

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF OHIO
WESTERN DIVISION

HERMAN A. DENDINGER, et al.,	)	Case No. C 84-7854
	)	
Plaintiffs,	)	[Hon. Nicholas J. Walinski]
	)	
vs.	)	RESPONSES OF DEFENDANT UNION
	)	CARBIDE CORPORATION TO
CHRYSLER PLASTIC PRODUCTS	)	PLAINTIFF'S INTERROGATORIES
CORPORATION, et al.,	)	DIRECTED TO ALL DEFENDANT
	)	<u>PVC MANUFACTURERS</u>
Defendants.	)	

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Now comes defendant, Union Carbide Corporation, and for
its response to plaintiff's interrogatories, states as follows:

INTERROGATORY NO. 1: Are you a manufacturer of
polyvinyl chloride (PVC) resin?

ANSWER:

Yes.

INTERROGATORY NO. 2: When did you first begin
manufacturing PVC resin?

ANSWER:

1933

INTERROGATORY NO. 3: Have you manufactured PVC resin
continuously since the date indicated in your answer to
interrogatory number 2?

ANSWER:

Yes.

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INTERROGATORY NO. 4: Indicate the percentage of all PVC resin manufactured by you in calendar year 1967 that was the result of the following processes: (a) suspension; (b) emulsion; (c) bulk; or, (d) solution.

ANSWER:

Information and Belief:

A.	70mm/yr.	32% Suspension
B.	24mm/yr.	11% Emulsion
C.	24mm/yr.	11% Buld
D.	<u>100mm/yr.</u>	<u>46% Solution</u>
	218mm/yr.	100%

INTERROGATORY NO. 5: Indicate the extent to which the percentages of your total PVC resin output attributed to any of the four processes identified in the prior interrogatory have changed since calendar year 1967, by indicating the specific changes made and dates of all such changes.

ANSWER:

Information and Belief:

<u>Total Capacity</u>	<u>Item (Plants)</u>	<u>% Change</u>
243 mm 1968	Suspension expanded (to 95mm)	+39% of 218
219 mm 1976	Emulsion shut down	-11% of 218
100 mm 1977	Suspension and Bulk shut down	-50% of 218
80 mm 1980	Solution cut (to 80mm)	-10% of 218

INTERROGATORY NO. 6: Did you sell any PVC resin to Chrysler during calendar year (a) 1967; (b) 1968; (c) 1969; (d) 1970; (e) 1971; (f) 1971 [sic]; (g) 1972; (h) 1973; (i) 1974; (j) 1975; (k) 1976; (l) 1977; (m) 1978; (n) 1979; and, (o) 1980.

ANSWER:

(a) Records not available.

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- (b) 0
- (c) 0
- (d) 0
- (e) 0
- (f) 0
- (g) Suspension PVC 80,950 lbs. Solution PVC 2,000 lbs.
- (h) Bulk (Union Carbide Corporation Process) PVC 11,000 lbs. Solution PVC 16,000 lbs.
- (i) Bulk (Union Carbide Corporation Process) PVC 9,000 lbs. Solution PVC 12,000 lbs.
- (j) Bulk (Union Carbide Corporation Process) PVC 3,800 lbs. Solution PVC 50 lbs.
- (k) Bulk (Union Carbide Corporation Process) PVC 17,000 lbs. Solution PVC 9,700 lbs.
- (l) Bulk (Union Carbide Corporation Process) PVC 11,000 lbs. Solution PVC 2,250 lbs.
- (m) 0
- (n) 0
- (o) 0

INTERROGATORY NO. 7: If your answer to the preceding interrogatory is, in any part, "yes", indicate the total volume of PVC sold to Chrysler during every year that you sold PVC resin to Chrysler.

ANSWER:

See answer to Interrogatory No. 6.

INTERROGATORY NO. 8: For every calendar year between 1967 and 1980, inclusive, that you sold PVC resin to Chrysler, indicate the percentage of such resin which was manufactured by the following processes: (a) suspension; (b) emulsion; (c) bulk; and, (d) solution.

ANSWER:

<u>Year</u>	<u>Suspension</u>	<u>Emulsion</u>	<u>Bulk*</u>	<u>Solution</u>
1972	97.6%	0	0	2.4%

1973	0	0	40.7%	59.3%
1974	0	0	42.8%	57.2%
1975	0	0	98.7%	1.3%
1976	0	0	63.7%	36.3%
1977	0	0	83.0%	17.0%

*Note Union Carbide Corporation Bulk process PVC was made by a unique continuous process noted for purity of resin and low RVCM, ie 0-15 ppmw.

INTERROGATORY NO. 9: Did you at any time conduct any testing to determine the concentration of vinyl chloride monomer contained in your PVC resin at any time following manufacturing?

ANSWER:

Yes.

INTERROGATORY NO. 10: If your answer to the preceding interrogatory is "yes," indicate: (a) what testing was done; (b) when such testing was done; (c) who conducted the testing; and, (d) what the results were.

ANSWER:

Testing done routinely from 1974 onward by Quality Control Laboratories at plants.

Some testing was done earlier in 1960s but records are not available. Testing methods were not believed to be reliable prior to 1974.

Testing consisted of injecting a solution of the resin sample into a vapor fraction analyzer and determining the resultant RVCM in ppmw.

Suspension process homopolymer PVC contained 200-1000 ppmw RVCM as produced. Union Carbide Corporation bulk process copolymer PVC contained 5-15 ppmw RVCM as produced. Union Carbide Corporation solution process copolymer PVC contained 1 ppmw RVCM as produced.

INTERROGATORY NO. 11: For every calendar year in which you sold PVC resin to Chrysler, indicate what percentage of the

PVC resin sold was: (a) homopolymer; (b) copolymer; or, (c) terpolymer.

ANSWER:

Union Carbide Corporation objects to this Interrogatory since the copolymer and terpolymer supplied are unique ultra-low RVCN PVC. Without waiving this objection, Union Carbide Corporation further states:

<u>Year</u>	<u>Homopolymer</u>	<u>Copolymer</u>	<u>Terpolymer</u>
1972	97.6%	2.4%	-
1973	0	100.0%	-
1974	-	100.0%	-
1975	-	98.7%	1.3%
1976	-	89.7%	10.3%
1977	-	100.0%	-

INTERROGATORY NO. 12: With respect to every sale of PVC resin from you to Chrysler, indicate the date on which such resin was manufactured and the date on which such resin was shipped to Chrysler.

ANSWER:

Union Carbide Corporation cannot supply the exact dates for every sale of PVC resin to Chrysler, however, based on information and belief:

All PVC was produced in Texas City, Texas and shipped by bulk container ship to Perth Amboy, NJ where it was stored until bagged or shipped in bulk carriers. Estimated time in bulk containers is 32 days.

PVC bagged at Perth Amboy was warehoused until shipped by truck or rail car. Storage time in warehouse was 14 days average.

Transit by truck to Chrysler was 1 day, thus PVC was held 32 days average in bulk and 15 days in bags.

INTERROGATORY NO. 13: Did you, at any time, notify Chrysler of any studies indicating that vinyl chloride monomer

was: (a) hazardous to human health or (b) that vinyl chloride monomer was a suspected carcinogen?

ANSWER:

Based on information and belief:

All PVC customers of Union Carbide Corporation were provided a booklet on monitoring the concentration of Vinyl Chloride in the work place or ambient air early in 1975. Bags of Union Carbide Corporation Bulk PVC were provided with warning labels as per OSHA. Solution PVC was accepted by OSHA as a fabricated product so low in RVCM as to not require a warning label.

Warnings issued by NIOSH and OSHA in 1974 were deemed adequate.

INTERROGATORY NO. 14: If your answer to the prior interrogatory is "yes," state in full, the date and substance of every such notification to Chrysler.

ANSWER:

Records of specific Chrysler warnings were not kept. See answer to Interrogatory No. 13..

INTERROGATORY NO. 15: When did you first become aware of any study indicating that vinyl chloride monomer was a suspected carcinogen; or, (b) hazardous to human health?

ANSWER:

- (a) Maltoni, C., "Occupational Carcinogeneses" Proceedings of the Second International Symposium on Cancer Detection and Prevention, April 1973.

Viola, P.L., "Oncongenic Response of Rat Skin, Lungs, and Bones to Vinyl Chloride" Cancer Research pp. 516-522, Vol. 31, 1971.

- (b) Jan. 1974 BF Goodrich and NIOSH reports of Angiosarcoma of the liver at BFG Louisville, KY plant.

INTERROGATORY NO. 16: What steps were taken by you prior to, or during the course of, your sales of PVC resin to Chrysler to determine the concentration of residual vinyl chloride monomer in said resin.

ANSWER:

See answers to Interrogatory Nos. 10 and 13.

INTERROGATORY NO. 17: What steps were taken by you prior to, or during the course of, your sales of PVC resin to Chrysler, to determine whether any component of that resin was an actual or potential carcinogen?

ANSWER:

In addition to reviewing the studies supported or conducted by others:

Study sponsored by Union Carbide Corporation at Melon Institute.

Smyth, H.F., Jr. and Weil, C.S., "Chronic Oral Toxicity to Rats of Vinyl Chloride-Vinyl Acetate Copolymer," Toxicology and Applied Pharmacology, Vol. 9, pp. 501-504, 1966.

Chronic Toxicity studies cosponsored by Union Carbide Corporation with PVC industry.

Hefner, R.E., et al., "The Effects of Exposure of Rats to Vinyl Chloride on the Sulfhydryl Levels of Liver," Dow Chemical, U.S.A., for Manufacturing Chemists Association, 1973.

Dow Chemical, U.S.A., "Continued Studies on the Pharmacokinetics/Metabolism of Vinyl Chloride in Mammals," Manufacturing Chemists Association, Washington, D.C., 1975.

Tabershaw/Cooper Associates, Inc., "Epidemiological Study of Vinyl Chloride Workers," 2180 Milvia St., Berkeley, CA 94704, May 3, 1974.

Industrial Biotest Laboratories, Inc., "23-Month Status Summary to Manufacturing Chemists Association, Chronic Vapor Inhalation Toxicity Study with Vinyl Chloride in Albino Rats, Albino Mice and Golden Hamsters," Northbrook, IL, 1975.

University of Louisville Cancer Center, "Technical Proposal Research Techniques and Methods for Detection and Prevention of Carcinogenesis in Industrial Workers," October 31, 1975. (Supported by Manufacturing Chemists Association.)

Watanabe, P.G., et al., "Fate of ^{14}C - Vinyl Chloride After Single Oral Administration in Rats," Manufacturing Chemists Association, Washington, D.C., 1975

Equitable Environmental Health, Inc., "Epidemiological Study of Vinyl Chloride Workers - Final Report," 2020 Milvia St., Berkeley, CA 94704, August 1977.

Chiazze, L., Jr., Nichols, W.E., and Wong, Otto, "Mortality Among Employees of PVC Fabricators," Journal of Occupational Medicine, Volume 10, No. 9, September 1977.

Watanabe, P.G., et al., "Summary of the Studies Conducted on Pharmacokinetics/Metabolism of Vinyl Chloride in Rats," Manufacturing Chemists Association, Washington, D.C., 1977.

Watanabe, P.G., et al., "Hepatic Macro-molecular Binding Following Exposure to Vinyl Chloride," Manufacturing Chemists Association, Washington, D.C., 1977.

John, J.A., et al., "The Effects of Maternally Inhaled Vinyl Chloride on Embryonal and Fetal Development in Mice, Rats and Rabbits," Manufacturing Chemists Association, Washington, D.C., 1976.

INTERROGATORY NO. 18: Did Chrysler, at any time, ever ask you whether you were aware of any studies indicating that exposure or overexposure to vinyl chloride monomer posed any actual or potential human health hazard?

ANSWER:

No records exist as to inquiries by Chrysler as to health hazards resulting from use of Union Carbide Corporation PVC resins.

INTERROGATORY NO. 19: Describe the steps taken by you subsequent to January, 1967 to reduce the concentration of residual vinyl chloride monomer in PVC resin manufactured by you.

ANSWER:

Information and belief:

Vacuum stripping systems were installed on suspension resin lines about 1967-1968.

Resin drying systems were upgraded to reduce volatiles 1967-1972.

Resin testing and aeration initiated in 1974 to reduce residual vinyl chloride in suspension process PVC.

Union Carbide Corporation bulk and solution process resins were monitored and residual vinyl chloride content of the resin controlled by process conditioning in 1974.

INTERROGATORY NO. 20: State the full name, home address and business address of your employee who is most knowledgeable concerning the residual concentrations of vinyl chloride monomers in the PVC resins manufactured by you between January 1, 1967 and December 31, 1980.

ANSWER:

Unknown at this time.

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AS TO OBJECTIONS:

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Conoco, Inc., Uniroyal, Inc.,
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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Responses to Plaintiff's Interrogatories Directed to all Defendant PVC Manufacturers was mailed by United States mail, postage prepaid, to Kirk J. Delli Bovi, Esq., attorney for plaintiff, at his office located at Murray & Murray Co., L.P.A., 300 Central Avenue, Sandusky, Ohio 44870, and to defense counsel as set forth in the attached Schedule of Service this _____ day of October, 1986.

An Attorney for Defendants
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Company, The BFGoodrich
Company, Firestone Tire &
Rubber Company, Conoco,
Inc., Uniroyal, Inc., Union
Carbide Corporation, and
Diamond Shamrock Corp.

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