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Letters

ENGINEERING CONSULTING GROUP, MOEA

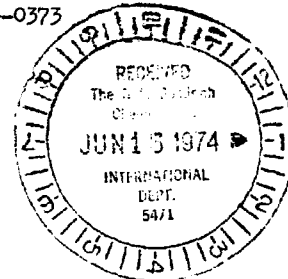
NO. 1 PAO CHING ROAD, 4TH FLOOR
TAIPEI, TAIWAN
REPUBLIC OF CHINA
TEL. 33-14-81

PLEASE REPLY TO
POST OFFICE BOX 23
TAIPEI, TAIWAN

TELEGRAPHIC ADDRESS
ECGM, TAIPEI

RPK
LTP
ALH
JWE

June 6, 1974
Ref. ECG-74-0373



VCM Exposure problems
or equivalent

Mr. A. L. Hatfield
B. F. Goodrich Chemical Company
6100 Oak Tree Boulevard
Cleveland, Ohio 44131
U. S. A.

Dear Mr. Hatfield :

We received the complete package of information about the problem of workers' exposure to VCM in PVC and VCM plants with your letter of May 29, 1974.

Thank you very much for your assistance in this matter. We are making copies for the concerned government agencies, and the companies which produce or use VCM.

We will contact you further if questions develop about this valuable material. We greatly appreciate B. F. Goodrich Chemical Company sharing this information with us. Please send us any new information you can about new analytical or detection procedures.

Very best regards,

Sincerely,

ENGINEERING CONSULTING GROUP, MOEA

Jack Dorsey
J. J. Dorsey

Petrochemical Consultant

JJD:kw

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May 29, 1974

Mr. J. J. Dorsey
Petrochemical Consultant
Engineering Consulting Group, MOEA
Post Office Box 23
Taipei, Taiwan

Dear Mr. Dorsey,

This is in response to your letter of May 4, 1974 concerning the problem of worker exposure to vinyl chloride in PVC and VCM plants.

Since this problem first became apparent to our company in early 1974, we have conducted an extensive program in order to clarify the problem and to take the necessary steps to eliminate any possible danger to our workers from exposure to vinyl chloride. We have been joined in this effort by most VCM and PVC producers in the U.S.A. as well as in many countries overseas.

In order to provide you with some general background concerning this problem, we are enclosing the following documents:

- (1) A statement by Mr. Vittone, President of B.F. Goodrich Chemical Company, at a fact-finding hearing before the Occupational Safety & Health Administration of the U.S. Department of Labor.
- (2) A letter from Dr. Marcus M. Key, M.D., Assistant Surgeon General of the U.S., which demonstrates the action taken by the various U.S. health and safety agencies. Included in this letter is a recommended monitoring and control procedure for processes involving vinyl chloride.
- (3) The Emergency Temporary Standard for Exposure to Vinyl Chloride, which is the Government regulation under which we have been operating until recently.

You will note that the Emergency Temporary Standard sets a maximum concentration of vinyl chloride in the atmosphere of 50 ppm. Our plants in the U.S. have all been able to maintain an exposure level below 50 ppm.

Within the past few days the U.S. Government has issued the Proposed Occupational Standard for Vinyl Chloride, which is enclosed. This states that the Proposed Standard for employee exposure be set at no detectable level. This is, of course, not attainable at this time if we are to continue operation of our PVC

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Mr. J. J. Dorsey
Engineering Consulting Group, MOEA
Taipei, Taiwan

May 29, 1974
Page 2

plants. Our company and others are preparing to defend the position that this level is not immediately attainable, nor is it justified. This demonstrates the gravity of the problem and we would certainly recommend that preparation be made for a complete new situation in vinyl chloride related industries.

In regard to your specific question about methods for analyzing vinyl chloride vapor in air, we are enclosing a comprehensive report prepared by Mr. L.B. Crider of the B.F. Goodrich Chemical Company Development Center. This report evaluates the various methods of monitoring vinyl chloride monomer in ambient air, both for survey detection and for fixed monitoring. We have adopted the recommendations of this report throughout our company.

For portable survey work, we are now employing the Century Organic Vapor Analyzer (OVA). This instrument is quite portable and is reported to be accurate in a range of 10-1000 ppm of vinyl chloride. Since this is an organic vapor analyzer, it does monitor other hydrocarbons and there is a tendency to have interference in the range below 10 ppm. We are presently developing an absorption column to the sample entry of this analyzer in order to screen out hydrocarbons other than vinyl chloride.

Our plants have now followed up the Organic Vapor Analyzer with the installation of a Bendix Total Hydrocarbon Analyzer. This instrument also utilizes the principle of a flame ionization detector. It is installed in the pressurized control room with signal points and an automatic sampling arrangement at from 6-12 points in each process building area. The Bendix system has permitted us a constant monitoring of the environment in the process building.

The Emergency Temporary Standard previously mentioned also requires a personnel monitoring program. We are enclosing an analytical procedure for this vinyl chloride personnel monitoring. Our operators actually wear the sampling device which consists of a small battery operated pump plus the charcoal absorbing cylinder which samples the air being breathed.

We trust that the enclosed packet of information will provide you with background of this problem as well as the procedures which are now being used to insure the protection of our workers. We are hopeful that this information will prove to be beneficial to the vinyl chloride and PVC manufacturing companies in Taiwan.

Should you have additional questions in the future, we will be happy to respond to them.

With best regards.

Sincerely, BFG34016

A. L. Harfield / temp
A. L. Harfield

bcc: R.P. Kenney/C.R. Flynn/L.M. Puckett
ATH/mak

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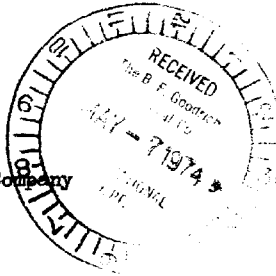
CRF - Please have a draft prepared for me. This man has been critical of -FGC in the past. 5/7/74
See attached
ENGINEERING CONSULTING GROUP, MOEA
NO. 1 PAO CHING ROAD, 4TH FLOOR
TAIPEI, TAIWAN
REPUBLIC OF CHINA
TEL 331481

PLEASE REPLY TO
POST OFFICE BOX 23
TAIPEI, TAIWAN

TELEGRAPHIC ADDRESS
ECGM, TAIPEI

May 4, 1974
Ref. ECG-74-0298

Mr. A. L. Hatfield
Administrative Director
International Department
B. F. Goodrich Chemical Company
6100 Oak Tree Boulevard
Cleveland, Ohio 44131
U. S. A.



Dear Mr. Hatfield :

I am sure you are aware of the recent disclosures of the hazards to workers in PVC plants from exposure to VCM.

We are interested in establishing as soon as possible a plan to control and minimize the VCM concentration in the working areas of plants producing PVC and VCM in Taiwan. Since we have met here, I am writing you in hopes that, it will be possible for you to refer this letter to someone in B. F. Goodrich Chemical Company who could supply me with some specific information.

I am interested in learning about the method of analyzing for VCM vapor in air in the range of 0 to 100 ppm, and 100 to 1000 ppm. Hopefully someone can supply me with the name of companies selling special equipment, if utilized for this purpose.

I would also hope to receive from you the name of someone in B. F. Goodrich Chemical Company whom I could contact about any special procedures to avoid worker contact with VCM vapor.

Fortunately in Taiwan all of the PVC plants are built with only a roof over the reactor area so that natural ventilation to dissipate VCM vapor leaks is possible, if adequate.

I will look forward to hearing from someone about VCM analytical information plus any other information that can be sent to me.

Very best regards,

Sincerely,
ENGINEERING CONSULTING GROUP, MOEA

J. J. Dorsey
Petrochemical Consultant

JJD:kw

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ROUGH DRAFT

J.J. Dorsey
Petrochemical Consultant
Engineering Consulting Group, MOEA
#1 Paoching Road, Fourth Floor
P.O. Box 23
Taipei, Taiwan

Dear Mr. Dorsey:

We are gratified to note your concern relative to VCM exposure problem. Ever since the disclosure, early in 1974, that three cancer deaths at our Louisville Plant appeared to be related to long-term exposure to vinyl chloride, our company has been conducting an extensive program to further identify the problem and to take all possible steps to eliminate it. We have been joined in this effort by most of the members of the VCM and PVC producing industry in the U.S. as well as in many foreign countries. We are quite willing to share ^{much of} the information that has been developed as a result of these programs.

Before attempting to answer your specific questions, I believe that it would be helpful to provide some of the general background information that might put the problem in a clearer context. First, ⁽¹⁾ I enclose a statement by Mr. A. Vittone, Jr., the President of our Company, before a fact-finding hearing before the Occupational Safety and Health Administration of the U.S. Department of Labor. This statement is a clear picture of how the problem developed. Next, ⁽²⁾ I include a letter from Dr. Marcus M. Key, M.D., the Assistant Surgeon General of the United States, which demonstrates the action taken by the various United States health and safety agencies. Included in this letter is a recommended monitoring and control procedure for processes involving vinyl chloride. This procedure ^{, referred to as the NIOSH procedure,} is a good general "bible" which has been ~~by now~~ followed almost to the letter by our various plants in the United States. This is certainly a good starting point in any program you might embark upon toward controlling worker hazards. ⁽³⁾ Finally, I have enclosed the Emergency Temporary Standard for Exposure to Vinyl Chloride, which is ~~now~~ the governmental regulation under which we ^{have been} operating until recently.

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This standard sets a maximum concentration of 50 ppm exposure. The MCA Animal Test Program referred to in Mr. Vittone's statement on page 6 has now produced some additional animal test results. At an exposure of 50 ppm two mice out of 200 samples developed angiosarcoma after seven months exposure. Rats and hamsters also included in this test did not develop any cancer of this type below the 250 ppm exposure. Nevertheless, this study will undoubtedly trigger a program to lower the permissible level below 50 ppm. I should add that our U.S. plants following the procedures ^{NIOSH} ~~shown~~ ~~in the NIOSH recommendations~~ have all been able to maintain an exposure level below 50 ppm.

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To answer your specific question about the methods of analyzing for VCM vapor in the air, I am first enclosing a comprehensive report prepared by our staff technical services which evaluates the various methods of monitoring vinyl chloride monomer in ambient air, both for survey detection and for fixed monitoring. I believe you will find this report very helpful. We have adopted the recommendations of the report throughout our company. ^{HP} For portable survey work we are using the Century Organic Vapor Analyzer (OVA). This is the first instrument we used and we were able to determine exposure levels in all of our buildings by taking a large number of readings and determining weighted averages. We were also able to follow specific operators and thus develop a personnel monitoring system. This instrument is quite portable. It is accurate from approximately 10 to 1,000 ppm of VCl. Since it is an organic vapor analyzer, it does pick up other hydrocarbons, and there is somewhat of a "noise" problem below 10 ppm. We are presently working to add an absorption column to the sample entry of this analyzer in order to screen out those hydrocarbons other than vinyl chloride. This instrument has served us well in the early circumstances, but as you approach 10 ppm, the "noise" level becomes a greater factor.

Following an initial screening using the OVA instrument, our plants have now followed this up with the installation of a Bendix Total Hydrocarbon Analyzer. This instrument

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Insert (1)

Within the past few days the U.S. government has issued the Proposed Occupational Standard for Vinyl Chloride, which is enclosed. This states that the proposed standard for employee exposure is set at no detectable level. This is of course not attainable at this time if we are to continue operation. Our company and others are preparing to defend the position that this level is not immediately attainable nor is it justified. It demonstrates the seriousness of the problem and it is certainly wise to prepare ^{situation} yourself for a whole new ballgame in the VCM related industries.

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also utilizes the principle of a flame ionization detector. It is installed in a pressurized control room with signal points and an automatic sampling arrangement at either six or twelve points in each process building area. Usually the sample points are placed near the exhaust exit points, so that, in effect, you are monitoring the air that is being exchanged in the building. } Incidentally, our building ventilations are mostly designed for six ⁽⁶⁾ air changes per hour with the emergency ventilation set at ^{twenty (20)} 20 air changes per hour. Recently, we have been thinking in terms of twelve ⁽¹²⁾ air changes per hour, and some of our newer plants do have this more adequate ventilation capability. The Bendix system has permitted us a constant monitoring of the environment in the building, and we find that it operates on a fairly level pattern. Any significant amount of vinyl chloride, such as a leak or even the opening of a reactor manhead, will cause the detectable level to increase. The pattern then has been that the foreman will go out into the area with the portable instrument and determine what the problem is. The Bendix instrument, of course, has the same problem at low levels as does the OVA, since it utilizes the same principle.

The ^Emergency ^Temporary ^Standard, also called for a personnel monitoring program. This program is not nearly so well developed as the previous two analytical techniques I have mentioned. However, I am enclosing an analytical procedure along with a description of the equipment involved. The procedure involves gathering a sample with an activated carbon tube. The carbon sample following an exposure, usually four hours, is then dissolved in carbon disulfide and the extracted material then analyzed on a gas chromatograph with a flame ionization detector. The operators actually wear the sampling device, which consists of a small pump, battery operated, plus the charcoal adsorbing cylinder which, in effect, samples the air that the man is breathing. This procedure is still somewhat in the stage of development, and I would offer the advice that you concentrate on the other two procedures in your own work.

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We have gathered an additional packet of information which we are currently in the process of sending out to our international plants. This includes information about respiratory equipment, protective clothing, the air sampling device previously mentioned, and an oxygen analyzer. This information might also ~~perhaps~~ be of interest to you.

I hope that this ^{letter} has provided you with ~~some of~~ the specific information regarding the methods of analysis that we have ~~presently~~ been using and that the background information is also of value. Clancy Flynn, who says that he knows you quite well and has spent some time with you during his last trip to Taipei, is the person to contact about any special procedures to avoid worker contact. Clancy has been handling the communication of the vinyl chloride problem to the International plants of the B.F. Goodrich Chemical Company and would be happy to assist you in any way possible. Please feel free to ask for additional information should it be required.

Too Strong?

Best regards,

A.L. Hatfield

cc

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Question - we could also include Malone report
to CSDA hearing
No

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