



REC'D JUN 25 1975

INTER-OFFICE CORRESPONDENCE

To: *[Handwritten signature]*
J. M. Davis
A. C. Ellsworth
J. E. Fauber
F. C. Ludden
J. W. Moore
C. D. Racer
L. S. Smith
H. E. Starn

Date: January 20, 1975
From: R. E. Sourwine
Location: 19 East
Subject: Medical Management of
VCM Workers

Attached is a letter from Dr. Grant that resulted from a recent meeting with Drs. Lovejoy and Perez-Roig. The purpose of the meeting was to establish uniform guidelines for the removal of employees with abnormal liver functions from the vinyl chloride work area.

The impact of removing key people due to medical reasons could have operational and Employee Relations ramifications, therefore, you may wish to review and comment on the draft that is included in the attachment.

If you have any comments, would you please send them to me with a copy to Dr. Bell by July 1, 1975.

R. E. Sourwine /cls

R. E. Sourwine

/cls

Attachments

cc: Z. G. Bell
F. C. Dehn
W. P. Lawrence

SL 028189



INTER-OFFICE CORRESPONDENCE

Date: June 9, 1975

From: L. B. Grant, M.D.

Location: 14 West

Subject: Medical Management
of VCM Workers

To: Dr. Fred C. Dehn

Reference: Letter from Z. G. Bell, Jr. to A. G. DeMarco
and A. T. Raetzsch dated April 22, 1975,
Subject as Above (See Attachment #1)

The meeting described in the above reference was held as planned. Dr. Lovejoy reported on a meeting he had recently attended on the same subject, which was attended by physicians from VCM and PVC manufacturing industries (see attachment #2). Dr. Perez-Roig then discussed the subject program in effect in Caribe. Then Dr. Lovejoy did the same for Lake Charles. Caribe has had two employees since the beginning of their program that had to be removed from working with VCM. These cases were both discussed in detail. Dr. Lovejoy did not have with him specific information on employees removed from working with VCM at Lake Charles, but he recalled that there had only been a few and all were maintenance employees.

We then discussed the minimum program that should be in effect within the Chemical Division. The discussion included: the content of the medical examination for preplacement and periodic examinations, how to follow up employees with abnormal findings, recommendations for removal from and/or return to potential exposure of any employee who was working with VCM, and follow-up of former VCM employees who have left PPG.

Based on the above discussions, a rough draft was prepared and agreed upon. A copy of this draft is shown in attachment #3.

It is the undersigned's suggestion that if Chemical Division Management agrees in principle with attachment #3 that it should be appropriately rewritten so as to be incorporated in the Chemical Division's "Work Practice Guidelines for VCM", I would be pleased to assist in this matter if requested to do so.


Lee B. Grant, M.D.
Corporate Medical Director

LBG:mh

Attachments

cc: E. J. Slack
W. P. Lawrence
H. B. Lovejoy, M.D.
M. Perez-Roig, M.D.

Z. G. Bell, Jr.
A. Procko
J. Lee
C. Mesloh



INTER-OFFICE CORRESPONDENCE

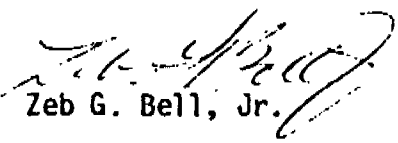
To: Messrs. A. G. DeMarco
A. T. Raetzsch

Date: April 22, 1975
From: Z. G. Bell, Jr.
Location: 10 West
Subject: Medical Management of
VCM Workers

As an outgrowth of the OSHA Standard on vinyl chloride which requires certain specific medical tests and procedures be performed, a meeting is scheduled at the Caribe plant to coincide with Dr. L. B. Grant's and my visit the week of May 27, 1975. The "Medical Management of VCM Workers" meeting will start at 9:00 AM on May 28, 1975.

This meeting will be directed towards establishing a uniform guideline for removal of employees with abnormal liver functions from work in the vinyl chloride area. In order to have a full understanding of the impact upon plant operations, we would request that an operational supervisor from both Lake Charles and Caribe be present. It is requested that Dr. H. B. Lovejoy attend and that Dr. Perez-Roig be present.

With this correspondence, I request the Caribe plant to be our host.


Zeb G. Bell, Jr.

ZGB:mal

cc: F. C. Dehn
L. B. Grant, M.D.
R. E. Hanna
W. R. Harris
J. B. Lee
H. B. Lovejoy, M.D.
M. Perez-Roig, M.D.
V. A. Sarni/R. E. Widing/J. A. Clapperton
H. C. Twiehaus

RECEIVED

APR 22 1975

SL 028191

H1

7

VCM PRODUCERS PHYSICIAN'S MEETING
SHERATON HOPKINS
CLEVELAND, OHIO

ATTENDED BY H.B. LIVINGSTON, M.D.

May 13, 1975

The meeting was chaired by Dr. Maurice Johnson, Medical Director of B. F. Goodrich.

The first speaker was Dr. Ralph Cook of Dow, Midland, Michigan Plant. The effects of Vinyl Chloride he mentioned include the explosion at the proper concentration which is a hazard, narcosis which occurs somewhere in the area of 5,000 to 8,000 per million concentration, hepatitis which may occur somewhere between 200 and 300 ppm, and acroosteolysis. He mentioned the angiosarcomas which are found and these were confirmed by Dr. Maltoni, but also they were noted by Maltoni in sites other than the liver in control animals. In time he mentioned that 5 ppm of Vinyl Chloride was the maximum allowable concentration for any period of time; that 0.5 ppm was the action level where the Vinyl Chloride Standard had then to be applied. Medical aspects of the Standard were then discussed, and at the Midland, Michigan Plant they made what they call a health inventory on each patient. This included the employee's identification with age, etc., his work history, his family doctor, his smoking history, family history, then the physical examination which included height, weight, blood pressure, hearing, vision, intraocular tension, pulmonary function, and laboratory data which included an EKG, urine analysis and blood chemistries which were the SMA 12 including fasting blood sugar, BUN, uric acid, creatinine, total serum bilirubin, total serum proteins, serum albumin, SGOT, alkaline phosphatase, LDH, and cholesterol. These were drawn in a non-fasting state along with the GGTP and SGTP some seven to ten days prior to the battery of history and physical examinations. The reports were available at the time of the physical examination. The people were then separated into those with liver problems and those

with non-liver problems and those that were normal. Those that were normal were seen again in either six to twelve months depending upon their previous exposure time in Vinyl Chloride. The non-liver problems were advised as to what appropriate action should be taken with their problem and the liver problems underwent further evaluations which included fasting liver function studies. If these were normal there was no further problem and the patient again returned in six to twelve months. If these were abnormal, their problem was discussed with the individual and the possible other hepato toxins mentioned, such as alcohol, other medications, tc., and they were retested in three weeks at which time a comprehensive liver profile was done and their consultant might be seen. A consultant would be a specialist in either gastroenterology or some other internist properly educated in the field of Vinyl Chloride toxicity. Comprehensive liver profile included the various LDH isoenzymes, the phosphatase fractionation, both total and direct serum bilirubin, SGOT and SGPT and GGTP, total count, CBC, and possibly alpha fetoprotein and a mucopolysaccharide spot test on the urine. If liver function studies were indicative of further disease, the patient was then advised to undergo hospitalization where Pan-angiography liver scanning, along with spleen scanning, and multiple biopsies were done. At the time these patients were being checked, they were removed from the Vinyl Chloride area.

When asked about the billing or charging for the consultants, Dr. Cook mentioned that some of these were covered under regular insurance, some were covered under compensation insurance and this was decided when the etiology of the abnormality was determined. There was also what he called an internal medical "slush fund" which would pay for the necessary lab work and consultants until such time as the regular insurance or compensation insurance could be decided upon.

The discussion then went to what is normal so far as laboratory work was concerned. Dr. Cook mentioned that there were many differences of opinion, that the Midland, Michigan Plant had been using the Bio-Science Laboratory and they thought

that these were accurate and what they would depend on, recognizing that only 95% of the people would fall within the normal limits. Dr. Hans Popper, Pathologist, was quoted as stating that the upper limit of the test plus 50% increase should be the cut-off. He also mentioned that in the studies at Louisville, by Dr. Creech and Dr. Johnson, some 56 out of 1153 employees checked by liver scans had an enlarged spleen. They also found a number of other problems including fibrosis of the liver, esophageal varices, and they felt that all of these might be work-related. Since this was present in the people who had a history of work exposures less than 200 ppm. It was recommended that everyone set their own normals but they recommended no more than two standard deviations. It was mentioned that there was much variation on many of the automatic chemistry machines.

Dr. Johnson mentioned Dr. Popper's viewing, "Liver function tests do not measure liver function." Creech stated that in their opinion the SGOT was 50% accurate, the SGPT was 87% accurate and the GGTP was 90% accurate so far as abnormalities were concerned. Creech from Goodrich in Louisville stated that any abnormality equaled removal from the area and he also stated that a liver scan was now a routine procedure in Louisville. One patient was found to have a 6 cm angiosarcoma with no liver function blood abnormalities. They were using both biochemical tests for other abnormalities particularly the periportal fibrosis. They felt in Louisville that possibly the periportal fibrosis would cause a liver abnormality and that this condition may precede and be responsible for the development of angiosarcomas. The angiosarcomas do not necessarily give abnormal liver function on the blood test. They also saw on the scan large spleens and varices. The scan was done at a cost of \$75 per person, was now done yearly but they would probably go to every six months. When asked about the radiation given by the amount of radio-active material, he stated that it was one-tenth the X-radiation that was received in a normal chest X-ray. They included every single person in the Vinyl area. They received no

objection from any of the employees when they understood what the problem was. They used a particular type of scan which was called a "rectilinear scan." They did use some camera scans but felt that the rectilinear scan was more important in that the pictures could then be reevaluated by other radiologists provided that the technician used the same Kili Volt readings and the same point readings.

For biopsy they felt that it did not matter which route was used. They do this rather simply and routinely there through the transjugular route which threads a Cook type needle through the jugular vein down through the vena cava past the heart and into the hepatic vein and they take five specimens. They felt that the specimen must be at least 10 mm long by 2 mm in diameter and include two portal triads and one central vein or one portal triad and two central veins. By this route you do not get as many portal areas as you do with the percutaneous biopsy, but if you have a bleeding problem with a low prothrombin time, the bleeding would be back into the vein and thereby cause no particular problem. You also could measure wedge pressures and estimate the portal pressures through the transjugular route. They did not do venograms because of the risk of liver infarction. They were finding many patients who had an increase in the vena caval pressures. They do not know why; they thought it might be due to cardiac or pulmonary fibrosis problems but many of these conditions did not exist and they thought possibly vinyl exposure might be responsible for the increase in the vena caval pressures. The periportal fibrosis, as I mentioned above, was found in all the angiosarcoma cases and it may be that we as physicians should be looking for this rather than the angiosarcoma in that none of the angiosarcomas were resectable and this particular pathological condition may precede the angiosarcomas in its development. He said that there was no evidence that osteolysis was due to vinyl. He said that at least in animals. He stated that possibly vinyl acetate might be responsible in that it took two and one-half years of a polycleaner working vinyl for them to develop the problem, but it was only in those who had been working since they had changed from

one process to another and have a Vinyl acetate problem exposure. The question of when to start scanning - they had found that they had had no tumors in any of the people except in their polycleaners who had the highest Vinyl exposure.

The next speaker was a Dr. Tamburo who is, I think, a Pathologist, and possibly heads up the Gastroenterology Service at the University of Louisville and has been working closely with Dr. Johnson and Dr. Creech on the evaluation of their liver problems. He stated that there were big spleens found in people working with butadiene, starting in other conditions as well. It is not known what causes this and it may be that the previously described normal sizes of spleen on a scan are not accurate; that the spleens may vary much more widely in size normally.

They talked of various types of stains that were used on the staining of tissues obtained at biopsy. Mentioned a positive Schicatta? stain being equivalent to a diagnosis of viral hepatitis. He stated that biopsies were exceedingly safe if done by a properly trained individual. The technique did not seem to make much difference. He thought that whatever the individual's training was is the type of biopsy that should be used. They were using a thin Vin-Silverman needle with a Franklin modification and bite-off. He insists that the biopsies be done in the morning so you will have your complete surgical staff available in the afternoon if there is any complication that might occur. They had some three out of a possible 20,000 liver biopsies that had difficulty which he called morbidity but no mortality. He also mentioned that he felt that the SGPT was some 83% accurate, GGTP was some 85% accurate, but there were some false positives. He felt that the ICG clearance was a valuable test utilizing 5 mm per kilogram of body weight and measuring the clearance which would be drawn at 2, 4, 6, 8 and 10 minutes. He stated that this could all be done very simply by putting a needle in the vein,

*

? Not sure of spelling.

giving the radio-active material for the scan, then giving the ICG dye, then drawing blood for your complete liver function studies; then drawing your blood for your ICG clearance at 2, 4, 6, 8 and 10 minutes. This could be accomplished with one stick in the vein and the patient would be much more satisfied and more cooperative. He also felt that scans were mandatory in that the liver function studies were unreliable in detecting tumors of the liver. He asked about high bilirubin levels only. He felt that this should warrant a complete liver profile but felt that many times the problem of liver disease was present and these people would be permitted to continue working in the Vinyl area. The ICG test would have to be normal as well as would the CCONDS. He stated that if there was any problem, he felt that sending of tissue biopsies to Dr. Ishook*, Armed Forces Institute of Pathology in Washington, would be the choice of consultants for evaluation. He felt that not only H & E stains be done on the tissues but that they be done with Masson's stains as well. Creech then mentioned that they had had excellent cooperation from the employees in that their nurses at the plant were able to get all types of medical data from the individual's family physician. Some of the patients were referred or went to their own family physician for problems that might be related to Vinyl exposure. He then mentioned that the Vinyl Chloride Standard issued by the government was in error in that people who had been taken out of Vinyl Chloride were not required to be followed. They felt at Goodrich that all of these people should be followed for ten to twenty years after they were removed from the Vinyl area. They also felt that no specific medical criteria should be laid down by the Vinyl Standard because there had been no formula found that would insure that a physician practice properly and that there was no form or formula that could prevent a physician from practicing improperly.

Dr. Ballou of Firestone spoke on their experience with their 250 vinyl workers as compared with 2500 others in the rubber industry in their Potstown Plant and

*

? Not sure of spelling.

liver scans on all of their people find more liver enlargement in vinyl workers than others but not as many large spleens. They found no difference in liver function abnormalities. They did some 127 scans. They found 23 probably abnormal spleens. He mentioned that Dr. Selikoff mentioned finding chromosome abnormalities in vinyl-exposed people where the rubber workers were no worse off in their experience and that this work had apparently been confirmed by Dr. Killian who is at the Dow Plant in Freeport, Texas. They did find, however, more diastolic hypertension in vinyl workers. In measuring their liver size they utilized a specific method of measuring, giving the mid-clavicular line and the mid-sternal line. They also utilized their scan in evaluating the size of the liver and in the spleen. They found that in this case there was nothing subjective utilized that the radiologist could read the same way every time from the raw data. The University of North Carolina is involved in their study here and also feels vinyl chloride causes no chronic pulmonary diseases, although it does cause a temporary decrease in their vital capacity which is decreased during the day but is back to normal the following morning.

Dr. McBurney from Diamond-Shamrock then stated that it was essential that we as physicians attempt to get management to agree to spend more money to implement data procurement. He also went on to state that if a union upholds an employee's refusal to undergo physical examinations and testing personnel, then the physician at the plant should talk to him and attempt to persuade him to have these tests. If he still refuses, they attempt to have the employee sign a waiver and then forget it. At some plants they discharged for this. Firestone allows men to go to their own panel of internists at their own expense, and then they have the internist sign that he is O.K. to work in vinyl. They have found that none of the private physicians are willing to sign this vinyl release so it winds up going back to the plant

physician. This concluded the morning part of the session and in the afternoon more questions were discussed.

What constitutes an exposure? It was the final conclusion of most of the people there that any single exposure had to be considered as an exposure. It was again mentioned that after an abnormality was found what is done with personnel. Every plant there advised, recommended and proceeded with the condition that the man was restricted from the area. This caused the Tenneco representative to be very much concerned in that they had a union which was causing problems. Dr. Cook from Dow at Midland stated that he had what they called "medical bumping rights." This permitted the Medical Department to place people in another plant or another place due to his medical condition and this could be a promotion, but the man was then "fixed" to this area and could not utilize this "medical bumping" procedure to climb the promotional list.

The problem of contractors' employees was then discussed and it was Dr. McBurney's feeling that the primary company have the responsibility for advising and seeing about the contractors' employees. Cook at Dow stated that there was no way this could be accomplished at their plant because of the rapid change-over in contractors' employees. He stated that people regularly working for contractors in the area, the contractors paid for the work but the company did the work and the employee was given a note. The contractor maintained the records.

Whose responsibility the vinyl exposure was in tank cars and ships was then discussed. It was felt that both had to assume this responsibility. Heavy exposure as a result of an "emergency" condition. The handling of exposed personnel was discussed. They felt that the person should be hospitalized if narcosis occurred, if not, the employee was then to be given liver function studies, EKG, etc., immediately.

or as soon as possible and then followed as indicated.

The remainder of the afternoon involved the EPA Standard which many of the Industrial Hygienists and Physicians were more concerned about than the medical OSHA Standards. It was mentioned that in 1974 the EPA estimated some 90 million kilograms of vinyl being released into the air by the manufacturers. There has been work suggesting that possibly angiosarcomas in the general population might be caused by exposure to Vinyl Chloride. In Connecticut as the sufferers of the angiosarcomas lived in an area close to a vinyl manufacturing plant. It was mentioned that the EPA are in a power struggle. Dr. Infante? report on the possible increase in chromosomal abnormalities, birth defects, increased abortions, etc., was mentioned and it was also mentioned that Section 112 of the Clean Air Act will be the law under which the EPA will act. Under this statute they do not have to make an economic evaluation but can dictate immediately to industry what they shall do. Once a compound is placed upon this list by the Clean Air Act and the EPA, it can be removed only if it is proved to be non-hazardous. Dr. Mayo Smith of the Air Products Company felt that this was a much more serious threat than the OSHA regulations. He felt that if we could strip the PVC to less than 400 ppm that there would be no problem; that the copolymer was more difficult to strip even at 180° than the dispersion resins.

HBL:mc

*

? Not sure of spelling.

DRAFT
May 20, 1975

Chemical Division
PPG Industries

Reference: Para (K) Medical Surveillance
1910.39q Vinyl Chloride OSHA

The above reference details the minimum requirements that will be implemented in all PPG operations for employees working in VCM operations and exposed to VCM in air concentrations at or above the "action level."

- "done"*
- I. Pre-Placement Examination - All employees prior to being assigned to a job which will potentially expose them to VCM will be provided an initial medical examination in accordance with the above reference. If an employee's health would be materially impaired by exposure to VCM, he will not be assigned to a job which will potentially expose him to VCM. The Plant Physician will certify as to the suitability of an employee to work in a job potentially exposing him to VCM and to wear protective equipment and respirators, ~~utilizing the form shown in attachment #1. A copy of this form will be provided to the employee, a copy will be placed in the employee's plant medical record, and other copies provided to appropriate management personnel.~~ *utilizing the form shown in attachment #1. The pink copy will be placed in the employee's med. records, the yellow copy will be given to the employee & the General Foreman will keep the original.*
- OK*
- II. Periodic Examination - All employees working on a job which potentially exposes them to VCM will be provided medical examinations in accordance with the above reference at either 6 or 12-month intervals. If in the physician's judgment the employee's health would be materially impaired by exposure to VCM, he will be removed from such potential exposure. The Plant Physician will certify as to the employee's suitability as described above.
- OK*
- III. Emergency (Massive Release of VCM) - Any employee involved in same will be seen by the Plant Physician as soon as possible.
- IV. Abnormal Liver Function Tests - If any of the 5 tests on the employee's serum specimen required in the above reference are abnormal, the employee will be evaluated in the Plant Medical Department and advised of the necessity to repeat the abnormal test or tests within 2 or 3 weeks prior to which time he should avoid such non-work related activities as might be expected to cause a test to be abnormal. Plant management should be advised as to the necessity to repeat the abnormal tests..

OK

If the repeat test or tests are abnormal, the Plant Physician will certify as to the unsuitability of the employee to continue working in a job potentially exposing him to VCM. The Plant Physician will arrange for a more comprehensive examination of the employee with appropriate medical specialists. Such examination may include but not be limited necessarily to the following specific procedures when indicated: liver scanning, liver angiogram, and liver biopsy.

V. Return of an Employee to Potential VCM Exposure - If in the Plant Physician's opinion an employee, who has been removed from potential VCM exposure for health reasons, has sufficiently recovered so that VCM exposure would not materially impair the employee's health, the Plant Physician may so certify as described above. Such a decision might be appropriate if the abnormal tests return to normal and remain so for at least 3 months.

OK
no
VI. Contractor Employees - Such employees' medical surveillance will be as described above and under the direction of the Plant Physician. *Some have been*

VII. Former PPG Employees' Follow-Up - All employees who have had 5 or more years' employment at PPG in a job where they were potentially exposed to VCM will be followed up as follows:

- If directed to do this it will be done*
1. At the time that they leave PPG they will be advised as to the advisability of follow-up examinations every 3 years to include the 5 tests on a serum specimen required for VCM employees under the OSHA Standard and that PPG will pay for such tests if they provide us with a permanent address.
 2. PPG will send them a notice every 3 years advising them as to the arrangements for the tests and then advise them as to the results.
 3. PPG will request death certificates from the state when the person dies.
 4. Appropriate epidemiological analysis will be performed on the follow-up data received.

Note: Although not required by the above-referenced OSHA Standard because presently available medical evidence suggests involvement of other organ systems of the body is possible, the following additional tests should be considered on an annual basis:

SMA 12
CBC
Urine
FVC and FEV₁
Chest X-ray

Any abnormalities should be considered as a basis for possible rejection on the pre-placement exam and appropriate follow-up on the periodic exam.

VINYL CHLORIDE CERTIFICATE

This is to certify that _____,
employee of the vinyl chloride (VCM) area, is physically fit for:

- a) Use of respirators of any kind.
- b) Use of protective equipment.
- c) Exposure to VCM in emergency.

Signed today after physical examination.

Date

Plant Physician

SL 028203