CHEMSTAR NEWS

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THE LONG HAUL: NEW TRANSPORTATION RULES ROLL IN

We think we can, we think we can, we *know* we can . . . CHEMSTAR Panels face challenges head on. Currently, CHEMSTAR Panels are tackling the weighty task of meeting new and different shipping requirements issued by the U.S. Department of Transportation over the past year. Two major DOT rulings addressing the transportation of hazardous materials, HM-181 and HM-126C, will greatly affect chemical industry shipping practices.

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HM-181

The proposed rule, HM-181, published in the *Federal Register* on December 21, 1990, will harmonize U.S. regulations with the international packaging system. Under the existing U.S. system, packages must meet specific construction guidelines. HM-181 replaces "specification" packaging standards with performance oriented packaging standards in which packages must pass one or more "performance" tests for certification.

In converting to the international system, U.S. manufacturers and shippers of hazardous materials must adopt uniform shipping descriptions, which will replace the former shipping codes. HM-181 revises the Hazardous Materials Table of 49 CFR 172.102 to include the international shipping descriptions. The Table lists applicable classification and identification number, labeling, bulk and non-bulk packaging designation for a wide array of hazardous materials.

When DOT revised the Table, many chemicals were reclassified, and therefore will have substantially different packaging and labeling requirements. Of 200 comments on the

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CHEMICAL MANUFACTURERS ASSOCIATION 2501 M STREET, NW. WASHINGTON, D.C. 20037 202/887-1100 FAX 202 887 1237

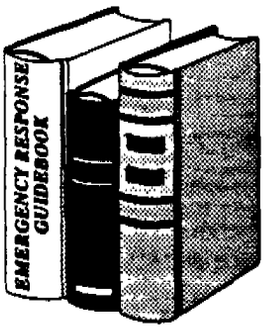
rule, many focused on problems resulting from this reclassification. The **Methyl Bromide Panel** filed comments on certain aspects of HM-181, among them, the required packaging changes. For example, in the ruling, DOT limited the cylinder capacity for methyl bromide. The Panel commented that this limitation is unnecessary, unjustified, and inconsistent with how materials of similar or greater hazard are treated in the rule.

Bruce Jacobsen of Olin, Chairman of the **Chlorinated Pool Chemicals Panel**, noted that HM-181 affects the shippers in additional ways. For example, the new packaging regulations will greatly reduce, or perhaps even eliminate companies' opportunities for exemption loads. Vendors, rather than chemical producers, likely will have to conduct the package certifications.

In order for a company to be in compliance with HM-181, the material packaging, the bill of lading, and all shipping must be uniform. In addition, companies not yet in compliance may want to adopt a rotation policy to ensure that the older materials currently stored in depots and terminals have already been shipped before the regulations are phased in.

Another concern of CMA was that the U.S. public would not have ample time to comment to DOT before it adopts international regulations. DOT stated that it will address this issue in the future.

Although HM-181 is not effective until October 1, 1991, DOT authorized compliance on January 1, 1991. However, DOT established several transition periods for meeting certain requirements. The only requirements in effect this year are classification and hazard communication regulations applicable to new explosives, infectious substances, and materials poisonous by inhalation. Shippers can continue to use specification packaging until October 1, 1996 for all materials except those poisonous by inhalation. Poisonous Inhalation Materials must have performance packages by October 1, 1993. Manufacturers can continue producing specification packaging until October 1, 1994.



HM-126C

The second important rule, HM-126C, addresses emergency response communication standards. HM-126C requires that emergency response information accompany hazardous material shipments. Many companies are using the *Emergency Response Guidebook*, which was developed by DOT to provide information on necessary first response actions for incidents involving hazardous materials. The Guidebook specifically addresses the handling of many CHEMSTAR Panel chemicals.

Under HM-126C, shipping papers must include a 24-hour contact for emergency response information. Many companies have been using CMA's Chemical Transportation Emergency Response Center (CHEMTREC) as this contact for some time. CHEMTREC provides emergency response information to over 12,000 shippers and carriers. Since HM-126C has been enacted, almost 5,000 companies have registered with CHEMTREC. CHEMTREC resources include emergency response personnel, chemists, product specialists, medical departments, and over one million Material Safety Data Sheets.

CHEMTREC also coordinates several emergency response mutual aid groups trained t address emergencies involving several specific chemicals. The **Hydrogen Fluoride Panel** includes producers and distributors who developed mutual aid agreements to ensure that expert emergency advice on transportation incidents is available at all times. The Hydrogen Fluoride Mutual Aid Group is made up of teams specifically trained in responding to emergencies involving this chemical. The Panel has formed a Mutual Aid Task Group to discuss and monitor emergency response activities, and a Transportation Task Group to address safe transportation issues.

The newly reconstituted Vinyl **Chloride Panel** intends to form a similar Mutual Aid Netw rk under CHEMTREC. The Vinyl Chloride Transportation Network (VCNet) will be comprised of chemical company and for-hire response teams that can provide technical expertise and assistance

during emergencies. Often a shipper's emergency response team is too far from the incident and cannot respond promptly. In such a case, the shipper would call CHEMTREC to request a VCNet member company to respond at the scene. If another company cannot respond, the shipper, through CHEMTREC, will authorize a designated for-hire response company to go to the emergency site. The shipper will reimburse the responding VCNet company or for-hire company for expenses.

CHEMTREC works in tandem with CHEMNET, the CMA Chemical Mutual Aid Network, which provides shippers with access to more than 250 chemical industry emergency response teams trained to mitigate chemical spills, leaks, and fires. CHEMNET is activated by shippers that are unable to respond to serious hazardous material emergencies in a timely manner because of proximity or availability of resources.

Safer transportation is the ultimate goal of both HM-181 and HM-126C. The challenge for CHEMSTAR Panels, and any shipper, is developing smooth and efficient routes to compliance. Panel members should become familiar with the major requirements of the new rules and consider the utility of any joint activities among member companies. Contact your Panel Manager for details.

For information on CHEMTREC activities, all are welcome to contact Henry Sauer at 202/887-1254. For more information on HM-181, contact Michael Heimowitz at 202/887-1360. For more further information on HM-126C, contact Alma Howard at 202/887-1263.

A. Kosko

SPECIAL THANKS

THE IMPORTANCE OF LEAVING ERNIES

CHEMSTAR Policy Committee Chairman Earnest W. Deavenport, Jr. of Eastman Kodak and Vice-Chairman Ernest H. Drew of Hoechst Celanese relinquished their positions on June 1. Both had served for two years, during which they approved and oversaw significant changes in CMA management services. First, the Committee initiated a renaming of the specific chemical special programs to CHEMSTAR Panels, and gave the panels increased attention at the CMA Board level. Next, at the Committee's request, CMA member companies designated specific chemical contacts to aid information flow when panel matters or regulatory issues dictate a special need. Then, the Committee approved and referred to the CMA Board of Directors, the adoption of the Business Council mechanism for addressing special CMA member company business sector or business function interests. The CHEMSTAR service is much changed, for the better, thanks to the efforts of Messrs. Deavenport and Drew. We offer many thanks to them on behalf of all who work for and with the Association. Their efforts have made a difference for us all. We are glad that they continue to serve on the CMA Board of Directors.

. . . AND REMEMBERING MOMMA

After 12 action-packed years, CMA Vice President and Technical Director Geraldine V. Cox has decided to seek new challenges. In announcing her resignation, Gerry stated that, "Working for CMA has given me a wealth of very unique experience in the development and management of science advocacy, public service programs, and issue research — and I'm eager to use that experience in other areas." CMA President Robert A. Roland, in praising her efforts to build an effective, credible technical and research organization within the Association, indicated that, "She has succeeded in that mission brilliantly." Under Gerry's tenure as the "mother" of CHEMSTAR, the Division has grown from a handful of special programs to 53 chemical panels. These panels have funded $64 million of scientific research by universities, government laboratories, and independent research facilities around the world. In addition, Gerry has aided the birth of the business councils. In the first year, five councils have been established, with memberships ranging from eight to 30 companies. The staff and member companies of CHEMSTAR will miss Gerry's expertise and her ability to crystallize the issues. We wish her great success in all future endeavors.

L. Spurlock

OECD WANTS YOU, EPA WANTS YOU . . . To Volunteer

CMA is seeking volunteers to sponsor chemicals for the Organization for Economic Cooperation and Development High Production Volume Existing Chemicals Testing Program.

OECD designed the High Production Volume Existing Chemicals Testing Program to spread the burden of chemical testing among its member countries. Through information collection, evaluation, and testing, the Program will develop an internationally accepted data base. A Screening Data Information Set has already been designed for assessing HPV chemical risks. SIDS tests include screening studies for toxicological effects, ecotoxicological effects, and environmental fate and pathways.

Although fourteen member countries have agreed to monitor a proportionate share of the testing, the actual studies will be conducted by individual chemical manufacturers, except Japan, whose government will conduct the testing. The United States is committed to testing 25% of the chemicals identified by OECD. EPA will serve as the U.S. monitor of the data. Many CMA member companies will participate in the Program (see CHEMSTAR News, Vol. 2, No. 1, March 1990; No. 2, June 1990; No. 3, September 1991; and Vol. 3, No. 1 for background information).

Dossiers of existing test data and testing plans for the first phase of the Program were approved in November 1990. CMA member companies have sponsored nine of 53 Phase I chemicals which are now undergoing SIDS testing. The U.S. quota for the second and third phases is 27 of 100 chemicals. These chemicals will be allocated formally in September. Eleven CMA member companies and two CHEMSTAR Panels have indicated a willingness to test 21 of the latter chemicals tentatively assigned to the U.S. However, other countries also have solicited lead responsibility for half of the U.S. requests. **Therefore, CMA is seeking several more volunteers to sponsor chemicals for Phases II and III.** The overlap will be reconciled at a future OECD meeting.

A new schedule evolved from the OECD Extended Steering Group Meeting on Existing Chemicals in Paris on March 21-22. For chemicals in Phases II and III, the schedule will be as shown in the adjacent box.

The HPV chemicals will be tested according to priority categories —P1, P2, and P3. Organic chemicals tested in Phase I are in the P1

OECD EXISTING CHEMICALS TESTING PROGRAM
Schedule

	PHASE II	PHASE III
- Allocation of 100 chemicals to individual countries	September 1991	
- Requests sent for existing data on 50 chemicals	September 1991	December 1991
- Existing data due to OECD	January 1992	April 1992
- Data reviewed by OECD and SIDS plans proposed	May 1992	August 1992
- Dossiers reviewed by member countries and agreement reached on SIDS testing plans	September 1992	December 1992
- SIDS testing started	December 1992	March 1993
- SIDS testing completed	February 1994	June 1994

category. In Phases II and III, chemicals may be selected from a reordered P1/P2 list of organic chemicals. Inorganic compounds will be considered for testing in Phase IV.

On May 6-8 in Berlin, the OECD held a meeting of the German/ Swedish Clearing House on Data Availability of Existing Chemicals. The purpose of this meeting was: to categorize new HPV chemicals recently submitted by OECD countries; to group the remaining P1 and P2 chemicals to facilitate allocation of country sponsorships in Phases II and III; and, to review the SIDS dossiers of two German "replacement" chemicals. These tasks were accomplished successfully.

A list of "Working Chemicals," compiled from the old and new P1/P2 lists is now available at CMA. ***For a copy of the list or information on participating in the voluntary testing program, contact Cecilia Spearing at (202)887-1305.***

C. Spearing

MEDTREC — NEW PRESCRIPTION FOR SAFETY

Medical Treatment Emergency Communications is a new industry initiative designed to improve medical emergency response information on chemicals and information exchange to key medical and first response personnel. Community physicians are not always familiar with patient management involving industrial chemicals. Information of this kind, if it exists, is not easily accessible to these practitioners and is sometimes unclear, inconsistent, or out of date. Enter MEDTREC, which targets primary care physicians, corporate medical physicians, emergency personnel, and specialists in poison information.

Poison control centers are seeking ways to work with industry to improve handling industrial chemical inquiries. CMA and the American Association of Poison

PROTOCOLS FOR MEDICAL PLANNING
Chemicals on the SARA Section 304 List

- Alkaline Corrosives
- Acids and Acid Mists (Hydrochloric Acid)
- Aliphatic Fuel Distillates (Gasoline)
- *** Ammonia
- *** Aromatic Hydrocarbon Solvents (Toluene)
- *** Arsine
- Carbon Monoxide
- Chlorinated Hydrocarbon Solvents (Trichloroethylene)
- Cyanide
- Ethylene Oxide
- ** Formaldehyde
- Halogen Gases (Chlorine)
- *** Hydrofluoric Acid
- ** Hydrogen Peroxide
- Hydrogen Sulfide
- * Isocyanates (TDI)
- ** Methemolglobin-inducing Compounds (Aniline)
- ** Methyl Bromide
- Nitriles
- ** Nitrogen Oxides
- * Pesticides-Organophosphates and Carbamates (Parathion)
- *** Phenol
- * Phosgene
- *** Phosphine
- Smoke Inhalation

* Protocols In Progress; ** Next For Protocol Development; *** Final Draft Soon to be Distributed for Review.

Control Centers are working cooperatively to identify training needs and develop a self-administered training package for medical information response to industrial chemical emergencies.

The new U.S. DOT Response Communication Standards requires a 24-hour emergency contact telephone number on all hazardous materials shipping papers. This contact must have knowledge of the material's hazards and emergency response/incident mitigation information, or have access to a person with such knowledge. Many companies use CHEMTREC and poison control centers to meet this obligation. MEDTREC plans to improve the communications network for emergency medical inquiries through existing CHEMTREC channels.

Increasing awareness of the consequences of hazardous material releases has resulted in new emergency response requirements for hazardous industrial operations. Section 304 of the Emergency Planning and Community Right To Know Act of 1986 (SARA) requires "advice regarding medical attention necessary for exposed individuals" following a reportable release of an extremely hazardous substance.

The Agency for Toxic Substances and Disease Registry is addressing the need for medical management information on hazardous chemicals. ATSDR contracted with DeLima Associates in California to produce detailed protocols for emergency medical management of patients adversely affected by exposure to chemicals. Under this agreement, protocols will be developed to meet medical planning requirements for chemicals listed under Section 304 of SARA Title III. The first 25 protocols have been identified (see box on previous page).

Information, training, and communications are steps to help industry and the community preplan for effective medical emergency response. These are basic goals of the MEDTREC initiative. ***For further information, contact Elizabeth Gormley at 202/887-1194 or Karen Creedon at 202/887-1384.***

K. Creedon

ATSDR TELLS WHAT'S UP

Under SARA Title I, the Agency for Toxic Substances and Disease Registry is required to develop a list of the most hazardous substances found at National Priority List Sites. The Agency is then to review toxicological data on listed chemicals, and develop research programs to collect data needed to perform health assessments at these sites. Development of research programs is to be coordinated with EPA and NTP (see *CHEMSTAR News*, Vol. 2, No. 4, December 1990 for background information). SARA required that 100 substances be listed in 1987 and 1988 with an additional 25 substances listed in each of the next 3 years.

On April 29, ATSDR held a public meeting to review its progress and discuss plans for fulfilling its statutory obligations. The Agency highlighted the following areas:

LISTING

ATSDR has listed 250 priority substances. The final list of 25, required under SARA, is scheduled to be published in October 1991. ATSDR plans to reprioritize the list of 275 chemicals at the same time. The ranking criteria, which is a combination of potential hazard and exposure, will be published at the end of June.

PILOT SUBSTANCES

In 1990, ATSDR published an example exercise to identify data needs using four pilot substances: carbon tetrachloride, chloroethane, isophorone, and phenol. Comments on the pilot exercise raised generic issues on data needs. ATSDR plans to publish replies to these issues. An example carbon tetrachloride document will be available from the Agency for review. Responses to chemical specific issues raised in the pilot exercise will be available through the docket.

From the exercise, ATSDR established four principles:

1. The decision logic document will be expanded to meet the

needs for a TSCA Section 4 finding.

2. Special test guidelines and expanded descriptions of test requirements will not be provided. Rather, ATSDR envisions using TSCA test guidelines where they exist. For non-TSCA tests, parties interested in conducting the tests will submit protocols for review by ATSDR, EPA, and NTP.

3. ATSDR will not tier exposure testing ahead of health testing; ATSDR finds both types of testing necessary and of high priority.

4. ATSDR will require tests by the major route of exposure around NPL sites. Toxicokinetic information will be used for extrapolation or to change priorities for secondary routes of exposure.

Two of the pilot substances, carbon tetrachloride and chloroethane, are among 38 priority chemicals selected for development of a research program. Phenol and isophorone are deferred since they are not among the top priority chemicals in the new ranking system.

RESEARCH PROGRAMS

The 38 substances for which research programs will be developed are expected to remain among the top 50 after the reprioritization exercise. For each substance, ATSDR assigned a data need priority. "A" is high priority, "B" is low priority, and "C" is not a priority at this time. In assigning these priorities, ATSDR used the following principles:

1. Analytical methods are high priority. If methods are available, determination of environmental and human exposure levels are high priority.

2. For substances with known toxicity and exposure, bioavailability studies are high priority. Similarly, if species differences are significant, physiological-based pharmacokinetic modelling is high priority.

3. Studies to develop target organ and dose response information, if not already available, are high priority.

4. Emphasis will be placed on mechanistic, epidemiology, and mitigation of toxicity studies where there is known high toxicity and exposure.

ATSDR will gather "A" priority data needs on the first 38 substances, followed by "B" needs, before moving on to substance 39 and beyond.

DATA NEEDS

A *Federal Register* notice will be published identifying the "A" priority needs for the 38 substances. Companies will have 90 days to volunteer to sponsor the testing, before EPA issues a TSCA Section 4 test rule. Data needs for chemicals not covered under TSCA will be subject to an ATSDR research program. ATSDR plans to fund its testing program by an indirect charge added to the clean-up cost at NPL sites. A *Federal Register* notice describing cost recovery will be published this year.

For more information on ATSDR activities, contact Dr. Elizabeth Moran at 202/887-1182.

E. Moran

38 SUBSTANCES FOR ATSDR RESEARCH PROGRAM DEVELOPMENT

Arsenic	Methylene Chloride	Fluorene
Aldrin/Dieldrin	Nickel	Indeno(1,2,3-cd)pyrene
Benzene	PAHs:	Phenanthrene
Beryllium	Acenapthene	Pyrene
Cadmium	Acenaphthylene	Polychlorinated Biphenyl
Carbon Tetrachloride	Anthracene	Compounds:
Chloroethane	Benzo(a)anthracene	Aroclor-1260, -1254, -1248,
Chloroform	Benzo(a)pyrene	-1242, -1232, -1221, and -1016
Chromium	Benzo(b)fluoranthene	Selenium
Cyanide	Benzo(g,h,i)perylene	Tetrachloroethylene
p,p'-DDT, DDE, DDD	Benzo(k)fluoranthene	Toluene
Di(2-ethylhexyl)phthalate	Chrysene	Trichloroethylene
Lead	Dibenzo(a,h)anthracene	Vinyl Chloride
Mercury	Fluoranthene	Zinc

Federal Register Notices on SARA Section 110 Schedule

Cost Recovery Regulations	June - September 1991
Reply to Comments on Pilot Exercise	June - September 1991
New Criteria for Listing	June 1991
Research Program on 38 Priority Chemicals	August 1991
New List and Reprioritized List	October 1991
Rewrite of First 25 Toxicological Profiles	October 1991

EPA PROPOSES TESTING IN BUNDLES

On March 4, EPA published an unusual proposed TSCA Section 4 rule requiring testing of several chemicals for developmental and reproductive effect endpoints and neurotoxicity testing (see this Newsletter, FR Notices). Developmental/reproductive and neurotoxicity testing are proposed for twelve and ten chemicals, respectively. The CMA Health and Safety Committee, and several CHEMSTAR Panels, as well as the American Industrial Health Council filed comments on the rule on June 3. CMA and AIHC closely coordinated each step of developing the comments. CHEMSTAR Panels that submitted comments include: **Acetone, Alkylphenol and Ethoxylates, Carbon Disulfide, Diisocyanates, Glycol Ethers, Ketones, Oxo Process, Trimellitate Esters, and Toluenediamines.** Highlights of these comments are listed in the box on the next page.

CMA GENERIC COMMENTS

CMA comments endorsed the concept of the endpoint rule, but recommended that:

- supportable criteria be developed for identifying substances for endpoint testing;
- the basis for selecting individual test substances be fully explained;
- substances selected only because of large production volume and exposure potential be screened using the OECD Screening Information Data Set battery before being considered for endpoint testing;
- substances previously tested under TSCA not be added to endpoint rules in the absence of new data or scientific developments; and,
- EPA request exposure and toxicity information from industry before initiating an end-point rulemaking.

CMA questioned whether EPA's screening criteria for the end-point rules will effectively identify high priority candidates for testing. Of particular concern was EPA's exclusive reliance on the gross indicators of exposure (such as the size of the affected workplace population and the presence of chemicals in consumer products) to select substances for neurotoxicity testing. CMA recommended that EPA give greater weight to the intensity, duration, and frequency of exposure, since these factors will determine whether substances with neurotoxic potential pose a significant risk to workers or consumers. Toxicity considerations and exposure factors also should play a role in selecting substances for neurotoxicity testing.

For developmental/reproductive toxicity testing, CMA recommended that neither structure activity relationship, nor *in vitro* screening data, nor an unconfirmed TSCA Section 8(e) submission solely be used as criteria for selecting substances. CMA suggested using a tiered testing scheme to give EPA the option of requiring screening assays as the first step in evaluating end-point chemicals. In addition, CMA requested that EPA make final the Agency's policy for exposure-based findings, (as required by the Fifth Circuit Court of Appeals in the cumene case), before taking final action on neurotoxicity endpoint testing in this rulemaking. The CMA submission also suggested that EPA relate exposure scenarios to toxicological concerns as a means of determining an unreasonable health risk before taking final action under TSCA Section 4 (a)(1)(a).

CMA urged EPA not to reject previous studies that may not meet current test guidelines but are adequate for determining developmental/reproductive and neurotoxic risks. Furthermore, CMA commented that EPA should not overlook reported negative effects studies. For substances which are tightly controlled in the workplace because of concern about other endpoints, as CMA pointed out, it is doubtful that additional testing will change risk assessment and risk management decisions.

CMA identified the critical need for EPA to issue its guidelines for neurotoxicity risk assessment be-

fore the completion of testing under the proposed end point rule. The guidelines should take into account the importance of dose factors, the difference between primary and secondary neurotoxic effects, and the lesser degree of concern associated with transient and reversible effects.

The CMA comments endorsed the extensive comments filed by AIHC on EPA's proposed neurotoxicity test battery. CMA pointed out that the Scheduled Controlled Operant Behavior test is of limited scientific value for these endpoints and may not be feasible as an inhalation study. If EPA retains the SCOB test, adequate laboratory capacity will not be available to permit full compliance with the neurotoxicity rule under the proposed test schedule.

Finally, the comments reinforced the observation that many large volume chemicals which are subject to EPA's proposed rules need a *de minimis* exemption from export notification requirements under TSCA Section 12(b). CMA urged the Agency to require one-time export notifications for countries to which Section 4 chemicals are shipped.

EPA has not yet responded to these comments. Stay tuned for the update!

For further information Panel members should contact their Panel Managers. Copies of the general CMA comments may be obtained by contacting Sandra Tirey by telefax at 202/887-1237.

H. Shah

TSCA END-POINT RULE
HIGHLIGHTS OF CHEMSTAR PANEL COMMENTS

ACETONE
The Acetone Panel argued that based on existing data (including data overlooked by EPA), the chemical should be excluded from the proposed test rule. EPA excluded other solvents from the proposed rule that had comparable data. The Panel also recommended that EPA review studies on isopropanol, since it is metabolized almost exclusively to acetone, before identifying any data needs.

The Panel asked the Agency to justify TSCA Sections 4(a)(1)(a) and 4(a)(1)(b) findings for acetone. The Panel stated that if EPA feels that neurotoxicity testing is necessary after reviewing all available information, the Agency should adopt a tiered testing approach, but not include the proposed Schedule Controlled Operant Behavior Test in the final rule. As its rationale, the Panel cited the reasons identified in the CMA and AIHC comments.

ALKYLPHENOL AND ETHOXYLATES
The Alkylphenol and Ethoxylates Panel commented that EPA overestimated the potential for exposure to dodecylphenol. The Panel believes that the data from one species, the rat, indicates that an adequate margin of safety exists for exposed individuals. The Panel recommended that EPA remove dodecylphenol from the final endpoint rule for developmental effects testing.

CARBON DISULFIDE
The Carbon Disulfide Panel commented that EPA has failed to make the threshold finding under TSCA Section 4(a)(1)(A)(i), and thus a test rule for developmental and reproductive effect studies of carbon disulfide is not warranted at this time. The cited environmental exposure data contain numerous errors and are not adequate for concluding that exposure to carbon disulfide may present unreasonable reproductive and developmental risks to humans. Because the record does not support a finding under Section 4(a)(1)(A)(i) that carbon disulfide may present an unreasonable risk, EPA's other findings identified in the proposed rule do not apply. If EPA determines that additional testing of carbon disulfide is necessary, the Panel recommended a tiered testing scheme. The Panel noted that the proposed testing for carbon disulfide does not provide for screening assays before full-scale testing is initiated.

GLYCOL ETHERS
The Glycol Ethers Panel recommended that the Agency remove 2-ethoxyethanol from the list of chemicals selected for neurotoxicity testing because: (1) EPA greatly overstated the potential for human exposure by relying on inaccurate and outdated data and by failing to recognize the extremely low workplace exposures; (2) imminent regulations of 2-ethoxy ethanol by OSHA will further reduce the risk of occupational exposure and will render the proposed testing program unnecessary and irrelevant; (3) toxicity data adequately demonstrate that the chemical poses no risk of neurotoxicity at expected levels of exposure; and (4) generally, 2-ethoxyethanol does not meet EPA's own criteria for inclusion in this test rule.

KETONES
The Ketones Panel commented that EPA overlooked numerous studies on methyl isobutyl ketone which address the potential for MIBK to cause neurobehavioral or neurotoxic effects. The studies show that MIBK may cause mild, transient, pharmacological effects which reverse upon cessation of exposure. Also, data

TSCA End-Point Rule Panel Comm nts (Cont.)

on MIBK are comparable to the results which would be derived from the proposed neurotoxicity test battery, (except for the SCOB test, which should not be included in the array of tests proposed). Further, the Panel recommended that EPA justify its requirements under TSCA Sections 4(a)(1)(A) or 4(a)(1)(B).

OXO PROCESS

The Oxo Process Panel commented on proposed tests for seven chemicals: 2-methylpropanoic acid (isobutyric acid), 2-ethylhexanol, n-amyl acetate, 1-butanol, 1-butyl acetate, ethyl acetate, and isobutyl alcohol. The Panel noted that EPA has not sufficiently justified its Section 4 findings for any of the oxo process chemicals. Furthermore, even with appropriate findings, the Panel believes that not all seven chemicals should be subject to testing requirements. The Panel also expressed concern about the scope of testing required under the proposed neurotoxicity test rules.

TOLUENEDIAMINES

The Toluenediamines Panel commented that EPA's exposure findings were based on CMA comments in 1982 and a study by NIOSH in 1980. These are not representative of current employee exposures. Further, because of 2,4-toluenediamine suspected carcinogenicity, producers and users have adopted various means to limit exposures to the lowest levels possible. The Panel also addressed the issue of general population exposure that the Agency had calculated based on 1984 and 1977 data. The 1988 TRI database indicates that releases of 2,4-toluenediamine to air and water are less than 10% of EPA's estimate. The Panel concluded that, based on the current data, there is no reason to believe that the small releases to air and water result in any significant human exposures. With respect to the health effects finding, the Panel concluded that the studies cited by EPA contain no evidence of human health risk in the workplace.

TRIMELLITATE ESTERS

The Terephthalic Acid Task Group of the Trimellitate Esters Panel commented that reproductive effects testing for terephthalic acid is unnecessary based on exposure data. EPA relied on the 1987 Toxic Releases Inventory database to prove that releases to air and water occur, rather than identifying exposed populations or estimating the level, frequency, or duration of possible exposures. EPA had previously concluded that human exposures to terephthalic acid from air or water releases are quite low beyond facility boundaries. The Panel commented that EPA's "unreasonable risk" finding was based solely on one study that did not provide any evidence of developmental or reproductive toxicity at levels that may occur in the general population. Furthermore, EPA omitted additional studies showing that terephthalic acid presents a low risk for developmental and reproductive toxicity.

ture workshops, contact Carol Stack at 202/887-1196.

CEFIC AND PE PANEL TEAM UP AGAIN

(BERLIN, May 29)

Representatives of the Phthalate Esters Panel attended the third annual joint meeting of the Panel with the Technical Committee Plasticizers, a part of the CEFIC Plasticizers Sector Group. Panel members gave presentations on their environmental testing program, recent advocacy efforts with FDA concerning DEHA in food film, and actions toward possible Clean Air Act delisting of some phthalates. Participants discussed the impacts of ATSDR and OECD testing programs on phthalates. The groups also addressed the IARC meeting, to be held in June, which will evaluate mechanistic data on di-2-ethylhexyl phthalate.

The groups plan to hold the next joint meeting in the U.S. in 1992. ***For more information on Phthalate Esters, contact Marian Stanley at 202/887-1207.***

EOIC HIRES CIIT

(Washington, DC, June 5)

The Ethylene Oxide Industry Council signed a contract with the Chemical Industry Institute of Technology to develop a pharmacokinetics model for ethylene oxide. The research will span a three-year period beginning in 1991. The study will develop a preliminary rat and mouse model, and ultimately, a pk-human model. In addition, CIIT will determine chemical parameters, reaction rates, and metabolites as needed. ***For further information, contact Dr. Robert Romano at 202/887-1198.***

PEOPLE

THE NEW "C" TEAM

The new Chairman of the CHEMSTAR Policy Committee is **Seymour S. Preston, III** of ATOCHEM North America and the new Vice Chairman is **Peter R. Heinze** of BASF. Both members of the CMA Board of Directors were appointed by the Board to serve terms beginning on June 1. They join CMA staff Vice Presidents **Gordon D. Strickland, Gary C. Herrman and David F. Zoll** as members of the Committee whose responsibility is oversight of the CHEMSTAR management policies. We look forward to excellent leadership from Messrs. Preston and Heinze.

JOHN JUMPS IN, JIM JUMPS OUT

The Phthalate Esters Panel welcomes its newest member, **John Bankston** of Aristech Corporation. He replaces **James Santory**, who served as Panel Chairman in 1990. Prior to joining Aristech last year, Bankston was employed at Mobay Corporation for 15 years. His knowledge of business and regulatory compliance will be an asset to the Panel. We look forward to working with John. Best of luck to Jim in future endeavors, and many thanks for fine contributions to the Panel.

BENTLEY RETIRES

Dr. Edward Bentley retired from both Texaco and CMA activities in June. Bentley has provided excellent contributions to 11 CHEMSTAR Panels since 1979. At the time of his departure, he was Chairman of the Alkanolamines Panel, and member of the Butadiene, Cyclohexane, Ethylene Glycol, and Ethylene Oxide Panels. Ed will be missed by company representatives and CMA staff alike for his outstanding accomplishments, industry knowledge, and cheerful and friendly nature. Best wishes to Ed in his well-deserved retirement!

LYNAM LEAVES

Dr. Donald Lynam of Ethyl resigned as Chairman of the Brominated Flame Retardant Industry Panel. The Panel thanks Don for his guidance over the past year. Dr. David McAllister of Great Lakes and Dr. Marcia Hardy of Ethyl will serve as Chairman and Vice Chairman, respectively. We look forward to continuing excellent leadership!

GLICKMAN MOVES ON

Andy Glickman retired as Chairman of the Environmental Research Work Group of the Petroleum Additives Panel due to his promotion to Coordinator of Toxic Substances Control of Chevron.

The Panel thanks Andy for his superb leadership over the past four years. Good luck, Andy!

DON'T MESS WITH BROWNING

Marilyn Browning, CMA Associate General Counsel and CHEMSTAR Counsel for four years, resigned from the Association on May 31 to move to Houston, TX. Marilyn was responsible for general legal oversight of all CHEMSTAR Panels and Business Councils. She also acted as supervisor of all outside legal counsels retained by the panels and counsels. During her tenure, Marilyn developed the extensive contract and agreement formats necessary for safeguarding member companies entering TSCA Section 4 and FIFRA testing programs. She also represented panels in negotiating a multitude of contracts with laboratories, companies and academic institutions. Marilyn has joined her husband, also an attorney, in Houston where he recently became a member of a law firm. She currently is seeking a position in the Houston area (member companies take note). Many, many thanks to Marilyn for an excellent job, and the best of luck in finding a challenging new position.

ENTER ONDOCSIN

Robert Ondocsin (ON-DOSS-IN), CMA Counsel and former Counsel to the CMA Engineering and Operations Committee and Health and Safety Committee, was appointed on June 1 to replace Marilyn Browning as CHEMSTAR Counsel. Like Marilyn, Bob will be responsible for general legal oversight of all Panels and Business Councils, including legal review of documents, antitrust counseling, contract review and management of retained counsels. Bob has been at CMA since 1989. His focus with the CMA standing committees and their task groups has been on antitrust and general liability counseling, contract oversight and OSHA regulatory advocacy. Before coming to CMA, Bob worked in safety and health management positions at Union Carbide and PPG Industries. He holds B.S. and MS. degrees from the University of Pittsburgh. Bob is a member of the New York and Connecticut Bars and received his J.D. from Pace University. We look forward to excellent counseling from Bob!

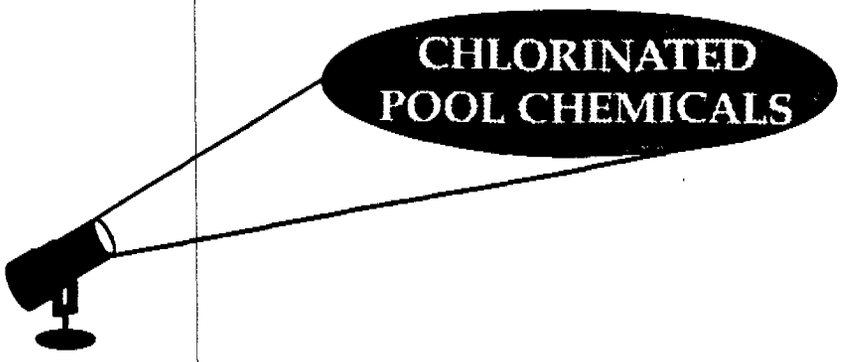
NEW PANEL MANAGER

Kathleen Roberts joined CMA and the CHEMSTAR Division staff in April 1991. She is responsible for the management of the Hexamethylene Diisocyanate, Ethylene Glycol, Chlorinated Pool Chemicals, and Fluoroalkenes Panels. Prior to joining CMA, Roberts was a Product Manager with Jellinek, Schwartz, Connolly, and Freshman, Inc. Previously, she was a Laboratory Technician for Hazelton Laboratories America, conducting inhalation and genetic toxicology research.

Kathleen holds a BS in biology from the University of North Carolina at Chapel Hill. We welcome her and look forward to great management.

ANOTHER RISING STAR

To celebrate her first anniversary with CMA, **Marian Stanley** was promoted to Senior Panel Manager. Marian came to the CHEMSTAR Division in May 1990 to manage the Specialty Acrylates/Methacrylates Panel and the Environmental and Toxicology Research Task Groups of the Phthalate Esters Panel. During the past year, she has assumed the management responsibility for the full PE Panel and its other task groups. Marian holds a MBA in Pharmaceutical Studies from Farleigh Dickinson University and a B.S. in Chemistry from Pratt Institute. Congratulations to Marian on her promotion!



SPOTLIGHT

This is the twenty-second article in a series which highlights the activities of the various CHEMSTAR Panels.

The Chlorinated Pool Chemicals Panel formed in 1989 to promote safety in the manufacturing, packaging, transportation, storage, and use of chlorinated oxidizers used for pool water purification. Panel members include producers of calcium hypochlorite and chlorinated isocyanurates worldwide. Current members are ATOCHEM North America, Fertilizers & Chemicals, Monsanto, Nissan Chemical, Nisso America, Olin, PPG, Saskatoon Chemicals, Shikoku Chemical, and 3-V. ***The Panel Chairman is Bruce Jacobsen of Olin.***

EMERGENCY RESPONSE EDUCATION

Chlorinated pool chemicals are highly reactive oxidizing agents which can become unstable if mishandled, improperly stored or contaminated. In order to educate and train firefighters and other emergency response personnel, the Panel has produced a bulletin and videotape on proper procedures for storing and handling of chlorinated pool chemicals. The videotape addresses the procedures for responding to fires involving chlorinated pool chemicals and provides information on protective equipment and cleanup procedures. The videotape and the bulletin have been distributed in the U.S., Japan, and Europe.

TESTING

In response to a proposed reclassification of oxidizers in NFPA 43A, "Code for Storage of Liquid and Solid Oxidizing Materials", the Panel is exploring the conduct of small - and large - scale testing on pool chemicals. The testing will assess burn rates and provide information to users for warehousing and packaging of pool chemicals. Olin is conducting preliminary laboratory testing and the Panel will decide how to proceed after reviewing this information.

CHLOROFORM MEASUREMENTS

The Panel will sponsor research in California this summer to measure chloroform releases from swimming pools. This study is in response to the California Air Resources Board's concern about chloroform emissions in the state, and the potential listing of the chemical as a toxic air contaminant. CARB identified swimming pools that are disinfected with chlorine-containing chemicals as sources of indirect production of chloroform. The Panel's research program will measure chloroform emissions associated with swimming pools under various conditions in order to evaluate the potential "health risks" to people living nearby. The Research Task Group, chaired by Bonnie Sandel of Olin, currently is developing a test protocol to be submitted to CARB for approval.

TRANSPORTATION

The Transportation Task Group, chaired by Kenneth Lee of PPG, is finishing a bulletin which contains guidelines for transporting calcium hypochlorite and chlorinated isocyanurates. The bulletin is intended for shippers of pool chemicals and personnel responsible for in-transit storage, and will include information on pertinent federal transportation regulations. This bulletin will be published within the next few months.

Barbara Francis has served as manager of the Panel since its formation, but will be succeeded by Kathleen Roberts in the near future. Kathleen can be reached at 202/887-1146.

NEWS BRIEFS

CPSC PROPOSES LABELING RULE

(Washington, DC, April 17)

The Consumer Product Safety Commission issued a proposed rule on labeling requirements for Art Materials and other Products Subject to the Federal Hazardous Substances Act, guidelines for determining chronic toxicity, and a supplemental definition of "toxic" (see FR Notices, this Newsletter). The proposed rule covers labeling of all consumer products for chronic hazards. Although issued under the Labeling of Hazardous Art Materials Act, the guidelines also will be applied in enforcement actions under the FHSA. This act regulates hazardous substances ". . . intended, or packaged in a form suitable, for use in the household or by children." CPSC classifies carcinogenicity, neurotoxicity, reproductive and developmental toxicity as "chronic hazards" that must be identified on product labels. The CMA Health and Safety Committee is taking the lead in preparing comments.

The CPSC rule will impact several chemical-specific Panels. The Crystalline Silica Panel is working with the Product Safety Task Group to develop arguments against the use of yet another automatic trigger. Comments were due in July 1991; however, CMA has been granted a 90-day extension, which is still pending Commission action. ***For more information, contact Elizabeth Gormley at 202/887-1194 or Claudette Cofta at 202/887-1278.***

BUTADIENE RESEARCH UNDERWAY

(Washington, DC, May 14)

The Butadiene Panel initiated a four-year $1.5 million research program aimed at understanding the mechanism of action and species differences in response to 1,3-butadiene. The Panel's goal is to develop data that more accurately predicts the potential risk to humans. The Research Program will be conducted at three facilities: The University of Colorado, the University of North Carolina, and the Inhalation Toxicology Research Institute in Albuquerque, New Mexico.

Butadiene is a commodity chemical used in the production of polymers and synthetic rubber. Recent carcinogenicity bioassays show that the chemical is a potent carcinogen in the B6C3F1 mouse but a weak carcinogen in the Sprague-Dawley rat. The difference in carcinogenic susceptibility must be understood in order to assess risk to humans.

The University of Colorado program will focus on species differences in susceptibility to leukemia/lymphoma associated with chronic exposure of the B6C3F1 mouse to butadiene. Research at the University of North Carolina will examine the ability of butadiene and its metabolites to induce mutations, and will determine molecular events that cause these mutations. The ITRI program will focus on how differences in metabolism of butadiene in mice, rats, monkeys and humans relate to differences in sensitivity to the carcinogenicity of butadiene. ***For more information, contact Butadiene Panel Manager, Dr. Elizabeth Moran, at 202/887-1182.***

PA PANEL HOLDS FIRST WORKSHOP

(San Antonio, TX, May 21)

The Petroleum Additives Panel sponsored a Product Approval Code of Practice Workshop for those interested in candidate engine oil performance testing. The 85 registrants included engine test schedulers, formulators, test engineers, test or approval program administrators, and research supervisors. The Panel developed the Code of Practice to help ensure consistency in testing as performance specifications of engine lubricant additives are evaluated. The workshop emphasized elements of the Code that address test registration procedures and test stand selection.

Several Task Group members contributed to the success of the workshop. Henry K. Newhall of Oronite-Chevron Research and Technology presented an overview of the Code of Practice. Richard Ritchie of Amoco Petroleum Additives led the session on test registration procedure, and Rick Oliver of Texaco Additive Company led the session on test stand selection.

In light of the wide interest, the Panel plans to hold additional workshops to introduce the Code to other interested and affected parties. ***For information on fu-***

NEW TO CHEMSTAR

ACETONE PANEL

The Acetone Task Group formed under the Ketones Panel in early 1990 to address concerns of acetone manufacturers, processors, and users. In April, Task Group members decided, because of the complexity of issues, to discontinue the Task Group and form an Acetone Panel. Recently, the Acetone Panel submitted comments to EPA on the proposed TSCA Section 4 end-point rule for neurotoxicity. In addition, the Panel is preparing a toxicological review to assist the National Sanitation Foundation with evaluating solvent cements.

Currently, the Panel is co-funding a research project with the Coordinating Research Council, California Air Resources Board, the South Coast Air Quality Management District, and the National Aerosol Association. Under this cooperative program, the University of California at Riverside will conduct studies of atmospheric reactivities of volatile organic compounds, including acetone.

The Chairman of the Acetone Panel is **Philip Casterton** of Shell Chemical Company. ***For further information on Panel activities, contact Panel Manager Barbara Francis at 202/887-1314.***

LABORATORY AND RESEARCH CHEMICALS COUNCIL

Representatives of nine producers of laboratory and research chemicals formed a new Business Council under CHEMSTAR. The Laboratory and Research Chemicals Council will address concerns specific to its segment of the chemical industry and comment on regulatory and legislative proposals affecting its sector. **Javid Bashir** of Fisher Scientific is the Council Chairman. ***For more information, contact Dr. Elizabeth Moran at 202/887-1182.***

TOLUENEDIAMINES PANEL

The Toluenediamines Panel was reactivated in April in response to the TSCA Section 4 proposed rule (see FR Notices, this Newsletter) requiring multi-substance testing for developmental and reproductive toxicity. The Panel will develop advocacy positions and the Toxicology Research Task Group will design research on the potential effects of 2,4-toluenediamine on health and the environment. Panel member companies include Air Products and Chemicals, BASF, ICI Americas, Mobay, and Olin. The Panel Chairman is **James LaPrad** of BASF. ***For more information, contact Panel Manager Cecilia Spearing at 202/887-1305.***

PEOPLE TO WATCH

. . . Kudos to **Claude Wolf**, Chairman of the Biocides Panel, who presented smashing testimony to the House Agriculture subcommittee on cost and time expenditures for the biocide registration process under FIFRA . . . applause for **Henry Newhall** of Oronite-Chevron, **Richard Ritchie** of Amoco and **Rick Oliver** of Texaco Additive who led excellent sessions at the Petroleum Additives Panel's Product Approval Code of Practice Workshop . . . thumbs up to CHEMSTAR Associate Director **Bob Romano** who participated in a seminar in Austin, TX on Chlorine Dioxide Water Disinfection. Bob expanded his wealth of knowledge on chlorine dioxide chemistry, analysis, and regulations. We expect he expanded on fajitas too . . .

RECENT RELEASES

FEDERAL REGISTER NOTICES

PROPOSED MULTI-SUBSTANCE RULE FOR THE TESTING OF DEVELOPMENTAL AND REPRODUCTIVE TOXICITY *(56 FR 9092, March 4, 1991).*

27th REPORT OF THE INTERAGENCY TESTING COMMITTEE *(56 FR 9534, March 6, 1991).*

LABELING REQUIREMENTS FOR ART MATERIALS AND OTHER PRODUCTS SUBJECT TO THE FHSA PRESENTING CHRONIC RISK HAZARDS; GUIDELINES FOR DETERMINING CHRONIC TOXICITY; SUPPLEMENTAL DEFINITION OF 'TOXIC' *(56 FR 15672, April 17, 1991).*

ADVANCE NOTICE OF PROPOSED RULEMAKING FOR AND REQUEST FOR COMMENT AND DATA ON LAND DISPOSAL RESTRICTIONS; POTENTIAL TREATMENT FOR NEWLY IDENTIFIED AND LISTED WASTES AND CONTAMINATED DEBRIS *(56 FR 24444, May 30, 1991).*

COMMENTS

Comments to the California Air Resources Board on the DRAFT TECHNICAL SUPPORT DOCUMENT FOR 1,3 BUTADIENE *(filed by the Butadiene Panel, March 21, 1991)*

Comments to the California South Coast Air Quality Management District on PROPOSED RULE 1410 *(filed by the Hydrogen Fluoride Panel, March 25, 1991)*

Comments to EPA on the TWENTY-SEVENTH REPORT OF THE INTERAGENCY TESTING COMMITTEE *(filed by the Phenol Panel, April 1, 1991)*

Comments to Office of Management and Budget on EPA's INFORMATION REQUEST FOR DATA ACQUISITION FOR PESTICIDE REGISTRATION *(filed by the Biocides Panel, May 22, 1991)*

Comments to EPA on the PROPOSED MULTI-SUBSTANCE NEUROTOXICITY TEST RULE *(filed by the Acetone Panel, June 3, 1991)*

Comments to EPA on the PROPOSED MULTI-SUBSTANCE TEST RULE FOR DEVELOPMENTAL AND REPRODUCTIVE TOXICITY AND NEUROTOXICITY ON DODECYLPHENOL *(filed by the Alkylphenol and Ethoxylates Panel, June 3, 1991)*

Comments to EPA on the PROPOSED MULTI-SUBSTANCE TEST RULE FOR DEVELOPMENTAL AND REPRODUCTIVE TOXICITY *(filed by the Carbon Disulfide Panel, June 3, 1991)*

Comments to EPA on the PROPOSED MULTI-SUBSTANCE NEUROTOXICITY TEST RULE FOR 2-ETHOXYETHANOL *(filed by the Glycol Ethers Panel, June 3, 1991)*

Comments to EPA on the PROPOSED MULTI-SUBSTANCE NEUROTOXICITY TEST RULE *(filed by the Ketones Panel, June 3, 1991)*

Comments to EPA on the PROPOSED MULTI-SUBSTANCE TEST RULE FOR DEVELOPMENTAL AND REPRODUCTIVE TOXICITY *(filed by the Oxo Process Panel, June 3, 1991)*

Comments to EPA on the PROPOSED MULTI-SUBSTANCE TEST RULE FOR DEVELOPMENTAL AND REPRODUCTIVE TOXICITY *(filed by the Terephthalic Acid Task Group, June 3, 1991)*

Comments to EPA on the PROPOSED TEST RULE FOR DEVELOPMENTAL AND REPRODUCTIVE TOXICITY *(filed by the Toluenediamines Panel, June 3, 1991)*

FINAL REPORTS

"An Approach to Using the Two-Stage Model for Estimating the Carcinogenic Risk of DEHP" *(Phthalate Esters Panel, April 17, 1991).*

"Aquatic Toxicity of Phthalate Esters" *(Phthalate Esters Panel, April 18, 1991).*

"Oral Toxicity of 2-Ethylhexanol in Rats After Administration by Gavage (Aqueous Emulsion) for Three Months" *(Oxo Process Panel, April 23, 1991).*

"Limited Study of Oral Toxicity of 2-Ethylhexanol in Rats After Administration by Gavage (Aqueous Emulsion) for Three Months" *(Oxo Process Panel, April 23, 1991).*

"Oral Toxicity of 2-Ethylhexanol in Mice After Administration by Gavage for Eleven Days (Nine Applications; Solution in Corn Oil)" *(Oxo Process Panel, April 23, 1991).*

"Oral Toxicity of 2-Ethylhexanol in Mice After Administration by Gavage (Aqueous Emulsion) for Three Months" *(Oxo Process Panel, April 23, 1991).*

"Limited Study of Oral Toxicity of 2-Ethylhexanol in Mice After Administration by Gavage (Aqueous Emulsion) for Three Months" *(Oxo Process Panel, April 23, 1991).*

"Toxicity of 2-Ethylhexanol in Rats After Administration of Microencapsulated Material Via the Diet for Eleven Days" *(Oxo Process Panel, April 23, 1991).*

"Toxicity of 2-Ethylhexanol in Mice After Administration of Microencapsulated Material Via the Diet for Eleven Days" *(Oxo Process Panel, April 23, 1991).*

"Oral Toxicity of 2-Ethylhexanol in Mice After Administration by Gavage for Eleven Days (Nine Applications; Solution in Propylene Glycol)" *(Oxo Process, April 23, 1991).*

"Oral Toxicity of 2-Ethylhexanol in Rats After Administration by Gavage for Eleven Days (Nine Applications; Solution in Propylene Glycol)" *(Oxo Process Panel, April 23, 1991).*

"Oral Toxicity of 2-Ethylhexanol in Rats After Administration by Gavage (Aqueous Emulsion) for Eleven Days (Nine Applications)" *(Oxo Process Panel, April 23, 1991).*

"Oral Toxicity of 2-Ethylhexanol in Mice After Administration by Gavage (Aqueous Emulsion) for Eleven Days (Nine Applications)" *(Oxo Process, April 23, 1991).*

"In-Vivo Percutaneous Absorption of 14C-DEHP Plasticized Polyvinyl Chloride Film in Male Fischer 344 Rats" *(Phthalate Esters Panel, May 1, 1991).*

"Chronic Toxicity of Nonylphenol to the Mysid, Mysidopsis bahia" *(Alkylphenol and Ethoxylates Panel, May 21, 1991).*

"Early Life Stage Toxicity of Nonylphenol to the Fathead Minnow, Pimephates promelas" *(Alkylphenol and Ethoxylates Panel, May 21, 1991).*

UPCOMING EVENT

The 20th Annual Conference of the North American Association for Environmental Education will be held in St. Paul, Minnesota from September 27 - October 2, 1991. The Conference is entitled, "Confronting Environmental Challenges in a Changing World." The conference will include workshops, presentations, symposia, and field study trips focusing on current environmental issues. For more information on the conference, contact Lori Mann of NAAEE at 415/342-9378.

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Correspondence may be sent to *CHEMSTAR NEWS*, 2501 M Street, NW, Washington, DC 20037; Telephone 202/887-1337; Fax 202/887-1237.

Amy Kosko, Editor