

M/A 2289 JBH:sg
December 2, 1974

TO: J.A. Ruffing G. Katz A. Heuer J. Mitzner
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FROM: J.B. Harrison

SOCIETY OF PLASTICS ENGINEERS MEETING IN NEW YORK CITY,
OCT. 31-NOV. 1, 1974 ON VINYL CHLORIDE

The following are my notes taken from attendance at the Society of Plastics Engineers Vinyl Chloride meeting at the Americana Hotel in New York City on Oct. 31-Nov. 1, 1974:

HIGHLIGHTS

Particularly key items brought out in the numerous technical presentations at this meeting appear to me to be as follows:

- a. R. Fleming (Air Products Co.) the keynote speaker, was very positive that, in order to meet the current OSHA standard (1 ppm), one hundred percent wearing of masks will be required.
- b. Dr. Paul Lobo, Technical Director of TENNECO, stressed the importance of trying to reduce the free VC in the stripper. Their Burlington, N.J. plant produces copolymer, and they have successfully reduced the free VC level in copolymer from a previous 200 ppm down to 0-20 ppm.
- c. R. Fleming in discussing the current OSHA law, says that OSHA could grant waivers to a manufacturing site, if it so desired, after the Jan. 1st date. However, he said that no one knows whether waivers will be granted.
- d. G. McCowin (Food & Drug Administration) said that heavy scrutiny would now be given to PVC polymers used in food packaging to determine how much free VC gets into the food. He further said that ultimately the FDA will have to make a decision as to what regulation it must make.
- e. G. Schweitzer (EPA) said that an EPA standard will be forthcoming in 2-6 months which will instruct industry as to how much free VC they will be permitted to put out into the environment. He said that he expected that the level probably would be in the vicinity of 90 parts per billion at the fence line.
- f. It appears to me, from listening to the numerous discussions and comments from the speakers, that OSHA is not going to permit employers to rely solely on automatic area monitoring with continuous instruments. Rather, there will be a permanent requirement on employers to carry out individual personnel monitoring.

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- g. Essentially all companies are highly interested in going to continuous recording instruments in their plants, unless they are convinced they have a non-regulated area. Essentially all these companies felt that gas chromatography was the preferred way to go. VC accuracy down to 10 parts per billion appears quite feasible.
- h. Paul A. Wilke, Jr. (Wilks Scientific Corp.) talked on his MIRAN infrared units. He stressed that they were extremely useful for leak-testing in the plant. He allowed that they were not as free from interferences as gas chromatography.
- i. Byron A. Denenberg (MDA Scientific, Inc.) presented a very interesting and very new instrument based on a chemical impregnated paper tape. Sensitivity was 10 ppb. Cost of the instrument was relatively lower than other types. Interferences are only unsaturated chlorocarbons (trichlor, perchlor, etc.).
- j. Ronald Voisard (Scott Aviation) gave a full rundown on gas mask technology. There appears to be a great deal of confusion in this area however, it is going to be resolved fast. He said that in general, a full face mask will have a tenfold permissible level as compared with a half face mask.

GENERAL NOTES

In general the speakers followed closely with the program (see attached). The following general notes were taken and pretty much followed sequentially the order of the program:

1. KEYNOTE ADDRESS, "What is the Vinyl Chloride Monomer (VCM) Problem?" Richard Fleming, Vice President, Chemicals Group, Air Products & Chemicals, Inc.

Manufacturing areas with less than 0.5 ppm are exempt from some, but not all, of the aspects of the standard. There will be a field enforcement manual (not prepared yet) for OSHA field inspectors to indicate to them how they should interpret the standard. There are numerous inconsistencies in the standard of Oct. 4, 1974. If ordered to meet the inconsistent standard, manufacturers will have to require one hundred percent of time wearing a mask by their personnel. Satisfactory masks to meet the standard are not available at this time. A certain percentage of the population does not have proper pulmonary function to wear masks. There are numerous problems associated with masks to the worker: vision, discomfort, psychological effects, falling hazards, leakage, breathing dead air, etc. There is a possibility of a court "stay" against the Jan. 1, 1975 kick-off date as a standard. In general R. Fleming was very pessimistic about the future. He believes that the companies will try to meet the standard and stay in business, particularly because of the political implications upon companies attempting to go out of business. Fleming pointed out that a good part of the pessimism stems from the fact that other government agencies still must decide in their areas (EPA, FDA, etc.). R. Fleming's final conclusion was: unless prompt relief from the law is achieved, severe economic dislocations are going to occur.

2. "VCM and PVC Resin Manufacture" Dr. Paul Lobo (Technical Director of TENNECO Chemicals, Inc.)

Dr. Lobo discussed the possibilities of leaving a bigger heel in a tank car in order to avoid need for a compressor for monomer transfers (compressors are a source of leakage). He said many VC manufacturers will accept the heel back and build it into their accounting system. He recommended the use of canned pumps. He said that the TENNECO plant at Pasadena is being constructed in such a way as to prevent build-up of polymer on the walls. Dr. Lobo spent considerable time discussing the importance and also ways and means of lowering the free VC in the finished polymer. He pointed out that the technology to do this also prevents VC from blowing out to the environment which he considered of paramount importance. The TENNECO Burlington, N.J. plant manufactures copolymer and normally produced a copolymer with 200 ppm of VC in it. They have been, for some time, working on ways to reduce the copolymer content and now are in the 0-20 ppm range. A chart, presented by Dr. Lobo, showed numerous samples with 0 ppms in the finished product. Generally, he said, this was accomplished in the stripper. The finished copolymer, with low free monomer in it, is achieved generally at some cost in higher color and also some porosity change which may have an impact on the processor and will require him to change his processing techniques.

3. "VCM From Resin Shipment Through Fabrication" Rodney P. Becker (PVC Applications & Technical Service Manager)
Frederick A. Sacks (Applications Engineer Plastics Division, Diamond Shamrock Chemical Co.)

Fred Sacks discussed laboratory work studying the propensity of resin to give off vinyl chloride which will then accumulate in dead air spaces, particularly as a function of time. Resin (for example in a silo) will reach an equilibrium level with dead air above the resin in the silo after about 72 hours. Levels of 1,200 ppm were reached in the dead air space. In dead storage pellets of VC still had not reached equilibrium after 30 days, however, in the case of pellets the equilibrium level of VC was very low 50-100 ppm. Rodney Becker discussed the presence of VC in dead air spaces in fabricating operations employing PVC. He presented the position that in general fabricators with normal ventilation improvements should be able to keep their operations below the action level. He discussed the need for vacuum on high intensity mixers to prevent the VC from getting into the room. He pointed out that in warehousing conditions generally dead air spaces exist, and that good ventilation and equilibration throughout the entire warehouse does not occur. The VC being heavy tends to hang in the dead air spaces so that near a stack of pallets of resin high levels of free VC may occur.

At a question and answer session Dick Fleming was asked if employee (i.e. union employees) have any legal authority to ask for an extension to keep a plant running while engineering improvements are being built in. Fleming answered that they do not. He said that OSHA can grant waivers to a site if it so desires, but at this time no one knows whether a waiver of this type would be considered by OSHA.

4. "VCM--The FDA Viewpoint" Gerard L. McCowin, (Assistant to Director Div. of Food and Color Additives, FDA)

Since 1958 by U.S. law any food additive must be proved safe by a company prior to

adding it to food directly or indirectly (i.e. via a food wrap).

There have been certain exceptions, that is the so-called GRAS list (these are generally recognized as safe materials).

Originally, many years ago, PVC, acetate copolymer, and vinylidene chloride copolymer were approved as safe for food use, largely on the basis of low solubility in food media. Current data, however, indicates that VC does get into food (including aqueous, acidic, and fatty foods).

Is vinyl chloride carcinogenic when ingested? No one knows. However, Professor Maltoni of Italy is now doing feeding studies using olive oil as a carrier.

Ultimately the FDA will have to make a decision as to what regulation it must make.

There is no knowledge right now as to the timing of the Federal Register proposal by the FDA.

In a question and answer session afterwards, G. McGowin indicated that the FDA might require food wrap plastics to have no more than 1 ppm free monomer in the food wrap. Also, potable water pipe might be required not to exceed 10 ppm free monomer.

5. "VCM--The EPA Viewpoint" LUNCHEON SPEAKER Glenn E. Schweitzer, (U.S. Environmental Protection Agency)

Mr. Schweitzer informed the group that EPA standards would be forthcoming in a Federal Register publication within the next 2-6 months. The air emission standards will be based on best available control technology, with an expectation that plants must cut emissions by at least 75%. He said that they were estimating that capital cost to accomplish this would probably increase resin cost by 4%. He expected that the final standard would issue about one year after the initial publication in the Federal Register. Installation time would then be somewhere between 3 and 24 months thereafter. Assuming all this is correct it would seem that the final EPA installation is going to be 24-36 months from now for a plant.

Schweitzer said that the EPA had not decided on the maximum permissible level which could go outside a plant fence line, but that he expected it would be in the vicinity of 90 parts per billion maximum.

EPA will do its own monitoring with its own personnel on plant.

EPA also would be developing its own standards for drinking-water facilities, concerning PVC pipe and also concerning PVC reservoir liners.

Regarding effluent guidelines to water systems, the EPA will probably change the existing BOD/COD standards, and convert them to ppm VC.

Schweitzer was extremely critical of industry and felt that industry to date had done a poor job regarding monomer to the environment. He said that even in the absence of U.S. Government standards industry should immediately now do everything it can to cut emissions. He further said that if industry is putting out chemicals to the neighborhood, that industry may have to consider medical surveillance of neighborhood people.

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In general he was quite critical and caustic and suggested that the current vinyl chloride problem was a lesson to both the government and to industry as to how NOT to handle a problem, and that it was an example of allowing things to get too late.

Schweitzer said that the EPA felt that it would cost a plant about 1-3 million dollars per plant to depollute the plant (EPA-wise). (Industry people I talked with indicated they felt this was far too low.)

In answer to a question regarding levels of VC that EPA was finding in surrounding neighborhoods, Schweitzer said that they were finding VC levels in the vicinity of 3-30 parts per million.

6. TELEPHONE DISCUSSION WITH OSHA PERSONNEL IN WASHINGTON, D.C.

A group telephone discussion was set up with 3 OSHA personnel in Washington, D.C. including Grover Rinn. The Washington, D.C. OSHA personnel were answering questions given to them by telephone by 2 personnel from the VC conference in the Americana Hotel. Questions were supplied in written form from the audience, were screened by a screening team, then passed on to the 2 personnel on the podium who then carried out the telephone conversation. The course of this phone meeting took about 1 1/2 hours, and the following questions were raised, discussed, and answered by the Washington, D.C. personnel:

- a. QUESTION: If part of a manufacturing plant is greater than 5 ppm, but no one is normally there, is it a regulated area?

ANSWER: If people are occasionally in the area, it will be a regulated area.

- b. QUESTION: Is there an official OSHA analytical procedure (i.e. the NIOSH carbon tube, carbon disulfide g.c. procedure)?

ANSWER: No. Choice of analytical procedure is up to the employer.

- c. QUESTION: Is continuous automatic monitoring sufficient to replace personnel monitoring?

ANSWER: NIOSH/OSHA prefer personnel sampling, however, the employer may use any other method if it provides a good method for simulating employee exposure. The burden of proof here will be on the employer.

- d. QUESTION: Is there a level of residual VC in finished polymer for which labeling will not be necessary?

ANSWER: No. We have no data to exempt any level of free VC from the labeling requirement.

- e. QUESTION: What detection mechanism does OSHA consider adequate for plant operation considering that the charcoal tube is too slow, and too late particularly with regard to the 15 minute TWA?

ANSWER: The statistical approach is the only one we have and is burdensome. OSHA has no other approach to offer.

f. QUESTION: Must the medical records of persons working in an exposed VC area move with the employee when he leaves and goes to a new employer?

ANSWER: Yes, if the second employer uses him in a regulated area.

g. QUESTION: If the employee goes from a regulated area (in company A) to a non-regulated area (in company B), does company B have to maintain medical records?

ANSWER: No.

SPEAKER: Dr. Frank M. Zado & Dr. J.O. Rasmuson, "Monitoring Methods for VCM at Western Electric" (Western Electric Research Center)

Western Electric felt they had to develop their own procedures for monitoring their plants. They do not manufacture monomer or PVC, however, they handle PVC and compounds of PVC in large quantities particularly in connection with wire and cable.

Frank Zado was responsible for development of gas chromatography procedures for studying individual problem areas in plants and also automatic g.c. for remote continuous monitoring. Successful g.c. procedures were developed with a sensitivity of 0.015 ppm. The instrument was portable and was made from commercially available equipment, and was modified by Western Electric personnel. It is very adaptable to measuring other pollutants. Among other things, the Zado Western Electric approach used 2 parallel chromatographic columns with one constantly being backflushed and purged with inert gas, thereby providing maximum reliability of instrument. Also, they added a novel twist in that a "breath-sampling cylinder" device could be tied directly into the instrument.

J. Rasmuson spoke on his work concerning development of methods in the sub parts per billion range for VC. By means of a trapping/concentration technique extreme sensitivity was developed. A concentration factor greater than 1,000 was developed by a trapped/carbon tube method. The g.c. procedure was thereby made sensitive to 0.1 ppb. Detector was a mass spectrometer 62-10M, which the speaker said was much superior to a flame-ionization detector. Accuracy was plus or minus 10% over a range 1 ppb-10 ppm. Cost of the entire setup was \$5,000.

SPEAKER: R. Lanchester (American Can Co.)

Mr. Lanchester discussed procedures for studying presence of free VC in can linings. A Hewlett-Packard gas chromatography unit was used with a flame ionization detector. Can linings were sampled by solvent extraction procedure to dissolve the lining. The solvent was then injected into the g.c. No free VC was found in any of the many can linings studied.

SPEAKER: Paul Wilke (Wilks Scientific Corp.)

Mr. Wilke discussed the infrared MIRAN I and MIRAN II units and their use in working with the current VC problem in plants. Sensivity was said to be down to .0.2 ppm. In discussing the infrared units as compared with g.c., Mr. Wilke declared that g.c. is more specific and less subject to interferences. However, he felt the infrared, since it gives an instantaneous reading, is particularly useful as a leak-testing instrument in a plant.

SPEAKER: Byron Denenberg, "A Continuous Monitor for VC Monomer, Based on Impregnated Paper Tape" (MDA Scientific, Inc.)

Mr. Denenberg presented quite an interesting discussion of the MDA paper tape instrument. Originally developed for TDI (and MDI) the method is now actively being developed as a paper tape instrument for use in the continual monitoring of VC. Sensitivity goes down to 0.01 ppm. Instrument is relatively inexpensive with the sensor itself in the vicinity of \$3,000. A total continuous monitoring unit for a plant with 30 point pickup is said to cost about \$13,000. There are some significant interferences, but they are entirely and only unsaturated chlorocarbons (trichloroethylene, perchloroethylene, vinylidene chloride, etc.). There are no other interferences. Vinyl acetate, for example, does not interfere. An interesting sidelight was a personnel monitor, a cassette that a man would wear in his shirt pocket, the tape from which would be removed at the end of his shift and could be immediately developed to show the profile of the man's exposure during his entire shift.

SPEAKER: P. Ketter, Supervisor of Analytical Chemistry (TENNECO)

Mr. Ketter discussed personnel monitoring by the g.c. method. He presented data showing that the Federal Government charcoal tubes/carbon disulfide procedure is subject to a number of errors. Therefore, at TENNECO, they have gone to other types of g.c. procedures eliminating the carbon disulfide, and have developed a more accurate method based on a teflon bag.

A question and answer panel now took place regarding analytical procedures. Questions and answers were as follows:

a. QUESTION: Is the bag system for personnel monitoring approved?

ANSWER: We do not know. Ask OSHA.

b. QUESTION: (to Dr. Zado) Will Western Electric market their g.c. analysis method?

ANSWER: We are forbidden by law to manufacture and sell equipment of this type. We will be happy to enter into discussion with anyone on it.

c. QUESTION: (to Mr. Denenberg) Does dust/dirt effect the paper tape cassette sensitivity?

ANSWER: No.

d. QUESTION: (to Mr. Denenberg) Is there a time-lapse on the paper tape VC procedure? (We had heard there was a 10 minute time lapse on the paper tape procedure for TDI.)

ANSWER: On VC the time delay is 3 minutes between the pickup on the tape and the print out. On MDI/TDI the time delay is 10 minutes.

e. QUESTION: (to Mr. Wilke) Can you increase the sensitivity of your method by pressuring the gas of the cell?

ANSWER: Yes, you can increase its sensitivity tenfold by going to ten atmospheres in the cell.

f. QUESTION: (to Mr. Rasmuson) Can the Western Electric VC procedure be set up for continuous monitoring?

ANSWER: Yes.

g. QUESTION: (to Mr. Denenberg) Can you develop a device that will act as a personnel monitor warning device for an operator when he is in the presence of greater than 5 ppm VC?

ANSWER: We have developed a "mini guard" which is only for hydrogen sulfide so far. For VC we are developing a mini guard. We are right now 6-9 months away from completion.

h. QUESTION: (to Mr. Denenberg) Can an MDA paper tape instrument purchased for TDI also be used for VC?

ANSWER: The 7,000 TDI instrument is convertible, but it must be recalibrated. Conversion is not feasible for day-to-day changes.

SPEAKER: D. Daubert (ICI)

Mr. Daubert gave a talk concerning VC in the health status in Europe. The approach of the European countries toward the VC problem is quite variant depending on the country. Most countries have current regulations in the vicinity of 50 ppm. One country, Norway, has suspended all production of resin. Mr. Daubert feels that Europe will not go to the present strict U.S. OSHA level unless these levels really appear feasible.

SPEAKER: R. Voisard, Mgr. Distributor Development & Tech Service (Scott Aviation, Division of ATO, Inc.)

Mr. Voisard gave a detailed breakdown of the present state of the art on gas masks and airline respirators. He described that there is a good deal of confusion because a number of masks described in the OSHA Federal Register regulation simply do not exist at the present, and in fact, Scott Aviation feels some of them will not be manufactured. Further adding to the confusion is the fact that both NIOSH and the Bureau of Mines must give approval. Of particular interest was Mr. Voisard's statement that in general a full face mask will have approximately a tenfold concentration permissible as compared with a half face mask.

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SPEAKER: K. Oelske, Production Manager (DOW)

Mr. Oelske gave a detailed and professional portrayal of good engineering procedures in working with VC monomer in a plant. Dow has done detailed studies on the exposures to their employees in various plant jobs and in general find that highest exposures are received by tank car loaders and laboratory samplers. He gave specific recommendations for various plant operations including the following:

Tank Car Loading

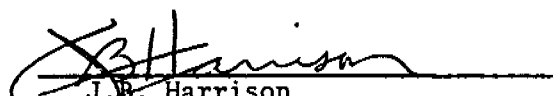
- a. Purge all unloading lines back into the process.
- b. Put magnetic level gauges on tank cars.

Recommendations for Laboratory Personnel

- a. Better fume hoods.
- b. Close the loop on the sampling system with purging ability so that lab samples may be fed back into the process.

Recommendations for Maintenance Personnel

- a. Set up purging back into the process on pumps, heat exchangers, reboilers, etc.
- b. Use of the Chemtrol pump for liquid VC transfer.
- c. Use of centrifical compressors instead of reciprocating compressors.
- d. Total elimination of compressors.
- e. Use of portable breathing air cylinders conveniently located on portable carts for maintenance workers.


J.B. Harrison
Works Manager, Hicksville

attachment

cc: J.B. Harrison

OCC 1582

FRIDAY, NOVEMBER 1, 1974

7:00 a.m. REGISTRATION — Imperial Foyer, 2nd Floor
MORNING SESSION — ANALYTICAL DEVICES & METHODS

Moderator — Dr. Gerald J. Mantell

8:45 a.m. "Monitoring Ambient Vinyl Chloride with Infrared Analyzers".
Paul A. Willis, Jr., President
Donald S. Lavery
Wilky Scientific Corporation

Abstract: VCM has a characteristic infrared spectrum. Thus, with recently developed selective filter infrared analyzers equipped with long path absorption cells, it can be detected in the atmosphere and measured quantitatively in the low parts per million range. The infrared method has high specificity, provides nearly instantaneous measurements and the equipment is simple, requiring a minimum of service and maintenance. Both portable and continuous, multi-sample point infrared VCM analyzers will be described.

9:15 a.m. "A Continuous Monitor for Vinyl Chloride Monomer, Based Upon an Impregnated, Paper Tape".
Byron A. Denenberg, Vice-President
MDI Scientific, Inc.

Abstract: A self-contained, specific, low cost, semi-portable, continuous monitor for VCM has been developed. Model 7070 is based upon the use of an impregnated paper tape, supplied in convenient cassettes which produces a color reaction when exposed to VCM. Continuous recording and both audio and visual alarms are incorporated into the basic design. The monitor and the color reactions will be discussed.

9:45 a.m. "VCM — What to Expect During an OSHA Inspection"
Otto White, Jr., Regional Industrial Hygienist
U.S. Department of Labor
Occupational Safety and Health Administration
New York, N.Y.

Abstract: An in-depth view of the typical procedures utilized during an OSHA inspection to determine compliance to the Vinyl Chloride Standard, 29 CFR 1910.93q. Discussion includes: recognition and identification of potential vinyl chloride sources; review of vinyl chloride monitoring program and records; evaluation of control methods used to limit airborne concentration of vinyl chloride; assessment of respiratory protection program and extent of employees knowledge in relation to exposures in excess of the standard and observation of monitoring.

10:15 a.m. Coffee Break

10:30 a.m. PANEL SESSION: Discussion of questions relative to VCM: Sample Collection and analysis.

11:15 a.m. "VCM — Current European Status"
(Speaker to be announced)

12:15 p.m. LUNCHEON — Imperial Ballroom B

FRIDAY, NOVEMBER 1, 1974

AFTERNOON SESSION — PROTECTIVE DEVICES & PROCESS OPTIMIZATION

Moderator: David H. Anderson,
Contract Division Manager
Quintel Corporation

1:30 p.m. "Respiratory Protection for Vinyl Chloride Monomer"
Ronald Vorsard, Mgr. Drivably for Development & Tech. Service — Buffalo
Scott Aviation, Division of A I O, Inc.

Abstract: This paper will discuss the equipment requirements relative to the Emergency Temporary Standard and the Permanent Standard by OSHA on VCM. Mr. Vorsard will discuss the degrees of protection afforded by the various types of respirators, the trade-off associated with each, the equipment serviceability and costs.

2:00 p.m. "Respiratory Protective Devices and Protective Clothing Used in Areas of VCM Manufacture"
Karl Oeltke, Production Manager
Dow Chemical U.S.A.

Abstract: Mr. Oeltke will discuss information on Engineering Controls and Manufacturing Practices in both production of VCM and copolymers of vinyl chloride. He will describe possible areas of VCM exposure and the protective clothing and/or respiratory protection needed in these areas. Advantages and disadvantages of the different types of protection will be covered.

2:30 p.m. "Protective Techniques for VCM in Mixing and Extruding Operations"
Dr. Maurice Oberg, Senior Staff
Industrial Hygienist
LFE Environmental Systems

Abstract: A variety of manufacturing facilities using PVC resins were surveyed for airborne concentration of VCM. Results of this survey were presented for both lab and large scale operations and include storage, handling, mixing, and extruding. This paper deals with corrective measures and attempts to answer: What is available today? What is being used? How long does it last? What does it cost?

3:00 p.m. "Controlling and Reducing Monomer Content in PVC Formulations Through Advanced Compounding Techniques"
Ronald Adams, Chief Engineer
Werner & Pfleiderer Corporation

Abstract: Mr. Adams will discuss methods of reducing VCM content in both rigid and plasticized PVC formulations through advanced compounding techniques. An analysis of typical PVC formulations will be made defining all processing stages where monomer might be set free, including pre-blending, melt compounding, pelletizing, pellet drying, conveying, storage and remelting during final conversion. The possibility of eliminating VCM by thermal or auto-catalytic decomposition will be discussed.

3:30 p.m. Summary Highlights of the Conference
Dr. Daniel S. Dixler
Keller and Heckman, Washington, D.C.

Extra Paper "Vinyl Chloride Analysis in PVC Processing Plants"
Paul A. Ketterer, Group Leader Analytical
Tenneco Chemicals, Inc.

Mr. Ketterer will be on the Panel Friday, 10:30 a.m.

SOCIETY OF PLASTICS ENGINEERS, INC.

Palisades Section • Vinyl Plastics Division

VCM
THE
PROCESSORS' PERSPECTIVE

OCTOBER 31 — NOVEMBER 1, 1974

THURSDAY — FRIDAY

AMERICANA HOTEL
7th Ave. & 52nd St.
New York City

"THE MOST IMPORTANT RESEARCH SPONSORED BY"

OCC 1583

ATTEND.....

The Department of Labor, Occupational Safety and Health Administration (OSHA), has proposed new standards to limit exposure to vinyl chloride monomer (VCM). This regulation is of concern to plants manufacturing VCM and/or polyvinyl chloride (PVC) and plants which process PVC into compounds and/or fabricated products. The regulation has been devised in order to limit exposure to VCM, as it has been suspected of being linked to the incidence of angiosarcoma. Other governmental agencies, such as the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA) are also interested in this problem. The Society of Plastics Engineers, Inc. has scheduled a two day technical conference in order to disseminate information relative to the new regulation, emphasizing the effect on the PVC processor.

This RETEC will feature.....

- History of the VCM situation relative to its effect on employee health.
- A summary of OSHA, FDA and EPA regulations, current and proposed.
- Explanation of what the regulations mean to producers, processors and users of vinyl plastic products.
- Analytical devices and methods of detection and monitoring.
- Protective equipment.
- Processing techniques to minimize VCM exposure.
- Analysis of future needs.
- Educational displays pertinent to the technical papers.

EDUCATIONAL DISPLAYS – Versailles Terrace

Hours: Thursday, Oct. 31 – 10:00 a.m. – 12:15 p.m.

2:00 p.m. – 6:00 p.m.

Friday, Nov. 1 – 10:00 a.m. – 12:15 p.m.

2:00 p.m. - 4:00 p.m.

Nature of the Educational Displays will consist of companies supplying equipment for the detection of VCM, protective equipment from VCM exposure, as well as consulting, engineering and analytical services relative to VCM. Detection equipment includes spot and continuous analyzers based on gas chromatography, infrared and colorimetric techniques. For further information, contact E. J. Wickson, Exxon Chemical Co., P.O. Box 536, Linden, N.J. 07036, (201) 474-2162.

WEDNESDAY EVENING - OCTOBER 30, 1974

6 - 9 p.m. REGISTRATION, Regency Foyer, 3rd Floor

THURSDAY, OCTOBER 31, 1973

7:30 a.m. Registration – Imperial Foyer, 2nd Floor

MORNING SESSION – ESTABLISHING A PERSPECTIVE

8:45 a.m. **Welcome and Introduction**
*Arnon B. Margam, Hiteco Chemical Div.,
 W.R. Grace & Co.,
 President Palisades Section, SPE*

9:00 a.m. **Keynote Address: "What is the Vinyl Chloride Monomer (VCM) Problem?"**
Richard Fleming, Vice-President, Chemicals Group
Air Products & Chemicals, Inc.

Abstract: Mr. Fleming will present an up-to-date overview of the VCM problem, particularly as it relates to the concerns of the processors and fabricators for worker protection. He will discuss various key issues leading to the development of the OSHA Standard now in effect and the polymer producers' responsibility to workers and customers.

9:30 a.m. "VCM and PVC Resin Manufacture"
Dr. Paul Lobo, Group Director, Organics & Polymers Division
Tenneco Chemicals, Inc.

Abstract: VCM and PVC resin manufacturing processes are reviewed and related to the degree of worker exposure in the past and present. Additionally, information on the VCM level in resins as shipped to processors will be discussed.

10:00 a.m. "VCM From Resin Shipment Through Fabrication"
Rodney P. Becker, Manager, M/C Applications & Technical Service
Frederick A. Sacks, Applications Engineer
Plastics Division
Diamond Shamrock Chemical Co.

Abstract: The results of VCM determination at compounding and fabricating operations in processors' plants will be detailed. Operations most likely to need close supervision will be described. Methods for minimizing worker exposure will be suggested. This paper should be informative especially for those wishing to upgrade their understanding of the complicated technology involved in the processing stage of articles based on PVC.

10:30 a.m. **Coffee Break**
Moderator: Dr. Lewis B. Weisfeld
Vice-President and Scientific Director
Cincinnati Milacron Chemicals, Inc.

10:45 a.m. Continuation of: "VCM From Resin Ship-
ment Through Fabrication"

11:15 a.m. "VCM – The OSIA Standard and its Interpretation"
(Speaker to be announced)

OSHA will discuss the background leading to the standard in existence after October 5, 1974. What is the current standard? Who is affected and how? Ongoing and future activities by OSHA in this area will be included as much as possible.

12:15 p.m. LUNCHEON — Imperial Ballroom B
Guest Speaker: John H. Myers, President SPE
General Manager, Research & Development
Delaware Plastics Division
Container Corp. of America

11/11/1917

AFTERNOON'S SHOW

2:00 p.m. "VCM — The EPA Viewpoint"
Glenn F. Schwartz, Ph.D.
Office of Toxic Substances
U.S. Environmental Protection Agency
Washington, D.C.

Abstract: Mr. Schwientek's presentation will cover recent EPA activities relative to VCM. It also should provide insight into what industry should now be doing or planning to do in order to control VCM as a pollutant.

2:30 p.m. "VCM = The FDA Viewpoint,"
Gerard L. McGowan, Assistant to the Director,
Division of Food and Color Adulteration,
Food and Drug Administration, 444
Washington, D.C.

Abstract: Current involvement by FDA will be continued, consistent with actions taken or pending. This will include a discussion of the Food Additives Regulations as they relate to food, chemicals, and what they require of the processor.

ANALYTICAL DEVICES & METHODS

Moderator: Dr. Gen H. E. Nicholl,
Director of Research,
Air Products and Chemicals, Inc.

3:00 p.m. "Determination of Vinyl Chloride in V"

*Dr. Robert H. H. H., Jr., Chairman
Department of Health, Education, and Welfare
Public Health Service
Physical & Chemical Analysis Division, OCHD
National Institute for Occupational Safety
& Health (NIOSH), Cincinnati, Ohio*

Abstract: The method used by NIOSH for the analysis of vinyl chloride (VCM) in workplace air is discussed. An fumigant is used to displace the VCM from the breathing zone, the air is drawn through a tube containing a desiccant, and the vinyl chloride is trapped. For analysis, the vinyl chloride is desorbed from the desiccant, solvent is added, and the acid is subsequently determined by gas chromatography.

3:30 p.m. "Monitoring Methods for VCS" 11-11-10
Dr. Frank M. Zullo & Dr. Ted C. ...
Western Electric Research Corp.

Abstract: Vinyl chloride (VCM) monomers and copolymers at Western Electric can be measured by means of a modified VC analyzer. This instrument consists of a gas chromatograph equipped with a flame ionization detector and a control module providing capabilities for automatic and manual attended operation. The highly efficient detector provides interference free measurement of VCM at levels as low as from less than 0.1 ppm in cycles of 10 minutes. The instrument measurements, if desired, can be displayed on a digital readout.

4:00 p.m. "Analysis for MCM in LVC for Control and Extractant"
for E. Saito, M. ...
Control and Extractant Dept. ...

Abstract: The gas chromatographic method for the determination of VCM in PVC Resins, composite materials, and in the presence of other volatile components has been in contact with full-sized PVC articles and in the preparation of standard and samples for the determination. The problems of sensitivity and interference in the various means of detection and procedures employed in the analysis of extracts.

3:30 p.m. - 6:00 p.m. Industry Reception - **Grand Ballroom**

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