



Vinyl chloride

UNIROYAL, Inc.
Oxford Management & Research Center
Middlebury, Connecticut 06749

June 21, 1974

Mr. James Kallenborn
Office of Program Development, OSHA
U.S. Department of Labor
1726 M Street, N.W.
Washington, D.C.

RE: VINYL CHLORIDE

Dear Mr. Kallenborn:

At your meeting with ORC on June 18, you asked for informed opinions on eight questions related to vinyl chloride. In the following paragraphs are my considered opinions based on many years experience in research and development of Agricultural Chemicals as well as ten years as Corporate Industrial Toxicologist for UNIROYAL. In this last capacity, I have been in many plants. I am thoroughly familiar with the processes in every phase of the problem and have been heavily involved in the vinyl chloride problem. My comments follow in the order in which you listed them.

1. Engineering. Considerable freedom must be left with the engineering department in each plant. Processes differ. Some plants already have eliminated hand cleaning of vessels, the source of the greatest exposure. In our own plant, we are not this far along and estimate that it will be about two years before we can have a solvent cleaning operation in operation.
2. Personal protective equipment. Considering the great reduction in exposure I see very little need for personal protective equipment other than the usual safety shoes, hard hats, safety glasses, etc., customary in most chemical operations. We are dealing with a very dilute concentration of a gas in air. Nothing short of a completely sealed space suit will be really effective. There is no toxicological reason to specify such protection. In my mind, it would create a far greater risk than the VC exposure even in a PVC plant. It would be an unconscionable inconvenience, hazard and expense to inflict on the worker and management in any kind of fabricating operation where concentrations are very low generally. Again, we should let local union-management communities work out solutions to meet local needs.
3. Monitoring. Except for preliminary study in a few plants, this should not be necessary in the ordinary fabricating plant. It is too time consuming and not enough competent manpower is available to do enough monitoring to be reliable. A little data can be quite misleading. Most fabricating operations will result in well under 10 ppm and I see no data to suggest that this is a hazardous level. We should concentrate our effort where the problem is worst - the PVC plant and to a minor extent the worst places

UPL 18501

in the monomer plants. In PVC, I believe there should be sequential samplers capable of measuring 10 ppm with reasonable accuracy. They should sample critical points where the highest exposure might occur and should include an alarm to warn when exposure climbs greatly above the norm for that point. Hand monitoring with a portable instant indicating instrument will enable plant personnel to detect the source and to take immediate corrective action. Personnel monitoring should also be largely limited as above to the PVC plant. Competition will force manufacturers to reduce monomer content as much as possible, thereby reducing exposure potential in fabricating plants.

Some sequential monitoring in monomer plants is probably desirable to pick up leaks for prompt maintenance. Portable instant reading instruments could be used as an alternative. It is not necessary in fabricating plants.

In general, wherever personal monitoring is done it should be based on a reasonable statistical design so as to get the maximum data with the minimum waste of manpower. We must keep in mind that there are few trained workers capable of doing the kind of analytical work required and there will be many equally pressing calls on their time.

4. Medical program. A good medical program is always desirable. However, the specialized NIOSH liver function type of test should be reserved for PVC plants, and to a lesser extent VC plants. In any case, they should be limited to personnel having over 10 ppm TWA exposure. These tests are not good predictors of angiosarcoma. Much freedom should be given the local health personnel who are trained professionals. They have to deal with the total man.

This medical surveillance program above should be part of an international long range research effort as proposed by Prof. Maltoni.

5. Medical and monitoring records as discussed above should be kept until the man dies, then transferred to a central group as discussed in the last paragraph under item 4 above. There should be provision for periodic review of the health data until about the year 2000 when it will be possible to determine whether changes made now have been successful in eliminating significant incidence of tumors due to VC.
6. Covered workers - those with TWA exposure greater than about 20 ppm. This will eliminate most fabricating plants and customers of their products.
7. Regulated areas - Workplaces covered by item 6.
8. Exposure level. I strongly suggest a TWA of 50 ppm with review in one and two years when the various studies will be coming to completion. My study of the Maltoni data on rats, the Tabershaw-Cooper and Dow's studies convince me that there is no scientific basis to predict that this level will result in undue risk.

URL 18502

Please call on me if I can be of help. We will present more data in our written report submitted at the hearing next week.

Sincerely,

Walter D. Harris

Walter D. Harris, Ph. D.
Corporate Industrial Toxicologist

WDH/mab

bcc: Mr. Wayne Brooks, ORC
Dr. Daniel Boyd, U.S. Dept. of Labor
R. J. Dowling
B. R. Leach
J. D. Forbes, M.D.
D. E. Dudrow
R. E. Lowell
Frank Ryan, RMA

URL 18503