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Vinyl Chloride
Spotlight article

ACGIH + CHEMSTAR = Success

Panels focus on Key Player in Worker Health and Safety

Since its founding in 1938, the American Conference of Governmental Industrial Hygienists (ACGIH) has been committed to the development and dissemination of technical information that can be used to create a healthful and safe environment for workers and the surrounding community. ACGIH addresses both the administrative and technical aspects of worker health and safety while providing a forum for the exchange of ideas, experiences, techniques and the promotion of standards.

Technical committees, which are established by and report directly to the Board of Directors, are the building blocks of ACGIH. (See left side.)

These groups conduct reviews of issues specific to each committee, make recommendations and distribute information through reports, symposia, conferences and peer-reviewed publications.

CHEMSTAR Panels and Councils that have contact with ACGIH most frequently interact with the Threshold Limit Values for Chemical Substances Committee, commonly referred to as the "TLV Committee". This Committee is responsible for the development

of TLVs for chemical substances. The Committee's recommendations and notice of intended changes are subject to review for a minimum of one year, after which they are referred to the ACGIH general membership for approval. TLVs are limits of airborne concentrations of substances which are intended for use in industrial hygiene practice. ACGIH emphasizes that the TLVs are guidelines or recommendations in the control of occupational health hazards; they are not intended for other uses. Nevertheless, because TLVs are helpful in establishing workplace regulations, the TLVs recommended by ACGIH are frequently adopted by the Occupational Safety and Health Administration (OSHA) and state regulators.

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A TLV is neither a fine line between safe and dangerous workplace exposure nor a relative index of toxicity. TLVs are simply estimates, based on the best available information from industrial experience, and of human and animal studies. The TLV Documentation contains the data upon which the TLV is based. The

ACGIH Technical Committees

Agricultural Health and Safety

Air Sampling Instruments

Air Sampling Procedures

Bioaerosols

Biological Exposure Indices

Computers in Safety and Health

Construction

Hazardous Waste

Industrial Ventilation

Infectious Disease

Mining Safety and Health

Research Needs in Industrial Hygiene

Small Business

Threshold Limit Values for Chemical Substances

Threshold Limit Values for Physical Agents

amount of information available will vary from substance to substance, thus some TLVs are more firmly rooted than others. Because of these potential uncertainties, Panels and Councils often assist ACGIH reviews by providing crucial data.

In October 1995, the TLV Committee met in San Antonio, TX. When the TLV of Ethylene Glycol Monobutyl Ether (EGBE) was considered, the EGBE Panel's EGBE Task Group shared hematology studies and their PB/PK model as justification for keeping the current TLV. Next, the Panel will co-sponsor a symposium with ACGIH on Pharmacokinetics/Pharmacodynamics in Developing Systems and Impact on Risk Assessment on April 21-22, 1996, in Arkansas. Panel members are optimistic that data and dialog will lead to their goal of retaining the TLV.

The optimism is based on experience: given the opportunity, CHEMSTAR panels can contribute an important service to ACGIH by initiating a scientific dialog and providing the most updated information on the particular chemicals under consideration. For example, in February 1995, the Acetone Panel sent technical experts, who had completed critical studies on acetone, to an ACGIH meeting. At that meeting, the experts provided additional insights into their work, discussed the relevance of their data with other studies, and

suggested how their research should be considered in determining an acetone TLV value. The Panel believes that this opportunity for scientific exchange was instrumental in addressing the concerns of the ACGIH Subcommittee, and will lead to a proper TLV assignment for acetone.

Additionally, the Oxo Process Panel had a similar experience when ACGIH proposed the lowering of the TLV on n-butyl acetate. The Panel sponsored a study to assess exposure to butyl acetate sprays at furniture manufacturing operations. In January 1995, the Panel presented the study results to the ACGIH TLV subcommittee. Although the committee has not yet voted on the proposed reduction, the Oxo Process Panel believes that the study provided sufficient evidence that the current TLV is adequately protective, and that ACGIH will act accordingly.

The Inorganic Acid Mists Panel currently is addressing the recommended ACGIH notation for sulfuric acid as a human carcinogen. The Panel feels that the notation is not justified since it is based on IARC's classification of occupational exposure to inorganic acid mists containing sulfuric acid as carcinogenic. IARC did not classify sulfuric acid, per se, as carcinogenic. The Panel currently is bringing this disparity to ACGIH's attention with the objective of a similar clarifi-

cation by ACGIH. The Panel feels that the potential for success is high.

And finally, the successful approach the Alkanolamines Panel took in 1992 is a model for all the foregoing examples. A proposed A-2 carcinogen designation for triethanolamine was removed by ACGIH after the Panel submitted data that had not previously been considered, and presented the information at an ACGIH meeting. Based on their successful experience, the Panel recommends the following strategy to other groups that have issues with ACGIH:

- Watch ACGIH's "Notice of Intended Changes" for early warning;
- Interact with ACGIH at an early stage; and
- Develop a well prepared written counter-proposal.

For the future, it is important to remember ACGIH and CHEMSTAR's successful past. There is frequently commonality in the issues both groups address and the establishment of a good working relationship early in the process can benefit all. For more information on ACGIH and its processes, call (513) 742-2020.

NEWS FLASH

ITC Revised Priority Testing List

The Interagency Testing Committee (ITC) delivered its 37th Report to the EPA Administrator on November 22, 1995. The Report revises the TSCA 4(e) Priority Testing List by recommending 28 alkylphenols and alkylphenol ethoxylates and removing 43 previously recommended silicone chemicals and five isocyanates.

The ITC removed the silicone chemicals after reviewing submitted production and exposure data. The

five isocyanates were removed upon consideration of production and importation volume data, TSCA-related uses and data needs. Ten isocyanates remain on the Priority Testing List because ITC is soliciting consumer use and exposure data.

The alkylphenols and alkylphenol ethoxylates in the "recommended" category are subject to information gathering. **EPA will add them to the TSCA 8(d) Health and Safety rule. Manufacturers and importers of these materials will be required to**

submit unpublished studies to the EPA within 60 days of the effective date of the rule. The ITC will review the submitted studies before designating any of the compounds for testing under TSCA section 4. Data of interest are: 1) chemical composition data (major components and impurities); 2) environmental fate data; 3) health and ecological effects data, including data on toxicokinetics and endocrine-modulating effects. *To obtain a copy of the report, contact John Walker, (202) 260-1825.*

In Memoriam: The Demise of CFCs

On December 31 of this year let's pause a moment to consider the loss of what were once thought to be the world's "perfect chemicals" — chlorofluorocarbons (CFCs).

Invented in the 1930s as safe, economical alternatives to the potentially hazardous refrigerants then in use [ammonia (flammable and toxic), sulfur dioxide (even more toxic)], CFCs subsequently found many industrial and commercial uses as aerosol propellants, foam-blowing agents, and coolants in home, commercial and auto air conditioners.

Over time, CFCs became major contributors to a higher standard of living and to the global economy. In 1987, at the peak of production, almost 1.1 million metric tons were produced worldwide, generating revenues in the billions of dollars. CFCs are non-flammable, non-corrosive, not explosive, very low in toxicity, and extremely stable. Stability and consequent atmospheric lifetime are some of the very properties that led to their demise.

A respect for science and product stewardship motivated chemical industry leaders. In 1970, Dr. James Lovelock of Britain detected CFC-11 in the atmosphere. By 1972, DuPont was calling on fluorocarbon manufacturers from around the world to meet under the auspices of CMA (then MCA) to discuss the environmental fate of CFCs.

As a result of this meeting, the international Fluorocarbon Panel was formed. Approximately twenty CFC producers from around the globe launched a program to determine the atmospheric fate of CFCs. Over its lifetime (1972-1990) the Panel spent more than \$23 million to support research in areas as diverse as: gas phase and heterogeneous chemistry; atmospheric measurements (including ground-based, balloon and aircraft measurements and their analysis, and more

work by Lovelock); atmospheric modeling; ultraviolet measurement; ozone trend detection; and biological effects of increased UV radiation. This focused program, that began with science, eventually played a major role in the development of public policy on CFCs.

In 1974, two U.S. scientists postulated the potential for CFCs to contribute to the destruction of the earth's ozone layer. The ozone layer is essential to life on earth, acting as a filter for ultraviolet radiation from the sun. Its destruction could occur through release of chlorine radicals following the breakdown of CFCs when exposed to intense solar radiation in the stratosphere. Then in 1985, a British scientist reported that, using ground-based measuring devices, he had detected a decrease in total ozone over Antarctica. NASA confirmed these ground-based measurements after the extremely low values were retrieved from raw satellite data.

Eventually, these and other investigations led the international community to conclude that the science supported taking action globally. They instituted an international process to periodically assess our knowledge of important atmospheric processes. The Fluorocarbon Panel played a pivotal role in supporting international cooperation in these efforts. The results of these assessments increasingly supported action to curb the release of CFCs and other ozone-destroying compounds.

Under the auspices of the United Nations Environment Programme, intense public, industrial and academic focus resulted in assessments not only of atmospheric science and other technical issues, but of the impacts of CFCs and ozone depletion on society and the global economy. In 1987, these considerations led to the adoption of the Montreal Protocol by international government policy makers.

This Protocol, now ratified by 40 nations, called for a reduction of CFC consumption, stepwise over a ten year

period, to 50% of 1986 levels. In 1989 the Fluorocarbon Panel publicized their conclusion that scientific evidence justified speeding up the phase-out on a global basis. Continued scientific research and the continued growth of the Antarctic "ozone hole" led in 1990 to a strengthening of the Montreal Protocol, and a total phase out of CFC production by the year 2000. Subsequently, the U.S. Congress decided even stronger measures were warranted and, as part of the Clean Air Act Amendments of 1990, passed a law halting CFC production by the end of 1995.

The development of suitable substitutes for CFCs has not been easy for the chemical industry. Some hydrofluorocarbons (HFCs) and hydrochlorofluorocarbons (HCFCs) have received approval from EPA, but HCFCs also have some ozone-depleting potential (though less than CFCs). In addition, some of the replacements may have decomposition products that may not be as biologically benign as CFCs. Other chemical products and alternative processes are being explored.

The members of the former CHEMSTAR Fluorocarbon Panel are proud to have played a role in facilitating international cooperation by industry, academia and government in establishing the solid scientific foundation. This effort prepared their companies to participate constructively in the process that led to unified action on such an important global environmental policy issue. This effort can also be recognized as an early model for product stewardship by the chemical industry.

Let's have a moment of silence.....

For additional information on the CMA Fluorocarbon Panel, contact Elizabeth Festa Watson at (202) 887-1194.

CMA 113985

Vinyl Chloride



This is the latest article in a series which highlights the activities of the various CHEMSTAR Panels and Councils.

The Vinyl Chloride Panel was formed long ago — in 1971 — to develop and analyze health and safety concerns on the vinyl chloride monomer. Today, the health issues are addressed by the Vinyl Chloride Health Committee, one of two subsets of the Panel, and safety issues are addressed by the Vinyl Chloride Transportation Committee, the other subset. Each Committee's membership is listed below.

Health

Jonathan Ramlow of the Dow Chemical Company is the current chair of the Health Committee. In 1993, the American Journal of Industrial Medicine published the Panel's concerns about a 1991 publication entitled, "An Industry-Wide Epidemiologic Study of Vinyl Chloride Workers," by Wong *et al.* The concerns included the reporting of excess mortality due to brain cancer and emphysema without a discussion of other factors that may affect the evaluation of these findings. Dr. Wong agreed with the Panel's concerns. He subsequently published an article subsequently in the same journal indicating that the concerns raised by the Panel were important not only for the vinyl chloride epidemiology study, but also for occupational epidemiologic studies in general.

The Panel has worked with Richard Reitz, a consultant, to predict cancer risk from vinyl chloride exposure with a physiologically-based pharmacokinetic (PB-PK) model. The risk assessment based on the PB-PK model predicted considerably fewer risks than would be calculated by non-pharmacokinetic procedures. The

HEALTH

Borden, Inc.
The Dow Chemical Company
Formosa Plastics
The Geon Company
Georgia Gulf Corporation
Occidental Chemical Corporation
PPG Industries, Inc.
Westlake Polymers
Vista Chemical Company

TRANSPORTATION

Borden, Inc.
The Dow Chemical Company
Formosa Plastics
The Geon Company
Georgia Gulf Corporation
Occidental Chemical Corporation
PPG Industries, Inc.
Shintech, Inc.
Vista Chemical Company
JTS Enterprises, Inc.

Committee presented this model to EPA personnel to ensure that the Agency's vinyl chloride risk estimates are based on sound scientific data and methodologies.

In 1994, the Committee began negotiating with EPA and ATSDR on their data needs for vinyl chloride for risk assessment at Superfund sites. EPA proposed requiring reproduction, teratology, and neurotoxicity testing under TSCA, if a negotiated testing program between the Agency and industry was not reached. The Committee has reached tentative agreement on a testing program with ATSDR for developmental and reproductive effects testing, but has not yet been convinced of the scientific need for conducting neurotoxicity testing.

This year, the Committee contracted with Applied Epidemiology Inc. to update the Vinyl Chloride Epidemiology Study (1942-82), that was conducted by Environmental Health Associates in 1986. The update will analyze mortality among vinyl chloride workers through 1992.

Transportation

Vergel Perry of the Dow Chemical Company is the current chair of the Transportation Committee. In 1991, the Panel expanded its scope to address safety issues in the transportation of the vinyl chloride monomer. In 1992, the Committee formed a Vinyl Chloride Mutual Aid Network (VCNet) that provides technical expertise and assistance by the industry and contractors to emergency responders at vinyl chloride transportation incidents. VCNet plans to coordinate its activities with railroad and community response teams. The Committee has prepared a map that includes information on railroad transportation routes and industry, contractor, railroad, and selected community emergency response teams. The map enables CHEMTREC to activate VCNet in cases of incidents. The Committee conducts periodic mock emergency response exercises to ensure the CHEMTREC, contractor and company response teams are aligned and can act quickly in case of an emergency.

The Committee has developed an Emergency Response Operation manual to facilitate the operation of the mutual aid network among CHEMTREC, vinyl chloride manufacturers and users, emergency response contractors, and railroad emergency response teams. The manual also contains information on public communication in emergency situations. The Committee is in the process of preparing a video on use of a capping kit in the transfer of vinyl chloride at an incident site and on the use of personal protective equipment.

The Committee also has developed a Vinyl Chloride Safety Awareness Training Workshop. The workshop is directed at industry, contractor, and community emergency response personnel to provide them with a better understanding of the principles and techniques involved in responding to a vinyl chloride incident. The workshop provides a detailed view of health and safety risks that may be encountered in responding to vinyl chloride incidents. As part of the training, workshop attendees sometimes participate in a simulated vinyl chloride incident.

In early 1992, the Committee met with US Department of Transportation (DOT) representatives to discuss the industry's concerns about the DOT re-

quired shipping label name, "Vinyl Chloride, Inhibited," under 49 CFR 172.102. Most domestic shipments on vinyl chloride and shipments to Canada and Mexico are not chemically inhibited and therefore, would not be in compliance with the shipping label name. The Committee provided scientific support that uninhibited vinyl chloride does not undergo a violent polymerization reaction over a short period of time. DOT agreed with the Committee and revised its Hazardous Materials Regulations through a Federal Register notice in October 1992.

The Committee has commented on the DOT's proposed implementation of the UN recommendation to align the US Hazardous Materials Regulations with corresponding provisions of international standards. The Panel expressed concern that the proposed changes to the shipping name for vinyl chloride would effectively prevent vinyl chloride from being shipped domestically in its current state. The Committee recommended that "Provision 21" be added to the proposed listing that would permit shipping of vinyl chloride in its current state and still maintain the alignment of the DOT regulations with corresponding international standards. In December, DOT published a final rule (HM-215A) that included "Provision 21."

The Committee worked with OSHA to receive clarification of the applicability of the Vinyl Chloride Standard or the Hazardous Waste Operations and Emergency Response Standard when responding to vinyl chloride leaks. The clarification supported the Committee position that entry by properly trained personnel into unknown concentration or concentration greater than 36,000 ppm for non-life rescue operation is necessary to prevent catastrophic failure or explosion.

The Committee has requested the Association of American Railroads to docket a proposal to consider standardizing manways for newly constructed rail tank cars in vinyl chloride service. Adoption of such a standard would help to ensure that all newly constructed rail tank cars in VCM service are capable of accepting a transfer capping kit.

The Committee will comment on DOT's anticipated Tank Vessel and Facility Response Plan, and Response Equipment for Hazardous Substances mandated by the Oil Pollution Act of 1990.

For more information, contact Has Shah at (202) 887-1192.

Metal Catalysts Plan Ahead

(September 19-20, Houston, TX)

At the Metal Catalyst Panel's Fall meeting, they emerged with a clearer focus of what issues take priority for the coming year. The Panel was able to formulate an advocacy strategy for 1996 which will reflect the emerging importance of the Resource Conservation and Recovery Act and the Clean Air Act issues. *For further information, contact Leah Porter at (202) 887-1364.*

Safety Seminar Success

(August 29-September 1, Hilton Head, SC)

The Hydrogen Fluoride Panel held their annual Safety Seminar. The seminar provided a forum for education and information exchange covering manufacturing, transportation and handling of hydrogen fluoride. The seminar is an annual event and open to all interested in attending. *For additional information, contact Elizabeth Watson at (202) 887-1194.*

(H₂O)₃ = Drinking Water, Process Water and Waste Water

(September 14 - 15, New Orleans, LA)

The Chlorine Dioxide Panel in conjunction with EPA, the American Water Works Association Research Foundation, and the World Health Organization held an International Symposium entitled, "Chlorine Dioxide: Drinking Water, Pro-

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cess Water and Wastewater Issues." The objectives of the symposium were to provide information to Industry involved in operations and management of water treatment facilities, water chemistry, health effects, application technologies and regulatory issues of chlorine dioxide. The two-day seminar also focused on generation, test methods and current research and health issues relating to chlorine dioxide, including cryptosporidium. *For more information, contact Dr. Robert Romano at (202) 887-1198.*

Petroleum Additives Presents ... (Toronto, October 18)

Members of the Petroleum Additives Technical Advisory Group gave a

panel presentation on the CMA Code of Practice for engine oil testing at the Society of Automotive Engineers meeting in Toronto. The three part presentation, "CMA Code of Practice — A Catalyst for Change" addressed the state of engine oil testing prior to introduction of the Code, the changes brought about by the Code when it was implemented in March 1992, and how recent changes to the Code can lead to improved engine test precision and partnering with other industry stakeholders in the development of new engine oil categories. The presenters were: Bill Mahoney (Ethyl), Rick Tittel (Castrol NAA), and Al Ross (Lubrizol).

For more information, or copies of the presentation, contact Carol Stack at (202) 887-1196.

TEA Time

The Alkanolamines Panel released a Panel-sponsored subchronic dermal toxicity study on triethanolamine (TEA). The study, conducted in mice, indicated that TEA did not cause systemic toxicity. Results will be published in *Food and Chemicals Toxicology* (Vol. 33, No. 8, pp 675-680, 1995). *For more information, contact the Alkanolamines Panel manager, Jon Busch at (202) 887-1189.*

PEOPLE

Chair it again, Wayne

H. Wayne Ellice, Crosfield Catalysts, was confirmed for a second term as Chair of the Metal Catalysts Panel for 1996. Wayne has particular interest in TLVs (Threshold Limit Values) and PELs (Permissible Exposure Limits). These are areas of major concern to the metal catalysts industry, because OSHA is expected to propose new guidelines very soon. The Panel looks forward to an eventful year under Wayne's leadership.

Cody Takes the Reign

Patricia Cody, Union Carbide Corporation, has taken the reign from Neil Hawkins, The Dow Chemical Company, as the new Chair of the Alkanolamines Panel. This active Panel welcomes Patricia and bids a fond farewell to Neil for his superb job.

Bob Makes a Double Impact

Bob Chouffot, Shell Chemical Company, has been elected as the new

Chair of the Hydrocarbon Solvents Panel and Vice-Chair of the Solvents Council. Thanks for meeting the challenge, Bob!

Baby Makes Grandma

Elizabeth (Bette) Moran, Ph.D., DABT, CHEMSTAR Director, and manager of the Carbon Disulfide, Ethylbenzene, Olefins and Terephthalates Panels, can add one more title to her name...GRANDMA. The CHEMSTAR Department would like to extend a hardy congratulations to Bette on the birth of her first grandchild, Maria Irene.

A Half Dozen Welcomes

(September 6, Washington, DC)

The Regulatory Data Council welcomed six new members at its second meeting. Henkel, Eastman Kodak, Safety-Kleen, Mobil Oil, Lubrizol, and National Starch and Chemical will join the Council's Steering Committee, increasing its ranks to twelve. The Council's mission is to compile core compliance list information on individual chemicals in a standard format that all members can use, at an affordable cost. Four task groups were formed

and began operation — List Expansion, Technical, Membership, and User Interest. A proposal on the next lists to be included in the database will be submitted to the Steering Committee by the List Expansion Task Group shortly. *For more information on the Regulatory Data Council, contact Marian Stanley at (202) 887-1207.*

Richard Sutherland, Sterling Chemicals.

The Chlorine Dioxide Panel wants to thank you for the memorable signs that you created for the Third International Symposium in New Orleans on September 14-15, 1995.

PEOPLE TO WATCH

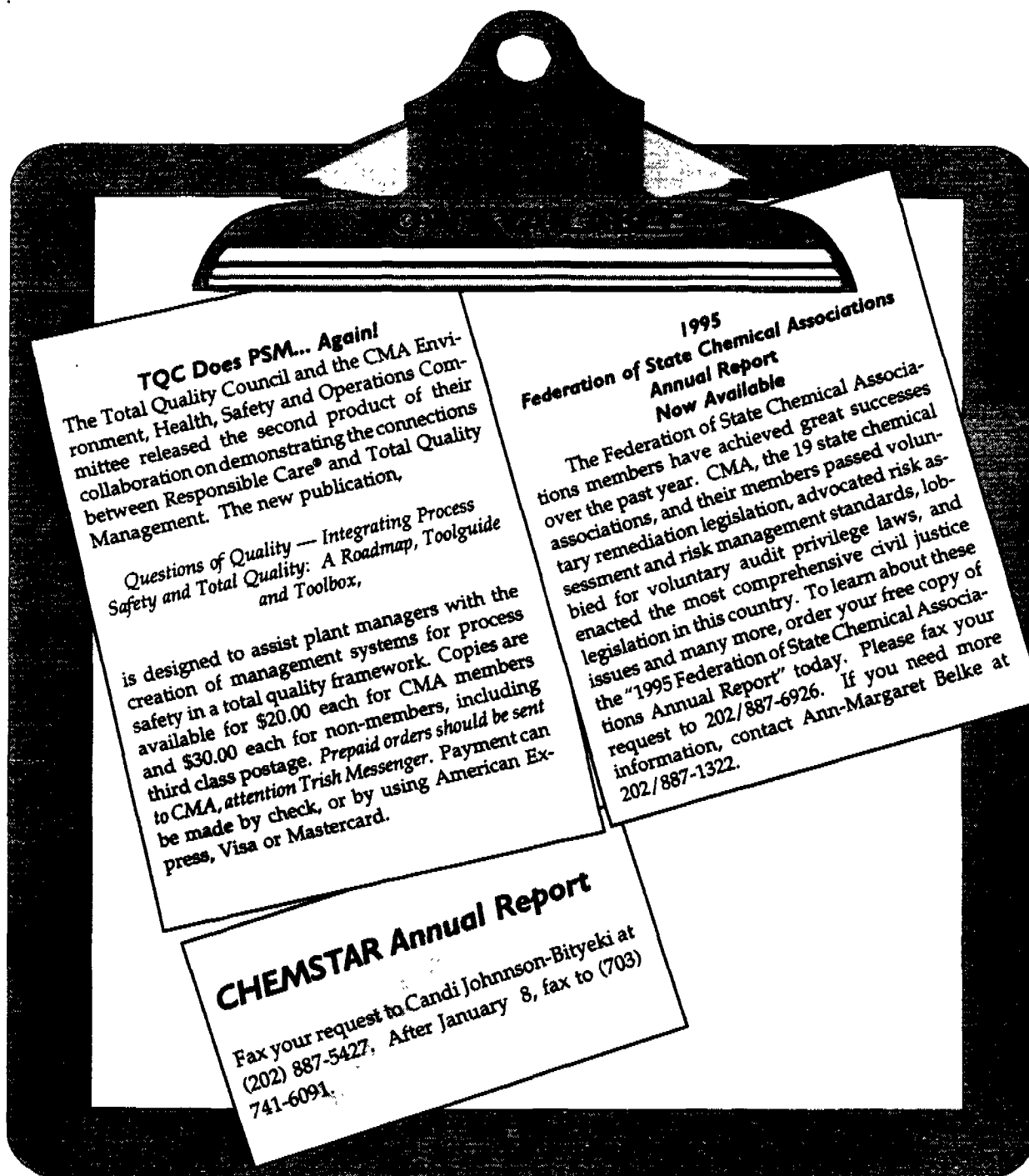
Comments

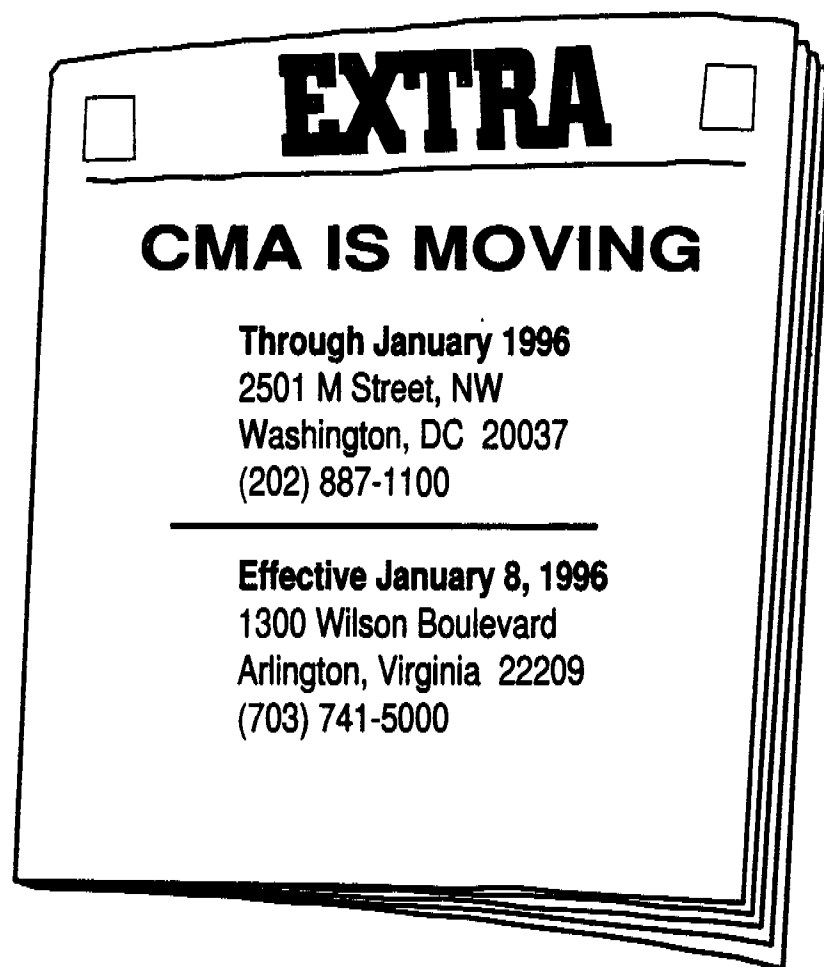
Comments to the House Committee on Science, Subcommittee on Technology on Maintaining Our International Competitiveness: the Importance of Standards and Conformity Assessment on Industry, (filed by the Total Quality Council, July 7, 1995).

Comments to EPA on the Proposed Ethylbenzene TSCA Section 4 Test Rule, (filed by the Ethylbenzene Panel, July 25, 1995).

Comments to EPA on the External Review Draft of the Revised Air Quality Criteria for Particulate Matter, (filed by the Crystalline Silica Panel, August 1, 1995).

Comments to EPA in Response to EPA's Request for Testing Proposals for the Negotiation of a TSCA Section 4 Enforcement Consent Agreement, (filed by the Hexamethylene Diisocyanate Panel, August 11, 1995).





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