ATTACHMENT 1

BIOMEDICAL AND ENVIRONMENTAL SPECIAL PROGRAMS

AN OVERVIEW

1.0 MISSION

The mission of the CMA Biomedical and Environmental Special Programs Division (Special Programs) is to provide manufacturers, processors, and/or users of a chemical or chemicals with the opportunity to support collectively research and/or advocacy on specific chemicals. When referring to Special Programs, advocacy involves external communication, not designed solely for information exchange, that relates to existing or developing regulations, legislation or litigation. CMA serves participating companies by providing proper and effective administration of programs.

Scientific information developed through research programs should promote the health and safety of the general public and of workers involved in manufacturing, processing, and using these chemicals. All significant findings and reports of CMA-administered research programs are available to the public in a timely manner.

2.0 DIVISION SUMMARY

CMA approved the first "special project" in 1972. The initial special projects were exclusively research oriented. The intent at that time was for CMA to collect and disburse the necessary funds, contract for the research to be done, and provide meeting facilities and surveillance over the conduct of the meetings. The time requirements on CMA staff were expected to be minimal since the participating companies would provide all technical expertise and management skills necessary to conduct the programs. The administration of these programs was assigned to CMA secretaries of several standing committees.

The number of special programs administered by CMA increased at a moderate rate from 1972 to 1979. By the end of 1979, CMA was administering to seventeen special programs. Since 1980, requests for CMA to undertake new special programs have increased considerably. This increase is due mainly to increased activities related to the Toxic Substances Control Act, Clean Air Act and Clean Water Act. The Special Programs Division presently coordinates research and/or advocacy for twenty-three special programs.

CMA took its first steps toward advocacy in 1977 when the Benzene Program Panel was formed in response to a worker-exposure standard proposed by OSHA. Industry believed that the scientific studies on which this standard was based were flawed. The Benzene Panel's Charter was to develop a sound technical base that could be used by industry to challenge the proposed regulations. The Benzene Panel's Charter was expanded in November 1978 to

allow the Panel to represent the interests of the members of CMA before federal and state agencies in all matters relating to safety and health issues arising out of the production, reaction, release, packaging, repacking, storage, transportation, handling or use of benzene. Since 1980, fifteen program panels have broadened their charters to include advocacy or begun programs which included advocacy.

In September 1979, the CMA Executive Committee authorized the formation of a Special Programs Advisory Group (SPAG). SPAG was subsequently given the status of Special Committee which is now known as the Special Programs Advisory Committee (SPAC). Three major responsibilities of SPAC are: (1) to review requests for individual product advocacy by special program panels and determine that appropriate conditions for these advocacy positions are met; (2) to review each ongoing special program at least once a year to provide guidance based on SPAC members' expertise; and, (3) to make certain that advocacy actions of each Special Program are in harmony with CMA Standing Committee positions. Appendix A lists current members of SPAC. During 1981, SPAC completed review of all ongoing special programs.

In addition, in 1980 and 1981, SPAC approved CMA undertaking new special programs on arsenic, ethylene oxide, glycol ethers, ketones, polychlorinated biphenyls, and zinc dialkyl dithiophosphates.

Appendix B lists all special programs undertaken by CMA to date. Appendix C lists companies that are currently participating in special programs.

3.0 STAFF ORGANIZATION AND RESPONSIBILITIES

The Special Programs Division has a staff of thirteen, including a Director, five program administrators, a program coordinator, five secretaries, and one word processor. One program administrator and one secretary devote their time exclusively to the Fluorocarbon Program. The other four program administrators and four secretaries are responsible for the remaining twenty-two programs. Figure 1 outlines the organization of Special Programs with respect to both the staff and the specific programs.

Program administrators prepare for and attend panel and task group meetings, prepare records of meetings, and write and administer all contracts in their respective areas. In addition, program administrators:

- maintain awareness of pertinent regulations relating to panel's activities;
- communicate with government agencies on scientific and regulatory matters;
- coordinate information flow to and from the agencies, the companies, other trade associations and academic communities;
- coordinate the development of advocacy and regulatory position

papers with appropriate CMA staff, standing committees; and outside consultants; and,

- o provide monitoring and auditing services for ongoing research projects.

The Special Programs Division keeps the office of General Counsel informed of the status of ongoing panel activities.

4.0 BUDGET

To date CMA program panels have spent $20,430,287 in research and advocacy programs on 24 families of chemicals (see Table 1).

4.1 Overhead Reimbursement Budget

CMA charges participating companies the full costs, including overhead, for administration of special programs. The program account is charged $500 per day for professional staff. This charge includes both the direct and allocated costs of full time professional and clerical Special Programs staff and routine professional or support assistance from the Technical, Legal, Government Relations, Communications, and Administrative Services Departments.

Other direct costs, such as out-of-town travel, meeting room and program equipment rentals when meeting outside CMA, conference calls, telex, unusually large printing and mailings, etc., are charged as miscellaneous administrative expenses to the program. Other CMA professional staff time, if required to work on specific or non-routine aspects of the program, is charged at the same rate as the program administrator. In addition to an overhead reimbursement of $500 per day, the CMA Special Programs Division is credited monthly with 0.75% of received but not expended special program funds as interest. Interest received on non-disbursed Special Program funds is used to defray administrative costs not recovered by the daily rate. In the case of the fluorocarbon program, the unexpended funds balance is approximately $2 million. This has resulted in a special agreement with the Program Panel to credit its funds with interest at 9% and charge a fixed fee of $16,500 per month from June 1981 to May 1982. This arrangement produces an effective billing rate of $825 per day instead of the normal $500 per day. The fixed fee of $16,500 will be reviewed in March 1982 for fiscal year 1982-1983.

4.2 Panel Research/Advocacy Budget

CMA requires written commitment for the full amount of a study budget from all participating companies before executing study contract(s). A separate account is established to receive and disburse funds for each program.

As a matter of CMA fiscal policy, participating companies are invoiced for a minimum of 50% of the projected fiscal year commitments. Initial invoicing occurs immediately after participating company management approval of the program activities. During the course of the program, additional collections are made as necessary to maintain a reserve from which disbursements are made. Reserves are maintained as low as possible under sound financial management.

A new phase of a program begins whenever there is a change in composition of sponsoring companies. At the completion of any phase of a program, uncommitted funds are carried over to a subsequent phase. If a company voluntarily drops out of a program at the completion of all contracted work, a refund is made if the pro-rated balance of uncommitted funds exceeds $2,500 for that company. A company which voluntarily drops out of a program during an ongoing study is expected to provide its full financial commitment to the current study phase including any additions or extensions which were approved during the term of its participation.

A financial statement detailing all expenses and commitments is prepared monthly for each program. A copy of the statement is provided to panel members at their meetings to keep them informed of the financial status of the panel.

5.0 GOALS FOR 1981 - 1982

- o to continue working on establishing new contacts within regulatory agencies;
- o to establish better communication with both U.S. and non-U.S. trade associations involved in activities related to Special Programs;
- o to enhance the scientific credibility of CMA by promoting the publication of CMA-administered research in peer review journals;
- o to achieve better recognition of CMA's capabilitres by initiating the Special Programs News Letter starting January 1982; and,
- o to establish semi-annual meetings with representatives of other trade associations involved in administration of toxicologic and epidemiologic research.

6.0 LONG-RANGE PLAN

Through much hard work on the part of CMA staff and panel members, CMA-administered research is developing a reputation for its objectivity and integrity. However, there is room for improvement. Special Programs needs to increase the chemical industry's awareness that Special Programs has the expertise to:

- o administer research and advocacy programs; and,
- o provide scientific services which, until recently, have not been available, expected, or requested.

To accomplish this, Special Programs has identified steps which should be taken over the next few years. These include:

- o reducing the work load per program administrator to enable him/her to undertake the challenge of new tasks/programs;
- o encouraging staff, through educational benefits, to expand existing and develop new expertise in science and business management;
- o hiring new staff to complement existing staff in scientific disciplines not already adequately covered;
- o hiring additional support staff capable of assuming a portion of a program administrators non-scientific administrative duties in order to permit the program administrator to devote more time to scientific and liaison functions;
- o playing a larger role in penetrating the Washington scene and interacting with regulatory agencies and professional societies by establishing good professional relationships with peers in the regulatory agencies, the industry, and government-funded research laboratories;
- o utilizing the contacts and experience of individual program administrators more effectively within the Special Programs Division and other Divisions of CMA;
- o completely reevaluating the method of compensating CMA for services provided;
- o developing the flexibility to provide services panels expect and for which they are willing to pay; and,
- o publicizing Special Programs accomplishments and capabilities in:
  - CMA News
  - ChemEcology
  - The newly-proposed Special Programs Newsletter
  - Peer review journals (publication of research results)
  - News releases on significant findings

7.0 MAJOR ACCOMPLISHMENTS

7.1 Chlorobenzenes

Panel toxicologists provided technical input to the Chlorobenzenes Producers Association (CPA) for their submission to EPA in response to EPA's proposed TSCA Section 4(a) Test Rule on Chlorobenzenes. This group of panel toxicologists has continued to work closely with the CPA in the development of a voluntary industry testing program that would be acceptable by EPA in lieu of formal test rule.

Following earlier dialogues between CMA/CPA and EPA a "decision-tree" approach to testing of commercial chlorobenzenes was adopted. The outline for this proposal is now being reviewed by EPA. The testing program as now envisioned would be much more conservative in scope than that originally outlined by EPA in their proposed Test Rule.

7.2 Ethylene Oxide

The EO council is organized in such a way that it is able to respond immediately to emergency situations. A petition to OSHA to issue an emergency temporary standard of 1 ppm was submitted on August 13, 1981. Within two weeks the Council, working on advice from its regulatory and scientific committees and outside counsel, prepared a precise, detailed response which they submitted during a meeting with OSHA on September 2. This meeting was also attended by the American Hospital Association and the Veterans Administration--both of which were anxious to join with the Council to present a united industry position. On September 29 OSHA denied the petition.

7.3 Fluorocarbons

- The Program has made substantial contributions to the scientific understanding of what is happening in the stratosphere. The calculated ozone depletion at steady state (approximately 100 years from now) has fluctuated between 5% and more than 20%. Current calculations indicate 6%.

- The Program has achieved a reputation for scientific objectivity and integrity seldom attributed to industry-sponsored effort.

- There has been cooperation with government agencies throughout the world and with international agencies. Research conducted by government agencies has been funded or co-funded and research with universities or private laboratories has been co-funded with government support.

- CMA is the only member of the Coordinating Committee on the Ozone Layer of the United Nations Environment Program not

representing a national government or an international agency.

- Perhaps the greatest contribution has been the influence on the government funded stratospheric research, particularly in the U.S. The productivity of government agency research has been improved substantially over the past five years. At least in part this has been due to the methodology followed and advocated by the industry-sponsored program and the oversight and review provided by the Fluorocarbon Program Panel.

7.4 Phthalate Esters

- The Phthalate Esters Program Panel has developed a voluntary test Program to address potential health and environmental effects of a class of compounds.

- The panel has worked with the Test Rules Development Branch (TRDB) of the Environmental Protection Agency and has gained their acceptance of the test program. TRDB is currently proceeding with agency review of the program and we expect official acceptance by mid-November.

- The Panel is optimistic that EPA will decide that the data do not warrant a 4(f) finding at this time.

- The FDA Task Group has developed a voluntary test program for DEHA which is aimed at determining the cause of the bioassay results. This program will be presented to FDA with the hope that the FDA will accept the program in lieu of an interim regulation or ban on DEHA.

- The FDA Task Group has successfully altered the time table within the Bureau of Foods for regulatory action on DEHA. This delay has allowed FDA and CMA scientists to discuss the scientific issues to develop mutually acceptable regulatory actions to assure public safety and the continued use of an unreplaceable substance, DEHA, in food contact applications.

7.5 Polychlorinated Biphenyls

There has been a spirit of mutual cooperation between CMA and EPA since the beginning of this program. EPA representatives worked with CMA in developing our surveys and presenting a symposium on these surveys to industry and other trade association representatives.

- CMA obtained the cooperation of almost 50% of its membership in the 50 ppm incidental generation survey.

- CMA has continued to maintain on open dialogue with other trade associations involved in collecting data for EPA--especially the National Electrical Manufacturers Association and the Edison Electric Institute.

- CMA submitted to EPA a narrative dissertation on the problems and costs associated with low level PCB analysis. This report was well accepted by the Agency and received good coverage in several trade publications.

- In order to insure the objectivity of the data generated by its current round robin, CMA secured the participation of several EPA laboratories in addition to member company labs. It is hoped that the data generated from this cooperative effort will demonstrate to EPA the variability of analytical results which must be considered in writing and enforcing a regulatory cut off level for PCBs.

8.0 SUMMARIES

8.1 Special Program Advisory Committee

The Special Program Advisory Committee (SPAC) was formed to provide the Program Panels with multi-disciplinary expertise in areas of scientific research and governmental advocacy. SPAC reviews each special program on an annual basis and once a year reports to the CMA Executive Committee on the progress of each program.

Controversies which exist either within a panel or between staff and panels which cannot be resolved at staff level, are brought to SPAC for review and recommendation. SPAC reviews all new and revised programs for consistency with Association policy.

8.2 Acrylonitrile (AN)

The Arcrylonitrile Program is concerned with the epidemiology, toxicology, and environmental aspects of processes involving acrylonitrile, its copolymers and its end products. The program was begun in 1974 to develop additional data on the toxicology of AN. This was accomplished through animal exposure studies by inhalation and ingestion.

An epidemiology study was not conducted because of lack of specific exposure data for most of the period to be studied as well as difficulties associated with designating a suitable control group. Several participating companies conducted their own internal epidemiology studies, three of which have been published in detail.

FDA has been interested in food-contact applications of AN polymers, especially beverage bottles. However, the Panel did not assume an advocacy position on this issue. The Society of Plastics Industry conducted advocacy related to OSHA regulations on AN, but CMA was not involved.

As a result of proposed regulations by EPA in 1980, the monomer and polymer producers decided to charter a new organization under SOCMA to fulfill the necessary advocacy role. This new group will also perform any future research on Acrylonitrile. The CMA panel voted to disband upon completion of its current research.

8.3 Allyl Chloride

Concern over the carcinogenic hazard attributed to vinyl chloride prompted the formation of the AC Program Panel in January, 1976. The panel has so far undertaken three research projects: a teratology study, a pharmacokinetic and metabolic study and a 90-day inhalation probe study. The need for additional research will be determined after the results of these studies are evaluated.

8.4 Arsenic (AS)

An Arsenic Program Panel was established in the first quarter of 1981. The panel's objectives are to: 1) gather information; 2) conduct necessary research to compliment existing information; 3) educate regulators; and 4) undertake regulatory advocacy.

The panel's first priority was to sponsor an arsenic symposium and an in-depth critical literature review on the health effects associated with arsenic. The symposium, scheduled for November 4-6 in Gaithersburg, Md. is being cosponsored with the National Bureau of Standards. Session topics include industrial sources and uses of arsenic, biomedical and environmental perspectives, and epidemiology.

The literature review is underway and should be completed in November 1981. The panel may initiate research studies based on needs identified in this review and may undertake advocacy regarding present and proposed arsenic standards.

8.5 Benzene (B)

The Benzene Program Panel was formed in November 1976. The Panel assessed the data used by NIOSH and OSHA in proposing workplace standards for benzene, developed its own recommendations, and gathered additional data to substantiate establishment of a standard.

The panel continues to be concerned with expansion of the toxicological and epidemiological data base, development of industry guidelines for workplace standards, and health and safety aspects of EPA's proposed National Emission Standards for Hazardous Air Pollutants (NESHAP).

The panel completed a benzene reproduction study which showed no compound-related adverse effects in male and female rats exposed to levels up to 30x the present workplace standard. CMA and the American Petroleum Institute have initiated an extensive 90-day inhalation study of benzene toxicity in rats and mice which will be used to set dose levels for a subsequent two-year chronic benzene study. An epidemiology study of approximately 14,000 workers in nine plants should be completed in 1982.

8.6 Butylated Hydroxytoluene (BHT)

The BHT Panel was formed in response to a proposed interim regulation issued by the FDA in May, 1977. The panel's goal is to collect toxicological information on BHT and to recommend research to fill any data gaps which might exist.

An Agency Proposal Pending was published on December 31, 1979, but the final rule is still not out. The panel expects FDA to recommend that only a 90-day subchronic study be undertaken. The panel is waiting for U.S. government action before taking further action on BHT.

The French government recently began phasing out BHT as a direct food additive and is at present reviewing the use of BHT as an indirect additive. The joint FAO/WHO Expert Committee on Food Additives recently extended the temporary Average Daily Intake (ADI) for BHT, pending receipt of additional testing data.

8.7 Chlorobenzenes (CB)

The Chlorobenzenes Program Panel began its program in 1974 with the conduct of a worldwide literature search on available health data regarding monochlorobenzene (MCB), ortho-dichlorobenzene (ODCB) and para-dichloro benzene (PDCB). Since that time, the panel has been concerned with expanding the toxicological data base on these three compounds and has recently added a fourth (1,2,4-trichlorobenzene) to a proposed test program.

In October 1980, the panel initiated a series of teratology studies on MCB, ODCB and PDCB in rats and rabbits. To clarify results obtained in the MCB study in rabbits, a follow-up study was conducted in this species. A draft final report on both MCB studies is expected by the end of the year. The ODCB research was completed and interim data are being assembled; animals go on test in the PDCB teratology study in November 1981.

The panel has worked closely with the Chlorobenzenes Producers Association (CPA) in formulating comments on EPA's proposed rules for testing of chlorobenzenes under TSCA Section 4(a). The CPA has held a series of discussions with EPA in an effort to develop a voluntary industry-sponsored testing program in lieu of a formal test rule. A proposal outline was developed and submitted to the Agency. If approved, the CPA has asked the panel to provide funding and administration for the program.

8.8 Epoxy Resin (ER)

The Special Program on Epoxy Resins was approved in July, 1977. The panel was formed to evaluate the available health effects literature on Epoxy Resins and to sponsor necessary research. Initially, the panel decided to concentrate on Bisphenol-A epichlorohydrin-derived epoxy resins.

The panel is initiating an advocacy role by requesting that OSHA remove Bisphenol A diglycidyl ether from OSHA's candidate carcinogen list.

8.9 Ethylene Dibromide (EDB)

Concerned about possible government regulatory action, the panel was formed in 1979. On December 14, 1977, EPA issued a Notice of Rebuttable Presumption Against Registration (RPAR). The agency concluded that presumptions for oncogenicity, mutagenicity and reproductive disorders had not been rebutted.

A subchronic inhalation study conducted by Dow Chemical Toxicology Research Laboratory showed that repeated subchronic exposure of rats to 10 or 40 ppm of EDB induced pathologic changes in the respiratory epithelium of the nasal turbinate. Subsequent post-exposure phase revealed a lack of progression of the lesions, with almost complete reversion toward normal histologic appearance of the nasal turbinate.

Two additional studies were conducted by the National Cancer Institute (NCI) and the National Institute for Occupational Safety and Health (NIOSH). The panel conducted third-party auditing of both of these studies. The independent auditor found that both studies were of acceptable quality and their findings valid. Since EDB was shown to be carcinogenic in both studies, there is no need for either continued research or an advocacy program. The panel therefore decided to disband. However, the panel has been reactivated as a result of the National Brotherhood of Teamsters' petition to OSHA to lower the current worker exposure standard from 20,000 ppb to 15 ppb.

8.10 Ethylene Dichloride (EDC)

The Ethylene Dichloride Program Panel was formed in February, 1975 to evaluate the adequacy of knowledge relating to EDC. The panel initiated a chronic inhalation, a metabolic, and a teratogenic study in experimental animals. The Panel decided to disband, pending the acceptance of all final reports on this research. This decision was reversed when it was learned that EPA was considering proposing a TSCA Section 8(a) rule.

8.11 Ethylene Oxide (EO)

A study conducted at Bushy-Run labs showed Ethylene Oxide to be carcinogenic in rats. Industry was interested in gathering information on the safe handling of Ethylene Oxide which led to the formation of the Ethylene Oxide Industry Council on July 30, 1981. The Council operates through an Executive Committee and four operating committees: Scientific, Regulatory, Finance and Membership, and Communications.

The Council is developing information regarding responsible industry programs to: 1) control exposure to ethylene oxide; 2) to develop relevant scientific, technological and economic data; and, 3) to cooperate with other national and international organizations having similar objectives. The Council will present this information and data to any United States federal, state or municipal governmental body considering regulatory controls on ethylene oxide so as to assure that such standards, regulations or policies, are reasonable, scientifically sound, and economically and socially effective.

The Council developed a response to the petition filed by the Public Citizen Health Research Group and the American Federation of State, County and Municipal Employees to lower the exposure standard for ethylene oxide. The petition asked that the eight hour TWA be lowered from 50 ppm to 1 ppm and that a short-term exposure level of 5 ppm be established. Representatives of the Council met with OSHA officials on September 2 to discuss industry's concern regarding the petition. On September 29 OSHA denied the petition.

8.12 Fluorocarbons (FC)

The Fluorocarbon Program was formally organized in the Spring of 1973 with essentially all of the Free World producers of chlorofluorocarbons (CFCs) supporting the effort. The panel's initial purpose was to determine the fate of CFCs in the atmosphere and the effects they may produce on plants or animals. There was no suspicion of their effect on the stratosphere.

With the publication of the Ozone Depletion Theory in June, 1974 the Program was expanded and accelerated. To date, over $10,000,000 has been spent on this research. There is no indication that the participants intend to curtail this effort in the immediate future.

The panel limits its funding to scientific research and its advocacy to dissemination of research results and interpretation of the state of the science. Legislative and regulatory advocacy is handled by a coalition of CFC producers and users, the Alliance for Responsible CFC Policy. The Alliance depends on the Fluorocarbon Program Panel for scientific data.

8.13 Glycol Ethers (GE)

The Glycol Ethers Program was formed on June 26, 1980 and is concerned primarily with the alkyl and dialkyl ethers of ethylene glycol and diethylene glycol, selected ethers of propylene glycol, and their acetic acid esters. The panel conducted a review and evaluation of the published and available unpublished literature on health and environmental effects. As a result of the literature review the panel has developed a multi-phase testing program. This program includes testing of: Ethylene Glycol Monomethyl Ether (EM), Ethylene Glycol Monobutyl Ether (EB), and Ethylene Glycol Monoethyl Ether (EE) in 1981 (Phase I) for teratology and possible reproductive effects. Phase II will begin in 1982 and includes teratology studies on: Ethylene Glycol Monoethyl Ether Acetate (EE Acetate) and Propylene Glycol Monomethyl Ether (PM). Phase II also includes a subchronic study of EE and a research study still under development, which will allow a comparative assessment of glycol ethers with their acetates. A Phase II testing program on other glycol ethers may be developed in 1982.

The Glycol Ethers Program Panel currently is considering developing exposure data and has begun a liaison program with NPCA and CSMA. The panel is also considering what role, if any, they wish to play in an advocacy program with EPA and/or OSHA. Current advocacy activities involve interactions with NIOSH, ACGIH, and ECETOC.

8.14 Ketones (K)

In 1979 five ketones, methyl ethyl ketone (MEK), methyl isobutyl ketone (MIBK), mesityl oxide (MO), isophorone and cyclohexanone, were recommended for testing under Section 4(e) of TSCA by the Interagency Testing Committee. The Ketones Panel met for the first time on January 23, 1980. Their first activity was to assemble all toxicology literature on eight ketones, including the five on the ITC List. Both published and unpublished (from the files of participating companies) studies were reviewed and principal areas of deficiencies in toxicology information identified. Since the Industrial Health Foundation (IHF) already had a program on cyclohexanone, the present scope of the Ketones Panel is limited to the four remaining ketones on the ITC List.

A revised EPA schedule resulted from a ruling in favor of the Natural Resources Defense Council which had sued EPA for

non-compliance under Section 4 by not having initiated rule-making within the one year deadline. The suit resulted in deadlines of 1982 for cyclohexanone and 1983 for the remaining four ketones. Further rescheduling resulted in deadlines in mid-1982 for all five ketones. The panel is currently undertaking an advocacy program on four of the ketones on the ITC List: MEK, MIBK, MO and isophorone. The program involves developing use and exposure information, as well as a voluntary test program.

A 90-day inhalation study on methyl isobutyl ketone (MIBK) is currently underway and reproduction and teratology studies are under consideration. The panel will follow closely complimentary testing on methyl ethyl ketone by CIIT, and methyl isoamyl ketone by Eastman Kodak. The panel has met once with EPA on testing recommendations for ketones under Section 4(a) and is developing a document for submission to the Agency. The document will present summaries of toxicity data on the four ketones and use and exposure information. An overview of the research program will also be included.

8.15 Phosgene (P)

The Phosgene Panel was formed in April, 1975. Its purpose is to maximize safety in the production and use of phosgene, to reduce the possibility of exposure incidents, and to develop effective diagnostic procedures and therapeutic countermeasures. The panel is studying means for monitoring concentrations of phosgene in air, means of evaluating actual exposures to phosgene as a guide to medical treatment, and means of preventing incidents of phosgene release. Toward this objective, the panel has funded:

- o two animal studies and published two papers in the Archives of Environmental Health (These studies suggested possible mechanisms of Phosgene poisoning and candidate therapeutic agents.);
- o a worldwide literature search; and,
- o a third animal study directed toward exposure of candidate therapeutic agents expected to be effective based on the literature search or on results from the first two animal research projects.

In order to improve engineering and safety practices during the manufacturing or use of phosgene, the panel is structuring and conducting four surveys to identify and update this information. Dupont and Dow have each conducted in-house retrospective epidemiology studies on workers exposed to phosgene. The panel does not currently find it feasible to sponsor a prospective study due to the absence of a controlled, phosgene-only exposure.

To improve worker safety, the panel is working with instrument designers and manufacturers to develop instrumentation with maximum sensitivity for both industrial (process) and personal monitoring, develop protective clothing, and self contained breathing devices. The panel is also exploring improved in-plant safety practices and developing optimal post-exposure diagnostic procedures and therapeutic countermeasures.

8.16 Phthalate Esters (PE)

The CMA Phthalate Esters Program Panel, which was formed in 1972, originally concentrated its efforts on studying the environmental effects of phthalates. Extensive literature surveys at that time indicated little or no concern over the health effects of phthalates. The Interagency Testing Committee recommended only environmental testing on the phthalate ester class of compounds. Under the provisions of Section 4 of the Toxic Substances Control Act (TSCA), EPA could develop test rules for environmental testing; however, the phthalate esters panel began development of a comprehensive voluntary environmental effects test program.

As a result of a 1980 draft report from the NCI to the National Toxicology Program which shows that di-2-ethylhexyl phthalate (DEHP; also widely known as DOP) causes hepatocellular carcinoma at high dose levels in laboratory rodents, phthalate esters received increased attention from regulatory agencies. With the disclosure of the new NTP findings, the Program Panel expanded its efforts to include a comprehensive testing program to address the human health concerns. The goal was to develop a comprehensive voluntary test program that would develop test data required under Section 4 of TSCA, but without the imposition of mandatory test rules.

The first phase of the comprehensive environmental effects and human health effects testing program is ready to be implemented. The human health effects portion has been designed to examine a limited number of compounds on a risk assessment basis. The studies which comprise this phase of the program will generate sound scientific data that can be applicable to phthalate esters as a class, rather than to specific chemicals. Allocation of costs, was developed to include all the affected industries, phthalate producers, raw materials suppliers and phthalate users.

The environmental effects testing portion, includes the 14 phthalate esters produced in large volume. The program includes acute testing for all 14 phthalates in three species. Additional acute and chronic test data will be developed for those esters for which test data is not already available. The Phthalate Esters Panel has held several discussions with Mr. Newburg-Rinn of EPA's Test Rules Development Branch. As a result of these discussions, EPA held a public meeting on September 15, 1981 to propose acceptance of the Panel's Voluntary Test Program. Final

acceptance awaits receipt of written comments from the public and some further review within the Agency.

In a response to a Citizen's Petition filed under Section 21 of TSCA, the EPA Office of Pesticides and Toxic Substances conducted a priority review assessment of DEHP which could result in a 4(f) Action being taken by the Agency. The CMA Phthalate Esters Panel is currently working with EPA on this issue.

Phthalate and adipate esters are also of interest to three Bureaus within the FDA, the Bureau of Foods, the Bureau of Biologics and the Bureau of Medical Devices. The Bureau of Biologics and the Bureau of Medical Devices are primarily interested in DEHP use in flexible plastics that come in contact with blood, blood elements or intravenous solutions.

The Bureau of Foods regulates DEHA for use in plastics that come in contact with foods, and DEHP for use in plastics that contact non-fatty foods. In addition, other adipates, di-(C_7, C_9-alkyl) adipate and di-n-alkyl adipate (made from C_6, C_8, C_{10} alcohols) are sanctioned for use in foods, but foods, but the sanctions on these latter compounds were based upon safety of DEHA.

In June 1981, a new Task Group (FDATG) was formed within the Phthalate Ester Panel, to interact with FDA on issues relating to adipates and phthalates. At that time the Bureau of Foods was preparing a strategy document for submission to the FDA commissioner which could have resulted in a restriction or ban of DEHA in food contact applications. The Phthalate Esters FDATG met with representatives of the FDA and successfully delayed the strategy document. The FDATG is currently preparing a detailed review of DEHA toxicity data and developing a voluntary testing program which FDA could accept in lieu of an interim regulation or ban on DEHA. Since the Phthalate Esters Panel was originally organized and funded to address EPA's concerns, the FDATG activities will be funded separately.

The panel faces the challenge of presenting an industry concensus on a class of compounds. Individual participating companies have diverse interests, but all have a common goal--to minimize the regulatory action on these substances by responsible, voluntary programs supported broadly.

8.17 Polychlorinated Biphenyls (PCBs)

The recent decision in EDF v. EPA, NO. 79-1580, set aside two parts of EPA's regulation pertaining to PCBs. The Court found that EPA did not present substantial evidence to support its determination to: 1) exclude from regulation materials containing less than 50 ppm PCBs and, b) define the statutorily exempted "totally enclosed uses" as intact and non-leaking. As a

result of requests by EPA and EDF the Court decided to stay its mandate for up to eighteen months. Within this time period EPA is to collect information and promulgate a supportable regulation on PCBs.

CMA staff, with advice from the Chemical Regulations Advisory Committee (CRAC) and interested company representatives, negotiated with EPA and EDF to gather information on the 50-ppm incidental generation issue. Since CRAC's budget could not support the data-gathering efforts, the Special Programs Division was asked to assume responsibility for this project. The first panel meeting was held in February, 1981.

The PCB Panel is conducting two surveys of its member companies: 1) 50 ppm incidental generation survey - to characterize the nature and scope of the low concentrations of PCBs; 2) totally enclosed survey - to identify the numbers of pieces of electrical equipment which contain PCBs, the volume of such PCBs, and their concentration levels or ranges. The information obtained from these surveys will be presented to EPA. In August 1981, the panel submitted to EPA an analytical narrative dissertation discussing the problems and costs associated with low level PCB analysis. The panel is currently conducting an analytical round-robin testing program which involves both industry and EPA laboratories.

8.18 Rubber Additives (RA)

The Rubber Additives Program Panel was formed in March 1980 to sponsor research that would expand the toxicological data base on rubber chemicals of interest to participating companies.

As an initial effort, the panel sponsored a series of *in vitro* tests on purified and commercial samples of 2-(morpholinothio) benzothiazolesulfenamide (MBS). Further testing of MBS is presently under consideration, as is the need for testing of other rubber additives.

The panel works in close cooperation with both the WTR (International Working Group on Rubber Chemical Toxicology) and the Rubber Manufacturers Association. All three groups have been concerned with nitrosamines in the workplace and the panel is considering undertaking a testing program on nitrosamine.

8.19 Styrene (S)

The Styrene Program Panel is expanding the styrene toxicology data base. The panel also represents the interests of its members before federal agencies in matters relating to safety and health issues.

A two-year chronic and three-generation reproduction study of styrene in drinking water was completed and released to fed-

eral agencies. The panel also reviewed a draft final report on a styrene pharmacokinetic study in mice. The latter study indicated species differences with respect to acute styrene toxicity in rats and mice. The panel presently is assessing how these differences relate to man before proceeding further with a research program.

The panel incorporated a Regulatory Task Group to address EPA's proposed regulations (NESHAP) for benzene emissions from ethyl benzene/styrene plants comments were submitted to EPA on June 1, 1981.

8.20 Titanium Dioxide (TD)

In 1977, Du Pont initiated a review of the literature on titanium dioxide toxicity and concluded that further information was needed to answer possible questions which might be directed at titanium dioxide. The impact of the Toxic Substances Control Act also raised concern as to the adequacy of existing information.

The panel has tentatively concluded that a historical mortality study is not justified at this time. The panel plans to terminate program activities if no new evidence of human health effects is reported as a result of the two year inhalation studies being conducted by Du Pont.

8.21 Trichloroethylene (TCE)

The Trichloroethylene Program Panel was formed on May 12, 1975 in response to an NCI Memorandum of Alert. The panel's primary concern was a long-term inhalation study. A contract was signed in 1975 with Industrial BIO-TEST Laboratories (IBT) to conduct such a study. The testing performed by IBT resulted in a number of grave inadequacies and a final report was not issued. Therefore, the CMA TCE Audit Task Group prepared an audit report. EPA's Cancer Assessment Group has asked the panel to provide validation of chamber concentrations for the first 12 to 15 months of the IBT study.

The panel is monitoring the progress of the NCI bioassay on TCE which involves several strains of mice and rats.

Although the panel contemplated an epidemiological study, SOCMA determined that a study population for an epidemiologic investigation would be too small to yield statistically significant results. Therefore, such a study was not conducted.

8.22 Vinyl Chloride (VC)

Since 1972, the Program Panel has supported activities related to the accumulation and assessment of health and safety data of vinyl chloride monomer.

After funding several animal studies, the emphasis on research shifted from toxicological investigations to the early diagnosis and clinical management of vinyl chloride-related injuries. The panel is also funding an update of a vinyl chloride epidemiology study of 10,000 workers.

The panel has maintained a close liaison with SPI and several European-based companies. The present interest in polyvinyl chloride (PVC) dust control limits in the UK is being closely followed. Several months ago OSHA requested information on PVC dust; however, no notice has been published or other action taken.

8.23 Vinylidene Chloride (VDC)

The Vinylidene Chloride Program Panel was formed in May 15, 1974 to investigate the potential toxicologic effects and pharmacokinetics of inhaled and ingested VDC in laboratory animals. Dow Chemical, which was planning research on VDC toxicology, agreed to convert its program into an industry-wide effort. The Two-Year Inhalation Toxicity and Oncogenicity Study of Vinylidene Chloride in Rats is stil in progress.

The Work Practices Task Group of the panel prepared a Health and Safety Work Practices Guideline for Vinylidene Chloride to minimize exposure to VDC. The Guidelines were sent to the Director of NIOSH and the Project Manager for Criteria Documents at SRI. They received no other distribution.

The panel is preparing to respond to a Health Risk Assessment Criteria document on VDC under preparation by the EPA Criteria and Health Assessment Group. OSHA does not have a standard for VDC and EPA is unlikely to require any further toxicity testing on VDC under TSCA Section 4.

The pharmacokinetics and metabolism research show a species sensitivity of Mouse>Rat>Man. The total data bank indicates oncogenicity is not observed without recurrent tissue damage and without a cytotoxic dose; a tumorigenic response in man would be an improbable event.

8.24 Zinc Dialkyl Dithiophosphates (ZDDP)

The ZDDP Program Panel was chartered in November 1980 to conduct research on this class of oil additives. As a first step, gonadal toxicity studies of three ZDDP compounds were initiated in immature and mature rats and rabbits.

Obvious species differences were observed between rabbits and rats with respect to ZDDP toxicity. Consequently, the panel proposes to conduct a comparative in vivo pharmacokinetic study

in the rat, rabbit, and man. A dose-response study is also proposed to determine a no-effect level in rats and rabbits.

In vitro testing of ZDDPs by individual companies has shown that some members of the class have genotoxic potential. The Program Panel is considering conducting mutagenicity/carcinogenicity assays to further assess this potential.

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