TECHNICAL COMMITTEE MEETING

Newark Airport Marriott Hotel
Newark International Airport
Newark, New Jersey

Thursday
December 7, 1989
9:30 a.m.

Attendees:

Frank Borrelli, Georgia Gulf Corporation
Larry Brecker, Witco - Argus Division
Charles Bush, BFGoodrich Company
William Carroll, Occidental Chemical
Frederic Clarke, Benjamin/Clarke Associates (in part)
Robert Elcik, Occidental Chemical
Leon Fishbein, Borden Chemicals & Plastics
Donald Goodman, Occidental Chemical
Roy Gottesman, Vinyl Institute
H.P. "Bud" Hall, Vista Chemical Company
Robert Hinderer, BFGoodrich Company
Marcelo Hirschler, BFGoodrich Company
Gabe Lefebvre, BFGoodrich Company
Richard Magee, NJ Institute of Technology
Deborah Neale, BFGoodrich Company (in part)
H. Patrick Toner, Society of the Plastics Industry

I. SELF-INTRODUCTIONS AND MINUTE APPROVALS

Following self-introductions, the location of fire exits was indicated. Dr. Bush recommended that a change be made in the minutes of the September 19, 1989 meeting to reflect that the recommendation to the Board for grants to NRT and Rutgers be shown as having been made by Dr. Carroll. Mr. Lefebvre motioned that the minutes of the September 19th Technical Committee meeting be approved with this correction, seconded by Mr. Goodman and unanimously approved.

II. PROJECT REVIEWS

A. Fire and Combustion Toxicity

1. NIBS Program - Toxic Hazard Assessment

Dr. Frederic Clarke of Benjamin/Clarke Associates presented a review of a technical position paper developed by him and Dr. Hirschler in which the NIBS

Toxic Hazard Assessment test was subjected to a detailed analysis. The complete report and covering letter are included in these minutes as Appendix A.

In summary, Dr. Clarke indicated that there were 3 major shortcomings in the NIBS test which attempted to duplicate post-flashover conditions:

1 - The test is run at an oxygen level that is too high to reflect simulated actual fire conditions.

2 - The CO/CO2 ratio at approximately 0.05 is too low to simulate flashover conditions. The hazard of CO is understated and the effect of products that produce gases such as HCl, HF and HCN is overstated. The effect is to have intense burning conditions, causing the more complete combustion of CO than normally occurs in fires.

3 - The IT50 value is not a good predictor of total toxic hazard. Since CO generation is understated, if one corrects this by a factor of 3, the IT50 value range shrinks to a range of 1.0 to 4.8 as compared with the originally-produced values of 1.5 to greater than 15 minutes. As a result, the test cannot be a good predictor of toxic hazard.

Recognizing the political problems involved inasmuch as NIBS has actively promoted the potential of this test, the following actions were agreed upon:

1 - The report in Appendix A will be released by Pat Toner to the SPI Coordinating Committee on Fire Safety (CCFS). Mr. Toner will delete those sections on pages 10 and 11 of the Clarke/Hirschler report which represent recommendations for possible revision of the NIBS test.

2 - Dr. Hirschler will meet with the NIBS working group, at their request, on December 11th to discuss the issues raised in the report. He will indicate his views on the test without further recommendations on how the apparatus can be used, and will not present either a Vinyl Institute or Goodrich recommendation to the working group.

3 - A subcommittee consisting of Fred Clarke, Marcelo Hirschler, Dick Magee, Chuck Bush and Roy Gottesman will review the Clarke/Hirschler report to establish a Vinyl Institute position on the NIBS test. This could be either abandoning any additional work or recommending further work to modify the test. This committee will meet prior to the scheduled CCFS Meeting in February, so that the Vinyl Institute position can be presented at that time.

2. Smoke Corrosivity - University of Edinburgh Study

Dr. Hirschler reviewed the data received on the study being carried out by Dr. Dougal Drysdale and associates at the Unit of Fire Safety Engineering, at the University of Edinburgh in Scotland. Because of the formidable agenda, Dr. Hirschler's presentation was hurried, and a complete copy of the slides he presented can be found in Appendix B of these minutes.

Dr. Hirschler indicated that exposure conditions evaluated included free burning, an enclosed sample with open air access and an enclosed sample with restricted air access. Corrosivity effects were determined on copper mirrors.

The principal conclusion of this study was that the corrosivity of the smoke increases with a decrease in oxygen levels. Corrosion continues long after exposure. While the PVC samples produced greater corrosivity than other materials, the differences were not dramatically different. An increase in temperature caused large increases in corrosivity, with nylon showing even greater corrosion than PVC.

Assignment:

Dr. Hirschler will receive a report now that the work is completed from the University of Edinburgh. At that time, we will determine whether and how to publish this information. Dr. Hirschler is to formulate a recommendation for consideration at the next Technical Committee Meeting.

3. Publications from SwRI on Medical/Health Effects Program

Dr. Hinderer indicated that the first of three publications has been received in draft form and is

undergoing review by the Medical Subcommittee. He anticipates the availability of all three papers by the end of January, at which point they will be sent out for legal review.

Assignment:

Dr. Hinderer has the continuing assignment to see that these publications are completed and undergo legal review prior to release for publication.

4. NIST Center For Fire Research Conference

Due to limited time, Dr. Hirschler was not able to present his report on the recently-held fire research conference at the National Institute for Science and Technology (formerly the National Bureau of Standards). A copy of his report to Roy Gottesman and Chuck Bush dated December 5th is included as Appendix C of these minutes.

B. **Pipe Issues**

1. Update on California Environmental Impact Report

Roy Gottesman provided an update of the California EIR process. He indicated that the hearings held in California in late September and early October produced expected attacks by the Plumbers' Union. At the Los Angeles hearing, ABS pipe was attacked for failures in service, apparently due to the defective material made from regrind, recycled ABS recovered from telephone bodies, an unauthorized source. The Sacramento hearings resulted in a litany of complaints on pipe failures from Polybutylene (PB) pipe, apparently due to failures of acetal fittings. He noted that no attacks had been made against PVC piping.

Roy Gottesman provided a list of the various objections raised in the comments filed in behalf of the Plumbers' Union. Perhaps the most ludicrous one is that the Draft EIR process is biased, since the plastics industry provided funding to pay for the SRI study. This had been done with complete knowledge and agreement of the union, since funds were not otherwise available to carry-out this study.

Finally, he noted that the final draft of the EIR is anticipated in March 1990 at which point, the Housing and Community Development Department would

be able to certify the EIR and propose regulations enabling the expanded use of plastic pipe.

Roy Gottesman also noted recent information relating to the desire of San Leandro, California to approve plastic pipe, and the inquiry relating to the performance of plastic pipe in earthquakes. Information developed during an earthquake in Venezuela and during the recent San Francisco earthquake indicates that plastic pipe, because of its ability to flex, performs very well under earthquake conditions as compared with metal pipe.

2. Report On Pipe Resource Organization Meeting - October 30, 1989

In the absence of Al Reventas, Roy Gottesman indicated that the group is embarked on an advertising program involving testimonials from specialists in the area of large diameter pipe. This program will appear in the AWWA Journal starting in January.

3. Code Consultants Fall Meeting - October 24, 1989

Roy Gottesman reported that this meeting was held with our consultants Fred Clarke of Benjamin/Clarke Associates and Joe Zicherman of IFT Technical Services in order to coordinate code activities within the VI and SPI. It is planned to have such meetings on a semi-annual basis. Copies of the minutes of this meeting are available upon request.

III. COUNCIL FOR SOLID WASTE SOLUTION PROGRAMS

Robert Elcik of Occidental Chemical, who is on the Council For Solid Waste Solutions Operating Committee, provided the following synopsis of Council programs.

A. Heavy Metals

Bob Elcik indicated that the Coalition of Northeastern Governors (CONEG) has developed draft model legislation that contains a ban on cadmium, lead, chromium and mercury in all packaging materials. The fear expressed was that subsequent proposals could expand the list of materials to be banned, which could include chlorine and that individual states could even enact more restrictive legislation. A report issued by the Council For Solid Waste Solutions on November 30th on the CONEG toxic reduction model legislation is included as Appendix D of these minutes. It was recommended that VI member companies work with their respective governor's offices

in the northeast to request that there be economic impact data developed establishing the impact of these proposed bans.

To this point, there has been no action on the Vinyl Institute cadmium statement. The Council is planning a broader statement but is moving very slowly. Bob Elcik indicated that Occidental Chemical is leading the Council's effort to draft legislation limiting the banned materials to the heavy metals mentioned above, which is consistent with EPA/TSCA requirements. He noted that CMA's RCRA Task Force had met on December 6th and had decided to study the CONEG issue further. Inasmuch as legislation can be expected to be introduced in the northeast states by the end of January, the CMA decision to conduct a study is unfortunate because time is running out. Both Occidental Chemical and Dow are represented on the CMA RCRA Task Force.

B. **Congressional Action**

Bob Elcik reported that Representative Tom Lukin (D-OH) introduced three bills into the House of Representatives dealing with solid waste. One outlines a federal strategy for addressing municipal solid waste. The second bill imposes a tax on $7.50 per ton on virgin materials used in the manufacture of certain products. No action is expected on these until the end of 1990.

He further noted that Senator Gore (D-TN) introduced two bills which are designed to promote the use of recycled materials derived from municipal solid waste, and that companion legislation has been introduced into the House. There could be concern on these latter bills, which are being followed by the Council.

C. **Council For Solid Waste Solutions Programs**

Bob Elcik reported that the Council has a budget of $13.2 million for 1990, which $6.5 million being slated for a national ad and point-of-purchase campaign targeting opinion leaders.

In the technical area, the Franklin Associate study dealing with the volume of plastics in landfills has been issued, and indicates the level to be approximately 18%. This essentially confirms the results of Professor Rathje, who has carried out "digs" in landfills and feels that the Franklin figure may even be slightly on the high side. In the area of non-municipal solid waste, the largest poundage appears to be PVC from demolition and construction site disposal. It was pointed out that

these figures are arrived at by a numbers balance, and that there have not been any actual measurements. Bob Elcik voiced the opinion that this potential problem must be dealt with, as landfills will increasingly reject this source of PVC scrap. It was noted that such materials cannot be recycled into pressure pipe subject to code regulations.

Assignment:

Bob Elcik has the assignment to distribute the draft Franklin Associates report when it can be released.

D. **University of Massachusetts Video**

There has been no progress on this video, although it is believed that Dick Magee could be involved in the section dealing with incineration. Dick noted that a video he produced at NJIT had received an award.

E. **CORRE/Conference of Mayors Incineration Conference**

The first draft of this report has issued, but had some problems in the section dealing with PVC and dioxin generation. While most participants felt that dioxin generation from PVC was a non-issue, an EPA representative felt that the data was not yet clear.

Assignment:

Bob Elcik is to see that Technical Committee members receive the Incineration Conference Report when it is released.

IV. **RECYCLING PROJECTS**

A. **Vermont Republic Industries**

Al Voegele, President of Vermont Republic Industries, gave a slide presentation on his company. He indicated the initial effort involved recycling of IBM chip shipping tubes. The program has now expanded to include PVC trim from Eveready battery packages and siding from modular homes. Generally, reground PVC is sold into the pipe manufacturing market. Al Voegele indicated his view that small entrepreneurs will be the driving force in this business and need help with regard to applications.

Don Goodman suggested the following possibilities for the continuing program with VRI:

1. Developing a model to refine the economics of recycling costs in cooperation with the University of Vermont.

2. Sponsoring Mr. Voegele's leadership position in the Vermont recycling industry.

3. Promoting the Vermont Republic Industries operation as a model for disadvantaged individuals at other locations. It was noted that Mr. Voegele has been invited by groups in New York State to help in the development of such programs.

4. Assistance in developing a recycling program for post-consumer waste in Vermont.

Because of the limited time remaining in this year's contract, which expires in August of 1990, Roy Gottesman offered the suggestion that the focus for the current contract be on technology transfer to New York State and elsewhere, so that the VRI model can be established there. He further suggested that a proposal be presented for consideration by the Vinyl Institute for a post-consumer recycling project that would be a cooperative venture, taking waste plastics through an entire process to cleaned-up flake for sale. The group agreed with these recommendations.

Assignments:

1. Don Goodman will continue his liaison with VRI with regard to the transfer of technology and promoting VRI as a model in New York State and other locations. Periodic reports on the progress of this program will be made.

2. A team consisting of Don Goodman, Bill Carroll and Lee Fishbein will work with Al Voegele to define and scope out a program for a plastics recovery operation in Vermont using post-consumer plastics. This will be considered for inclusion in next year's budget.

B. **Sortation Projects**

1. National Recovery Technologies (NRT)

Roy Gottesman reported that the contract with NRT for the sortation project has been signed, the first payment made and subsequent payments are to be based on the schedule of performance outlined in the contract.

Bill Carroll reported on a visit made by the project team to NRT on November 30th. Our team includes Bill, Frank Borrelli and Lee Fishbein. He showed a short video tape of the XL Company Disposal MRF at Crestwood, Illinois, which uses the NRT eddy current separation system for aluminum removal. The task force is optimistic that the project can be successfully concluded within one year, using an electro-magnetic energy source for sortation. NRT has a head start on this project, since it essentially piggybacks on the EPA project to remove chlorinated plastics prior to incineration.

A press release announcing the Vinyl Institute/NRT program is scheduled for release on December 11th.

Assignment:

The NRT Task Force will continue to monitor the NRT project with regard to the technology involved and will report periodically to the Technical Committee.

C. **Center For Plastics Recycling Research (CPRR)/Plastics Recycling Foundation (PRF)**

Bill Carroll reported that Rutgers has been advised of our funding decision, and a $50,000 commitment has been made to Rutgers. Although a contract remains to be signed, he indicated that the ASOMA x-ray fluorescence instrument has already been procured, and on December 5th, he and Roy Gottesman had seen the operation at Rutgers, which is in the start-up phase. The NRT and Rutgers program are considered complementary and both may have utility at various points in a sortation process.

Frank Borrelli will serve as the task force chairman for coordinating the Rutgers project and Bill Carroll will also continue to be involved in it. Dr. Bush is to advise the other participants in this group, including a possible Goodrich representative.

Assignment:

Roy Gottesman will arrange for a meeting at Rutgers with Henry Frankel, the principal investigator, early in January, so that our project team can continue to follow the Rutgers progress.

D. **Rhode Island/New England CRInc.**

Lee Fishbein reviewed the meeting which he and Roy Gottesman had held on September 28th with Victor Bell of the Rhode Island Department of Environmental Management. They were advised of the Vinyl Institute's commitment to the development of sortation technology, and we stressed our interest in seeing that vinyl was not excluded in the Rhode Island plans. It was noted that Rhode Island is requesting a "long term" guarantee buyback price on recycle from a mixed plastic stream, after HDPE and PET have been mined out. It was pointed out that neither the quantity nor composition of such a mixed plastic stream are known. Lee Fishbein noted that a second MRF is expected to come on stream in April 1991.

Assignment:

Lee Fishbein has the continuing assignment to keep Victor Bell and Rhode Island DEM informed of the progress on the PVC sortation projects, although Rhode Island does not plan to isolate PVC from its waste stream in the near term.

E. **New England CRInc.**

Lee Fishbein reported that he had met with Steven Katz at New England CRInc. on November 29, 1989 to advise him of the PVC sortation projects, OxyChem's PVC bottle buyback program and to ask that they do not exclude vinyl in their collection projects. In Lee's judgment, the timing was most opportune, as New England CRInc. has been solicited by a number of municipalities to prepare proposals for MRF's at various locations.

Assignments:

1. Bill Carroll is to contact New England CRInc. with details of the OxyChem buyback program.

2. Lee Fishbein is to maintain the liaison with New England CRInc. to continue to advise them on the progress of our sortation programs.

A current information sheet on New England CRInc.'s operation is contained in Appendix E.

F. **CPRR/PRF Commingled Plastics Program**

Bill Carroll provided a review on the project at Rutgers which involves the development of the ET1 machine. The project continues to plod along, but the properties are

poor for structural applications and the project suffers economically due to the low operating throughput.

The work that is next scheduled will involve evaluations on PVC in the commingled streams. This will be useful in establishing that vinyl can be handled in a commingled plastics without technical difficulties. Beyond this, Bill Carroll has recommended terminating the project after these experiments are done, inasmuch as commercial operators are starting to utilize this technology.

G. **R2B2**

Frank Borrelli reported that R2B2 has moved into their new facility in the South Bronx. However, it is his understanding that PVC flaked regrind inventory is not moving due to price deterioration. The course of any future program with R2B2 is uncertain.

Assignment:

Frank Borrelli is to consider a potential program at R2B2 for next year and report back with recommendations at the next Vinyl Institute Technical Committee Meeting.

H. **ASTM**

Frank Borrelli reported on ASTM activities in committees D20 and F17. He noted that the group is considering potential markets for recycled products where ASTM specifications may hinder market development. They will not explore potable water pipe, or other applications where code specifications could be compromised. Roy Gottesman reported that there is a request by Henry Frankel, who heads this ASTM activity, for volunteers for ASTM task groups of D20.95.01 in the area of plastic pipe and PVC. It was agreed that we should get back to Henry Frankel regarding volunteers for these programs, to which Georgia Gulf and Oxy are already assigning one individual.

Assignment:

Technical Committee members are to advise Frank Borrelli of the individuals which their companies can provide to serve on these ASTM task groups and Frank will coordinate this activity and advise Henry Frankel of the individuals to be involved.

There was brief discussion of the coding issue within ASTM and the conflicts between the ASTM and SPI systems. There appears to be no resolution to this conflict.

V. INCINERATION

Due to limited time, all agenda items were not discussed on this subject. However, the following were covered:

A. Lead Levels in Imported Shoes

Larry Brecker reported that 8 samples of imported shoes had been received and lead analyses are expected within two weeks.

Assignment:

The assignment continues with Larry Brecker to report on the analysis of these shoes. If lead levels are high, the VI will have to establish a position with regard to such importation. When the results on these analyses are complete, the information will be provided to Franklin Associates for updating their report.

Assignment:

Gabe Lefebvre has the continuing assignment to see that the Franklin Associates correct the report with regard to lead issues. Subsequent to that, a position paper for lead stabilizers in non-critical applications will have to be developed.

VI. TECHNICAL INFORMATION PAPERS

A. VCM Generation in Landfills

Roy Gottesman discussed the difficulty in getting release of this paper, which has been encountered at Dow. He is working with Bill Shoun of Dow to see that this paper is released.

Assignment:

Roy Gottesman will attempt to have Dow "sign off" on the paper written by John Krokosky, so that it can be published.

B. Indoor Pollution From PVC

The paper including information on plasticizers has been completed by Frank Borrelli working with the Edward Howard agency and is now being circulated for approval by the involved committee chairmen.

VII. **NEW SUBJECTS**

A. **R & D Program Proposal From Cleveland State University**

This program proposal which had been sent out as Attachment A with the agenda for this meeting was discussed by Chuck Bush. It was agreed that the Vinyl Institute would not fund this project.

B. **Carlon Request For Specimen Preparation**

The request for specimens, which was Attachment B to the agenda for this meeting was discussed. Because of the proprietary nature of the specimens, the fact that it is not of industry-wide utility, and because of the requirements for manpower, Roy Gottesman will advise Charles Forsberg of Carlon that the Vinyl Institute member companies are unable to help with this request.

C. **ASTM Symposium on Fire Hazard and Fire Risk Assessment**

This item, contained as Attachment C for the agenda of this meeting, relates to an invitation for papers at a Symposium on Fire Hazard and Fire Risk Assessment to be held on December 3, 1990 in San Antonio, Texas.

It was noted that abstracts for this paper must be submitted by January 15, 1990 to Dr. Hirschler, who is the symposium chairman.

D. **London Conference on Flame Retardants**

Roy Gottesman indicated that the British Plastics Federation, in collaboration with APME and the Fire Retardant Chemicals Association is sponsoring a conference in London on January 17-18, 1990 on the subject of flame retardants. Dr. Hirschler will update the Technical Committee on this conference at its next meeting.

VIII. **BUDGET CONSIDERATIONS**

Roy Gottesman reported that the original budget of $202,000 for programs in solid waste, fire and combustion and miscellaneous activities had been reduced to $160,000 in a budget revision on October 12, 1989. Expenditures through November 30, 1989 corrected for a refund of $16,000 received from PRARI amounted to $65,753.72. This allows for some $94,000 to be available for expenditures to the end of the current fiscal year.

Considering the $25,000 grant to Vermont Republic Industries, the commitment of $34,571 for the completion of the papers dealing with animal toxicity at SwRI, the $6,000 needed to pay for the University of Edinburgh study, he noted that only $28,000 had not been committed as yet. Roy Gottesman inquired of other needs that might be anticipated and Marcelo Hirschler noted that $20,000 should be allocated for work dealing with the HCl decay project. On this basis, there is approximately $8,000 that could still be available for other projects.

Roy Gottesman proposed that we ask Dr. Robert Bennett, Associate Dean of the College of Engineering and Director of the Office of Applied Research at the University of Toledo to determine viable end uses for PVC. We would advise him of the physical properties that could be expected for PVC recovered from the waste stream, and he would be asked to match these with potential end uses where there are no code restrictions. Dr. Bennett has previously carried out similar activities on HDPE and PET for the Plastics Recycling Foundation.

Assignment:

Roy Gottesman will request a proposal for a project from Dr. Bennett encompassing the above considerations.

IX. **NEXT MEETING DATE**

The Technical Committee's next meeting will be on Thursday, February 1, 1990 at the Hilton Gateway Hotel at Newark Airport.

An early item on the next agenda will be the development of the Technical Committee's FY 1990-1991 budget.

X. **ADJOURNMENT**

The meeting was adjourned at 4:00 p.m.

Respectfully submitted,

Roy T. Gottesman