June 2, 1986

TO: See Distribution

FROM: M. M. O'Mara

2nd Quarter 1986 Vinyl Institute Technical Committee Update

On 5/27/86, the Vinyl Institute's Technical Committee met to review its technical projects. This meeting was in conjunction with the VI's annual meeting on 5/28/86. All committee members attended and provided reports on their various projects. A brief summary of these projects and status thereof is provided:

1. 1986 Budget

The 1986-7 budget for the Technical Committee has been set at $360 M (vs $476 M actual for 1985-6). This budget reflects a strategic shift from purely technical programs which were needed in the past to defend PVC in a variety of markets to new market development programs which will be aimed at market expansion. The reduction also reflects the need to reduce the overall cost of VI programs.

2. Technical Committee Project Updates

i) Pipe Permeation/Leaching - Mr. Goodman

Goodman described the excellent technical results now in hand on permeation of plastic pipe experiments carried out at McKesson. There is no increase of halohydrocarbons in potable water involving CPVC; organics from solvent are less than 1 ppm and these solvents have not been identified as hazardous or unusually toxic. We will be working with the VI's Communication Committee to release this information; initial exposure in Chicago is already planned.

The pipe (plastic and metal) permeation studies will show that the overall risk from plastic pipe is less than that from metal pipe. That story needs to be told before a number of audiences. None of the horrors envisioned by the media and plumbers in the early 1980's have come to pass; indeed quite the opposite.

ii) Fire Research - Dr. Carroll

An experimental protocol aimed at more clearly defining the absorptive properties of hydrogen chloride during combustion has been developed in a joint venture between the VI and the National Bureau of Standards. Aimed at developing data that can be included in the NBS fire modeling (FAST model) effort,

this is the first time that the 'decay" of HCl under actual fire conditions is recognized as a valid technical issue and is being factored into an overall hazard analysis. The VI-NBS experiments will involve the transport and deposition of HCl across (and on) painted and unpainted surfaces. It is expected that these experiments will be carried out in early June.

iii) Medical Research - Dr. Hinderer

The research emanating from this program continues to be revealing and somewhat surprising. Baboons exposed to 500/5000 ppm of HCl and monitored for 1 year after exposure show no long range health affects as a result of these exposures. This is totally contrary to the rodent experiment work of Alarie and suggests that baboons are much more tolerant of HCl than are rodents. It can now be shown that Alarie's assumptions regarding HCl and man are simply wrong.

The 6 month post exposure studies after the 10,000 ppm HCl experiments (baboons, 15 minute exposures) will be available at the end of June and will be reported in October.

Our results were presented at the March meeting of the Society of Toxicology and drew a significant amount of interest (after all we are currently the only ones in the world doing baboon studies). In addition, Alarie's current incapacitation model (he never gives up!) drew a high level of criticism from the behavioral scientific community.

Our next experiments involving combustion (vs. pure) HCl are now planned for mid 1986.

iv) Solid Waste Management - Dr. Pfeiffer

A testing protocol for the Pittsfield incineration study has now been agreed upon by the VI and New York State ERDA Department. Testing (Phase II) will be carried out between 6/2/86 and 6/27/86; a report will be due in October 1986. This program continues to be the highest priority program within the VI Technical Committee. Phase II experiments will involve municipal solid waste (MSW) incineration at three temperatures, with low oxygen, with added PVC, with added water, with no PVC, with PVC plus water added. The purpose of all these experiments is to determine under what incineration conditions chlorodioxin forms and how best to mitigate the event.

In the next few months, the Solid Waste Management Committee under a new leader (Lee Fishbein, Borden) will be assessing the role of this committee in the recycling issue, especially with respect to the research required to handle this issue.

Michael M. O'Mara

jb
2.66-86

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F. E. Beaird
W. F. Carroll
L. Fishbein
H. R. Flammer
D. Goodman
M. A. Kabayama
C. Niemi
J. B. Pfeiffer

RTG

BFGoodrich

File: Technical Comm. mtg 12/3/85

The BFGoodrich Company
Chemical Group
6100 Oak Tree Boulevard
Cleveland, Ohio 44131
216-447-6475

Dr. Michael M. O'Mara
Vice President
Research and Development

December 10, 1985
MMO/210/85

TO: Distribution

FROM: Chairman, V.I. Technical Committee

SUBJECT: V.I. Technical Committee - 4th Quarter, 1985 Report

The full Technical Committee met on 12/3/85 for an all day review of V.I. technical programs. This report contains a brief summary of those programs. The next Technical Committee will be a joint meeting with the Codes/Standards Committee in March 1986 in order to map out a new direction for our technical programs in 1986-7 and beyond. Many of the "catch-up" technical programs will be coming to an end, and we see no new critical projects that need initiating in the near future. Thus, it is incumbent on the Technical Committee to develop less defensive, more market focused programs that will allow further penetration of PVC in the marketplace. It is our intention to develop those new potential programs in March.

Technical Program Update

I - Solid Waste Management: John Pfeiffer

John provided an overview of the Pittsfield incinerator experiment that was just completed. Data is now just being analyzed and a report will be available in late December. John identified a number of problems which need to be thoroughly analyzed before deciding to go ahead with Phase II. In the past few days I had a chance to discuss the program with our consultant (Magee) and he was quite optimistic that these data plus new data from other studies will give us new insights into the incineration of PVC.

Both O'Mara and Pfeiffer will attend the NYSERDA meeting to review the technical data from Phase I. This meeting will take place in early January.

The Chairman wishes to acknowledge Dr. Pfeiffer's careful and thoughtful monitoring of this critical V.I. project.

II - Permeation: Don Goodman

Don gave a very upbeat review of this program. He noted that the issue has progressed from early day pipe-in-fishtank experiments to today's modeling-based-on-first-principles. The Dutch Waterworks Association (KIWA) has issued its report and the findings therein fully support our Battelle work. As a matter of fact, what started out as a technical disaster progressed to an excellent, in-depth technical study. As an independent study, the KIWA report will go a long way toward helping to reaffirm PVC's good reputation as a safe material for water transport. Even more encouraging is the data coming out of the McKesson study. Metal pipe extraction studies are showing Pb^{+2}, Cu^{+2} levels above the current EPA guidelines (50 ppb/1000 ppb respectively) whereas "worse case PVC" or in other words CPVC, is performing extremely well.

The Permeation Subcommittee was instructed to review their program with the Toxicity Subcommittee in order to identify the proper mechanism for establishing a metal vs. plastic risk assessment.

III - Fire Research: Bill Carroll

Experiments at small scale continued in order to better understand the HCl decay process. Their most recent experiments show that there is a profound affect of surface type (Masonite, ceiling tile, cement block, dry wall, PMMA) on the rate of HCl decay. [As a side note, after this meeting I attended a 2-day meeting at NBS (I am on the Evaluation Panel for Fire Research) in which Dr. Gann of NBS was highly complimentary of Dr. Carroll's committee's efforts to establish kinetic equations describing HCl transport and decay. He further indicated that every new feature of decay that the V.I. discovered would be put into the NBS hazard model. This is another example of the payback for aggressively establishing sound scientific work.]

IV - Medical Subcommittee: Bob Hinderer

Our testing (pulmonary affect of HCl on baboons) schedule for HCl is as follows:

	Evaluation Time		
Exposure Level (ppm)	3 Mo.	6 Mo.	1 Yr.
0	C	C	C
500	C	C	May '86
5000	C	C	C
10,000	Feb. '86	May '86	Aug. '86

C =Completed

IV - Medical (continued)

It is important to first note that no animal deaths occurred as a result of any of these experiments. There is evidence of pulmonary change as a result of exposure to 5000 ppm HCl, which isn't terribly surprising. However, a biopsy of the 5000 ppm exposed lung showed no evidence of fibrosis or other damage which was surpising. This may mean that the onset of an affect occurs at 5000 ppm exposure (15 minutes) with permanent and irreversible change taking place only at the extremely high (and unrealistic from an actual fire condition viewpoint) end of the concentration range. Our Medical Subcommittee will be presenting these results at a Society of Toxicology Meeting this Spring.

With advice on model development from the Fire Research Subcommittee, Bob announced that they now have developed a conceptual approach to burning PVC and carrying out baboon exposures to HCl. Their plan in this regard is to develop the complete protocol by the 2Q-86, begin experiments by 3Q-86 and finish all evaluations by 3Q-87. The full Technical Committee will review the protocol before the Medical Subcommittee begins their work. Once completed this will end the 3-year program we developed and launched in 1984-5.

V - Information Database Subcommittee: Fishbein

Lee supplied the committee with the 4th Q. update of key literature information. The full Committee continues to have problems in implementing this program. One subcommittee again failed to produce any literature citings while another provided a group of citings that had not been through any prioritization and were, therefore, of little value. The Chairman will continue to work with Dr. Fishbein to get this program implemented.

On a more positive note, a very nice literature search on the recycling of PVC was completed. This literature search will be the basis upon which the Technical Committee will form a technical strategy on recycling (see above) early in 1986.

M. M. O'Mara

MMO/mat
Distribution:
V.I. Technical Subcommittee
R.T.Gottesman
B.A.DiLiddo
G.R.Snider
H.J.Fast
D.Hunter

The Vinyl Institute

July 17, 1985

HIGHLIGHTS OF CURRENT VINYL INSTITUTE ACTIVITIES

Prepared for Technical Committee Meeting
Sheraton Hopkins Hotel
Cleveland, OH

Solid Waste Management

- The Vinyl Institute has agreed to contribute technical and financial resources to a combustion/emissions research project to be coordinated by the New York State Energy Research and Development Authority (NYSERDA) at a state-of-the-art incinerator in Pittsfield, MA.

- A pamphlet on "Facts about Incineration" as a viable approach to solid waste mangement of plastics is being printed.

- An SPI "Ad Hoc Task Force" is being established by the new SPI President to deal with establishing an overall position on this issue. Steve Schaefer, VI Vice Chairman, and Roy Gottesman are members of that task force.

- Dr. Richard Magee of Stevens Institute of Technology, Hoboken, NJ has been retained as a consultant to the VI Technical Subcommittee on Solid Waste Management on the incineration project.

- The Association of Plastic Manufacturers in Europe have agreed to join in Phase II of the Pittsfield-NYSERDA incinerator project if VI particpates in Phase II and will provide $ 40,000 U.S. in funding.

Combustion/Toxicity

- The Vinyl Institute cosponsored a "National Conference on Fire Fatalities --Role of the Forensic Scientist" on May 23-24 with the SPI Coordinating Committee on Fire Safety (CCFS) and the Polyurethane Division. The Conference was conducted by St. John's University and, while attendance was less than hoped for, the possibility of having the proceedings published is being investigated.

- A proposal from the National Bureau of Standards for a "guest worker program"aimed at development of improved measurement techniques for hydrogen chloride produced in fires will be considered at this Technical Committee meeting.

Combustion/Toxicity (continued)

• The ISFSI "Vinyl in Today's Fire Environment" slide/tape program is being updated and modified so that it is compatible with the recently developed SPI and Polyurethane Division educational programs.

• As a part of the Institute's continuing dialogue with the fire service community, Roy Gottesman made presentations before the Annual Meeting of the Illinois Fire Chiefs' Association on May 22 in Peoria and the Illinois Fire Protection Districts Convention on June 28 in Springfield. A combined VI/ISFSI speakers program is to be developed with intial planning/programming and media training to be held early in September.

Communications

• An all-vinyl house initially displayed by BFGoodrich at the National Plastics Exposition (NPE) in Chicago in mid-June is being loaned for use in a trial of exhibiting at home shows as a means of having the VI reach the home builder, architect, engineering, specifier groups. The exhibit, which is being modified to include VI signage, will be displayed at the Southern California Home and Garden Show in Anaheim from Aug. 17-25. The new logo "Vinyl--America's Choice" will debut here.

• A "Hearing-Action Plan" is being developed in cooperation with Marketshare to include centralizing resource information, development of strategy and identification and selection of appropriate spokespersons to appear at such hearings.

Manufacturing Practices

• A special task force of representatives from this committee met with representatives from the Delaware City, Delaware plant of Formosa Plastics Corporation to offer technical assistance to that company in developing a response to the Consent Order which Formosa had entered into with the Delaware Department of Natural Resources and Environmental Control. The Consent Order resulted from some 30 charges of illegal VCM emissions at the Delaware City operation.

• A brief has been prepared for submission in the Natural Resources Defense Council (NRDC) challenge to EPA's withdrawal of the 1977 proposal to amend the vinyl chloride emission standard.

Codes and Regulatory

• The VI coordinated the appearance of witnesses at the Allegheny County, PA Board of Health hearing on June 18 on the appropriateness

of allowing plastic plumbing in the 120 municipalities over which the Board has jurisdiction. This hearing was directly related to an earlier Pittsburgh City Council action, effective June 1,1985, which bans plastic pipe in duct work and electrical conduit in buildings over three stories tall. On July 16, Mistick Builders appeared before the Pittsburgh Board of Standards and Appeals requesting a variance under the Pittsburgh ordinance to use "plastic pipe" in a new building to be constructed that is four stories. VI and PPFA have assisted Mistick's attorney as this could be the basis for a legal challenge to the Pittsburgh ordinance.

Labelling

- Product labels and Material Safety Data Sheets are being reviewed within the Legal Committee to determine if a generic type label could be developed as well as a MSDS that could be submitted to OSHA for approval.

Membership Recruitment

- Georgia Gulf Corporation has decided to join the Vinyl Institute.

- Membership is still under consideration by Formosa Plastics.

Roy T. Gottesman
July 17, 1985

File VI Technical Committee Meeting 3/21/85

BFGoodrich

The BFGoodrich Company
Chemical Group
6100 Oak Tree Boulevard
Cleveland, Ohio 44131
216-447-6475

Dr. Michael M. O'Mara
Vice President
Research and Development

April 3, 1985
MMO/43/85

TO: VI TECHNICAL COMMITTEE

FROM: M. M. O'MARA

1ST QUARTER 1985 UPDATE OF TECHNICAL SUBCOMMITTEE PROJECTS

The full Technical Committee of the VI held its first quarter meeting of 1985 in Philadelphia on 3/21/85. In attendance were: Gottesman, Pfeiffer, Hall, Carroll, Fishbein, Johnson, Goodman, Hugh Farber (Dow), and O'Mara. Ms. Donahue from the Communication Committee was also present.

1) Solid Waste Management

Dr. Pfeiffer informed the group of the New York State agency's (Environmental Research and Development Authority) plan to carry out full scale incineration experiments in late 1985 in order to estimate dioxin/HCl emissions from incinerators. This narrowly focused "research" appears to be aimed at eliminating PVC from packaging while ignoring a broader environmental issue - the emission of a wide variety of pollutants from incinerators and how to minimize/eliminate those emissions. It is felt that if that broader and more important issue is addressed then a broad spectrum of waste including PVC, can be safely handled. In addition the recyclability of all plastic materials (inherent energy content) can be realized while at the same time reducing the mass of solid waste that must be reduced.

It has been learned that the New York group has been joined by five other states (New Jersey, California, Connecticut, Pennsylvania and Florida) and that a funding level of $.5MM has been established. After a good deal of discussion it was decided that various approaches to the NY-ERDA agency would be made in an effort to convince them to look at the broader issue. Funding by the VI and perhaps other SPI groups would be discussed. An action plan to implement this was developed by the group. O'Mara, Pfeiffer and Gottesman are implementing this action plan.

2) Lee Fishbein - Technical Data Base

Using the strategy developed at the last committee meeting of creating centers of technical excellence within each technical subcommittee and then having each subcommittee flow key reports to Fishbein for capture, Mr. Fishbein presented us with his first offering. Over the next three months additional work will be carried out in the Pipe

Permeation and Medical Subcommittee to more thoroughly capture their external reports. As a first try, the Technical Committee did a fine job in accomplishing its goal. By the end of the second quarter, this task will be completed to the stage where the Technical Update document can be distributed throughout the VI. Right gentlemen?

3) Peg Donohue of the Communication Committee distributed a white paper on solid waste that her committee has been developing. This is included as an addendum to this report. The Chairman of the Technical Committee thanks Ms. Donohue for her efforts in coordinating this effort and working with members of the Technical Committee to resolve key technical issues raised during the creation of this white paper. A job well done.

4) Medical Subcommittee

Three-day and three-month post exposure examination of baboons exposed to 5000 ppm HCl/15 minutes have been completed. All three animals survived the exposure, appeared normal after three days and two of three appeared normal after three months. One appeared to have problems with the pulmonary test though no deaths. The six-month examination will reveal whether this is an artifact or not. A 10,000 ppm HCl exposure for 15 minutes resulted in severe pulmonary distress but again no death. Additional experiments at this concentration will not be performed since it appears to be an upper limit in survivability and is far below a concentration experienced in real world fire situations.

Closer to reality, three animals have been exposed to 500 ppm of HCl/15 minutes. Little effect was observed at this concentration thereby verifying previous work by the Federal Aviation Administration.

Post exposure examinations will continue.

5) Pipe Permeation

The Dutch Government supported KIWA study on pipe permeation has been completed and a report has been issued. Their work fully supports the finding at Battelle that PVC pipe is not a problem with respect to ground water pollutant penetration. According to one report the California state government feels "permeation is not an issue any longer". (At least until a group of plumbers hold another press conference.) To make sure this problem

remains a non-problem, Phase III kinetic work at Battelle will be completed on PVC pipe. This will allow the industry to technically handle any "what if" permeation scenario without running very expensive show and tell experiments.

6) Fire Research

Our first technical paper based on studies at SWRI is ready for publication. Recent HCl decay experiments at SWRI have resolved (apparently) the kinetic problems observed some months ago. A second paper based on these most recent experiments is being prepared. Dr. Carroll will review this work at NBS in April to make sure we are fully coordinated with their activities in hazard analysis. Things are moving along according to plan.

Next Meeting

The next meeting of the Technical Committee will be at the annual meeting May 1st.

M. M. O'Mara

MMO/smh
8834v
4/3/85

cc: R. T. Gottesman
B. A. DiLiddo
G. R. Snider
M. N. Johnson

THE DISPOSAL OF SOLID WASTE CONTAINING PVC

When was the last time you purchased meat at a grocery store in a clear plastic wrap? Wasn't it nice to see the product you purchased before you paid for it? Plastic packaging has improved the average consumer's quality of life by providing lightweight convenience, safety and better hygiene for the foods and goods they purchase. Blister packaging allows consumers to see and handle articles before they are purchased, while preventing breakage and soiling. Drugs can be packaged in tamper-resistant, single-dose units. Plastics bottles are lightweight, require less energy to produce than glass and are shatterproof.

What happens to packaging materials when they are no longer needed? Although some are recycled, most will end up as municipal waste where they must be disposed of safely and economically. Municipal waste incineration is one environmentally safe method of waste disposal. It provides the opportunity for energy recovery using the solid wastes as fuel and it reduces the ultimate impact on the environment.

Recently, questions have been raised regarding the effect on the environment from operating incinerators with such varied wastes and especially waste containing polyvinyl chloride plastic (PVC). Based on the best available technical information, PVC in the waste does not adversely affect human health or the environment when burned in a properly designed and operated resource recovery incinerator.

Hydrogen chloride

Specific concerns have been expressed with respect to the formation of hydrogen chloride (HCl) gas from the combustion of polyvinyl chloride plastics. Chlorine is a necessary ingredient in the formation of HCl. However, the total chlorine content in garbage is less than one percent, and PVC contributes less than 1/3 of that one percent[1-3]. Other materials such as textiles, rubber, leather, paper and foodstuffs contribute twice as much chlorine content to the garbage as PVC plastics[4]. Furthermore, a modern incinerator equipped with a scrubber will eliminate 95-99 percent of the hydrogen chloride gas generated from combustion.[3&5] With respect to acid rain formation, all research has shown that acid rain is caused primarily by sulfur dioxide and nitrogen oxides. Research to date has shown that HCl plays an insignificant role in the acid rain problem.

No increase in dioxin emissions

Because of PVC's chlorine content, the question has been asked, "does burning PVC in incinerators contribute to dioxin formation?" To date, under incineration conditions described below, chlorides from PVC have not been shown to form chemical intermediates required for dioxin formation. PVC is one of many sources of chloride in the incinerator. These chlorides may or may not react with organic compounds in the garbage to ultimately form dioxins.[6] When burning refuse is held at very high temperatures (1000°C) in the presence of excess oxygen for at least

one second, the formation of dioxin is minimized[1-2]. Tests performed on a full size modern incinerator where three times the normal amount of PVC was added to the municipal refuse showed no increase in dioxin emissions[7].

Combustion control--a reasonable option

It has been suggested by some regulatory groups and public interest organizations that plastics materials should be separated from municipal wastes and recycled. While this is a viable and preferred alternative for some plastic materials, it isn't for all. Plastics need to be separated by type prior to recycling. PVC is not readily identifiable because it is used in such a wide variety of applications. Recycling programs should be voluntary and used only where feasible. Particularly since--as evidenced above--separating PVC plastic bottles and other PVC materials from the waste stream before incineration would not significantly reduce emissions of dioxin.

The National Bureau of Standards suggests that combustion control is a better alternative. "Removal of sources of chlorine by presorting municipal solid waste streams prior to incineration is not a reasonable option compared to attempting combustion control and/or a post-combustion control option for minimizing PCDD (dioxins) and PCDF emissions from municipal solid waste fired incinerators."[8]

For more information contact:
The Vinyl Institute
A Division of the Society of the Plastics Industry
355 Lexington Avenue
New York, New York 10017

REFERENCES

1. Cleverly, David H., "Chlorinated Dibenzo-P-Dioxins and-Furans in Incineration of Municipal Waste," New York City Department of Sanitation (1983).

2. Shaub, W.M., W. Tsang. "Physical and Chemical Properties of Dioxins in Relation to Their Disposal" in Human and Environmental Risks of Chlorinated Dioxins and Related Compounds. Richard Tucker, ed., Plenum Publishing Corporation (1983).

3. Air Pollution Control at Resource Recovery Facilities, draft document, California Air Resources Board (November, 1983).

4. Alter, Harvey, "Resource Recovery from a Chemical Viewpoint" in Materials from the Chemical Viewpoint, Amer. Chem. Society, Washington, D.C. (March, 1979).

5. Chlorine and Hydrogen Chloride, National Research Council (April, 1976).

6. Lustenhouwer, J.W. A., K. Olie and O. Huntzinger, "Chlorinated Dibenzo-P-Dioxins and Related Compounds in Incinerator Effluents," Chemosphere 9, Pergamon Press, pp. 501-522 (1980).

7. Karasek, F.W., A.C. Viau, G. Guiochon and M. F. Gonnord, "Gas Chromatographic-Mass Spectrometric Study on the Formationof Polychlorinated Dibenzo-P-Dioxins and Polychlorobenzenes from Polyvinyl Chloride in a Municipal Incinerator," Journal of Chromatography 270, Elsevier Science Pub., pp. 227-234 (1983).

8. Shaub, W.M. "Technical Issues Concerned with PCDD and PCDF Formation and Destruction in MSW Fired Incinerators," NBS, U.S. Department of Commerce (11/84).

9. Lipsky, D., K.R. Boldt, M.S. Manto and R.R. Eobal, "Assessment of Potential Public Health Impacts Associated with Predicted Emissions of Dibenzo-P-Dioxin...," Fred C. Hart Associates, Inc. (14 November 1984).

TO: ROY GOTTESMAN

FROM: M. M. O'MARA

4/9/84
MMO/43/84

SUMMARY OF TECHNICAL COMMITTEE PROJECTS

1ST QUARTER - 1984

The following project summaries represent progress through March, 1984:

Pipe Permeation - Goodman

Phase II (pipe systems exposed to water saturated with various hydrocarbons) is now 70% complete. Early test results indicate permeation through the jointed asbestos cement pipe. This project will be completed in June.

As a result of our study, Battelle is considering an independent study of permeation. Also, EPA has asked Goodman and Dr. Pfau of Batelle to present our data at a meeting in May. The results of the study, Battelle's future plans, EPA's future plans, the California EIR process and work in Europe will dictate our continuing research in this area.

Database Project - Fishbein

There are now 538 documents/articles in our technical/legal database. Battelle has developed an "end-user" training module for individual companies who wish to use this system. Redmon (of Brown, Todd & Heyburn), will discuss with Gottesman the expense of maintaining this database.

Fire Research - Carroll

Small scale experiments are now underway to rationalize kinetically the release and decay of hydrogen chloride observed under larger scale conditions. When we finally publish this work, we would like to include a rigorous kinetic model to describe the HCl decay phenomenon. Kineticists from BFG and Conoco continue to work with Carroll on the most appropriate model. Technical controversy continues on how well this can be done because of the extremely complex chemical/physical processes occurring during these combustion/degradation experiments.

Final large scale "neutral plane" experiments with burning PVC will be completed the first week of April. To assure that we are learning from previous experiments, new work on studying HCl decay in a scaled-down model will not begin until all experiments to date have been analyzed by VI-NBS-SWRI scientists and a brainstorming session at SWRI has taken place. Thus further studies will be delayed until mid-summer.

Medical Studies

In an effort to assure maximum use of our research expenditures, the medical subcommittee under Dr. Johnson has been debating/discussing the most appropriate experiments to follow up on the pioneering work of the FAA in which primates were exposed to various concentrations of HCl. A research strategy has now been developed, beginning experiments will take place in late April/early May and will proceed for a nine-month period. During this period, three main questions will be addressed:

1) to what degree does HCl (gas/aerosol) penetrate the lower respiratory tract

2) what concentration of HCl causes short/long term impairment of lung function in primates

3) are toxic effects in rats, qualitatively and quantitatively predictive of those in man

One final personnel note, Dr. Jack Drumwright M.D. of Vista Chemical has joined the Medical Subcommittee.

Dioxin Issue

During the first quarter, representatives of the VI Technical Committee visited Prof. Liberti in Italy to determine if his data did support his conclusion that burning PVC with vegetable waste in an incinerator lead to increased amounts of dioxin in the flyash. To make a long story short, his data did not support his assertion. Crummett of Dow after reviewing his data indicated that his (Liberti's) conclusions were, in fact, not at odds with the more recent data from Prof. Karasek (University of Waterloo) who found that increased amounts of PVC added to a well run incinerator did not lead to increased concentrations of dioxin. Thus Commoner's letter in the New York Times earlier this year concluding that PVC leads to increases in dioxin in incinerators is not as "conclusive" as Commoner thinks. In the past few weeks, O'Mara has discussed with Prof. Karasek and Prof. Hutzinger (University of Bayreuth, West Germany) the possibility of continuing research in this area.

These proposals will be discussed within the Technical Committee over the next few months.

M. M. O'Mara

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