston, TX.

#125 IN VIVO EFFECTS OF ALLYLAMINE AND 8-AMINOPROPIONITRILE ON LYSYL OXIDASE AND SEMICARBbazIDE-SENSITIVE AMINE OXIDASE. M B Trent, D Kumar, P J Boor. University of Texas Medical Branch, Galveston, TX.

#126 PURIFICATION AND CHARACTERIZATION OF SEMICARBbazIDE-SENSITIVE AMINE OXIDASE FROM PORCINE AORTA. M Tao, U R Tipnis, P J Boor. University of Texas Medical Branch, Galveston, TX.

#127 DIFFERENTIAL RESPONSIVENESS OF CULTURED AORTIC SMOOTH MUSCLE CELLS (SMC) TO TOXIC INSULT: INFLUENCE OF SPECIES AND GROWTH CONDITIONS IN VITRO. R Bowes and K Ramos. Dept. of Veterinary Physiology and Pharmacology, Texas A & M University, College Station, TX and Dept. of Pharmacology, Texas Tech University Health Sciences Center, Lubbock, TX.

#128 ALTERATIONS IN AORTIC PROTEIN PHOSPHORYLATION INDUCED BY BENZO(A)PYRENE (BaP). K Ramos and J K Sutton. Dept. of Veterinary Physiology and Pharmacology, Texas A & M University, College Station, TX and Dept. of Pharmacology, Texas Tech University Health Sciences Center, Lubbock, TX.

#129 DIFFERENCES IN RESPONSE TO MCTP OF BOVINE AND PORCINE VASCULAR ENDOTHELIUM IN CULTURE. C M Hoern, J F Horeidel, J G Wagner, and R A Roth. Michigan State University, East Lansing, MI.

#130 EFFECTS OF PALLYTOXIN ON PRIMARY CULTURES OF CHICK EMBRYO HEART CELLS. W L Thompson, K A Bostian and J G Pace. US Army Medical Research Institute of Infectious Diseases, Fort Detrick, Frederick, MD. Sponsor: R W Wannemacher, Jr.

#131 TOXIC EFFECTS OF COCAINE AND ALCOHOL EVALUATED IN PRIMARY MYOCARDIAL CELL CULTURES. J F O’Dell, R B Melchert, J A Eselin, and A A Welder. University of Oklahoma, College of Pharmacy, Oklahoma City, OK.

#132 COMBINED EFFECTS OF COCAINE AND NITRENDRIPINE ON PRIMARY MYOCARDIAL CELL CULTURES. R B Melchert, J A Eselin, J F O’Dell, and A A Welder. University of Oklahoma, College of Pharmacy, Oklahoma City, OK.

#133 EFFECTS OF COCAINE AND NOREPINEPHRINE ON PRIMARY MYOCARDIAL CELL CULTURES. J A Eselin, J F O’Dell, R B Melchert and A A Welder. University of Oklahoma, College of Pharmacy, Oklahoma City, OK.

#134 DIFFERENTIAL MECHANISMS OF DOXORUBICIN AND MITOXANTRONE CARDIOTOXICITY. N G Shippe, R T Dorr and D S Alberts, Dept. Pharmacology/Toxicol. and Arizona Cancer Center, Univ. of Arizona, Tucson, AZ. Sponsor: A J Gandolfi.

#135 SHORT TERM CULTURE OF ADULT RAT HEART SLICES. A R Parrish, N G Shippe, R T Dorr, C L Krumdieck, T P Pretlow, A J Gandolfi and K Brandle. Departments of Pharmacology and Toxicology, U of Arizona, Tucson, AZ; Department of Nutrition Sciences, U of Alabama, Birmingham, AL; Institute of Pathology, Case Western University, Cleveland, OH.

#136 PROTECTION BY RUTHENIUM RED AGAINST HYPOXIA-REOXYGENATION INJURY IN RAT MYOCARDIUM. J P Keffer and Y Park. Division of Pharmacology and Toxicology, College of Pharmacy, the University of Texas at Austin, TX.


#138 INTERACTION OF CADMIUM WITH ATRIAL NATRIURETIC FACTOR RECEPTORS: LIGAND BINDING AND CELLULAR PROCESSING. J Gridhar, A Rathinavelu and G E Isom. Dept. Pharmacol. & Toxicol., Sch. of Pharmacy & Pharmacal Sci., Purdue Univ., W. Lafayette, IN.


TUESDAY MORNING, FEBRUARY 13
GRAND BALLROOM

POSTER SESSION: DEVELOPMENTAL TOXICOLOGY

Chairperson: Narasindah Agnish, Hoffmann-La Roche, Inc., Nutley, N.J.
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 10:00 a.m.-11:30 a.m.


#144 DEVELOPMENTAL TOXICITY ASSESSMENT OF BROMOXYNYL IN RATS AND MICE. J M Rogers, B M Francis* and N Chemoff. US EPA, Research Triangle Park, NC. *National Research Council Senior Associate.

#145 THE DEVELOPMENT OF TOXICITY IN THE OFFSPRING OF FISCHER 344 RATS FOLLOWING IN-UTERO OR LACTATIONAL EXPOSURE TO AMIODARONE (AD). D A Hill and M J Reeser. Department of Pharmacology and Toxicology, West Virginia University, Health Sciences Center, Morgantown, WV.


#147 AUDITORY DISORDERS FOLLOWING POSTNATAL EXPOSURE TO KANAMYCIN IN DEVELOPING RATS: RELATIONSHIP WITH DISAPPEARANCE OF INNER AND OUTER HAIR CELLS IN INNER EAR AND AUDITORY FUNCTIONAL DISORDER USING AUDIOMETER. T Watanabe, M Shiwada, K Mochida and S Takayama. Drug Safety Research Center, Research Institute, Daichi Pharmaceutical Co., LTD.


#149 BEHAVIORAL AND NEUROCHEMICAL EFFECTS OF SECALONIC ACID D IN MICE FOLLOWING POSTNATAL EXPOSURE. P G Montella and C S Reddy. Dept. Vet. Biomedical Sciences, University of Missouri, Columbia, MO.


#152 ATTENUATION OF 2-METHOXYETHANOL-INDUCED MALFORMATIONS IN MICE BY D- AND L-SERINE. F Welsch, J M Duignan, D C Clarke, and C A Nebus. CII, Research Triangle Park, NC.


#154 DEVELOPMENTAL TOXICITY OF INHALED DIPROPYLENE GLYCOL MOMOMETHYL ETHER (DPGME) IN RABBITS AND RATS. W J Breslin, F S Ciezak, C L Zablotsky, R A Corley, B L Yano and H G Verschuren. Toxicology Research Laboratory, The Dow Chemical Company, Midland, MI.

#155 TERATOLOGY STUDY WITH (2-NAPHTHOXY) ACETIC ACID IN RATS. S Henwood, K Mellon, and T Osmir. Hazleton Laboratories America, Inc., Madison, WI and S C Johnson & Son, Inc., Racine, WI.

#156 DEVELOPMENTAL TOXICITY OF BORIC ACID (BORA) IN MICE AND RATS. C J Price, E A Field, M C Marr, C B Myers, R E Morrissey and B A Schwett. Research Triangle Institute and *National Toxicology Program/NIH/Research Triangle Park, NC.


#158 EMBRYONIC AND FETAL FOLATES FOLLOWING N2O EXPOSURE. S A Rice and A Carugh. Stanford University & VA Medical Center, Palo Alto, CA.

#159 A SEGMENT II INHALATION TERATOLOGY STUDY OF TEREPTHALIC ACID IN RATS. B M Ryan, N S Halton and J D Jermigan. IIT Research Institute and Amoco Corporation, Chicago, IL.
TUESDAY MORNING, FEBRUARY 13
GRAND BALLROOM

POSTER SESSION: DRUG TOXICOLOGY

Chairperson: Lori Ann Dostal, Parke-Davis Pharmaceutical Research, Ann Arbor, MI.
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 8:30 a.m.-10:00 a.m.

#166

#167

#168

#169

#170
CHRONIC TOXICITY STUDY OF THE ANTICANCER DRUG CANDIDATE CI-898 IN RATS. L A Dethloff and J R Watkins. Parke-Davis Pharmaceuticals Research, Ann Arbor, MI.

#171

#172
PRECLINICAL (IN VIVO/IN VITRO) SAFETY EVALUATION OF CGS 6216, A BENZODIAZEPINE ANTAGONIST. G C McCormick, K R Huber, A T Arthur, W O Iverson and V M Travis. CIBA-GEIGY Corporation, Pharm. Div., Research Dept., Tox/Path, Summit, NJ.

#173
SUBCHRONIC SAFETY EVALUATION OF PEGATED SODIUM SUPEROXIDE DISMUTASE ADMINISTERED INTRAVENOUSLY TO ALBINO RATS AND BEAGLE DOGS. B A Mayes, J B Carnicoff, T A Barboz, K A Gossett, and Y Greener. Drug Safety Assessment, Sterling Research Group, Rensselaer, NY.

#174
90-DAY SUBCHRONIC TOXICITY STUDIES OF SALICYLAMIDOSULFAPYRIDINE (SASP) IN F344/N RATS AND B6C3F1 MICE. A S K Murphy, L E Senderbach, F Karl, and H J Estes. NIEHS/NTP, Research Triangle Park, NC and EG&G Mason Research Institute, Worcester, MA.

#175
SUBCHRONIC ORAL TOXICITY OF THE ANTIMALARIAL DRUG WR 238605 IN DOGS. B S Levine, R Long, D H Fischer, H Chung. University of Ili at Chicago, IL; Pathology Assoc., Inc., Chicago, IL; and Walter Reed Army Institute of Research, Washington, DC.


RESPIRATORY AND CARDIOVASCULAR CHANGES ASSOCIATED WITH TOXIC DOSES OF A PEPTIDE ANTAGONIST OF VASOPRESSIN. D J Murphy, M E Walker and D A Culp. Dept. of Investigative Toxicology, Smith Kline and French Lab., King of Prussia, PA.

PRECHRONIC Inhalation TOXICITY STUDIES OF 1-EPINEPHRINE HYDROCHLORIDE IN RODENTS. D D Dietz, J R Leininger, R A Renno, and H A Ragan. NIEHS/NTP, Research Triangle Park, NC and Battelle-Pacific Northwest Laboratories, Richland, WA.

AMIODARONE-INDUCED PULMONARY TOXICITY IN RATS: A TISSUE-SPECIFIC MANIFESTATION. S Kacem, University of Ottawa, Ottawa, Ontario, Canada, and M J Reasor. West Virginia University Health Sciences Center, Morgantown, West Virginia.


THE EFFECT OF SHORT TERM ETHANOL TREATMENT ON HEPATIC MICROSONAL MONOOXYGENASE (HMO) IN A SYSTEM UTILIZING TOTAL ENTERAL NUTRITION (TEN). M J J Rons, C K Lumpkin and T M Badger. Department of Pediatrics, University of Arkansas for Medical Sciences, Little Rock, AR. Sponsor: J Qandy.

THE EFFECTS OF VERAPAMIL IN ISOLATED HYPOTHERMIC RAT HEARTS. C R Rasmussen and R F Burlington. Biology Department, Central Michigan University, Mt. Pleasant, MI. Sponsor: W H Siddiqui.


EFFECTS OF PYRANTEL PAMOATE ON BLOOD ENZYME LEVELS IN MICE. G M Al-Hachim, A Al-Waseef, M Hashim. Environmental Toxicology Laboratory, Dept. of Environmental Sciences, King Abdulaziz University, Jeddah, Saudi Arabia.


MECHANISM OF PHOTOCHEMOLYTIC ACTION OF PD 117596, A QUINOLONE ANTIBACTERIAL AGENT. D G Robertson, D L Bailey, and J S Kiley. Department of Pathology Exper. Toxicology, Parke-Davis Pharmaceutical Research Division, Warner-Lambert Company, Ann Arbor, MI.


AUTOINDUCTION OF ANTIPYRINE ELIMINATION IN DOGS AT A DOSE (5 MG/KG) USED TO ASSSESS ENZYME INDUCTION OF OTHER DRUGS. D E Amacher, M R Nocerini, R A Ronfeld, and J A Reynolds. Pfizer Inc., Central Research, Groton, CT.

ASSESSMENT OF HEPATIC ENZYME INDUCTION BY ML 1012 AS PART OF ITS SAFETY EVALUATION IN RATS. T N Thompson, J L. Geary, S E Unwin, J P Lacz, K K Hwang. Marion Laboratories, Inc, Kansas City, MO.

PERINATAL AND POSTNATAL EFFECTS OF CGS 16617, AN ANGIOTENSIN CONVERTING ENZYME INHIBITOR, IN RATS. G Batacron, K Winbert, E Yau, and V Tran. Research Department, Pharmaceuticals Division, Ciba-Geigy Corp., Summit, NJ.

CARCINOGENICITY STUDIES IN RODENTS WITH THE ANGIOTENSIN CONVERTING ENZYME (ACE) INHIBITOR QUINAPRIL HYDROCHLORIDE. E J McGuire, J A Anderson, A W Gough, and F A de la Iglesia. Pathology and Experimental Toxicology, Parke-Davis Pharmaceutical Research Division, Ann Arbor, MI.
POSTER SESSION: HALOGENATED HYDROCARBONS I

Chairperson: Jane Ellen Simmons, U.S. EPA, Research Triangle Park, NC.

Displayed: 8:30 a.m.-11:30 a.m.
Attended: 10:00 a.m.-11:30 a.m.

#198 DISPOSITION OF PERFLUOROOCTANOIC ACID (PFOA) IN RATS. B. Kuslikis, J. P. Vanden Heuvel, M. J. Van Ralghem and R. E. Peterson. Environmental Toxicology Center and School of Pharmacy, University of Wisconsin, Madison, WI.

#199 EFFECTS OF PERFLUORODECANOIC (PFDA) AND PERFLUOROOCTANOIC (PFOA) ACIDS ON HEPATIC CARNITINE PALMITOYLTRANSFERASE (CPT) ACTIVITY IN RATS. J. P. Vanden Heuvel, B. I. Kuslikis and R. E. Peterson. Environmental Toxicology Center and School of Pharmacy, University of Wisconsin, Madison, WI.

#200 DISPOSITION OF PERFLUORODECANOIC ACID (PFDA) IN RATS. M. J. Van Ralghem, J. P. Vanden Heuvel, B. I. Kuslikis and R. E. Peterson. Environmental Toxicology Center and School of Pharmacy, University of Wisconsin, Madison, WI.


#203 ORAL TOXICITY OF TRANS 1,2-DICHLOOROETHYLENE (DCE) AND 1,1,1-TRICHLOOROETHANE (TCE) GIVEN ALONE AND IN COMBINATION TO RATS. C. Witmer, K. R. Cooper, L. Iowa, and G. Post. Rutgers University, Piscataway, NJ and NJ Department of Environmental Protection, Trenton, NJ.

#204 PROTECTION BY PANTETHINE, CYSTAMINE AND PANTOTHENIC ACID AGAINST CARBON TETRACHLORIDE TOXICITY IN THE RAT. I. S. Nagel, C. A. Lau-Cam and A. L. Kapoor. St. John's University, College of Pharmacy, Jamaica, N.Y. Sponsor: L. Trombeta.

#205 POTENTIATION OF CARBON TETRACHLORIDE AND CHLOROFORM TOXICITY BY KETONES IN THREE TARGET ORGANS. P. Raymond and G. L. Plaa. Dept. de Pharmacol. J. de Montreal, Montreal, Canada.

#206 CCL4 INDUCED LIPID PEROXIDATION AND ENZYME LOSS IN RAT LIVER SLICES. S. Azri, H. P. Mata, A. J. Gandolfi, and K. Brendel. Dept. of Anesthesiology, University of Arizona, Tucson, AZ.


#209 LETHALITY AND HEPATOTOXICITY OF HALOMETHANES IN CHLORODECONE (CD), PHENOBARBITAL (PB) OR MIREX (MX) PRETREATED GERBILS. Z. Cai and H. M. Mendelk. Dept. Pharmacol & Toxicol., Univ. Miss. Med. Center, Jackson, MS.


TOXIC INTERACTIONS BETWEEN CARBON TETRACHLORIDE (CC14) AND TRICHLOROETHYLENE (TCE) IN CULTURED RAT HEPATOCYTES. R G Lamb, C Gennings, J F Borzelleca, and P Berz. Depts. of Pharmacol./Toxicology, and Biostatistics, MCV, Richmond, VA and US EPA, Cincinnati, OH.

TOXIC INTERACTIONS BETWEEN CARBON TETRACHLORIDE (CC14) AND PERCHLOROETHYLENE (PCE) IN CULTURED RAT HEPATOCYTES. J F Borzelleca, C Gennings, P Berz and R G Lamb. Depts. of Pharmacol./Toxicology and Biostatistics, MCV, Richmond, VA and USEPA, Cincinnati, OH.

PRETREATMENT WITH 6-HYDROXYTETRAMICIN REDUCES THE HEPATOTOXIC RESPONSE TO SYNERGIC COMBINATIONS OF CARBON TETRACHLORIDE AND OTHER CHLORINATED HYDROCARBONS IN MALE, F-344 RATS. D R Steup, S C Mitchell, and L G Sipes. Dept. of Pharmacology and Toxicology, University of Arizona, Tucson, AZ.


SYNTHESIS OF HYDROXY DERIVATIVES FROM 3,4-4'-TETRACHLOROBIPHENYL AND THEIR IDENTIFICATION AS MICROSOMAL METABOLITES BY GC/MS. G A Kubitzak, K L Blatt, F Nesbitt, and L W Robertson. Graduate Center of Toxicology, University of Kentucky, Lexington, KY and Institute of Toxicology, University of Mainz, Mainz, FRG.

VINYL FLUORIDE DOMINANT LETHAL MUTATION STUDY. N C Chromey, L S Mullin, and D P Kelly. E J du Pont de Nemour & Co., Hasbrouck Laboratory for Toxicology and Industrial Medicine, Newark, DE.

METHYLENE CHLORIDE (1): MORPHOLOGICAL, IMMUNOHISTOCHEMICAL AND BIOCHEMICAL EFFECTS ON MOUSE LUNG FOLLOWING INHALATION EXPOSURE. L L Smith, I Wyatt, T Green, R W Lewis, P M Hect, and R R Foster. ICI PLC Central Toxicology Laboratory, MacClesfield, Cheshire, UK.

METHYLENE CHLORIDE (2): MORPHOLOGICAL AND BIOCHEMICAL EFFECTS ON ISOLATED LUNG CLARA CELLS FOLLOWING INHALATION EXPOSURE. R W Lewis, I Wyatt, J R Foster, T Green, P M Hect, and L L Smith. ICI PLC Central Toxicology Laboratory, MacClesfield, Cheshire, UK.

SUBCHRONIC ORAL TOXICITY STUDY OF DIBROMOMETHANE IN THE RAT. P A Miller, R D Alsaker, M Robinson, and J B Ternill. Hazelton Laboratories, Rockville, MD and US EPA, Cincinnati, OH.

SUBCHRONIC INHALATION TOXICITY STUDY OF 1,1,1,3-TETRACHLOROPROPANE IN THE RAT. W H Siddiqui, G B Koloski, M A Zimmer, and E B Hobbs. Dow Corning Corporation, Midland, MI.

HYPERTHYROIDISM ALTERS CREATION OF DICHLOROETHYLENE METABOLITES INTO SERUM AND BILE. M F Kanz and M T Moslen. Department of Pathology, University of Texas Medical Branch, Galveston, TX.

TUESDAY MORNING, FEBRUARY 13
FONTAINEBLEAU BALLROOM D

POSTER SESSION: HEMATOXICOLOGY

Chairperson: Carl O. Schulz, University of South Carolina School of Public Health, Columbia, SC.
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 8:30 a.m.-10:00 a.m.


BABOONS EXPOSED TO ELECTRIC FIELDS DO NOT SHOW ALTERATIONS IN BLOOD COMPOSITION OR CHEMISTRY. W R Rogers, Dept. of Biosciences and Bioengineering, Southwest Research Institute, San Antonio, TX.


THE METABOLISM OF BENZENE IN MICE TO TRANS, TRANS-MUCONIC ACID IN RELATION TO STRAIN SENSITIVITY. G Wilt, W M Maniara, V J Mlyavarapu, and R D Goldstein. Joint Graduate Program in Toxicology, UMDNJ-Robert Wood Johnson Medical School/Rutgers University, and EOHSI, Piscataway, NJ.


SUPPRESSION OF ERTHROPOIESIS IN MICE BY COMBINED TREATMENT WITH THE BENZENE METABOLITES p-BENZOQUINONE (BQ), MUCONALDEHYDE (MUC) AND HYDROQUINONE (HQ). P Hu, R L Guy, G Wilt, B D Goldstein, and R Snyder. Joint Graduate Program in Toxicology, Rutgers University/UMDNJ-Robert Wood Johnson Medical School, Piscataway, NJ.

HYDROQUINONE (HQ)-INDUCED TOXICITY TO MACROPHAGES. M J Reeser, D R Cutler, J S Strobl, D Wierda and K S Landreth. West Virginia University Health Science Center, Morgantown, WV.


PHENOL-INDUCED STIMULATION OF HYDROQUINONE BIOACTIVATION IN MOUSE BONE MARROW IN VIVO: POSSIBLE IMPLICATIONS IN BENZENE MYELOTOXICITY. P Doane-Satzer, V V Subrahmanyam, K L Steinmetz, and M T Smith. School of Public Health, University of California, Berkeley, CA.

TUESDAY MORNING, FEBRUARY 13
FONTAINEBLEAU BALLROOM D

POSTER SESSION: HEPATOTOXICITY I

Chairperson: Mostata Z. Badr, University of Missouri, Kansas City, MO.

Displayed: 8:30 a.m.-11:30 a.m.

Attended: 10:00 a.m.-11:30 a.m.

ANALYSIS OF KUPFFER CELL (KC) FUNCTION USING THE ISOLATED PERFUSED RAT LIVER. D L Laskin, J D Laskin, C R Gardner, S J. Joint Grad. Prog. Toxicology, Rutgers University & UMDNJ Piscataway, NJ.


A COMPUTER MODEL OF THE EFFECTS OF PHENYLEPHRINE (PE) ON HEPATIC RESPIRATION AND THE PORTAL PRESSURE IN THE ISOLATED PERFUSED RAT LIVER. R Guy and S JI. Joint Graduate Program in Toxicology, Rutgers University. Piscataway, NJ.


HEPATOTOXICANTS ELEVATE SERUM BILIRUBIN BY INCREASING FORMATION NOT DECREASING ELIMINATION OF BILIRUBIN. D Y Mitchell, C Madhu, and C D Klaassen. Univ. Kansas Med. Ctr., Kansas City, KS.


FLUORESCENT LABELING TO MONITOR KUPFFER CELL PHAGOCYTIC ACTIVITY IN PERFUSED RAT LIVER. P E Ganey, J J Lemasters, and R G Thurman. Lab. of Hepatology and Toxicology, Depts. of Pharmacology and Cell Biology and Anatomy, University of North Carolina, Chapel Hill, NC.

ULTRASTRUCTURE AND BIOCHEMICAL STUDIES OF CHLORDEcone-POTENTIATED BROMO-TRICHLORS-METHANE (BrCC13) HEPATOTOXICITY. O M Faroon, R W Henney, M G Soni, H M Mehendale. Training Program in Toxicology, Dept. Pharmacology and Toxicology, University of Mississippi Medical Center, Jackson, MS.

LIPOLYPSACCHARIDE (ENDOTOXIN) PROTECTS C3H/OUJ BUT NOT C3H/HEJ MICE FROM THE HEPATOTOXIC EFFECTS OF ACETAMIDINE AND CARBON TETRACHLORIDE. E E Sendelbach, A Parkinson, and C D Klaasen. EG & G Mason Research Institute, Worcester, MA and Univ. Kansas Med. Ctr., Kansas City, KS.

THE EFFECT OF TEN OLEANANE-TYPE TRITERPENOIDS COMPOUNDS ON EXPERIMENTAL LIVER INJURY IN MICE. Y P Liu, J Liu, Q Mao and C D Klaasen. Univ. Kansas Med. Ctr., Kansas City, KS.

ACETYSALICYLIC ACID PRETREATMENT DECREASES ACETAMIDINE-INDUCED HEPATOTOXICITY IN MICE. P Rozman, C Madhu and C D Klaasen. Univ. Kansas Med. Ctr., Kansas City, KS.

THE PROTECTIVE EFFECT OF OLEANOLIC ACID ON ACETAMIDINE HEPATOTOXICITY IN MICE. C D Klaasen, Y P Liu, J Liu and C Madhu. Univ. of Kansas Med. Ctr., Kansas City, KS.

ETHIONINE POTENTIATES ENDOTOXIN (LPS) HEPATOTOXICITY IN RATS. J A Hewett, A E Schultze, and R A Roth. Dep. Pharmacology/Toxicology and Pathology, Michigan State University, East Lansing, MI.

REMARKABLY ENHANCED SENSITIVITY TO THE DETECTION OF PROTEINS BY WESTERN BLOT USING CHEMILUMINESCENCE. A P Schaap, R F Novak, L Romano, A M Mortensen, S G Kim, and H Akhavan, Institute of Chemical Toxicology and Department of Chemistry, Wayne State University, and Lumigen, Inc., Detroit, MI.

FURTHER OPTIMIZATION OF THE CRYOPRESERVATION PROCEDURES FOR RAT AND HUMAN HEPATOCYTES. A P Li, J C Merrill and D J Beck. Monsanto Co., St. Louis, MO.

ISOLATION AND CULTURING OF HUMAN HEPATOCYTES. J C Merrill, J J Brems, A P Li. Monsanto Company, Environmental Health Laboratory. St. Louis, MI.

DIFFERENTIAL EFFECTS OF PREGNANCY (P) AND ETHYNYL-ESTRADIOL (EE2) ON THE UPTAKE OF 3H-ESTRADIOL-17B-(B-D-GLUCURONIDE) (E217G), 3H-PORTOCOL (TC) AND 3H-L-ALANINE (ALA) INTO ISOLATED RAT HEPATOCYTES (IRH). M Vore and S Tag. Graduate Center of Toxicology and Department of Pharmacology, University of Kentucky, Lexington, KY.

DIFFERENTIAL EFFECTS OF MIREX (M), CHLORDECON (C) AND PHENOBARBITAL (P) ON BILE SECRETORY FUNCTION IN VIVO AND TRANSPORT IN ISOLATED RAT HEPATOCYTES (IRH). S Tag and M Vore. Graduate Center of Toxicology, Department of Pharmacology, University of Kentucky, Lexington, KY.

TOXICITY OF PHENACETIN AND ITS HOMOLOGS IN RAT LIVER CELL CULTURES. P J Davis, J C Divita, C G Reddy and D Acosta. Div. of Pharmacology & Toxicology, Div. of Medicinal Chemistry, College of Pharmacy, The University of Texas, Austin, TX.

STUDIES IN VITRO ON THE MECHANISM OF PAPAVERINE-INDUCED HEPATOTOXICITY. J C Divita, D Acosta and P J Davis. Div. of Pharmacology & Toxicology, Div. of Medicinal Chemistry, College of Pharmacy, The University of Texas, Austin, TX.

DIFFERENT MECHANISMS OF LIVER HYPERTROPHY INDUCED BY TWO 2-QUINOLINYL-METHOXYS LEUKOTRIENE ANTAGONISTS. M Kelley, M Faulkner, A Groth-Watson, D Kornbrust, and J Sanders. Drug Safety Division, Rorer Central Research, Horsham, PA.

EVALUATION OF POTENTIAL CHEMOPROTECTANTS AND ANTIDOTES AGAINST MICROCYSTIN-LLR HEPATOTOXICITY. S J Stohs and S J Hermansky. Creighton University Health Science Center and University of Nebraska Medical Center, Omaha, NE.


MECHANISM OF ALUMINUM-INDUCED INHIBITION OF HEPATIC GLYCOSIS. M Badr, Z X Xu, L Fox, S Melethil and L Winberg. University of Missouri-Kansas City, Kansas City, MO.

HEPATOTOXICITY OF MENADIONE IN SPRAGUE-DAWLEY RAT LIVER SLICES. S J Waters, T C Spaulding, K Brendel and A J Gandolfi. Anaquest-BOC Health Care, Murray Hill, NJ and Department of Pharmacology, University of Arizona, Tucson, AZ.

GLUTATHIONE DEPLETION POTENTIATES A GUINEA PIG MODEL OF HALOTHANE-ASSOCIATED HEPATOTOXICITY. R C Lind and A J Gandolfi. Dept. of Anesthesiology, University of Arizona, Tucson, AZ.

EXAMINATION OF THE STRUCTURAL COMPONENTS RESPONSIBLE FOR THE IN VITRO HEPATOTOXICITY OF M-741, AN EXPERIMENTAL NEUROMUSCULAR BLOCKING AGENT. R Gaf, T C Spaulding, A J Gandolfi and S J Waters. Anaquest-BOC Health Care, Murray Hill, NJ and Department of Pharmacology, University of Arizona, Tucson, AZ.

TUESDAY MORNING, FEBRUARY 13
FONTAINEBLEAU BALLROOM D
POSTER SESSION: REACTIVE METABOLITES

Chairperson: Garold S. Yost, University of Utah, Salt Lake City, UT.
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 8:30 a.m.-10:00 a.m.

#266 BIOACTIVATION OF 5,6-DICHLORO-4-THIA-5-HEXENOATE IN ISOLATED RAT HEPATOCYTES.
M W Anders, M E Fitzsimmons. Dept. of Pharmacology, University of Rochester, Rochester, NY.

#267 MECHANISMS OF OXIDATIVE METABOLISM OF THE SYSTEMIC PNEUMOTOXIN 3-METYLINDOLE
IN MICE. G L Skiles and G S Yost. Department of Pharmacology and Toxicology, University of Utah, Salt Lake City, UT.

#268 GLUTATHIONE (GSH) DEPLETION AND CLARA CELL INJURY BY NAPHTHALENE OXIDE (NO)

#269 DNA ADDUCTS IN THE RESPIRATORY AND NONRESPIRATORY TISSUES OF CIGARETTE SMOKE-EXPOSED RATS. R C Gupta1,2 and G Garcia1,2. Dept. of Prev. Med.1, Tobacco & Health Res. Inst.2, and the Grad. Center forToxicol.3, Univ. of Kentucky, Lexington, KY.

#270 CHARACTERIZATION OF SULFITE-ENHANCED DIOL EPoxide MUTAGENICITY. J L Green and G A Reed. Dept. of Pharm. & Tox., Univ. of Kansas Medical Center, Kansas City, KS.

#271 CHARACTERIZATION OF BENZO(A)PYRENE (BAP) ADDUCTS TO THE PLASMID, PXP-14.
J E Hulla, D B Mann and D L Springer. Battelle Pacific Northwest Laboratory, Richland, WA.

#272 APPARENT FORMATION OF DNA-PROTEIN CROSSLINKS IN LIVERS OF MICE EXPOSED TO
METHYLENE CHLORIDE OR BROMOCHLOROMETHANE. M Casanova, D F Deyo, and H D Heck. CIIT, Research Triangle Park, NC.

#273 IN VIVO MACROMOLECULAR BINDING AND TISSUE DISTRIBUTION OF ortho- AND para-TOLUIDINE.
W J Brock, S G Hundley and P H Lieder, E. I. du Pont, Haskell Laboratory for Toxicology and Industrial Medicine, Newark, DE.

#274 ACTIVATION OF METHANOL BY S-9: FORMATION OF A CONDENSATIONPRODUCT WITH 2,4-
DIAMINOTOLUENE. L T Burk, H B Matthews, and M L Cunningham. NIEHS, Research Triangle Park, NC.

TUESDAY, FEBRUARY 13
9:00 a.m.-12:00 Noon

TOXICOLOGY, TOXIC SUBSTANCES AND THE PUBLIC—WORKSHOP

Chairpersons: Arthur L. Craigmill, UC/Davis, Davis, CA and Michael A. Kamrin, Michigan State University, East Lansing, MI

The presence of chemical residues in foods, problems with hazardous waste disposal, and other aspects of environmental contamination have become increasingly important public issues. Toxicologists are being called upon to deal with these public problems and to help communicate complex ideas, often to scientifically uneducated audiences. Public education programs are an important responsibility for scientists, who often must serve as expert advisors to public policy makers. The SOT Committee on Public Communications has been involved in organizing and assembling information about public education programs in toxicology for grade schools, non-science major undergraduates, the general public, and the news media. An overview of these programs will be presented, followed by an open discussion between speakers and workshop participants on how we, as trained toxicologists, can facilitate public understanding of the complexities of the issues surrounding environmental contamination, residues in foods, and chemical safety, and what our responsibilities are in the area of public policy development and promoting public understanding.

9:00 Welcome and Introduction
9:30 Public Education Programs in Toxicology for Grades K-12. Jon Seymour, The Procter & Gamble Company
9:50 Teaching Toxicology to Non-Science Major Undergraduates. Michael Kamrin, Michigan State University
10:10 Educational Programs for the General Public. Herbert Thier, University of California
10:30 Public Education Materials. Arthur Craigmill, University of California
10:50 Panel Discussion and Floor Participation
11:45 Concluding Remarks
PREDICTIVE VALUE OF ANIMAL STUDIES IN TOXICOLOGY—LECTURE

The SOT Committee on Animals in Research sponsors this presentation by professor Gerhard Zbinden, M.D., Institute of Toxicology, University of Zurich, on the benefits of using animals in toxicology/safety testing protocols.

TUESDAY AFTERNOON, FEBRUARY 13
1:30 p.m.-4:30 p.m.
FONTAINEBLEAU BALLROOM A

SYMPOSIUM: GLUTATHIONE-CONJUGATE MEDIATED TOXICITIES

Chairperson: Terrence J. Monks, University of Texas School of Pharmacy, Austin, TX.

Sponsored by the Mechanisms Specialty Section

Glutathione (γ-glutamyl-L-cysteinylglycine; GSH) is present in high concentrations in most living cells and participates in a variety of vital cellular reactions. In particular, GSH plays an important role in the detoxication of potentially toxic electrophiles by either reductive or conjugative mechanisms. Compounds that form GSH conjugates are usually readily excreted in urine as their corresponding mercapturic acids, which are S-conjugates of N-acetyl cysteine. However, in recent years evidence has accumulated suggesting that GSH conjugation plays an important role in the formation of reactive (toxic?) metabolites from a variety of chemicals. Thus, several classes of compounds are converted via conjugation with GSH into either cytotoxic, genotoxic or mutagenic metabolites. This symposium will highlight recent advances in our knowledge of: 1) the types of compound that undergo activation via conjugation with GSH; 2) the enzymology and regulation of GSH conjugate metabolism; and 3) the mechanism(s) and cellular toxicity of these GSH conjugates.

The halogenated alkanes were the first class of compounds for which conjugation with GSH was demonstrated to result in the formation of reactive metabolites. Vincinal dihaloalkanes form sulfur mustards upon GSH conjugation. Subsequent rearrangement results in the formation of highly reactive epoxides that can react with cellular nucleophiles and are implicated in the cytotoxicity and mutagenicity of these compounds. In contrast, haloalkenyl GSH conjugates require processing by the enzymes of the mercapturic acid pathway, and ultimately by cysteine conjugate B-lyase to give rise to various thio-containing reactive metabolites. The distribution and properties of the enzymes of the cysteine conjugate B-lyase pathway will be discussed. In particular, those factors that may regulate B-lyase activity and thus modulate B-lyase-dependent activation will be presented.

Other compounds that require GSH dependent activation exhibit B-lyase independent toxicities. For example, oxidation of benzoquinols in the presence of GSH gives rise to multi-GSH substituted conjugates that are potent nephrotoxicants. The toxicity of these conjugates is dependent upon their metabolism by renal tubular γ-glutamyl transpeptidase but does not appear to require the involvement of B-lyase. Finally, several reactions of thiols with electrophiles are reversible. For example, benzyl or allyl isothiocyanate form GSH conjugates that are in equilibrium with the parent compound. The position of this equilibrium is influenced by conditions of pH and the concentration of the reactants. The conjugates of the isothiocyanates thus display a cytotoxicity similar to the parent compound. These conjugates thus serve as storage forms of the electrophile with initial detoxication being followed by release of the electrophile at sites where local conditions favor a shift in the reversible equilibrium.

In conclusion, several different classes of compounds have now been shown to undergo activation via conjugation with GSH. Differences in the processing of these conjugates result in a variety of toxicities, the mechanistic basis of which also varies.

#11 1:30 Introduction. Terrence J. Monks, University of Texas at Austin.
#12 1:40 Glutathione-Dependent Bioactivation of Haloalkanes and Haloalkenes. Marion W. Anders, University of Rochester, Rochester, NY.
#13 2:10 Genotoxicity of Amino Acid S-Conjugates. Wolfgang Dekant, University of Wurtzburg, FR Germany.
#14 2:40 Enzymes of the Cysteine Conjugate B-Lyase Pathway. James L. Stevens, Alton Jones Cell Science Center, Lake Placid, NY.
#15 3:10 Quinol-Linked Glutathione Conjugate-Mediated Toxicities. Serrine S. Lau, University of Texas at Austin.
4:10 Discussion.

TUESDAY AFTERNOON, FEBRUARY 13
1:30 p.m.-4:30 p.m.
FONTAINEBLEAU BALLROOM B

SYMPOSIUM: APPLICATION OF PHARMACOKINETICS IN DEVELOPMENTAL TOXICITY RISK ASSESSMENT

Chairperson: Robert J. Kavlock, U.S. EPA, Research Triangle Park, NC.
Advancements in the art of performing risk assessments on suspected developmental toxicants will primarily occur as research progresses in four distinct areas: 1) better understanding of the relevance and biological significance of the manifestations of developmental toxicity; 2) application of pharmacokinetic information to assist in high-to-low dose and species-to-species extrapolations; 3) increased knowledge of mechanisms of dysmorphogenesis; and 4) better characterization of human exposure patterns. In the near future, it is likely that significant contributions to the risk assessment process will be derived mainly from the first two areas. The presenters will discuss the utilization of pharmacokinetic information to detect developmental hazards and to extrapolate developmental risk. The state-of-the-art in terms of pregnancy related alterations in physiology that impact on pharmacokinetics, and the actual utilization of pharmacokinetic information in improving study design, study interpretation, and within and between species comparisons of adverse developmental outcomes will be discussed. Each speaker will highlight those research needs that when addressed will best facilitate the incorporation of pharmacokinetic information into the risk assessment process. While this research area is still in its infancy, sufficient progress has been made over the last five years to suggest that such efforts will be fruitful.


#18 1:40 Physiological Alterations During Pregnancy: Impact on Toxicokinetics. Donald R. Mattison and Carol Cistola, University of Arkansas Medical Sciences, Little Rock, AR.

#19 2:10 Pharmacokinetic Considerations in the Design of Developmental Toxicology Studies. Heinz Nau, Free University, Berlin, FRGermany.

#20 2:40 Correlation of Pharmacokinetic Data With Endpoints of Developmental Toxicity. John F. Young, National Center for Toxicological Research, Jefferson, AR.


4:10 Discussion.

TUESDAY AFTERNOON, FEBRUARY 13
1:30 p.m. - 3:45 p.m.
BRITTANY ROOM

PLATFORM SESSION: FIBER TOXICITY

Chairpersons: Robert Charles Lindenschmidt, The Procter & Gamble Company, Cincinnati, OH and Gerald L. Kennedy, E I du Pont de Nemours & Co., Newark, DE.

#275 1:30 IN VITRO EFFECTS OF SILICON CARBIDE WHISKERS. N F Johnson, D G Thomassan, Y S Cheng and M D Hoover. Inhalation Toxicology Research Institute, Albuquerque, NM. Sponsor: R F Henderson.

#276 1:45 ACUTE INHALATION TOXICITY OF IRON WHISKERS. S A Thomson, D C Burnett, C L Crouse, R J Hilaski, R J Wright, U S Chemical Research, Development & Engineering Center, Aberdeen Proving Ground, MD. Sponsor: H Salem

#277 2:00 ACUTE INHALATION EFFECTS OF CROCODILE ASBESTOS AND WOLLASTONITE FIBERS IN RATS. M A Hartsky, K A Moore, M C Carakostas, and D B Warheit. DuPont Haskell Lab., Newark, DE.

#278 2:15 SUBCHRONIC INHALATION TOXICITY STUDY IN RATS EXPOSED TO SHORT CROCODILE ASBESTOS FIBERS. D K Craig, C A Lapin, M G Valero. Battelle, Columbus, OH; ARCO, Los Angeles, Ca; 3 Rorer Central Research, Ft. Washington, PA; formerly at Litton Bionetics Inc., Rockville, MD.


#280 2:45 EVALUATION OF PULMONARY FUNCTIONS DURING CHRONIC INHALATION STUDIES WITH REFRACTORY CERAMIC FIBERS (RCF) AND AN EXPERIMENTAL FIBER IN RATS. T Imamura, O Vogel, J Chavalier, R Mas, T Hesterberg. 4 "Research & Consulting Company, Geneva, Switzerland; "The Carborundum Co., Niagara Falls, NY; "Manville Corp., Denver, CO.

#281 3:00 RELATIVE MESOTHELIOMA INDUCTION IN RATS. D Coffin, US EPA, Research Triangle Park, NC; P Cook, US EPA, Dukuh, MN; L Pajekar, NCI, Rockville, MD; J Cressan, US EPA, Research Triangle Park, NC.

#282 3:15 EVALUATION OF LUNG DIGESTION METHODS FOR LUNG RECOVERY OF FIBERS. H C Hwang and D B Warheit. Du Pont Haskell Lab., Newark, DE.

#283 3:30 SOLUBILITY OF NATURAL AND MANMADE MINERAL FIBERS IN KARNOVSKY'S FIXATIVE. B Law and T Hesterberg. Manville Corporation, Denver, CO.
PLATFORM SESSION: RISK ASSESSMENT


#284 1:30 PHARMACOKINETIC MODELING OF TRICHLOROETHYLENE RELEVANT TO ITS HEPATOCARCINOGENICITY. B Allen, J Fisher, A Shipp, M E Andersen, and M Gargas. Clement Associates, K S Crump Division, Ruston, LA; Toxicology Division, Hazard Assessment Branch, WPAFB, OH; and Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

#285 1:45 A PB-PK RISK ASSESSMENT FOR CHLOROFORM. R H Rietz, R A Corley, A L Mendrala, J R Quast, M E Andersen, M L Gargas, R B Conolly & D A Staats. HES, Dow Chemical Co., Midland MI; Chem.ind.Inst. Tox.; and Northrop Services, Inc.

#286 2:00 NEGLIGIBLE RISK: LIMITS IMPOSED BY ENDOGENOUS CELLULAR PROCESSES. J A Todhunter. SRS International, Washington, DC.


#288 2:30 COMPARATIVE DATA BASE UTILIZATION IN FEDERAL REGULATION DECISIONS. M A Kamrin Center for Environmental Toxicology, Michigan State University, East Lansing, MI.

#289 2:45 THE CURE: A DATABASE OF HEALTH RISK ASSESSMENT INFORMATION FOR FUTURE RESEARCH. D J Reisman and C DeRosa. US Environmental Protection Agency, Cincinnati, OH; M W Francis and P Y Lu. Oak Ridge National Laboratory, Oak Ridge, TN.


#292 3:30 DOSE-EFFECTS MODELS FOR USE IN RISK ASSESSMENT FOR LEAD IN DRINKING WATER. A H Marcus Battelle Memorial Institute, RTP, NC.


#294 4:00 A PRAGMATIC RISK ASSESSMENT OF CTEF OLIGOMERS. D R Mattie, H J Clewell III, and M E Andersen. AAMRUTHT. Wright-Patterson AFB, OH.


#296 4:30 EXAMINATION OF HUMAN HEALTH RISKS FROM CO-SITING OF A COAL-FIRED POWER PLANT WITH COAL GASIFICATION PLANTS AND TRASH-TO-STEAM INCINERATORS. B Molhoit, A Huggins, R Nilsson, S Campbell Environmental Resources Management, Inc., Exton, PA; "University of Stockholm, Sweden; S A. Campbell Assoc., Columbia, MD. Sponsor: K Gabriell.

#297 4:45 RELATIVE RISKS OF A SECOND GENERATION COAL-BASED POWER PRODUCTION TECHNOLOGY. E J Hixson and D P Riden. Radian Corporation, Austin, TX.

TUESDAY AFTERNOON, FEBRUARY 13
LE MANS ROOM

POSTER/DISCUSSION SESSION: GAP JUNCTIONS


Displayed 1:30 p.m. - 4:30 p.m.
Discussion 2:30 p.m. - 4:30 p.m.

#298 MEZEREIN INHIBITION OF INTERCELLULAR COMMUNICATION AND ACTIVATION OF PROTEIN KINASE C IN HUMAN KIDNEY EPITHELIAL CELLS. W J Pardee, B V Madhukar and J E Trosko. Department of Pediatrics/Human Development, Michigan State University, East Lansing, MI.
EFFECTS OF SELECTED ANTI-TUMOR PROMOTING CHEMICALS ON GAP-JUNCTIONAL INTERCELLULAR COMMUNICATION IN V79 CELLS. L J Mills, S M Nelson and A R Malcolm. 1SAIC c/o US EPA-ERLN, 2US EPA-ERLN, Narragansett, RI.

UP-REGULATION OF A METALLOTHIONEIN-RAS24 FUSION GENE IN RAT LIVER EPITHELIAL CELLS IS CORRELATED WITH THE DOWN-REGULATION OF GAP JUNCTION FUNCTION. A W de Feijter, M W Lieberman and J E Trosko. Meridian Instruments, Inc., Okemos, MI, Baylor College of Medicine, Houston, TX and Michigan State University, East Lansing, MI.

RESTORATION OF GAP JUNCTIONAL INTERCELLULAR COMMUNICATION BY LOVASTATIN IN WB-H-ras-2a RAT LIVER EPITHELIAL CELLS. R J Ruch, J E Trosko, B V Madhukar, P Somani, and J E Kraun. Departments of Pathology and Pharmacology, Medical College of Ohio, Toledo, OH and Department of Pediatrics and Human Development, Michigan State University, East Lansing, MI.

CHANGES IN THE FATTY ACYL COMPOSITION OF MEMBRANE PHOSPHOLIPIDS ARE ASSOCIATED WITH MODULATION OF GAP JUNCTIONAL INTERCELLULAR COMMUNICATION IN RAT LIVER EPITHELIAL CELLS. C M Hasler, M R Bennink and J E Trosko. Michigan State University, East Lansing, MI.

INHIBITION OF CARDIAC GAP JUNCTIONAL INTERCELLULAR COMMUNICATION (GJIC) BY AMPHIPHILIC COMPOUNDS: ROLE OF EXTRACELLULAR pH. Z Xie, A Askari, and J E Kraun. Departments of Pharmacology & Experimental Therapeutics and Pathology, Medical College of Ohio, Toledo, OH.

INHIBITION OF INTERCELLULAR COMMUNICATION IN CARDIAC MYOCYTES BY HALOGENATED HYDROCARBONS. M Torasson, M J Breitenstein and H E Wey. Cellular Toxicology Section, ETB, DBBS, CDC-NIOSH, Cincinnati, OH.

INHIBITION OF GAP JUNCTIONAL INTERCELLULAR COMMUNICATION (GJIC) IN MYOCYTES BY OXYGEN FREE RADICALS. P J Scheler, Z Xie, and J E Kraun. Dept. of Pathology and Pharmacology, Medical College of Ohio, Toledo, OH.

INHIBITION OF GAP JUNCTIONAL INTERCELLULAR COMMUNICATION (GJIC) BY DECREASED INTRACELLULAR pH. J A Hampton and J E Kraun. Department of Pathology, Medical College of Ohio, Toledo, OH.


INHIBITION OF INTERCELLULAR COMMUNICATION BY ENVIRONMENTAL CHEMICALS IN RAT LEYDIG CELLS IN VITRO. B V Madhukar, H H Xu, B Lockwood, and J E Trosko. Department of Pediatrics/Human Development, Michigan State University, East Lansing, MI.

THE INFLUENCE OF MAINSTREAM SMOKE CONDENSATE FROM CIGARETTES WHICH BURN OR ONLY HEAT TOBACCO ON INTERCELLULAR COMMUNICATION BETWEEN CULTURED MAMMALIAN CELLS. S C McKarns and D J DiCottita. R.J. Reynolds Tobacco Company, Winston-Salem, NC.

TUESDAY AFTERNOON, FEBRUARY 13
BORDEAUX ROOM

POSTER/DISCUSSION SESSION: IN VITRO MODELS OF SKIN TOXICITY

Chairpersons: Daniel Acosta, University of Texas College of Pharmacy, Austin, TX and Nancy Monteiro-Riviere, North Carolina State University, Raleigh, NC.

Displayed 1:30 p.m. - 4:30 p.m.
Discussion 2:30 p.m. - 4:30 p.m.

2:30 p.m. Presentation by the Recipient of the 1988 Colgate-Palmolive Fellowship Award in In Vitro Toxicology:

IN VITRO EVALUATIONS OF PHARMACOLOGIC EFFECTS USING CULTURED HUMAN SKIN MODELS. E Bloom, R B Crook, H J Malbran, J R Polansky. Laboratory of Cellular Pharmacology and the Department of Dermatology, University of California, San Francisco, CA.

The ability to propagate human skin keratinocytes and fibroblasts has provided a means to obtain defined experimental material to examine pharmacological/toxic responses of the cells and to begin an exploration of disease and therapeutic mechanisms. In addition to parameters such as cell viability under subconfluent conditions, it is possible to propagate these cell under controlled conditions in which reproducible data concerning drug effects on specific protein synthesis, prostaglandin and other eicosanoid production, as well as important receptor-mediated second messenger systems can be obtained. Our evaluations of tetracarcinoyl phorbol acetate (TPA), ethyl phenyl propionate (EPP), and H2O2 effects demonstrate that different irritants show different patterns of response in keratinocyte cultures, including the induction (and repression) of different proteins defined using pulse 35S-methionine labelling and gel electrophorisis. TPA treatment resulted in a major induction at 44 kDa, with a deinduction at 46 kDa. H2O2 also produced a major induction at 44 kDa and a smaller relative induction at approximately 49 kDa. EPP showed no major inductions, but deinduced proteins at 48 and 46 kDa. TPA and EPP stimulated PGE2 production, whereas H2O2 treatment decreased it. In human skin organ culture, TPA produced the same major induction seen in the cell culture system, but EPP treatment resulted in different alterations in this system. Glucocorticoid treatment decreases PGE2 production and shows protein inductions in the range of 50-58 kDa. 2-dimensional gel electrophoresis of human skin fibroblasts in culture show inductions of specific proteins which are different from those observed in the keratinocyte cultures, offering the possibility of important cell-cell interactions which could play an important role in both therapeutic and disease mechanisms. Studies of the regulation of the inositol phosphate second messenger system in the
keratinocytes showed minor effects with irritants but showed major effects with histamine, bradykinin, as well as thrombin on this pathway. Continued investigation of these and other biochemical markers of injury and glucocorticoid effects may help to better define cell specific responses to human skin and help in the discovery of underlying subcellular mechanisms.

#310 EVALUATION OF SKINTEX™, AN IN VITRO METHOD FOR DETERMINING DERMAL IRRITATION. V C Gordon, C P Kelly, and H C Bergman, National Testing Corporation, Irvine, CA. Sponsor: R J Solo.


#315 THE EVALUATION OF A METHOD FOR PREDICTING SKIN IRRITATION POTENTIAL USING AN IN VITRO CYTOTOXICITY ASSAY WITH NORMAL HUMAN EPIDERMAL KERATINOCYTES (NHEK). S L Politzot- to, P E Laux, H E Kennish, S Hignet, C S Barrow, PPG Industries, Inc. Environmental Sciences Center, Pittsburgh, PA.

#316 EVALUATION OF AN IN VITRO DERMAL IRRITATION METHOD. R J Solo and V C Gordon. S C Johnson & Son, Inc, Racine WI and National Testing Corporation, Irvine, CA.

#317 THE USE OF PRIMARY CULTURED RAT KERATINOCYTES AS A MODEL FOR STUDYING IN VITRO CYTOTOXICITY OF DERMATOXIC AGENTS. G C Hsieh, D Aicos, and J R Lee. Department of Pharmacology and Toxicology, College of Pharmacy, University of Texas, Austin, TX.

#318 CUTANEOUS TOXICITY OF 2-CHLOROETHYL METHYL SULFIDE ON ISOLATED PERFUSED PORCINE SKIN. J R King and N A Monteiro-Riviere. Cutaneous Pharmacology and Toxicology Center. North Carolina State University, Raleigh, NC.

#319 EFFECTS OF ACIDS AND BASES ON THE ISOLATED PERFUSED PORCINE SKIN FLAP. V Srikrishna and N A Monteiro-Riviere. Cutaneous Pharmacology and Toxicology Center, North Carolina State University, Raleigh, NC.

TUESDAY AFTERNOON, FEBRUARY 13
BURGUNDY ROOM

POSTER/DISCUSSION SESSION: METALLOTHIONEIN

Chairpersons: Bruce R. Fowler, University of Maryland, Baltimore, MD and George M. Cherian, University of Western Ontario, London, ON.

Displayed 1:30 p.m. - 4:30 p.m.
Discussion 2:30 p.m. - 4:30 p.m.

#320 DETERMINATION OF METALLOTHIONEIN II CONCENTRATIONS USING BICINCHONINIC ACID. M Akkerman, R B Aoki, G E DuVal, B A Fowler. The University of Maryland, Baltimore MD.

#321 ARSENITE INDUCTION OF METALLOTHIONEIN IN MICE. H Kreppel, J W Bauman, J Liu and C D Klappst. Univ. of Kansas Med. Ctr, Kansas City, KS.

#322 SODIUM ARSENITE (AsIII) INDUCES METALLOTHIONEIN SYNTHESIS IN RAT LIVER BUT NOT IN THE KIDNEY. A Albores, R A Goyar, and M G Cherian. Department of Pathology, University of Western Ontario, London, ON, Canada.

#323 PROTECTION AGAINST ADRIAMYCIN TOXICITY BY INDUCING METALLOTHIONEIN IN APPROPRIATE TISSUES. M Satoh, A Nagamura and N Imura. Dept. of Public Health, School of Pharmaceutical Sciences, Kitasato University, Minato-ku, Tokyo, Japan.

#324 STUDIES ON THE INTERACTIONS OF CIS-DIAMMINEDICHLOOROPLATINUM (C-DDP) WITH METALLOTHIONEIN (MT) AND GLUTATHIONE (GSH) IN RAT. C A M Suzuki and M G Cherian. Dept. of Pathology, University of Western Ontario, London, Ont., Canada.

#325 OCCUPATIONAL CADMIUM EXPOSURE: URINARY METALLOTHIONEIN ASAN INDICATOR OF BODY BURDEN. Z A Shail, K J Ellis, S S Subramanian and A Greenburg. *Department of Pharmacology & Toxicology, University of Rhode Island, Kingston, RI; *Brookhaven National Laboratory, Upton, NY; *Health and Welfare, Ottawa, Canada and *University of Pittsburgh, Pittsburgh, PA.
TUESDAY AFTERNOON, FEBRUARY 13
LORRAINE ROOM

POSTER/DISCUSSION SESSION: TOXICITY OF MIXTURES

Chairpersons: Gabriel L. Plaa, University of Montreal, Montreal, CANADA and Harinara M. Mehendale, University of Mississippi Medical Center, Jackson, MS.

Displayed 1:30 p.m. - 4:30 p.m.
Discussion 2:30 p.m. - 4:30 p.m.

#326 CADMIUM ACCUMULATION AND METALLOTHIONEIN INDUCTION IN THE TISSUES OF MICE CHRONICALLY EXPOSED TO MAINSTREAM AND SIDESTREAM CIGARETTE SMOKE. C G Gariola1, R T Talwalkar2, P C Tewari2, and Z A Shaikh3. Tobacco & Health Res. Inst.1, Dept. of Gastroenterol.2, Univ. of Kentucky, Lexington, KY, and Dept. of Pharmacol. & Toxicol.3, Univ. of Rhode Island, Kingston, RI.

#327 COMPARISON OF CADMIUM ACCUMULATION AND METALLOTHIONEIN INDUCTION IN SUSCEPTIBLE AND RESISTANT STRAINS OF MICE. P C Tewari and Z A Shaikh. Department of Pharmacology & Toxicology, University of Rhode Island, Kingston, RI.

#328 a-HEDERIN PROTECTS AGAINST CADMIUM INDUCED LIVER INJURY BY INDUCING METALLOTHIONEIN. S Choudhuri, J Liu, Y P Liu, H Kreppel, G K Andrews and C D Klaassen. Univ. of Kansas Med. Ctr., Kansas City, KS.


#330 CADMIUM TOXICITY AND METALLOTHIONEIN EXPRESSION IN ROS 17.2.8 CELLS. D J Thomas, C R Angle and SA Swanson. Department of Pediatrics, University of Nebraska Medical Center, Omaha, NE.

#331 ROLE OF METALLOTHIONEIN IN GASTROINTESTINAL ABSORPTION OF CADMIUM. H Hota and M G Cherian. Dept. of Pathology, Univ. of Western Ontario, London, Ontario, Canada.


#334 TOXICOLOGY PROGRAM OF CHEMICAL MIXTURES AT THE NTP: A NEW ENDEAVOR ON PESTICIDES/FERTILIZER MIXTURES. T Goehl, R S H Yang, D Harbin1, R Brown1 D Armeson1. NIEHS/NTP, Research Triangle Park, NC, 1Midwest Research Institute, Kansas City, MO.

#335 TOXICITY OF COMPLEX MIXTURES OF FIRE GASES. B C Levin, M Paabo, L Highbarger, and N Eller. National Institute of Standards and Technology (NIST), Gaithersburg, MD.


#337 TOXICITY OF METHANOL AND ETHANOL IN COMBINATION. A F Youssif, Department of Forensic Medicine & Toxicology, Cairo University, Egypt, and Environmental Health Sciences Center, University of Rochester School of Medicine. Rochester, NY. Sponsor: Bernard Weiss.

#338 INHALED METHANOL ENHANCES THE HEPATOTOXICITY OF ORALLY ADMINISTERED CARBON TETRACHLORIDE. J E Simmons1, J W Allis1, A McDonald2, J C Seely3 and B L Robinson1. Health Effects Research Laboratory, U.S. EPA, 1NSI and 2PATHCO, RTP, NC.

#339 ADDITIVE EFFECTS OF MULTIPLE AROMATIC HYDROCARBONS IN VITRO. A C Beach and H J Harmon. Dept. Zoology, Oklahoma State University, Stillwater, OK. Sponsor: L W Robertson.

#340 BENZOP(A)PYRENE-DNA ADDUCT FORMATION IN RAT LUNG IS MODIFIED BY SIMPLE MIXTURES. S S Bentivegna and C M Winemer. Joint Graduate Program in Toxicology, Rutgers University, Piscataway, NJ.

#341 SEX DIFFERENCE IN 1,2-DICHLOROPROPENE PRETREATMENT EFFECTS ON CHLOROFORM TOXICITY IN RATS. H M Yang, M E Davis and W O Berndt. West Virginia Univ., Health Science Ctr., Morgantown, WV.

#342 MONOCHLOROACETATE (MCA) DOES NOT DECREASE VINYLIDENE CHLORIDE (VDC) TOXICITY BY INHIBITING CYTOCHROME P450. J B Wijewicka, M E Davis and W O Berndt. Dept. of Pharmacology and Toxicology, West Virginia University, Morgantown, WV.
MONOCHLORACETATE (MCA) POTENTIATES VINYLIDENE CHLORIDE (VDC) TOXICITY IN OLDER RATS, BUT NOT IN YOUNG ADULT RATS. M E Davis and W O Berndt, Dept. of Pharmacol. & Toxicol., Health Sciences Center, West Virginia University, Morgantown, WV.

TUESDAY AFTERNOON, FEBRUARY 13
MONACO ROOM

POSTER/Demonstration Session: Communicating Concepts

Chairperson: Arthur L. Craigmill, University of California-Davis, Davis, CA

Attended 1:30 p.m.-4:30 p.m. Tuesday only.
Displayed 8:30 a.m.-11:30 a.m. Wednesday only.

Communicating the Human and Environmental Impacts of Pesticides. J M Witt, M A Kamrin, A L Craigmill, and D Rutz. Oregon State University, Corvallis, OR; Michigan State University, E. Lansing, MI; University of California, Davis, CA and Cornell University, Ithaca, NY.


Database Tracks Research in Multidisciplinary Toxicology Laboratory. M J Gage. Health Effects Research Laboratory, US EPA, RTP, NC.


The Toxicology Resource Information Service. A L Craigmill. Environmental Toxicology, University of California, Davis, CA.

Toxicology, Decision-Making, and CEPU. H D Thier and R C Laugen. Chemical Education for Public Understanding Program (CEPU), Lawrence Hall of Science, University of California, Berkeley, CA. Sponsor: A L Craigmill.

Is Your Health in Jeopardy? Interactive Educational Computer Program for Junior and Senior High School Students. E Faustman, N Horike, H MacQueen, and D L Eaton. Department of Environmental Health, University of Washington, Seattle, WA.

Toxicology Guide for Installation Restoration Program Application. P Y Lu, R A Young, W M Francis, R H Ross, Biomedical and Environmental Information Analysis, Health and Safety Research Division, Oak Ridge National Laboratory, Oak Ridge, TN; J W Fisher, AAMRL/THA, Wright Patterson AFB, OH.


TUESDAY AFTERNOON, FEBRUARY 13
GRAND BALLROOM

POSTER SESSION: GENOTOXICITY

Chairperson: Michael J. Olson, General Motors Corporation, Warren, MI.
Displayed: 1:30 p.m.-4:30 p.m.
Attended: 1:30 p.m.-3:00 p.m.

#363

#364
THE GENOTOXIC POTENTIAL OF LINEAR ALKYLBENzenES IN A SHORTTERM TEST BATTERY. E C Robinson and R S Nair. Monsanto Co., St. Louis, MO.

#365

#366

#367
AZIDE MUTAGENESIS: EFFECTS OF DEUTERATION OF MUTAGENIC INTERMEDIATES. J B Mangold, J M Laye and M R Meschke. Toxicology Program, School of Pharmacy, University of Connecticut, Storrs, CT.

#368
MICRONUCLEUS ASSAY OF PHYSOSTIGMINE SALICYLATE IN RATS AND DOGS. G M Zaucha, G A Omer, D F Frost, S T Omary, D W Korte, Jr. Letterman Army Institute of Research, San Francisco, CA.

#369

#370
SPECIFICITY IN THE CO-MUTAGENICITY OF 2,4-DIAMINOTOLUENE. Y L Pan and G A Reed. University of Kansas Medical Center, Kansas City, KS.

#371
REDUCTION OF RADIATION CYTOTOXICITY BY DNA BINDING AGENT HOECHST 33342 IN CULTURED CHINESE HAMSTER OVARY CELLS. C Shi and P C Keng. Department of Biophysics and Cancer Center, School of Medicine and Dentistry, University of Rochester, Rochester, NY. Sponsor: T W Clarkson.

#372
BENZENE-INDUCED MICRONUCLEI FORMATION IN MOUSE FETAL LIVERBLOOD, PERIPHERAL BLOOD, AND MATERNAL BONE MARROW CELLS. H Hing, N Y Kado, P A Kuzmickiy, and D P H Hsiieh. Dept. of Environ. Toxicol., Univ. of California, Davis, CA. Research Division, California Air Resources Board, Sacramento, CA. Institute of Industrial Hygiene, Ministry of Railways, Beijing, China.

#373

#374

#375
A DIRECT COMPARISON OF THE GRAVITY-FLOW ALKALINE ELUTION TO THE CONVENTIONAL PUMPING METHOD IN THE DETECTION OF DNA DAMAGE. J R Hincks and N E Gibson. Laboratory of Pharmacology, AMC Cancer Research Center, Denver, CO.

#376
ALTERED GI ENZYME ACTIVITY IN CD-1 MICE AND F-344 RATS AFER 2- AND 4-WEEKS OF PENTACHLOROPHENOL TREATMENT. H W Chadwick, S E George, J Chang, M J Kohan, J P Dekker, J E Long, and M C Dufy. USEPA, HERL, Research Triangle Park, NC; UNC, Chapel Hill, NC; EHRT, Research Triangle Park, NC.

#377
FORMATION OF 8-HYDROXYGUANOSINE AND NICKS IN DNA EXPOSED TO METHYLENE BLUE PLUS LIGHT. J E Schneider, S Price, L Maitd, J M C Gutteridge, and R A Floyd. Molecular Toxicology Research Group, Oklahoma Medical Research Foundation, Oklahoma City, OK.


DOSE-DEPENDENT GENOTOXIC RESPONSE IN HUMAN BLOOD LYMPHOCYTES EXPOSED TO STYRENE IN VITRO. C L Richer 1, S Chakrabarti 1, M A Dhr 1 and M Senecal-Quevillon 1. Department d’Anatomie 1 and Medecine du Travail Hgy. Milleu, 2 Faculte de Medecine, Univ. de Montreal, Montreal, Quebec, Canada.

BIOASSAY DIRECTED FRACTIONATION OF THE URINARY METABOLITES FROM FISCHER 344 RATS TREATED WITH 2,6-DINITROTOLUENE AND PENTACHLOROHENOL. J P Dekker, R W Williams, G R Lambert, S E George, M J Kohan, and R W Chadwick. EHRT, Inc. and HERL, USEPA, Research Triangle Park, NC.

POTENTIATION OF 2,6-DINITROTOLUENE GENOTOXICITY BY PENTACHLOROHENOL IN CD-1 MICE AND FISCHER 344 RATS. S E George, R W Chadwick, M J Kohan, and J P Dekker. Health Effects Research Laboratory, USEPA, and Environmental Health Research and Testing, Inc., Research Triangle Park, NC.


CYTOGENETIC STUDY IN BONE MARROW CELLS OF MICE EXPOSED BY NOSE-ONLY INHALATION TO SMOKE FROM CIGARETTES WHICH BURN OR ONLY HEAT TOBACCO. C K Lee, B G Brown, D J Doohlitte, D C Bolin, P H Ayres, G T Burger, A Whayes, and C R E Coggins, R J Reynolds Tobacco Co., Co., Winston-Salem, NC and Vermont, Burlington, NC.


EFFECT OF ACRYLONITRILE (ACN) AND TRICHLOROETHYLENE (TRI) ON THE GENOTOXICITY OF STYRENE IN HUMAN BLOOD LYMPHOCYTES. J P Richer 1, S Chakrabarti 1, M A Dhr 1, and M Senecal-Quevillon 1. Dept. Med. Travel Hgy. Millieu 1, and D’Anatomie 1 Fac. Medecine, Univ. Montreal, Montreal, Quebec, Canada.

THE EFFECT OF Cr 3+ IONS ON DNA REPLICATION IN VITRO. L Xu, M D Cohen, and E T Snow. Institute of Environmental Medicine, NYU Medical Center, New York, NY.

INDUCTION OF CYTOTOXICITY, MICRONUCLEI, SCE AND MUTATIONS BY VARIOUS QUINONES OF POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN V79 CELLS. G Ludewig, F Oesch and H R Glatt Institute of Toxicology, University of Mainz, Mainz, FRG. Sponsor: L W Robertson.


COMPARISON OF DNA STRAND BREAK INDUCTION BY ENVIRONMENTAL GENOTOXINS IN TWO HUMAN LYMPHOBLASTOID CELL LINES. L W Chang, P Mysztkowski, A R DeAngelo and F B Daniel. US Environmental Protection Agency, Cincinnati, OH.

TUESDAY AFTERNOON, FEBRUARY 13
GRAND BALLROOM

POSTER SESSION: MECHANISMS IN INHALATION TOXICOLOGY

Chairperson: Douglas Alan Keller. E.I. du Pont de Nemours & Co., Newark, DE.

Displayed: 1:30 p.m.-4:30 p.m.
Attended: 3:00 p.m.-4:30 p.m.

DEVELOPMENT OF A SUBCHRONIC BLEOMYCIN HAMSTER MODEL OF LUNG FIBROSIS. S Zia, D M Hyde and S N Gin; Depts. of Vet. Pharmacol. & Toxicol., and Anatomy. Univ. of California, Davis, CA.


METABOLISM OF BLEOMYCIN BY NORMAL AND DAMAGED MOUSE LUNG TISSUE. L Fraser and J P Kehrer, Division of Pharmacology and Toxicology, College of Pharmacy, University of Texas at Austin, Austin TX.


THE UPTAKE OF VAPORS INHALED AT 50 OR 500 ppm MAY BE ESTIMATED FROM THE LOG OF THE WATER/ OR BLOOD/AIR PARTITION COEFFICIENTS. A H Dahl, S E Jones, and J W Spoo; Inhalation Toxicology Research Institute, Albuquerque, NM.


INFLUENCE OF PARTICULATE LOAD ON MACROPHAGE PROLIFERATION. R E Lehnert, J B Ortiz, Y E Valdez, J A Steinkamp. Los Alamos National Laboratory, Los Alamos, NM.


A COMPARISON OF AMIODARONE (AD) AND DESETHYLAMIODARONE (D-AD) CYTOTOXICITY IN RAT ALVEOLAR MACROPHAGES (AMs). C L Ogle and M J Reaor, Dept. Pharmacology and Toxicology, WV Univ., Morgantown, WV.

RED BLOOD CELLS FROM MONOCROCYTAL TREATED RATS DECREASE SEROTONIN REMOVAL IN ISOLATED PERFUSED LUNGS. L C Pan, D W Wilson, H J Segall, M W Lame, and D Morin. Dept. of Pharmacol. and Toxicol. Univ. of California, Davis, CA.

ALVEOLAR MACROPHAGE PRODUCTION OF GROWTH FACTORS FOR TYPE II CELLS FOLLOWING IN VIVO HYPEROXIA. J N Finkelstein and M E Brandes. Dept. of Pediatrics and EHS Center, University of Rochester, Rochester, NY.

IN VITRO METABOLISM OF CYCLOPENTADIENYL MANGANESE TRICARBONYL IN LUNG AND LIVER HOMOGENATES OF THE RAT. R J Clay and J B Morris, Toxicology Program, Univ. of Connecticut, Storrs, CT.

CALCIUM DEPENDENT UPTAKE OF PULMONARY SURFACTANT BY TYPE II CELLS. C E B Staphanowich', J N Finkelstein', B A Holm', W M Maniscalco'. 'EHS Center and Dept of Pediatrics, University of Rochester, Rochester, NY. 2 Perinatal Center, Children's Hospital, Buffalo, NY.

INFLAMMATORY CHANGES IN THE LAVAGE FLUID OF GUINEA PIGS EXPOSED TO ACID LAYERED COMBUSTION PARTICLES. T Gordon, L C Chen, P D Miller, W Y Su, and M Q Amdur; Dept. Env. Med., NYU, Tuxedo, NY.

TUESDAY AFTERNOON, FEBRUARY 13
GRAND BALLROOM

POSTER SESSION: MOLECULAR/CELLULAR

Chairperson: Jon Calvin Cook, E.I. du Pont de Nemours & Co., Newark, DE.
Displayed: 1:30 p.m.-4:30 p.m.
Attended: 1:30 p.m.-3:00 p.m.

PYRIDINE NUCLEOTIDE METABOLISM IN HEPATOCYTES INTOXICATED WITH TERT-BUTYL HYDROPEROXYDE. K Yamamoto and J L Farber; Thomas Jefferson University, Philadelphia, PA.


QUINONE CYTOTOXICITY ASSOCIATED WITH A CELL DENSITY-DEPENDENT INCREASE IN THE LEVELS OF CELLULAR QUINONE REDUCTASE (DT-DIAPHRASE). J J Schiager and Q Powis; Department of Pharmacology, Mayo Clinic & Foundation, Rochester, MN.

PHOSPHOLIPID METABOLISM IN CYANIDE-INTOXICATED HEPATOCYTES. I Sakaida and J L Farber; Thomas Jefferson University, Philadelphia, PA.

#412 CELLULAR ATP LEVELS AND ULTRASTRUCTURAL CHANGES IN MITOCHONDRIA IN LLC-PK1 CELLS AFTER HgCl2 AND CH3HgOH INSULT. L Bravo and S M Ford. Toxicology Program, St. John's U., Jamaica, NY.

#413 RELATIONSHIP BETWEEN MITOCHONDRIAL TRANSMEMBRANE POTENTIAL OF ATP AND CYTOTOXICITY. E Y Wu, M T Smith, and D Di Monte. School of Public Health, University of California, Berkeley, CA.

#414 MECHANISM OF NA+/K+-ATPASE (NKA) INHIBITION BY TRICYCLIC DRUG ANALOGS. M A Carfagna* and B B Muhoberac** Dept. of Pharm. and Toxicology, IU School of Medicine,* and Dept. of Chem., Indiana University-Purdue University,** Indianapolis, IN. Sponsor: R B Forney, Sr.*


#416 NOVEL FILTER TECHNIQUE FOR USE OF S9 ACTIVATION SYSTEMS IN IN VITRO STUDIES OF DNA DAMAGE MECHANISMS. W B Mattes, S D O'Lone and D W Matheson. CIBA-GEIGY, Farmington, CT. Sponsor: D R Saunders.

#417 ALTERATIONS IN HISTONE PHOSPHORYLATION IN RAT SPLEEN CELLS AFTER IN VITRO TREATMENT WITH 4,4'-METHYLENE-BIS (2-CHLOROANILINE) (MOCA). D G DeBord, K L Cheever, T F Swarengin. NIOSH, DBBS, ETB, BTS, Cincinnati, OH.


#419 RAT MESOTHELIAL CELL GENE EXPRESSION. E Bermudez, J Everitt, C Walker. CIT, Research Triangle Park, NC.


#422 ROLE OF PROTEIN KINASE C IN RADIATION-INDUCED DECREASE CALCIUM- UPTAKE IN RAT BRAIN SYNAPTOSONES. S B Kandasamy and W A Hunt. Behavioral Sciences Department, Armed Forces Radiobiology Research Institute, Bethesda, MD. Sponsor: V Bogg.

#423 SELECTIVE INHIBITION OF 45Ca2+ PTAKE INTO SYNAPTOSONES AND PRIMARY CELL CULTURES BY TRIPHENYL PHOSPHITE, A TYPE II OPIDN. M R Abu-Donia, D M Lapadula and J K Anderson. Duke University Medical Center, Durham, NC.

#424 STUDIES ON THE TOXIC EFFECTS OF MPP+ IN MOUSE BRAIN SYNAPTOSONES. D Di Monte, K P Scortcher, I Irwin, L E DeLamney and J W Langton. The Institute for Medical Research and California Parkinson's Foundation, San Jose, CA.


#426 EFFECTS OF PRESYNAPTIC PHOSPHOLIPASE (PLA2) TOXINS AND NONSPECIFIC PLA2 ENZYMES ON ACETYLCHOLINE (ACH) RELEASE RAT BRAIN SYNAPTOSONES. A Ghassemi and P Rosen- burg. Sec. of Pharmacol. and Toxicol., Univ. of Conn., Storrs, CT.


#428 ASSESSMENT OF BIOCHEMICAL CHANGES IN CHICKEN LYMPHOCYTES INDUCED BY IN VIVO EXPOSURE TO A NEUROPATHY-INDUCING ORGANOPHOSPHATE: A Nostrand and M Erich. Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA.

TUESDAY AFTERNOON, FEBRUARY 13
FONTAINEBLEAU BALLROOM D

POSTER SESSION: NEUROTOXICOLOGY I

Chairperson: Mohamed B. Abu-Donia, Duke University Medical Center, Durham, NC.


TRIMETHYLTIN DISRUPTS AUDITORY FUNCTION AND COCHLEAR MORPHOLOGY IN PIGMENTED RATS. V Hoefding and L D Fechter. The Johns Hopkins University, Baltimore, MD.


RAPID IMPAIRMENT OF INNER EAR FUNCTION BY TRIMETHYLTIN. L D Fechter and V Hoefding. The Johns Hopkins School of Hygiene and Public Health, Baltimore, MD.


LONG-TERM-POTENTIATION (LTP) MECHANISMS ARE MAINTAINED IN RATS PRETREATED WITH TRIMETHYLTIN (TMT). D L Armstrong, T Osaka, M L Swayer and H Yamasita. Division of Life Sciences, Univ. of Tx. and Depart. of Physiol., Univ. of Occup. and Environ. Health, Kitakyushu, Japan.

NEUROTOXIC PROFILE INDUCED BY SUBACUTE EXPOSURE TO TRIMETHYLTIN IN SPRAGUE DAWLEY (SD) RATS. G C Hagerty, S Morton, S Levin, Z Ruben, and S C Gad. Searle, Skokie, IL.

NEUROTOXIC AMINO ACIDS FROM THE CARCINOGEN METHYLAZOXMETHANOL (MAM). G Kirby and P Spooner. Center for Research on Occupational and Environmental Toxicology, Oregon Health Sciences University, Portland, OR.


METABOLISM OF b-N-METHYLAMINOBALANINE BY L-AMINO ACID OXIDASE. M Hashimi and M W Anders. Dept. of Pharmacology, University of Rochester, Rochester, NY.

NI(II) EFFECT(S) ON MICROTUBULE POLYMERIZATION IN VITRO. K Lin, C Andy and L N Chou. Depts. Pathology and Microbiology, Boston University School of Medicine, Boston, MA.

NEURONAL NECROSIS AND DEATH AFTER 3-ACETYLPYRydINE (3-AP): INFLUENCE OF AXOTOMY. C M Beiswanger, T L Roscoe, H E Lowndes. Neurotoxicology Laboratories, Rutgers College of Pharmacy, Piscataway, NJ.


MODULATION OF RAT RETINAL Na,K-ATPase (Na,K) AND Ca,Mg-ATPase (Ca,Mg) BY Pb, Ca, Na and Mg. D A Fox, S D Rubenstein and P Hsu. College of Optometry, University of Houston, Houston, TX.

EFFECT OF TRIETHYLTIN ON SYNAPTOSOMAL TRANSMITTER RELEASE. D Minnema, M Schamer, and G Cooper. Environmental Health, Univ of Cincinnati, Cincinnati, OH. Sponsor: E O'Flaherty.


DISTRIBUTION AND METABOLISM OF 3-H-SAXITOXIN IN RAT BRAIN. S M Naseem, H B Hines, and R W Wannemacher, Jr. US Army Medical Research Institute of Infectious Diseases, Frederick, MD.

SPECIES DIFFERENCES IN PYRETHROID ACTIONS ON SYNAPTIC MEMBRANE EXCITABILITY. J T Felts, P B Bancettini and J M Propp. Medical College of Wisconsin, Milwaukee, Wl.

CORRELATION OF IN VITRO WITH IN VITRO MONOHALOMETHANE NEUROTOXICITY. M Bonnefoi, C Davenport, and K Morgan. CIT, Research Triangle Park, NC. Sponsor: M B St. Clair.
TUESDAY AFTERNOON, FEBRUARY 13
FONTAINEBLEAU BALLROOM D

POSTER SESSION: OXIDATIVE STRESS I

Chairperson: Helmut A. Greim, GSF, Neuherberg, FRG.
Displayed: 1:30 p.m.-4:30 p.m.
Attended: 1:30 p.m.-3:00 p.m.


EFFECTS OF REPEATED EXPOSURES AND CONCENTRATION VS TIME ON ENHANCED SUSCEPTIBILITY TO STREPTOCOCCAL INFECTION DUE TO OZONE EXPOSURE. M J K Selgrade. U S Environmental Protection Agency, Research Triangle Park, NC.

THE ROLE OF INFLAMMATION IN SPECIES SENSITIVITY TO OZONE (O3) - INDUCED AIRWAY HYPERREACTIVITY. J S Tepper, J R Lehmann, D L Costa, M C Madden and S Fitzgerald. NSI-ES, RTP, NC. 1US EPA, RTP, NC and 2UNC, Chapel Hill, NC.

OZONE-MEDIATED EFFECTS ON MACROPHAGE (MO) FUNCTIONS IMPORTANT IN TUMOR SURVEILLANCE OF THE LUNG. J T Zaalikoff, G L Kreamer, M C Vogel, D Bowser, and R B Schlesinger. NYU Medical Center, NY, NY.


ELEVATED CELLULAR GLUTATHIONE CONTENT IN PARAQUAT EXPOSED MOUSE 3T3 CELLS. W Li and L N Czaja. Deps. of Microbiol. & Pathol., Boston University School of Medicine, Boston, MA.

BIOCHEMICAL AND MORPHOLOGIC RESPONSE OF NASAL EPITHELIA TO HYPOXIA. K J Nikula, P J Sabourin, A J Birdwhistell, B C Freitag, and J R Harkema. Inhalation Toxicology Research Institute, Albuquerque, NM.

RECOVERY OF LUNG PYRUVIDE NUCLEOTIDES FOLLOWING ACUTE OXIDANT INJURY. M R Montgomery, P Raska-Emery and J U Bais. VA Hospital and University of S. Florida, Tampa, FL.


FREE RADICAL CONTENT OF SMOKE FROM A TOBACCO-BURNING (1RF) AND A NEW CIGARETTE (NC) THAT HEATS TOBACCO. W Y Pryor, D F Church, M D Evans, W Y Rice, J R Hayes. 1Biodynamics Institute, Louisiana State University, Baton Rouge, LA and 2R J Reynolds Tobacco Company, Winston-Salem, NC.

RAT LUNG FUNCTION EFFECTS AFTER CHRONIC EXPOSURE TO NO2. D W Wrsett, J S Tepper, M A Stevens and D L Costa. NSI-ES, RTP, NC and *EPA, RTP, NC.


STRAIN SPECIFIC RESPONSE OF MURINE EPIDERMAL SUPEROXIDE DISMUTASE ACTIVITY TO PHORBOL-12-MYRISTATE-13-ACETATE. R T Pilotick, M G Brod, R A Scala, G Wilz. Joint Graduate Program in Toxicology, Rutgers University/UMDNJ-Robert Wood Johnson Medical School, Piscataway, NJ. Exxon Biomedical Sciences Inc., East Millstone, NJ.

PARAQUAT RESISTANCE IN SUPEROXIDE DISMUTASE TRANSFECTED CELLS CORRELATES WITH GLUTATHIONE PEROXIDASE AND NOT SUPEROXIDE DISMUTASE ACTIVITY. M J Kelner. University of California, San Diego, CA.

PARAQUAT RESISTANT CHINESE HAMSTER OVARY CELLS SHOW RESISTANCE TO GLUTATHIONE DEPLETION BY PARAQUAT BUT NOT BY HYDROGEN PEROXIDE. T J Kavanagh, G Raghu, P Rabinovitch, and G M Martin. Departments of Medicine, Environmental Health and Pathology, University of Washington, Seattle, WA. Sponsor: EM Faustman.

ANTIOXIDANTS PREVENT CYSTEINE CONJUGATE TOXICITY. Q Chen, T W Jones, P C Brown and J L Stevens. W Aton Jones Cell Science Center, Lake Placid, NY and Univ. of Maryland, Baltimore, MD.

DETECTION OF OXYGEN RADICALS BY FLUORESCENCE CYTOMETRY IN INTACT CELLS UNDER OXIDATIVE STRESS. D B Menzel, R Vandegrift, R Rasmussen and C LeBel. Southern Occupational Health Center, University of California, Irvine, CA.

OXIDANT INJURY AND DYNAMICS OF VITAMIN E INCORPORATION IN PULMONARY ARTERY ENDOTHELIAL CELL MEMBRANES. J M Patel, M Sekharam, and E R Block. Dept. of Medicine, University of Florida and VA Medical Center, Gainesville, FL.

GLUTATHIONE PEROXIDASE ACTIVITY IN ADULT SCHISTOSOMA MANSONI. K M Hathaway and J W Tracy. Environmental Toxicology Center, University of Wisconsin, Madison, WI. Sponsor: C R Novack.


TUESDAY AFTERNOON, FEBRUARY 13
FONTAINEBLEAU BALLROOM D

POSTER SESSION: SOLVENTS

Chairperson: Kenneth Ramos, Texas Tech University, Lubbock, TX.

Displayed: 1:30 p.m.-4:30 p.m.
Attended: 3:00 p.m.-4:30 p.m.


INHALATION VS. INTRAPERITONEAL ADMINISTRATION OF p-XYLENE TO RATS: A COMPARISON OF PULMONARY AND HEPATIC PARAMETERS OF TOXICITY. D Silverman, J Stickney, A Roberts and R Schatz. Northeastern University, Toxicology Program, Boston, MA.


STRUCTURE ACTIVITY RELATIONSHIP OF TOLUENE, p-XYLENE, p-NITROTOLUENE (PNT) AND p-CHLOROTOLUENE (PCT) ON RAT LUNG & LIVER MICROSOMAL FUNCTION AND COMPOSITION. T Zewe-die, G Furman, A Roberts and R Schatz. Toxicology Program, Northeastern University, Boston, MA.


ROLE OF ISOZyme-SPECIFIC INHIBITION OF CYTOCHROME P450 ACTIVITY IN 1-METHYLENE-INDUCED ALTERATIONS IN RAT LUNG BENZO(a)PYRENE METABOLISM. J Stickney, D Silverman, R Schatz. Toxicology Program, Northeastern University, Boston, MA.

SUBCHRONIC INHALATION TOXICITY STUDY OF ETHYL BENZENE IN F344/N RATS AND B6C3F1 MICE. C Aranyi, C L Gaworski, P B Senese, R Long, B S LeVine, K M Abdo and R S H Yang. 1ITRI, Chicago, IL, 2PAI, Chicago, IL, 3Univ. of IL, Chicago, IL, 4NIEHS/NTP, RTP, NC.
EFFECTS OF INHALED P-XYLENE ON MICE INFECTED WITH MURINE CYTOMEGALOVIRUS. M J Daniels, R H Jaskot*, J W Allis, and M J K Selgrade. U S Environmental Protection Agency, Research Triangle Park, NC., and NSI Technology Services Corp. RTP, NC.


TOULENE ALTERS MEMBRANE FUNCTION BUT NOT COMPOSITION IN RAT PULMONARY MICROSOMES. G Furman, D Silverman and R Schatz. Toxicology Program, Northeastern University, Boston, MA.

BODY BURDEN PROFILES OF METHYL ETHYL KETONE AND METHYL ISOBUTYL KETONE EXPOSURE IN HUMAN SUBJECTS. R Dick, D Darkovic, J Setzer, F Phipps and L Lowry. PHS-CDC-National Institute for Occupational Safety and Health, Cincinnati, OH.

EFFECT OF MONOKINETIC SOLVENTS ON HEXACHLOROBENZENE (HCB)-INDUCED PORPHYRIA IN RATS. K Krishnan, J Brodeur, G L Plaa, and M Charbonneau. Department of Pharmacology, Department of Medicine Trav. and Hyg. Mtl., University of Montreal, Montreal, Quebec, Canada.


INFLUENCE OF TIME AND DOSE IN THE DEVELOPMENT OF HEXACHLOROBENZENE (HCB)-INDUCED PORPHYRIA IN FEMALE RATS. M Charbonneau, J Brodeur and K Krishnan. Department of Medicine Trav. and Hyg. Mtl., University of Montreal, Montreal, Quebec, Canada.

TUESDAY, FEBRUARY 13
5:00 p.m.-6:30 p.m.
SURFSIDE ROOM (SHAWNEE HOTEL)

MECHANISMS SPECIALTY SECTION MEETING

TUESDAY, FEBRUARY 13
5:00 p.m.-6:30 p.m.
PASTEUR ROOM

RISK ASSESSMENT SPECIALTY SECTION MEETING

TUESDAY, FEBRUARY 13
6:30 p.m.-11:00 p.m.

LATIN FIESTA IN LITTLE HAVANA

"Rhumba" into the historic, cultural district of Little Havana with your SOT colleagues and friends. The evening will include roundtrip transportation to the authentic Latin enclave. Once there, you will be greeted by rhumba and conga dancers and a variety of Latin music, including Nestor Torres, a national favorite, who has recently produced an album. There will also be a super all-you-can-eat Cuban dinner. Tickets are $32.00 per person, which includes transportation, dinner, sangria, beer, soft drinks and entertainment. Pre-registration only, using the attached form. Sorry, no refunds or exchanges.

WEDNESDAY MORNING, FEBRUARY 14
8:30 a.m.-11:30 a.m.
FONTAINEBLEAU BALLROOM A

SYMPOSIUM: GENETIC DETERMINANTS OF CARCINOGEN SUSCEPTIBILITY IN RODENTS AND MAN

Chairperson: Cheryl Walker, CIIT, Research Triangle Park, NC.

Sponsored by the Molecular Biology Specialty Section

Tumor induction is a multi-stage process, influenced by at least two types of genes: (1) cellular oncogenes and (2) tumor suppressor genes. Whereas oncogenes are activated by chemical carcinogens via mechanisms such as point mutations, tumor suppressor genes must be inactivated in order for neoplastic transformation to occur. Hereditary inactivation of a tumor suppressor gene is the strongest known risk factor for human cancer. Therefore, this class of genes can act as determinants of carcinogen susceptibility. This symposia will examine how such genetic determinants of susceptibility influence neoplastic transformation in rodents and man. In various rodent models, the role of tumor susceptibility genes in the process of chemical carcinogenesis has been examined in some detail. This area will be covered in the symposia by
utilizing three rodent models as specific examples. First, an introduction to oncogenes and tumor suppressor genes will be presented in the context of a rat model for renal carcinogenesis. In this model, susceptibility to kidney tumors is due to the inactivation of a putative tumor suppressor gene, and the interaction of this inactivated gene with activated cellular oncogene(s) results in tumor formation. The second presenter will discuss how susceptibility to chemically induced lung tumors in inbred mice can be determined by at least three Paa (pulmonary adenoma susceptibility) genes, one of which may be the proto-oncogene K-ras. There are two alleles of this K-ras gene; strains with the 0.55 kb RFLP allele develop tumors, whereas those with the 0.70 kb RFLP allele are resistant. The last rodent model will indicate how a single gene, Hcx, that acts during the promotion phase of hepatocarcinogenesis has been found to be largely responsible for susceptibility to liver tumors in male CSH mice. The last two speakers will present information on how such genes act as a factor in determining human risk to carcinogens.

One will present work using normal human fibroblasts isolated from individuals with a hereditary predisposition to cancer. These cells spontaneously transform to immortality in tissue culture and undergo complete transformation to tumorigenicity following transfection with a single activated H-ras oncogene. The final presenter will describe how information regarding specific tumor susceptibility genes can be utilized in the process of risk assessment by use of the two stage MVK model.

#23 8:30  Introduction. Cheryl Walker, CIIT, Research Triangle Park, NC.

#24 8:40  Tumor Suppressor Gene and Cellular Oncogene Interactions in a Rat Model for Renal Carcinogenesis. Cheryl Walker, Chemical Industry Institute of Technology, Research Triangle Park, NC.

#25 9:10  Genetic Determinants of Chemically Induced Lung Cancer in Mice and Humans. Gary Stoner, Medical College of Ohio, Toledo, OH.

#26 9:40  Genetic Control of Murine Hepatocarcinogenesis. Norman R. Drinkwater, University of Wisconsin, Madison, WI.

#27 10:10  Human Cells In Vitro: Analysis of Cancer Susceptibility and Mechanisms of Tumorigenesis. Michael A. Tainsky, University of Texas, Houston, TX.

#28 10:40  Genetic Determinants of Carcinogen Susceptibility: Implications for Risk Assessment. Thomas Starr, Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

11:10 Discussion.

WEDNESDAY MORNING, FEBRUARY 14
8:30 a.m.-11:30 a.m.
FONTAINBLEAU BALLROOM B

SYMPOSIUM: INHALATION RISK ASSESSMENT: STATE-OF-THE-ART


Sponsored by the Risk Assessment and Inhalation Specialty Sections

Traditionally, quantitative risk assessment has focused on the risk of oral exposure to chemicals. However, inhalation presents additional complexities, such as issues of regional deposition in the respiratory tract or unique portal-of-entry effects. Part of the reason for the heightened interest in inhalation risk assessment is a result of the ongoing efforts of the U.S. Congress to restructure the 1970 Clean Air Act, as amended in 1977, and the increasing recognition of the importance of inhalation exposures from volatilization of chemicals from a variety of sources, such as hazardous waste sites.

The goal of the symposium is to present five major approaches to the quantitative risk assessment of inhaled chemicals. The topics were chosen based upon their current and future use in risk assessment, their novelty to the scientific community, and their scope/approach to risk assessment. Studies of exposure to inhaled particles are being used to assess qualitative differences in response as a function of exposure level which indicate anomalous responses at levels frequently employed in toxicological studies. Physiologically-based pharmacokinetic models are being used to predict more accurately the dose of toxicologically relevant compounds in exposures to inhaled gases. These issues are critical in the development of risk assessment models. EPA has recently started to use the newly developed inhalation dose methodology for chronic exposures to toxic air pollutants and other inhaled pollutants related to pesticides and other hazardous wastes. The decision analytic approach is being applied by EPA to criteria pollutants such as ozone and SO2. The Emergency Response Planning Guidelines represent a new approach to estimating risks from short-term exposures, frequently for chemicals with limited data bases on acute exposures.

#29 8:30  Introduction. Barbara D. Beck, Gradient Corp., Cambridge, MA.

#30 8:40  High Level Particle Inhalation Experiments: Possible Mechanisms and Extrapolation to Man. Gunter Oderoedter, University of Rochester, Rochester, NY.

#31 9:10  The Use of Acute Data to Set Exposure Standards. George M. Rusch, Allied-Signal, Inc., Morristown, NJ.


#34 10:40  Predicting Target Tissue Dose for Inhaled Gases Through Physiological Modeling Strategies: Melvin E. Anderson, Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

11:10 Discussion.
PLATFORM SESSION: DEVELOPMENTAL

Chairpersons: Stephen B. Harris, Stephen B. Harris Group, La Mesa, CA and Carole A. Kimmel, USEPA, Washington, D.C.

#490 8:30  ESTIMATING FETAL EXPOSURE TO TOXIC MATERIALS. B J Kelman and M R Sikov. Life Sciences Center, Pacific Northwest Laboratory, Richland, WA.

#491 8:45  A DEVELOPMENTAL NEUROTOXICITY STUDY PROTOCOL DEVELOPED BY THE US ENVIRONMENTAL PROTECTION AGENCY. E Z Francis, USEPA, Reproductive and Developmental Toxicology Branch/OHEA, Washington, DC. Sponsor: C A Kimmel.

#492 9:00  REPRODUCTIVE AND DEVELOPMENTAL TOXICITY RISK ASSESSMENT FOR SHORT-TERM EXPOSURE TO ETHYLENE OXIDE (EO). G L Kimmel, C A Kimmel, and H Zenick. Reproductive and Developmental Toxicology Branch/HHAQ/OHEA and Health Effects Research Laboratory/OHR, US Environmental Protection Agency, Washington, DC and Research Triangle Park, NC.


#494 9:30  DEVELOPMENTAL TOXICITY OF 2,3'-DIDEOXYCYTIDINE (Ddc) IN MICE. P Lindstrom, M Harris, A M Hoberman*, J K Dunick and R E Morrissey. National Toxicology Program, NIEHS, Research Triangle Park, NC; and *Argus Research Laboratories, Horsham, PA.

#495 9:45  STUDIES OF PRENATAL DEVELOPMENT IN THE RAT FOLLOWING ORAL EXPOSURE TO T-2 TOXIN. M S Bean, K Mayura, B A Clement, J F Edwards, J F Banzaya* and J D Phillips. Department of Veterinary Public Health and Pathology, Texas A&M University; and USDA/ARS, College Station, TX.

#496 10:00  SODIUM AZIDE (NaNO₂) HAS WEAK TERATOGENIC EFFECTS IN THE GOLDEN HAMSTER (GH). T R Sana, V H Ferris and R P Smith. Department of Pharmacology/Toxicology and Department of Anatomy, Dartmouth Medical School, Hanover, NH.

#497 10:15  THE EFFECTS OF LOW PROPYLTHIOURACIL DOSES ON THE RAT NEONATE. T T Sherer and R J Bull. Pharmacology/Toxicology Program, College of Pharmacy, Washington State University, Pullman, WA.


#499 10:45  TERATOCENICITY OF 5-FLUOROURACIL IN DROSOPHILA MELANOGASTER. D W Lynch, R L Schuler, D G Davis*, and R D Hood*. NICSH, Div. Biomedical and Behavioral Science, Experimental Toxicol. Br., Cincinnati, OH and *Department of Biology, The University of Alabama, Tuscaloosa, AL.

#500 11:00  TERATOCENIC INTERACTIONS OF DNA SYNTHESIS INHIBITORS. D A Dawson, T W Schultz, and T S Wilke. College of Veterinary Medicine, University of Tennessee, Knoxville, TN. Sponsor: D L Frazier.

#501 11:15  REVERSAL OF BROPURIME EMBRYOLETHALITY WITH PROGESTERONE OR INDOMETHACIN. T A Marks, D L Black, D G Bramsatter and K T Kirton, Drug Safety Research, The Upjohn Co., Kalamazoo, MI.

#502 11:30  MECHANISTIC STUDIES OF THE ATTENUATION OF 2-METHOXYETHANOL(2-ME) TERATOCENICITY BY SERINE ISOMERS IN MICE. D O Clarke, D B Steedman and F Welsch, CII, Research Triangle Park, NC.

#503 11:45  STUDIES ON THE TERATOCENESIS OF CYSTEINE PROTEINASE INHIBITION. G P Daston, D Baines and L D Lehman-McKeeman, Miami Valley Laboratories, Procter & Gamble, Cincinnati, OH.

PLATFORM SESSION: BIOTRANSFORMATION

Chairpersons: Robert Snyder, Rutgers University, Piscataway, NJ and Joseph Donald deBethizy, RJR Tobacco Company, Winston-Salem, NC.

#504 8:30  P450II1 ENZYME EXPRESSION IN ISOLATED AND CULTURED HEPATOCYTES. J Kraner, G Carter, S Ray, J Lasker, J Raucy. Toxicology Program, L. New Mexico College of Pharmacy, Albuquerque, NM. Alcohol Research and Treatment Ctr., Bronx VA Medical Center, Bronx, NY.

#505 8:45  REGULATION OF RAT LIVER CYTOCHROME P-450 III A ISOZYMES. J E A Leakey, J M McMillan, J J Bazzarre, J R Harmon, H C Cuny and M P Arlotto. Divisions of Reproductive and Developmental Toxicol. and

STUDIES ON TESTOSTERONE OXIDATION AND THE OXIDATIVE CLEAVAGE OF DIGITOXIN BY RAT LIVER MICROSONAL CYTOCHROME P-450 (IIIa1). D.C. Eberhart and A. Parkinson. University of Kansas Medical Center, Kansas City, KS.

COMPARISON OF THE TISSUE DISTRIBUTION OF TWO ISOZYMES OF RAT LIVER MICROSONAL CARBOXYESTERASE (HYDROLASES A AND B). E.W. Morgan and A. Parkinson. University of Kansas Medical Center, Kansas City, KS.


BENZENE METABOLISM BY TWO PURIFIED, RECONSTITUTED RAT HEPATIC MIXED FUNCTION OXIDASE SYSTEMS. T.A. Chepiga, C.S. Yang, and R. Snyder. Joint Graduate Program in Toxicology, Rutgers University/RWJ Medical School, New Brunswick, NJ.

N-OXIDATION AND MICROSONAL ENZYME EFFECTS OF IN VIVO EXPOSURE TO PRIMARY AROMATIC AMINES IN JAPANESE MEDAKA. J.M. Dady and S.B. Bradbury. University of Wisconsin, Superior, WI. US EPA Environmental Research Laboratory, Duluth, MN.


TOXICITY OF NAPHTHALENE-1,2-DIHYDRODIOL IN ISOLATED MOUSE HEPATOCYTES. R.E. Billings, N.E. Miller, J.E. Dabbs, S.E. LeVeal, and C.E. Green. Dept. of Biochemical Toxicology, SRI International, Menlo Park, CA and Depts. of Surgery and Pharmacology, University of Nevada, Reno, NV.

IN VIVO SPIN-TRAPPING OF METABOLITES OF 3,3’-DICHLOOROBENZIDINE. M. M. Jaba, A. Goshal, J.J. Power*, P. Downs*** and W.H. Masson***. Dept. of Pharmacology and Toxicology, Rutgers Univ., Piscataway, NJ (**), Ohio State University, Columbus (***), and Ohio State Health Sciences Center (****). Piscataway, NJ.


WEDNESDAY MORNING, FEBRUARY 14
LE MANS ROOM

POSTER/DISCUSSION SESSION: CALCIUM AND CYTOTOXICITY

Chairpersons: Thomas W. Jones, University of Maryland, Baltimore, MD and M.W. Anderson, University of Rochester, Rochester, NY.

Displayed 8:30 a.m.-11:30 a.m.
Discussion 9:30 a.m.-11:30 a.m.


PERTURBATION OF Ca2+ HOMEOSTASIS IN KIDNEY CELLS INDUCED BY Nephrotoxic CYSTEINE S-CONJUGATES: NEW INSIGHTS WITH FLUORESCENCE DIGITAL IMAGING MICROSCOPY. S. Vanvakas and M.W. Anderson. Dept. of Pharmacology, University of Rochester, Rochester, NY.

INTRACELLULAR CALCIUM CHLORATES INDUCE LIPID PEROXIDATION IN ISOLATED HEPATOCYTES. L.C. Deyo and D.J. Reed. Department of Biochemistry and Biophysics and Environmental Health Sciences Center, Oregon State University, Corvallis, OR.


A SIMPLE MODEL TO IDENTIFY MOLECULAR MECHANISMS OF ENERGY FAILURE INDUCED BY OXIDATIVE STRESS. J.H. Richtburg, M.M. Halleck and F.C. Kaufman. Joint Graduate Program in Toxicology, Rutgers University, Piscataway, NJ.

MITOCHONDRIAL Ca2+ TRANSPORT COUPLED TO SUPEROXIDE FORMATIONS SUGGESTS AN ALTERNATE MECHANISM FOR THE CARDIOTOXICITY OF DOXORUBICIN. E. Chacon, D. Acosta. The University of Texas, Austin, TX.
IONOMYCIN-INDUCED Ca2+-DEPENDENT INJURY IN PRIMARY RAT MYOCARDIAL CELLS. J R Babson and J. M. Dougherty, Dept. of Pharmacology & Toxicology, College of Pharmacy, University of Rhode Island, Kingston, RI. Sponsor: Z A Shaikh.

EFFECTS OF ETHACRYNIC ACID ON PRIMARY RAT MYOCARDIAL CELL THIOL STATUS AND INTRACELLULAR Ca2+ HOMEOSTASIS. C M Dhanbhobra and J. R Babson, College of Pharmacy, University of Rhode Island, Kingston, RI. Sponsor: Z A Shaikh.

LOCALIZATION OF CISPLATIN STIMULATED CALCIUM UPTAKE BY RENAL ENDOPLASMIC RETICULUM: A BIOMARKER FOR PLATINATE TOXICITY. A Varma and S H Snyder, Johns Hopkins University, Departments of Neuroscience & Environmental Health Sciences, Baltimore, MD. Sponsor: I Fechter.


EFFECTS OF A 21-AMINOSTEROID, LAZAROID (U-74006F), ON THE INHIBITION OF DOXORUBICIN-INDUCED INTRACELLULAR FORMATION OF REACTIVE OXYGEN SPECIES. R G Ulrich*, E Chacon, and D Acevedo. "The Upjohn Company, Kalamazoo, MI. and The University of Texas, Austin, TX.


WEDNESDAY MORNING, FEBRUARY 14
BORDEAUX ROOM

POSTER/DISCUSSION SESSION: IMMUNOTOXICITY OF DRUGS

Chairpersons: Gary R. Burleson, U.S. EPA, Research Triangle Park, NC and Albert E. Munson, Medical College of Virginia, Richmond, VA.

Displayed 8:30 a.m.-11:30 a.m.
Discussion 9:30 a.m.-11:30 a.m.


EVALUATION OF SORBINIL ACTIVITY IN THE MOUSE POPLITEAL LYMPH NODE (PLN) ASSAY. D. Wirda, P Wilson, G D Williams. Lilly Research Laboratories, Eli Lilly and Company, Greenfield, IN.


2,3-DIDEOXYADENOSINE SELECTIVELY AFFECTS B LYMPHOCYTE DIFFERENTIATION. Wai Cao, M L Stern, M L Luster and A E Munson. Department of Pharmacology and Toxicology, Medical College of Virginia, Richmond, VA and Systemic Toxicology Branch, National Institute of Environmental Health Sciences, NIH Research Triangle Park, NC.


IMMUNOGENICITY STUDIES OF A SYNTHETIC ANTIGEN OF ALPHA-METHYL DopA. C L. Lohr, A J Gandolfo and A K Hubbard. School of Pharmacy, Univ. of Conn., Storrs, CT and Dept. of Anes., Univ. of Ariz., Tucson, AZ.

IMMUNOTOXICOLOGICAL EVALUATION OF OXYMETHOLONE, AN ANABOLIC STEROID. K L White, Jr, J A McCay, D L Musgrove, R D Brown, M L Stern, and A E Munson. Dept. Pharmacol. & Toxicol. and Biostatistics, Medical College of Virginia/VCU, Richmond, VA.

FLOW CYTOMETRIC ANALYSES OF LEUKOCYTES FROM WORKERS EXPOSED OCCUPATIONALLY TO OPIATES. G M Hemmingsen, R E Biagini, S L Klinecwich, J S Gallagher, and L S Trinkle. NIOSH, DSHEFS and DBBS, University of Cincinnati, Cincinnati, OH.

SELECTIVE AUGMENTATION OF HOST RESISTANCE TO INFECTION IN MICE TREATED WITH PYREXOL. House RV, Pearson PC, and Thomas, PT. 1. Dept. of Life Sciences, IITRI, Chicago, IL and 2Cell Technology Inc., Boulder, CO.
IN VITRO EVALUATION OF DRUG-INDUCED TOXIC EFFECTS ON THE IMMUNE SYSTEM.
M J Pallardy 1,2, H N Lebrec 1,4, G R Bulleson 1,4 and C Bohuon 1,2. 1Laboratoire de Toxicologie, Faculte de Pharmacie, Chatenay-Malabry, France. 2Unite de biologie clinique, Instut G. Roussy, Villejuif, France. 3Health Effects Research Laboratory, US EPA, Research Triangle Park, NC.

WEDNESDAY MORNING, FEBRUARY 14
BURGUNDY ROOM

POSTER/DISCUSSION SESSION: METHYLMERCURY TOXICITY

Chairpersons: William D. Atchison, Michigan State University, East Lansing, MI and Kenneth Reuhl, Rutgers University, Piscataway, NJ.

Displayed 8:30 a.m.-11:30 a.m.
Discussion 9:30 a.m.-11:30 a.m.

METHYLMERCURY (MeHg) TOXICITY IN RAT PRIMARY ASTROCYTE CULTURES. M Aschner, N Eberle, K Miller and H K Kimelberg, Department of Pharmacology and Toxicology, Division of Neurosurgery, and the Inter-departmental Neuroscience Training Program, Albany Medical College, Albany, NY.


METHYLMERCURY TRANSPORT ACROSS THE BLOOD-BRAIN BARRIER BY MOLECULAR MIMICRY. L E Kerper, N Ballatos and T W Clarkson, Environmental Health Sciences Center, University of Rochester School of Medicine, Rochester, NY.


METHYL MERCURY, N-CAM EXPRESSION AND DYSMORPHOGENESIS. K R Reuhl and B Borgeson, Neurotoxicology Laboratories, Rutgers College of Pharmacy, Piscataway, NJ.

SYNAPTOPHOSMAL MEMBRANE DEPOLARIZATION IN VITRO BY MERCURIALS. M F Hare and W D Atchison, Dept. Pharmacol./Toxicol., & Neuroscience Program, Michigan State Univ., East Lansing, MI.

METHYL MERCURY DISTURBS NEURONAL PROTEIN PHOSPHORYLATION. T A Sarafian and M A Ventry, Dept. of Pathology, UCLA, LA, CA. Sponsor: A Cho.

EVIDENCE FROM RADIOTRACER FLUX AND BINDING STUDIES SUGGESTS THAT METHYLMERCURY BLOCKS Ca CHANNELS IN A VOLTAGE-DEPENDENT MANNER AND MAY INTERACT WITH MORE THAN ONE TYPE OF Ca CHANNEL. T J Shafler, and W D Atchison, Dept. of Pharm./Tox. and Ctr. Env. Tox., Michiagan State Univ., E. Lansing, MI.

MATURATION-DEPENDENT SENSITIVITY OF NEURON MICROTUBULES TO METHYLMERCURY. M M Falconer*, D L Brown*, A P Christiano, T L Rocoe, and K R Reuhl, *Univ. of Ottawa, Canada. and Neurotoxicology Laboratories, Rutgers College of Pharmacy, Piscataway, NJ.

ULTRASTRUCTURAL EFFECTS OF METHYLMERCURY (MeHg) ON CYTOSKELETAL ARCHITECTURE. L Kromidas and L D Trombetta, St. John's University, Queens, NY.

EFFECTS OF REPEATED METHYLMERCURY EXPOSURE ON INTERPHASE MICROTUBULES. R D Graff, K R Reuhl, Joint Graduate Program in Toxicology, Neurotoxicology Labs, Rutgers College of Pharmacy, Piscataway, NJ.

WEDNESDAY MORNING, FEBRUARY 14
LORRAINE ROOM

POSTER/DISCUSSION SESSION: PEROXISOME PROLIFERATION


Displayed 8:30 a.m.-11:30 a.m.
Discussion 9:30 a.m.-11:30 a.m.


#555 FURTHER STUDIES ON THE EFFECTS OF PERFLUORODECANOIC ACID (PFDA) ON PEROXISOMAL B-OXIDATION IN THE RAT. T Borges, J W Robertson, and H P Glaubert. Department of Nutrition and Food Science, University of Kentucky, Lexington, KY.

#556 SPECIES DEPENDENT INDUCTION OF PEROXISOME PROLIFERATION BY HALOXYFOP, A NEW HERBICIDE. W T Stott, B L Yano, D M Williams, S D Barnard, M A Hannah and F S Cieszlak. Dow Chemical Co., Midland, MI; Merrell Dow Pharmaceuticals, Indianapolis, IN.

#557 EFFECTS OF PERFLUORODECANOIC ACID ON HEPATIC HYDROGEN PEROXIDE-METABOLIZING SYSTEMS IN RATS: A TIME COURSE STUDY. L C Chen, M Baker, L Wilson, H P Glaubert and C K Chow. Graduate Center for Toxicology and Department of Nutrition and Food Science, University of Kentucky, Lexington, KY.

#558 LONG-TERM EFFECTS OF PEROXISOME PROLIFERATORS ON HEPATIC PEROXIDES AND DNA. T Suga, H Tamura, T Iida and T Watanabe. Department of Clinical Biochemistry, Tokyo College of Pharmacy, Tokyo, Japan.

#559 EFFECT OF 2-ETHYHEXANOL ON HEPATIC ENERGY STATE AND MITOCHONDRIA IN THE RAT. B J Keller, D Liang and R G Thurman. Lab of Hepatology and Toxicology, Dept of Pharmacology, Univ. of North Carolina at Chapel Hill, Chapel Hill, NC.

#560 THE EFFECT OF SHORT-TERM EXPOSURE TO ETHYHEXANOL IN VIVO ON HEPATIC OXYGEN UPTAKE IN ALCOHOL DEHYDRGENASE DEFICIENT DEERMICE. B U Brandford, B J Keller and R G Thurman. Laboratory of Hepatology and Toxicology, Dept. Pharmacology, University of North Carolina at Chapel Hill, Chapel Hill, NC.

#561 CONFORMATIONAL ANALYSES ON TERAZOLE SUBSTITUTED ACETOPHENONES THAT INDUCE PEROXISOME PROLIFERATION IN RAT LIVER. B S Foxworth, D K Herron, R D Dillard, C A Whitesitt, W S Marshall, and P L Eagan. Lilly Research Labs, El Lilly and Co., Indianapolis, IN.

WEDNESDAY MORNING, FEBRUARY 14
GRAND BALLROOM

POSTER SESSION: ACUTE AND CHRONIC TOXICOLOGY

Chairperson: Charles Lindamood, III, Southern Research Institute, Birmingham, AL.
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 8:30 a.m.-10:00 a.m.

#562 REDUCTION IN ANIMALS USED FOR ACUTE TOXICITY TESTING BASED ON RETROSPECTIVE ANALYSIS. H M Olson, R Fabian, Y Greener, F Pack, D Zelinger, J H Dean. Department of Toxicology, Drug Safety Assessment Division, Sterling Research Group, Rensselaer, NY.


#565 TOXICOLOGY OF PHENYLHYDROQUINONE. G L Kennedy. Haskell Laboratory for Toxicology and Industrial Medicine, E I Du Pont De Nemours & Company, Inc., Newark, DE.


#567 CHANGES IN THE ACUTE PHASE PROTEINS AND SERUM CHOLESTEROL IN EXPERIMENTAL SEPTICEMIA. C O Crockett, J O Olubadewo, and R F Ochillo. Labs of Pharmacology and Toxicology, Biomedical Research Center, Xavier University of Louisiana. New Orleans, LA.

WEDNESDAY MORNING, FEBRUARY 14
GRAND BALLROOM

POSTER SESSION: DERMAL/OCULAR TOXICOLOGY

Chairperson: Gillian Caroline Haggerty, G.D. Searle & Company, Skokie, IL.
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 8:30 a.m.-10:00 a.m.

#597
REPRODUCIBILITY OF IN-VIVO DERMAL ABSORPTION OF PESTICIDE IN FISCHER 344 RATS.

#598
PERCUTANEOUS PHARMACOKINETIC AND SUBCHRONIC STUDIES WITH 2-ETHYL-1,3-HEXANEDIOL (EHD) IN FISCHER 344 RATS.

#599
PHARMACOKINETICS OF 2,2'-DIMETHYLAMINO)ETHOXYETHANOL (DEE) FOLLOWING A SINGLE CUTANEOUS APPLICATION TO FISCHER 344 RATS.

#600
CUTANEOUS MYELOPEROXIDASE ASSAY OF DERMAL IRITANTS.

#601
REFINEMENT OF A NON-INVASIVE MOUSE MODEL FOR TESTING WEAK CONTACT SENSITIZERS.
VALIDATION OF A FLOW CYTOMETRIC METHOD FOR ANALYSIS OF CELL CYCLE KINETICS IN MOUSE SKIN. P H Ayres, S C McKarns, and D J Doolittle. R J Reynolds Tobacco Company, Winston-Salem, NC.


DERMAL TOXICITY OF COAL COPROCESSING PRODUCTS IN THE RAT. L Chu, D C Villeneuve, V E Secours, and V E Valli. Environmental and Occupational Toxicology Division, Environmental Health Directorate, Ottawa and Biopath Analysts Ltd., Guelph, Ontario, Canada.

A DOSE RESPONSE COMPARISON OF ALLERGIC CONTACT DERMATITIS TO PROPYL GALLATE AT VARIOUS APPLICATION SITES. Q Allgood, J Stotts, L Altringer, A Kraus. The Procter & Gamble Co., Cincinnati, OH.


A PROCEDURE FOR FOLLOW-UP OF SKIN REACTIONS TO FABRIC CONDITIONER PRODUCTS REPORTED BY CONSUMERS. J D Innis, D Smith, L Deaton, B Dick, K Blakley. The Procter & Gamble Co., Cincinnati, OH. Sponsor: J F Griffith.


TOXICITY OF DIETHANOLAMINE IN RATS AND MICE: 13-WEEK EXPOSURES. R L Meinhart*, M Heimann, A Peters, M Ryan, R Singer, L Mezza, R Persing*. NTP/NIEHS, Research Triangle Park, NC, and Battelle Columbus Laboratories, Columbus, OH.


ARTERIOLAR MACROANEURYSMS IN A BEAGLE DOG. (PHOTOGRAPHIC ILLUSTRATION OF INTRA-VITREAL HEMORRHAGE, A SEQUELA TO RUTFUE PULSATILE ANEURYSMS). D M Chicco and V M Tzina. Research Department, Pharmaceutical Division, CIBA-GEIGY Corporation, Summit, NJ.

SURFACTANT-INDUCED IRRITANT DERMATITIS IN HUMAN VULVAR AND FOREARM SKIN: CHARACTERIZATION WITH BIOENGINEERING TECHNIQUES. P Elso, D Wilheim and H I Maibach. Dept. of Dermatology, University of California San Francisco, San Francisco, CA.

PROTRACTED RESIDENCE OF TOPICALLY APPLIED COMPOUNDS IN THE STRATUM CORNEUM. D A W Bucks, H L Maibach, and R H Guy. Depts. of Pharmaceutical Chemistry and Dermatology, University of California, San Francisco, CA.

IN VITRO PERCUTANEOUS ABSORPTION OF FOUR PHARMACOLOGICAL COMPOUNDS THROUGH IRRITANT DERMATITIS SKIN. K P Wilhelm, C Surber, H L Maibach. Department of Dermatology, School of Medicine, University of California, San Francisco, CA.

TOXICITY ASSOCIATED WITH CHEMICAL COMPONENT CLASSES OF REFINERY STREAMS. M H Feuston, C R Mackerer, and M A Mehman. Mobl Oil Corporation, Princeton, NJ.

WEDNESDAY MORNING, FEBRUARY 14
FONTAINEBLEAU BALLROOM D

POSTER SESSION: METAL TOXICOLOGY

Chairperson: Maryka Horsting Bhattacharyya, Argonne National Laboratory, Argonne, IL.

Displayed: 9:30 a.m.-11:30 a.m.
Attended: 8:00 a.m.-11:30 a.m.

#622 ISOLATION OF HEAVY METAL RESISTANT BACTERIA FROM SEEDMENTS. S G Frackman, M A Schommer, and K H Nealson. Center for Great Lakes Research, Univ. of Wisconsin-Milwaukee, Milwaukee, WI. Sponsor: J T Celn.

#623 BIOAVAILABILITY IN RATS OF METAL ADSORBED TO SOILS. R Rubenstein, S Griffin, S Irene, C DeRosa and H Choudhury. US EPA, Washington, DC.

#624 PULMONARY TOXICITY AFTER CHRONIC INHALATION EXPOSURE TO ANTIMONY TRIOXIDE (Sb2O3) IN RATS. P E Newton, H J Boile and A W Sheldon. Boedynamics, Inc., E. Mistletoe, NJ; A O I A, Washington, DC.

#625 SUBCUTANEOUS AND INTRAPEIONEAL INFUSION OF RATS WITH HEXAVALENT URANIUM: A PILOT STUDY. M W Himmelstein and E J O Flaherty. Environmental Health, University of Cincinnati, Cincinnati, OH.

#626 UPTAKE AND ABSORPTION OF TWO COBALT COMPOUNDS BY THE GASTROINTESTINAL TRACT. J M Firriolo and D E Carter. Dept. Pharm. and Tox., University of Arizona, Tucson, AZ.

#627 DIETARY AND IN VITRO EFFECTS OF IRON (FE) ON ORNITHINE DECARBOXYLASE (ODC) ACTIVITY IN RAT TISSUE PREPARATIONS. D W Gaines, P Whittaker, W G Warner, and L Friedman. FDA, CFSAN, Washington, DC.

#628 HUMAN HEALTH IMPLICATIONS OF DIETARY SELENIUM INTAKE. A M Fan, Y W Lowney and M J DiBartolommaso. California Department of Health Services, Berkeley, CA.

#629 90-DAY TOXICITY STUDY OF SODIUM SELENATE IN F344 RATS AND B6C3F1 MICE. M E P Goad, K M Abdo, A Braun, F Voelker and L F Sendebeck. NIEHS/NTU, Research Triangle Park, NC and EG&G Mason Res. Inst., Worcester, MA.

#630 STIMULATION OF FREE RADICAL-MEDIATED PORPHYRINOGEN OXIDATION BY MERCURY: GLUTATHIONE COMPLEX. J S Woods, C A Calas and L Aicher, Department of Environmental Health, University of Washington, Seattle, WA.

#631 EXAMINATION OF CHANGES IN PROTEIN PHOSPHORYLATION FOLLOWING THE ACQUISITION OF NICKEL RESISTANCE IN BALB/C-3T3 CELLS. X W Wang and M Costa. Inst. of Environ. Med., NYU Medical Center, New York, NY.


#633 INVOLVEMENT OF SULFHYDRL METABOLISM IN TOXICITY AND CADMIUM IN TESTICULAR INTERSTITIAL CELLS. Z Z Wahba, L Hernandez, H J Issaq and M P Wankel. National Cancer Institute-FCRF, Frederick, MD.

#634 HEPATOCYTE TRANSDIFFERENTIATION OF THE PANCREAS IN WISTAR AND FISCHER RATS INDUCED BY REPEATED CADMIUM INJECTIONS. N Konishi, J M Ward, and M P Wankel. National Cancer Institute-FCRF, Frederick, MD.
CARCINOGENIC AND ANTICARCINOGENIC EFFECTS OF SINGLE DOSE CADMIUM IN FISHER RATS. B. Sasse, N. Konishi, R. M. Bare, J. M. Ward, S. Rehm, and M. P. Wealkos. Nat'l Cancer Institute-FCRF, Frederick, MD.


EFFECT OF ELEVATED PLACENTAL CADMIUM (Cd) CONCENTRATIONS ON BIRTHWEIGHT (BW) IN NON-SMOKING WOMEN. N. J. Lofaso, J. K. Kline, and J. H. Graziano. Dept. Pharmacology and School of Public Health (Epidemiology), Columbia Univ. College of Physicians & Surgeons, NY, NY.


FURTHER CHARACTERIZATION OF CADMIUM UPTAKE BY RAT LIVER SINUSOIDAL PLASMA MEMBRANE VESICLES AS A CARRIER MEDIATED PROCESS. H. B. Eastman and J. M. Frazier. Johns Hopkins University, Baltimore, MD.

METAL-BINDING CHARACTERISTICS OF THE LOW MOLECULAR WEIGHTS, HIGH AFFINITY CYTOSOLIC LEAD-BINDING PROTEIN IN MALE RAT BRAIN. G. E. Du Val, B. A. Fowler. The University of Maryland at Baltimore, Toxicology Program, Baltimore, MD.


DIFFERENTIAL EFFECTS OF LEAD ON PARATHYROID HORMONE-INDUCED RESPONSES IN OSTEROBLASTIC OSTEOSARCOMA CELLS USING 19F NMR. J. F. Rosen, F. A. X. Schanne, T. L. Dowd, R. J. Gupta. Departments of Pediatrics, Pathology, Biophysics, and Biochemistry, Albert Einstein College of Medicine, NY.


EFFECTS OF METAL IONS ON AGONIST-STIMULATED ACCUMULATION OF INOSITOL PHOSPHATES IN HIPPOCAMPAL AND CORTICAL SLICES. M. J. Bonner and H. A. Tissop. Curriculum in Toxicology, UNC-Chapel Hill, NC; LMIN, NIH, NIH, Research Triangle Park, NC; and Neurotoxicology Division, EPA, Research Triangle Park, NC.

LEAD INHIBITS THE RESPONSES OF A RAT OSTEOBLAST CELL LINE ROS 17/28 TO 1a, 25-DIHYDROXYVITAMIN D3 AND IGF-I. C. B. Ogle, D. J. Thomas, and S. A. Swanson. Department of Pediatrics, University of Nebraska Medical Center, Omaha, NE.

DOES Pb DELAY PROSOPHILA DEVELOPMENT. J. Cohn, D. Wielowski, M. J. Pokora, and D. A. Cory-Slechta. Environmental Health Sciences Center, University of Rochester School of Medicine and Dentistry, NY.

LEAD EXPOSURES TO FIREARM INSTRUCTORS IN AN OUTDOOR FIRING RANGE FROM NON-JACKETED AND JACKETED AMMUNITION. R. K. Tripathi and P. C. Shererez. VA Dept. of Health, Richmond, VA.

CADMIUM INDUCED NEPHROTOXICITY IN RHESUS MONKEYS (MACACAMULATTA) IN RELATION TO PROTEIN CALORIE MALNUTRITION. R. Prasad, V. K. Paiwall and R. N. Hat. Department of Biochemistry, PGIMER, Chandigarh, India.

WEDNESDAY MORNING, FEBRUARY 14
FONTAINEBLEAU BALLROOM D

POSTER SESSION: NATURAL PRODUCTS/FOOD

Chairperson: Elaine S. Wright, General Motors Corporation, Warren, MI.

Displayed: 8:30 a.m.-11:30 a.m.
Attended: 8:30 a.m.-10:00 a.m.


EFFECTS OF MOLECULAR STRUCTURE ON THE CHEMISORPTION OF AFLATOXIN B1 AND RELATED COMPOUNDS BY HYDRATED SODIUM CALCIUM ALUMINOSILICATE. A. B. Sarr, B. A. Clement and T. D. Phillips. Department of Veterinary Public Health, Texas A&M University, College Station, TX.

TOXICITY OF 15-MONOACETOXYSCIRPENOL FED TO YOUNG CHICKENS. A A Adamsover and P B Hamilton. Toxicology Program and Department of Poultry Science, North Carolina State University, Raleigh, NC.

HEMATOLOGY, CHEMICAL VALUES AND BLOOD CHOLESTEROL ESTERASE ACTIVITY IN F-344 RATS FOLLOWING A SINGLE DOSE OF OCHRATOXIN A. V Reddy, T Douglas and N Indacochea-Redmond. Midwest Research Institute (MRI), Life Sciences Department, Kansas City, MO.


INVESTIGATIONS ON THE ENHANCED TOXICITY OF INHALED SAXITOXIN. D A Creasia. US Army Medical Research Institute of Infectious Diseases, Frederick, MD.

ACUTE LETAL EFFECT OF T-2 TOXIN IN CATS RESULTS FROM SEQUENTIAL LOSS OF PLASMA AND BLOOD. H L Bostick, M L Goodheart and D C Thul. Dept. Pharmacol. & Toxicol., Dartmouth Med. Sc., Hanover, NH.


EFFECT OF FUSARIUM MONILIFORME METABOLITES ON UNSCHEDULED DNA SYNTHESIS (UDS) IN RAT PRIMARY HEPATO CYTES. W P Norell, R D Platner*, R F Vesonder, P M Hayes, C W Bacon and K A Voss. Russell Research Center, ARS/USDA, Athens, GA and *Northern Regional Research Center, ARS/USDA, Peoria, IL.

ALIPHATIC ALCOHOLS AND OXIDATIVE DAMAGE. W M Pierce. Jr. Department of Pharmacology and Toxicology, University of Louisville, Louisville, KY. Sponsor: T S Chen.

METABOLISM OF L-CANALINE IN THE RAT. M A Barge and G A Rosenthal, Graduate Center of Toxicology, University of Kentucky, Lexington, KY. Sponsor: L W Robertson.


TOXICITY, STABILITY, AND INACTIVATION OF RICIN (RCA10). R W Wannemacher, Jr., D A Creasia, H B Hines, W L Thompson, and R E Dinterman. Pathophysiology Division, USAMRDC, Fort Detrick, Frederick, MD.

AGE-RELATED TOXICITY OF ACORNS IN RATS. R R Dalvi and S P Govindwar. Toxicology Laboratory, School of Veterinary Medicine, Tuskegee University, Tuskegee, AL.

CATECHIN AS AN ANTIMUTAGEN AND ANTICARCINOGEN. M Nagabhushan. Northwestern University, Department of Pathology, Chicago, IL. Sponsor: E Kaminski.


FEEDING STUDY IN RATS WITH HEATED OLEOSTRA VEGETABLE OIL BLENDS. K W Miller and P H Long. The Proctor & Gamble Company, Winton Hill Technical Center, Cincinnati, OH.


POSTER SESSION: OXIDATIVE STRESS II

Chairperson: Martyn Smith, University of California-Berkeley School of Public Health, Berkeley, CA.
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 10:00 a.m.-11:30 a.m.

#673 MODULATION OF DIQUAT-INDUCED TOXICITY IN VIVO BY NOVEL INHIBITORS OF LIPID PEROXIDATION AND THE ANTIOXIDANT DIPHENYL-P-PHENYLENEDIAMINE. R A Jolly, G H Wolfgang, W J Donarski, R Ochoa and T W Petry. The Upjohn Company, Kalamazoo, MI.

#674 INHIBITION OF DIQUAT-INDUCED LIPID PEROXIDATION AND TOXICITY IN VITRO BY NOVEL ANTIOXIDANTS. G H Wolfgang and T W Petry. Investigative Toxicology Research, The Upjohn Company, Kalamazoo, MI.

#675 CYCLOPIAZONIC ACID (CPA) SUPresses PATULIN (PAT) INDUCED FREE RADICAL DAMAGE IN CULTURED RENAL CELLS. R T Riley and J L Showker. Toxicology and Mycotoxins Research Unit, Russell Research Center, USDA-ARS, Athens, GA. Sponsor: W P Norred.

#676 IN VITRO AND IN VIVO SUSCEPTIBILITIES OF RAT TISSUES TO CADMIUM-INDUCED LIPID PEROXIDATION. D Manca, A C Ricard, B Trottier, and G Chavaller. Environmental Toxicology Lab., University of Quebec in Montreal, Montreal, Canada.

#677 EFFECT OF CHRONIC FE OVERLOAD ON FE STATUS, LIPID PEROXIDATION AND THYMIDINE KINASE (TK) ACTIVITY. P Whittaker, R J Calvert, W Warmer, D WGaines and L Friedman. FDA Nutrition and Toxicology Divisions, Washington, DC.


#679 HYDROGEN PEROXIDE: A POTENT ACTIVATOR OF DIOXYGENASE ACTIVITY OF SOYBEAN LIPOXGENASE. A K Mitra and A P Kulkarni. Florida Toxicology Research Center, College of Public Health, University of South Florida, Tampa, FL.

#680 DIOXYGENASE AND PEROXIDASE ACTIVITIES OF SOYBEAN LIPOXGENASE: SYNERGISTIC INTERACTION BETWEEN LINOLEIC ACID AND HYDROGEN PEROXIDE. J Chauchuri and A P Kulkarni. Florida Toxicology Research Center, College of Public Health, University of South Florida, Tampa, FL.

#681 XENOBIOTIC CO-OXIDATION BY FEMALE RAT LUNG CYTOSOLIC LIPOXGENASE. Y Cai, S K Roy, and A P Kulkarni. Florida Toxicology Research Center, College of Public Health, University of South Florida, Tampa, FL.

#682 RAT LUNG LIPOXGENASE-CATALYZED EPOXIDATION OF BENZO (a) PYRENE-7,8-DIHYDRODIOL. A P Kulkarni and J Z Byczkowski. Florida Toxicology Research Center, College of Public Health, University of South Florida, Tampa, FL.

#683 XENOBIOTIC METABOLISM BY RAT LIVER CYTOSOLIC LIPOXGENASE. S K Roy, Y Cai and A P Kulkarni. Florida Toxicology Research Center, College of Public Health, University of South Florida, Tampa, FL.

#684 ROLE OF LIPOXGENASE IN FOREIGN COMPOUND METABOLISM: S-OXIDATION OF THIOBENZAMIDE BY PURIFIED SOYBEAN ENZYME. A K Naidu and A P Kulkarni. Florida Toxicology Research Center, College of Public Health, University of South Florida, Tampa, FL.

#685 PEROXIDATION OF LINOLEIC ACID BY ENVIRONMENTAL POLLUTANTS: HYDRATED SO2, REDUCED VANADIUM AND ASBESTOS. J Z Byczkowski and A P Kulkarni. Florida Toxicology Research Center, College of Public Health, University of South Florida, Tampa, FL.

WEDNESDAY MORNING, FEBRUARY 14
FONTAINEBLEAU BALLROOM C & D

POSTER SESSION: PESTICIDES

Chairperson: Merle G. Paule, U.S. FDA, Jefferson, AR.
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 8:30 a.m.-10:00 a.m.

#686 DETOXIFICATION OF CARBARYL BY ANAEROBIC GASTROINTESTINAL ORGANISMS. S J Laszewski and J M Hankin. Foth & Van Dyke, Green Bay, WI and University of Wisconsin-Madison, Madison, WI. Sponsor: R E Peterson.

BIOAVAILABILITY OF BOUND RESIDUES OF \(^{14}C\)FEBANTEL TO RATS. M P McLean, G R Krautter, T B Waggoner and L J Lawrence. Pharmacology and Toxicology Research Laboratory & Graduate Center for Toxicology, University of Kentucky, Lexington, KY.

CORRELATION OF THE CHANGES IN SGPT, SGOT AND LDH AFTER ADMINISTRATION OF PARADUTT (PQ). P A Diminakos, J M Mitchell and P Epipavellas*. Joint Program in Toxicology, Rutgers University, Piscataway, NJ and *Institute of Forensic Medicine, Saronika University, Greece.

TETRAHYDROPHTHALIMIDE (THPI) IN URINE AS A BIOLOGICAL INDEX FOR CAPTAN EXPOSURE IN HUMANS. R. Kreger, S Margetich and T Thongsinthusak. Worker Health and Safety Branch, California Department of Food and Agriculture, Sacramento, CA.

REGULATION OF METHOMYL ENTRY INTERVALS IN GRAPE VINEYARDS. J H Ross, M O'Malley, S Bissell, and R J Kreger. Worker Health and Safety Branch, Calif. Dept. of Food and Agric., Sacramento, CA.

RESPIRATORY EFFECTS OF AEROSOLS FROM FOUR DIFFERENT PYRETHROID-CONTAINING INSECTICIDAL FUMIGATING FORMULAS. T G Geimz, C E Manderfield, M Stock*, M Schaper*, and Y Alari*. "University of Pittsburgh, Pittsburgh, PA and S C Johnson, Inc., Racine, WI.

ALCOHOL SENSITIZING ACTION OF THIOCARBAMATE HERBICIDES. M D Faiman, L Wong, B W Hart, and D Miller. Department of Pharmacology and Toxicology, University of Kansas, Lawrence, KS.


SUBCHRONIC TOXICITY OF METHYLENE BIS(THIOCYANATE) ORALLY ADMINISTERED TO B6C3F1 MICE. E Czeh, B Myers, B Ullman, R Irwin, L T Burk and G Wolfe. Hazleton Laboratories, Rockville, MD and NIEHS/NTP, Research Triangle Park, NC.

SUBCHRONIC TOXICITY OF METHYLENE BIS(THIOCYANATE) ORALLY ADMINISTERED TO F344 RATS. B Myers, R Cardy, R Irwin, L T Burk and G Wolfe. Hazleton Laboratories, Rockville, MD and NIEHS/NTP, Research Triangle Park, NC.

DIETARY CHRONIC TOXICITY AND ONCOGENICITY OF HALOXYPOL HERBICIDE IN DOGS, RATS AND MICE. B L Yano, R A Campbell, F S Ciesiak, T Barna-Lloyd and J E Barriere. Toxicology Research Laboratory, The Dow Chemical Company, Midland, MI and "Murrell Dow Research Institute, Indianapolis, IN.

WEDNESDAY, FEBRUARY 14
10:00 a.m.-11:30 a.m.

POSTER SESSION FOR MINORITY STUDENTS

The ad hoc Tox 90s Educational Issues Task Force sponsors this special poster session for minority undergraduates (juniors/seniors) to explain the field of toxicology.

WEDNESDAY, FEBRUARY 14
12:00 Noon-1:00 p.m.

FONTAINE ROOM

SOT ISSUES SESSION

Chaired by SOT President Roger O. McClellan, DVM

Bring your lunch and participate in an open forum discussion of SOT affairs. Open to all registrants. Robert C. Barnard, Esq., Cleary, Gottlieb, Steins and Hamilton, will give a presentation on government conflict of interest guidelines and their impact on toxicologists. This will be followed by a discussion.
Symposium: Macrophage-Xenobiotic Interactions: Modulation of Toxicity and Macrophage Functions

Chairpersons: Lawrence Schook, University of Illinois, Urbana, IL and Peter Bick, Eli Lilly & Company, Greenfield, IN.

Sponsored by the Immunotoxicology Specialty Section

This symposium was organized to present recent results on interactions between macrophages and xenobiotics, and how such interactions affect either the nature and scope of the toxic response and/or changes in macrophage differentiation and function. The macrophage represents a cell which is central to the initiation and maintenance of an immune response. The cell is characterized by its resistance to pathogens and chemicals and is noted for its vast metabolic properties. These characteristics have permitted immunotoxicologists to study how the metabolic state of the macrophage may affect xenobiotic-induced toxicity and conversely how the xenobiotic may affect the functional state of the macrophage. This area of study has proven to be extremely rewarding since much knowledge has been gained in understanding the metabolism of xenobiotics, mechanisms of toxicity, regulation of macrophage differentiation and dissection of macrophage activation states. The development and use of xenobiotics which affect the immune system (e.g., recombinant hematopoietic growth factors and cytokines) will require that we continue to develop models to understand macrophage-xenobiotic interactions.

#35 1:30  Mechanisms for Alteration of Macrophage Differentiation and Activation Following Chemically-Induced Toxicity. Lawrence B. Schook, Laboratory of Molecular Immunology, Dept. of Animal Sciences, University of Illinois, Urbana, IL.

#36 2:00  Effect of Lead on Macrophage Growth and Function. M. Kowolenko, Bristol-Myers Co., Dept. of Investigative Toxicology, Syracuse, NY and D.A. Lawrence, Albany Medical College, Dept. of Microbiology and Immunology, Albany, NY.

#37 2:30  Modulation of Chemically-Induced Hepatotoxicity by Altering Macrophage Function. Debra L. Laskin, Graduate Program in Toxicology, Rutgers University, Piscataway, NJ.

#38 3:00  Activation of Macrophages and Xenobiotics. D.O. Adams, Department of Pathology, Duke University Medical Center, Durham, NC.

#39 3:30  Organophosphate Modulation of Macrophage Function. Kathleen E. Rodgers, Livingston Research Center, University of Southern California, Los Angeles, CA.

4:00  Discussion.

Symposium: Metal-Induced Alterations in Gene Expression

Chairperson: Carol T. Walsh, Boston University School of Medicine, Boston, MA.

Sponsored by the Metals Specialty Section

The purpose of this symposium is to present new findings on metal-induced alterations in gene expression and their significance to metal toxicity. The symposium will begin with a brief review of key regulatory components of gene expression including modifiers of DNA transcription and mRNA stability. An overview of known roles of essential metals such as zinc and iron and those of toxicological significance such as cadmium and mercury will be described. The regulatory DNA-binding proteins characterized by a zinc-containing region at the binding domain ("zinc finger-loop") will be explained. Current knowledge of the physiological significance of these proteins will be described. Hypotheses will be proposed for metal toxicity through interaction at the zinc-binding site. Findings on nickel-induced transformation of Chinese hamster embryo cells which suggest deletions of a tumor suppressor gene localized on the X chromosome will be presented. Approaches for chromosomal mapping of key sites in nickel-induced carcinogenesis will be described. Transcriptional induction by metals of the synthesis of metallothioneins, metal-binding proteins, will be discussed. Research will be presented, using yeast as a model eukaryotic system, which has demonstrated a regulatory gene encoding a metal-activated DNA-binding protein with a cysteine-rich metal-binding domain. Regulation by mercury in bacteria of the mer gene which codes for enzymes that detoxify the mercuric ion will be described. It will be explained how a mercuric ion interacts with the transcriptional activator protein MerR, which together produce a distortion in the DNA promoter site for the mer gene facilitating its transcription.

#40 1:30  Introduction. Carol T. Walsh, Boston University School of Medicine, Boston, MA.

#41 1:40  Zinc Finger-Loop Domains in Gene-Regulating Proteins as Potential Targets for Metal Toxicity. F. William Sunderman, Jr., University of Connecticut Medical School, Farmington, CT.

#42 2:15  Deletion of Heterochromatin and a Senescence/Tumor Suppressor Gene as a Mechanism of Nickel Carcinogenesis. Max Costa, New York University Medical Center, New York, NY.

#43 2:50  Regulation of Metallothionein Gene Expression in Man and Yeast. Michael Karin, University of California, San Diego School of Medicine, La Jolla, CA.
WEDNESDAY AFTERNOON, FEBRUARY 14
1:30 p.m. - 3:30 p.m.
BRITTANY ROOM

PLATFORM SESSION: ENVIRONMENTAL/AQUATIC TOXICOLOGY

Chairpersons: William L. Hayton, Washington, State University, Pullman, WA and Ronald S. Tjeerdema, University of California-Santa Cruz, Santa Cruz, CA.

#699 1:30  FLORIDA-RED TIDE TOXINS INDUCE AIRWAY SMOOTH MUSCLE DEPOLARIZATION. I S Richards, A P Kulkarni, and R Pierce. Department of Environmental and Occupational Health, College of Public Health, University of South Florida, Tampa, FL, the Mote Marine Laboratory, Sarasota, FL.

#700 1:45  SUBLETHAL EFFECTS OF PENTACHLOROPHENOL IN THE RED ABALONE AS MEASURED BY IN VIVO 31P NMR SPECTROSCOPY. B S Tjeerdema, T W M Fan, R M Higashi, and D G Crosby. *Aquatic Toxicology Prog., Institute of Marine Sciences, University of California, Santa Cruz, CA; Dept. of Environmental Toxicology, University of California, Davis, CA; and *University of California Bodega Marine Lab., Bodega Bay, CA.


#702 2:15  ERYTHROMYCIN PHARMACOKINETICS IN ADULT CHINOOK SALMON AFTER INTRA-AND EXTRA-VASCULAR INJECTION. W L Hayton, I R Schultz and C M Molfitt. Coll. of Pharmacy and Grad Pgm in Pharm/Tox, Washington St. Univ., Pullman, WA and Idaho Coop Fish and Wildlife Res. Unit, Univ. of Idaho, Moscow, ID.

#703 2:30  SCALING TRIFLURALIN TOXICOKINETICS FOR BODY SIZE IN RAINBOW TROUT. I R Schultz and W L Hayton. Pharmacology/Toxicology Program and College of Pharmacy, Washington State University, Pullman, WA.

#704 2:45  PRELIMINARY REPORT OF THE FINDINGS OF THE HEALTH EFFECTS FOR DENVER'S POTABLE REUSE DEMONSTRATION PROJECT. G Wolfe, B Myers, J J Lemen, T M Lauer, F Johns, L Condie, and J F Borzelleca. Hazleton Laboratories, Rockville, MD; Denver Water Department, Denver, CO; P R Arber, Assoc., Denver, CO; US Army Dugway, Stansbury park, UT; and Medical College of Virginia, Richmond, VA.

#705 3:00  EFFECT OF SUBCHRONIC DIELDRIN EXPOSURE ON THE FOOD INTAKE, GROWTH AND CONVERSION EFFICIENCY OF THE FISH CHANNA STRIATUS. W Galicka, N Varalakshmi, S Katte, and S R Reddy. Department of Zoology, Bangalore University, Bangalore, India. *Department of Zoology, University of Lodz, Lodz, Poland. Sponsor: H M Mehdendale.

#706 3:15  COMBINED EFFECTS OF SODIUM PENTACHLOROPHENATE AND QUANTITY OF FOOD ON THE FEEDING ENERGETICS OF THE CATFISH MYSTUS VITTATUS. G Belloxyapa and S R Reddy. Department of Zoology, Bangalore University, Bangalore, India. Sponsor: H M Mehdendale.

WEDNESDAY AFTERNOON, FEBRUARY 14
1:30 p.m. - 3:45 p.m.
CHAMPAGNE ROOM

PLATFORM SESSION: RENAL TOXICOLOGY

Chairpersons: Lois D. Lehman-McKeeman, The Procter & Gamble Company, Cincinnati, OH and William O. Berndt, University of Nebraska Medical Center, Omaha NE.


#708 1:45  PARATHYROID HORMONE AND ESTRADIOL REGULATE CADMIUM UPTAKE IN KIDNEY CELLS. J D Planagan and P A Friedman. Dept. Pharmacology & Toxicology, Dartmouth Medical School, Hanover, NH. Sponsor: R P Smith.


CAPTAFOL FUNGICIDE INDUCED HYALIN DROPLET NEPHROPATHY. WR Richter, J A MacGregor and R F Silveira, Chevron Environmental Health Center, Inc.

MALE RAT-SPECIFIC NEPHROTOXICITY RESULTING FROM EXPOSURE TO 3,5,5-TRIMETHYL-HEXANIC ACID (TMHA). L D Lehman-McKeeman, P A Rodriguez, D Caudill, M L Fey, C L Eddy and T N Asquith. Miami Valley Laboratories, Procter and Gamble Company, Cincinnati, OH.

EFFECT OF NEPHROTOXICANTS ON RENAL MEMBRANE TRANSPORT: IN VITRO STUDIES. R A Ansari and W Q Bemdt. Department of Pharmacology, College of Medicine, University of Nebraska Medical Center, Omaha, NE.

EFFECT OF NEPHROTOXICANTS ON RENAL MEMBRANE TRANSPORT: IN VIVO STUDIES. W Q Bemdt, R S Thakran and R A Ansari. Department of Pharmacology, College of Medicine, University of Nebraska Medical Center, Omaha, NE.

ACUTE NEPHROTOXICITY OF ACROLEIN-GLUTATHIONE ADDUCT IN THE MALE SPRAGUE-DAWLEY RAT. J Horvath, C Wimer and G Witc. Joint Graduate Program in Toxicology, Rutgers University and UMDNJ Robert Wood Johnson Medical School, Piscataway, NJ.

WEDNESDAY AFTERNOON, FEBRUARY 14
LE MANS ROOM

POSTER/DISCUSSION SESSION: CELL PROLIFERATION

Chairpersons: Matthew S. Bogdanoff, E.I. du Pont de Nemours & Co., Newark, DE and Byron E. Butterworth, CIIT, Research Triangle Park, NC.

Displayed 1:30 p.m.-4:00 p.m.
Discussion 2:30 p.m.-4:00 p.m.


WY-14643 DOSE-RESPONSE FOR INDUCTION OF HEPATIC PEROXISOMAL B-OXIDATION AND REPLICATIVE DNA SYNTHESIS IN MICE AND RATS. T L Lanier, D S Marsman, D M Hoover, N Wada, J A Popp and P L Ech. Toxicology Division, Lilly Research Laboratories, Eli Lilly and Company, Greenfield, IN and CIIT, Research Triangle Park, NC.

EFFECTS OF BARBITURATE COMPOUNDS ON HEPATIC AND RENAL CELL PROLIFERATION IN THE RAT. C M Weghorst, J A Hampton, and J E Klaunig. Department of Pathology, Medical College of Ohio, Toledo, OH.

CELL PROLIFERATION IN HEPATOCELLULAR LESIONS FROM DIETHYLNITROSAMINE (DENA) INITIATED INFANT B6C3F1 MICE FOLLOWING SHORT-TERM EXPOSURE TO ALPHA HEXACHLOROCYCLOHEXANE (HCH) OR PHENOBARBITAL (PB). J C Siglin, C M Weghorst, D E Rodwell, and J E Klaunig. Springborn Laboratories, Inc., Spencerville, OH and Dept. of Pathology, Medical College of Ohio, Toledo, OH.

INDUCTION OF CELL PROLIFERATION IN RAT AND MOUSE HEPATIC AND RENAL TISSUE FOLLOWING TREATMENT WITH GASOLINE. L D Schafer(1), J A Hartnett(1), J A Hampton(1), C M Weghorst(1), M J Olson(2), and J E Klaunig(1). (1) Dept. of Pathology, Medical College of Ohio, Toledo, OH and Biomedical Science Dept., (2) General Motors Tech Center, Warren, MI.

SUBCHRONIC INHALATION STUDY WITH VINYL FLUORIDE: EFFECTS ON HEPATIC CELL PROLIFERATION AND URINARY FLUORIDE EXCRETION. M S Bogdanoff, C R Kee, D P Kelly, MC Carakostas, and G P Sykes. Haskell Laboratory for Toxicology and Industrial Medicine, E I du Pont de Nemours and Co, Newark, DE.

CELL PROLIFERATION STUDIES IN RODENT HEPATOCYTES DURING 1,4-DICHLOROBENZENE ADMINISTRATION. S R Eldridge, L F Tilbury, H Randall, T I Goldsworthy, and B E Butterworth. CIIT, Research Triangle Park, NC.

THE HEPATIC CARCINOGEN 2,4-DIAMINOTOLUENE BUT NOT THE NONCARCINOGEN 2,6-DIAMINOTOLUENE INCREASES CELL PROLIFERATION IN THE RAT LIVER. M L Cunningham, R Maronpot, J Foley, and H B Matthews. NIEHS, Research Triangle Park, NC.

CELL PROLIFERATION IN RAT NASAL RESPIRATORY EPITHELIUM FOLLOWING THREE MONTHS EXPOSURE TO FORMALDEHYDE GAS. T M Monticello and K T Morgan. CIIT, Research Triangle Park, NC. Sponsor: J A Popp.

INDUCTION OF RENAL PAPILLARY NECROSIS IN THE RAT BY ETHOXYQUIN. G C Hard and G E Neal. Toxicology Unit, Medical Research Council, Carshalton, U.K. (Will not be presented in this session--will be presented in the Renal Toxicology session, Thursday morning.)
WEDNESDAY AFTERNOON, FEBRUARY 14
BORDEAUX ROOM
POSTER/DISCUSSION SESSION: PERIPHERAL NEUROPATHIES

Chairpersons: Doyle G. Graham, Duke University Medical Center, Durham, NC and Herbert E. Lowndes, Rutgers University, Piscataway, NJ.
Displayed 1:30 p.m.-4:00 p.m.
Discussion 2:30 p.m.-4:00 p.m.

ONE AND TWO-DIMENSIONAL ELECTROPHORESIS OF FAST AXONALLY-TRANSPORTED PROTEINS IN RAT NERVES FOLLOWING ACRYLAMIDE AND 2,5-HEXANEDIONE EXPOSURE. D W Sickle, Department of Anatomy, Medical College of Georgia, Augusta, GA.

COVALENT CROSSLINKING OF PROTEINS BY CARBON DISULFIDE. W M Valentine, V Amarnath, D C Anthony, and D G Graham. Dept. Pathology, Duke University Medical Center, Durham, NC.

ARE NEUROFILAMENTS THE CRITICAL SITE OF ACTION OF ACRYLAMIDE AND GAMMA-DIKETONES IN PRODUCING A PERIPHERAL NEUROPATHY? J K Pearson, D W Sickle, and A C Beall. Dept. of Anatomy, Medical College of Georgia, Augusta, GA.

PYRROLE-MEDIATED PROTEIN CROSSLINKING: TOWARD AN UNDERSTANDING OF THE MOLECULAR MECHANISM. D C Anthony, V Amarnath, and D G Graham. Dept. Pathology, Duke University Medical Center, Durham, NC.

KINETICS OF METHAMIDOPHOS INTERACTION WITH HUMAN AND HEN BRAIN ACETYLCHOLINESTERASE AND NEUROPATHY TARGET ESTERASE. M Lotti and S Carloli, Istituto di Medicina del Lavoro, Universita degli Studi di Padova, Padova, Italy.

PHENYL METHANESULPHONYL FLUORIDE PRECIPITATES DELAYED NEUROPATHY AFTER SINGLE NON-EFFECTIVE DOSES OF DISOPROPYLFLUOROPHOSPHATE IN HENS. S Carloli, E Capodicasa, A Moreto and M Lotti, Istituto di Medicina del Lavoro, Universita' degli Studi di Padova, Padova, Italy.

GLUCOSE 6-PHOSPHATE AND 6-PHOSPHOGLUCONATE DEHYDROGENASE ACTIVITIES IN DORSAL ROOT GANGLION IN ACRYLAMIDE NEUROPATHY. M A Philibert, F C Kaufman", D K Waters and H E Lowndes, Neurotoxicology Labs and *Cellular and Biochemical Toxicology Lab, Rutgers College of Pharmacy, Piscataway, NJ.

SUBACUTE NEUROPATHOLOGY OF ACRYLAMIDE. H E Lowndes, T L Roscoe and M A Philibert. Neurotoxicology Laboratories, Rutgers College of Pharmacy, Piscataway, NJ.


DIFFERENTIAL SUSCEPTIBILITY OF BIVERTER CERVICIS AND TIBIAL NERVES TO ORGANOPHOSPHATES INDUCING DELAYED NEUROPATHY IN HENS. H A N El-Fawal*, K Dyer, B S Jortner and M Ehriebr, Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA. (*NYU Medical Center, Institute of Environmental Medicine, Tuxedo, NY).

CHARACTERIZATION OF NEUROPATHY TARGET ESTERASE USING TRIFLUOROMETHYL KETONE TRANSITION STATE ANALOGS. T C Thomas, A Szekacs, S Rigas, B D Hammock, M G McNamee and B W Wilson. Dept. of Biochemistry and Biophysics, Avian Sciences, Entomology, and Environmental Toxicology, University of California, Davis, CA.

WEDNESDAY AFTERNOON, FEBRUARY 14
GRAND BALLROOM

POSTER SESSION: BIOTRANSFORMATION I

Chairperson: Jay M. Ansell, GAF Chemicals Corporation, Wayne, NJ.
Displayed: 1:30 p.m.-4:30 p.m.
Attended: 1:30 p.m.-3:00 p.m.

HEP G2: A MODEL FOR HORMONAL MODULATION OF ACTIVATION/DETOXICATION ENZYMES. S M Moore and C A Lamariniere. Dept. of Environmental Health Sciences, University of Alabama, Birmingham, AL.
HEPATIC METABOLISM AND TOXICITY OF TRANS-TRANS MUCONALDEHYDE. D Ross, P Holzner, and D R Peterson. Molecular and Environmental Health Sciences Program, University of Colorado, Boulder, CO.

METABOLISM OF 14C-TRIS(2-CHLOROETHYL) PHOSPHATE (TRCP) IN RATS AND MICE. J M Sanders, D W Herr, L T Burk, and H B Matthews. NIEHS, Research Triangle Park, NC.

IMMUNOHISTOCHEMICAL AND ENZYMATIC STUDIES OF THE FLAVIN-CONTAINING MONOOXYGENASE (FMO) IN MOUSE AND PIG SKIN. P E Levi, S A Inman, K Verkatesh, R Misra, E Hodgson, and N A Monterio-Riviere. Dept. of Toxicology, NC State Univ., College of Veterinary Medicine, NC State Univ., Raleigh, NC.

ENZYME KINETICS OF METHYLENE CHLORIDE; MFO AND GST ACTIVITIES IN FEMALE 86C33F1 MICE LIVER AND LUNG IN RELATION TO CHRONIC DOSING. R S Kerman, R A Sloane, M P McConan, R S Yang, C Ray, and R J Reitiz. NIEHS/NTD, Research Triangle Park, NC, ‘NSI, Research Triangle Park, NC, ‘Dow Chemical Company, Midland, Mi.

A COMPARISON OF 7-ETHOXYCOUMARIN (7-EC), 7-METHOXYCOUMARIN (7-MC) AND 7-HYDROXYCOUMARIN (7-HC) METABOLISM BY RABBIT AND HUMAN LIVER SLICES. J Barr, S Thohan, and G Sipes. Department of Pharmacology and Toxicology, University of Arizona, Tucson, AZ.

CHARACTERIZATION OF THE IN VITRO MICROSONAL METABOLISM OF METHACRYLONITRILE TO CYANIDE IN RAT LIVER. M Y H Faragui, R G Diz, R Cavazos, and A J Castillo. Dept. of Biology, The University of Texas Pan American, Edinburg, TX.

STRUCTURE-ACTIVITY RELATIONSHIPS IN THE HYDROLYSIS OF ACRYLATE AND METHACRYLATE ESTERS BY CARBOXYLESTERASE. T J McCarthy and G Witz. Joint Graduate Program in Toxicology, Rutgers University/UMDNJ-R W Johnson Medical School, Piscataway, NJ.

RATE AND ROUTE OF OXIDATION OF ACRYLIC ACID TO CARBON DIOXIDE. L Finch, C B Frederick, Rohm and Haas Co., Spring House, PA.

ABSORPTION, METABOLISM AND EXCRETION OF DIETHYLENE GLYCOL (DEG) IN RAT AND DOG. J M Mathews, M K Parker, H B Matthews, and A R Jettcoat. Research Triangle Institute and the National Institute of Environmental Health Sciences, Research Triangle Park, NC.

QUINIDINE INHIBITS IN VIVO METABOLISM OF AMPHETAMINE IN RATS. D F Moody and W Quangyuttikarn. Ctr. for Human Toxicol., Univ. of Utah, SL.

INHIBITION OF RAT AND MOUSE HEPATIC ALDEHYDE DEHYDROGENASE BY CITRAL. D R Peterson, C S Boyer, and D Y Mitchell. Molecular Toxicology and Environmental Health Sciences Program and Hepatobiliary Research Center, University of Colorado Health Sciences Center, Denver, CO.

GC/MS ASSAYS FOR THE DETERMINATION OF DEBRISOQUINE AND SPARTEINE METABOLITES IN MICROSOMAL FRACTIONS OF RAT LIVER. J Ho and D F Moody. Center for Human Toxicology, Univ. of Utah, Salt Lake City, UT.

THE METABOLISM OF ETHYLCYCLOHEXANE IN FISCHER 344 RATS. M P Serva, J Roberts, G A McDonald, M J Pannell, R M Mattie, C J Hixon, and K O Yu. Wright State University, Dayton OH and “H. G. Armstrong Aerospace Medical Research Laboratory, Wright-Patterson AFB, Dayton, OH.


EFFECT OF TRYPTOPHAN ISOMERS ON HEMATOCRIT AND FORMATE PRODUCTION IN MICE. A B Combs, M R Shafiee, and T Brian College of Pharmacy, University of Texas, Austin, TX.

ALTERATION OF CARBON TETRACHLORIDE (CCl4) HEPATOTOXICITY BY DIETARY FAT. C W Choi, 2 HJ Kim, 1 H W Jun, 1 K A Voss, 1 J V Bruker, and 1 A E Wade. College of Pharmacy, Kyungsung Univ., Busan, Korea, 1 Depts. of Pharmacol. & Toxicol. and 2Pharmaceutics, College of Pharmacy, 2Russell Research Center, Univ. of Georgia, Athens, GA.

INHIBITION AND INDUCTION OF METABOLISM OF ETHYLCARBAMATE (EC) BY ACETONE. N Kurata, F W Benz, H E Hurst, R A Kemper, and W J Waddell. Dept. of Pharmacology and Toxicology, University of Louisville, KY.


POTENTIATION OF BROMOBENZENE-INDUCED PNEUMOTOXICITY BY PHENOARBITRAL AS DETERMINED BY BRONCHOALVEOLAR LAVAGE FLUID ANALYSIS. B J Day, D A Page, and G P Carlson. Dept. of Pharmacol & Toxicol., Sch. of Pharmacy, Purdue Univ., W. Lafayette, IN.

AN EVALUATION OF THE METABOLISM OF 1-NITRO[14C]PYRENE BY RABBIT TRACHEAL EPITHELIAL CELLS: KINETIC ANALYSIS. L C King, E Hodgson and J Lewtas. U S Environmental Protection Agency, Research Triangle Park, NC; ‘Department of Toxicology, North Carolina State University, Raleigh, NC.
WEDNESDAY AFTERNOON, FEBRUARY 14
GRAND BALLROOM

POSTER SESSION: CARCINOGENESIS II

Chairperson: Sandra M. Baksi, U.S. EPA, Narragansett, RI.
Displayed: 1:30 p.m.-4:30 p.m.
Attended: 1:30 p.m.-3:00 p.m.

#759  INDUCTION OF NEUROENDOCRINE LUNG TUMORS IN HAMSTERS. H. P. Witschi and H. M. Schuller, University of California, Davis, CA and University of Tennessee, Knoxville, TN.

#760  INDUCTION OF ORNITHINE DECARBOXYLASE ACTIVITY BY 4,4'-METHYLENE-BIS(2-CHLOROANILINE) [Moca] in the Rat. W. W. Weigel and R. E. Savage, Jr., NIOSH, DBBS, ETB, BTS, Cincinnati, OH.

#761  DEVELOPMENT OF NEUROENDOCRINE LUNG TUMORS IN HAMSTERS EXPOSED TO DIETHYLNITROSAMINE AND OZONE. H. M. Schuller and H. P. Witschi, University of Tennessee, Knoxville, TN and University of California, Davis, CA.

#762  ACUTE EFFECTS OF THE BOWMAN-BIRK PROTEASE INHIBITOR IN MICE. V. Orrego and H. P. Witschi, Toxics Program, University of California, Davis, CA.

#763  EFFECT OF B-NAPHTHOFLAVONE ON N-NITROSO-ETHYLUREA-INITIATED LUNG TUMORS IN MICE. L. M. Anderson and A. B. Jones, Laboratory of Comparative Carcinogenesis, National Cancer Institute, Frederick, MD.

#764  PULMONARY NEOPLASIA AND NASAL IRRITATION FROM INHALATION OF TETRANITROMETHANE. J. R. Bucher, M. Jokinen, J. Cholakis. National Toxicology Program, Research Triangle Park, NC and *MRI, Kansas City, MO.


#766  INVESTIGATION OF A HORMONALLY-MEDIATED MECHANISM FOR IN L5300-INDUCED MAMMARY TUMORS IN FEMALE RATS. J. C. Cook, L. Murray, and R. C. Rhea, I. D. Pont de Nemours & Co., Haskell Laboratory for Toxicology and Industrial Medicine, Newark, DE.

#767  INVESTIGATION OF A HORMONALLY-MEDIATED MECHANISM FOR AMMONIUM PERFLUORO-OCTANOATE (C8) INDUCED LEYDIG CELL ADENOMAS. M. E. Hurtt, S. M. Murray, S. R. Frame and J. C. Cook, I. D. Pont de Nemours and Co., Haskell Laboratory for Toxicology and Industrial Medicine, Newark, DE.


#769  4,4'-METHYLENE-BIS(2-CHLOROANILINE) BINDING TO CYTOSOLIC PROTEINS IN RAT TARGET AND NON-TARGET TISSUES. D. A. Dankovic, R. E. Savage, K. L. Cheever, and T. Swearengen. NIOSH, DBBS, ETB, BTS, Cincinnati, OH.


#771  N-NITROSOPROLINE (NPRO) EXCRETION IN RURAL NEBRASKANS DRINKING HIGH-NITRATE (NO3) WATER. S. S. Minnich, A. Grandjean, S. Fikes, T. Maynard, L. Jones and S. Rosinsky. Epplinly Res. Cancer, Univ. of Neb. Med. Ctr., and Swanson Center Nutr., Omaha, NE.

#772  POLYCYCLIC AROMATIC HYDROCARBONS MAY INITIATE CARCINOGENESIS PRIOR TO A GENETIC EVENT. J. Alan Brench. Private Consultant, Hialeah, FL.


DERMAL TOXICITY AND CARCINOGENICITY OF 4-VINYL-1-CYCLOHEXENE DIEPOXIDE IN RATS AND MICE. R S Chhabra, J E Huff, J Haseman, M P Jokinen, and M Hetman. NIEHS, Research Triangle Park, NC, and Battelle Memorial Institute, Columbus, OH.


RELATIONSHIP BETWEEN IN VIVO RELAXATION OF THE COSTO-UTERINE SMOOTH MUSCLE (COSM) AND MESOVARIAL LIOMYOMA FORMATION IN VIVO. W E Colbert, B F Wilson, G D Williams, and P D Williams. Tox. Div., LRL, Eli Lilly and Company, Greenfield, IN.

PEROXIDASE-MEDIATED METABOLISM OF 4-AMINOBIPHENYL (4-ABP). M F Hughes and T E Eling. Laboratory of Molecular Biophysics, NIEHS, Research Triangle Park, NC 27709.

WEDNESDAY AFTERNOON, FEBRUARY 14
GRAND BALLROOM

POSTER SESSION: GLUTATHIONE

Chairperson: Nabil M. Elsayed, Letterman Army Institute of Research, Presidio of San Francisco, CA.

Displayed: 1:30 p.m.-4:00 p.m.
Attended: 1:30 p.m.-3:00 p.m.

ROLE OF GLUTATHIONE IN ORGANOPHOSPHORUS INSECTICIDE TOXICITY. J S Boone, H W Chambers and J E Chambers. Dept. Biol. Sciences, Miss. State University, Mississippi State, MS.

EFFECTS OF AT-125 ON THE HEPATOTOXICITY AND BIOLOGIC FATE OF 1,1-DICHLORO-ETHYLENE (DCE). M T Molelen, A K Haque, and M F Kanz. Department of Pathology, University of Texas Medical Branch, Galveston, TX.

GLUTATHIONE, y-GLUTAMYL TRANSEPTIDEASE AND THE MERCAPTOACIDIC PATHWAY AS MODULATORS OF QUINOL OXIDATION. T J Monks and S S Lau. Div. of Pharmacology and Toxicology, College of Pharmacy, University of Texas at Austin, TX.

KINETICS OF THE y-GLUTAMYL TRANSEPTIDEASE CATALYZED HYDROLYSIS AND TRANSPEPTIDATION OF ISOMERIC 2-BROMO-(GLUTATHION-S-YL)-HYDROQUINONES. H H Lo, T J Monks, and S S Lau. Division of Pharmacology and Toxicology, College of Pharmacy, The University of Texas at Austin, TX.

DIFFERENCES IN THE RENAL PROXIMAL TUBULAR NECROSIS CAUSED BY GLUTATHIONE AND N-ACETYLCYSSTEINE CONJUGATES OF 1,4-NAPHTHOQUINONE AND MENADIONE. S S Lau, T W Jones, R A Hill, R J Hight and T J Monks. Division of Pharmacol. and Toxicol., College of Pharmacy, The Univ. of Texas at Austin, TX, Univ. of MD School of Medicine, Baltimore, MD, and NHLBI, NIH, Bethesda, MD.


IN VITRO METABOLISM OF 1,2-DIHALOETHANES TO GLUTATHIONE-CONTAINING METABOLITES. P A Jean and D J Reed. Dept. Biochem. & Biophysics, Oregon State Univ., Corvallis, OR.

THE MOMENT OF GLUTATHIONE (GSH) REPLETION MODULATES 1,2-DIBROMOETHANE (DBE) TOXICITY. J R Wouters and J Brodeur. Dep. Med. du Travail et Hyg. du Milieu, Fac. Medecine, Univ. de Montreal, Montreal, Canada.

ANETHOL DITHIOLTHEO (ADT) PROTECTS AGAINST HEXACHLORO-1,3-BUTADIENE (HDBD) NEPHROTOXICITY. L Bouthiller and J Brodeur. Dep. Med. du Travail et Hyg. du Milieu, Fac. Medecine, Univ. de Montreal, Montreal, Canada.
#794 FORMATION AND EXCRETION OF THE GLUTATHIONE S-CONJUGATE OF HEXACHLOROBUTADIENE IN THE PERFUSED RAT LIVER. Y S Giel and W M Andersen. Dept Pharmacology, University of Rochester, Rochester NY.

#795 CONJUGATION OF ACRYLONITRILE (ACN) AND 2-CYANOETHYLENE OXIDE (CEO) WITH GLUTATHIONE (GSH). G L Kedderis, R Barra, S C J Sumner, and M J Turner, Jr. CIIT, Research Triangle Park, NC.

#796 SUBSTRATE-SPECIFIC INHIBITION OF RAT LIVER CYTOSOLIC GLUTATHIONE S-TRANSFERASE ISOENZYMES (GST) BY CHALCONE. K D Michelson and P L Eaton. Department of Environmental Health, University of Washington, Seattle, WA.

#797 METHYL ISOCYANATE BIOTRANSFORMATION IN RATS: IDENTIFICATION OF REACTIVE GLUTATHIONE-DERIVED METABOLITES IN BILE AND URINE. J G Slatter, M S Rashed, P G Pearson, D H Han and T A Baille, Dept. of Medicinal Chemistry. School of Pharmacy, University of Washington, Seattle, WA. Sponsor: S L Nelson.

#798 POTENTIATION OF ACETAMINOPHEN HEPATOTOXICITY BY PHENYLPROPANOLAMINE. S M Roberts, R G James, and R D Harrison. Center for Environmental Toxicology, University of Florida, Gainesville, FL.

WEDNESDAY AFTERNOON, FEBRUARY 14
FONTAINEBLEAU BALLROOM D

POSTER SESSION: INHALATION TOXICOLOGY

Chairperson: Kevin E. Driscoll, Procter & Gamble Company, Cincinnati, OH.
Displayed: 1:30 p.m.-4:00 p.m.
Attended: 1:30 p.m.-3:00 p.m.

#799 A 13-WEEK INHALATION STUDY OF TWO LINEAR POLYCARBOXYLATES IN RATS. P J Hakkinen. The Procter & Gamble Company, Cincinnati, OH.

#800 INHALATION COMPARISON IN RATS OF MENTHOL CIGARETTES WHICH BURN OR WHICH ONLY HEAT TOBACCO. C R E Coggins, A T Mosesberg, P H Ayres, J W Sagantz, G T Burger, and A W Hayes. R J. Reynolds Tobacco Co., Winston-Salem, NC and Veritas, Burlington, NC.

#801 SUBCHRONIC ORAL TOXICITY STUDY OF DIMETHYL-2,6-NAPHTHALENECARBOXYLATE (DM-2, 6-NDC) IN RATS. W D Johnson, N S Hatum, J P Ehrlich and J D Jerrigan. ITT Research Institute and Amoco Corporation, Chicago, IL.

#802 LONG-TERM INHALATION STUDY OF TEST TONER IN HAMSTERS. R Mermelstein, O Creutzenberg, C Dassenbrook, R Klipper, P Morrow, and H Muhe. Corporate Environmental Health & Safety, Xerox Corporation, Rochester, NY; 1Fraunhofer Institute for Toxicology, Hannover, FRG; 2University of Rochester, Rochester, NY.

#803 LACK OF INJURY TO RAT LUNG FOLLOWING REPEATED EXPOSURE TO AN AEROSOL OF 970 MOLECULAR WEIGHT (MW) ETHYLENE OXIDE/PROPYLENE OXIDE (EO/PO) RANDOM COPOLYMER. T R Tyler, D R Kline, L J Dood and P E Losco. 'Union Carbide Corp., Danbury, CT and Bushy Run Research Center, Export, PA.

#804 PULMONARY CLEARANCE AND RETENTION OF TEST TONER, TIO2 AND QUARTZ DURING A LONG-TERM INHALATION STUDY IN HAMSTERS. H Muhe, B Beilmann, O Creutzenberg, R Klipper, P Morrow, and R Mermelstein. Corporate Environmental Health & Safety, Xerox Corporation, Rochester, NY; 1Fraunhofer Institute for Toxicology, Hannover FRG; 2University of Rochester, Rochester, NY.

#805 ACUTE TOXICITY AND PULMONARY PATHOLOGY FROM SELECTED POLYALKYLENE GLYCOLS FOLLOWING ENDOTRACHEAL ADMINISTRATION TO RATS. R C Myers, S M Christopher, P E Losco, and T R Tyler. Bushy Run Research Center/Union Carbide Chemicals and Plastics Company, Inc., Export, PA; 1Union Carbide Corp., Danbury, CT.

#806 PULMONARY RESPONSE TO LUDOX® COLLOIDAL SILICA INHALATION EXPOSURE IN RATS. D P Kelly and K P Lee. E L du Pont de Nemours and Co., Haskell Laboratory for Toxicology and Industrial Medicine, Newark, DE.


#808 PULMONARY AUTO RADILOGIC AND BIOCHEMICAL RESPONSES IN RATS FOLLOWING SUBCHRONIC INHALATION EXPOSURES TO LUDOX® COLLOIDAL SILICA. B D Warden, L Achinko, M A Hartsky, and M C Carakostas. Du Pont Haskell Lab., Newark, DE.

#809 ACUTE INHALATION OF PERFLUOROISOBUTYLENE: CONCENTRATION-RESPONSE KINETICS. D M Stavert, D Archuleta, G Wood, M J Behr, B F Lehnert. Los Alamos National Laboratory, Los Alamos, NM.
A RISK ASSESSMENT FOR CRUDE OIL IN RESIDENTIAL SURFACE SOILS. C J Miller, M J Sullivan, S R Custance. Enviologic Data, Inc., Ventura, CA. (Will also be displayed and attended at the Dermal/Ocular Toxicology poster session, Wednesday morning.)

FREE CELL RESPONSE AND LAVAGE FLUID BIOCHEMICAL CHANGES FOLLOWING ACUTE EXPOSURES TO PERFLUOROISOBUTYLENE. L R Gurley, J E London, Y E Valdez, N M Lehner, D M Stavert, B E Lehner. Los Alamos National Laboratory, Los Alamos, NM.

TOXICITY ASSOCIATED WITH CHEMICAL COMPONENT CLASSES OF REFINERY STREAMS. M H Feuston, C R Mackser, and M A Mahlman. Mobil Oil Corporation, Princeton, NJ. (Will also be displayed and attended at the Risk Assessment poster session, Friday morning.)

ELECTRON MICROSCOPIC STUDY OF PERFLUOROISOBUTYLENE-INDUCED ACUTE LUNG INJURY. R Sebring, D M Stavert, B E Lehner. Los Alamos National Laboratory, Los Alamos, NM.


THE EFFECTS OF META-TETRAMETHYLYXYLENE DIISOCYANATE (m-TMXYD) VAPOR ON RESPIRATORY RATE AND TIDAL VOLUME OF SWISS-WEBSTER MICE AND SPRAIGE-DAWLEY RATS. H D Burleigh-Flayer, D E Dodd, and M A Friedman*. R A Davis*. Bushy Run Research Center, Export, PA and American Cyanamid Co., Wayne, NJ.

PATHOLOGIC RESPONSES TO HF, HBL, AND HC INHALED BY PSEUDO-MOUTH BREATHING AND NOSE BREATHING RATS. D Archuleta, D M Stavert, M J Behr, B E Lehner. Los Alamos National Laboratory, Los Alamos, NM.

SUBCHRONIC TOXICITY OF FREON HCFC-123 IN RATS. L Angevine Mailey, H J Tachymowicz, G M Rusch, M C Carakostas and J F Hansen. E l du Pont de Nemours and Co, Inc. Haskell Laboratory for Toxicology and Industrial Medicine, Newark, DE and Allied-Signal Co, Morrisown, NJ.


WEDNESDAY AFTERNOON, FEBRUARY 14
FONTAINEBLEAU BALLROOM D

POSTER SESSION: RESPIRATORY PHYSIOLOGY

Chairperson: Bruce J. Keiman, Battelle Pacific Northwest Laboratories, Richland, WA.

Displayed: 1:30 p.m.-4:00 p.m.
Attended: 1:30 p.m.-3:00 p.m.

DOES PREVIOUS EXPOSURE TO SULFURIC ACID SENSITIZE GUINEA PIGS TO THE PULMONARY EFFECTS OF OZONE? L C Chen, H E Lam, P D Miller, W Y Su, T Gordon, and M D Amour. Institute of Environ. Medicine, NYU Medical Center, Tuxedo, NY.

RESPIRATORY PHYSIOLOGY ALTERATIONS ASSOCIATED WITH THE INHALATION OF TRIMELITIC ANHYDRIDE. C L Leach, N S Hatoum, and P J Garvin. IIT Research Institute and Amoco Corporation, Chicago, IL.

PERFORMANCE OF GUINEA PIGS AT EXERCISE FOLLOWING EXPOSURE TO PARAQUAT AEROSOLS. M Nwasaki and Y Alarie. University of Pittsburgh, Pittsburgh, PA.

VENTILATORY RESPONSES OF SPRAGUE-DAWLEY RATS TO INHALATION OF THE NONIONIC DETERGENT TRITON-X 100. M E Walker, C Kotzer, and D J Murphy. SK&F Labs., Dept. of Investigative Toxicology, King of Prussia, PA.
WEDNESDAY AFTERNOON, FEBRUARY 14
FONTAINEBLEAU BALLROOM D

POSTER SESSION: REPRODUCTIVE TOXICOLOGY

Displayed: 1:30 p.m.-3:00 p.m.
Attended: 1:30 p.m.-3:00 p.m.

#831 A TWO-GENERATION REPRODUCTION STUDY IN RATS WITH ALKALYATE 215. B E Schroeder, Bio/Dynamics, Inc., East Millstone, NJ; E C Robinson, Monsanto Compn., St. Louis, MO.
#833 REPRODUCTIVE TOXICITY OF TRICHLOROETHYLENE (TCE) IN MOUSE AND RAT BREEDING PAIRS. J D George, J B Reel, C B Myers, J C Lamb, Jr., and J J Heindel. Research Triangle Institute and National Toxicology Program, NIH, RTP, NC.
#834 REPRODUCTIVE TOXICITY OF NITROBENZOCIC ACIDS IN SWISS CD-1 MICE. E Hope, D K Gulati, and B E Chapin*. Environmental Health Research and Testing, Inc., Lexington, KY and National Toxicology Programs, NIH, RTP, NC.
#835 DISPOSITION OF LITHIUM IN PREGNANT AND NON PREGNANT RATS. H S Butter and S A Qureshi. Bureau of Drug Research, Health Protection Branch, Ottawa, Canada.
#839 SENSITIVITY OF THE PERI-FERTILIZATION PERIOD: EFFECTS OF A SINGLE DOSE OF METHYL BENZIMIDAZOLE CARBAMATE (MBC) ON PREGNANCY OUTCOME IN HAMSTERS. S D Perreault, S Jeffay and P Poss. USEPA, HERL, RTB and NSI, RTP, NC. Sponsor: L E Gray.
#840 WHOLE OVARY CULTURE AS AN IN VITRO ASSESSMENT OF IN VIVO TOXICANT EXPOSURE AFFECTING OVARIAN STEROIDGENESIS. E Berman, J W Laskey, H Carter and J Ferrell. Reproductive Toxicology Branch, USEPA, RTP, NC. Sponsor: L E Gray, Jr.
PROTECTION AGAINST 2-METHOXYETHANOL (ME) INDUCED TESTICULAR TOXICITY BY CALCIUM CHANNEL BLOCKERS. B.I. Ghahery and R.E. Chapin. NIH/National Institute of Environmental Health Sciences/National Toxicology Program, Research Triangle Park, NC.


ETHYLENE DIBROMIDE (EDB): COMPARISON OF RABBIT AND HUMAN SEMINAL CHARACTERISTICS. J. Williams, B.C. Gladen, R.E. Chapin and S.M. Schrader*. National Toxicology Program, NIEHS, Research Triangle Park, NC; and *NIOSH, Cincinnati, OH.


THE EFFECTS OF THEOBROMINE(TB) AND COCOA EXTRACTS(CE) ON REPRODUCTIVE TISSUES OF MALE RATS. Y. Wang, A.P. Sinha Hakim, L. D. Russell and D. P. Waller. Department of Pharmacodynamics and Pharmacops, Univ. of IL at Chicago, Chicago, IL, and Dept. of Physiology, Southern IL Univ., Carbondale, IL.


SERTOLI CELL MEDIATED FE-TRANSFERRIN ENDOCYTOSIS IS NOT MICROTOUBLE DEPENDENT AND DOES NOT DECREASE DURING 2,5-HEXANDIONE EXPOSURE. K. Boekelheide and S. Hall. Dept. Pathol. & Lab. Medicine, Brown University, Providence, RI.


WEDNESDAY AFTERNOON, FEBRUARY 14
FONTAINEBLEAU BALLROOM D

POSTER SESSION: TOXICOKINETICS

Chairperson: Gulam Ahmad Shakeel Ansari, University of Texas Medical Branch, Galveston, TX

Displayed: 1:30 p.m.-4:00 p.m.

Attended: 1:30 p.m.-3:30 p.m.


#857 METABOLISM OF TRICHLOROETHYLENE IN MALE AND FEMALE B6C3F1 MICE. J W Fisher, M L Gargas* and M E Andersen*. Toxic Hazards Division, Hazard Assessment Branch, WPAFB, OH, "Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

#858 PHARMACOKINETIC MODELING OF METABOLISM OF TRICHLOROETHYLENE. J L Larson, W L Hayton, and R J Bull. Pharmacology/Toxicology Graduate Program, College of Pharmacy, Washington State University, Pullman, WA.

#859 DEVELOPMENT OF A PHYSIOLOGICALLY-BASED MODEL FOR INCORPORATION OF LEAD INTO THE RAT FETUS DURING GESTATION. E J O'Flaherty. Department of Environmental Health, University of Cincinnati, Cincinnati, OH.


#861 DISPOSITION OF INHALED ISOPRENE IN B6C3F1 MICE. R E Henderson, J A Bond, W E Bechtold, J D Sun, L S Simbaum*, A R Dahl, and M A Medinsky. Inhalation Toxicology Research Institute, Albuquerque, NM, *NIH, Research Triangle Park, NC.

#862 A PHYSIOLOGICALLY BASED PHARMACOKINETIC (PB-PK) MODEL FOR NICOTINE IN THE RAT. J D deBethizy and M E Andersen. RJ Reynolds Tobacco Co., Winston-Salem, NC; Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

#863 A PHYSIOLOGICALLY BASED PHARMACOKINETIC (PBPK) MODEL FOR ACRYLONITRILE (ACN) IN THE RAT. M L Gargas, G L Reddick, T R Fennell, and M E Andersen. CIIT, Research Triangle Park, NC.


#866 TOXICOKINETICS OF 14C-SALGENIN CYCLIC-0-TOLYL PHOSPHATE (SCOTP) IN MALE F-344 RATS. R E Chapin and L T Burke. Systemic Toxicology Branch, NIHES, Research Triangle Park, NC.

#867 KINETICS OF WR 249,655 (HI-6) IN BEAGLE DOGS AFTER IV, PO AND IM ADMINISTRATION. H Chung*, A Buckpit*, J D Baggot*, D Johnson*, P Brennan* and M Goldman*. *Walter Reed Army Institute of Research, Washington, DC and "School of Veterinary Medicine, UC Davis, Davis, CA.


#869 PHYSIOLOGICAL MODELS OF GASTROINTESTINAL ABSORPTION AND EXCRETION OF CHEMICALS CARRIED BY LIPIDS. W L Roth, R A Freeman, A G E Wilson. Monsanto Company, Environmental Health Laboratory, St. Louis, MO.

#870 TOXICOKINETICS AND METABOLISM OF PALMITOYL-PENTACHLOROPHENOL IN RATS. B S Kaphalia and G A Ansari. Dept. of Pathology, The University of Texas Medical Branch, Galveston, TX.


#872 PHARMACOKINETICS AND ORAL BIOAVAILABILITY OF SOIL-ADSORBED BENZO( A)PYRENE (BaP) IN RATS. D Goon, N S Hatoum, J D Jarnigan, S L Schmitt and P J Garvin. ITT Research Institute and Amoco Corporation, Chicago, IL.

#873 PHARMACOKINETICS, METABOLISM AND DISTRIBUTION OF MICROCYSTIN (Lr) IN THE RAT. J G Pace, N A Robinson, G A Milra, T G Lynchard C B Templeton, US Army Medical Research Institute of Infectious Diseases, Frederick, MD. Sponsor: B W Wannamacher, Jr.

#874 DE NOVO SYNTHESIS AND PHARMACOKINETIC (PK) STUDIES OF URETHANE (U) IN EXPERIMENTAL RATS. P Lee. DHHS, FDA, CFSA, General and Molecular Toxicology, Washington, DC.

#875 THEOPHYLLINE PHARMACOKINETICS IN THE F-344 RAT: COMPARISON OF SINGLE AND MULTIPLE ORAL DOES. K I Mackenzie, D E Carter and L G Sipes. Department of Pharmacology and Toxicology, University of Arizona, Tucson, AZ.

WEDNESDAY, FEBRUARY 14
4:00 p.m.-5:30 p.m.
FONTAINE ROOM

SOT ANNUAL BUSINESS MEETING

Chaired by SOT President Roger O. McClellan, DVM
Open to SOT members only.

WEDNESDAY, FEBRUARY 14
4:30 p.m.-6:30 p.m.

FORUM FOR NEW INVESTIGATORS

Chairperson: Marion Ehrich, Chairperson, SOT Education Committee.

The SOT Education Committee sponsors this forum for new investigators seeking funds for research and training. The panel will include representatives from SOT, NIH, USAF, and private agencies. Each will briefly describe areas of emphasis and respond to questions from the audience.

Presenters and Panel Members: Stephen Safe, SOT Education Committee; Chris Shorlavor, NIEHS; Fred Marozzi, Toxicology Study Section, NIH; Lt. Col. Janette Cerveny, USAF; Jim Wilson, AIHC; John Frazier, CAAT; Monica Valencovic, Marshall University School of Medicine; Charles Ruegg, Duke University.

WEDNESDAY, FEBRUARY 14
5:30 p.m.-7:00 p.m.

REGIONAL CHAPTER MEETINGS

Many SOT Regional Chapters will be sponsoring meetings and/or receptions at this time. Please check the hotel lobby board for room assignments.

WEDNESDAY, FEBRUARY 14
7:00 p.m.-10:00 p.m.
FONTAINE ROOM

SOT ANNUAL BANQUET AND AWARDS PRESENTATION

Tickets are $32.00 per person. Meeting registrants may sponsor and prepay for tables of 10. Registrants who purchase a table are able to choose their seating arrangement prior to the Banquet by stopping by the SOT headquarters office at the Fontainebleau. Requests will be honored on a first-come, first-served basis. Sorry, no refunds or exchanges.

THURSDAY MORNING, FEBRUARY 15
8:30 a.m.-11:30 a.m.
FONTAINEBLEAU BALLROOM A

SYMPOSIUM: MECHANISMS OF HYPOXIC CELL INJURY

Chairperson: James P. Kehrer, University of Texas College of Pharmacy, Austin, TX.

Hypoxic or ischemic tissue injury plays a major role in human pathology. This symposium will focus on some of the changes that occur in hypoxic cells and intact tissues which are currently believed to play a role in the mechanism of cellular injury and death. The most obvious and rapid change in hypoxia is the loss of ATP. Mitochondrial dysfunction appears to be a critical factor leading to hypoxic injury. This dysfunction is heterogeneous, depending on regional oxygen availability, cell type, degree of differentiation and demand. In general, cells which have a relatively low density of mitochondria (such as fetal and transformed cells) can respond effectively at O2 concentrations lower than those required for normal adult cells. However, all cells after various functions during anoxia in order to preserve mitochondrial protonotive force. These changes involve a loss of tissue homeostasis which may mimic damage as well as increase the cell's susceptibility to xenobiotic-induced injury. ATP depletion is a necessary but insufficient event preceding cell death. Other changes which have been observed during hypoxia include activation of plasma membrane bound phospholipase, increased membrane fluidity, increased permeability of the plasma membrane, rupture of surface blebs, increased cytosolic calcium, decreased mitochondrial potentials and decreased cytosolic pH. The relative importance of these changes in cell death has not been established. Recent evidence has suggested that intracellular acidosis suppresses the degradative processes activated by hypoxic and toxic injury. Restoration of normal pH accelerates cell killing by removing this inhibition suggesting cellular pH changes may be involved in reperfusion injury. The extensive regulatory role of calcium has focussed a great deal of attention on this cation as a mediator of hypoxic injury. However, increases in intracellular calcium during hypoxia do not correlate with the activation of phospholipase A and may more important in mediating the cell injury evident at reperfusion. The generation of reactive oxygen species has been demonstrated in reperfused tissues and also postulated to be involved in some of the changes observed during hypoxia. Studies using isolated-perfused liver do not support this postulate. However, work in isolated-perfused heart tissue has revealed changed during hypoxia con-
sistent with oxidative stress. Model and/or tissue related differences clearly are important considerations in studies on hypoxic injury. Decreased mitochondrial function appears to be central to the development of hypoxia-induced damage since there is no evidence that cells whose ATP content is not seriously depleted undergo hypoxic injury. The loss of ATP leads to ionic imbalances and the activation of various degradative processes which ultimately kill the cell. However, the specific degradative pathway which is the critical determinant of cell death remains unknown.

#45 8:30 Introduction. James P. Kehrer, University of Texas, Austin, TX.

#46 8:40 Mitochondrial Function During Hypoxia. Dean P. Jones, Emory University School of Medicine, Atlanta, GA.

#47 9:15 Digitized Videomicroscopy of Hypoxic Cell Injury: The Role of Intracellular pH. John J. Lemasters, University of North Carolina School of Medicine, Chapel Hill, NC.


#49 10:25 Oxidative Stress During Hypoxia in Isolated-Perfused Liver Tissue. Hartmut Jaeschke, Baylor College of Medicine, Houston, TX and Jerry R. Mitchell, The Upjohn Company, Kalamazoo, MI.

11:00 Discussion.

THURSDAY MORNING, FEBRUARY 15
8:30 a.m.-11:30 a.m.
FONTAINEBLEAU BALLROOM B

SYMPOSIUM: TRANSPLEMENTAL TRANSPORT OF TOXIC METALS AND FETAL EFFECTS

Chairperson: Robert A. Goyer, University of Western Ontario, London, ONT.

Sponsored by the Metals Specialty Section

With increasing knowledge of potential health effects of metals during fetal life there is a need for better understanding of the role of the placenta in the transfer of toxic metals from mother to fetus. There is also a need to identify factors which influence or modify fetal toxicity.

The papers in this symposium concern placental transport and fetal effects of three toxic metals, lead, cadmium and mercury. When the three metals are compared it becomes evident that the mechanisms for placental transport for each of the metals is different. For lead and cadmium there is a close association with the transfer of an essential metal, lead with calcium and cadmium with zinc. The pathogenesis of the fetal effects differ. Whereas fetal exposure to lead and mercury is responsible for the observed fetal toxicities, lead and mercury are CNS toxins but the mechanisms responsible for toxicity and, perhaps, potential for reversibility, differ. Cadmium may reduce birth weight by indirectly depriving the fetus of the essential trace metal zinc. And finally, metal toxicity may be modified by binding with specific proteins. Most is known about metallothionein but the mechanism for selective retention of cadmium and enhancement of zinc and copper transport is not known. Less is known about the lead inclusion body protein but there is some indication it may not be available in utero to sequester lead. Whether mercury forms protein complexes is not known.


#51 8:40 Biokinetics of Lead During Pregnancy. Kathryn R. Mahaffey, National Institute of Environmental Health Sciences, Research Triangle Park, NC.

#52 9:15 Human Fetal Lead Exposure: Intrauterine Growth, Maturation and Postnatal Neurobehavioral Development. Kim N. Dietrich, University of Cincinnati, Cincinnati, OH.


11:00 Discussion.

THURSDAY MORNING, FEBRUARY 15
8:30 a.m.-11:15 a.m.
BRITTANY ROOM

PLATFORM SESSION: IMMUNOTOXICOLOGY

Chairpersons: Donald E. Gardner, Northrop Services, Inc., Research Triangle Park, NC and Joel B. Cornacoff, Sterling Winthrop Research Institute, Rensselaer, NY.

#577 8:30 LACK OF IgE ANTIBODY TO CHLORHEXIDINE IN EXPOSED POPULATIONS. D.A. McMillan, J B Lucas and J Stotts. The Procter & Gamble Company, Cincinnati, OH.
SUPPRESSION OF INTERLEUKIN 2 (IL-2) ENHANCEMENT OF HUMAN NATURAL KILLER (NK) CELL ACTIVITY BY CARBARYL (CA). 1 G P Casale, 1 S Bavari, 2 R E Gold and 2 E F Vitzhum. Univ. of Nebraska Medical Center, 1 College of Pharmacy, Omaha, NE and 2The Institute of Agriculture and Natural Resources, Univ. of Nebraska, Lincoln, NE.

LOCAL GUT-ASSOCIATED IMMUNITY IS MORE SENSITIVE TO SUPPRESSION BY 7, 12-DIMETHYLBENZ(A)ANTHRACENE (DMBA) GIVEN ORALLY THAN IS SPLENIC IMMUNITY IN MICE. S W Burchiel and M P Gomez. The University of New Mexico, College of Pharmacy, Toxicology Program, Albuquerque, NM.

ALTERED LYMPHOCYTE PHENOTYPE AND FUNCTIONAL PATTERNS IN HUMANS EXPOSED TO CHLORDANE. P R McConachie and A C Zahnisky. Memorial Medical Center, Springfield, IL, and Immunox Research, Edwardsville, IL. Sponsor: S M Soman.

EFFECTS OF POLYCHLORINATED DIPHENYL ETHERS ON THE ANTIGEN-STIMULATED PLAQUE-FORMING CELL (PFC) RESPONSE IN C57BL/6 MICE. L Howe, R Dickerson, D Davis and S Saha. Department of Veterinary Physiology and Pharmacology Biochemistry & Biochemistry & Biophysics, Texas A&M University, College Station, TX.


FALSE POSITIVE INDICATION BY ELISA OF ANTIBODIES TO SERUM ALBUMIN FOLLOWING EXPOSURE TO GUINEA PIGS TO TOULENEDIISOCYANATE (TDI). M H Karol and R Jin. Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA.

LATE-ONSET PULMONARY RESPONSES IN GUINEA PIGS SENSITIZED BY INHALATION OF -DIPHENYL METHANE, 4,4'-DIISOCYANATE (MDI). D Griffiths-Johnson, K Spear, R Jin and M H Karol. Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA.

LYMPHOCYTE CELL SURFACE MARKERS AS INDICATORS OF AN ALLERGIC CONTACT HYPERSENSITIVITY RESPONSE. M L Stern, T A Brown and A E Munson. Pharmacology and Toxicology. Medical College of Virginia/VCU. Richmond, VA.

THURSDAY MORNING, FEBRUARY 15
8:30 a.m.-11:30 a.m.
CHAMPAGNE ROOM

PLATFORM SESSION: REPRODUCTIVE TOXICOLOGY


THREE-GENERATION REPRODUCTIVE STUDY OF COCOA POWDER IN RATS. K A Hostetler, J L Appar, R B Morrisey, S M Tarha, Jr. and C A Shively. Hershey Foods Corp., Hershey, PA.

PRELIMINARY INVESTIGATIONS OF THE REPRODUCTIVE CONSEQUENCES OF TOREMIFENE CITRATE TREATMENT. T Hirschm1, D Betlarme2, P M canulty2, J Tesh2 and L Weng2. Farmos Group1, Turku, Finland; Life Sciences Research2, Suffolk, England; Farmitalia Carlo Erba2, Milan, Italy; and Adria Laboratories2, Columbus, OH.


METALLOTHIONEIN MESSENGER RNA CHANGES IN MICE DURING PREGNANCY AND LACTATION. D Solomon1, M H Bhatacharya, G Ho, and F Collart. "US Department of Agriculture, Philadelphia, PA and Argonne National Laboratory, Argonne, IL.

#894 10:00  NICKEL CHLORIDE (Ni++)-INDUCED PERINATAL TOXICITY IN CD-1 MICE MAY BE DUE TO DECREASED PROLACTIN SECRETION. R P Reynolds and P A Fall. Research Triangle Institute, Research Triangle Park, N C. Sponsor: R W Ty."}

#895 10:15  IDENTIFYING SITES OF MATERNALLY MEDIATED EARLY PREGNANCY LOSS IN THE RAT. A Cummings and S Harris. USEPA, HERL, DTD, RTB, Research Triangle Park, NC. Sponsor: R Chadwick.


#897 10:45  ACUTE AND SUBCHRONIC TOXICOLOGY STUDIES WITH DETRELIX, ANLRH ANTAGONIST, IN THE RAT AND MONKEY. L DePasquale, A Chester and D Fairchild. Institute of Toxicologic Sciences, Syntex, Palo Alto, CA.


#899 11:15  DOMINANT LETHAL EFFECT OF SULFUR MUSTARD IN RATS. L B Sasser, J A Cushing and J C Darr. Biology and Chemistry Department, Pacific Northwest Laboratory, Richland, WA and USABRDL, Ft. Detrick, Frederick, MD.

THURSDAY MORNING, FEBRUARY 15
LE MANS ROOM

POSTER/DISCUSSION SESSION: METHODOLOGIES AND APPROACHES TO RISK ASSESSMENT

Chairpersons: Torbjorn Malmfors, Malmfors Consulting AB, Stockholm, Sweden and Thomas Osimitz, S.C. Johnson & Son, Inc., Racine, WI.

Displayed 8:30 a.m.-11:30 a.m.
Discussion 9:30 a.m.-11:30 a.m.


#903  DEVELOPMENT OF SHORT TERM ACTION LEVELS (STALs) FOR DRINKING WATER CONTAMINANTS IN NEW JERSEY. L Iowa, G Post, T J Sun, T A Ledoux, and L McGeorge. NJ Dept. of Environmental Protection, Trenton, NJ.

#904  RISK ASSESSMENT OF CHEMICAL CONTAMINANTS FOR SETTING CALIFORNIA DRINKING WATER STANDARDS. J P Brown, A M Fan, M J DiBartolomeis, and D P Spath. California Department of Health Services (DH5), Berkeley, CA.

#905  INTUITIVE TOXICOLOGY: HOW TOXICOLOGISTS JUDGE TOXICOLOGICAL DATA. T Malmfors, N Kraus and P Sivio, Malmfors Consulting AB, Stockholm, Sweden.

#906  RISK ASSESSMENT AND EXPOSURE TOOLS. T J Sun, J S Young, C M Benes, T A Ledoux, and W R Muir. New Jersey Department of Environmental Protection, Trenton, NJ, and Hampshire Research Institute, Alexandria, VA. Sponsor: G Post.

#907  ASSESSING RISKS FOR LESS THAN LIFETIME EXPOSURES. J Orme and E V Quinian, U S Environmental Protection Agency Washington, D C.

#908  ON REFERENCE DOSE (RDF) AND ITS UNDERLYING TOXICITY DATA BASE. M L Donson, L A Knauf and J C Swirtlar. U.S. Environmental Protection Agency, Washington, DC.


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RISK ASSESSMENT OF SYSTEMIC AND REPRODUCTIVE TOXICITY STUDIES. H Choudhury, C DeRosa, B R Sonawane and Wm. Stittler.* U S EPA and "Syracuse Research Corporation, Cincinnati, OH.


THURSDAY MORNING, FEBRUARY 15
BORDEAUX ROOM

POSTER/DISCUSSION SESSION: REACTIVE INTERMEDIATES

Chairpersons: Jack Hinson, National Center for Toxicological Research, Jefferson, AR and Serrine Lau, University of Texas School of Pharmacy, Austin, TX.

Displayed 8:30 a.m.-11:30 a.m.
Discussion 9:30 a.m.-11:30 a.m.


SELECTIVE PROTEIN ARYLATION BY ACETAMINOPHEN (APAP): IMMUNOHISTOCHEMICAL LOCALIZATION IN MOUSE LIVER, LUNG AND KIDNEY. S G Emlegh Hart, RW Cartun, D S Wyand, E A Khairal-
lah and S D Cohen. University of Connecticut, Toxicology Program, Depts. Pharmacology & Toxicology, Molecular & Cellular Biology and Pathobiology, Storrs, CT.

THE EFFECT OF PIPERYL BUTOXIDE (PBP) POST-TREATMENT ON THE SELECTIVE ARYLATION OF HEPATIC PROTEINS BY ACETAMINOPHEN (APAP) IN MALE, CD-1 MICE. J T Brady, R B Birge, E A Khairallah, and S D Cohen. University of Connecticut, Toxicology Program, Storrs, CT.


6-GLUTAMYL TRANSEPTIDASE CATALYZED CYCLIZATION OF 2-BROMO-3-(GLUTATHIONE-S-
YL)HYDROQUINONE. M L Rivera, R J Hight, T J Monks, and S S Lau. Div. of Pharmacol./Toxicol., The University of Texas at Austin, TX., and NHLBI, NIH, Bethesda, MD.


DIMETHYLSULFOXIDE PROTECTS AGAINST TOXICITY AND INHIBITS FORMATION OF 3- (CYSTEIN-S-YL) ACETAMINOPHEN PROTEIN ADDUCTS IN LIVER BUT NOT IN RESPIRATORY TISSUE. W M Hashefs, E H Jeffrey, A R Warbritton, T J Bucci, and D W Roberts. Univ. of Illinois, Urbana, IL and National Center for Toxicologic Research, Jefferson, AR.

IN VIVO BINDING OF TRICHLORORETHYLENE (TCE) TO HEMOGLOBIN (Hb), SERUM ALBUMIN (SA) AND HEPATIC PROTEINS (HP). R J Eyre, D K Stevens and R J Bull. Pharmacology/Toxicology Program, College of Pharmacy, Washington State University, Pullman, WA.


THURSDAY MORNING, FEBRUARY 15
BURGUNDY ROOM

POSTER/DISCUSSION SESSION: TUMOR PROMOTION AND PROGRESSION

Chairpersons: James Alan Popp, CIIT, Research Triangle Park, NC and R. Michael McClain, Hoffmann-La Roche, Inc., Nutley, NJ.
Displayed 8:30 a.m.-11:30 a.m.
Discussion 9:30 a.m.-11:30 a.m.

#925
INITIATION AND PROMOTION ACTIVITIES OF AFLATOXIN B1 IN EXPERIMENTAL HEPATOCARCINOGENESIS. H E Olsen, L S Hsieh, B H Ruebner, and D P H Hsieh. Dept. of Environ. Toxicol. and Dept. of Medical Pathol., Univ. of California, Davis, CA.

#926
EVIDENCE FOR IN VIVO PROMOTIONAL ACTIVITY OF CHENODEOXYCHOLIC ACID IN THE LIVER OF RATS. P C Blair, R E Wilson, and M B Thompson. NIEHS, Research Triangle Park, NC. Sponsor: L S Birnbaum.

#927
PROMOTION OF DIETHYLNITROSAMINE-INDUCED HEPATIC CARCINOGENESIS IN MICE BY ALL-TRANS- RETINOIC ACID AND TWO SYNTHETIC RETINAMIDES. D L McCormick and * R E Long. IIIT Research Institute, Chicago, IL, and *Pathology Associates, Inc., Chicago, IL.

#928
LIVER TUMOR PROMOTING AND/OR HEPATOCARCINOGENIC EFFECTS OF 1,4-BIS-(3,5-DICHLOROPYRIDYLOXY)-BENZENE IN C57BL/6NCR AND DBA/2NCR MICE AND F344 RATS. B A Diwan, R A Lubet, J M Ward, and J M Rice. BDCP, Program Resources, Inc., and National Cancer Institute-FCRF, Frederick, MD. Sponsor: R W Nims.

#929
EFFECTS OF 2,3,7,8- TETRACHLORODIBENZO-P-DIOXIN ON INITIATED WEANLING SPRAGUE DAWLEY RATS TREATED WITH PHENOBarBITAL. S D Sleight and RC Sills. Michigan State University, Dept. of Pathology, East Lansing, MI.

#930
HEPATIC PEROXISOME INDUCTION AND LIPOFUSCIN ACCUMULATION IN F344 RATS INITIATED WITH DIETHYLNITROSAMINE (DEN) AND PROMOTED WITH CLOFIBRIC ACID OR WY-14,643. D S Marsman, T L Goldsworthy and J A Popp. CIIT, Research Triangle Park, NC.

#931
PROGRESSION AS A DISTINCT STAGE IN CHEMICAL CARCINOGENESIS IN THE RAT LIVER. Y P Dragan, Y-H Xu, L Sargent, and H C Pitt. McArdle Laboratory for Cancer Research, Univ. of Wisconsin, Madison, WI.

#932
DIFFERENTIAL DOWN-REGUALTION OF EPIDERMAL PROTEIN KINASE C(PKC) BY TPA AND DIACYLGLYCEROL; ASSOCIATION WITH EPIDERMAL HYPERPLASIA. L A Hansen, N A Monteiro-Riviere and R C Smart. Dept. of Toxicology, North Carolina State Univ., Raleigh, NC.

#933

#934
INHIBITION OF BENZOYL PeroxIDE MEDIATED SKIN TUMOR PROMOTION BY ANTIODXANTS DIALLYL SULFIDE AND NORDIHYDROQUAERATIC ACID. H Mukhtar, M Athar, and H Raza. Dept. Derm., Case West. Res. Univ. and VAMC, Cleveland, OH.

#935
EFFECTS OF ANTHRONE TUMOR PROMOTERS ON THE EGF RECEPTOR OF CULTURED MOUSE KERATINOCYTES. A Imamoto and J DeGiovanni. University of Texas M.D. Anderson Cancer Center, Science Park-Research Division, Smithville, TX.

THURSDAY MORNING, FEBRUARY 15
GRAND BALLROOM

POSTER SESSION: DISPOSITION

Chairperson: Ho Chung, Walter Reed Army Medical Center, Washington, DC.
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 8:30 a.m.-10:00 a.m.

#936
COMPARATIVE TISSUE DISTRIBUTION AND HEMOGLOBIN BINDING OF POLICYCLIC AROMATICS FOLLOWING APPLICATION TO MOUSE SKIN. D Warehowsky, R Reisman, K LaDow, J Schneider, J Manier, M Radke and B Dariel. University of Cincinnati Medical Center, and USEPA, Cincinnati, OH.

#937
EFFECT OF REPEATED DOSING AND AGE ON THE DISPOSITION AND METABOLISM OF 4-CHLORO NITROBENZENE (4-CN) IN MALE FISCHER-344 RATS FOLLOWING ORAL ADMINISTRATION. D M Silveira, M F Comish, N F Ferrara, P M Markham and M Chadwick, Arthur B. Little, Inc., Cambridge, MA. Sponsor: A A Nomair.

TISSUE DISPOSITION OF INGESTED PERCHLOROETHYLENE (PER) IN RATS. X M Chen, C E Dallas, S Muradilhara, *J M Gallo, and J V Bruckner, Departments of Pharmacology & Toxicology and *Pharmaceautics, College of Pharmacy University of Georgia, Athens, GA.

PHARMACOKINETICS OF TRANS-1,2-DICHLOROETHYLENE (DCE) AND 1,1-DICHLOROETHANE (DCA) IN RATS. R O Manning, K H Brown, V Srivatsan, *J M Gallo and J V Bruckner, Department of Pharmacology & Toxicology and *Department of Pharmaceutics, College of Pharmacy, University of Georgia, Athens, GA.

1, 2-DICHLOROPROPANE (DCP): KINETICS AND METABOLISM IN FISCHER 344 RAT FOLLOWING ORAL AND INHALATION EXPOSURE. C Timchalk, M D Dryzga, F A Smith, J B Bartels. H&ES, the Dow Chemical Co., Midland, MI.


TISSUE DISTRIBUTION AND EXCRETION OF 14C-LABELED CINNAMIC ALDEHYDE FOLLOWING ACUTE SUBACUTE ORAL ADMINISTRATION IN MALE FISCHER-344 RATS. P P Sapienza, G J Ikeda, P I Warr and R E Dailey. FDA, CSFAN, Div. of Toxicological Studies, Washington, DC.

FERROCENE: DISPOSITION FOLLOWING NOSE-ONLY INHALATION BY THE RAT. R W Slaeter, T K Tippin, H B Matthews* and A R Jeffcoat; Research Triangle Park Institute and *The National Institute of Environmental Health Sciences, Research Triangle Park, NC.

DOSE-DEPENDENT PHARMACOKINETICS AND TERATOGENIC ACTIVITY OF TOPICAL RETINOIDS. R P Sharma, C G Williste, D L Berry and P V Allen. Toxicology Program, Utah State University, Logan, UT; California Dept. Health Service, Emeryville, CA and WRRC, USDA, Albany, CA.


EFFECT OF RESERPINE ON THE DISTRIBUTION AND METABOLISM OF N-METHYLTHIOBENZAMIDE (NMST) IN THE RAT. L Gibbs and G Trager. Dept. Pharm. andTox., Univ. of Kansas, Lawrence, KS.

AGE-RELATED CHANGES IN METABOLISM AND DISPOSITION OF SALICYLIC ACID (SAL) IN MALE FISCHER 344 RATS. L S Birnbaum, T F McMahon, and J J Diberto. NIEHS, Research Triangle Park, NC.

TISSUE DISTRIBUTION (TD) OF 14C IN RATS AFTER ADMINISTRATION OF SULOTROBAN (S) OR DALTROBAN (D); A STUDY BY WHOLE-BODY AUTORADIOGRAPHY (WBA). M Carbonaro and J Kao. Dept. of Drug Metabolism, King of Prussia, PA.

COMPARATIVE STUDIES ON THE DISPOSITION OF PICENADOL (LY150720) ENANTIOMERS IN PLASMA AND BRAIN OF MONKEYS, DOGS, AND RODENTS. D J Sweeney, C A Schmalz, and Q K Hanasono. Toxicology Division, Lilly Research Laboratories, El Lilly and Co., Greenfield, IN.

METABOLISM AND DISPOSITION OF POLYMERIC SODIUM GLYOXYLLATE IN THE RAT. W Ridley, J Warren, W Hopkins and R Nair. Environ. Health Lab. and Dept. of Med. and Health Sciences, Monsanto, Company, St. Louis, MO.


CHARACTERIZATION OF THERAPEUTIC PROTEINS IN DISPOSITION STUDIES. B L Ferroaio, M A Mohier, P A Cosmosi, J A Moore, B Reed and D Vandel, Genetech, Inc., South San Francisco, CA.

DISTRIBUTION AND EXCRETION OF ANTHRAQUINONE IN THE MALE F-344 RAT. M S Steup, S M Winter and LG Sidilas. Department of Pharmacology and Toxicology, University of Arizona, Tucson, AZ.
ANALYSIS OF ETHYL ACRYLATE (EA) AND ACRYLIC ACID (AA) RESIDUES FROM RAT TISSUES FOLLOWING ORAL EA DOSING. J R Udinsky and C B Frederick. Rohm and Haas Co., Spring House, PA.

STUDIES ON THE MECHANISMS OF HALOACETONITRILES TOXICITY: WHOLE BODY AUTO- RADIOGRAPHIC DISTRIBUTION OF 2-14C-CHLOROACETONITRILE (CAN) IN RATS. J P Loh and A E Ahmed. Dept. of Pathology, University of Texas Medical Branch, Galveston, TX.


PHARMACOKINETICS AND TISSUE DISTRIBUTION OF 14C-5-AMINOSALICYLIC ACID (14C-5-ASA) IN RATS. K Hwang, T Thompson, J Chang, A Mandagere, D Drees, J P Lacz, Marion Laboratories, Kansas City, Mo.

EFFECT OF TRAINED EXERCISE ON TIME COURSE OF DISTRIBUTION OF RADIOACTIVITY IN TISSUES OF RAT AFTER H-PHYSOSTIGMINE ADMINISTRATION. S N Somani and S R Babu, Dept of Pharmacology, Sch. of Med., Southern IL Univ. Springfield, IL.

DIFFERENTIAL TISSUE DISTRIBUTION OF CISPLATIN (CDDP) IN DOGS RESULTING FROM THE USE OF DEFINED INTRAVENOUS INPUT PROFILES. J E Riviere, R L Page, R A Rogers and S K Chang. Cutaneous Pharmacology and Toxicology Center, North Carolina State University, Raleigh, NC.

THURSDAY MORNING, FEBRUARY 15
GRAND BALLROOM

POSTER SESSION: ENDOCRINE TOXICOLOGY

Chairperson: Walter Piper, University of Michigan, Ann Arbor, MI.
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 10:00 a.m.-11:30 a.m.

MICROSOMAL ENZYME INDUCERS REDUCE THYROID HORMONE LEVELS BY AN EXTRA-THYROIDAL MECHANISM. R A Barter and C D Klaassen. Univ. Kansas Med. Ctr., Kansas City, KS.


GOITROGEN METABOLISM BY THYROID PEROXIDASE. D R Doerge. Dept. Agric. Biochem., Univ. of Hawaii, Honolulu, HI.


THE EFFECT OF DEXMETHASONE PRETREATMENT AND SelenIUM ON PLASMA GLUCOSE OF ADRENALECTOMIZED RATS. R A Potmish, H Rasek, R Seraus, and J L Early. College of Pharmacy, Florida A&M University, Tallahassee, FL. Sponsor: R C Schnell.

TIME COURSE FOR ALTERATIONS IN SERUM TESTOSTERONE (T) AND LH LEVELS FOLLOWING hCG, GnRH, AND NALOXONE CHALLENGES. S M Murray, M E Hurtt and C Cook. E I du Pont de Nemours and Co., Haskell Laboratory for Toxicology and Industrial Medicine, Newark, DE.

SPECIES DIFFERENCES IN RESPONSE TO EPOPTANE, AN INHIBITOR OF STEROIDogenesis. P J Fabian and T A Barbott. Toxicology Dept., Sterling Research Group, Rensselaer, NY.

LONG-TERM EFFECTS ON ESTROGEN RECEPTOR AND UTERINE GROWTH FOLLOWING POST-NATAL EXPOSURE TO DIETHYSTILBESTROL (DES). K L Medlock, W S Branham and D M Sheehan. Division of Reproductive and Developmental Toxicology, National Center for Toxicological Research, Jefferson, AR.


A SERUM COMPONENT CONTROLS TCDD-INDUCED SUPPRESSION OF STEROIDOGENESIS IN CULTURED BAC CELLS. C Williams and C Jefcoat. Environmental Toxicology Center, University of Wisconsin, Madison, WI.


2,3,7,8-TETRACHLORIDIBENZO-P-DIOXIN AS AN ANTIESTROGEN: EFFECTS ON NUCLEAR ESTROGEN RECEPTOR LEVELS IN MCF-7 CELLS. M Harris, T Zacharewski and S Safe. Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

EFFECTS OF 2,3,7,8-TETRACHLORIDIBENZO-P-DIOXIN (TCDD) ON ESTROGEN-INDUCED C-FOS ONCOGENE mRNA EXPRESSION IN THE FEMALE RAT UTERUS. B Eldridge, B Astrow and S Safe. Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

EFFECTS OF 2,3,7,8-TETRACHLORIDIBENZO-P-DIOXIN (TCDD) ON 17B-ESTRADIOL-INDUCED c-myc ONCOGENE mRNA LEVELS IN MCF-7 HUMAN BREAST CANCER CELLS. C Flowand and S Safe. Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

EFFECTS OF PERINATAL 2,3,7,8-TETRACHLORIDIBENZO-P-DIOXIN(TCDD) EXPOSURE ON THE DEVELOPMENT OF MALE RATS AND THEIR ANDROGENIC STATUS. R W Moore, T A Mably, and R E Peterson. School of Pharmacy and Environ. Toxicol. Ctr., Univ. of Wisconsin, Madison, WI.

ALtered sexual behavior in male rats exposed perinatally to 2,3,7,8-tetrachloridibenzo-p-dioxin (TCDD). T A Mably, R W Moore, R W Goy, and R E Peterson. School of Environ. Toxicol. Center, University of Wisconsin, Madison, WI.

THURSDAY MORNING, FEBRUARY 15
GRAND BALLROOM
POSTER SESSION: ENVIRONMENTAL/AQUATIC TOXICOLOGY

Chairperson: Kenneth L. Pavkov, CIBA/GEIGY Corp., Farmington, CT.
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 8:30 a.m.-10:00 a.m.

SPIDERS AS ENVIRONMENTAL MONITORS OF HEAVY METALS. T E Christenson, Dept Psychology, Tulane University, New Orleans, LA; J Cohn and M J Pokora, Environmental Health Sciences Center, University of Rochester School of Medicine and Dentistry, Rochester, NY. Sponsor: D A Cory-Slechta.

ALUMINUM ACCUMULATION IN THE BRAIN OF FISH FROM AN ACIDIFIED LAKE. R Stripp* and L Tambetta. *U.S. Dept. of Energy, New York, NY, Toxicology Program, St. John's University, Queens, NY.

CHANGES IN HEPATIC, RENAL AND PULMONARY POLYSUBSTRATE MONOXGENASE ACTIVITIES IN CATTLE EXPOSED TO AN ALBERTA CRUDE OIL. A A Khan, R W Coppack, L E Littie and M M Schuier. Animal Sciences Division, Alberta Environmental Centre, Vegreville, AB, Canada.

RADIOCESIUM (137Cs) UPTAKE IN MALLARDS AT THE SAVANNAH RIVER SITE (SRS) AND EFFECTS ON DNA CELL CYCLE IN RED BLOOD CELLS. L S George, C E Dallas, T L Briscbin and D E Evans. Col-
POSTER SESSION: HALOGENATED HYDROCARBONS

Chairperson: Charles Timchalk, Dow Chemical Company, Midland, MI.
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 10:00 a.m.-11:30 a.m.

HEPATOXICITY OF HALOCARBON 3,1 OIL AND CHLOROTRIFLUOROETHYLENE (CTFE) OLIGOMERS IN MALE FISCHER 344 RATS. N J DelRaso, C S Godin*, C E Jones and C Flemming*. Armstrong Aerospace Medical Research Laboratory, WPAFB, OH. "NSI Technology Services Corp., Dayton, OH. Sponsor: E Kinkead.


TWO-DIMENSIONAL ELECTROPHORETIC ANALYSIS OF PFDA HEPATOTOXICITY. F Witzmann, Indiana University-Purdue University at Indianapolis. N DelRaso and M George, Armstrong Aerospace Medical Research Laboratory, Toxic Hazards Division, WPAFB, OH. Sponsor: E R Kinkead.

MECHANISM OF LIVER WEIGHT INCREASE FOLLOWING EXPOSURE TO HALOCARBON 3,1 OIL. C S Godin, H G Wall, N J DelRaso* and E R Kinkead. NSI Technology Services Corp., Dayton, OH. "Armstrong Aerospace Medical Research Laboratory, WPAFB, OH.

COMPUTER SIMULATION OF CHLOROTRIFLUOROETHYLENE OLIGOMER (CTFE) PHARMACOKINETICS IN MALE RHESUS MONKEYS. A Vinegar, C S Seckel, C E Jones, and M B Ballinger. NSI Technology Services Corp., Dayton, OH and AAMRL/THT, Wright-Patterson Air Force Base, OH. Sponsor: B B Connelly.

SUBACUTE AND SUBCHRONIC TOXICITY STUDIES OF 1,3-DICHLOROBENZENE IN RATS. M Robinson, P T McCauley and G Henningsen. Environmental Toxicology Division, US EPA, Cincinnati, OH and Air Force Biomedical Research Laboratory, WPAFB, OH.


MACROMOLECULAR BINDING OF TRICHLOROACETONITRILE IN RAT. E L C Lin, T V Reddy. C W Gailon, B H McFarland, A C Roth, and F B Daniell. USEPA, Health Effects Research Laboratory, Cincinnati, OH.
LACK OF GLUTATHIONE OXIDATION BY DICHLOROACETATE AND TRICHLOROACETATE IN RAT HEPATOCYTE SUSPENSIONS. S Bruschi and R J Bull. Pharmacology/Toxicology Graduate Program, College of Pharmacy, Washington, State University, Pullman, WA.

3,3',4,4'-TETRABROMOBIPHENYL (TBB): EFFECTS ON ACUTE PHASE PROTEINS IN RATS. L Rodman, S Shedlofsky, A Swam, L Robertson, D Y Hou, R Honchal, and F de Bear. Dept. Med., VA Hosp. & Grad. Ctr. for Toxicology, Univ. of Kentucky, Lexington, KY.


SHORT TERM TOXICITY OF THREE CHLORINATED DIPHENYL ETHER ISOMERS IN THE RAT. D C Villeneuve, L Chu, V E Secours, and V E Vail. Environmental Health Directorate, Ottawa and Biopath Analyts Ltd., Guelph, ON, Canada.


ACUTE, SUBCHRONIC AND CHRONIC INHALATION STUDIES OF 1,1,2,3-TETRACHLOROPROPENE (TCP) IN RATS. B R Dudek, M V Roloff, T J Long*, W E Ribelini and T W Fuhremann. Monsanto Company, St. Louis, MO and *Amway Corporation, Ada, MI.


LOW-DENSITY LIPOPROTEIN (LDL) AS A TRANSPORTER FOR HEXABROMOBIPHENYL (HBB) INTO THE CELL. S IJang and L A Bernstein. Department of Environmental and Industrial Health-Toxicology, University of Michigan, Ann Arbor, MI.

DOSE FORMULATION STUDIES OF MICROENCAPSULATED 1,1,2,2-TETRACHLOROETHANE. S Graves, J M Lemunyon, C Hardbeck, W T Arnold, J H Karrenbrock, and D W Arneson, BioOrganic Chemistry Department, Midwest Research Institute, Kansas City, MO and C W Jameson, Division of Toxicology Research and Testing, National Institute of Environmental Health Sciences, Research Triangle Park, NC. Sponsor: N Indacrocea-Redmond.

THURSDAY MORNING, FEBRUARY 15
FONTAINEBLEAU BALLROOM D

POSTER SESSION: IN VITRO DERMAL/OCULAR TOXICOLOGY

Chairperson: Timothy J. Raczniaik, Upjohn Company, Kalamazoo, MI.

Displayed: 8:30 a.m.-11:30 a.m.

Attended: 8:30 a.m.-10:00 a.m.

THE ABSORPTION AND METABOLISM OF AZOIC COLORS IN INTACT AND FRACTIONATED SKIN. S W Collier, J E Storm, and R L Bronaugh. Division of Toxicological Studies, FDA, Washington, DC.

EFFECT OF VEHICLE ON PENETRATION AND DISTRIBUTION OF MICROCYSTIN IN HUMAN SKIN IN VITRO. M Mehta, B W Kempainen, C R Clark*, and R G Stafford, College of Veterinary Medicine and *School of Pharmacy, Auburn University, AL.

METHODS FOR IN VITRO SKIN ABSORPTION STUDIES OF A LIPOPHILIC TOXIN PRODUCED BY RED TIDE. B W Kempainen, W G Reifenrath*, R G Stafford and M Mehta, College of Veterinary Medicine, Auburn University, AL, and *Letterman Army Institute of Research, Presidio of San Francisco, CA.

THE IN VITRO PENETRATION AND DISPOSITION OF LYNGBYATOXIN A (TELOCECIN A) IN GUINEA PIG SKIN. R G Stafford, B W Kempainen, M Mehta, R C Clark*, and H Fujiki*. College of Veterinary Medicine and *School of Pharmacy, Auburn University, AL and **National Cancer Center Research Institute, Tokyo, Japan.

ROLE OF ABSORPTION RATE AND CUTANEOUS ENZYME ACTIVITY IN METABOLISM OF PERCUTANEOUSLY PENETRATING COMPOUNDS. J E Strom, S W Collier, R P Stewart and R L Bronbaugh. Division of Toxicological Studies, FDA, Washington, DC.


PERCUTANEOUS ABSORPTION OF RADIOLABELED PARATHION, MALATHION, CARBARYL AND LINDANE IN THE ISOLATED PERFUSED PROCINE SKIN FLAP (IPPSF). S K Chang, P L Williams and J E Rivers. Cutaneous Pharmacology and Toxicology Center, North Carolina State University, Raleigh, NC.

A QUANTITATIVE IN VITRO SCREEN FOR THE EVALUATION OF CANDIDATE TOPICAL PROTECTANTS AGAINST SOMAN. T H Snider, D W Hobson, C T Olson, G S Dill, and R L Joiner. Battelle Memorial Institute, Columbus, OH. Sponsor: C T Olson.


EVALUATION OF SIX IN VITRO ALTERNATIVES FOR OCULAR IRRITANCY TESTING. L H Bruner and R D Parker. The Procter & Gamble Co. Miami Valley Laboratories, Cincinnati, OH. Sponsor: C L Aiden.


EVALUATION OF TWO IN VITRO OCULAR IRRITATION ASSAYS. T J Long and R M Bednarz. Amway Corporation, Ada, MI.


THURSDAY MORNING, FEBRUARY 15
FONTAINEBLEAU BALLROOM D

POSTER SESSION: NASAL TOXICOLOGY

Chairperson: Christopher Coggins, RJR Tobacco Company, Winston-Salem, NC.

Displayed: 8:30 a.m.-11:30 a.m.
Attended: 10:00 a.m.-11:30 a.m.

DETERMINATION OF NASAL AIRFLOW CHARACTERISTICS IN F-344 RATS AND RHESUS MONKEYS AND APPLICATION TO INHALATION TOXICOLOGY. J S Kimbell, A Fleishman, M E Andersen and K T Morgan. CIT, Research Triangle Park, NC.

METABOLIC CAPABILITIES AND AFLATOXIN B1 METABOLISM IN MAMMALIAN TRACHEAL MICROSMAL PREPARATIONS. R W Ball, J M Hure and R A Goulber. Jr. Graduate Program in Toxicology, Utah State University, Logan, UT.

DEPOSITION OF ACETONE IN THE UPPER RESPIRATORY TRACT (URT) OF THE B6C3F1 MOUSE. J B Morris. Toxicology Program, Univ. of Connecticut, Storrs, CT.
SECRETION OF HYALURONIC ACID BY MUCOSAL AND SUBMUCOSAL GLAND EPITHELIAL CELL CULTURES DERIVED FROM HUMAN TRACHEA. G W Taylor, P A Mathieu, and D P Chopra. Institute of Chemical Toxicology, Wayne State Univ., Detroit, MI. Sponsor: R F Novak.

BLOOD LEVELS OF PROPYLENE OXIDE IN RATS DURING INHALATION OF PROPYLENE. K R Maples and A R Dah! Inhalation Toxicology Research Institute, Albuquerque, NM.

LECTIN BINDING IN SQUAMOUS METAPLASIA INDUCED BY BENZO(A)PYRENE AND VITAMIN A DEFICIENCY IN HAMSTER TRACHEA. D P Chopra and A P Joakim, Institute of Chemical Toxicology, Wayne State University, Detroit, MI. Sponsor: R F Novak.


MORPHOMETRIC ANALYSIS OF FORMALDEHYDE-INDUCED LESIONS IN RAT NASAL EPITHELIUM. E A G Bermudez, M B St. Clair, J A Swenberg and K T Morgan, CII, Research Triangle Park, NC and Dept. of Pathology, UNC, Chapel Hill, NC.

CARBOXYLESTERASE-DEPENDENT CYTOTOXICITY OF DIBASIC ESTERS (DBE) IN RAT NASAL EXPLANTS. B A Treia and M S Bogdanty. Haskell Laboratory for Toxicology and Industrial Medicine, E I du Pont de Nemours & Co. Newark, DE.

SEQUENTIAL STUDY OF NASAL AND HEPATIC LESIONS IN RATS CAUSED BY SINGLE DOSES OF N-NITROSAMINES. C Rangga-Tabbu and D D Sleight. Department of Pathology, Michigan State Univ., E. Lansing, MI.

THURSDAY MORNING, FEBRUARY 15
FONTAINEBLEAU BALLROOM D

POSTER SESSION: PATHOLOGY

Chairperson: Francis J. Koschier, CIBA-GEIGY Corp., Ardsley, NY.
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 8:30 a.m.-10:00 a.m.

A COMPARISON OF CLINICAL CHEMISTRY RESULT AND LIVER HISTOPATHOLOGY FOLLOWING ORAL DOSES OF CYCLODISENE (NSC-348948) TO BEAGLE DOGS. J G Page*, L M Thrippen*, J E Tomaszewski**, and C K Gnesher*?. Southern Research Institute, Birmingham, AL and National Cancer Institute, Bethesda, MD.

DOSE RESPONSE TO BROMODEOXYURIDINE (BrdU) SLOW-RELEASE PELLETS FOR IMMUNOHISTOCHEMICAL DETECTION OF LEVELS OF DNA SYNTHESIS IN TISSUES OF RATS AND MICE. J M Ward, R A Lubet, J Heineman, D Devor, and D Logsdon, Tumor Pathology and Pathogenesis Section, National Cancer Institute, and PRI-FCRF, Frederick, MD. Sponsor: M P Warales.


A STUDY OF THE LYSOZOMAL AND MITOCHONDRIAL RELATIONSHIP AS A RESULT OF CHLORQUINE CYTOTOXICITY ON MOUSE NEUROBLASTOMA C1300 CELLS IN CULTURE. S A Kucharewicz and L D Trombetta. St. John’s University Dept. of Pharmacy, Queens, NY.


DIFFERENTIAL EFFECTS OF TRANSFORMING GROWTH FACTOR b (TGFb) AND EPIDERMAL GROWTH FACTOR (EGF) ON THE CYTOCIDAL EFFECTS OF AFLATOXIN B1 (AFB) IN PRIMARY CULTURES OF RAT HEPATO CYTES. M S Pollanen, G K Wolenberg, J LaMarre, M A Hayes. Department of Pathology, University of Guelph, Guelph, Ontario, Canada.


THURSDAY MORNING, FEBRUARY 15
FONTAINEBLEAU BALLROOM D

POSTER SESSION: RENAL TOXICOLOGY

LIPID PEROXIDATION-DEPENDENT AND INDEPENDENT MECHANISMS OF CEPHALORIDINE CYTOTOXICITY IN ISOLATED RABBIT TUBULES. G P Rath. Toxicology Division, Lilly Research Laboratories, Eli Lilly and Co., Greenfield, IN.


ISOLATION AND CRYOPRESERVATION OF DOG AND HUMAN KIDNEY CELLS FOR TOXICITY STUDIES. M Berggren, R Ramaswamy, and G Paws. Department of Pharmacology, Mayo Clinic & Foundation, Rochester, MN.

EFFECTS OF CEPHALORIDINE ON PRIMARY CULTURES OF RAT RENAL CORTICAL EPITHELIAL CELLS: INTRACELLULAR REACTIVE OXYGEN SPECIES AND CALCIUM. J R Lee and D Acosta. The University of Texas, Austin, TX.

NEPHROGENIC REPAIR IN VITRO: THE ROLE OF PEPTIDE GROWTH FACTORS IN PROXIMAL TUBULE EPITHELIAL CELL (PTEC) GROWTH. G H Zhang, A Wallin, M Kan and J L Stevens. W Alton Jones Cell Science Center, Lake Placid, NY.


a2u-GLLOBULIN NEPHROPATHY (a2u-N) AND RENAL CELL PROLIFERATION IN MALE RATS EXPOSED TO EUROPEAN HIGH TEST AND PS-6 UNLEADED GASOLINE. S J Borghoff, N L Youtsey, J A Swanberg. CIIT, Research Triangle Park, NCand Depart. of Pathology, UNC, Chapel Hill, NC.

NBR MALE RATS FAIL TO DEVELOP RENAL DISEASE FOLLOWING EXPOSURE TO AGENTS THAT INDUCE ALPHA-2U-GLLOBULIN (A2u) NEPHROPATHY. D R Dietrich and J A Swanberg. Dept. of Pathology, University of North Carolina, Chapel Hill.

EFFECT OF D-LIMONENE-INDUCED HYALINE DROPLET EXACERBATION ON LYMPHOSOMAL PROTEOLYTIC FUNCTION AND URINARY PROTEIN EXCRETION. D Caudillo and D P Lehman-Mckeean. Miami Valley Laboratories, Procter and Gamble Company, Cincinnati, OH.

EVALUATION OF GENOTOXICITY AND SUBCHRONIC ORAL TOXICITY STUDIES OF AN ADIPOSE ESTER IN RATS. R T Tummey, A Tummmey, R T Przygoda Exxon Biomedical Sc., Inc., E Millstone, NJ. Sponsor: G F Egan.

S-(1,2-DICHLOROVINYL)-L-CYSTEINE SULFOXIDE, A PUTATIVE METABOLITE OF S-(1,2-DICHLOROVINYL)-L-CYSTEINE (DCVC), IS A POTENT NEPHROTOXIN. P J Sausen and A A Elfarra. Dept Comp. Biosci. and Environ. Tox. Center. Univ of Wisconsin, Madison, WI.


NEPHROTOXICITY OF N-(3,5-DICHLOROPHENYL)-SUCCINIMIDE (NDPS) IN NORMOGLYCEMIC AND DIABETIC RATS. M A Valentinovic, D W Nicoll, V J Teets and G O Rankin. Dept. Pharmacology, Marshall Univ. School of Medicine, Huntington, WV.

THURSDAY, FEBRUARY 15
12:00 Noon-1:00 p.m.

1990 BURROUGHS WELLCOME TOXICOLOGY SCHOLAR LECTURE

MECHANISMS OF INTERACTIVE HEPATOTOXICITY

by I. Glenn Sipes, Department of Pharmacology and Toxicology, College of Pharmacy, University of Arizona, Tucson, AZ.

Chaired by Tom S. Miya

Although the vast majority of toxicity studies involves administration of single chemicals to animals, humans are seldom exposed to single chemicals. Therefore it is important to gather more knowledge on how one chemical influences the toxicity of another. The term "interactive toxicity" is often used to describe those studies that search for potentiation, antagonism or synergism of toxic responses. Descriptions of interactive phenomena are important. However, it is understanding the mechanisms of interactive events that will have the greatest impact on toxicology. In fact, most toxicologists have worked in the area of interactive toxicology, since they often use one chemical to help explore the mechanism by which another chemical produces toxicity. We can borrow from these mechanistic studies to propose mechanisms of interactive events. Just how widespread this borrowing is will become apparent during this overview of mechanisms on interactive hepatotoxicity.

Since many chemicals require bioactivation to become hepatotoxic an obvious mechanism for interactive events is modulation of biotransformation. The hepatotoxicity of many chemicals (chloroform, halothane, dichlorobenzene, etc.) is dramatically potentiated in phenobarbital pretreated rats because of induction of selected cytochrome P-450 isoforms involved in the bioactivation of these chemicals. Similarly, their hepatotoxicity can be antagonized by inhibitors of cytochrome P-450. An interesting example of antagonism is the co-administration of CCl₄ and 1,2-dichlorobenzene. Co-administration of a minimally hepatotoxic dose of CCl₄ inhibits the metabolism and ultimately reduces the hepatotoxicity of 1,2-dichlorobenzene.

The liver possesses a number of chemicals that can protect it from insult by chemicals, or their toxic metabolites. Depletion of such hepatoprotective agents as glutathione, vitamin E, selenium and zinc can result in the potentiation of liver injury induced by a variety of different chemicals. For example, 1,4-dichlorobenzene is not hepatotoxic, even in phenobarbital pretreated rats. It becomes hepatotoxic in animals treated with phorone to deplete glutathione.

The mechanisms just discussed involve events occurring within the hepatocyte. Since the liver contains cells other than hepatocytes, effects of chemicals on these cells may be a cause of interactive hepatotoxicity. Recently, it was shown that large doses of vitamin A activate Kupffer cells, the resident macrophage of the liver. Exposure of vitamin A pretreated rats to minimally hepatotoxic doses of different toxicants (CCl₄, acetaminophen, allyl alcohol) results in a dramatic potentiation of liver injury. The mechanism of potentiation involves release of oxygen radicals from the Kupffer cells, apparently in response to toxicant-initiated events occurring in the hepatocyte. The end result is enhanced peroxidation of lipids present in the hepatocyte membrane and potentiation of hepatotoxicity.

The above present just a few of the potential mechanisms by which interactive hepatotoxicity may be produced. As we search for other mechanisms it is important that we focus not only on events within the target cell, but consider interaction among different cell types within a tissue. Equally important may be chemical induced changes in other organs and tissues that influence the response of a target tissue.
THURSDAY AFTERNOON, FEBRUARY 15
1:30 p.m.-4:30 p.m.
FONTAINEBLEAU BALLROOM A

SYMPOSIUM: NEW DIRECTIONS IN CANCER RISK ASSESSMENT: MODIFYING
THE EPA GUIDELINES


Sponsored by the Carcinogenesis Specialty Section

The EPA's current cancer risk assessment guidelines have been actively employed by the agency for approximately five years. In that time the EPA and the scientific community have realized that certain aspects of these guidelines should be examined in light of new information and approaches regarding cancer risk assessment which have been developed within the discipline during this time-frame. The EPA in the last year has been very active in its reexamination of these guidelines utilizing the opinions of experts within and outside of the agency in its consideration of the modification of these guidelines. This symposium will deal with several aspects that have been discussed in this process. It is hoped that this symposium will allow the membership of the Society to suggest necessary and valid scientific changes that will assist the EPA in its deliberations.

#57  2:15  The Search for Adequate Bioassay Data: Crude Biology Versus Statistics. Ernest Eugene McConnell, Raleigh, NC.
4:00  Discussion.

THURSDAY AFTERNOON, FEBRUARY 15
FONTAINEBLEAU BALLROOM B

SYMPOSIUM: NEW ADVANCES IN CHEMICALLY-INDUCED MITOCHONDRIAL
DYSFUNCTION: RELATIONSHIPS TO TOXICITY

Chairperson: Glenn F. Rush, Eli Lilly and Company, Greenfield, IN

Sponsored by the Mechanisms Specialty Section

The purpose of this symposium is to provide a state-of-the-art review of our current knowledge of toxicant-induced mitochondrial injury. Within the last decade, there has been an increased awareness of the critical role that mitochondria play in homeostatic cell functions. Thus, toxicant-induced disturbances in functions such as mitochondrial calcium uptake, ATP synthesis, etc. may initiate a sequence of biochemical changes that may ultimately lead to cell death and there are many new reports in the literature describing these changes. There have also been recent reports in the literature describing new methods for evaluating mitochondrial function both in the intact cell and in isolated mitochondria. This symposium is designed to bring these new concepts in chemically-induced mitochondrial injury together in a single session. The symposium will be divided into two basic sections. The first three speakers will focus on the biochemical techniques and mechanisms involved in chemically-induced mitochondrial injury. The last two speakers will focus their presentations on specific toxicants that appear to target the mitochondria.

#60  1:30  Introduction. Glenn F. Rush, Eli Lilly and Company, Greenfield, IN.
#61  1:40  Direct Probing of Mitochondrial Function in Intact Cells. Rick G. Schnellman, University of Georgia, Athens, GA.
#62  2:10  Overview of Mitochondrial Glutathione. Donald J. Reed, Oregon State University, Corvallis, OR.
#63  2:40  Biochemical Alterations in Mitochondrial Function Leading to Lethal Cell Injury. Glenn F. Rush, Eli Lilly and Company, Greenfield, IN.
#64  3:10  Biochemical Reactions Leading to Parkinsonian Symptoms Elicited by MPTP. T. Singer, University of California, San Francisco, CA.
4:10  Discussion.
THURSDAY AFTERNOON, FEBRUARY 15
LeMANS ROOM

POSTER/DISCUSSION SESSION: CHELATION OF METALS

Chairpersons: Mark M. Jones, Vanderbilt University, Nashville, TN and H. Vasken Apostolian, University of Arizona, Tuscon, AZ.
Displayed 1:30 p.m.-4:30 p.m.
Discussion 2:30 p.m.-4:30 p.m.

#1078 CHELATION, BILIARY EXCRETION AND RENAL DEPOSITION OF CADMIUM IN RATS. M A Basinger; M G Cherian; P K Singh; and M M Jones. Dept. of Chem., Vanderbilt Univ., Nashville, TN.


#1082 2,3-DIMERCAPTOSUCCINIC ACID (DMSA) ALTERS INTRACELLULAR LEAD METABOLISM IN CLONAL RAT OSTEOBLASTIC (ROS 17/2.8) CELLS. G J Long, J F Rosen. Albert Einstein College of Medicine, Bronx, NY. J G Pounds. Institute of Chemical Toxicology, Wayne State University, Detroit, MI.

#1083 2, 3-DIMERCAPTO-1-PROPANESULFONIC ACID (DMPS) AS A RESCUE AGENT FOR THE NEPHROPATHY INDUCED BY MERCURIC CHLORIDE. R K Zalups, R M Gelen and E Cernichari. Marcor Univ, School of Med., Div of Basic Medical Sciences, Macon, GA; and Univ. of Rochester Med. Ctr., Dept. of Biophysics, Rochester, NY.


#1085 EFFECTS OF DISULFIRAM ON THE ACCUMULATION OF METALS IN THE RAT BRAIN. E Delmaestro, L D Trombetta and R A Stripp. Toxicology Program, St. John's University, Queens, NY.

#1086 DDT C HEALATION, BUT NOT MESNA, LOWERS CISPLATIN NEPHROTOXICITY, KIDNEY PLATINUM LEVELS AND REDUCTION IN KIDNEY COPPER. R S DeWoskin and J E Riviere. Toxicology Program, North Carolina State University, Raleigh, NC.

THURSDAY AFTERNOON, FEBRUARY 15
BORDEAUX ROOM

POSTER/DISCUSSION SESSION: IN VITRO SYSTEMS FOR EVALUATION OF DEVELOPMENTAL TOXICITY

Chairpersons: Elaine Faustman, University of Washington, Seattle, WA and Frank Welsch, CTI, Research Triangle Park, NC.
Displayed 1:30 p.m.-4:30 p.m.
Discussion 2:30 p.m.-4:30 p.m.


#1088 STUDIES ON RETINOID BINDING TO NUCLEAR RECEPTORS FOR RETINOIC ACID. A. A. Levin, J F Grippo, C Nerv* and A M Jetton*, Dept. of Toxicology and Pathology Hoffmann-La Roche, Nutley, NJ and * Cell Biology Group. NIEHS. Research Triangle Park, NC Sponsor: E A Pfizer.

#1089 DEVELOPMENTAL NEUROTOXICITY OF ETHANOL (E0H): INTERACTION WITH MUSCARINIC RECEPTOR (MR) STIMULATED PHOSPHOINOSITIDE METABOLISM. S M Candura, W Baldini, L Manzo* and L G Costa. Dept. of Environmental Health, Univ. of Washington, Seattle, WA and * Dept. of Pharmacology, Univ. of Pavia Medical School, Pavia, Italy.

DETECTION AND RANKING OF DEVELOPMENTAL HAZARDS ASSOCIATED WITH CHLORINATED PHENOLS. K Mayura, E E Smith, B A Clement, and T D Phillips. Department of Veterinary Public Health, Texas A&M University, College Station, TX and Prairie View A&M University, Prairie View, TX.

EVALUATION OF THE DEVELOPMENTAL TOXICITY OF CITRININ USING HYDRA ATTENUATA AND POSTIMPLANTATION RAT WHOLE EMBRYO CULTURE. Y G Yang, K Mayura and T D Phillips. Department of Veterinary Public Health, Texas A&M University, College Station, TX.


CHROMOSOMAL DAMAGE TO PREIMPLANTATION EMBRYOS IN VITRO BY NAPHTHALENE. L S Gollihan, P Iyer, J E Martin, and T R Irvin. Vet Anatomy Dept. and TEES Engineering Toxicology Division, Texas A&M Univ., College Station, TX. Sponsor: A C Ray.

PERTURBATION OF GROWTH AND DEVELOPMENT OF POST-IMPLANTATION RODENT EMBRYOS IN CULTURE BY PARATHION. E K Stevens, J E Martin, and T R Irvin. Vet Anatomy Dept. and TEES Engineering Toxicology Division, Texas A&M University, College Station, TX. Sponsor: A C Ray.

EFFECTS OF ALBENDAZOLE AND ALBENDAZOLE SULFOXIDE ON CULTURES OF DIFFERENTIATING RODENT EMBRYONIC CELLS. S G Whittaker and E M Faustman. Depts. of Path. and Env. Health, Univ. of Washington, Seattle, WA.

ROLE OF TRANSFORMING GROWTH FACTOR-B IN ORGANOGENESIS IN VITRO INVESTIGATION USING LIMB AND MIDBRAIN CELLS. D Laffamme and E Faustman. Department of Environmental Health, University of Washington, Seattle, WA.

TAURINE DOES NOT ATTENUATE ISOTREINOIN TOXICITY IN CULTURED ORGANOGENESIS-STAGED RAT EMBRYOS. T J Flynn and R R Gibson. Division of Toxicological Studies, FDA, Washington, DC.

THURSDAY AFTERNOON, FEBRUARY 15
BURGUNDY ROOM

POSTER/DISCUSSION SESSION: PHAGOCYTIC CELLS AND TISSUE INJURY

Chairpersons: Rogene F. Henderson, Inhalation Toxicology Research Institute, Albuquerque, NM and Michael A. Trush, Johns Hopkins University, Baltimore, MD.

Displayed 1:30 p.m.-4:30 p.m.
Discussion 2:30 p.m.-4:30 p.m.

ACTIVATION OF BP-7,8-DIOL TO DIOLEPOXIDES BY HUMAN POLYMORPHONUCLEAR LEUKOCYTES (PMNs) AND MEYOLOPEROXIDASE (MPO). M A Trush, D R Mosebrook and W G Mallet. Johns Hopkins University, Baltimore, MD.

DEPLETION OF CIRCULATING NEUTROPHILS ATTENUATES a-NAPHTHYLTHIOCYANATE (ANT)-INDUCED LIVER INJURY. L J Dahm and R A Roth. Dept. Pharmacology and Toxicology, Michigan State University, East Lansing, MI.

2,3,7,8-TETRAChLOROdIBENZO-p-DIOXIN INCREASES THE RELEASE OF TUMOR NECROSIS FACTOR-ALPHA (TNF-α) AND INDUCES ETHOXYRESORUFIN-O-DEETHYLASE (EROD) ACTIVITY IN RAT KUPFFER'S CELLS (KCs). M J Taylor, G C Clark, Z Z Atkins, G Lucier, and M J Lustig. NIH, NIEHS, NTP, Research Triangle Park, NC.


TUMOR NECROSIS FACTOR (TNF) PRODUCTION FOLLOWING INHALATION OF COTTON DUST. L K Ryan and M H Karl. Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA.

GLUTATHIONE RELEASE BY PULMONARY ALVEOLAR MACROPHAGES IN VITRO: A POSSIBLE INDEX OF PARTICLE CYTOTOXICITY. D S Boehme and R F Henderson. Inhalation Toxicology Research Institute, Albuquerque, NM.

PULMONARY RESPONSES TO A 5 DAY INHALATION EXPOSURE TO SILICA (SiO2) OR TITANIUM DIOXIDE (TiO2). J Higgins, K E Despolit, R C Lindenschmidt, J K Maurer and M Perkins. Miami Valley Laboratories, Proctor & Gamble Co, Cincinnati, OH.
RELATIONSHIPS BETWEEN ALVEOLAR MACROPHAGE (AM) ACTIVATION, LUNG PARTICLE CLEARANCE AND PULMONARY FIBROSIS. K E Driscoll, J K Maurer, L Crosby, and D Windsor. Miami Valley Laboratories, Procter & Gamble Co, Cincinnati, OH.


BENZENE (BZ)-INDUCED ALTERATIONS IN MOUSE BONE MARROW (BM) MACROPHAGE (MP) FUNCTIONS. L MacEachern, R Snyder, and D L Laskin. Joint Grad. Prog. in Toxicology, Rutgers University, Piscataway, NJ.

THURSDAY AFTERNOON, FEBRUARY 15
GRAND BALLROOM

POSTER SESSION: BIOMARKERS

Chairperson: Leonard Friedman, U.S. FDA, Laurel, MD.
Displayed: 1:30 p.m.–4:30 p.m.
Attended: 1:30 p.m.–3:30 p.m.

MEASUREMENT OF DNA DAMAGE IN HUMAN LYMPHOCYTES EXPOSED IN VITRO TO BENZO(A) PYRENE (BP) AND ETHYLENE DIBROMIDE (EDB). J M Goldring, C R Miller, G Lucier and C L Thompson, NEHS, RTP, NC and Curr. In Toxicology, UNC, Chapel Hill, NC.

EVALUATION OF 7-SUBSTITUTED ACTINOMYCIN D ANALOGS: COMPARISON OF CYTOTOXICITY ASSAYS TO DNA STRAND-BREAKAGE ANALYSIS. C P Rosenbaum, A Agarwal and S K Sengupta, Dept. of Pharmacology, Boston Univ. School of Medicine, Boston, MA. Sponsor: C Y Walsh.

DETECTION OF METALLOTHIONEIN (MT) GENE EXPRESSION IN LYMPHOCYTES OF CADMIUM (Cd) EXPOSED RATS. G N Cosma, D Curris, K S Squibb, C A Snyder and S J Garte. Inst. of Environ. Med., NYU Medical Center, New York, NY.

IN VITRO HEMOGLOBIN ADDUCT FORMATION IN BLOOD FROM RATS, MICE AND HUMANS USING 14C-PHENOL. J D Sun and K D Muscato. Inhalation Toxicology Research Institute, Albuquerque, NM.


IN VIVO AND IN VITRO ADDUCTION OF DICHLOROACETIC ACID WITH BLOOD PROTEINS. T V Reddy, J Mattix, E L C Lin and E B Daniel. USEPA, Health Effects Research Laboratory, Cincinnati, OH.

14,1'-METHYLENE-BIS(2-CHLOROANILINE) [MOCA]: THE EFFECT OF MULTIPLE ORAL ADMINISTRATION, ROUTE AND PHENOBARBITAL INDUCTION ON MACROMOLECULAR ADDUCT FORMATION IN RATS. K Cheever, G DeBord, and T Swaarengin. NIOSH, DBBS, ETB, BTS, Cincinnati, OH.


STRESS PROTEIN SYNTHESIS INDUCED IN RAT KIDNEY BY MERCURICCHLORIDE. P L Goring, B R Fisher and C A Dick. Food and Drug Administration, Rockville, MD.

DETERMINATION OF MUCONIC ACID IN THE URINE OF WORKERS OCCUPATIONALLY EXPOSED TO BENZENE AS A BIOLOGICAL EXPOSURE INDEX. W E Bechtold, G Lucier, L S Birnbaum, S-N Yin, G-L Li, and R F Henderson. Inhalation Toxicology Research Institute, Albuquerque, NM, "National Institute of Environmental Health Sciences, Research TrianglePark, NC, "Institute of Occupational Medicine, Chinese Academy of Preventive Medicine, Beijing, Peoples Republic of China.

URINARY METABOLITES OF S-(2-BENZOTHIAZOYL)-L-CYSTEINE (BTC) AS MARKERS OF IN VIVO CYSTEINE CONJUGATE B-LYASE (LYASE) AND S-GLUCURONOSYLTRANSFERASE (SGT) ACTIVITIES. Y Hwang and A A Elfarrar. Dept. Comp. Biosci. Environ. Tox. Center, Univ. of Wisconsin, Madison, WI.

THURSDAY AFTERNOON, FEBRUARY 15
GRAND BALLROOM

POSTER SESSION: GASTROINTESTINAL TOXICOLOGY

Chairperson: Logan C. Stone, Procter & Gamble Company, Cincinnati, OH.
Displayed: 1:30 p.m.-4:30 p.m.
Attended: 3:00 p.m.-4:30 p.m.

#1122 B-PHENYLETHYLAMINE (PEA) PROTECTS RAT GASTRIC MUCOSA AGAINST ABSOLUTE ETHANOL. M J Drelkanko, Dept. of Toxicology, Allied-Signal Inc., Morristown, NJ.

#1123 THE EFFECTS OF ORAL ADMINISTRATION OF A HIGH-MOLECULAR-WEIGHT CROSSLINKED POLYACRYLATE IN RATS. R C Lindenschmidt, L C Stone, J L Seymour, R L Anderson, P A Fosberry, M J Winrow. The Procter and Gamble Company, Cincinnati, OH.

#1124 TRIMETREXATE TOXICITY IN RATS: PROTECTION BY LEUCOVORIN. J R MacDonald, C C Morse, and D G Pegg. Parke-Davis Pharmaceutical Research Division, Warner-Lambert Co. Ann Arbor, MI.

#1125 EFFECTS OF 3-HYDROXY-3-METHYLGLUTARYL COENZYME A (HMG COA) REDUCTASE INHIBITORS ON THE RODENT FORESTOMACH. M W Kloss, D H Patrick, and J S MacDonald. Department of Safety Assessment, Merck, Sharp, and Dohme Research Laboratories, West Point, PA.

#1126 SUBCHRONIC TOXICITY STUDY OF SC-39026, AN ELASTASE INHIBITOR, IN RATS. C P Chergells, S Levin, and C Cook. Searle R & D, Skokie, IL.

#1127 CORRELATION BETWEEN THE DISPOSITION OF 3-HYDROXY-3-METHYLGLUTARYL COENZYME A (HMG CoA) REDUCTASE INHIBITORS AND HYPERPLASTIC CHANGES IN RODENT FORESTOMACH. A G Zacche, M W Kloss, L L Lee, and J S MacDonald. Merck Sharp, & Dohme Research Labs., West Point, PA.

#1128 A DIETARY FLAVONOL, QUERCETIN PRODUCES DNA DAMAGE IN CULTURED COLONIC CELLS. A T Canada, L M Kaiser, T D Nguyen. Depts. of Anesthesiology and Medicine, Duke University Med. Center and Durham VA Hospital, Durham, NC.

#1129 INDUCTION OF PATHOLOGICAL CHANGES IN RAT PANCREATIC ACINAR CELLS BY CHRONIC EXPOSURES TO NICOTINE AEROSOL. L W Chang, P Chowdhury, P L Rayford. Depts. of Pathology, Pharmacology & Toxicology, and Physiology, University of AR for Medical Sciences, Little Rock, AR.

#1130 BIOCHEMICAL CHARACTERIZATION OF MICROSOMAL HEME OXYGENASE IN THE SMALL INTESTINAL EPITHELIUM. D Rosenberg and A Kappas. Dept. Metab./Pharm., The Rockefeller University, New York, NY.

THURSDAY AFTERNOON, FEBRUARY 15
GRAND BALLROOM

POSTER SESSION: HUMAN TISSUES/SUBJECTS; BIOMEDICAL DEVICES

Chairperson: Theodore J. Benya, Ethyl Corporation, Baton Rouge, LA
Displayed: 1:30 p.m.-4:30 p.m.
Attended: 3:00 p.m.-4:30 p.m.

#1131 CRYOPRESERVED HUMAN TISSUES IN RESEARCH. *D C Cook, R Fisher and K Brendel. *International Institute for The Advancement of Medicine, Essington, PA and Dept. of Pharmacology and Toxicology, College of Pharmacy, Univ. of Arizona, Tucson, AZ.

#1132 TOXICITY ASSESSMENT IN CYROPRESEVERED HUMAN KIDNEY AND LIVER SLICES. R Fisher, I G Sips, A J Gandolfi and K Brendel. Departments of Pharmacology and Toxicology, University of Arizona, Tucson, AZ.

#1133 BIOTRANSFORMATION ACTIVITY AND CHEMICAL INDUCED TOXICITY IN VITRIFIED HUMAN KIDNEY CORTICAL SLICES. S M Wishnes, A J Gandolfi, I G Sips and K Brendel. Department of Pharmacology and Toxicology, University of Arizona, Tucson, AZ.

#1134 IN VITRO METABOLISM OF [14C]-TOLUENE BY HUMAN AND RAT LIVER MICROSOMES AND LIVER SLICES. D E Chapman, T J Moore, S R Michener and G Powis. Department of Pharmacology, Mayo Clinic and Foundation, Rochester, MN.

#1135 METABOLISM OF 3-METHYLINDOLE BY HUMAN PULMONARY AND HEPATIC MICROSOMES. W Ruangyuttikarn, M L Appleton and G S Yost. Dept. Pharmacology and Toxicology, Univ. of Utah, Salt Lake City, UT.
HUMAN OSTEOLASTS AS A MODEL FOR OSTEOTOXINS. S A Swanson, C R Angle, and D J Thomas. Department of Pediatrics, University of Nebraska Medical Center, Omaha, NE.

INHIBITION OF HUMAN LIVER CYTOSOLIC GLUTATHIONE S-TRANSFERASE ISOENZYMES (GST) BY TRI-BUTYLACETATE (TBT), 2,4-DICHLOROPHENOXACETIC ACID (2,4-D) AND ETHYLENE DICHLORIDE (EDC). L G Berlad and D L Eaton. Department of Environmental Health, University of Washington, Seattle, WA.

GOOD EPIDEMIOLOGICAL PRACTICES (GEP S): STANDARD SETTING FOR THE DISCIPLINE. C L Berner, J K Baldwin, B K Hoover, A R Schnatter. Exxon Biomedical Sciences, Inc., East Millstone, NJ.

HUMAN HALON 1301 (BROMOTRIFLUOROMETHANE) INHALATION STUDY. C W Lam 6 J, D Calkins1, J Degioanni1, M Tan1, F War1, T Galen1, and D Pierson. Biomedical Laboratory Branch and 2Space Biomedical Research Institute, NASA Johnson Space Center, 3KRGInternational, 4University of Texas School Public Health, and 5University of Texas Health Sciences Center, Houston, TX.

SUBACUTE INTRAVENOUS (IV) TOXICITY OF A HYPERTONIC SALINE/DEXTRAN 70% (HSD) RESUSCITATION FLUID. S T Omaye, G M Zaucha, D F Frost, C B Clifford, L A McKinney, and D W Korte, Jr. Letterman Army Institute of Research, San Francisco, CA.

COLLAGENASE PRODUCTION BY SYNOVIAL CELLS INCUBATED WITH SIMULATED ARTIFICIAL WEAR PARTICLES. C W Stott, S J Moroney and D Abruyn. Johnson & Johnson Health Care Research, New Brunswick, NJ.

THURSDAY AFTERNOON, FEBRUARY 15
GRAND BALLROOM

POSTER SESSION: IMMUNOTOXICOLOGY

Chairperson: Jerry H. Exon, University of Idaho, Moscow, ID.
Displayed: 1:30 p.m.-4:30 p.m.
Attended: 3:00 p.m.-4:30 p.m.

ISOMER SPECIFICITY OF ANTIBODIES TO TOLUENE DISOCYANATE (TDI). R Jin and M H Karol. Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA.

LYMPHOCYTE SUBSET TypING IN CYNOMOLGUS MONKEYS. M R Blevins, J D Aley, and D A Broit. Pathology and Experimental Toxicology, Parke-Davis Pharmaceutical Research, Ann Arbor, MI.

USE OF IMMUNOHISTOCHEMISTRY TO DETECT DIPHENYLMETHANE 4,4'-DISOCYANATE (MDI) IN EXPOSED GUINEA PIGS. S Aizicovich, R Jin, D LaPietra, K F Gottlieb and M H Karol. Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA.

IMMUNOTOXICITY OF 2-METHOXY AND 2-BUTOXY ETHANOL IN RATS. J H Exon, J L Bussiere, and G M Mathe. Department of Veterinary Science, University of Idaho, Moscow, ID.

HOST RESISTANCE TO TRICHINELLA SPIRALIS INFECTION IN RATS EXPOSED TO DIALKYLITINS. R W Luetke, C B Copeland, D L Andrews, M M Riddle and R J Szmalowicz. US EPA, Research Triangle Park, NC.

METHOXYETHANOL IS IMMUNOTOXIC IN THE RAT. R J Szmalowicz, M M Riddle, R R Rogers, R W Luetke, C B Copeland, D Miller, J W Laskey and L E Gray. U.S. EPA, Research Triangle Park, NC.

RAT-ADAPTED INFLUENZA VIRUS AS A HOST-RESISTANCE MODEL FOR PULMONARY IMMUNOTOXICITY STUDIES. G R Burton1, J D Stutzman2, J P Ehrich, S D Brown1, and T M Chambers3. Environmental Toxicology Division, Health Effects Research Laboratory, USEPA, RTP, NC, 4NSI-ES, RTP, NC, and 5St. Jude Children's Research Hospital, Memphis, TN.


THE EFFECT OF FBS AND DMSO ON THE TCDD-INDUCED SUPPRESSION OF THE IN VITRO T-DEPENDENT HUMORAL IMMUNE RESPONSE. D L Morris, N K Snyder, S D Jordan, and M P Holappa. Department of Pharmacology and Toxicology, Medical College of Virginia, Richmond, VA.

PROTEIN PHOSPHORYLATION AND TYROSINE KINASE ACTIVITY IN TCDD EXPOSED B LYMHPHOCYTES. D R Gormolec, G C Clark, J A Blank and M J Ludar. Immunotoxicology Group, Systemic Toxicology Branch and Laboratory of Biochemical Risk Analysis, NIEHS, Research Triangle Park, NC.
GAMMA INTERFERON ANTAGONISM OF 2,3,7,8-TCDD-INDUCED ANTIBODY RESPONSE SUPPRESSION: ARE IL-4-MEDIATED PROCESSES INVOLVED? N K Snyder, R K Dooley, C M Kramer, D L Morris and M P Holcapek. Department of Pharmacology and Toxicology, The Medical College of Virginia of Virginia Commonwealth University, Richmond VA.

IMMUNE CELL ALTERATIONS FOLLOWING GESTATIONAL EXPOSURE TO 2,3,7,8-TETRA-CHLOROBENZO(p)DIOXIN. C Comment, P Lindstrom, D Germolec, R Morrissey and M J Luster. Systematic Toxicology Branch, National Institute of Environmental Health Sciences/NIH, Research Triangle Park, NC.

FUNCTIONAL ANALYSIS OF ANTIGEN-PRESENTING CELLS FOLLOWING ANTIGEN CHALLENGE: INFLUENCE OF 2,3,7,8-TCDD/CHLOROBENZO(p)-DIOXIN (TCDD). N I Korkvist and J A Brauner. College of Veterinary Medicine, Oregon State University, Corvallis, OR.

IMMUNOTOXICITY OF THE PYRROLIZIDINE ALKALOIDS MONOCRATALINE FOLLOWING SUB-CHRONIC ADMINISTRATION IN C57BL/6 MICE. J A Deyo and N I Korkvist. College of Veterinary Medicine, Oregon State University, Corvallis, OR.

ADRENALECTOMY (ADX) AND 3,4,5,3',4',5' HEXACHLOROBIPHENYL (HxCB) SUPPRESSION OF CYTOTOXIC T LYMPHOCYTE (CTL) RESPONSE TO P815 ALLOGENEIC TUMOR IN C57BL/6 MICE. G K DeKrey, L B Steppan, J A Deyo and N I Korkvist. College of Veterinary Medicine, Oregon State University, Corvallis, OR.

IMMUNOTOXICOLOGICAL PROPERTIES OF N-NITROHYDROXYETHYLNITROSAMINE (NHEMA). S C Wood and M P Holcapek. Department of Pharmacology and Toxicology, Medical College of Virginia, Richmond, VA.

ROLE OF 7,12-DIMETHYLBENZ(a)ANTHRACENE (DMBA) METABOLITES IN MEDIATING ITS IMMUNOTOXICITY. G S Ladic, T T Kawabata, and K L White, Jr. Departments of Pharmacology and Toxicology and Biostatistics, Medical College of Virginia/VCU Richmond, VA.

THE EFFECT OF PRENATAL EXPOSURE TO CHLORODANE ON THE INFLUENZA IMMUNE RESPONSE IN BALB/c MICE. B L Blaylock, J B Barnett, L S Soderberg, J H Menza and J Gandy. Dept. of Microbiology and Immunology, Univ. of Arkansas for Medical Sciences. Little Rock, AR.

INTERLEUKIN 2 (IL-2) DRIVEN PROLIFERATION OF HUMAN LARGE GRANULAR LYMPHOCYTE IS SUPPRESSED BY CARBARYL. S Barani and G P Casale. University of Nebraska Medical Center, College of Pharmacy, Omaha, NE.


ROLE OF GALLIUM AND/OR ARSENIC IN GALLIUM ARSENIDE INDUCED IMMUNOSUPPRESSION. L A Burns, E E Sikorski, C Wolf, Jr, J Saady, and A E Munson. Deps. Pharmacology, & Toxicol. and Pathol., Medical College of Virginia/VCU, Richmond, VA.


IMMUNOTOXICITY OF DIACETOXYCIRPENOL (DIS) IN MICE. R S Tomar, B R Blackley and S S Gill. Department of Entomology and Environmental Toxicology Graduate Program, University of California, Riverside, CA, and Veterinary Physiological Sciences, University of Saskatchewan, Saskatoon, Canada.


EFFECT OF S-ETHYLTIOFLUOROACETATE PRETREATMENT ON THE IMMUNE RESPONSE TO HALOTHANE IN THE GUINEA PIG. K L Hastings, S Schuman, A P Brown, C Thomas, A J Gandolfini. Department of Anesthesiology, University of Arizona, Tucson, AZ.

TOXICOLOGY AND IMMUNOTOXICITY FOLLOWING MURINE EXPOSURE TOQUATERNARY AMMONIUM COMPOUNDS (QAC). M J Murray, P A Horn, P T Thomas, R V House, J H Dean. Proctor & Gamble Co., Cincinnati, OH; ITTRI, Chicago, IL; Sterling-Winthrop, Rensselaer, NY.

EVALUATION OF CEPHALOSPORIN IMMUNOTOXICITY IN MICE. K Furuhashi, R W Benson, B J Knowles, D W Roberts. National Center for Toxicological Research, Jefferson, AR.

RAINBOW TROUT PERITONEAL MACROPHAGE: DEVELOPMENT OF A MODEL FOR IMMUNOTOXICITY TESTING. N A Enane, J T Zeikoff, J M O'Connor and K S Squibb. NYU Medical Center, NY, NY.
POSTER SESSION: HEPATOTOXICITY II

THURSDAY AFTERNOON, FEBRUARY 15
FONTAINEBLEAU BALLROOM D

Chairperson: Michael Lee Cunningham, NIEHS, Research Triangle Park, NC.
Displayed: 1:30 p.m.-4:30 p.m.
Attendees: 1:30 p.m.-3:00 p.m.

HEPATOTOXICITY OF ETHANOL ADMINISTERED SIMULTANEOUSLY WITH EITHER CARBON TETRACHLORIDE OR ALLYL ALCOHOL IN RATS. J W Allis, J E Simmons, D E House, B L Robinson, A McDonald, and E Berman. Health Effects Research Laboratory, U.S. and "NSI, RTP, NC.

NUCLEAR CA$^{2+}$ ACCUMULATION AND DNA FRAGMENTATION IN VIVO DURING ACETAMINOPHEN-INDUCED LIVER INJURY IN MICE. G B Corcoran, S D Ray, C Sorge, E Braun, A Tavocoll, J L Raucy. Toxicology Program, Univ. of New Mexico College of Pharmacy, Albuquerque, NM.


ALTERATION OF HEPATIC LIPID COMPOSITION BY MIREX. J Elgin, L Jovanovich and M A Q Khan. Dept. Biological Sciences, University of Illinois, Chicago, IL.

EFFECT OF DIETARY PROTEIN CONTENT ON THE ACTIVITY OF RAT LIVER S9 IN THE AMES SALMONELLA/MAIMMAL MICROSOE MUTAGENICITY ASSAY. G M Woodall, D M Delmann, and W C Dauterman. Dept. of Toxicology, North Carolina State University, Raleigh, NC; "U.S. Environmental Protection Agency, Research Triangle Park, NC.

ROLE OF GLUTATHIONE IN ACETAMINOPHEN INDUCED POTENTIATION OF 1,1-DICHLOROETHYLENE TOXICITY. P B Wright and L Moon. Dept. of Pharmacol. USUHS, Bethesda, MD.

PARACELLULAR/TRANSCELLULAR PERTURBATIONS AND BILE FLOW IN RATS. D J Gilroy, R E Larson, O R Hedstrom and J R Dujmstra. Oregon State University, Corvallis, OR.


HEPATOTOXICITY OF VALPORIC ACID AND METABOLITES IN PERINATAL RAT AND HUMAN LIVER SLICES. K Brendal, R Fisher, H Nau and R H Hauck. Department of Pharmacology, Univ. of Arizona, Tucson, AZ and Institute for Toxicology Free University, Berlin, FRG.

EFFECT OF FLAVONOID DERIVATIVES ON MICROCYSTIN-LR HEPATOTOXICITY. A B Fajer and K A Merish. USAMRIID, Fort Detrick, Frederick, MD and University of Maryland School of Medicine, Baltimore, MD. Sponsor: R Wannemacher, Jr.

INDUCTION OF PORPHYRIA IN PRIMARY MOUSE AND RAT HEPATOCYTE CULTURES. A M Brady and E A Lack. ICI Central Toxicology Laboratory, Macclesfield, UK.


SUBCHRONIC ORAL TOXICITY OF 1,3-DICHLOROPROPAINE IN THE RAT. L H Billups, J B Tenill, G W Wolfe, M Robinson. Hazleton Laboratories America, Inc., Rockville, MD and Environmental Toxicology Division, Health Effects Research Laboratory, US EPA, Cincinnati, OH.

DEVELOPMENT OF A DATABASE OF XENOBIOTIC EFFECTS AT THE PROTEIN LEVEL FOR USE IN EXPERIMENTAL TOXICOLOGY. N L Anderson, J P Hofmann and N G Anderson, Large Scale Biology Corporation, Rockville, MD.


EFFECTS OF BUTYLATED HYDROXYTOLUENE ADMINISTERED PRIOR TO AND DURING PREGNANCY AND LACTATION IN ADULT AND NEONATAL RATS. R H Hinton, S C Price, M MacFarlane, S Cottrell, J N Bremner, Bomhard E M and P Grasso. Robens Institute, University of Surrey, Guildford, Surrey, UK. Sponsor: J W Bridges.
THE MICROSONAL MONOOXYGENASE SYSTEM OF REGENERATING LIVER. C K Lumpkin, M J J Ronis and T M Badger, Department of Pediatrics, University of Arkansas for Medical Sciences, Little Rock, AR. Sponsor: J Gandy.


TAUROUSODEXYCHOLATE (TUDC), BUT NOT TAUCOLATE (TC), CAN REVERSE CHLORPROMAZINE (CPZ)-INDUCED CHOLESTASIS IN THE ISOLATED PERFUSED RAT LIVER. R Utilii, C C Abernathy, H J Zimmerman and M F Tripodi. Institute for Medical Therapy, University of Naples, Italy. Office of Drinking Water, U.S. EPA and Armed Forces Institute of Pathology, Washington, DC.

DIFFERENTIAL HEPATOTOXICITY OF DICHLOROBENZENE (DCB) ISOMERS IN FISCHER-344 (F-344) AND SPRAGUE-DAWLEY (SD) RATS. L Gunawardhana, E R Stine and I G Sinas. Dept. of Pharmacology & Toxicology, College of Pharmacy, University of Arizona, Tucson, AZ.


INHALATION STUDIES OF 3.1 OIL FOR DETERMINATION OF A NO- EFFECT LEVEL. E R Kinkead, H G Wall, C S Godin, R E Whitmire, and D R Mattie. NSI Technology Services Corporation, Dayton, OH; *AAMRL/THT Wright-Patterson Air Force Base, OH.

EFFORTS TO REVERSE DOXURUBIN-INDUCED HEPATOTOXICITY IN MICE. R Raj, S Deodhar and Y Belenky. A&M College of Pharmacy & Health Sci., Long Island University, Brookline, NY.


HYPOTENSION-INDUCED INCREASE IN HEPATIC MITOTIC ACTIVITY IN RATS. H A Solleveld and R A Macia, Depts. of Experimental pathology and Investigative Toxicology, SmithKline and French Labs., King of Prussia, PA. Sponsor: R S Goldberg.

PERSISTENCE OF ALTERED BILIARY TREE PERMEABILITY AFTER RECOVERY FROM MIREX-INDUCED HEPATOBILIARY DYSFUNCTION. L D Curtis. Oak Creek Laboratory of Biology, Dept. Fisheries and Wildlife, Oregon State University, Corvallis, OR.

13-WEEK TOXICITY STUDY OF PHENYL AND PHENYLTHISOXOCYANATES IN FISCHER 344 RATS FED AIN-76A PURIFIED DIET. O Adam-Rodwell, P Conran, S Mandal, and G Stoner. Medical College of Ohio, Department of Pathology, Toledo, OH.

HEPATIC ULTRASTRUCTURAL CHANGES INDUCED BY PHENYL AND PHENYLTHISOXOCYANATES IN RATS FED AIN-76A PURIFIED DIET. R G Hay, S D Crofoot, J Randall, J Haskins, G Adam-Rodwell, and D D Stoner. Department of Environmental and Industrial Health, The University of Texas, Ann Arbor, MI and Department of Pathology, Medical College of OH, Toledo, OH.

EFFECTS OF CHRONIC SWIM-TRAINING AND BOUTS OF ACUTE EXHAUSTIVE EXERCISE ON HEPATIC AND RENAL FUNCTION FOLLOWING ACETALDEHYDE ADMINISTRATION. D L Kaplan, M A Smith and R Hildebrandt. The University of New Mexico, Toxicology Program, College of Pharmacy, Albuquerque, NM. Sponsor: S W Burchiel.

IN VIVO HEPATIC BIOCHEMICAL CHANGES AS A RESULT OF ACUTE COCAINE ADMINISTRATION IN THE MOUSE. C S Boyer and D R Petersen. Molecular Toxicology and Environmental Health Sciences Program, University of Colorado, Boulder, CO.

LAMELLAR BODY (LB) FORMATION BY AN AMINOCYCLITOL ANTIBIOTIC IN RATS WITH ALTERED HEPATIC METABOLIC CAPACITY. K Tomaszewski, P Jeffrey, G Harries and R Ulrich. Upjohn Ltd., Crawley, UK and The Upjohn Company, Kalamazoo, MI.

THURSDAY AFTERNOON, FEBRUARY 15
FONTAINEBLEAU BALLROOM D

POSTER SESSION: NEUROTOXICOLOGY II

Chairperson: Stephen Michael Lasley, University of Illinois, Peoria, IL.
Displayed: 1:30 p.m.-4:30 p.m.
Attended: 3:00 p.m.-4:30 p.m.
EFFECTS OF LEAD EXPOSURE DURING DIFFERENT PERIODS OF DEVELOPMENT ON SPATIAL DELAYED ALTERNATION IN MONKEYS. D C Rice and S G Gilbert. Toxicology Research Division, Health Protection Branch, Ottawa, Ontario, Canada.


INFLUENCE OF AGING ON THE IMPAIRMENT OF MEMORY PRODUCED BY DIAZEPAM. H L Komisky, M A Buck, K L Mundinger, F K McSweeney, V A Farmer and M D Dougan. The Xavier Institute of Environmental Toxicology, Xavier University of Louisiana, College of Pharmacy, New Orleans, LA and Department of Psychology, Washington State University, Pullman, WA.

INCREASED SENSITIVITY TO AN ANTICHOLINERGIC-INDUCED COGNITIVE DEFICIT AFTER CHRONIC NICOTINE ADMINISTRATION. E D Levin and J E Rose. Nicotine Research Laboratory, VA Medical Center and Dept of Psychiatry, Duke University, Durham, NC.

INTRAPERITONEAL CARBON MONOXIDE AND DEVELOPMENTAL NEUROTOXICITY TESTS. J L Orr, S S Singh, and J A Dellinger. Toxicology and Applied Pharmacology, Southwest Research Institute, San Antonio, TX.


EFFECT OF IN UTERO CAFFEINE EXPOSURE ON SPATIAL AND NON-SPATIAL MATCHING TO SAMPLE PERFORMANCE IN INFANT MONKEYS. S S Gilbert and D C Rice. Toxicology Evaluation Division and Toxicology Research Division, Bureau of Chemical Safety, Food Directorate, Health Protection Branch, Health and Welfare Canada, Ottawa, Canada.

NEUROBEHAVIORAL EVALUATION OF EXPOSURE TO 4, 4'-THIOBIS-(6-T-Butyl-m-CRESOL) IN FISCHER 344 RATS. G B Freeman, R Trejo, M Hoffman, A Peters, P Kurtz, and L S Binbaum. Battelle, Columbus, OH and "National Toxicology Program, RTP, NC.

ACUTE CARBON MONOXIDE EFFECTS ON BRAIN-STIMULATION REWARD IN RATS. J D Rowan and S B Fountain. Dept. of Psychology, Kent State University, Kent, OH. Sponsor: Z Annau.


RAT STRAIN AND STOCK COMPARISONS USING A FUNCTIONAL OBSERVATIONAL BATTERY: BASELINE VALUES AND EFFECTS OF AMITRAZ. V C Moser, K L McDaniel and P M Philips. NSI Technology Services, Research Triangle Park, NC.

VALIDATION OF A NEUROTOXICITY TEST BATTERY: EFFECTS OF ACRYLAMIDE (ACR) AND 3',3''-IMINOPROPIONITRILE (IPDN). G E Schultze and B Boysen. Hazleton Laboratories America Inc., Vienna, VA.

FUNCTIONAL OBSERVATIONAL BATTERY AND MOTOR ACTIVITY ASSESSMENT IN RATS. S Singh and J Dellinger. Toxicology and Applied Pharmacology, Southwest Research Institute, San Antonio, TX.


DEVELOPMENTAL NEUROTOXICITY FOLLOWING NEONATAL EXPOSURE TO IMINODIPROPIONITRILE (IDPN) IN THE RAT. K M Crofton, M E Stanton and D B Peele. Neurotoxicology Division, US ECOA, RTP, NC and NSI Technology Services, RTP, NC.
EVIDENCE OF LEARNING AND MEMORY DEFICITS FOLLOWING ADULT EXPOSURE TO
IMINODIPROPIONITRILE (IPN) IN THE RAT. D B Peele and K M Crofton. NSI-Environmental Sciences, and
Neurotoxicology Div., U.S. Environmental Protection Agency, RTP, NC.

EFFECTS OF CARFENTANIL ON AUDITORY BRAINSTEM EVDOK RESPONSES (ABRS) IN FERRETS.
S A Rueter and R J Moduszewski, Toxicology Div., Chemical Research Development and Engineering Center,
APG, MD. Sponsor: H Salem.

SUBCHRONIC INHALATION TOXICITY AND NEUROTOXICITY STUDIES WITH ETHYLENE GLYCOL
MONOPROPYL ETHER IN RATS. G V Katz, L G Bernard, D Q Topping, and M S Vlajovic. Health and Environmental
Laboratories, Eastman Kodak Company, Rochester, NY.

1,2-DICHLOROPROPANE (DCP): TSCA NUEROTOXICOLOGY GUIDELINE EVALUATION OF RATS
EXPOSED TO VIA GAVAGE FOR 13 WEEKS. J K Mattson, K A Johnson, S J Gorzinski and R R Albee. Health
and Environmental Sciences, The Dow Chemical Co., Midland, MI.

THE COMPARABILITY OF RAT AND HUMAN VISUAL EVOKED POTENTIALS. H K Hudnell and
W K Boyes. Neurotoxicology Division, US EPA, Research Triangle Park, NC.

ALTERATIONS IN RAT VISUAL-EVOKED POTENTIALS (VEPS) AFTER ACUTE OR REPEATED
CARBON DISULFIDE (CS2) EXPOSURE. D W Herr, M S Berccey, W K Boyes, and R S Dyer. Neurotoxicology
Division, US EPA, RTP, NC.

REDUCED VISUAL CONTRAST SENSITIVITY IN RATS AFTER REPEATED EXPOSURE TO
EPA, RTP, NC.

LOSS OF CHOLINERGIC THETA IN CA1 OF HIPPOCAMPUS FOLLOWING COLCHICINE. M E Gilbert
and G Peterson. NSI Technology Services Corp. RTP, NC and East Carolina University, Greenville, NC. Sponsor: K
M Crofton.

NEUROBEHAVIORAL EFFECTS OF WHITE SPIRITS DURING ACUTE AND CHRONIC EXPOSURE.
B M Kulig. Medical Biological Laboratory TNO. Rijswijk, Netherlands.

THURSDAY AFTERNOON, FEBRUARY 15
FONTAINEBLEAU BALLROOM D

POSTER SESSION: DIOXINS

Chairperson: James R. Olson, SUNY-Buffalo, Buffalo, NY.
Displayed: 1:30 p.m.-4:30 p.m.
Attended: 1:30 p.m.-3:00 p.m.

PERCUTANEOUS ABSORPTION OF NEAT 2,3,7,8-TETRACHLORO-DIBENO-P-DIOXIN (TCDD) AND
TCDD ABSORBED ON SOILS. T A Roy, J J Yang, A J Krueger and C R Mackerer, Mobil Environmental and Health

MAXIMUM DERMAL ABSORPTION OF TCDD OCCURS IN WEANLING RATS. J A Jackson,
Y B Banks, and L S Birnbaum. NIEHS, Research Triangle Park, NC.

FINITE DERMAL ABSORPTION AFTER LOW DOSE TCDD EXPOSURE. Y B Banks and L S Birnbaum.
NIEHS, Research Triangle Park, NC.

EFFECT OF CONTACT TIME AND MATRIX TYPE ON TRANSPULMONARY ABSORPTION OF TCDD
FROM LABORATORY-CONTAMINATED FLY ASH AND GALLIUM OXIDE. C S Nease, M A Ammarso, T H
Medicine, UM/DNJ-R W Johnson Medical School, Piscataway, NJ. and "NJDEP, Trenton, NJ.

A PHYSIOLOGICAL MODELING ANALYSIS OF THE DOSE-DEPENDENCE OF 2,3,7,8-TETRA-
CHLORODIBENZO-P-DIOXIN (TCDD) PHARMACOKINETICS IN WISTAR RATS. M E Anderson. CIIT, Research
Triangle Park, NC.

DISPOSITION OF INTRAVENOUS 2,3,7,8-TETRABROMODIBENZO DIOXIN (TBBDO) IN RATS.
L Buckley Kedders, J J Diberto, and L S Birnbaum. NIEHS, Research Triangle Park, NC and Curriculum in Toxicology,
UNC, Chapel Hill, NC.

SHORT-TERM DISPOSITION OF TCDD IN RATS AFTER IV INJECTION. S W Ernst, L W D Weber,
B U Stahl and K Rozman. University of Kansas Medical Center, Kansas City, KS (USA): Institute fur Toxikologie,
GSF Munich, Neurerberg (FRG); Medizinische Fakultat, Universitat Erlangen-Nurnberg (FRG).

EFFECTS OF 2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN (TCDD) AS AN ANTIESTROGEN IN MCF-7
HUMAN BREAST CANCER CELLS. L Siegel and S Sato. Department of Veterinary Physiology and Pharmacology,
Texas A&M University, College Station, TX.
8-iodo-5-methyl-1,3-dichloro-dibenzofuran (I-MCDF) and 125I-MCDF as 2,3,7,8-tetrachlorodibenzofuran (TCDD) antagonists. T. Zacharewski, J. Piskorska-Pliszcynska, R. Rosengren, B. Astrott, M. Harris, L. Safe, and S. Safe. Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

Partial antagonism of 2,3,7,8-tetrachlorodibenzofuran-p-dioxin (TCDD)-induced CYP1A1 gene expression by a-naphthoflavone. M. Merchant, L. Arellano, and S. Safe. Departments of Veterinary Physiology and Pharmacology and Biochemistry and Biophysics, Texas A&M University, College Station, TX.

Halogenated aryl hydrocarbon-induced suppression of the in vitro plaque-forming cell (PFC) response to sheep red blood cell (SRBC) is not dependent on the Ah receptor. D. Davis, and S. Safe. Departments of Veterinary Physiology and Pharmacology and Biochemistry and Biophysics, Texas A&M University, College Station, TX.

Comparative toxicities of heptachlorodibenzofuran isomers in C57BL/6 mice. R. Dickerson, L. Howie, D. Davis, and S. Safe. Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

The role of estrogens in liver tumor promotion by TCDD in rats. Q. Lucier, T. Godsworthy, J. Foley, J. Goldstein, G. Clark, and R. Maronpot. NIEHS and CIT, Research Triangle Park, NC.

Role of transforming growth factor-b in TCDD-induced changes in growth of epithelial cells. C. D. Hebert and L. S. Birnbaum. NIEHS, Research Triangle Park, NC and University of North Carolina, Chapel Hill, NC.

Reversal of the toxicity of TCDD by putrescine. T. Thomas, S. A. MacKenzie, and M. A. Galle. Department of Environmental and Community Medicine, UMDNJ-Robert Wood Johnson Medical School, Piscataway, NJ.

2,3,7,8-tetrachlorodibenzofuran-p-dioxin (TCDD) alters 3H-labeling of guinea pig (GP) pancreatic membranes (PMs). K. Ebner and F. Majumdar. Pesticide Research Center, Michigan State University, East Lansing, MI.


Effects of perinatal exposure to 2,3,7,8-tetrachlorodibenzofuran-p-dioxin (TCDD) on reproductive function in male rats. D. L. Bjerke, T. A. Mabry, R. W. Moore, and R. E. Peterson. School of Pharmacy and Environmental Toxicology, Univ. of Wisconsin, Madison, WI.

Persistence of hydronephrosis in mice following in utero and/or lactation exposure to 2,3,7,8-tetrachlorodibenzofuran-p-dioxin (TCDD). L. A. Couture, M. W. Harris, A. M. Clark, and L. S. Birnbaum. NIEHS, Research Triangle Park, NC and UNC, Chapel Hill, NC.


Interspecies sensitivity to TCDD examined using embryonic palatal organ culture. B. D. Abbott and L. S. Birnbaum. NIEHS, Research Triangle Park, NC.


Biological effects in and deposition to eggs produced by female Japanese medaka (Oryzias latipes) exposed to 2,3,7,8-tetrachlorodibenzofuran-p-dioxin (TCDD). R. Prince and K. R. Cooper. Joint Graduate Program in Toxicology, Rutgers University/UMDNJ, Piscataway, NJ.

Differential induction of cytochrome P-450 isozymes by a single dose of 2,3,7,8-tetrachlorodibenzofuran-p-dioxin in mouse liver and lung. L. E. Beabe and L. M. Anderson. Lab. of Comparative Cancerogenesis, NCI-PCRF, Frederick, MD.


Hepatic ACC activity but not protein is decreased by TCDD. K. Marien, J. M. Mckim, H. W. Schauss, and D. P. Selivonchik. Dept. of Food Science, and Dept. of Biochem. & Biophys., Oregon State Univ., Corvallis, OR.
THURSDAY, FEBRUARY 15
5:00 p.m.-6:30 p.m.

SPECIALTY SECTION MEETINGS (EXCEPT MECHANISMS AND RISK ASSESSMENT)

Please check the hotel lobby board for room assignments.

FRIDAY MORNING, FEBRUARY 16
8:30 a.m.-11:30 a.m.
FONTAINEBLEAU BALLROOM A

SYMPOSIUM: HEALTH EFFECTS OF INHALED FIBROUS MATERIALS

Chairpersons: Neil F. Johnson, Inhalation Toxicology Research Institute, and David B. Warheit, Du Pont Haskell Laboratory, Newark, DE.
Sponsored by the Inhalation Specialty Section

Chronic inhalation of asbestos fibers has been associated with the development of fibrotic lung disease (i.e., asbestosis), bronchogenic carcinoma, and pleural mesothelioma. Inasmuch as the correlation between occupational exposure to asbestos and lung disease has been confirmed, it seems likely that the commercial use of asbestos fibers will be banned in the near future. To fill the void, a variety of non-asbestos-form synthetic and mineral fiber substitutes are currently being promoted for commercial use in the insulating and composite industries. The potential pulmonary toxicity of many of these materials has not been fully determined, although the pathogenic effects of asbestos and other fibers have been attributed to their fibrous nature. It is widely accepted that fiber dimension is one of the most important factors in the pathogenesis of asbestos-induced lung disease.

#66 8:30  Introduction. Neil F. Johnson, Inhalation Toxicology Research Institute, and David B. Warheit, Du Pont Haskell Laboratory, Newark, DE.
#67 8:40  Introduction to Fiber Toxicology. Gerald L. Kennedy, Jr., Du Pont Haskell Laboratory, Newark, DE.
#68 9:10  Use of Mammalian Cells in Culture to Assess the Genotoxic and Carcinogenic Potential of Asbestos and Man-Made Vitreous Fibers (MMVF). Tom W. Hesterberg, Manville Technical Center, Littleton, CO.
#69 9:40  In Vivo Assessments of Pulmonary Toxicity Following Exposure to Inhaled Fibers: Utilization of Bronchoalveolar Lavage (BAL) and Fixed Lung Tissue to Assess Fiber Deposition Patterns and Early Cellular Responses. David B. Warheit, Du Pont Haskell Laboratory, Newark, DE.
#70 10:10 Assessment of the Biological Effects of Inorganic Fibrous Materials in Animal Experiments. Neil F. Johnson, Inhalation Toxicology Research Institute, Albuquerque, NM.
#71 10:40 Human Exposure and Disease Associated with Inorganic Fibrous Materials. Jon L. Konzen, Owens-Corning Fiberglas Corporation, Toledo, OH.
11:10  Discussion.

FRIDAY MORNING, FEBRUARY 16
8:30 a.m.-11:30 a.m.
FONTAINEBLEAU BALLROOM B

SYMPOSIUM: PEROXISOME PROLIFERATION AND NONGENOTOXIC CARCINOGENESIS

Chairperson: David E. Moody, University of Utah, Salt Lake City, UT
Sponsored by the Mechanisms Specialty Section

First observed in 1965 as a causal factor in clofibrate-induced hepatomegaly, a number of diverse compounds have now been found to induce hepatic peroxisome proliferation. The identification of peroxisome proliferators is based upon predictable cellular changes which include: 1) hepatomegaly accompanied by increases in peroxisomes and smooth endoplasmic reticulum; 2) increases in peroxisomal and non-peroxisomal enzymes involved in lipid and hydrogen peroxide metabolism; 3) induction of drug-metabolizing enzymes; and 4) hypolipidemia.
The limited number which have undergone chronic bioassays, 5) have also been found to cause hepatocarcinogenesis after long-term, relatively high dose, continuous treatment. This latter finding brings this class of compounds into the forefront of toxicological interest. Based on these criteria, greater than 50 chemicals have now been found to elicit peroxisome proliferation. These compounds, of diverse commercial and environmental concern, include liberate and non-liberate hypolipidemic agents, other drugs, placitizers with analogs of 2-ethylhexanol as the esters, selected pesticides, and certain halogenated hydrocarbons. First, an updated overview on the phenomenon of peroxisome proliferation, and their potential mechanism of carcinogenesis will be presented. Secondly, correlative in vivo and in vitro studies will be presented which address structure-activity relationships, species specificity, and mechanisms of proliferation. Thirdly, some alternative avenues of carcinogenesis by these chemicals will be addressed. The formal presentations will close with comments on the regulatory perspective in regard to peroxisome proliferation and human cancer risk assessment, followed by a panel discussion on items of special interest.

FRIDAY MORNING, FEBRUARY 16
LeMans Room

POSTER/DISCUSSION SESSION: ASSESSMENT OF CHEMICAL INTERACTIONS WITH DNA

Chairpersons: James Bond, CIIT, Research Triangle Park, NC, and Hazel B. Matthews, NIIEHS, Research Triangle Park, NC.

Displayed 8:30 a.m.-11:30 a.m.
Discussion 9:30 a.m.-11:30 a.m.

#1261 DIFFERENTIAL DNA-PROTEIN CROSSLINKING IN RAT LYMPHOCYTES, LIVER AND KIDNEY FOLLOWING EXPOSURE TO CHROMIUM (VI) IN DRINKING WATER. T Coogan, J Motz, C Snyder, S Squibb, and M Costa. NYU Medical Ctr., Inst. Environ. Med., Tuxedo, NY.

#1262 ANALYSIS OF AFLATOXIN B1-DNA ADDUCTS WITH ENZYME-LINKED IMMUNOSORBENT ASSAY. D P H Heigh, M-S Zhao, C X Li, J N Seiber, B D H mammock, and F S Chu. Dept. Environ. Toxicol., Univ. of California, Davis, CA; Dept. Food Microbiol. Toxicol., Univ. of Wisconsin, Madison, WI.

#1263 A BLOTTING METHOD TO MONITOR THE FORMATION OF CHEMICALLY-INDUCED DNA-PROTEIN COMPLEXES. M D Cohen, C A Miller, L S Xu, E T Snow, and M Costa. Institute of Environmental Medicine, New York University Medical Center, New York, NY.

#1264 COMPARISON OF DNA-PROTEIN CROSSLINKS (DPCs) FORMED BY CHROMIUM COMPOUNDS WITH THOSE INDUCED BY cis-DIAMMINEDICHLOROPlatinUM(II) (cisPt) AND FORMALDEHYDE (CH2O). C A Miller, M D Cohen, and M Costa. New York University, Department of Environmental Medicine, Tuxedo, NY.

#1265 DNA ADDUCTS WITH ISOPROPYLMETHANESULFONATE. F Li, J J Solomon, F Mukai and A Segal. Dept. Environmental Medicine, New York University Medical Center, New York, NY. Sponsor: M Costa.

#1266 DNA ADDUCT FORMATION IN CD-1 MICE AND FISCHER 344 RATS TREATED WITH 2,5-DINITROTOLUENE AND PENTACHLOROPHENOL. M J Kohan, S E George, M H George, J E Gallagher, and R W Chadwick. HERL, USEPA, and EHRT, Inc., Research Triangle Park, NC.

#1267 EFFECT OF ACETYLATOR GENOTYPE ON THE LEVELS OF CARCINOGEN-DNA ADDUCTS IN INBRED HAMSTERS TREATED WITH 2-AMINOFUORENE. T J Flammang, T Yerokun, D W Hein, G Talaska, W G Kirklin, F Ogolla and R J Ferguson. National Center for Toxicological Research, Jefferson, Ar and Morehouse School of Medicine, Atlanta, GA. Sponsor: J A Hinson.

#1268 AFLATOXIN DNA ADDUCT FORMATION IN CHRONICALLY DOSED RATS FED A CHOLINE DEFICIENT DIET T F Schrager, P M Newberne, A H Pikul and J D Groopman Boston Univ. School of Medicine Boston, MA.

#1269 MECHANISM OF CHEMOPROTECTION AGAINST AFLATOXIN (AFB1)-INDUCED HEPATOCARCINOGENESIS IN RATS BY OLTIPRAZ. T W Kasprzak, N E Davidson, P A Egner, K Z Guyton, J D Groopman, Y-L Luis, and B D Rosucka. Johns Hopkins Medical Institutions, Baltimore, MD and Dartmouth Medical School, Hanover, NH.

#1270 DNA SEQUENCE ANALYSIS OF HER2 MUTATIONS OCCURRING IN VIVO IN HUMAN TLYMPHOCYTES. L Recio, J Cochran, D Simpson, T R Skopek, J P O'Neill, J A Nicklas, and R J Albertini. CIIT, RTP, NC. Univ. of
#1271
IN VITRO ASSESSMENT OF RAT LYMPHOCYTE DNA REPAIR FUNCTION FOLLOWING CHRONIC DRINKING WATER EXPOSURE TO CHROMIUM (VI). N Christie, T Coogan, J Motz, C Snyder, and K Squibb; NYU Medical Ctr., Inst. Environ. Med., Tuxedo, NY.

FRIDAY MORNING, FEBRUARY 16
BURGUNDY ROOM

POSTER/DISCUSSION SESSION: GLUTATHIONE

Chairpersons: Clay Frederick, Rohm & Haas Company, Spring House, PA and Nazzareno Ballatori, University of Rochester, Rochester, NY
Displayed: 8:30 a.m.-11:30 a.m.
Discussion: 9:30 a.m.-11:30 a.m.

#1272

#1273
IS THE LIVER AN IMPORTANT SITE OF GLUTATHIONE DEGRADATION? C A Patterson and N Ballatori. Environmental Health Sciences Center, Univ. of Rochester School of Medicine, Rochester, NY.

#1274
RATIO OF GLUTATHIONE (GSH) HYDROLYSIS PRODUCTS/TOTAL SULFUR (THIOLS PLUS DISULFIDES) IN BILE REFLECTS HEPATIC GAMMA-GLUTAMYLTRANSPEPTIDASE (GPT) ACTIVITY IN RATS. D Satsangi, C Madhu, D Y Mitchell, and C D Krugger. University of Kansas Med. Ctr., Kansas City, KS.

#1275
GLUTATHIONE TURNOVER IN 14 RAT TISSUES. D W Potter and T Tran. Rohm and Haas Co., Spring House, PA. Sponsor: C B Frederick.

#1276
EFFECTS OF o-XYLENE ON GLUTATHIONE SYNTHESIS AND UTILIZATION. T G Aucoin and R A Schatz. Toxicology Program, Northeastern University, Boston, MA.

#1277
BUTHIONINE SULFOXIMINE DEPLETES BOTH GLUTATHIONE AND CYSTEINE IN RAT KIDNEY. A M Standeven and K E Wetterhahn. Department of Pharmacology & Toxicology, Dartmouth Medical School, and Department of Chemistry, Dartmouth College, Hanover, NH. Sponsor: B D Roebuck.

#1278
1-CYANO-2-HYDROXY-3-BUTENE (CHB) INCREASES SYNTHESIS OF GLUTATHIONE (GSH) IN RAT LIVER AND PANCREAS. E H Jeffrey, A Kore, T March, M Broom, R Fornea, and M Witting. University of Illinois, Urbana, IL.

#1279
RELATIONSHIP BETWEEN METALLOTHIONEIN AND GLUTATHIONE IN ADULT RATS. C B Houghton and M Q Chen. Dept. of Pharmacol. & Toxicol., Univ. of Western Ontario, London, ON, Canada.

#1280
GLUTATHIONE ESTER CORRECTS THE KIDNEY GLUTATHIONE AND CYSTEINE DEFICIENCIES IN THE AGING MOUSE. T S Chen, J P Richie and C A Lang. Deps. of Pharmacology & Toxicology and Biochemistry, University of Louisville, KY.

#1281
REGIONAL DISTRIBUTION OF GLUTATHIONE IN RAT BRAIN: EFFECT OF STYRENE OXIDE. C A Trenga, L G Costa and D L Eaton. Dept. of Environmental Health, Univ. of Washington, Seattle, WA.

#1282
GLUTATHIONE TURNOVER IN HEPATOCTYES OF A PRIMITIVE MARINE VERTEBRATE. W T Simmons and N Ballatori. Environmental Health Sciences Center, Univ. of Rochester School of Medicine, Rochester, NY.

#1283
HISTOCHEMICAL DISTRIBUTION AND LOCALIZATION OF GLUTATHIONE NERVOUS SYSTEM. Z Zhang, M A Philbert, D K Waters, H E Lowndes. Joint Graduate Program in Toxicology, Neurotoxicology Laboratories, Rutgers College of Pharmacy, Piscataway, NJ.

FRIDAY MORNING, FEBRUARY 16
FONTAINEDAU BALLROOM D

POSTER SESSION: BIOTRANSFORMATION II

Chairperson: Gary P. Bond, Air & Stream Improvements, Inc., New York, NY
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 8:30 a.m.-10:00 a.m.

#1284
CONTINUOUS EXPRESSION OF HUMAN GROWTH HORMONE (hGH) DIFFERENTIALLY AFFECTS HEPATIC CYTOSOLIC CONJUGATION ENZYMES IN MALE AND FEMALE hGH TRANSGENIC MICE. P A Cos.
PYRIDINE INDUCTION OF CYTOCHROME P450IIIE 1: EVIDENCE FOR ENHANCED PROTEIN SYNTHESIS. S G Kim and R F Novak. The Institute of Chemical Toxicology, Wayne State University, Detroit, MI.

INCREASE OF CYTOCHROME P450A1 mRNA IN RATS BY PYRIDINE. R F Novak, S G Kim, S L Reddy and A M Mortensen. The Institute of Chemical Toxicology, Wayne State University, Detroit, MI.

PULMONARY CYTOCHROME P-450 FROM SPRAGUE-DAWLEY RATS. K-M Chang and J D deBethizy. R J. Reynolds Tobacco Company, Toxicology Research, Winston-Salem, NC.

MOLECULAR ASPECTS OF CYTOCHROME P450 INDUCTION IN RAINBOW TROUT. M L Haasch, P J Wejsenhor, J J Lech. Medical College of Wisconsin, Center for Great Lakes Studies, University of Wisconsin-Milwaukee, WI.

BIOACTIVATION OF AFLATOXIN B1 BY HUMAN LIVER MICROSOMES: ROLE OF CYTOCHROME P450III A ISOENZYMES. H S Ramesdell and D L Eaton. Department of Environmental Health, University of Washington, Seattle, WA.

RECONSTITUTION OF TESTOSTERONE OXIDATION BY PURIFIED RAT CYTOCHROME P-450-p (III A1). A Parkinson, M R Halvorson and D C Eberhart. University of Kansas Medical Center, Kansas City, KS.

DIFFERENTIAL EFFECTS OF IONIC STRENGTH AND pH ON TESTOSTERONE OXIDATION BY MICROSOMAL AND PURIFIED FORMS OF RAT LIVER CYTOCHROME P-450. B Gemzik, M R Halvorson and A Parkinson. University of Kansas Medical Center, Kansas City, KS.

IMMUNOCHEMICAL LOCALIZATION OF TWO CARBOXYESTERASES (HYDROLASES A AND B) IN RAT LIVER, TESTIS AND KIDNEY. B Yan, E W Morgan, and A Parkinson. University of Kansas Medical Center, Kansas City, KS.

A SINGLE DOSE OF 3-METHYLCOLANTHRENE (MC) INDUCES CYTOCHROME P-450s IN FETAL RAT TISSUES. M S Miller, A B Jones, D P Chauhan, S S Park and L M Anderson. NCI-FCRF, Frederick, MD.


IN VITRO METABOLISM AND MUTAGENICITY OF 1,2,3-TRICHLOROPROPANE (TCP). N A Mahmoud, L T Burka, M L Cunningham, Springborn Labs., Inc., Spencerville, OH and NIEHS, RTP, NC.

BIOACTIVATION OF 1,3-BUTADIENE TO BUTADIENE MONOXIDE (SM) AND CROTONALDEHYDE (CA) BY MOUSE LIVER MICROSOMES. R J Duescher, C M Pasch and A A Elfarra. Dept. Comp. Biosci. and Environ. Tox. Center, Univ. of Wisconsin, Madison, WI.

METABOLIC TRANSFORMATION OF SUBSTITUTED ALKENES-A THEORETICAL CHEMICAL APPROACH. R J Laib and G Csanyi, Dept. of Toxicology, Institute of Occupational Health, Dortmund, FRG. Sponsor: H Kappus.

BIOTRANSFORMATION OF HYDRAZINE (HDZ) IN MONOLAYER CULTURES OF RABBIT HEPATOCYTES. C A McQueen and R R Rosado. American Health Foundation, Valhalla, NY.

ETHANOL EFFECTS ON ACETYLATION POLYMORPHISM. R G Elve and A P Alvarez. Armstrong Aerospace Medical Research Laboratory, Wright-Patterson AFB, OH and Uniformed Services University, Bethesda, MD.

AGE-RELATED CHANGES IN BIOTRANSFORMATION AND TOXICITY OF POTASSIUM CYANIDE (KC) IN MALE C57BL/6N MICE. T F McMahon and L S Birnbaum. NIEHS, Research Triangle Park, NC.

THE EFFECT OF SODIUM TETRAHIOANTIF ON CYANIDE CONVERSION TO THIOCYANATE BY ENZYMATIC AND NON-ENZYMATIC MECHANISMS. S I Baskin and S D Kirby. Pharmacology Division, United States Army Medical Research Institute of Chemical Defense, Aberdeen Proving Ground, MD.

FRIDAY MORNING, FEBRUARY 16
FONTAINEBLEAU BALLROOM D

POSTER SESSION: IN VITRO TOXICOLOGY

Chairperson: David W. Brewster, Monsanto Company, St. Louis, MO.

#1304 EVALUATION OF THE YEAST PHOTOTOXICITY ASSAY AS AN IN VITRO ALTERNATIVE TO IN VIVO PHOTOTOXICITY TESTING. D Long, T Stephens, B Reece, B Bryan, P Silver, Mary Kay Cosmetics, Dallas, TX.

#1305 EVALUATION OF THE BACTERIAL BIOLUMINESCENCE TEST AS AN IN VITRO ALTERNATIVE TO IN VIVO TOXICITY TESTS OF COSMETIC PRODUCTS. B Bryan, P Silver, T Stephens, D Long, B Reece, Mary Kay Cosmetics, Inc., Dallas, TX.

#1306 THE USE OF BALB/C 3T3 FIBROBLASTS AND THE PROTOzoAN TETRAHymenA THERMOphILA AS IN VITRO ALTERNATIVES TO IN VIVO SAFETY TESTING. P Silver, T J Stephens, B Reece, D Long, and B Bryan, Mary Kay Cosmetics, Inc., Dallas, TX.

#1307 IN VITRO ASSESSMENT OF TROsPECTOMycin AND GENTAMICin SULFATE IN THE LLC-PK1 CELL LINE. J A Bacon, R J Weaver, and T J Racznik; Investigative Toxicology and Research Support Biostatistics, The Upjohn Company, Kalamazoo, MI.

#1308 CULTURED EUKARYOTIC FUNGAL CELLS AS AN ALTERNATIVE TEST SYSTEM FOR ASSESSING THE CYTOTOXICITY OF DRUGS AND CHEMICALS. D A Acosta, G C Hsieh, and P J Davis, College of Pharmacy, University of Texas, Austin, TX.

#1309 PLASMA MEMBRANE CHARACTERISTICS AS INDICES OF IN VITRO TOXICITY. D W Bombick and D J Doolittle, R J Reynolds Tobacco Company, Winston-Salem, NC.

#1310 MITOCHONDRIAL MEMBRANE POTENTIAL AS AN INDICATOR OF IN VITRO CYTOTOXICITY. C A Rahm, D W Bombick, and D J Doolittle, R J Reynolds Tobacco Co., Winston-Salem, NC.

#1311 A RAPID INEXPENSIVE INCUBATOR CONVERSION FOR SUBMERGED ORGAN CULTURE. C G Rousseaux and D Venables, Department of Veterinary Pathology, W.C.V.M., University of Saskatchewan, Saskatoon, SASK, Canada. Sponsor: W M Hirschel-Hock.

#1312 DEVELOPMENT OF AN AUTOMATED IN VITRO ASSAY FOR THE SCREENING OF NEW CANDIDATE PRETREATMENT AND TREATMENT (P&T) COMPOUNDS FOR THEIR ABILITY TO INHIBIT THE AGING RATE OF GD-INHIBITED ACETYLCOLiNESTERASE. D W Hobson, J A Blank, G S Dill, and R L Joiner, Battelle Memorial Institute, Columbus, OH. Sponsor: C T Olson.


#1314 STUDIES WITH CGS 10758B AND CGS 11750 (ANTIPSYCHOTICS) IN RAT HEPATOcYES: EXPLORING IN VITRO MODELS OF HEPATOc TOXICITY M J Schlosser, A F Plonski, J C Kapeghian, E T Yau, and V M Traina, Research Dept., Pharma. Div., CIBA-GEIGY Corp., Summit, NJ.

#1315 THE BIOTRANSFORMATION OF TETRA HYDROAMINOACRIDINE (THA) INCULTURED HEPATOcYES AS THE CAUSE FOR RELATIVE CYTOTOXICITY IN 3 SPECIES. T A Smolarek, C V Higgins, and D E Amacher, Drug Safety Evaluation. Pfizer Central Research, Groton, CT.

#1316 COMPARISON OF TOXICITY INDICES IN ISOLATED FISH AND RAT HEPATOcYES EXPOSED IN VITRO. S M Baks, US EPA, Narragansett, RI, and J M Frazier, Johns Hopkins School of Hygiene and Public Health, Baltimore, MD.

#1317 CYTOTOXICITY OF 3-METHYLENEDIOXINDOLE (3MeeDI) IN ISOLATED LUNG CELLS. W K Nichols, D N Larson and C S Yost, Department of Pharmacology and Toxicology, University of Utah, Salt Lake City, UT.

#1318 β LACTAM ANTIBIOTIC TOXiCITY TO RK1 RABBIT KIDNEY EPITHELIAL CELLS. P A Duffy and F R McNa. Safety of Medicines Dept. ICI Pharmaceuticals, Macclesfield, UK. Sponsor: T C Oron.

#1319 ETHANE DIMETHANESULPHONATE (EDS) PERTURBS EPIDiMYAL EPITHELIAL CELL FUNCTION IN VITRO. G Klinefelter, NSI, Heron TB, NC. Sponsor: L E Gray.

#1320 EFFECTS OF EDS ON RABBIT LEYDIG CELL TESTOSTERONE PRODUCTION IN VITRO. J W Laskey and G F Klinefelter, Reproductive Toxicology Branch, USEPA & NSI, RTP, NC. Sponsor: L E Gray Jr.

#1321 EFFECT OF NITROGEN DIOXIDE EXPOSURE ON PHOSPHOLIPASES IN PULMONARY ARTERY ENDOTHELIAL CELLS. G B Bhat, J M Patel and E R Block, Department of Medicine, University of Florida and Veterans Administration Medical Center, Gainesville, FL.

#1322 COMPARATIVE EFFECTS OF SULFUR MUSTARD ON NAD LEVELS AND VIABILITY OF PERIPHERAL BLOOD LYMPHOCYTES, HUMAN KERATINOCYTES, AND HUMAN LYMPHOCYtic CELLS. J A Blank, D W Hobson, G S Dill, and R L Joiner. Battelle Memorial Institute, Columbus, OH. Sponsor: C T Olson.

COVALENT BINDING OF A HALOTHANE METABOLITE AND NEOANTIGEN PRODUCTION IN GUINEA PIG LIVER SLICES IN VITRO. A P Brown, K L Hastings, A J Gandolfo, K Brendel. Department of Anesthesiology, University of Arizona, Tucson, AZ.

LIVER SLICES FROM CHRONIC ETHANOL TREATED RATS ARE SENSITIZED TO COCAINE HEPATOTOXICITY. S Connors, D R Ranklin, A J Gandolfo, C L Kruidenier, C Eshel, and K Brendel. Dep. Pharmacology and Surgery, Univ. of AZ, Tucson, AZ; Dep. Nutritional Sciences, Univ. of WA, Birmingham, AL.

EFFECT OF VOLATILE ANESTHETICS ON PROTEIN SYNTHESIS AND SECRETION IN GUINEA PIG LIVER SLICES. H N Ghantous, J Fernado, A J Gandolfo, K Brendel. Department of Anesthesiology, University of Arizona, Tucson, AZ.

FRIDAY MORNING, FEBRUARY 16
FONTAINEBLEAU BALLROOM D

POSTER SESSION: METABOLITE IDENTIFICATION

Chairperson: Patrick J. Sabourin, Battelle Columbus Laboratories, Columbus, OH.
Displayed: 8:30 a.m.-11:30 a.m.
Attended: 8:30 a.m.-10 a.m.

URINARY METABOLITES OF [1,2,3-13C]ACRYLAMIDE DETERMINED BY 13C NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY. S C J Sumner, J P MacNeela and T R Fennell. CIIT, Research Triangle Park, NC.


DETECTION OF URINARY METABOLITES OF [1,2,3-13C]ACRYLONITRILE IN THE RAT AND MOUSE USING 13C NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY. T R Fennell, S C J Sumner, S D Held and G L Kedders. CIIT, Research Triangle Park, NC.

METABOLISM OF TRANS,TRANS-MUCONALDEHYDE, A HEMATOXIC MICROBIAL METABOLITE OF BENZENE, BY PURIFIED XANTHINE OXIDASE. T A Kirley, B D Goldstein, and G Witz. Joint Graduate Program in Toxicology, UMDNJ-Robert Wood Johnson Medical School/Rutgers University, and EOHSI, Piscataway, NJ.


IDENTIFICATION OF AROMATIC HYDROXYLATED METABOLITES OF 3,4-(METHYленEDIOXY) METHAMPHETAMINE (MDMA) BY ION TRAP TANDEM MASS SPECTROMETRY. H K Lim and R L Foltz, Center for Human Toxicology, Univ. of Utah, SLC, UT. Sponsor: M R Franklin.

COMPARATIVE METABOLISM OF 2,4- AND 2,6-ISOMERS OF TOLUENE DIISOCYANATE IN F344 RATS. M P Dieter, H B Matthews, C W Jameson, NIH, National Institute of Environmental Health Sciences, and A R Jeffcoat, RTI, Research Triangle Park, NC.

ANALYSIS OF CARBARYL METABOLITES USING HPLC AND SUPERCRITICAL FLUID CHROMATOGRAPH (SFC). R C Zagar, D W Leter* and D L Springer. Battelle Pacific Northwest Laboratory, Richland, WA and Mountain States Analytical, Salt Lake City, UT.*

QUINOLINE METABOLISM AND TOXICITY IN THE ISOLATED PERFUSED RAT LIVER. E J La Voie, E H Weyand, R L Schenker, A W Bartczak, and S Jj. College of Pharmacy, Rutgers University, Piscataway, NJ.

CHOLESTEROL ESTER HYDROLASE MEDIATED CONJUGATION OF HALOETHANOLS WITH FATTY ACIDS. H K Bhat and G A Arsan. Divisions of Biochemistry and Chemical Pathology, University of Texas Medical Branch, Galveston, TX.

FRIDAY MORNING, FEBRUARY 16
FONTAINEBLEAU BALLROOM D

POSTER SESSION: METHODS IN TOXICOLOGY
MORPHINE AND OXYMORPHINE: DETECTION BY IMMUNOASSAY IN EQUINE BLOOD AND URINE. S Stanley, T Wood, J Blake, H-H Tai, D Watt and T Tobin. Graduate Center for Toxicology, University of Kentucky, Lexington, KY.


IMMUNOASSAY DETECTION OF DRUGS IN RACING HORSES. DETECTION OF THE DIURETICS ETHACRYNIC ACID AND BUMETANIDES IN EQUINE BLOOD AND URINE BY ELISA. T Wood, S Stanley, J Blake, H-H Tai, D Watt and T Tobin. Graduate Center for Toxicology, University of Kentucky, Lexington, KY.

NONINVASIVE MEASUREMENT OF BLOOD PRESSURE IN CONSCIOUS CYTOMOLGUS MONKEYS. A Chestier, K Lund, A Dorr and L DePass. Institute of Toxicologic Sciences, Systex, Palo Alto, CA.

IMMUNOASSAY DETECTION OF DRUGS IN RACING HORSES. DETECTION OF R_ENGINE IN EQUINE BLOOD AND URINE, BY A ONE STEP ELISA ASSAY. J M Yang, T Wood, S Stanley, J Blake, D Watt and T Tobin. The Graduate Center for Toxicology, University of Kentucky, Lexington, KY.

THE USE OF MAGNETIC RESONANCE IMAGING TO DETECT HEXACHLOROBENZENE INDUCED CHANGES IN ORGAN VOLUME. A P Yagminas, R Towner, V E Vali and D C Villeneuve. Environmental and Occupational Toxicology Division, Environmental Health Centre, Ottawa and Biopath Analysts Ltd., Guelph, ON, Canada. Sponsor: L Chiu.


ASSAYS FOR NEUROTOXIC ESTERASE (NTE) AND CHOLINESTERASE (CHE) ACTIVITIES USING A MICROTITER PLATE READER. L Correll and M Ehrlich. Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA.


NOVEL SPECTROPHOTOMETRIC SUBSTRATES FOR EPOXIDE HYDROLASE. E G Dietze, E Kuwano, and B D Hammock. Departments of Entomology and Environmental Toxicology University of California, Davis, CA.

AN IMPROVED METHOD FOR MEASURING FEED CONSUMPTION IN MICE. R Hiles, K Williams, K Myers, S Ethl, D Conant, and J Kleeman. Hazleton Laboratories America, Inc., Madison, WI.

THE EFFECTS OF ANESTHESIA AND TISSUE STORAGE ON NEUROPATHY TARGET ESTERASE ACTIVITY IN CHICKEN BRAIN. D M Voss, I Bekersky, B G Boysen and K D Williams. Hazleton Laboratories America, Inc., Madison, WI.

USE OF HYDRA AS AN ALTERNATIVE TO ANIMAL MODELS. N Tipnis, R Gundersen and E M Goodman. Biomedical Research Institute, University of Wisconsin-Parkside and C E Dick, S C Johnson, Racine, WI.

A SIMPLE ASSAY METHOD FOR OMEGA-OXIDATION OF LAURIC ACID BY HEPATIC ENZYMES. D D Giera and R B L van Liesh. Toxicology Division, Lilly Research Laboratories, Ei Lilly & Company, Greenfield, IN.

AGAR-FILLED RAT LUNG SLICES FOR USE IN TOXICOLOGIC EVALUATIONS. M S Stefaniak, T P Pretlow, C E Krumdieck, A J Gandolfi, and K Brendel. Deps. of PharmTox., Univ. of Arizona, Tucson, AZ. 1. Inst. of Pathology, Case Western Reserve Univ., Cleveland, OH. 2. Dept. of Nutritional Sci., Univ. of Alabama, Birmingham, AL.


COMPARATIVE TOXICITIES OF PULMONARY TOXINS IN AGAR-FILLED RAT LUNG SLICES. A J Gandolfi, M S Stefaniak, C E Ekeles, and K Brendel. Deps. of Pharmaco1. and Surg., Univ. of Arizona, Tucson, AZ.
USE OF A SALINE FLUSH TO FACILITATE THE INTRAVENOUS ADMINISTRATION OF IRRITATING TEST COMPOUNDS TO RATS. N Donohue, S Ballenger, N Greenberg, E Keens, B Myers, and V Markiewicz. Hazelton Laboratories, Vienna, VA.

A METHOD TO EVALUATE POTENTIAL TOXICITY OF SMOKE FROM BURNING POLYMERS. D J Caldwell and Y Alarie. University of Pittsburgh, Pittsburgh, PA.

SELECTIVE ADSORPTION OF MYCOTOXINS (SAM): FIELD-PRACTICAL METHOD OF MULTIMYCOTOXIN DETECTION. B A Clement, A B Sarr, K Mayura and T D Phillips. Department of Veterinary Public Health, Texas A&M University, College Station, TX.

APPLYING IDEAS FROM CHAOS TO TOXICOLOGY. J L Murphy. Office of Drinking Water, U.S. Environmental Protection Agency, Washington, DC.

FRIDAY MORNING, FEBRUARY 16
FONTAINEBLEAU BALLROOM D

POSTER SESSION: ORGANOPHOSPHATES

Chairperson: Janice E. Chambers, Mississippi State University, Mississippi State, MS.

Displayed: 8:30 a.m.-11:30 a.m.

Attended: 8:30 a.m.-10:00 a.m.

COMPARATIVE STUDIES OF ORGANOPHOSPHORUS ESTER-INDUCED DELAYED NEUROPATHY (OPIDN) IN RATS AND HENS DOSED WITH MIPAFOX. B S Jortner, K R Dyer, L G Shell, and M F Ehrich. Virginia-Maryland Regional College of Veterinary Medicine, Virginia Tech, Blacksburg, VA.

SELECTIVE INHIBITION OF MUSARIN RECEPTOR BINDING BY THE ORGANOPHOSPHATE PARAOXON IN THE HUMAN SK-N-SH LINE. L S Katz and J K Marquis. Boston, MA, and A D Little, Inc., Cambridge, MA.

AXONAL AND TERMINAL DEGENERATION PATTERNS IN THE FERRET BRAIN AFTER EXPOSURE TO TRIPHENYLPHOSPHITE (TPP). D Tanaka, Jr; S J Bursian; E Lehning; and R J Aulerich. Deps of Anatomy and Animal Science, Michigan State University, E. Lansing, MI.


HIGH AFFINITY AGONIST ACTION OF PARAOXON ON THE M3 MUSCARINIC RECEPTOR IN RAT BRAIN. D Jett, J Abdallhan, E E El-Fakahany and A Eidman. Dept of Pharmacology and Experimental Therapeutics, School of Medicine and Dept of Pharmacology and Toxicology, School of Pharmacy, Univ of Maryland at Baltimore, Baltimore, MD.

CORRELATION OF BLOOD AND TISSUE CHOLINESTERASE (ChE) INHIBITION AFTER PARATHION EXPOSURE. C N Pope, M L Chapman, T K Chakraborti, and P W Ferguson. School of Pharmacy, Northeast Louisiana University, Monroe, LA.

TOXICITY OF CARBARYL AND ALDICARB ON BRAIN AND LIMB CULTURES OF CHICK EMBRYOS. M Faras-Eiaawar and T K Rowles. VA/MD Regional College of Veterinary Medicine, Blacksburg, VA.

MOLECULAR DESCRIPTORS OF SPECIES-SELECTIVE CHOLINESTERASE INHIBITION. K B Wallace and J R Kemp. University of Minnesota, School of Medicine, Department of Pharmacology, Duluth, MN.

EFFECTS OF SOMAN ON THE INCORPORATION OF DEUTERATED CHOLINE INTO BRAIN CHOLINE AND ACETYLCOLINE. V R Jimmerson, T M Shih and R R Mallman. WRAIR, Washington, DC USAMRICD, APG, MD and Toxicol. Curriculum. UNC, Chapel Hill, NC.


CLINICAL CASE STUDY OF FIFTY PATIENTS DIAGNOSED WITH PERIPHERAL NEUROPATHY AND/OR M.S. SECONDARY TO CHEMICAL EXPOSURE. Z R Gard, BioTox, Inc., San Diego, CA. Sponsor: S B Harris.

NINETY-DAY TOXICITY STUDY OF GLYPHOSATE IN FISCHER RATS AND B6C3F1 MICE. P C Chan and J D Frejean. National Inst. of Environmental Health Sciences, Research Triangle Park, NC and Southern Research Institute, Birmingham, AL. Sponsor: D Dietz.

EFFECTS OF CIOVAP® APPLICATIONS ON BLOOD CHOLINESTERASE ACTIVITIES IN STEERS. R W Coppock, A A Khan, H Philip, M M Schuler and L E Lillie. Animal Sciences Division, Alberta Environmental Centre, Vegreville, AB, Canada.


CARBOFURAN-INDUCED ALTERATIONS IN HIGH-ENERGY PHOSPHATES, TOTAL CREATINE KINASE(CK), AND CK ISOENZYMES. P C Gupta, J T Goed, and W L Kadol. BreatheIt Veterinary Center, Murray State Univ., Hopkinsville, KY.

EFFECT OF PARATHION AND 2,4-D ON GROWTH AND OXIDATIVE METABOLISM OF RHIZOBIUM SESBANIA. M Ashraf and M H Aleem. Dept. of Toxicology, University of Kentucky, Lexington, KY. Sponsor: L S Robertson.


PHARMACOKINETIC ANALYSIS OF TOLERANCE TO AN ORGANOPHOSPHORUS INSECTICIDE, CHLORFENVINDOPHOS, IN RATS. S Tsuda, T Ikeda, and Y Shiraai. Institute of Environmental Toxicology, Mit-sukaido, Ibaraki, Japan.

FRIDAY MORNING, FEBRUARY 16
FONTAINEBLEAU BALLROOM D

POSTER SESSION: RISK ASSESSMENT

Chairperson: Craig H. Farr, Monsanto Company, St. Louis, MO.

Displayed: 8:30 a.m.-11:30 a.m.
Attendee: 10:00 a.m.-11:30 a.m.


COMPARISON OF A WATER QUALITY CRITERION AND THE LIFETIME HEALTH ADVISORY FOR 2,4,5-TRINITROTOLUENE. R H Ross, P Y Lu, W R Hartley*. Biomedical and Environmental Information Analysis, Health and Safety Research Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee; "US Environmental Protection Agency, Washington, DC.

THE DEVELOPMENT OF CRUDE OIL CARCINOGENIC POTENCIES FOR ORAL AND DERMAL EXPOSURES TO CRUDE OIL. M J Sullivan, S R Custance. Enviroplogc Data, Inc., Ventura, CA.

A REALISTIC APPROACH TO MEASURING THE DERMAL TRANSFER OF POLYCHLORINATED BIPHENYLS (PCBs) FROM CONTAMINATED SURFACES FOR USE IN PUBLIC HEALTH RISK ASSESSMENT. D J Rosenbaum, G Caron, and P Brussock. Enviroplogc Data, Chadds Ford, PA. Sponsor: J H Dean.
THE RELATIVE TOXICITIES OF AROCLORS UNDER SIMILAR EXPERIMENTAL CONDITIONS.

SUBCHRONIC TOXICITY STUDIES OF PAHs IN MICE.
S Griffin, S Irene, and H Choudhury. US EPA, Washington, DC.

CARCINOGENIC RISK ASSESSMENT OF BIS(2-CHLOROETHYL) ETHER (BCEE).

CARCINOGENICITY ASSESSMENT FOR PENTACHLOROPHENOL.
S Irene, R Rubenstein, S Segal, V J Cogliano and B Allen, U.S. Environmental Protection Agency and Clement Assoc., Inc., Washington, DC. Sponsor: J Murphy.

VINYL CHLORIDE: ANOTHER LOOK.

RISK ASSESSMENT OF DIOXIN CONTAMINATION OF THE UPPER SACRAMENTO RIVER,
CALIFORNIA: PUBLIC HEALTH CONCERNS AND ECOLOGICAL FACTORS.

SOIL INCREASES NAPHTHALENE BIOAVAILABILITY IN ORALLY EXPOSED FEMALE RATS.
R Turkal, G Skowronski, A Kady, M Botrous, and M Abdel-Rahman. Dept. Pharmacology & Toxicology, N.J. Medical School, UMDNJ, Newark, NJ.

PESTICIDES IN SOIL: DOES CANCER RISK, COMPARED TO THAT FROM DIETARY EXPOSURE,
WARRANT REMEDIATION?
F Martz. California Department of Health Services, Toxic Substances Control Program, Sacramento, CA.

RISK ESTIMATION FOR SOLVENTS IN SOIL.

TOXICOLOGY AND QUANTITATIVE RISK ASSESSMENT OF ENVIRONMENTAL EXPOSURE TO 2-METHYL-4-CHLOROPHENOXACYCIC ACID (MCPA).

HEALTH RISK ASSESSMENT FOR INHALATION EXPOSURE TO TRICHLOROETHYLENE (TCE).

CONSIDERATION OF SPECIES CONCORDANCE AND PHARMACOKINETICS IN A RISK ASSESSMENT OF METHYLENE CHLORIDE.
G A Alexeff and I Hertz-Picciotto. Department of Health Services and *University of California, Berkeley, CA.

ON THE RISK/BENEFIT BALANCE OF PROPHYLACTIC DOSES OF ASPIRIN.
S Feinman and C Gable; FDA and Systemetrics/McGraw Hill, Washington, DC; Sponsor: M Bleiberg.

DEVELOPING EXPOSURE SCENARIOS FOR ASSESSING HUMAN HEALTH EFFECTS OF COMBUSTION EMISSIONS.
J Dollarhide, P McGinnis, M Kujawa, and *R Bruins. Syracuse Research Corporation, Cincinnati, OH and *ECAO, U.S. Environmental Protection Agency, Cincinnati, OH.

RISK ASSESSMENT OF METALS IN AIR Emitted FROM A MUNICIPAL WASTE INCINERATOR.

TOXICOLOGY AND QUANTITATIVE RISK ASSESSMENT FOR MERCURY.
R A Young. Biomedical and Environmental Information Analysis, Health and Safety Research Division, Oak Ridge National Laboratory, Oak Ridge, TN; D Weil, Environmental Criteria and Assessment Office, US Environmental Protection Agency, Research Triangle Park, NC.

DIFFERENCES IN THE BIOAVAILABILITY OF VARIOUS FORMS OF ARSENIC AND THE IMPLICATIONS FOR RISK ASSESSMENT AND SITE REMEDIATION.

TOXIC EFFECTS AND RISK ASSESSMENTS FOR BORON AND COMPOUNDS.


A RISK ASSESSMENT FOR CRUDE OIL IN RESIDENTIAL SURFACE SOILS. C J Miller, M J Sullivan, S R Custance. Environologic Data, Inc., Ventura, CA.
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Shayne C. Gad (1988-1990)
Beverly Y. Cockrell (1989-1991)
Robin Sheryl Goldstein (1989-1990), ad hoc

AWARDS
James E. Gibson, Chairperson (1989-1990)*
James A. Swenber (1988-1990)
Mary Vore (1989-1991)

BOARD OF PUBLICATIONS
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Curtis D. Klaassen, Vice President, Auditor*
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I. Glenn Sipes, TAP Editor, Auditor

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(Curtis D. Klaassen*)
James Bond, Chairperson (1988-1990)
Gerald L. Kennedy, Jr. (1988-1990)
Joseph Donald deBethizy (1989-1991)
Donald A. Fox (1989-1991)

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James E. Gibson, Chairperson (1989-1990)*
Sheldon D. Murphy (1988-1990)

FINANCE
James S. Bus, Treasurer, Chairperson*
Roger O. McClelIan, President
Curtis D. Klaassen, Vice President
Lawrence Reiter (1988-1990)
Craig S. Barrow (1989-1991)

HISTORIAN
(Philip G. Watanabe*)
Orville E. Paynter, Advisor
Van Marshall Seabough, Advisor

BURROUGHS WELLCOME TOXICOLOGY SCHOLARSHIP AWARD ADVISORY
(James E. Gibson*)
Tom S. Miya, Chairperson (1980-)
Harold J. Fallon (1980-)
Curtis D. Klaassen (1987-1990)
Meryl H. Karol (1989-1992)

IUTOX COUNCILORS
James E. Gibson, Chairperson*
Jerry B. Hook
Curtis D. Klaassen
Roger O. McClelIan
I. Glenn Sipes

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PLACEMENT
(Meryl H. Karol*)
Elizabeth J. Hixson, Director (1988-1991)
Rudolph V. Von Burg, Co-Director (1989-1992)
Larry L. Hall (1988-1990)
Marston V. Roloff (1989-1991)
Gisela Witz (1989-1992)

PROGRAM
Curtis D. Klaassen, Vice President, Chairperson*
Donald J. Reed, Vice President-Elect, Co-Chairperson
Patricia J. Beattie (1987-1990)
Daniel Wierda (1987-1990)
Michael P. Waalkes (1989-1992)

PUBLIC COMMUNICATIONS
(Jack H. Dean*)
Juanell N. Boyd (1988-1990)
Jon L. Seymour (1988-1990)
Carol J. Henry (1989-1991)
Michael A. Evans (1989-1990), ad hoc
Elaine Faustman (1989-1990), ad hoc
Michael A. Kamrin (1989-1990), ad hoc
Michele Ann Medinsky (1989-1990), ad hoc

REGULATORY AFFAIRS AND LEGISLATIVE ASSISTANCE
(John A. Moore*)
Carol M. Schiller, Chairperson (1988-1990)
Frank N. Kotsonis (1988-1990)
Penelope Fenner-Crisp (1989-1991)

TECHNICAL
(Jack H. Dean*)
Robert A. Scala, Chairperson (1989-1991)
Peter H. Bick (1988-1990)
Matthew S. Bogdanoff (1988-1990)

ed hoc TOX 90'S
EDUCATIONAL ISSUES TASK FORCE
(Curtis D. Klaassen*)
A. Jay Gardolli, Chairperson
Robert E. Dudley
David Eaton
Michele Ann Medinsky
Harrihara M. Mehendale

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OFFICERS-SPECIALTY SECTIONS

(Philip G. Watanabe, Liaison)

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Vice President-Elect: Paul M. Newberne
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Vice President: Janardan K. Reddy
Vice President-Elect: vacant
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Vice President: Peter H. Bick
Vice President-Elect: Albert E. Munson
Secretary/Treasurer: Peter T. Thomas
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Vice President: Bernard Weiss
Vice President-Elect: Kenneth Reuhl
Secretary/Treasurer: Deborah A. Cory-Slechta
Councilors: Lucio G. Costa, Donald A. Fox (Past President), Deborah C. Rice

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Vice President-Elect: Richard Schlesinger
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Vice President-Elect: Robert E. Staples
Secretary/Treasurer: Robert J. Kavlock
Councilors: Robert Elliot Chapin, George P. Daston, Richard Skaklo (Past President)

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(Florence K. Kinoshita, Liaison)

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President: Craig S. Barrow
President-Elect: Michelle M. Schaper
Vice President: Harry N. Finkbone
Secretary/Treasurer: Dario Ennis Dodd
Councilors: Doug Bricker, Mary E. Davis, Frederic W. Fochtman (Past President), Donald W. Lamb

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President: Chada Sudershan Reddy
President-Elect: George J. Traiger
Vice President: Kin-Kai Hwang
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Councilors: Joel R. Coats (Past President), Charles O. Knowles, Thomas L. Pazdernik, William P. Ridley, Ronald N. Sibutsuka

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President: Daniel Acosta
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Vice President-Elect: James P. Kehrer
Secretary: Deborah L. Armstrong
Treasurer: John Zembel
Councilors: will be appointed

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President: James S. Bus
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President: Richard S. Waritz
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Vice President-Elect: John G. Dent
Secretary/Treasurer: Francie J. Koschier
Councilors: Timothy J. McCarthy, R. Michael McClain (Past President), Stanley Allen Roberts, Edward V. Sargent, Carroll A. Snyder

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President: Karen M. MacKenzie
President-Elect: Robert E. Dudley
Vice President: Shaye C. Gad
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Treasurer: David L. Conine
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President: Dean E. Carter
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President: Ronald G. Thurman
President-Elect: Linda S. Birnbaum
Vice President: Douglas E. Rickert
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Newsletter Editor: Elizabeth Gross Bermuda

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President: Robert A. Schatz
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Vice President: Zachary A. Wong
Secretary: Keith F. Pfeifer
Treasurer: Stanley T. Omaye
Councilors: Arthur L. Craigmill, Bruce D. Hammock (Past President), Judith Ann Parker

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President: Carlo H. Tamburro
President-Elect: Michael A. Evans
Secretary/Treasurer: Larry W. Robertson
Councilors: Robert A. D'Amato, Michael L. Dorson, Stanley D. Erk (Past President), Ellen J. O'Flaherty

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President: Anne P. Autor
President-Elect: Donald R. Buhler
Vice President: Lucio G. Costa
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South Central
President: William Sliker, Jr.
President-Elect: William H. Benson
Vice President: Merle G. Paule
Secretary/Treasurer: Jack A. Hinson
Councilors: Wallace L. Guess (Past President), Philip John Medon, Marvin Cracraft Wilson

Southeastern
President: Barbara Wallin Kempopenhagen
President-Elect: Anne M. Woven-Garrett
Secretary/Treasurer: Carl O. Schultz
Councilors: John Catravas (Past President), Jacob Dunbar, Charles Lindamood, Ill, Kenneth Voss

Southern California
President: Paul Hochstein
President-Elect: Randy Neal Roth
Vice President: Arthur K. Cho
Secretary/Treasurer: Henry Jay Forman
Councilors: Joseph R. Landolph, Robert F. Phalen, Ronald C. Shank

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American Academy of Clinical Toxicology
Carol R. Angie

American Academy of Veterinary and Comparative Toxicology
Jane F. Robens

American Association for Accreditation of Laboratory Animal Care
A. Wallace Hayes (delegate)

American Association for the Advancement of Science
Mark Hite

American Association for Cancer Research
Richard H. Adamson

American Association for Pharmaceutical Scientists
Dale Johnson

American Association for Poison Control Centers
Anthony R. Temple

American Board of Forensic Toxicology
Randall C. Baselt

American Board of Medical Toxicology
Barry H. Runnack

American Board of Toxicology
James C. Lamb

American Board of Veterinary Toxicology
Gary D. Osweiler

American College of Laboratory Animal Medicine
Ghanita N. Rao

American College of Toxicology
Marshall Steinberg

American College of Veterinary Pathology
William W. Carlton

American Industrial Hygiene Association
Robert T. Drew

American Institute of Nutrition
Stanley T. Omeye

American Society for Biochemical and Molecular Biology
Jerold A. Last

American Society for Pharmacology & Experimental Therapeutics
James L. Way

Asian Society of Toxicology
Insu P. Lee

British Toxicology Society
I.H.F. Purchase

Commission of Life Sciences, NRC
Frederick W. Oehme

Environmental Mutagen Society
James M. LaVelle

European Society of Toxicology
Kari K. Rozman

Federation of European Societies of Toxicology
Tor Malmfors

Institute of Food Technologists
Stanley T. Omeye

International Society of Regulatory Toxicology & Pharmacology
Frederick Coulston

International Society for the Study of Xenobiotics
Robert Snyder

International Society of Ecotoxicology & Environmental Safety
Frederick Coulston

International Society on Toxinology
Philip Rosenberg

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Keith Cooper

Society for Epidemiological Research
James S. Woods

Society for Forensic Toxicology
Randall C. Baselt

Society for Quality Assurance

Society for Risk Analysis
Thomas B. Starr

Society for Toxicologic Pathologists
Felix A. de la Iglesia

Society of Toxicology of Canada
Jules Brodeur

Swedish Society of Toxicology
Tor Malmfors

Teratology Society
Jeanne M. Manson

Tissue Culture Association
Daniel Acosta

The Toxicology Forum
Ian C. Munro

World Federation of Association of Clinical Toxicology Centers and
Poison Control Centers
Frederick W. Oehme
CORPORATE ASSOCIATE MEMBERS
(James S. Bus, Liaison)

Alcon Laboratories
Ft. Worth, Texas

Allied-Signal, Inc.
Morristown, N.J.

American Petroleum Institute
Washington, D.C.

American Standards Biosciences Corporation
New York, New York

AMOCO Corporation
Chicago, Illinois

ARCO
Los Angeles, California

ARCO Chemical Company
Newtown Square, Pennsylvania

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Cambridge, Massachusetts

Berlex Labs
Cedar Knolls, New Jersey

Bio/dynamics, Inc.
East Millstone, New Jersey

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Cleveland, Ohio

Bristol Myers Corporation
(Company Products Division)
Stamford, Connecticut

Burroughs Wellcome Company
Research Triangle Park, North Carolina

Carter-Wallace, Inc.
Cranbury, New Jersey

Chevron Environmental Health Center, Inc.
Richmond, California

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Greensboro, North Carolina

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Atlanta, Georgia

Colgate-Palmolive Company
Piscataway, New Jersey

Dow Chemical Company
Midland, Michigan

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Wilmington, Delaware

Eastman Kodak Company
Rochester, New York

Eli Lilly & Company
Greenviel, Indiana

Exxon Biomedical Sciences, Inc.
East Millstone, New Jersey

G.D. Searle & Company
Skokie, Illinois

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Warren, Michigan

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Hazleton Laboratories Corporation
Vienna, Virginia

Hercules Incorporated
Wilmington, Delaware

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Somerville, New Jersey

Hoechst-Pharmaceuticals, Inc.
Somerville, New Jersey

Hoffmann-La Roche, Inc.
Nutley, New Jersey

ICI Americas, Inc.
Wilmington, Delaware

International Research & Development Corporation
Mattawan, Michigan

Marion Laboratories
Kansas City, Missouri

Merck Sharp & Dohme Research Laboratories
West Point, Pennsylvania

Merrell Dow Research Institute
Cincinnati, Ohio

Microbiological Associates, Inc.
Rockville, Maryland

Mobay Chemical Corporation
Stiwell, Kansas

Monsanto Company
St. Louis, Missouri

Ortho Pharmaceutical Corporation
Raritan, New Jersey

Pennwalt Corporation
King of Prussia, Pennsylvania

PEPSICO
Valhalla, New York

Pfizer, Inc.
Groton, Connecticut

PPG Industries
Pittsburgh, PA

The Procter & Gamble Company
Cincinnati, Ohio

Rhone-Poulenc Inc.
Research Triangle Park, North Carolina

RJR Nabisco, Inc.
Winston-Salem, North Carolina

Rohm & Haas Company
Spring House, Pennsylvania

Sandoz Research Institute
East Hanover, New Jersey

Schering Corporation
Bloomfield, New Jersey

Smith Kline & French Laboratories
King of Prussia, Pennsylvania

Squibb Institute for Medical Research
New Brunswick, New Jersey

Stauffer Chemical Company
Westport, Connecticut

Sterling-Winthrop Research Institute
Rensselaer, New York

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Palo Alto, California

Union Carbide Corporation
Danbury, Connecticut

The Upjohn Company
Kalamazoo, Michigan

Warner-Lambert Company
(Parke-Davis Pharmaceutical Research)
Ann Arbor, Michigan

Wyeth-Ayerst Research
Philadelphia, Pennsylvania
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<th>Year</th>
<th>Achievement</th>
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<td>1967</td>
<td>Gabriel L. Plaa</td>
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<td>Allan H. Conney</td>
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<td>Samuel S. Epstein</td>
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<td>Sheldon D. Murphy</td>
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<td>1972</td>
<td>Robert L. Dixon</td>
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<td>1974</td>
<td>Morris F. Cranmer</td>
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<td>1975</td>
<td>Ian C. Munro</td>
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<td>1976</td>
<td>Curtis D. Kaassen</td>
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<td>1977</td>
<td>James E. Gibson</td>
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<td>Raymond D. Harbison</td>
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<td>Michael R. Boyd</td>
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<td>1984</td>
<td>Melvin E. Anderson</td>
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<td>1985</td>
<td>Alan R. Buckpitt</td>
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<td>Sam Kacew</td>
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<td>James S. Bus</td>
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<td>Jeanne M. Manson</td>
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<td>James F. Kehrer</td>
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**Frank R. Blood**

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<td>G.J. Johnstone</td>
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<td>O. Hutzinger</td>
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<td>C.J. Kaplan</td>
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<td>Perry J. Gehring</td>
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<td>Otto G. Rasbe</td>
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<td>Christine Dixon</td>
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<td>Meryl Karol</td>
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**Arnold J. Lehman**

<table>
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<th>Year</th>
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<tbody>
<tr>
<td>1966</td>
<td>Henry F. Smyth, Jr.</td>
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<td>Arnold J. Lehman</td>
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<td>R.T. Williams</td>
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<td>Harold C. Hodge</td>
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<td>Don D. Irish</td>
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<td>Kenneth P. DuBois</td>
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<td>O. Garth FitzHugh</td>
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<td>Herbert E. Stokinger</td>
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<td>William B. Deichmann</td>
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<td>Frederick Coulston</td>
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<td>1976</td>
<td>Verid K. Rowe</td>
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<td>Harry W. Hays</td>
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<td>Julius M. Coon</td>
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<td>David W. Fassett</td>
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<td>John H. Weissburger</td>
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<td>Ted A. Loomis</td>
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<td>1987</td>
<td>Bo Holmstedt</td>
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<td>1988</td>
<td>Seymour L. Fries</td>
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<td>Wayland J. Hayes, Jr.</td>
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**Merit**

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<td>Malvin E. Anderson</td>
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<tr>
<td>1963</td>
<td>Michael L. Gargas</td>
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<td>1964</td>
<td>Lawrence J. Jenkins, Jr.</td>
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<td>1965</td>
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<td>Roger O. McClellan</td>
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<td>1988</td>
<td>M.D. Snipes</td>
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<td>1989</td>
<td>Ronald K. Wolf</td>
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<td>Harold C. Hodge</td>
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<td>1976</td>
<td>Ted A. Loomis</td>
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<td>1977</td>
<td>Robert B. Forney</td>
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Burroughs Wellcome Toxicology Scholar

1981–86 ............................................ Alan P. Poland
1982–87 ............................................ Curtis D. Klaassen
1983–85 ............................................ R. Craig Schnell
1983–88 ............................................ Frederick P. Guengerich
1984–89 ............................................ Philip Guzelian
1985–90 ............................................ I. Glenn Sipes
1986–91 ............................................ Daniel Acosta
1987–92 ............................................ Richard P. Mallman
1987–92 ............................................ Bruce D. Hammock
1988–93 ............................................ Harithara M. Mehendale
1989–94 ............................................ Stephen H. Safe

* * * * * * * * * * * * * * * * * * * * * * * * *

1989 SOCIETY OF TOXICOLOGY
GRADUATE FELLOWSHIP AWARD RECIPIENTS' PRESENTATIONS

HAZLETON LABORATORIES CORPORATION FELLOWSHIP
Recipient: Lorraine E. Twerdok, Johns Hopkins University, Baltimore, MD.
#234—"Studies With 1,2-Dithiole-3-Thione As A Chemoprotector In Mouse Bone Marrow Stromal Cells"

HOFFMANN-LA ROCHE, INC. FELLOWSHIP
Recipient: Timothy J. Shafer, Michigan State University, Dept. of Pharmacology & Toxicology, East Lansing, MI.
#547—"Evidence From Radiotracer Flux And Binding Studies Suggests That Methylmercury Blocks Ca Channels In A Voltage-Dependent Manner And May Interact With More Than One Type Of Ca Channel"

Hazleton Laboratories Corporation Fellowship
1984 ............................................ Patricia Ganey
1985 ............................................ Kevin Gaido
1986 ............................................ Lisa Naser
1987 ............................................ Marjorie Romkes
1988 ............................................ Caroline J. Decker
1989 ............................................ Lorraine E. Twerdok

Hoffmann-La Roche, Inc. Fellowship
1987 ............................................ Andrew G. King
1988 ............................................ Dori J. Thomas
1989 ............................................ Timothy J. Shafer

Colgate-Palmolive
1988 ............................................ Ernest Bloom
1989 ............................................ Gin C. Hsieh

THE PROCTER & GAMBLE COMPANY FELLOWSHIP
Recipient: Christopher M. Weghorst, Medical College of Ohio, Toledo, OH.
#718—"Effects Of Barbiturate Compounds On Hepatic And Renal Cell Proliferation In The Rat"

CIBA-GEIGY CORPORATION FELLOWSHIP
Recipient: Timothy Zacharewski, Texas A&M University, Dept. of Veterinary Physiology & Pharmacology.
#1243—"8-Iodo-6-Methyl-1,3-Dichloro-Dibenzo-furan (I-MCDF) and 125I-MCDF As 2,3,7,8-Tetrachlorodibeno-p-Dioxin (TCDD) Antagonists"

Procter & Gamble Fellowship
1979 ............................................ Paul W. Ferguson
1980 ............................................ Anthony P. De Caprio
1981 ............................................ Cheng Wang
1982 ............................................ Samson Chow
1983 ............................................ Laurie Basting
1984 ............................................ Philip Bartholomew
1985 ............................................ Russell Esterline
1986 ............................................ Leonard Sayers
1987 ............................................ Randall Ruch
1988 ............................................ Lawrence J. Dahm
1989 ............................................ Christopher M. Weghorst

CIBA-GEIGY Corporation Fellowship
1989 ............................................ Timothy Zacharewski

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