

VI TECHNICAL COMMITTEE

Stouffer Tower City Plaza Hotel
24 Public Square
Cleveland, Ohio 44113
Severance Room

Thursday
November 8, 1990
8:30a - 4:00p

Attendees:

Frank Borrelli, Georgia Gulf Corporation
Larry Brecker, Witco Corporation
Charles Bush, BFGoodrich Company
Ray Gomez, BFGoodrich Company
Don Goodman, Occidental Chemical Corporation
Roy Gottesman, Vinyl Institute
H.J. "Bud" Hall, Vista Chemical Company
Robert Hinderer, BFGoodrich Company
Marcelo Hirschler, BFGoodrich Company
Fred Krause, BFGoodrich Company
John Krokosky, Dow Chemical Company
Gabe Lefebvre, BFGoodrich Company
Richard Magee, NJIT
Ron McCreedy, Dow Chemical Company
Debbie Neale, BFGoodrich Company
Robert Strength, Vista Chemical Company Consultant

I. SELF-INTRODUCTIONS

The meeting was initiated with self-introductions. Not all of the shown attendees participated in the first portion of this meeting which involved discussions on fire and combustion toxicity related issues. Frank Borrelli, Larry Brecker, Ray Gomez, Fred Krause, and Debbie Neale joined the meeting at 10:00 a.m. when the meeting considered the remaining subjects.

II. PROJECT REVIEWS

A. Subcommittee on Fire Science - Fire and Combustion Related Issues

1. Corrosivity

Marcelo Hirschler indicated that the smoke corrosivity issue is a serious one that needs to be addressed. There is a need to try to diffuse the

idea that only acid gases generated in a fire can cause corrosion.

He noted that 3 tests are currently being used or developed for this purpose.

- a. The DIN test in Germany is not well-defined, but is a small-scale dynamic test that is based on metal loss. This test has been accepted by ISO, which will move it forward.
- b. CNET test developed in France some 7-8 years ago is a static test employing a 20 liter chamber and 600 milligrams of material. A copper circuit board is the target and the decrease in resistance is measured after exposure to fire gases. An international round robin on this test is to be completed in 1991.
- c. Radiant exposure apparatus. This test uses the apparatus developed at Southwest Research Institute and used in the program sponsored by NIBS. It is to be moved to a ballot within ASTM E 5.21.70 by the chairman of that group, Hank Roux. This involves a 200 liter test chamber, a static environment and rhorback probes are used to measure metal loss via a wheatstone bridge. The advantage of the radiant exposure apparatus is that it can utilize larger samples and the 2 arms are far apart.

The problem that exists is the correlation of these 3 small-scale tests to real life experience. In these small-scale tests, vinyl performs poorly and non-halogenated materials appear to be better.

Fred Clarke, a consultant to this subcommittee has been asked to design a large-scale protocol concept to look at the potential of smoke in causing service interruption of electrical and electronic components. This concept covered by his letter of October 18th to Roy Gottesman had been circulated to the Fire Sciences Subcommittee. It is based on using 3 different measures of corrosion:

- a. Metal loss using rhorback corrosion sensors.
- b. Conductive sooting, using inter-digitated test cones.

- c. Contact fouling using 5 miliamp relays and measuring circuit resistance when the contacts are closed.

Committee Chairman Charles Bush asked that the group define the goal for this project and the following was agreed upon:

GOAL:

To put the potential for service interruption of electrical/electronic components by smoke from the combustion of PVC products relative to smoke from other competitive products into proper perspective. This encompasses not only metal loss by corrosion, but also conductive sooting and contact fouling.

TACTICS:

To conduct a near term, large-scale experiment to develop reliable and meaningful data that can be used to address marketplace issues and guide test developments in this area. It was recognized that the Clarke proposal could involve an expenditure in the range of \$50,000 to \$100,000. The desirability of including the Fluoropolymers Division of SPI in a joint program involving large-scale testing was noted.

MILESTONE:

A definitive proposal for the Technical Committee is necessary including funding mechanism. To be included in this proposal will be participation by the SPI Fluoropolymers Division, Bellcore and others.

Action:

A subcommittee consisting of Bud Hall, Marcelo Hirschler and Bob Strength was constituted to develop the definitive proposal for presentation at the next Technical Committee Meeting in January.

2. Code Activity - Vinyl Siding

There was brief discussion on recent activity to address the code issue which could seriously affect the use of vinyl siding. Technical support, including consultant by Fred Clarke has been provided to the Vinyl Siding Institute on this issue. Inasmuch as this is a project that must be

carried forward by the Vinyl Siding Institute, it was agreed that members of the Technical Committee will participate in any vinyl siding activities on a limited basis to monitor and guide their activity, but that the Vinyl Institute itself will not take an active role or further fund any activity here.

3. NIST Proposal on Intermescent Materials

A letter from Rich Gottwald to the Coordinating Committee on Fire Safety dated October 7th provided a pre-proposal for a study on intermescent polymers at NIST. Following discussion, the Technical Committee decided not to support this program.

Action:

Roy Gottesman will advise Rich Gottwald that, while this is a very good idea, because of budget and other limitations, the Vinyl Institute will not be able to provide any funding in support of this project.

4. NIBS Combustion Toxicity Test

Marcelo Hirschler briefly reviewed the history of this project and noted that subsequent to a meeting held on August 15, 1989, there had been no activity on this project until last week when NIBS scheduled a meeting which was held on November 6th in Washington.

GOAL:

To get NIBS to recognize and address shortcomings in their proposed test method.

REVISED GOAL:

To aid in the development of a new combustion toxicity test that correctly assesses the toxic hazard of PVC and other materials.

Following the meeting on November 6th, by a vote of 13 to 6, the Steering Committee moved that the test, as currently constituted, will be moved forward into the consensus standard process at ASTM and NFPA. Included will be the test information redeveloped at Southwest Research, a proposed standard, as well as the critiques and comments received by NIBS on this program.

Action:

1. As this process moves forward into ASTM, Marcelo Hirschler and Bob Strength have the assignments to assure that the concerns that have been identified are properly considered and addressed in their standard development.
2. Marcelo Hirschler and Bob Strength are to advise the Technical Committee how we can participate in any standards development work at NFPA.

Marcelo Hirschler noted that the NIS revision of a toxic hazard test based on the NIBS apparatus is expected to move forward later in 1991, and this approach is more realistic and favorable to vinyl products.

5. 1993 National Electrical Code

Marcelo Hirschler provided Roy Gottesman with copies of 19 proposals which have been submitted by BFGoodrich Company for consideration in the 1993 National Electrical Code. Largely, these are aimed at establishing a new category having the suffix "LHR" after the code type designation. These would be used on products that have limited heat release characteristics.

Because of the volume of photocopying involved, these proposals are not being included with the minutes of this meeting. Any members of the Technical Committee desiring copies of these 1993 NEC submissions should call the Vinyl Institute office and copies will be forwarded.

6. December Conference on "Environmentally Friendly Flame Retardant Systems"

Bud Hall pointed out this conference which is being held in St. Louis on December 2-4. Largely from the make-up of this conference, it appears that it could be a Union Carbide-sponsored event, although it was noted that Fred Clarke, a consultant to the Vinyl Institute, is on the program.

Following discussion, it was agreed that Vinyl Institute participant attendance at this conference is not necessary.

Roy Gottesman suggested that the VI and its member companies might want to consider a similar conference to tout vinyl electrical materials at a future date.

7. HCl Decay

Marcelo Hirschler advised that only one project remains to be done, and this will be completed by June 1991 within budget.

Debbie Neale, who joined the meeting at this point, enquired if anyone new about the New York Port Authority restricting the use of PVC in its operations. None of the attendees had any new or recent information on this subject.

B. PVC "Ecobalance" - Life Cycle Analysis

Chuck Bush reviewed the background on this project indicating that a subcommittee consisting of Frank Borrelli, Bill Carroll, Lee Fishbein, Roy Gottesman, Fred Krause, Gabe Lefebvre and he had met on September 13th to review all responses to our RFP on this project and had narrowed the field down to Battelle, Chem Systems and SRI International. He stated that at the September 18th Executive Board Meeting, he had made a presentation to the Board and following discussion, the Executive Board requested that the initial work focused on packaging. Further, the Executive Board agreed to an expenditure not to exceed \$150,000 this fiscal year.

On October 4th and 5th, the subcommittee met in Wayne with representatives from these 3 consulting firms and solicited a revised proposal from each of these companies. Roy Gottesman briefly discussed the elements of the revised proposals. Chuck Bush indicated that the Battelle organization did not appear to be that interested in this project, and in fact, their revised proposal ended up costing approximately the same in fees, despite the fact that less work is involved.

The following chart indicates the strong points and weaknesses of the remaining 2 organizations:

SRI International:

Strengths:	Background knowledge
	Knowledge of environmental issues
	Thorough proposal

Weaknesses: Cost
Logistics
Project management (past performance)

Chem Systems:

Strengths: Interest/energy level
Costs
Logistics
Process and engineering know-how
(specifically on chlorine/
caustic soda)

Weaknesses: Little knowledge or involvement with
environmental community
Background in life cycle analyses

Debbie Neale suggested that scientific peer review via people either in academia or recognized within the scientific community would be desirable, so that the ultimate work product has credibility.

Dick Magee offered a view that no matter what is done at this point in time, because of the rapid developments in this area, it is likely that the life cycle analyses studies will have to be carried out again at a future time. He therefore suggested that the group consider doing this as cheaply as possible, i.e., using Chem Systems which had the lowest bid proposal.

Roy Gottesman cautioned the group that regardless of which contractor is selected, we will need active participation by members of the task force in counseling and guiding this project to a successful completion.

On the basis of the discussion and the recommendation from the task force that Chem Systems be awarded this project, Don Goodman made a motion that the Technical Committee support the recommendation of the Ecobalance Subcommittee that we move ahead to carry out the ecobalance studies with Chem Systems. Following a second by Bud Hall, the motion was unanimously passed.

Debbie Neale volunteered to serve on the steering committee to provide guidance relative to ultimate packaging and dissemination of this report.

Action:

1. Roy Gottesman will contact Chem Systems to finalize a contract and payment schedule.
2. Roy Gottesman will set-up a meeting to initiate this project with Chem Systems at the Vinyl Institute offices on December 5th and will advise the ecobalance subcommittee when this is arranged.

Roy Gottesman noted that the American Institute of Architects is establishing an environmental guide and had requested information relating to life cycle analyses on wall and floor coverings. He had provided this information to members on the Ecobalance Technical Subcommittee, but to this point has not received anything.

Action:

1. Roy Gottesman has the assignment to contact Walter Anderson at the Resilient Floor Covering Institute to be certain that they respond to the AIA questionnaire.
2. Gabe Lefebvre has the assignment to contact Susan Young at CCFA to be certain that they respond to this life cycle analysis request.

C. IncinerationGOAL:

To guide and participate in planned Swedish/Norwegian laboratory studies to determine the role of PVC in dioxin/furan in municipal solid waste incineration emissions.

Dr. Richard Magee reported on the meeting that he had attended with Professor Rappe and others held in Umea, Sweden on October 30th. He noted that the initial experiments seem to validate the correlation of their laboratory incinerator to large-scale units. While he is comfortable with this conclusion, Dr. Magee indicated that he is concerned with data reproducibility. It appears that they will change from manual to automatic controls, which should solve some of the reproducibility problems when they operate the reactor themselves. Professor Rappe and his collaborators plan to move ahead with a slightly modified reactor which will be built within the next 2-3 months and validation should be carried out in this new reactor next spring. The plan

then would be to have actual studies begin in the summer of 1991.

Dr. Magee noted that he has concerns with the design of the Norweigan combustion device. In the Norweigan experiments, they plan to use radio active (CL^{36}) in PVC. He feels that the Norweigan reactor, which is unproven should not be used, but rather that they should use the same type of reactor as in the Swedish studies.

Dick Magee's major concern is that the reactor does not have an air pollution control device, and he encouraged them to add this. A follow-up meeting is scheduled to be held on June 3-4 for a review of the initial results and a decision to proceed.

Dr. Magee noted that there are 4 key elements that he believes are necessary in this program:

1. Coordination of the efforts in Sweden and Norway is essential, both as it regards reactor configuration and field composition.
2. A range of different field compositions should be used ranging from 0.1-1% chlorine, and Dr. Rappe should be encouraged to do this.
3. An air pollution control device should be added, so that results both prior to and following an air pollution control device can be assessed.
4. Monitoring of $CO-CO^2$ has been suggested by Dr. Hirschler.

Action:

1. Roy Gottesman will write to Harold Clayton at Norsk Hydro identifying the above issues and making recommendations for the Umea studies. He will also inquire about the basis of the 0.7% chlorine which was indicated in the synthetic fuel.

D. Franklin Associates Studies on Lead in Plastics

The final study from Franklin Associates on lead in plastic products in MSW was distributed. Mr. Lefebvre advised that the report was not distributed to congressional committees based on the decision of the SPI Government Affairs Department to forego this until a more appropriate time, so as not to give the issue visibility.

Mr. Lefebvre also indicated that it would be desirable to have the report listed with NTIS so that it is available and so that copies could be sent out to people who had gotten the original Franklin Study from this source.

Action:

Gabe Lefebvre is to provide Roy Gottesman with information so that the Franklin Report can be included in materials available from NTIS.

E. Recycling Update

Fred Krause reported on the recent activities of VIGOR which were reviewed at a committee meeting on October 30th.

1. NRT

A media briefing was held on October 31st at the National Press Club in Washington, D.C. and was very successful. The next milestone will be installation of an NRT unit at XL Corporation in Crestwood, Illinois during the first quarter of 1991.

2. CPRR - Rutgers

Of the monies due to the Plastics Recycling Foundation on this project, \$35,000 has been paid leaving \$15,000 still to be paid.

Action:

Roy Gottesman will write to Wayne Pearson asking that the project be concluded to involve crushed bottles and for a final report, so that the project can be closed out.

3. Plastics Recycling Foundation (PRF)

GOAL:

To support an industry-wide effort to development technology for recycling of plastics and have an input into this development.

In view of the increase in directorate membership fees in the Plastics Recycling Foundation from \$50,000 to \$60,000 per year as of January 1, 1991 there was discussion as to whether the Vinyl Institute needs to continue with full membership or

to reduce its contribution to a \$30,000 membership as a non-executive board member.

Dr. Hirschler voiced the opinion that we should either be "all or nothing" in this activity. While this discussion did not reach a resolution, Roy Gottesman noted the desirability of advising Wayne Pearson of PRF that future funding may be reduced.

Action:

Roy Gottesman will write to Wayne Pearson advising him of the possibility that the Vinyl Institute will not be able to fully fund a directorate membership next year, but that this issue will be decided at budget time.

4. Rhode Island/New England CRInc.

Roy Gottesman and Lee Fishbein will visit with Victor Bell at the Rhode Island Department of Environmental Management on Friday, November 16th to advise him of the NRT developments.

5. Vermont Republic Industries (VRI)

GOAL:

To maintain contact with Al Voegele and to enable him to be a favorable spokesman on vinyl recycling.

Don Goodman reported that Al Voegele continues to do excellent work in promoting the recyclability of vinyl.

6. R2B2

GOAL:

To explore using R2B2 in a manner similar to that which is being carried out by VRI, i.e., to have Michael Schedler given a "travel grant" to spread positive news on PVC recyclability.

Originally, the intent was to use R2B2 as a demonstration unit. As this is not feasible at this time, Georgia Gulf intends to pursue this avenue alone according to Frank Borrelli.

7. **ASTM**

ASTM standards for recycled materials are being followed by Peter Lloyd of BFGoodrich. At the present time, Fred Krause indicated we do not plan to comment on the definitions of recycled products.

8. **DevTech****GOAL:**

To scale up their technology from lab bench to pilot scale.

This technology involves separation of flake material, but to this point, the separations had only been applied on pure streams. At the last meeting of VIGOR, it was agreed that Bill Carroll would solicit individual contributions from Vinyl Institute member companies which would be pooled under the VI umbrella. It would be expected that \$10,000 contributions could be obtained from Goodrich, Georgia Gulf, Occidental, American Mirrex and Klockner.

Bill Carroll indicated that he would like to have certain questions resolved of a technical nature, i.e., will the technology work on flakes that are contaminated with for example, an early residue. If these questions are answered to his satisfaction, then he would coordinate with the other companies to get their contributions to the \$50,000 level. It is his proposal to them request an additional \$50,000 from the Vinyl Institute itself by redeploying monies that would not be spent on the ecobalance studies.

Action:

Bill Carroll has the continuing assignment to determine whether the technology developed at DevTech will work on non-clean flake, to solicit funding from interested VI member companies and assuming both of the above are complete, to propose to the Executive Board that additional funding be given to the DevTech process development.

F. Medical/Health Effects

1. Compendium on Fire Toxicity of PVC

GOAL:

To compile all relevant papers on fire toxicity and health effects for use in educating various publics.

Action:

Bob Hinderer and Marcelo Hirschler have the assignment to work with Hal Kaplan, our toxicology consultant to identify the critical papers to be included in such a compendium and to determine the timing and organization for completion of same.

2. American Liver Foundation Pamphlet

Bob Hinderer indicated that he is awaiting a response from Dr. Tamburro on this and will recontact him to see that this item is completed.

3. Kaplan Consultation

The publication of the rodent/primate studies is moving ahead and 3 papers are close to finalization. The target is to have all 3 papers submitted to scientific peer review journals by March 31, 1991.

Action:

The assignment continues with Bob Hinderer to see that these 3 papers based on the SWRI studies are submitted to scientific journals by March 31, 1991.

Dr. Kaplan will also present a paper at the BCC Conference in May 1991. This paper will be written by Bob Hinderer and Hal Kaplan.

It will not be possible to have a paper in time for the 1991 Hilado Conference, and it was decided to postpone any paper by Dr. Kaplan until next year.

Action:

Bob Hinderer is to review with Hal Kaplan the items which we would expect to complete under his consulting arrangement with us, even though they may not be completed during this fiscal year.

4. Angiosarcoma Registry

Roy Gottesman noted that the transfer of the Registry from Dr. Brian Bennett at ICI to Dr. Jack Drumwright of Vista has taken place. He indicated that, based on some conversation with Willem Prinselaar, there may be some feeling on the part of the Europeans that they should have retained the Registry. Roy indicated that he intends to pursue this with Mr. Prinselaar.

III. NEW BUSINESS

A. Solvent Cement Issue - California

There was some brief discussion on the problems relating to solvent cements which have not yet been approved under NSF Standard 61. Further, the South Coast Air Quality Management District in California has set certain limits on solvent emissions from cements. Don Goodman indicated that he is not certain that the correct sponsors are pursuing this problem. He will investigate this on a planned visit in California.

Action:

Don Goodman is to provide a status report at the next meeting of the Technical Committee and recommend a course of action if same is needed.

B. Military Standards and Specifications for Wire and Cable

At the last Electrical Materials Council meeting, it was indicated that military contacts have raised the possibility of rewriting military specifications so that new PVC products could be included.

Action:

Bud Hall will contact Charles Carmen at BFGoodrich to determine if the Institute can accomplish anything worthwhile. Bud Hall will provide a recommendation at the next Technical Committee meeting.

C. National Research Council of Canada's World Building Congress

An invitation has been received from the National Research Council of Canada for a paper at CIB '92 - The World Building Congress to be held on Montreal on May 18-22, 1992.

Action:

Marcelo Hirschler and Bud Hall have the assignment to determine if we want to present a paper at this meeting.

D. Other Items1. PVC Fencing

It was noted that ASTM F 14.15 is being established relating to alternative fencing systems, which could include PVC fencing.

It was agreed that individual companies active in this area will decide on their involvement.

2. ANSI Request To PPI For Experts on Drinking Water Additives

After discussion, it was agreed that Roy Gottesman will advise Stan Mruk of PPI that the Vinyl Institute has no technical experts that could qualify to serve on this ANSI committee.

E. Anderson Laboratories

Roy Gottesman reported on information that he had received from Mark Goldman at Anderson Laboratories dealing with sensory irritation and pulmonary effect measurements. These tests are based on a modification of an ASTM test and Roy indicated that he had some serious concerns as to the methodology. Not only are tests run at extremely high temperatures, outside the normal use in the built environment, but the significance of these tests is questionable.

Action:

1. Roy Gottesman will write to Anderson Laboratories raising our concerns regarding the validity and appropriateness of the test procedures.
2. Roy Gottesman will alert Susan Young at CCFA and Wally Anderson at RFCI about the Anderson Laboratories programs, so that they can alert their members to this potentially detrimental test protocol.

Because the meeting started with the Fire Sciences Subcommittee, the minutes of the last meeting had not been approved. Prior to conclusion of the meeting, the minutes of the July 26, 1990 meeting of the Technical Committee were unanimously approved.

Prior to the conclusion of the meeting, Chairman Bush noted that this would be John Krokosky's final meeting, as he is being reassigned in the Dow organization. He and the entire group thanked John for his many contributions to the Technical Committee and asked that the minutes reflect an acknowledgement of his contributions.

The meeting was adjourned at 4:00 p.m. The next meeting was tentatively scheduled for January 29, 1991 at a Newark, New Jersey airport location. Members of the Technical Committee will be advised of the exact date and location.

Respectfully submitted,

Roy T. Gottesman