

TECHNICAL COMMITTEE MEETING

Ponte Vedra Inn and Club
200 Ponte Vedra Boulevard
Ponte Vedra Beach, Florida
East Room

Thursday
May 28, 1992
1:05 p.m.

Attendees:

Ray Azrak, Union Carbide (in part)
Robert Burnett, Vinyl Institute
William Carroll, OxyChem
Lee Fishbein, Borden Chemicals and Plastics
Donald Goodman, OxyChem
Roy Gottesman, Chemical Management Resources (VI Consultant)
H.J. Bud Hall, Vista Chemical Company
Nora Jacobs, Edward Howard and Company
John Kirkpatrick, Vista Chemical Company
Fred Krause, BFGoodrich Company
Richard Magee, NJIT
Louis Maresca, BFGoodrich Company
Ron McCreedy, Dow Chemical
David Meeker, Edward Howard and Company
Gonzalo Sandino, Petroquimica Colombiana
Mark Schneider, Vista Chemical Company
Robert Strength, Product Safety Mgmt (Vista Consultant) (in part)
Robert Walker, Uni-Bell PVC Pipe Association (in part)

I. MEETING OPENING, SELF-INTRODUCTIONS, APPROVAL OF MINUTES

The meeting was opened by Chairman Ron McCreedy at 1:05 p.m. with a round of self-introductions. The minutes of the Technical Committee meeting of March 12, 1992 were unanimously approved on motion by Bud Hall, seconded by Fred Krause.

II. OBJECTIVES OF MEETING

Chairman McCreedy set forth the following as objectives of this meeting:

R&S 144431

1. Review current projects and issues including objective(s), status, problems and action required.
2. Consider new issues and identify possible actions required of the Technical Committee.
3. Review assignments and identify the resources (both individuals and budget) needed to support existing and new projects.
4. Agree upon date and location for next Technical Committee meeting.

He also noted the following new items for discussion and/or addition to the agenda:

1. International Joint Commission on Great Lakes (IJC) Report.
2. Update/possible revision of the following literature items:
 - a. "PVC On The Fireground" pamphlet
 - b. "Combustion Gases of Various Building Materials" technical paper
3. Canmet meeting to be held in Ottawa, Canada - June 26, 1992.
4. Expected showing of the BBC program, "The Devil's Element" on the Discovery Channel on the evening of May 12.
5. SPI update of the PVC section of Patty's "Industrial Hygiene and Toxicology".
6. Tertiary Recycling/Pyrolysis - Partnership Programs
7. MIT/Norwegian - "Cl2 Chain" Project
8. Technology Clearinghouse - PVC as an engineered plastic (for next committee agenda)

Ron McCreedy noted also the request of Debbie Neale of BFGoodrich for support needed to defeat a Proposition 65-type bill which is on the State of Ohio ballot in November.

III. BUDGET

Bob Burnett reported that the overall Vinyl Institute budget for fiscal year 1991-1992 ending May 31, 1992 is projected to show a slight favorable variance. This projection includes a

\$50,000 payment to the Chlorine Institute for the Vinyl Institute contribution to the CANTOX project and \$26,500 to BFGoodrich for completion of the fire gas computer modeling project.

The CANTOX project had not been anticipated when the fiscal year 1991-1992 had been developed and only \$15,000 had been included for completion of the fire modeling project. While the overall Technical Committee budget was thereby exceeded, sufficient funds were available in other budget accounts to achieve an overall favorable budget variance.

Bob Burnett also reported that the Executive Board had approved the fiscal year 1992-1993 budget that included \$135,000 for requested Technical Committee programs.

IV. PROJECT REVIEWS

A. Fire Sciences

1. Combustion Toxicity - New York City Toxicity Advisory Committee

Bud Hall and Bob Strength reported that there was nothing new to report since the last update and that the Advisory Committee has not announced a date for its next meeting.

The Advisory Committee is looking at fire modeling and, in this connection, Fred Clarke is doing a test case involving EPS (expanded polystyrene) in an attempt to "educate" the Advisory Committee on fire hazard assessment.

Separately, the Carpet and Rug Institute has proposed using a modified Pittsburgh test which uses lethal area as a concept and red oak as a standard. Three new areas that are being considered for regulation would cover other floor coverings, CPVC pipe for use in fire sprinkler systems and interior finishings.

A letter sent to the committee by H. Patrick Toner, Vice President, Technical of SPI dated April 16, 1992 is included with these minutes as Appendix A. It delineates SPI's suggestions on issues to be considered in using hazard analysis techniques, advocates a categorization approach and discusses the limitations of the New York State Toxicity Protocol and the Pittsburgh Test.

Assignment*

Bud Hall has the continuing assignment to monitor the activities of the New York City Toxicity Advisory Committee working with H.P. Toner and Richard Gottwald and to report on same at the next Technical Committee Meeting.

2. Corrosivity Testing - Polyolefins Fire Performance Council Testing at UL

Bud Hall and Bob Strength reported that both the Vista and BFGoodrich advanced performance materials scheduled to be tested at UL had been sent to UL. Bob Strength was unable to reach Jim Bennett at GE to learn of the status of the test program and Roy Gottesman was unsuccessful in reaching Carl Tripp. (Subsequent to the meeting, Pat Benkner had a telephone call from Carl Tripp indicating that testing was underway with completion expected in June.)

Assignment*

Bud Hall and Bob Strength have the assignment to track the corrosivity test program at UL and to report on same at the next meeting.

3. Meeting with NEMA

The meeting to involve representatives of the SPI's Fluoropolymers Division (Lauren Caudill of duPont), SPI's Polyolefins Fire Performance Council (Carl Tripp) and the Vinyl Institute (Bud Hall) and the National Electrical Manufacturers Association (NEMA) to address mutual concerns was not held in May, as originally planned.

Bud Hall indicated that NEMA remains interested in having such a meeting, which he now expects will be held in the fall, probably in September.

Assignment*

Bud Hall is to participate in the meeting with NEMA when it is rescheduled and update the Technical Committee of progress at its future meetings.

4. National Electrical Code

Bob Strength reported that the newly-adopted National Electrical Code includes the optional design-

nation markings that had been proposed and accepted by Code Panel 6.

5. Factory Mutual Testing/Update

Bud Hall reported that he had not received any response to his letter to Archie Tewarson of Factory Mutual which, while offering VI cooperation, requested further information on the proposed Factory Mutual Test program and the opportunity to observe testing in progress.

No further action is planned at this time unless a response is received from Mr. Tewarson.

6. Corrosion Testing in Other Use Areas

Lou Maresca reported that as a result of his discussion with business people at BFGoodrich, he was convinced of the desirability and necessity for a test program to develop information on potential corrosion problems for PVC-based products used in such durable applications as computer housings. He has started some "up front" work at BFGoodrich and proposed that a Vinyl Institute-sponsored technical program be initiated and requested participation from other companies. Lou Maresca will head the subcommittee which will include Bud Hall of Vista and Paul Zorzi of Georgia Gulf and will arrange for a telephone conference to discuss and propose a program.

Assignment*

Lou Maresca has the assignment to prove out a corrosion testing protocol using an adaptation of the cone calorimeter, to arrange for a teleconference to agree upon a test program and to report on same at the next Technical Committee meeting along with a projection on costs needed for the proposed program.

7. HCl Decay Modeling - Completion/Report

Lou Maresca has determined that the work on this project has been completed to enable its incorporation into the NIST Hazard I program. No additional work is planned nor is any recommended at this time.

Lou Maresca indicated that Merrill Galloway of BFGoodrich and Marcelo Hirschler, now with Safety

Engineering Laboratories, planned to present a paper on this work at a conference in October 1992. Roy Gottesman reminded Lou Maresca that, in view of problems in the past, the proposed paper should be submitted to Bob Burnett for clearance per established Vinyl Institute policy prior to its submission or presentation.

Assignment*

Dr. Maresca has the assignment to see that a final report is received on the HCl decay modeling project and that the paper to be presented at a conference in October 1992 is submitted for Vinyl Institute review and clearance prior to its presentation.

B. Incineration - Swedish/Norwegian Studies

1. Report on ECVI Dioxin Meeting in Umea, Sweden on May 14-15, 1992

Richard Magee reviewed the background on incineration of vinyl as part of the MSW stream including the Pittsfield study, the ongoing debate in Europe and the Umea and Norwegian studies. A copy of Dick's report of the meeting held in Umea on May 14-15 is included with these minutes as Appendix B.

Dick Magee noted that the Norwegian and Swedish projects are moving forward very slowly and that they now barely have reactors that are operable. In addition, as noted in his report, a new issue has been added, PCB toxicity and this will result in expanding the analytical program at Umea. Finally, he noted that the projects are running out of money.

Dick Magee indicated that he had advised the Norwegian SI investigators of the questions raised about the radio-active labeling of PVC that they have synthesized using Na ³⁶Cl by nucleophilic substitution in tetrahydrofuran (THF) solvent using a crown 4-ether catalyst. Although the SI workers believe that substitution did occur, they agreed to consider performing a sodium analysis on the "radio-labelled" PVC (as suggested in Larry Brecker's letter to Bob Burnett dated March 30, 1992) and to prepare a "substituted" PVC from normal NaCl (in the same manner as the radio-labelled material was made) and compare its combustion with commercial PVC.

Assignment*

1. Lou Maresca agreed to investigate whether the BFGoodrich laboratory has the capability to establish radio-labelled chlorine in the PVC via NMR and advise Roy Gottesman.
2. If Lou Maresca finds that the analysis can be carried out, he will advise Roy Gottesman who will, in turn, request Werner Freiesleben to arrange to have a sample sent from SI to BFGoodrich for analysis.

Discussion next followed on the proposed full matrix for the SI runs in which they proposed to evaluate:

- 1 - PVC + Biomass
- 2 - NaCl + Biomass
- 3 - PVC* + Biomass
- 4 - NaCl* + Biomass
- 5 - Umea synthetic waste fuel

It was generally agreed that there was redundancy in the proposed runs, that it was necessary to establish the chlorine content in the "Biomass" and that a run is needed in which PVC was replaced by a non-chlorine containing polymer such as polyethylene. Dick Magee indicated that he expects to receive a complete listing of the compositions and rules to be used by mid-June.

Assignment*

Dick Magee is to obtain information from SI on the chlorine content in the "Biomass" and is to recommend including a run with polyethylene (PE) + Biomass.

Dick Magee reported that the Umea group had obtained air pollution control (APC) equipment from Flakt and want to carry-out dioxin analyses both before and after the APC. It had been the recommendation of Dick Magee that APC equipment be installed on the Umea pilot unit.

With regard to continued funding of the European studies, it was agreed that the cost overruns on the SI/Norwegian project were not due to either an expansion or change of scope but due to their ineptitude and the Vinyl Institute should not fund any part of that study. Because of the greater

likelihood that reliable information will result from the Umea studies and since they did arrange for the installation of the APC equipment, both Dick Magee and Roy Gottesman strongly urged that the Umea project be supported during the coming year.

Assignment*

1. Dick Magee and Roy Gottesman will develop a suitable letter to send to Werner Freiesleben at ECVI by July 1 to:
 - a. Advise him of our continued concerns on the SI project.
 - b. Advise them that the \$10,000 VI funding is to be earmarked solely for support of the Umea project.
2. Roy Gottesman will request further information and details on the large scale mixed-plastics incineration burns to be carried out at Karlsruhe of Professor Vogg.

The next meeting of the ECVI Dioxin Project Team will be held in October 22-23 in Karlsruhe.

2. Partnership for Plastics Progress Program on Incineration/Energy Recovery

Don Goodman reported that Dick Magee had given the Partnership Committee working on this issue a presentation on waste-to-energy and included a discussion on risk assessment to the community. Don is the project leader of the program which has provided a grant to Dick Magee to develop a spreadsheet model using PVC (as a template for other plastics) as the initial study. Later information will be requested for other plastics.

From this, the information available will be ascertained and the information "gaps" developed to determine what experimental incineration runs, if any, need to be carried out.

Don Goodman indicated that he will be requesting a critical review of the spreadsheet model from Technical Committee members. This project has a target date for an initial report by September 1.

Assignment*

Don Goodman is to keep the VI Technical Committee informed about the progress of the Partnership for Plastics Progress Energy Recovery program at its future meetings.

3. Recovery of HCl from Incineration Processes

Dick Magee noted that the initial look at this was carried out by a master's degree student at NJIT under Professor Shaw but did not include any evaluation of the literature references found or any economic analysis. He also noted that Dr. K. Sinkar at NJIT has been investigating the use of contained hollow fibers as separation media and believes this could be a useful method for HCl recovery.

Questions were raised regarding the economic viability or even the need for any additional literature work to evaluate the conventional and direct recovery of HCl from incineration processes.

In order to more clearly focus on the objectives of any literature search that might be carried out, it was agreed that Dick Magee and Roy Gottesman should develop a specific request for such a project that could be used to solicit proposals from prospective researches.

Assignment:

Dick Magee and Roy Gottesman are to collaborate and develop a request for proposal for a literature search to evaluate economics/feasibility of conventional and direct recovery of HCl from incinerator flue gases.

Fred Krause next led a discussion on the questions and concerns relating to incineration. He pointed out that even though we have a good technical story on incineration, in addition to the recycling activities, key questions continue to arise relating to incineration of PVC and the burning and generation of toxic gases.

These concerns need to be addressed, and it was suggested that this would be an appropriate subject for the Tripartite meeting to be held in Washington, D.C. in September.

Assignment*

Bob Burnett is to arrange for a discussion to involve Dick Magee, Don Goodman, Fred Krause, and Roy Gottesman to establish the agenda of items to be discussed in the incineration session at the Tripartite meeting.

Discussion was also held on hospital waste incineration. While medical waste can be handled in properly-designed batch incinerators operating at the appropriate temperatures and with pollution control devices, concern was expressed that users of PVC in medical applications may switch to other materials that are considered to be more environmentally benign.

Assignment

Lou Maresca will head a subcommittee to consist of Fred Krause, Don Goodman, and Lee Fishbein to develop a strategy on what the Technical Committee should do in the area of incineration of medical products based on PVC.

C. Lifecycle Analysis

1. Chem Systems Report

Bob Burnett indicated that the Vinyl Products Lifecycle Assessment Report prepared by Chem Systems was issued to all members of the Executive Board and other interested parties along with copies of the press release which announced the completion of this project.

2. Update on Partnership for Plastics Progress Product Benefits Committee Program

Roy Gottesman indicated that he has been participating in the Product Benefits Committee of the Product Stewardship Task Force of the Partnership for Plastics Progress. At its last meeting, he reported that representatives of Franklin Associates Limited were present to receive input concerning their latest energy report. In addition, he noted that the Product Benefits Committee will be requesting proposals from practitioners in the lifecycle analysis area to conduct lifecycle inventories for six major plastic resins, PVC being included amongst these. In phase one, the inventories will be taken to the resin/compound stage. It

is anticipated that phase two of this program will then carry the inventory forward into fabricated products.

Assignment*

Roy Gottesman has the continuing assignment to participate in the Product Benefits Committee and to advise the Technical Committee of progress at future meetings.

3. The Chlorine Institute Program

Ron McCreedy provided the information on the lifecycle analysis program of the Chlorine Institute which can be found in Appendix C.

In summary, he indicated that the Chlorine Institute lifecycle analysis has been delayed to January 1, 1993 until the environmental study (CANTOX) has been completed. Further, he indicated that a macro-economic model to evaluate economic impact on major end use applications is to be developed with a final report expected by the end of 1992.

4. MIT/Norwegian Chlorine Lifecycle Analysis Study

Ron McCreedy provided the information contained in Appendix D which included in these minutes. In summary, he indicated that the Chlorine Institute will not fund this study this year, which is being sponsored by the Norwegian government and Norsk Hydro.

Ron McCreedy stated that the Chlorine Institute will review a proposal from MIT after the first year report has been completed. He further noted that if requested, the Vinyl Institute should provide appropriate vinyl industry data.

5. Tellus Report

Bob Burnett reported that there has been no response from Tellus and absolutely nothing has occurred during the last month.

D. Medical/Health Effects

1. Publications From SwRI Work

Lou Maresca reported that Bob Hinderer had submitted 3 publications on this work to the Fundamental

and Applied Toxicology Journal on May 5. He also provided the final summary report prepared by Bob Hinderer which can be found in Appendix E, included with these minutes.

2. Compendium of Fire Toxicity Publications

Lou Maresca provided a brief report on the monograph/critical papers in the area of combustion toxicity and fire hazard. Some discussion was held regarding someone to handle the area of combustion toxicity and it was agreed that Fred Clarke should be approached to assist Dr. Hinderer in this work.

Assignment*

Lou Maresca will contact Bob Hinderer and also request that Fred Clarke cooperate with Bob Hinderer in completing the fire toxicity compendium and to provide a sample format for the next Technical Committee meeting.

Further information on this can be found in Appendix F, included with these minutes.

3. Unit Risk Factors For VCM

Ron McCreedy provided a report (see Appendix G included with these minutes) relating to this subject. He indicated that a Vinyl Institute task force group will review the interim report and make recommendations regarding any further work to the Technical and Health, Safety and Environment Committees.

It is anticipated that a final report will be completed by October and then a decision will be needed as to undertaking an extension of this work to include older adults and children.

4. Epidemiologic Study on Workers Exposed to VCM

A brief discussion was held on a article by Dr. Otto Wong, which appeared in the September 1991 American Journal of Industrial Medicine. This study, which was based on workers exposed to vinyl chloride prior to January 1973, had been published without CMA approval. Ron McCreedy indicated that CMA was reviewing this article and was preparing a response.

Assignment

Ron McCreedy is to provide a contact at CMA to Nora Jacobs regarding the Wong article which alleged increased brain tumors as a result of VCM exposure.

V. UPDATE ON VIGOR/RECYCLING ACTIVITIES

Fred Krause updated the group on the various activities of the VIGOR team including the following:

1. NRT Device - This has been completely refurbished and was expected to be shipped to Clearvue this week. Clearvue is working to construct a second line and should be able to start-up this line with the NRT device installed by mid-June. In this operation, vinyl containers will be sorted out, ground and cleaned.
2. Partnership Program - AIC Autosort Device - Fred Krause indicated that this device is to be installed at North American Recycling. Progress is on schedule and it is expected that the AIC unit will be shipped at the end of May and it is anticipated that the installation will be completed in mid-June. He noted that a fairly significant public relations program will be inaugurated when this device is operable. Rigid bottles are to be sorted into 6 different resin types at a rate of 1500 pounds per hour.
3. MSS Bottle Sort - Fred Krause indicated that this unit has been installed at Eaglebrook, has undergone modification and is now being operated on three shifts. A second unit has been installed at Environmental Resources in Greensboro, North Carolina.
4. Florida Project - Roy Gottesman briefly updated the group on visits made the prior week to four organizations that had responded to the Vinyl Institute request for proposal in which a vinyl sortation device (ASOMA) would be installed at an ongoing facility to demonstrate the recyclability of vinyl rigid containers. He also advised the group that he had learned of a new company, Waste Alternatives, Ocala, Florida that had been recommended by several people as a good location for this sortation device.

Assignment

Frank Borrelli and Roy Gottesman will complete an evaluation of two remaining sites and will make a recommendation to VIGOR by the end of June.

Bob Burnett reported on a recent meeting with people at NAPCOR. In the past, NAPCOR has declined participation in several sortation/plastics recovery projects. They have now hired a consultant (Tom Brady) to see if it is feasible to reduce PVC contamination in PET to less than 10 ppm.

VI. SOLVENT CEMENT ISSUES UPDATE

Don Goodman provided an update on this program. He noted that among the good news were the following - an extension of regulations by the Bush administration, the fact that the Southcoast Air Quality Management District is in disarray due to management changes, the expectation of a de facto time extension, the ad hoc group being alive and well, the fact that new solvent cements have been developed by several of the major producers, fabricators of pipe joints are now involved, alternatives other than chemical joining methods are being explored and the solvents used in cements appear to be satisfactory under NSF standard 61 testing.

On the other hand, Don Goodman noted several items of "bad news" which are still concerns. The regulations due to come into effect on January 1, 1993 are still in place, although an amendment is likely by the Southcoast Air Quality Management District. The agency continues to be harsh, arrogant, and unpredictable. There is new uninformed management at the agency, and a commitment to carry out the bubble program concept.

Longer term, there is a concern that this type of regulation may extend into other areas in California including San Diego and the San Francisco Bay area.

Assignment

Don Goodman will continue to update the Technical Committee on this project at future meetings.

VII. SENSORY IRRITATION/INDOOR AIR POLLUTION

Lee Fishbein provided background information on this subject. The EPA has stated that after extensive monitoring that off-gassing of commercial products is a major contribution to poor indoor air quality, and it has concluded that indoor air pollution constitutes a major health problem. Further, OSHA has estimated that between 800,000 and 1.2 million commercial buildings have some form of "sick building syndrome" affecting some 30-70 million workers. Indoor air quality problems fall into three general areas - (1) comfort complaints, (2) acute health effects and (3) chronic health effects. A major cause of indoor air pollution is inadequate ventilation.

There is already much activity on the federal level and legislation was introduced into the Senate last year that would provide EPA and other agencies with the authority to conduct general research on indoor air pollution. Specifically, this legislation would require EPA to develop and publish a list of indoor air contaminants in the form of health advisories. Such advisories would include a description of the characteristics of each contaminant and the health threats posed at various concentrations.

The impacts of this on vinyl products are many, as vinyl would be included in wall coverings, decorative and laminate films, in cabinetry, partitions, acoustical tile, upholstery, etc.

Test methods under consideration include analytical methods for volatile organic chemical emissions including gas chromatography/mass spectroscopy and these are favored by EPA.

Anderson Laboratories is advancing a biological testing response procedure, which follows ASTM E.981 which was developed by Professor Alarie at the University of Pittsburgh for the U.S. Army testing of riot control agents and pesticides. This method quantitatively measures irritancy as indicated by the reflex inhibition of respiration in mice which are exposed to sensory irritants.

Modifications to the existing ASTM E.981 tests have been proposed by Anderson Laboratories. The initial draft proposal was introduced at the April 29th meeting of the ASTM Subcommittee D.22.05. It is anticipated that the subject will come up again for consideration at the next committee meeting which is scheduled for October 5-8, 1992.

Lee Fishbein reported that Borden has a company member representative on the ASTM Subcommittee and will be following the ASTM activity.

Assignment

Lee Fishbein has the continuing assignment to advise the Technical Committee of the ASTM activity.

A Vinyl Institute technical paper on indoor air pollution is in need of review and possible revision.

Assignment

Lee Fishbein will review the current publication on indoor air pollution and provide any changes/revisions to Edward Howard and Company, so that an updated version of this technical paper can be published.

VIII. NEW BUSINESS/CARRYOVER ITEMS

Because of the lateness of the hour, the following items of new business were placed on the agenda for discussion at the next committee meeting.

1. Technology Clearinghouse

Assignment

Ron McCreedy is to develop a scope for the Technology Clearinghouse project and report on same at the next Technical Committee meeting.

2. PVC as an Engineered Plastic

Assignment

Ron McCreedy will develop a scope/report on PVC as an engineered plastic for consideration at the next meeting.

3. SPI Update of the PVC Section of Patty's "Industrial Hygiene and Toxicology"

Assignment*

Ron McCreedy will follow-up and report on this at the next meeting.

4. Review and Updating of Literature Items Dealing with Fire

Assignment*

Bud Hall will work with Marcelo Hirschler to update/revise the Vinyl Institute literature pieces dealing with fire related issues.

5. International Joint Commission

Nora Jacobs reviewed the recent activity of the International Joint Commission of the Great Lakes and indicated that a response document was developed and is being coordinated with the Chlorine Institute. Technical Committee members were provided with a draft of a paper entitled "A Time for Good Science on the Great Lakes" and were requested to provide any inputs to Nora Jacobs no later than June 5.

6. Emissions From Vinyl Fabrication

Lou Maresca noted that in tests conducted from fabrication processes involving extrusion, thermoforming and

injection molding, it was not possible to detect vinyl chloride monomer, hydrogen chloride or lead aerosols down to a level of 0.001 micrograms.

7. Tertiary Recycling

The Partnership for Plastics Progress program dealing with tertiary recycling was noted as well as a recent article in Plastics News indicating that chemical recycling is being evaluated in Germany by VKE.

Assignment

Roy Gottesman will contact Haimo Emminger at VKE requesting further information including test results on the chemical recycling test carried out at Veba Oel A.G.'s Kohloel-Anlage Refinery. Information received will be provided to Mark Meszaros of Amoco, who is heading the Partnership Task Force on this project.

IX. NEXT MEETING DATE AND LOCATION

The next meeting of the Technical Committee will take place on September 17, 1992 from 10:00 a.m. to 5:00 p.m. at a Newark location.

X. ADJOURNMENT

The meeting was adjourned at 5:55 p.m.

Respectfully submitted,


ROY T. Gottesman

* Note: Items marked with an asterisk are to be carried forward to the next Technical Committee agenda.

ASSIGNMENTS

Bud Hall has the continuing assignment to monitor the activities of the New York City Toxicity Advisory Committee working with H.P. Toner and Richard Gottwald and to report on same at the next Technical Committee Meeting.

Bud Hall will work with Marcelo Hirschler to update/revise the Vinyl Institute literature pieces dealing with fire related issues.

Bud Hall is to participate in the meeting with NEMA when it is rescheduled and update the Technical Committee of progress at its future meetings.

Bud Hall and Bob Strength have the assignment to track the corrosivity test program at UL and to report on same at the next meeting.

Lou Maresca has the assignment to prove out a corrosion testing protocol using an adaptation of the cone calorimeter, to arrange for a teleconference to agree upon a test program and to report on same at the next Technical Committee meeting along with a projection on costs needed for the proposed program.

Lou Maresca has the assignment to see that a final report is received on the HCl decay modeling project and that the paper to be presented at a conference in October 1992 is submitted for Vinyl Institute review and clearance prior to its presentation.

Lou Maresca will head a subcommittee to consist of Fred Krause, Don Goodman, and Lee Fishbein to develop a strategy on what the Technical Committee should do in the area of incineration of medical products based on PVC.

Lou Maresca will contact Bob Hinderer and also request that Fred Clarke cooperate with Bob Hinderer in completing the fire toxicity compendium and to provide a sample format for the next Technical Committee meeting.

Lou Maresca agreed to investigate whether the BFGoodrich laboratory has the capability to establish radio-labelled chlorine in the PVC via NMR and advise Roy Gottesman. If Lou Maresca finds that the analysis can be carried out, he will advise Roy Gottesman

Roy Gottesman will, in turn, request Werner Freiesleben to arrange to have a sample sent from SI to BFGoodrich for analysis. (ref: above assignment for L. Maresca)

Roy Gottesman and Frank Borrelli will complete an evaluation of two remaining sites with regard to the Florida project and will make a recommendation to VIGOR by the end of June.

Roy Gottesman will request further information and details on the large scale mixed-plastics incineration to be carried out at Karlsruhe of Professor Vogg.

Roy Gottesman has the continuing assignment to participate in the Product Benefits Committee and to advise the Technical Committee of progress at future meetings.

Roy Gottesman will contact Haimo Emminger at VKE requesting further information including test results on the chemical recycling test carried out at Veba Oel A.G.'s Cohoel-Analge Refinery. Information received will be provided to Mark Meszaros of Amoco, who is heading the Partnership Task Force on this project.

Dick Magee and Roy Gottesman will develop a suitable letter to send to Werner Freiesleben at ECVM by July 1 to:

- a. Advise him of our continued concerns on the SI project.
- b. Advise them that the \$10,000 VI funding is to be earmarked solely for support of the Umea project.

Dick Magee and Roy Gottesman are to collaborate and develop a request for proposal for a literature search to evaluate economics/feasibility of conventional and direct recovery of HCl from incinerator flue gases.

Dick Magee is to obtain information from SI on the chlorine content in the "Biomass" and is to recommend including a run with polyethylene (PE) + Biomass.

Bob Burnett is to arrange for a discussion to involve Dick Magee, Don Goodman, Fred Krause, and Roy Gottesman to establish the agenda of items to be discussed in the incineration session at the Tripartite meeting.

Ron McCreedy is to provide a contact at CMA to Nora Jacobs regarding the Wong article which alleged increased brain tumors as a result of VCM exposure.

Ron McCreedy is to develop a scope for the Technology Clearinghouse project and report on same at the next Technical Committee meeting.

Ron McCreedy will develop an scope/report on PVC as an engineered plastic for consideration at the next meeting.

Ron McCreedy will follow-up and report on the PVC section of Patty's Industrial hygiene and Toxicology at the next meeting.

Don Goodman is to keep the VI Technical Committee informed about the progress of the Partnership for Plastics Progress Energy Recovery program at its future meetings.

Don Goodman will continue to update the Technical Committee on the solvent cement issue at future meetings.

Lee Fishbein has the continuing assignment to advise the Technical Committee of the ASTM activity on indoor air pollution.

Lee Fishbein will review the current publication on indoor air pollution and provide any changes/revisions to Edward Howard and Company, so that an updated version of this technical paper can be published.

The Society of the
Plastics Industry, Inc.



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April 16, 1992

Mr. David Sobel
Executive Engineer
Department of Buildings
Executive Offices
60 Hudson Street
New York, New York 10013

Re: Toxicity Advisory Committee

Dear Mr. Sobel:

As the Society of the Plastics Industry, Inc.'s (SPI) representative to the Toxicity Advisory Committee, I wanted to follow up with you on a few thoughts stemming from the very worthwhile meeting held February 13, 1992. The presentation given by Dr. Babrauskas of the National Institute of Standards and Technology (NIST) raised some interesting points, particularly those comments on the use for hazard analysis for regulatory purposes, which I hope the Committee will have an opportunity to explore further at its next meeting. SPI has long been a proponent of the use of hazard analysis techniques, and we thought it would be useful to provide you with some further thoughts on approaches that might be used.

The goal of any building or fire code is to provide appropriate protection to life and property from the threat of fires. The typical approach used in building and fire codes involves a combination of 1) considering different hazards posed by differences in the occupancies involved, 2) establishing fire properties performance standards for products used in building construction, and 3) considering the physical characteristics of the structure which might affect the ability to halt or limit the spread of fire, such as the presence or absence of smoke detectors and sprinklers. While the work of the Toxicity Advisory Committee is focused on the product performance standard element, specifically, on combustion toxicity, we believe that all of the other factors relate directly to the type of performance standard which may be imposed.

SPI suggests that New York City's goal of advancing fire and life safety can best be achieved by assuring that the City's code is in harmony with the major national model building codes. As an aside, it should be noted that national model code bodies have acknowledged that small-scale combustion toxicity tests have no demonstrable relationship to product performance in real fires, and have eliminated prescriptive "no more toxic than wood" language from their model building codes. This was also done by the State of New York when it adopted regulations implementing a

combustion toxicity database several years ago. We believe that this course should also be followed in New York City. However, we believe New York City can be a leader in the use of hazard analysis for regulatory purposes.

SPI's suggestions on issues to be considered by the City in looking at hazard analysis techniques as a basis for regulation would include the following principles:

1) Criteria for product acceptance should be based on performance tests which reflect a) the end use of the product to be tested, b) that product's potential exposure to a fire threat, and c) the occupancy or use involved.

2) Within a general framework, different product applications should be regulated or approved individually, since different fire hazards are likely to be involved. For example, separate standards might apply to floor coverings, interior finish materials, and insulation because of the different uses, and different fire threats associated with those uses.

3) The currently available small-scale combustion toxicity tests are not suitable for use alone as a basis for imposition of performance standards on products. Any prescriptive requirements for overall combustibility performance must include, as a minimum, criteria based on ignitability and contribution to firespread and growth, in addition to toxicity. These requirements could be incorporated into a categorization format which matches the requirements for the specific products involved within the parameters of particular occupancies. Existing code requirements for these parameters should typically be used.

4) It is generally agreed, as Dr. Babrauskas pointed out, that combustion toxicity test results do not produce the kind of data which allows users to make fine distinctions about product performance. To the extent that toxicity data is included in a categorization or matrix approach, as suggested above, the filing of combustion toxicity data developed for classes of products should be permitted.

5) The categorization approach described in Item 3 above should be used as a screen for acceptance of products. More rigorous or sophisticated assessment or hazard analysis techniques, such as those developed by NIST or by the National Fire Research Protection Foundation (NFPRF), must be accepted as an alternative. Such a risk assessment or hazard analysis should include consideration of other fire safety parameters, such as thermal barriers, used in the end use application of the particular product involved. Risk assessment/hazard analysis

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might also be appropriate if existing prescriptive requirements for, e.g., ignitability, flamespread, smoke, and the like do not exist for the product involved.

Toxicity Tests

SPI recognizes that the mission of this Task Force is to evaluate how the City of New York can responsibly incorporate product testing, including combustion toxicity testing, in its regulatory process. We believe, then, that the categorization approach outlined above offers a reasonable way to try to use toxicity test data in a non-misleading way.

While many standardized tests for ignition, flame spread and the like exist, the status of combustion toxicity tests is quite different. This complicates the task of selecting a combustion toxicity test or tests for use in the categorization approach. This is because these laboratory toxicity tests do not readily correlate with actual performance in real fires, and thus do not provide the type of performance standards on which building code regulations should be based. Nevertheless, results from these tests may be suitable, with expert professional judgment, for use as a component of a hazard analysis or in the suggested matrix approach outlined above. All current combustion toxicity tests have some technical limitations. At present, the New York State Toxicity Protocol is perhaps the most widely used test. More products have been tested using this procedure than any other procedure, and class testing is specifically permitted.

The New York State Toxicity Protocol is a variation on the University of Pittsburgh test method. Significant changes in the University of Pittsburgh method were made before this version of the Pittsburgh test was adopted by New York State for purposes of implementing its toxicity data file. The test has still not received recognition or adoption by a national standards-making body, but is in use in New York State. The procedure shares many of the same limitations of the University of Pittsburgh test, e.g., it is not representative of all actual conditions and exposures. And, use of the ramped heating mode results in materials with the same intended use, but with different thermal stabilities, being evaluated under different temperature conditions. This leads to questions about this test's ability to uniformly compare product results. Recognizing these limitations, a major advantage of the New York State procedure, as noted above, is that a voluminous amount of data, including category data, has been filed with the state. Round-robin agreement between laboratories has now improved.

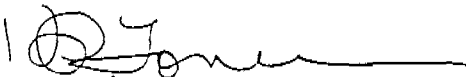
* * * *

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SPI looks forward to continuing to discuss ways in which New York City might adopt a hazard analysis approach at the upcoming meeting. If you have further questions or if there is additional background information which we could provide you in the meantime, please let me know.

Very truly yours,


H. Patrick Toner

R&S 144454

Appendix B

M E M O R A N D U M

TO: Robert Burnett
Roy T. Gottesman

FROM: Richard S. Magee

SUBJ: Steering Committee Meeting, Umea, May 14-15

DATE: May 20, 1992

Attendance

Scientific Advisors - Buekens, Magee, Vogg
Industrial/Gov. Participants - Clayton, Drougge,
Freisleben, Niklasson
Scientists - Fangmark, Lovenius, Marklund, Nordin,
Rappe, Vikstrom (Umea)
Ellestad, Stori, Tryggestad (SI)

Summary

These two research efforts are proceeding extremely slow; however the necessary experimental apparatus, instrumentation, etc. is essentially in-place and progress should accelerate. Both programs have added new personnel and committed additional resources to the project. A new issue of adding PCB toxicity to PCDD/PCDF toxicity is arising in Europe, and this suggests expanding the Umea analytical plan. The project will require additional funding, should involve two more steering committee meetings, and take another year to complete.

Related Issues

Prof. Rappe reported that the EC Commission Expert Group report on dioxins was in draft form and that it states very clearly that PVC in the waste has a minimal impact on dioxin emissions. (Harold Clayton as secretary of the group has a copy of the draft report.)

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R&S 144455

Prof. Rappe indicated that he feels that new data presented during recent USEPA public hearings on dioxin toxicity will make it difficult to reduce current US emission standards. In fact, they may become more stringent.

Prof. Rappe further indicated that a new issue has surfaced, the toxic additivity effects of PCBs, which may be equal to or greater than PCDD/PCDFs.

Status of the Norwegian Project

Goal: To study the fate of chlorine from fuel containing organic chlorine compared to fuel containing inorganic chlorine by careful radioactive chlorine mass balances.

1. Radioactive PVC* has been synthesized from NaCl* by substitution in THF solvent, utilizing a crown 4-ether catalyst, with a 30% + yield.

The yield increased with time over a three week period, which SI believes confirms that a substitution has taken place, and thermal decomposition of PVC* (100 C) yielded the correct HCl/HCl* ratio. They have agreed to consider performing a sodium analysis on the PVC* to further confirm the reaction and to formulate a PVC from NaCl in the same way and compare its combustion with commercial PVC.

2. The combustion unit has been further modified, tested and nearly finished. Problems with the fuel feeding mechanism remain and an air preheater is being added to increase the operating temperature to > 900C. The system produces good combustion, e.g. low CO, only for low feeding rates. Residence time in the reactor has not been determined.
3. Prof. Vogg raised challenges, joined by Prof. Rappe, on the proposed chemical analysis sampling train. Specifically the present flue gas temperature entering the train (> 400C) and the NaOH conditioning both will produce combustion product artifacts. Also it is not clear what will be measured and the value when only looking at inorganic or organic chlorine separately. The fuel matrix proposed makes little sense (unfortunately I didn't totally pick-up on this at the meeting) and I am going to suggest a change.

4. The chlorine content in the fuel will be 1% and it is strongly suggested that CaCl_2 be substituted for NaCl since at the combustion temperatures in the reactor NaCl may be too stable. Further the absence of any metals in the feed will negate the potential for catalytic effects.
5. The SI study must be completed by December since a Ph.D. student from the University is working on the radioactive labeling for his thesis.
6. The project has run out of money and needs on additional 500,000 NOK to finish (Table 1)

Status of Umea Project

1. The reactor is essentially complete. Since most of the cost of the reactor came from another project (biomass combustion) little testing with MSW has been done (only one run was done since the data was sent for the progress report in March).
2. Two new researchers have been added to the research team to make runs daily. (Unfortunately A. Nordin in another department is the one who has constructed the unit, worked on the biomass, and is most familiar with its operation).
3. The on-line MS was dropped during shipping and has only recently arrived at Umea.
4. Problems with the cooling-section remain. The temperature drop in the first 2.5m is too rapid and heating elements will be added. The cooler section is mechanically cleaned between each run to eliminate memory effects.
5. Fly-ash carryover was so high that a cyclone separator had to be added. Ash build-up in the bed reduces runs to six-hours. The apparatus is being modified to allow for ash removal.
6. Preliminary data seem to indicate that the unit (combustor/cooler) reaches steady-state temperature in 4 hours. However, fly-ash deposits in the cooler section seem to always be in a transient situation. This is a major problem since it is not clear when dioxin testing should occur.
7. The operation of the unit seems to indicate good combustion, e.g. $\text{CO} < 50 \text{ ppm}$.

8. The fuel matrix proposed after the last meeting could not be fabricated. The gelatin seemed to form a cement mix and the pellets could not be extruded. After much discussion the fuel mix was changed once again. This was helpful, I believe, since we have a better mix of inorganic/organic chlorine and better total chlorine levels (Table 2). This also resulted in a drop of the single plasticizer run. The new pellets will not be available until October.
9. The major effort during the next four months will be to perform stability, reproducibility and memory testing on the reactor system using the old original fuel.
10. Umea has proposed performing 46 PCB analyses on the combustion products in light of the new interest in PCB additive toxicity (460,000 SEK, Table 1).
11. Umea has arranged with Flakt for a spray dryer/fabric filter APCD to add onto the system. They propose testing after the APCD (300,000 SEK, Table 1).

Summary

These projects are moving into a critical phase where testing will begin and results generated. I feel that it is essential that we critically review the fuels to be tested and the testing matrix. These should be available for review in early June. Sometimes I have the sense that the group has lost sight of why we are conducting this research in the first place and fear that if we are not careful we may raise more questions than answers.

Next Steering Committee Meeting is scheduled for October 22-23, 1992 in Karlsruhe.

Table 1

Financial Summary

Project Funding

Swedish Env. Prof. Bd.	350,000	SEK
Royal Norwegian Council for Scientific & Ind. Research	250,000	NOK
Vinyl Institute (\$10,000)	50,000	SEK
ECVM	1,000,000	SEK
Total	<u>1,650,000</u>	SEK

Project Budget

Umea	700,000	SEK
SI, Oslo	850,000	NOK
Additional Costs	100,000	SEK
Total	<u>1,650,000</u>	

Additional Costs

SI, Oslo	500,000	NOK	500,000	NOK
To complete work				

Umea			
Fuel	50,000	SEK	
PCBs (46 samples)	460,000	SEK	
APCD	300,000	SEK	
	<u>810,000</u>	SEK	810,000 SEK
Total			<u>1,310,000</u>

Table 2

Umea Fuel Composition

	<u>Organic/Inorganic Ratio</u>	<u>Cl = %</u>
A	1 : 1	1.0
B	1 : 0	0.5
C	3 : 1	2.0
D	0 : 0	< 0.05
E	0 : 1	0.5

Appendix C

THE VINYL INSTITUTE - TECHNICAL COMMITTEE MEETING
PONTE VEDRA, FLORIDA
MAY 28, 1992

LIFE CYCLE ANALYSIS - CHLORINE INSTITUTE PROGRAM

OBJECTIVE:

THE CHLORINE INSTITUTE HAS INITIATED A THREE PHASE PROGRAM IN DEFENSE OF THE SAFE USE AND DISPOSAL OF CHLORINE AND CHLORINE DERIVATIVES.

PHASE I - INDUSTRY OUTREACH:

THE CHLORINE INDUSTRY'S OUTREACH PROGRAM IS DESIGNED TO REACH MANY PUBLICS WITH A SINGLE OBJECTIVE - TO ENHANCE THEIR ATTITUDES TOWARD CHLORINE. A POSITIVE SHIFT NOW IN PUBLIC OPINION WILL SET THE COURSE FOR THE INDUSTRY'S SUCCESSFUL FUTURE.

PHASE II - HEALTH & ENVIRONMENT:

THE CHLORINE INSTITUTE HAS CONTRACTED WITH CANTOX TO PERFORM A CRITICAL REVIEW OF PERTINENT INTERNATIONAL LITERATURE DEALING WITH THE ROLE THAT CHLORINE AND CHLORINATED PRODUCTS PLAY ON HUMAN HEALTH AND IN THE ENVIRONMENT.

PHASE III - ECONOMIC BENEFITS ANALYSIS:

TO QUANTIFY THE VALUE OF THE MAIN CONSUMER USE APPLICATIONS OF CHLORINE, CHLORINE DERIVATIVES AND CAUSTIC SODA TO THE U.S. ECONOMY.

- 1) DEVELOP A DATABASE AND MACRO-ECONOMIC MODEL OF THE VALUE OF CHLORINE AND CHLORINE DERIVATIVES TO SOCIETY.

STATUS: RFP - 06/15/92

CONTRACT - 08/01/92

FINAL REPORT - 01/01/93 (ESTIMATE)

- 2) DEVELOP A DETAILED ECONOMIC IMPACT ASSESSMENT ON MAJOR END USE APPLICATIONS.

STATUS: RFP - 06/15/92

CONTRACT - 08/01/92

FINAL REPORT - 01/01/93 (ESTIMATE)

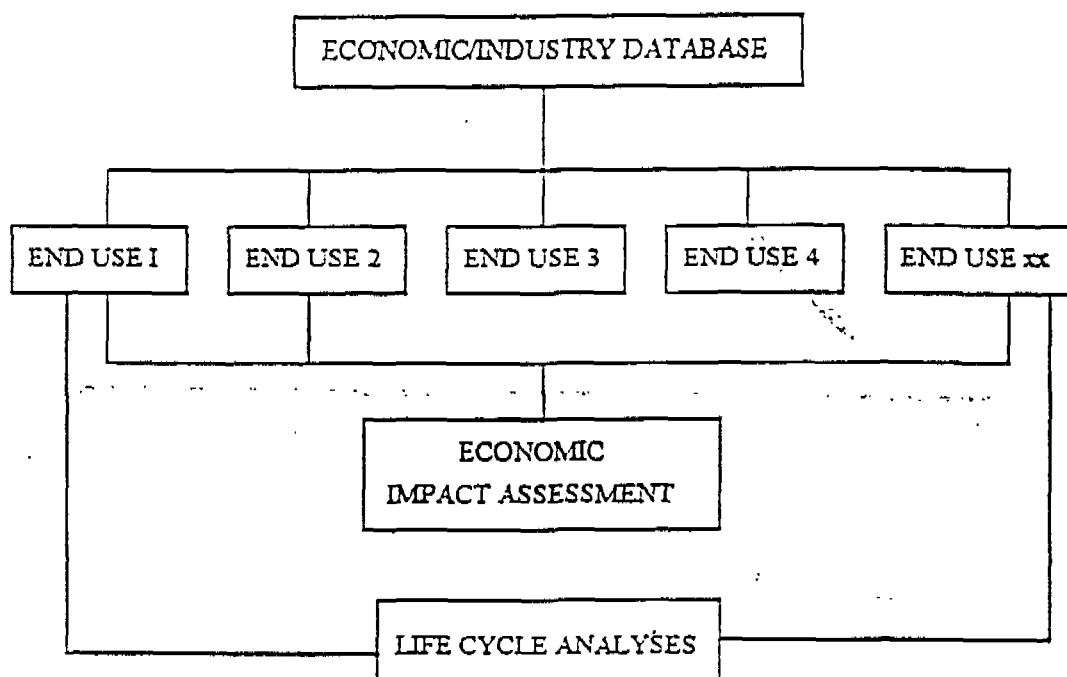
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LIFE CYCLE ANALYSIS - CHLORINE INSTITUTE PROGRAM

- 3) CONDUCT LIFE CYCLE ANALYSES ON SELECT MAJOR
END USE APPLICATIONS AND THE ALTERNATIVE
PROCESSES.

STATUS: END USE APPLICATIONS AND NEED FOR
LCA WILL BE EVALUATED AFTER THE
HEALTH /ENVR AND IMPACT/BENEFIT
ANALYSES HAVE BEEN COMPLETED.

PROJECT FLOW:



RECOMMENDED ACTION(S):

PROVIDE CHEM SYSTEMS LCA REPORT TO THE CHLORINE
INSTITUTE AND THEIR CONSULTANT. CONTINUE TO
MONITOR AND SUPPORT THEIR PROGRAM, AS
APPROPRIATE.

RL McCREEDY
DOW USA

Appendix D

THE VINYL INSTITUTE - TECHNICAL COMMITTEE MEETING
PONTE VEDRA, FLORIDA
MAY 28, 1992

MIT/NORWEGIAN CHLORINE LCA STUDY

OBJECTIVES:

TO DEVELOP A GLOBAL ANALYSIS OF CHLORINE IN OUR SOCIETY AND TO EXAMINE VARIOUS PUBLIC POLICY OPTIONS ON CHLORINE AND CHLORINE ALTERNATIVES.

STATUS:

- 1) THE RESEARCH PROGRAM AT MIT, DIRECTED BY KIRK BOZDOGAN, IS CURRENTLY SPONSORED BY THE NORWEGIAN GOVERNMENT, NORWEGIAN SMELTERS ASSOCIATIONS, NORSK HYDRO, AND THE SOCIETY FOR THE PRESERVATION OF NATIONAL RESOURCES. MIT IS ACTIVELY SEEKING MORE SPONSORS.
- 2) MIT IS FIVE MONTHS INTO A MULTI-YEAR STUDY. THEIR GOAL FOR 1992 IS TO DEVELOP A BASE LEVEL OF INFORMATION ON THE CHLORINE INDUSTRY AND CHLORINE ISSUES.
- 3) THE INITIAL END USE SEGMENTS MIT WILL STUDY INCLUDE; CFC's, INDUSTRIAL SOLVENTS, PVC, CHLORINATED PESTICIDES AND THE PULP AND PAPER INDUSTRY.
- 4) THE PROJECT SCOPE INCLUDES DEFINING THE ROLE OF CHLORINE AND CHLORINE ALTERNATIVES IN MODERN ECONOMIC SYSTEMS AND PRIORITIZING POLICY OPTIONS.

RECOMMENDED ACTION(S):

- 1) THE MIT PROJECT MERITS ATTENTION, BUT NOT ADDITIONAL FINANCIAL SUPPORT, IN 1992. THE CHLORINE INSTITUTE WILL PROVIDE INDUSTRY DATA. THE VI SHOULD PROVIDE APPROPRIATE PVC INDUSTRY DATA, IF REQUESTED.

TELETYPE
ALL WORK

R&S 144463

MIT/NORWEGIAN CHLORINE LCA STUDY

- 2) CI WILL REVIEW A PROPOSAL FROM MIT AFTER THEIR FIRST YEAR REPORT HAS BEEN COMPLETED (12/92). NO UPDATE/REVIEW IS NEEDED BY THE VI UNTIL THE YEAR END REPORT.

RL McCREEDY
DOW USA

R&S 144464

Appendix E

COMPARISONS OF THE ACUTE AND LONG-TERM RESPIRATORY EFFECTS OF HYDROGEN CHLORIDE GAS AND PVC COMBUSTION PRODUCTS IN RODENTS AND BABOONS

Final Summary - May 1992

Animal studies sponsored by the Vinyl Institute at Southwest Research Institute were conducted to address allegations and issues involving the toxicity of HCl and the combustion products of PVC. This work was funded in order to 1) assess the appropriateness of the rodent as a model for predicting the toxicity of HCl and PVC combustion products in man, 2) determine the degree of respiratory tract penetration and the immediate or delayed effects of these chemicals in primates, and 3) compare the CO₂ challenge method used for assessing pulmonary function in rodents with the more sophisticated methods used in primates.

Research was divided into three phases: 1) studies of HCl as a pure gas, 2) the development of a combustion system for continuously generating levels of HCl from PVC under flaming and non-flaming conditions, and 3) studies of HCl produced during the thermal decomposition of PVC. Initially, groups of three anesthetized baboons were exposed for 15 minutes to 0, 500, 5,000 or 10,000 ppm HCl. Respiratory parameters were monitored during and shortly after exposures. Lung x-rays were taken one hour after exposure and pulmonary function tests and CO₂ challenges were conducted at 3 days and at 3, 6, and 12 months post-exposure. Biopsies and pathological evaluations of the respiratory tract also were conducted at the end of the one year post-exposure observation period. Mice, rats, and guinea pigs were exposed to selected doses of HCl for 15 minutes and generally were treated in a similar manner as the primates. The CO₂ challenge method was used to evaluate pulmonary function at 3 days and 3 months post-exposure, and pathological examinations of the respiratory tract were conducted at 3 months because of geriatric considerations with the rodents. Following the development of the continuous combustion system which combined key features of the German DIN and NBS (NIST) systems, baboons, rats, and guinea pigs were exposed and monitored as described above to 5,000 ppm HCl generated from PVC under flaming and non-flaming conditions. Mice were not used in this part of the study because of the complete mortality which was observed at 2550 ppm HCl gas.

These studies showed that HCl gas and HCl generated from the thermal decomposition of PVC is less hazardous than previously believed. Primates were able to survive short-term (15 min.) exposure to high concentrations of HCl (10,000 ppm pure gas and 5,000 ppm from PVC). The lung x-rays, pulmonary function tests, and respiratory tract pathological evaluations indicated that the upper respiratory is very effective in removing HCl from inhaled air. There was no evidence of any significant deep lung

penetration of HCl at 5,000 ppm (pure gas or PVC generated) and only limited penetration at 10,000 ppm which is evidenced by the lack of any significant lung findings until one year post-exposure. These studies also indicated that mice and guinea pigs are not good predictors of HCl/PVC combustion product lethality in man. Generally, the rat was the closest to the primate while mice and guinea pigs were approximately an order of magnitude more sensitive. However, even the rat appeared to be somewhat more sensitive than primates with respect to lethality in the PVC combustion studies. Comparisons of the CO2 challenge method with more sophisticated pulmonary function methods confirmed that this diagnostic tool has a lower sensitivity and specificity and indicated that the more sophisticated methods were preferable when it is feasible to use them. Finally, these studies are supportive of and consistent with known anatomical and physiological differences between rodents and primates particularly with respect to their response to irritant gases.

Appendix F

MONOGRAPH/CRITICAL PAPERS IN PVC COMBUSTION TOXICITY AND FIRE HAZARD

Status Report - May, 1992

In 1991 the VI Technical Panel agreed in principle to support the development of a monograph or compendium of critical papers on PVC combustion toxicity and fire hazard. Drs. Kaplan, Hirschler, and I agreed to work on this project. I asked Dr. Kaplan to assist me with the combustion toxicity literature and Dr. Hirschler to handle fire hazard including HCl decay (attachment). We held several conference calls and were successful in identifying a first cut of critical papers. However, because of our need to focus our efforts on the publication of the SWRI research and because of the departure of Dr. Hirschler from BFGoodrich, this project was put on hold until manuscripts on the SWRI work was submitted for publication.

Now that the manuscripts have been submitted we are now in a position to reactivate this project. The Technical Panel needs to provide some guidance on how to proceed. We can cover the whole area or we could just handle combustion toxicity. If we undertake the former, we could ask either Dr. Fred Clark or Dr. Hirschler to assist unless we get someone within the VI member companies to volunteer. Further thought on how and where this should be published is appropriate. CRC, The SIRC Review, and a book are some of the options that have been considered. ✓

R&S 144467

Sections

1. Fire hazard and smoke toxicity
2. HCl decay
3. Toxicity of HCl
4. Toxicity of PVC smoke
5. Examples of Fire Hazard Calculations with PVC Smoke

Appendix G

THE VINYL INSTITUTE - TECHNICAL COMMITTEE MEETING
PONTE VEDRA, FLORIDA
MAY 28, 1992

VCM UNIT RISK FACTORS

OBJECTIVES:

TO CONDUCT A NEW QUANTITATIVE CANCER RISK ASSESSMENT FOR VCM THAT WILL ...

- 1) ADDRESS THE SIGNIFICANT DIFFERENCES IN THE UNIT RISK FACTOR FOR VCM WHEN VARIOUS DATABASES AND RISK MODELING TOOLS ARE UTILIZED.
- 2) TO UPDATE THE EXISTING VCM UNIT RISK FACTOR USED BY LEGISLATURES/REGULATORS TO REFLECT THE REDUCED CANCER RISK THAT IS DETERMINED WHEN MODERN STATISTICAL MODELING TECHNIQUES ARE USED.

STATUS:

AN EVALUATION OF THE VCM UNIT RISK FACTOR HAS BEEN INITIATED BY MEL ANDERSEN (CIIT), TREVOR GREEN (ICI) AND DICK REITZ (DOW USA) USING EXISTING HUMAN HEALTH DATA AND PHARMACOKINETICS MODELING.

JUNE 01 - COLLECTION AND ORGANIZATION OF AVAILABLE DATA COMPLETED.

JUNE 15 - GREEN AND REITZ WILL MEET IN EUROPE TO EVALUATE THE DATABASE AND BEGIN PBPk MODELING.

AUG 01 - STATISTICAL MODELING AND AN INTERIM REPORT COMPLETED.

OCT 01 - FINAL REPORT COMPLETED. ARTICLE WILL BE SUBMITTED FOR PEER REVIEW AND PUBLICATION (6-9 MONTHS PROCESS).

RECOMMENDED ACTION(S):

VI TASK GROUP (BORRELLI, BURNETT, HINDERER, McCREEDY, OTHERS?) TO REVIEW INTERIM REPORT AND MAKE REPORT AND RECOMMENDATIONS USE TO THE TECHNICAL AND HS&E COMM.

RL McCREEDY
DOW USA

R&S 144469

agenda

SI

VI TECHNICAL COMMITTEE

Ponte Vedra Inn and Club
Ponte Vedra, Florida
East Room

Thursday
May 28, 1992
1:00pm-5:00pm

- 1:00p I. SELF-INTRODUCTIONS
- 1:05p II. APPROVAL OF MINUTES OF 3/12/92 MEETING
- 1:10p III. OBJECTIVES OF MEETING R. McCreedy
- 1:15p IV. PROJECT REVIEW

(40 min) A. Fire Sciences

- ✓ 1. Combustion Toxicity H. J. Hall
New York Advisory Council
- ✓ 2. Corrosivity Testing - Poly- H. J. Hall
olefins Fire Performance Council
Testing UL including PVC Materials
- ✓ 3. Meeting with NEMA H. J. Hall
- ✓ 4. Corrosion Testing in Other Use L. Maresca
Areas - Report/Recommendation
- ✓ 5. Factory Mutual Testing/Update H. J. Hall
- ✓ 6. HCl Decay Modeling - Completion L. Maresca
Report/ Final Invoice

(40 min) B. Incineration - Swedish/Norwegian Studies

- ✓ 1. Report of ECVI Dioxin Project R. Magee
Meeting in Umea, Sweden on
May 14-15.
- ✓ 2. Recovery of HCl from Incineration R. Magee
Processing - In-depth review of
literature
- ✓ 3. Partnership for Plastics Progress D. Goodman
Program on Incineration - Update

✓ 4. P3/Tertiary Recycling Analysis Paul Clark

Antitrust Reminder

Group activities of competitors are inherently suspect under the antitrust laws. Many agreements among competitors, however, are both legal and beneficial to the industry. The best vehicle for enjoying the benefits of permitted agreements among competitors while avoiding the pitfalls of illegal agreements is by belonging to a trade association like SPI which takes its obligations in this regard very seriously.

All SPI staff members are well versed in antitrust matters and the association relies heavily on their judgment to see that topics which may give an appearance of an agreement that would violate the antitrust laws are not discussed at SPI meetings. The fact that an SPI staff member is present at a meeting, however, should not invite probing to determine how far a discussion can proceed before it becomes apparent that it is improper and is cut off. It is the responsibility of each member in the first instance to avoid raising improper subjects for discussion. This reminder has been prepared to assure that participants in SPI meetings are aware of this obligation.

The Dos and Don'ts presented below highlight only the most basic antitrust principles. Each participant in an SPI meeting should be thoroughly familiar with the SPI Bulletin, "The Antitrust Laws and You—A Guide and Introduction to an Understanding of the Federal Antitrust Laws," and should consult counsel in all cases involving specific situations, interpretations, or advice.

DON'T

1. Do not, in fact or appearance, discuss or exchange information regarding:
 - (a) Individual company prices, price changes, price differentials, mark-ups, discounts, allowances, credit terms, etc. or data that bear on price, e.g., costs, production, capacity, inventories, sales, etc.
 - (b) Industry pricing policies, price levels, price changes, differentials, etc.
 - (c) Changes in industry production, capacity or inventories.
 - (d) Bids on contracts for particular products; procedures for responding to bid invitations.
 - (e) Plans of individual companies concerning the design, production, distribution or marketing of particular products, including proposed territories or customers.
 - (f) Matters relating to actual or potential individual suppliers that might have the effect of excluding them from any market or of influencing the business conduct of firms toward such suppliers or customers.
2. Do not discuss or exchange information regarding the above matters during social gatherings incidental to SPI-sponsored meetings, even in jest.
3. Do not meet without SPI staff or counsel present.

DO

1. Adhere to prepared agendas for all SPI meetings and object any time meeting minutes do not accurately reflect the matters which transpired.
2. Understand the purposes and authority of each SPI group in which you participate.
3. Consult with the SPI General Counsel and your company counsel on all antitrust questions relating to SPI meetings.
4. Protest against any discussions or meeting activities which appear to violate the antitrust laws, disassociate yourself from any such discussions or activities and leave any meeting in which they continue.

5. ~~A~~. Radioactive Labeled PVC-Norwegian R.Gottesman
Preparation (L. Brecker letter to /R. Magee
R. Burnett of March 30, 1992)

20.11 C. Life Cycle Analysis

1. Chem Systems Report R. Burnett/
R.Gottesman
2. Update on Program of Product R. Gottesman
Benefits Committee of Product
Stewardship Task Force of Partner-
ship for Plastics Progress
3. Chlorine Institute Program R. McCreedy
4. ~~MIT/Norway~~
5. ~~A~~. Tellus Report R. Burnett

3:00p B R E A K

3:15p D. Medical/Health Effects

- ✓1. Publications from SwRI Work L. Maresca
- ✓2. Compendium of Fire Toxicity L. Maresca
Publications
- ✓3. Unit Risk Factors for VCM R. McCreedy

3:30p V. REPORTS ON OTHER ONGOING PROJECTS

- ✓A. VIGOR/Recycling F. Krause
- ✓B. Solvent Cement Issues - Update D. Goodman
- ✓C. ASTM - Indoor Air Pollution L. Fishbein

4:15p VI. NEW BUSINESS Group

4:45p VII. REVIEW OF ASSIGNMENTS

4:55p VIII. NEXT MEETING DATE AND LOCATION

5:00p IX. ADJOURNMENT

TECHNICAL COMMITTEE - 1:00 P.M.
THURSDAY, MAY 28TH
EAST ROOM

Ray Azrak
Bob Burnett
Bill Carroll
Frank Conrad
Bruce Duerringer
Lee Fishbein
Don Goodman
Roy Gottesman
Bud Hall
Walt Hermes
Nora Jacobs
Fred Krause
Brad Lienhart
Peter Lindabery
Richard Magee
Donna Magill
Louis Maresca
Bob Margevich
Ron McCreedy
Debbie Neale
John Opdycke
Al Reventas
Richard Ryder
Erv Schroeder
Nelson Stefany
Vic Struber

AV REQUIREMENTS:

Overhead Projector and Screen

FOOD:

Coffee, Tea, Sodas at 12:45 p.m.
Refresh at 2:30

TOTAL: 26

R&S 14473