

DEFENDANT UNION CARBIDE CORPORATION'S ANSWERS TO  
PLAINTIFF'S FIRST SET OF INTERROGATORIES TO DEFENDANTS  
CORRECTED AND REVISED ANSWERS

1. Defendant first manufactured VYNS, VYHH and VMCH solution resins in 1941. Defendant first manufactured suspension PVC-type resin as sold to Ford in 1962.
2. Dates of manufacture and sale are same. Defendants records for PVC sales to Ford do not exist prior to 1968.
3. Defendant continues to manufacture VYHH, VYNS and VMCH resins presently. Defendant does not manufacture suspension PVC for sale.
4. See item 3.
5. Solution Vinyl Resin VYNS-3 Sales to Ford, Mt. Clemens, Michigan.

|      |                |
|------|----------------|
| 1968 | 221,000 pounds |
| 1969 | 25,400 pounds  |
| 1970 | 112,000 pounds |
| 1971 | 106,000 pounds |
| 1972 | 47,000 pounds  |
| 1973 | 36,000 pounds  |
| 1974 | 64,000 pounds  |
| 1975 | 63,000 pounds  |
| 1976 | 126,000 pounds |

Chemical Composition of VYNS

|                        |                       |
|------------------------|-----------------------|
| Poly Vinyl Chloride    | 88.5-90.5% by wt.     |
| Poly Vinyl Acetate     | 11.5-9.5% by wt.      |
| Unconverted VC monomer | less than 1ppm by wt. |

Solution Vinyl Resin VYHH Sales to Ford, Mt. Clemens, Michigan.

|      |               |
|------|---------------|
| 1968 | 13,000 pounds |
| 1969 | 21,000 pounds |
| 1970 | 23,000 pounds |
| 1971 | 31,000 pounds |
| 1972 | 35,000 pounds |
| 1973 | 52,000 pounds |
| 1974 | 39,000 pounds |
| 1975 | 61,000 pounds |
| 1976 | 45,000 pounds |

Chemical Composition of VYHH.

|                        |                       |
|------------------------|-----------------------|
| Poly Vinyl Chloride    | 85.0-86.5% by wt.     |
| Poly Vinyl Acetate     | 15.0-13.5% by wt.     |
| Unconverted VC monomer | less than 1ppm by wt. |

Suspension PVC Resin. Primary product was QYSL-7 though small amounts of QSCM-7 and QYTQ-07 were sold. The only difference in the three resins is in molecular weight.

Sales to Ford, Mt. Clemens, Michigan.

|      |                  |
|------|------------------|
| 1968 | 1,792,000 pounds |
| 1969 | 6,429,000 pounds |
| 1970 | 852,000 pounds   |
| 1971 | 168,000 pounds   |
| 1972 | 0 pounds         |

UCC discontinued PVC suspension resin sale to Ford in 1971.

Chemical composition

Poly Vinyl Chloride 100%

6. a. Resins VYNS-3 and VYHH - Solution Vinyl Resins  
Resin QYSL-7, QSCM-7 and QYTQ-7 Suspension PVC Resin
- b. Bakelite Vinyl Plastic
- c. Resins VYNS-3 and VYHH were used to manufacture artificial wood grained plastic film for Ford station wagons. Resins QYSL-7, QSCM-7 QYTQ-7 were used to manufacture vinyl film for automobile interiors.
- d. Resins VYNS-3 and VYHH were shipped in multi walled Kraft paper bags. Resins QYSL-7, QSCM-7 and QYTQ-7 were generally shipped in railroad hopper cars.
- e. Yes. The customer mixes the PVC with plasticizers, stabilizers, colorants, fillers, and other chemical substances, which then is converted into a film product. There are literally hundreds of chemical additives that may be incorporated with PVC resins, the selection of which by the customer is dependent upon the ultimate product to be produced.
7. a. See the answer to Interrogatory 2.
- b. PVC suspension process technology used by Defendant was purchased from Wacker-Chemie, GMBH of the Federal Republic of Germany in 1960.  
  
Solution vinyl resin technology was developed at South Charleston, WV starting in 1933.
- c. PVC suspension resins were manufactured under direction of Dr. Hans Bauer, Wacker-Chemie GMBH, Werk, Burghausen, Federal Republic of Germany.  
  
Solution vinyl resins were developed by many persons whose identity is not recorded.
- d. This defendant has no such records, but literature and patents exist on poly vinyl chloride encompassing the design and development of PVC resins.

- e. Defendant objects to this interrogatory because it is unduly burdensome and irrelevant to the subject matter of this action.
  - f. Unknown.
21. The interrogatory is only partially meaningful. Solution vinyl resins VYHH and VYNS-3 were produced only by UCC and Ford's specification simply reflected UCC's specification. In the case of suspension PVC resin, the Ford specification applied to any of a number of suppliers thus the Ford specification took precedence:

| <u>UCC Specification</u> | <u>Ford Specification</u> |
|--------------------------|---------------------------|
| QSCM-7                   | M96F51                    |
| QYTO-7                   | M96F51A                   |
| QYSL-7                   | M96F93                    |
| QYSC-7                   | M97F60A                   |

23. No

- a. Not applicable.
  - b. Defendants PVC products are inert solids which are not volatile. The use of the term heat stability is not understood when used in conjunction with volatility. Heat stability in the PVC industry refers to the development of color during processing and use. All PVC products contain small amounts of water and other materials remaining from manufacture. These trace volatiles are controlled by drying and other processing conditions to published specifications. Therefore tests and research studies were not necessary.
44. On information and belief, UCC personnel have visited the Ford Motor Company plant at Mt. Clemens in conjunction with product quality problems not related to health and safety. A UCC representative also toured the Mt. Clemens plant as a result of an alleged injury claim by Mikyska about 1980.
- a. Defendant has no right to inspect customers' plants for product health and safety concerns. In the case of Ford Motor Company, they had an ongoing safety program thus there was no reason for safety inspections and air sampling.
  - b. Not applicable.
46. Permissible exposure limits to air contaminants were established by OSHA in 36 FR 10503 (May 12, 1971). Monitoring was not specifically required.

Specific monitoring requirements were established by OSHA in 39 FR 1234 (April 5, 1974 and in 29 CFR 1910.1017 (April 1, 1975).

47. The interrogatory is overbroad and seeks information irrelevant to this action and is ambiguous as to time period. Defendant has used a variety of air sampling techniques which were "state of the art" at the time they were used. All complied with governmental regulations existing at the time. Air samples were taken to determine the content of air contaminants in the work space air of the defendant's plants. Actions taken in response to such sampling are not pertinent to the plaintiff's claim.

50.

1. Union Carbide Corporation  
Medical Department  
39 Old Ridgebury Road  
Danbury, CT 06817

The present Director of Union Carbide's Medical Department is Dr. T. A. Lincoln. Previous Directors are Dr. J. J. Welsh, Dr. Thomas Hale, and Dr. A. S. Cranch.

2. Union Carbide Corporation  
Bushy Run Research Center  
Export, Pennsylvania 15632

The present Director of Bushy Run Research Center is Dr. Fred Frank. Previous Directors include Dr. Arthur Webb, Dr. Eugene Cox, Dr. Clarence P. Carpenter and Dr. Henry M. Smyth.

- (54.) 1946 Chemical Hygiene Fellowship, Mellon Institute, Pittsburgh, PA, a Union Carbide Corporation sponsored activity. Cost unknown.

Report:

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

1966 Manufacturing Chemist Association, Washington, D.C. Study of Occupational Acroosteolysis tips by University of Michigan. Cost to UCC was approximately \$9,000.

Reports:

- a. Dinman, B. D., et al, "Occupational Acroosteolysis I An Epidemiological Study" Archives of Environmental Health 22, 61-73, 1971.
- b. Cook, W. A., et al "Occupational Acroosteolysis II An Industrial Hygiene Study" Arch. Environmental Health 22, 74-82, 1971.
- c. Dodson, V. N. et al "Occupational Acroosteolysis III Clinical Study", Arch. Environmental Health 22, 83-91, 1971.

UCC  
048897

1972 Manufacturing Chemists Association, Washington, D.C. - Research Program to investigate carcinogenic potential of vinyl chloride. Cost \$350,000. UCC pledged \$15,000 over a three-year period for a chronic inhalation and an epidemiological study.

1974 Manufacturing Chemists Association, Washington, D.C., Study of Metabolism and Teratogenic Effects of Vinyl Chloride. Cost - ~\$75,000. UCC contributed ~\$5,000.

1974 Organization Resources Counselors, Epidemiological Study of PVC Fabricator Employees. Total cost unknown. UCC contribution ~\$2,000.

1976 University of Louisville, School of Medicine - Research into Detection and Prevention of Carcinogeneses in Industrial Workers. Cost ~\$1,500,000. UCC cost ~\$30,000 over three years.

### Reports

1. Kiplinger, et al, "Interim Results of Exposure of Rats, Hamsters and Mice to Vinyl Chloride", New York Academy of Sciences 246, 1975.
2. Watanabe, P.G., et al, "Fate of <sup>14</sup>C - Vinyl Chloride after Single Oral Administration in Rats", Manufacturing Chemists Association, Washington, D.C., 1975.
3. Equitable Environmental Health Inc. "Epidemiological Study of Vinyl Chloride Workers Employed by Union Carbide Corporation, South Charleston Plant", Berkeley, California, 1976.
4. 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.
5. Organization Resources Counselors, Inc. "Report on a Mortality Study Covering Employees of Fabricators", 1625 I Street N.W., Washington, D.C., 1976.
6. Equitable Environmental Health, Inc. "Epidemiological Study of Vinyl Chloride Workers", Berkeley, California, 1977.
7. Watanabe, P. G., et al, "Summary of Studies Conducted on Pharmacokinetics/ Metabolism of Vinyl Chloride in Rats", Manufacturing Chemists Association, Washington, D.C. 1977.
8. Watanabe, P. G., et al, "Hepatic Macromolecular Bonding Following Exposure to Vinyl Chloride", Manufacturing Chemists Association, Washington, D.C. 1977.

Results of all UCC sponsored research have been made public. The body of literature on vinyl chloride toxicity is so voluminous that copying everything is burdensome and generally not applicable to the plaintiff's alleged injury.

UCC  
046698

55. a. M. E. Eisenhour, Principal Engineer  
Union Carbide Corporation  
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Texas City, Texas 77590

Deposition, Morristown, NJ, 1979.

- b. Carol Weil, Chief Toxicologist ret.  
Union Carbide Corporation  
Bushy Run Research Center  
Export, PA 15632

Deposition, Morristown, NJ, 1979.

- c. R. N. Wheeler, Jr., Asst. Director Product Safety  
Union Carbide Corporation  
P. O. Box 8361  
South Charleston, WV 25303

Public Hearing, Washington, D.C., 1974.  
Deposition, Morristown, NJ 1979.  
Deposition, Cleveland, Ohio, 1983.

- d. Richard Hughes, Vice-President ret.  
Union Carbide Corporation  
39 Old Ridgebury Road  
Danbury, CT 06817-0001

Public Hearing, Washington, D.C., 1974.

- e. C. U. Dernehl, M.D., Associate Medical Director ret.  
Union Carbide Corporation  
39 Old Ridgebury Road  
Danbury, CT 06817-0001

Public Hearing, Washington, D.C., 1974.

- f. W. T. Gray, Assistant Plant Manager  
Union Carbide Corporation  
P. O. Box 50  
Hahnville, LA 70057

Deposition, Morristown, NJ, 1979.