

LEVINSON, CONOVER, ~~XXX~~ & AXELROD

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ATTORNEYS FOR plaintiffs

EUGENE MALIKO et al

Plaintiffs,

vs.

UNION CARBIDE etc.

Defendant

UNITED STATES DISTRICT COURT,
) FOR THE DISTRICT OF NEW JERSEY

) Civil No. 76-1533

) SECOND SUPPLEMENTAL INTERROGATORIES

)

TO:

PITNEY, HARDIN & KIPP, ESQS.,
Attorneys for defendant Union Carbide
163 Madison Ave., Morristown, N.J. 07960

SIRS:

The plaintiffs desire of the defendant answers to the following interrogatories under oath within the time prescribed by law:

1. There was testimony at depositions taken of Emil Borsch on April 14, 1977 at the offices of Levinson, Conover & Axelrod, Esqs., 265 Hobart St., Perth Amboy, N. J. wherein Mr. Borsch testified that the Amboy Terminaling as predecessor of the Outerbridge Terminal Co. in addition to having received shipments of polyvinyl chloride and vinyl chloride monomer also received from the defendant corporation chemicals known as polyethylene resin, bis-phenol -A- and polysteyrene. Were these chemicals shipped by the defendant corporation to the Amboy Terminaling Co. through the years prior to 1975?

No vinyl chloride monomer was shipped. Interrogatory 2 of the Supplemental Interrogatories provides this information by year.

RNW 0456

2. Set forth where this defendant manufactured those chemicals.

Polyethylene was manufactured in Texas, Louisiana and Puerto Rico.

Bisphenol A was manufactured in Puerto Rico.

Polystyrene was manufactured in New Jersey.

3. Set forth whether there were any other chemicals in addition to these chemicals manufactured by the defendant prior to 1975.

See answer to interrogatory 2 in the first Supplemental Interrogatories.

4. Describe polyethylene resin as to

(a) color

White

(b) the form in which it was shipped, ie, pellet, powder or otherwise.

Pellets and granules.

(c) the tonage shipped from 1975 backwards for a period of ten years.

See interrogatory 2 in the first Supplemental Interrogatories.

(d) the chemical strength

Less than ninety-nine percent polyethylene.

(e) chemical components other than polyethylene

Antioxidant	0.1%	- substituted
Diatomaceous earth	< 0.1%	
Stearates and fatty acids	< 0.1%	

5. Describe bis-phenol -A-.

(a) color

White

(b) the form in which it was shipped, ie. pellet, powder or otherwise.

Prills - spherical shapes approximately 1/8 inch in diameter.

(c) the tonage shipped from 1975 backwards for a period of ten years.

See interrogatory 2 in the first Supplemental Interrogatories.

(d) the chemical strength and components

4, 4' Isopropylidene diphenol	> 99%
Phenol	0.05 - 0.15%
Water	0.1%

RNW 0458

6. Describe polysteyrene.

(a) color

White

(b) the form in which it was shipped, ie. pellet,
powder or otherwise

Pellet

(c) the tonage shipped from 1975 backwards for a
period of ten years.

See interrogatory 2 in the first Supplemental Interrogatories.

(d) the chemical strength and components

Volatile material 0.3% or less as styrene

Crystal polystyrene is 99% polystyrene

Impact polystyrene is 93 to 85% polystyrene
and 6 to 14% rubber

SAN resins are 76% polystyrene
23% polyacrylonitrile

7. Describe any other chemicals in addition to the ones aforesaid

(a) color

(b) the form in which it was shipped, ie., pellet, powder or otherwise.

(c) the tonage shipped from 1975 backwards for a period of ten years.

See interrogatory 2 in the first Supplemental Interrogatories.

(e) the chemical strength and components

RNW 0460

8. How were each of these chemicals shipped to Amboy Terminaling Co., ie, loose, cartons, containers or open freight.

Van-like aluminum containers.

Some polyethylene was received and handled in sealed bins, i.e., large rubber bags containing several tons of material.

9. Set forth whether any of these particular products were developed by the defendant corporation in its research laboratory and if so, set forth the date each was developed.

Polyethylene, polystyrene and bisphenol A were articles of commerce prior to Union Carbide Corporation's start of manufacture.

10. Do any of these chemicals have any toxic qualities known to the defendant now or at the time of shipment and if so, set forth when the defendant was first aware of such toxic qualities as well as the nature of such toxicity.

All substances are toxic to some degree. Polyethylene toxicity studies were conducted at Mellon Institute by UCC in 1949. These showed a very low order of toxicity. Bisphenol A was studied at Mellon Institute in 1951. Polystyrene was generally regarded as low order of toxicity.

Bisphenol A dust contamination in the air was limited to 15 mg/m^3 and later reduced to 10 mg/m^3 (OSHA nuisance dust regulation). Skin contact may cause irritation. Dust of bisphenol A may cause eye injury.

11. For what purpose were these chemicals used in the trade.

Bisphenol A is used for manufacture of epoxy, polycarbonate, polysulfone, phenoxy and phenolic resins. It also is used as an antioxidant.

Polyethylene is used for the manufacture of film, sheeting and molded or extruded articles.

Polystyrene is used for the manufacture of films and molded or extruded articles.

12. For what purpose were these chemicals used in the trade.

See previous interrogatory.

13. Did this defendant sell these products to the corporations known as OTD and ATC.

No.

14. Set forth and describe any research done by this defendant prior to the manufacture of these products as to any toxicity or danger from these products to any of the handlers thereof.

Toxicity research prior to manufacture consists of a search of all available literature on the subject.

15. Set forth any and all continuing research and studies done by this defendant at any time after the product was first manufactured and up to the present time relative to the studies of toxicity of the particular product substance on any worker exposed to it in the course of handling said products in the hands of the ultimate manufacturer and user thereof.

See Attachment A for Polyethylene

See Attachment B for Bisphenol A

See Attachment C for Polystyrene

16. Did this defendant in the course of the manufacture of this product or products do any continuing research on the product as to determining the toxicity, carcinogenic nature thereof to any person coming in contact with its raw form.

Skin irritation studies on bisphenol A are in progress at Mellon Institute.

Toxicity studies on monomers, styrene, acrylonitrile and vinyl chloride are in progress cooperatively through Manufacturing Chemists Association.

17. If the previous question is answered in the affirmative, set forth by appending hereto a list of all articles, books and pamphlets which were read or used by this defendant in the course of the manufacture of these chemicals and their derivatives or in connection with such toxicity. Also set forth the name and date of the publication and publisher of these articles.

Handbook of Toxicology, W. S. Spector, Ed.
Saunders, Philadelphia - 1956

Dangerous Properties of Industrial Materials,
N. I. Sox
Van Nostranel Reinhold Company - 1975

Industrial Hygiene and Toxicology, F. A. Patty
Vol. II Toxicology, Fussett and Irish
John Wiley & Sons

Practical Toxicology of Plastics, Lefaux
London Iliffe Books, Ltd. - 1968

18. Was the chemical content of any of these products hereinabove named ever changed between the date it was first manufactured, during the course of the shipping to OTD and if so, set forth in detail the manner in which it was changed, the relative component strengths and why it was changed.

The basic chemical content was not changed, however, the ratios of one material to another are varied to secure desired physical properties. There was no effect on the material toxicity.

To list every minor change in a resin product is burdensome and impossible and would contribute nothing to the current litigation.

RNW 0463

19. Were any of the aforesaid products labeled in any manner during the course of shipping from 1975 backwards for a period of ten years and if so, set forth by attaching hereto a copy of such label and if it cannot be attached describe (a) the number of labels placed on each container (b) the color of the lettering (c) size of the lettering (d) color of the background and the type of container on which it was placed.

A weigh ticket was attached to each container identifying the material and the weight of the contents and the container number.

Attachment "D" shows a copy of a weigh ticket which was attached to the bulk container in a transparent plastic envelope.

20. If the chemicals were shipped in other cartons, ie., railroad cars, trucks or other methods, set forth the following: (a) describe the containers (b) the number of labels placed on a carton the size of the label (c) the color and size of the lettering on the label (d) the size of each carton and the weight when loaded.

Polyethylene, polystyrene and polyvinyl chloride were also received in 100,000 to 175,000 pounds net weight, closed hopper cars, which were unloaded by pneumatic conveyor.

Weigh tickets and tags were attached to openings.

21. Set forth the name and address of each and every expert the defendant intends to use at the time of trial having knowledge of the relevant facts herein.

Mr. R. Hollingshead will provide the names and addresses of the experts he intends to use at the time of trial.

22. Set forth the name and address of each and every expert the defendant intends to call upon at the time of trial to testify on its behalf and attach hereto a copy of his or their reports.

Mr. Hollingshead will provide the names and addresses of every expert he intends to call upon at the time of trial and provide copies of their reports.

23. Did the defendant during the course of research and development of the products polyethylene resin, bis-phenol -A- and polystyrene exchange any of its personnel or work jointly with any other chemical manufacturer, chemical consultant and researchers in the synthesis of these products with respect to toxicity and danger as well as inherent health problems that may have existed.

Union Carbide did not work directly with others nor exchange any personnel in the synthesis of these products. It should be understood, however, that Union Carbide Corporation and other companies freely make public and exchange all information concerning safety, health and toxicity of materials produced usually through the various trade organizations, e.g., MCA, SPI or SOCMA.

24. Set forth the date that these chemicals were first synthesized by this defendant.

Polyethylene	-	1941
Bisphenol A	-	1945
Polystyrene	-	1935

25. Set forth a list of all problems that were met and observed by the defendant and its agent in (a) the synthesis of these products (b) insofar as there might have been a problem with toxicity to the user.

Phenol is used as a raw material in the manufacture of bis-phenol A, therefore, normal precautions in handling phenol were observed. (See Attachment "E")

No extraordinary toxic effects were noted in the manufacture of polystyrene or polyethylene.

26. Did this defendant through its agents at any time make recommendations to any corporations or individuals purchasing these products named to have their employees wear any particular type of protective clothing when using these products and if so, set forth (a) all copies of such notices that were sent (b) what type of clothing was to be worn (c) what were the employees instructions in wearing these clothes, (d) the date the notice was sent to the employees.

No. In the case of bisphenol A, Union Carbide Corporation pointed out that it was mildly irritating to the skin and direct contact should be avoided. Eye injury could result from exposure to the material. (See Attachment "F")

Union Carbide's practice is to point out the nature of the hazard and let the customer select his own safety equipment.

27. Set forth the reason the defendant shipped its products inclusive of the chemicals named and PVC and VCM through the Amboy Terminaling Co. and the Outerbridge Terminal Co. rather than ship direct to the consumer from Union Carbide.

The defendant shipped its products through ATC and/or OTC rather than ship direct to the consumer to secure the advantage of lower shipping costs via water borne bulk containers.

The defendant at no time shipped vinyl chloride monomer via ATC and/or OTC.

28. What was the purpose and reason for the defendant to establish a separate entity, to wit, OTD and ATC for the purpose of transshipping chemicals.

ATC and/or OTC transshipped the materials at a lower cost than Union Carbide Corporation believed it could using its own personnel.

29. As to each of the products herein mentioned, set forth .
was there ever a safety data sheet applied and if so, attach a
copy of such safety data sheet for the years 1960 through 1974
inclusive.

See Attachment "G".

These are representative sheets in use. Safety data sheets do
not exist for all resin products but safety precautions are
universal for all resins.

30. Set forth a sheet giving a general description of each of
the chemicals named.

This has been done in interrogatories 4, 5 and 6.

31. Were any of these products named herein a registered trade
name of the defendant or were they generic titles.

They were generic titles.

32. Were any of these products flammable and if so, state which
as well as the kindling point.

RNW 0467

Polyethylene, polystyrene and bisphenol A are all flammable.
Kindling (?) temperatures are:

Polyethylene	Over 600°F	ASTM D1929
Polystyrene	Over 800°F	ASTM D1929
Bisphenol A	405°F	ASTM D92

33. Did any of these products give off air borne dust and if so, is the same inherently dangerous to those breathing same and describe the danger.

Bisphenol A prills can generate dust or fines in dynamic ³ conditions. Exposure to dust levels of less than 15 mg/m³, later reduced to 10 mg/m³ or less by OSHA as per nuisance dust regulations is believed to be adequate protection.

Polyethylene and polystyrene do not generate dust under dynamic conditions.

34. When did this defendant first become aware of any such danger of the breathing of such dust.

See Attachment "H".

35. Did this defendant have any knowledge of the hazards of these chemicals to animals any time subsequent to 1940 and if so, name the articles in which it first became familiar with such hazards either by ingestion of dust particles, acute toxicity or inhalation of monomers.

See Attachments "A", "B", "C", and "H".

Styrene, ethylene and vinyl acetate were not found to be hazardous at low levels. Vinyl acetate odor is irritating (vinegary) at very low levels.

36. How did it become familiar with such hazards.

Studies were sponsored at Mellon Institute. Literature such as the American Industrial Hygiene Journal was constantly scanned. Material on safety was transferred via trade organizations such as MCA.

37. What were the threshold limits values for these chemicals in ambient air that was in effect prior to 1974.

RNW 0468

Polystyrene, polyethylene and bisphenol A are non-volatile thus threshold limit values have no meaning. There is a threshold limit value on nuisance dust established by OSHA. This is 10 mg/m³. Prior to OSHA the limit was 15 mg/m³.

38. Was this threshold limit value established by OSHA, FDA or EPA or any other and if so, set forth in detail that group or governmental body which established same as well as the date and number of regulations so established.

See interrogatory 37.

39. What relationship does the threshold limit value for these chemicals in air have with the threshold limit value for these chemicals in the resin when the resin particle is exposed to ambient air.

This interrogatory is improper in that it seeks expert opinion in a manner inconsistent with Rule 26 (4) (A) (i) FRCP. (Actually no relationship exists since the chemicals are essentially non-volatile.)

40. Explain fully the term ppm of these chemicals in question in a resin particle as shipped in bulk or bags.

The term is awkward and not used for the chemicals involved. Ninety-nine percent bisphenol A described in ppm would be 990,000 ppm.

41. What do the unites represent in the ppm term, physically and chemically.

See answer to interrogatory 34 in the first Supplemental Interrogatories.

42. What does the ppm term mean when used for ambient air.

See answer to interrogatory 35 in the first Supplemental Interrogatories.

43. What are the units and what physical and chemical interpretation is associated with the units of ppm for ambient air that has been polluted with chemical gas.

See answer to interrogatory 36 in the first Supplemental Interrogatories.

44. What is the conversion factor for ppm (air) in order to obtain the equivalent in mg/m^3 (milligrams per meter cubed).

The question cannot be answered unless the material is identified. The conversion factor is specific to a given pure material.

45. Did the weather change in any way effect the condition of the products shipped and if so, describe the manner in which the product would be effected.

No.

46. Attached hereto and made part hereof and marked Schedule "A" is a memorandum dated May 12, 1975 originally provided by the defendant to plaintiff in prior answers to interrogatories.

(a) set forth and attach hereto a copy of the VCM cancer suspect labels which are referred to.

The attached memorandum was provided by ATC employee, D. Romaine. The labels should be obtained from ATC. Sample labels are also shown in the OSHA Standard for Vinyl Chloride published in the Federal Register 39 FR 35890. (Attachment "I")

(b) when did the defendant for the first time become aware of cancer suspects.

The defendant was acting as instructed by OSHA in the Standard for Vinyl Chloride, effective April 15, 1975, and published as noted above. The defendant submitted extensive data to OSHA showing that the subject resins did not cause worker exposure in excess of the permissible exposure limits for vinyl chloride monomer. OSHA ultimately agreed the labels were not required on these resins.

(c) in what manner did this defendant become aware.

See item 46 (b).

(e) if defendant became aware ^{of} such carcinogenic propensities of VCM set forth copies of text and dates of publication of all such material upon which defendant herein became concerned of the propensities of VCM.

See attached chronological listing of references regarding the propensities of VCM. (Attachment "J")

The subject resins, however, did not contain enough VCM to cause the OSHA permissible exposure limits to be exceeded. See attached submission to OSHA regarding solvent and dispersion resins. (Attachment "K")

47. Set forth and describe the difference between solvent and dispersion resins, giving qualifications of each.

The differences between solvent and dispersion resins were discussed in the first interrogatory.

RNW 0471

48. Attached hereto and marked Schedule "B" is a handwritten statement by this defendant marked Vinyl Suspension Resins dated October 23, 1975. Set forth after Vinyl Suspension Resins is an arrow with the words Highest VCM Category. (a) set forth the scale used to determine highest and lowest VCM categories. (b) set forth the precise rating for the VCM category (c) set forth the meaning of all the other formulas listed thereon beginning with QSAE etc.

Schedule B was obtained from ATC and was prepared by them apparently after or during consultation with Mr. Douglas Neal, Industrial Hygienist at Union Carbide's Bound Brook plant. Mr. Neal expressed an opinion regarding the amount of residual vinyl chloride monomer contained in the suspension vinyl resins listed.

There is no set scale to determine the highest and lowest VCM category. Resin QSQF based on 9 samples averaged 253 ppm by weight residual VCM in 1975 on arrival at Perth Amboy. On a scale of 1 to 5 with 5 indicating the highest residual vinyl chloride monomer content material in Category 1 would be QSAN, QSAP, QSPB, QSAL and QYPQ. Material in Category 2 would be QSQL. Material in Category 3 would be QSQH and QSAH. Material in Category 4 would be QSAE and QSQF. Material in Category 5 would be VSJD, VSJE, VSJF, VSKK and VSFB. Material QYFA is unidentifiable, apparently an error.

Union Carbide uses four letter codes to identify individual products in vinyl resins. Only the first letter is significant, i.e., Q means vinyl chloride homopolymer and V means vinyl chloride-vinyl acetate copolymer. S in the second spot means suspension resin though this is not consistent.

49. Attached hereto and marked Schedule "C" is another sheet provided by this defendant marked Vinyl Suspension Resins, VCM (PPM) level. (a) describe each and every supplement on this sheet and the names thereof.

Schedule "C" is a memorandum of a telephone conversation between Mr. Romaine of ATC and Mr. R. M. Arnold of Union Carbide Corporation's Texas City plant laboratory made by Mr. Romaine.

VSSK-10) - Suspension vinyl chloride-vinyl acetate copolymer
VSJE-10) - resins. (VSSK-10 is assumed to be VSKK-10)

QSOF) - Suspension vinyl chloride resins containing a small
QSQH) - amount of ethylene.

QSAN)
QSAP) - Suspension vinyl chloride resins.
QSAH)

QSQH Blends 979) - 10 ppm This appears to indicate RVC content
980) of these resin blends. All data
refers to residual vinyl chloride
content of the resins.

50. Attached hereto and marked Schedule "D" is a typewritten sheet, undated, which was provided by the defendant in prior answers Set forth.

(a) what is the date of this sheet

The date of this sheet is January 8, 1976.

(b) when did this defendant undertake the phaseout of the dispersion
Manufacture of dispersion resins ceased in December of 1976.

(c) Why did the defendant phaseout the suspension of dispersion resins.

The products didnot meet Union Carbide Corporation's profitability goals.

(d) Was there any vinyl chloride-vinyl acetate copolymers shipped through the ATC/OTC between 1960 and 1974.

Yes.

(e) does this particular product also have any cancer suspect characteristics known to the defendant and if so, set forth such knowledge known to the defendant.

Union Carbide Corporation's dispersion vinyl resins were never handled by ATC, therefore, this question has no merit.

See attached submission to OSHA by Union Carbide Corporation regarding dispersion resins.

Attachment "K".

51. The defendant also set forth in Schedule "D" the manufacturing of Polyvinyl Chloride Ethylene Copolymers manufactured at Texas City. Set forth whether this particular product has any cancer suspect characteristics known to the defendant and if this particular product was shipped at any time to OTD/ATC .

These products are very similar to suspension vinyl chloride homopolymer resins and contain small amounts of unconverted vinyl chloride monomer.

See question 49. They were regularly shipped to OTD/ATC.

52. Is this particular product carcinogenic.

Under the conditions existing at ATC, we do not believe the product is carcinogenic.

53. Attached hereto is a handwritten statement marked Schedule "E" provided by the defendant herein. (a) set forth as to paragraph 1 the precise meaning of this and also as to paragraphs 2,3,4,5,.

Schedule "E" was obtained from ATC. We presume it refers to exposure of ATC personnel to vinyl chloride monomer which appears to be less than the OSHA "action level" of 0.5 ppm. For specific answers, ATC should be queried.

RNW 0475

54. Attached hereto and marked Schedule "F" is a handwritten paper marked Warehouse "A" Deregulation. Set forth the reason and meaning of this particular document.

Schedule "F" was obtained from ATC and they should be queried as to its meaning.

55. Is ATC the exclusive east coast distribution/^{center}for defendant corporation for all chemicals set forth herein.

No.

56. For what period of time has the ATC acted in this capacity.

See interrogatory 55.

57. Did the OTD corporation also act in the same capacity and set forth the period of time.

See interrogatory 55.

RNW 0476

58. Attached hereto and made part hereof and marked schedule "G" is a report of the Occupational Safety and Health Administration directed to Amboy Terminaling Company comprising of a number of sheets. Is the Report of Survey at Amboy Terminaling Co. by Michael A. Yarnell and Nancy Thorpe accurate as to (a) introduction (b) the Process of bagging PVC (c) the review of standard (d) Direct reading indications (e) sample data (f) results and (g) discussion.

Union Carbide has no direct knowledge as to the accuracy of Schedule G. This is a copy of an inspection report by OSHA of the ATC facilities at Perth Amboy. The low levels of vinyl chloride monomer measured confirm Union Carbide Corporation's belief that the hazard was well controlled.

59. Who was responsible for the labeling of the product when it left the various points of origin of Union Carbide to be Shipped to ATC/OTD.

Container labeling was the responsibility of the Union Carbide Corporation's Distribution Department Supervisor at the plant where the bulk containers were filled prior to shipment to ATC.

60. Did this defendant as the owner of the wholly owned subsidiary OTD/ATC ever make an inspection of the premises at any time between 1960-1975 for the purpose of determining the toxicity of any chemicals and the effect on workers on the premises. If so, set forth a copy of such inspection report.

No.

61. Did the defendant through the supervisor of OTD/ATC control the working conditions on these premises.

No.

62. For what period of time were Mr. R.N.Wheeler and Mr.J.W. Whittlesey employees giving also (a) their job titles (b) the place of employment (c) the nature of their duties.

Mr. R. N. Wheeler, Jr.
Employed March 20, 1943
Technical Superintendent
Union Carbide Corporation
P.O. Box 8004
South Charleston, W. Va. 25303

Represents Union Carbide Corporation in matters relating to vinyl chloride, vinyl chloride resins and similar materials.

J. W. Whittlesey, Esq.
Employed April 1, 1953
Senior Labor Attorney
Union Carbide Corporation
270 Park Avenue
New York, New York 10017

Represents Union Carbide Corporation in matters relating to labor.

RNW 0478

63. When for the first time did this defendant company make an inspection of the premises of OTD/ATC to determine the vinyl chloride exposure levels.

Union Carbide Corporation made no inspections of OTD/ATC premises to determine vinyl chloride exposure levels.

The control of working conditions is the responsibility of OTD/ATC.

64. What prompted that inspection.

See interrogatory 63.

65. Set forth the findings of that examination.

See interrogatory 63.

66. What were the concentrations of VCM shipped to the Perth Amboy plant between 1960 and 1974 setting forth a complete schedule.

Vinyl chloride monomer was never shipped to Perth Amboy, only vinyl chloride resins were shipped.

RNW 0479

Dated: October 24, 1977

Levinson, Conover & Axelrod, Esqs.,
by: Alfred A. Levinson