

UNION CARBIDE CORPORATION
PLASTICS DIVISION

South Charleston Plant

October 24, 1966

TO : Mr. A. R. Anderson (515)
Dr. C. U. Dernehl (NYO)
Mr. F. D. Dexter (NYO)
Mr. J. M. Elliott (514)
Dr. E. Q. Hull (514)
Dr. R. E. Joyner (515)

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SUBJECT: MCA Occupational Health Committee Meeting,
Cleveland, Ohio - October 6, 1966

Attached is my summary of a meeting in Cleveland, Ohio regarding health problems of polyvinyl chloride producers. A copy of the Manufacturing Chemists' Association notes, issued by Mr. F. H. Carman, Technical Director, is also attached.

The meeting impressed me with the following points:

1. There is a definite health problem related to polyvinyl chloride manufacture.
2. Our people will have to be informed of the potential hazard.
3. Our medical and safety costs are going to be increased to reduce the potential hazard.

The notes cover B. F. Goodrich's approach to study and control the disease. While I think they are being overly conservative in some instances, they have provided a basis for our planning.

Until there is a definite plan for handling this problem within the Corporation, this information should be regarded as confidential and its circulation severely limited.

R. W. Wheeler Jr.

RNWheelerJr/ra

Attachments

(Personal & Confidential)

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MEETING PVC RESIN PRODUCERS
AT
CLEVELAND ENGINEERING SOCIETY
UNDER THE SPONSORSHIP OF
MCA AND B. F. GOODRICH CHEMICAL COMPANY

OCTOBER 6, 1966

Attendees: (See attachment)

Mr. F. H. Carman - MCA

1. MCA normally sets up functional rather than product-oriented committees. This group is an exception and required authorization by Board of Directors.
2. All policy statements, press releases, etc. must be handled by MCA. The committee on Occupational Health may issue no statements of its own accord.
3. Meetings other than this one are not recognized by MCA.

Dr. Rex Wilson & Mr. William McCormick - B. F. Goodrich Company

Several years ago one of the plants noted a case of an employee having soreness of finger tips. Further examination showed bone damage in the fingers.

They have since X-rayed all personnel in PVC plants. This showed one percent of all people examined had some damage; six percent of PVC pot cleaners were affected. Personnel in the Cleveland Office and one Rubber Plant were examined without finding any similar damage. Currently, they have identified thirty cases—two not connected with PVC. Two cases showed external ulceration; four showed scleroderma. R

Affected personnel were assigned to other work. On repeated examination most showed improvement with some new bone tissue formed. Improvement was not uniform throughout the group.

Communication with some U. S. companies and foreign companies showed one foreign company had a number of similar cases which they thought was related to vinyl chloride intoxication.

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Study of literature turned up two references to the disease:

Cordier, et al
Cahiers de Medicin du Travail
January, 1966 (Belgian)

Suciu, et al
Medicina Interna (Bucharest)
15:967-78, August, 1963

B. F. Goodrich has translations of these articles and will supply them to interested responsible personnel.

Disease appears to be unique to PVC manufacture. Incidence at B. F. Goodrich is higher in old plants as compared to new ones, and is higher in pearl (suspension) polymerization than in emulsion. Possibly higher incidence in closed structure plants than in open structure, though this may be repeat of old versus new plant. Raw material suppliers have been contacted but no cases have been found by raw material suppliers.

Symptoms

- Raynaud's phenomena — Blanching of finger tips on exposure to cold. Numbness of finger tips.
- Scleroderma — Thickening of skin on fingers.
- Acro-osteolysis — Washing away or dissolution of the bones.
- Other Indications — Shortening of finger tips, soreness of finger tips, sensitivity of finger tips; slow recovery of hand temperature on exposure to cold water; blockage of arteries in fingers; some changes in the esophagus.

X-ray appears to be the most reliable tool for diagnosis. Other symptoms may or may not be present. Reading of X-rays in mild cases can be tricky. Normal reaction is to assume finger damage from trauma.

Time of disease onset varied from 3 to 10-15 years.

B. F. Goodrich knows the following other items:

1. VC monomer can be absorbed through skin and exhaled.
2. Blood vessels in fingers showed arterial blood supply blockage in affected fingers.
3. No cases have appeared in vinyl chloride monomer production, possibly due to lower exposure. VC intoxication appeared to have no relationship.
4. Disease called lathyrism, resulting from eating large amounts of chick peas, is similar.

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B. F. Goodrich has used consultants and medical school research facilities to study disease. Various theories are as follows:

1. May be a change in collagen tissue resulting in failure to hold calcium.
2. May be polymerization of VC in body (not too likely).
3. May be a systemic disease as opposed to a purely localized disease (fingers).

B. F. Goodrich's program, based on findings, is as follows:

1. All new employees are given hand X-ray examinations.
2. PVC pot cleaners will be required to wear gloves (PVC coated). Other type gloves are being studied for permeability.
3. Plant personnel are being X-rayed every six months.
4. Employee information:

Plant physician has told those affected of the disease. They are considered Compensation cases. They are given copies of examination findings for transmission to their own doctors. Other personnel have been told there is a medical problem and the cause is not known. People are aware it is in the PVC pot cleaning area. No lost-time injuries have resulted from disease yet. One case involved sympathectomy to make hands warm.

5. Personnel affected by the disease are transferred to other work. There is no complaint from unions or people and no reluctance to clean PVC pots.
6. Further studies are planned though this is complicated by the fact that no animal exhibits Raynaud's phenomena. Collagen tissue studies will be made. They are worried about possible long-term effect on body tissue, especially if it proves to be systemic.

B. F. Goodrich is sharing its knowledge with all PVC manufacturers. They hope all will use discretion in making the problem public. Any new findings should be communicated to the MCA Occupational Health Committee or to Dr. Rex Wilson of B. F. Goodrich Company. They would read any X-rays supplied them without charge. They particularly want to avoid exposés like Silent Spring and Unsafe at Any Speed.

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Other Statements and Observations:

Dr. C. U. Dernehl - UCC

No neurovascular cases have been recorded. Twenty-six men at Texas City Plant have been checked with four being suspects; three of these may be from trauma. Eighteen men at South Charleston have been checked with three suspected cases. Follow-up is planned. The men are continuing in their jobs. The absorption of VC through the skin has been definitely noted. (Doctor Dernehl, in a private conversation, stated that he wanted to check VC absorption through the skin of PVC pot cleaners. He also wanted to expand the number of people checked via X-ray.)

Dr. H. L. Gordon - Dow Chemical Company

No cases have been noted. There have been no X-ray studies. He produced a similar phenomena in mice tails, using alcohol and carbon tetrachloride when working on trench-foot studies.

Dr. J. H. Wolfsie - U. S. Rubber Company

No reported cases. No X-ray studies.

Mr. Dan Carberry - Atlantic Tubing and Rubbery Company

One case of Raynaud's phenomena in a former pot cleaner was noted. Recovery is apparent; the man is now a foreman.

Dr. C. A. Johnson - Goodyear Tire and Rubber Company

Forty selected people have been X-rayed. Found one case with a bone notch. Pot cleaners are rotated.

Anonymous - Shawinigan Chemicals Ltd

One case of finger blanching and numbness about fifteen years ago (not supported by Shawinigan personnel present).

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Monsanto Company

No one attended. Discussion of fact that they knew of problem but used solvent cleaning for PVC pots.

Considerable discussion by Thompson and others as to how a small producer could investigate personnel health.

RNWheelerJr/ra

October 7, 1966

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