

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS
WESTERN SECTION

* * * * *

PAUL M. CULLINAN, et al.,	*	
	*	
Plaintiffs,	*	CIVIL ACTION
	*	NO. 85-0378-F
v.	*	
	*	
MONSANTO COMPANY, et al.,	*	
	*	
Defendants.	*	
	*	

* * * * *

DEFENDANT THE B.F. GOODRICH COMPANY'S RESPONSE TO
PLAINTIFF'S REQUEST FOR SUPPLEMENTATION OF
ANSWERS TO INTERROGATORIES (Set I)

Defendant The B.F. Goodrich Company ("BFG") hereby supplements its answers to interrogatories numbered 2 through 5, set I. The following supplemental answers are intended to supplement and not replace the responses previously filed by BFG. By responding further to these interrogatories, BFG does not intend to waive its prior responses and objections, and states that the following supplemental responses are made subject to its specific objections and answers to each interrogatory contained in the Answers and Objections of Defendant The B.F. Goodrich Company to Interrogatories Propounded By the Plaintiff(s), Set I, filed on or about April 28, 1986.

BFG19331

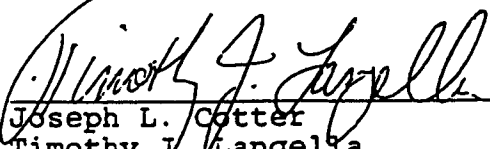
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Supplemental Answer to Interrogatories Nos. 2, 3, 4 and 5.

BFG has no records showing that it supplied or sold PVC and/or VC to Monsanto's Texas City facility prior to 1979.

The B.F. Goodrich Company

By its attorneys,

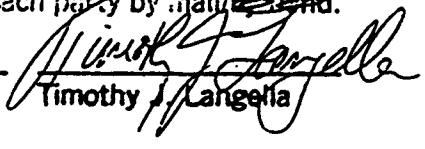
 10/2/87
Joseph L. Cotter
Timothy J. Langelia
GOODWIN, PROCTER & HOAR
Exchange Place
Boston, MA 02109
(617) 570-1000

SVS-5500/B

CERTIFICATE OF SERVICE

I hereby certify that on this day a true copy of the above document was served upon the attorney of record for each party by mail/hand.

Dated: 10/2/87


Timothy J. Langelia

UNITED STATES DISTRICT COURT
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* * * * *	*	

DEFENDANT THE B.F. GOODRICH COMPANY'S RESPONSE TO
PLAINTIFF'S REQUEST FOR SUPPLEMENTATION OF
ANSWERS TO INTERROGATORIES (Set II)

Defendant The B.F. Goodrich Company ("BFG") hereby supplements its answers to certain interrogatories in plaintiffs' second set of interrogatories to BFG. The following supplemental answers are intended to supplement and not replace the responses previously filed by BFG. By responding further to these interrogatories, BFG does not intend to waive its prior responses and objections, and states that the following supplemental responses are made subject to its specific objections and answers to each interrogatory contained in the Answers and Objections of Defendant The B.F. Goodrich Company to Plaintiffs' Second Set of Interrogatories, filed on or about September 26, 1986.

Supplemental Answer to Interrogatory No. 9: BFG states that as a chemical manufacturer it makes reasonable efforts to

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keep current as to the results of any research or other studies which are of interest to the chemical industry generally, including studies relating to the health effects of chemical exposure. Following is a partial list of publications and reports of which BFG was aware prior to 1980:

Malignant Tumors of the Liver and Lungs in an Area with a PVC Industry
Saric, M; Kulcar, Z; Zorica, M; Gelic, I
Environmental Health Perspectives, Vol. 17, pp. 189-192
1976, October

Pulmonary Changes Among Vinyl Chloride Polymerization Workers
Lilis, R; Anderson, H; Miller, A; Selikoff, IJ
Vol. 69, No. 2, pp. 299-303
1976, February

Evaluation of Mortality in BF Goodrich Workers: A Follow-Back Study of Medical Records and Death Certificates (Final Report)
1974, May 17

Medical Records and Industrial Hygiene Studies for BFG
1974, March 20

Birth Defects and Vinyl Chloride
Edmonds, CDC
NIOSH, Conference on Women and the Workplace (Washington)
1976, June 17-19

Vinyl Chloride and Congenital Malformation
CDC
1976

Working Conditions and Measures for their Sanitation in the Production and Utilization of Vinyl Chloride Plastics
Tribukh, SL; Tikhomirova, NP; Levin, SV; Kozlov
Arg. Sanit., Vol. 10, pp. 38-45
1949

The Toxicity of Vinyl Chloride as Determined by Repeated Exposure of Laboratory Animals

Torkelson, TR; Oyen, F; Rowe, VK
American Industrial Hygiene Association, Vol. 22, No.
5, pp. 354-361
1961, October

VCM from PVC During Thermal Decomposition
1975

Mortality Among Vinyl Chloride Workers: Abstract Only
Monson, RR
1974, August 17

Scientific and Technical Assessment Report on Vinyl
Chloride and Polyvinyl Chloride
EPA, 600/6-75-004
1975, June

The Effects of Organic Compounds Used in the
Manufacture of Plastics on the Responsitivity of
Murine and Human Lymphocytes
Thurman, GB; Simms, BG;
Goldstein, AL; Kilian, DJ
Tox. and Applied, Vol. 44, pp. 617-641
1978

Effects of Inducers on the In Vivo Covalent Binding of
a Vinyl Chloride Metabolite to Liver Fractions
Pessayre, D; Wandscheer, JC; Descatoire, V; Dolder, A;
Benhamou, JP
Biochemical Pharmacology, Vol. 28, pp. 3667-3668
1979

Epidemiologic Considerations in the Design of
Toxicologic Studies: An Approach to Risk Assessment
in Humans
Woods, JS, NIH
Vol.. 38, No. 5, pp. 1892-1896
1979, April

Oncogenic and Mutagenic Risks in Communities with
Polyvinyl Chloride Production Facilities
Infante, PF
Annals of the New York Academy of Sciences
1976

Calculations of the Amount of VCM Metabolized at
Various Concentrations
Hinderer, RK
1978

Biochemical Alterations in Livers of Rats Exposed to
Vinyl Chloride

22196005

DU JT; Sandoz, JP; Tseng,
MT; Tamburro, CH
Journal of Toxicology and Environmental Health, Vol.
5, pp. 1119-1132
1979

Neoplastic Risk Among Workers Exposed to Vinyl Chloride
Waxweiler, RJ; Stringer, W; Wagoner, JK; Jones, J;
Falk, H; Carter, C
Annals of the New York Academy of Sciences, pp. 40-48
1976

Epidemiological Study of Vinyl Chloride Workers:
Final Report
1978, December

Epidemiologic Study of Vinyl Chloride Workers Employed
by Union Carbide Corporation, South Charleston Plant
1976, December

Results of Prospective Mortality Study on Humans
Exposed to VC/PVC
Frentzel-Beyme, VR; Schmitz, T; Thiess, AM
1978, October

Contemporary Pest Control Practices and Prospects -
Vol. I: Carcinogenesis in Man and Laboratory Animals
1975

Occupational Lung Disease--Agents of Inorganic Origin
Wagner, JC
pp. 213-220
1977, June

An Epidemiologic Investigation of Lung Cancer in a
Multixenobiotic Occupational Environment
Waxweiler, RJ, University of North Carolina
University of North Carolina
1978

The Medical Commission on the Production of PVC
1974, December

Preliminary Report on the Medical Examination of 288
Employees at the PVC Plant, Norsk Hydro A.S.,
Porsgrunn Fabrikker
Hillestad, L
1975, January 31

Occupational Acroosteolysis III. A Clinical Study
Dodson, VN; Dinman, BD; Whitehouse, WM; Nasr, AHM;
Magnuson, HJ

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Arch. Environ. Health, Vol. 22
1971, January

Occupational Acroosteolysis II. An Industrial Hygiene Study

Cook, WA; Giever, PM; Dinman, BD; Magnuson, HJ
Arch. Environ. Health, Vol. 22
1971, January

Occupational Acroosteolysis: I. An Epidemiological Study

Dinman, DB; Cook, WA; Whitehouse, WM; Magnuson, HJ;
Ditchcheck, T
Arch. Environ. Health, Vol. 22
1971, January

Vinyl Chloride Content of Subcutaneous Adipose Tissue from Vinyl Chloride Polymerization Workers

Knittle, J; Fontanares,
P; Daum, S; Selikoff, IJ
1974, December

Concerning the Principles and Methods of Toxicological Assessment of Volatile Substances Released by Synthetic Polymers

Trakhtenberg, IM; Bartenev, VD; Savitskii, IV;
Balashov, VE
Vol. 33, pp. 109-112
1968, January

Vinyl Chloride: Code of Practice for Health Precautions

Health and Safety Executive, pp. 1-41
1975, February

Health Effects of Vinyl Chloride Monomer: An Annotated Literature Collection

Warren, H; Huff, JE
Environmental Health Perspectives, Vol. 11, pp. 251-252
1975, June

Vinyl Plastics: Their Dermatological and Chemical Aspects

Morris, GE
Archives of Industrial Hygiene & Occupational Medicine, Vol. 8, pp. 535-539
1953

Contact Dermatitis from Plastics containing Tri-Aryl Phosphates

Pegum, JS
British J. of Dermatology, Vol. 78, pp. 626-631
1966

What's in PVC
Little, K.
Vol. 2, pp. 351-352
1968

Acropathy of the Extremities Associated with VC
Polymerization--A New Occupational Disease
Kovac, A.; Kurajica, L.; Juric-Ruzic, D.; Parac B.
Vol. 91, No. 5, pp. 5-17
1969

Contact Dermatitis Due to Table Cloth Cover of Vinyl
Plastic Fabric
Hitschmann, OB
1950

Angiosarcoma of the Liver in Vinyl Chloride/Polyvinyl
Chloride Workers
J. of Occupational Medicine, Vol. 16, No. 12
1974

Cytogenetic Studies of Bone Marrow Cells from Rats
Exposed to Vinyl Chloride
Johnston, RV; Mensik, DJ; Pinkerton, MN; Whorton, EB
1975

Carcinogenicity Bioassays of Vinyl Chloride:
Research Plan and Early Results
Lefemine, G; Maltoni, C
Environmental Research, Vol. 7, pp. 387-405
1974

Vinyl Chloride Induced Liver Disease
Thomas, LB; Popper, H; Berk, PD; Selikoff, I; Falk, H
1975

Experiments on the Chronic Toxicity of a Copolymer of
Vinyl and Vinylidene Chloride
Seeler, AO; Clinton, M; Boggs, J; Drinker, P
Harvard Univ.
1947

Industry's Latest Cancer Scare
1974, February

Properties and Essential Information for Safe Handling
and Use of Vinyl Chloride
1972

Further Studies of Polymers as Carcinogenic Agents in
Animals
Oppenheimer, BS; Oppenheimer, ET; Danishefsky, I;
Stout, AP; Eirich, FR

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Cancer Research, Vol. 15, pp. 333-340
1955

Oncogenic Response of Rat Skin Lungs and Bones to
Vinyl Chloride

Caputo, A; Bigotti, A; Viola, PL
Cancer Research, Vol. 31, pp. 516-522
1971, May

The Correlation of Clinical and Environmental
Measurements for Workers Exposed to Vinyl Chloride

Kramer, CG; Mutchler, JE
AIHA, Vol. 33, No. 1, pp. 19-30
1972, January

Working Conditions and Measures for their Sanitation
in the Production and Utilization of Vinyl Chloride
Plastics

Tribukh, SL; Tikhomirova, NP; Levin, SV; Kozlov, LA
1949

Ten Canadian Cases of Angiosarcoma of the Liver in
Vinyl Chloride Workers

Delorme, F
1978

Vinyl Chloride Content of Subcutaneous Adipose Tissue
from Vinyl Chloride Polymerization Workers

Knittle, JL; Fontanares, P; Daum, S; Selikoff, IJ
1974

Hemangiosarcoma and Hepatocellular Carcinoma of the
Liver Following Vinyl Chloride Exposure

Gokel, JM; Liebezeit, E; Eder, M
1976

Association of an Angiosarcoma of the Liver with a
Hepatoma in a Vinyl Chloride Worker

Delorme, F
1978

Scleroderma Like Skin Changes, Raynaud's Syndrome and
Acroosteolyses in Workers in the Polyvinyl Chloride
Producing Industry

June, S; Lange, CE
1972

Toxic Trigeminal Disease and Polyvinylidene Chloride

Krieger, J; Warter, JM; Mengus, M; Mehl, J; Isch, F
1971

Occupational Acroosteolysis (AOL): An Epidemiologic Investigation of a New Disease Among Polyvinyl Chloride Synthesis Workers
Magnuson, J.; Dinman, BD; Cook, WA; Giever, PM; Whitehouse, WM
1969, September 22-27

Occupational Acroosteolysis
Markowitz, SS; McDonald CJ; Fethiere, W; Kerzner, MS
Arch. Dermatol., Vol. 106, pp. 219-223
1972, August

Occupational Lesions of the Skin due to PVC
Sonneck, HJ
1962

Occupational Acroosteolysis
Wilson, RH; McCormick, WE; Tatum, CF; Creech, JL
JAMA, Vol. 210, No. 8, pp. 577-581
1967, August 21

Occupational Carcinogenesis
Maltoni, C.
1973, April 9-12

Acute Inhalation Toxicity of Vinyl Chloride to Laboratory Animals
Mastromatteo, E; Fisher, AM; Christie, H; Danziger, H
J. of AIHA, Vol. 21, pp. 394-398
1960

Chronic Oral Toxicity to Rats of a Vinyl Chloride-Vinyl Acetate Copolymer
Smyth, HF; Weil, CS
Tox and Applied, Vol. 9, pp. 501-504
1966

One-Year Time Sequence Inhalation Toxicity Study of Vinyl Chloride in Rats: I. Growth, Mortality, Haematology, Clinical Chemistry and Organ Weights
Feron, VJ; Kruysse, A; Til, HP
Vol. 13, pp. 25-28
1979

Anesthesia XXVII: Narcosis with Vinyl Chloride
Oster, RH; Carr, CJ; Krantz, JC
Vol. 8, pp. 359-361
1947, July

One-Year Time-Sequence Inhalation Toxicity Study of Vinyl Chloride in Rats: II. Morphological Changes in the Respiratory Tract, Ceruminous Glands, Brain, Kidneys, Heart and Spleen

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Feron, VJ; Kroes, R
Vol. 13, pp. 131-141
1979

One-Year Time-Sequence Inhalation Toxicity Study of
Vinyl Chloride in Rats: III. Morphological Changes in
the Liver

Feron, VJ; Spit, BJ; Immel, HR; Kroes, R
Vol. 13, pp. 143-154
1979

Effects of Single and Repeated Exposures of Humans and
Rats to Vinyl Chloride

Lester, D; Greenberg, LA; Adams, WR
J. of AIHA, Vol. 24, pp. 265-275
1963, May-June

Pharmacokinetics of Vinyl Chloride in the Rat

Bolt, HM; Laib, RJ; Kappus, H; Buchter, A
Vol. 7, pp. 179-188
1977

Disposition of (1,2-14C) Vinyl Chloride in Rat

Bolt, HM; Kappus, H; Buchter, A; Bolt, W
Vol. 35, No. 3, pp. 153-162
1976

Studies on the Metabolism of Vinyl Chloride

Antweiler, H
Vol. 17, pp. 217-219
1976

Metabolism of Vinyl Chloride

Watanabe, PG; Hefner, RE; McGowan, GR; Gehring, PJ
1974, November 14

Vinyl Chloride Induced Depression of Hepatic
Non-protein Sulfhydryl Content and Effects on
Bromosulphalein (BSP)

Watanabe, PG; Hefner, RE; Gehring, PJ
1976

Hepatic Macromolecular Binding Following Exposure to
Vinyl Chloride

Watanabe, PG; Zempel, JA; Pegg, DG; Gehring, PJ
Tox and Applied, Vol. 44, pp. 571-579
1978

A Procedure for Preparing 14C-Labeled Vinyl Chloride
Wagner, ER; Muelder, WW
Vol. 246, pp. 152-153
1975, January 31

Cytochrome P-450 and the Metabolism of Vinyl Chloride
Salmon, AG
Vol. 2, No. 2, pp. 109-114
1976

A Gas-Chromatographic Method for the Preparation of
14C-Labeled Vinyl Chloride
Wagner, ER; Muelder, WM; Watanabe, PG; Hefner, RE;
Braun, WH; Gehring, PJ
Vol. 11, No. 4, pp. 535-542
1975

Activation of Vinyl Chloride to Covalently Bound
Metabolites: Roles of 2-Chloroethylene Oxide and
2-Chloroacetaldehyde
Guengerich, FP; Crawford, WM; Watanabe, PG
Vol. 18, No. 23, pp. 5177-5182
1979

Testimony: Pharmacokinetics of Vinyl Chloride
Gehring, PJ
1976, February 2

Acro-Osteolysis Occurring in Men Engaged in the
Polymerization of Vinyl Chloride
Harris, DK; Adams, WGF
Vol. 3, pp. 712-714
1967

Percutaneous Absorption of Vinyl Chloride
Hefner, RE; Watanabe, PG; Gehring, PJ
Tox and Applied, Vol. 34, pp. 529-532
1975

Hepatic Lesions Caused by Vinyl Chloride Monomer in
Humans: Study of Eight Clinicopathological Cases
Pialat, J; Pasquier, B; Pahn, M; Kopp, N
Vol. 27, No. 6, pp. 361-375
1979

Investigation of the Diseases Produced by Vinyl
Chloride

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Suciu, I
Vol. 15, pp. 967-978
1963, August

Angiographic and Radionuclide Characteristics of
Hepatic Angiosarcoma Found in Vinyl Chloride Workers
Whelan, JG; University of Louisville; Creech, JL;
Tamburro, CH
Vol. 118, No. 3, pp. 549-557
1976, March

The Pathology of 111 Cases of Primary Hepatic
Malignancy Collected in the Liverpool Region
Cruickshank, AH
Vol. 14, pp. 120-131
1961, March

Occupational Acroosteolysis - A Clinical Investigation
of Polyvinyl Chloride Synthesis Workers
Dinman, BD; University of Michigan; Dodson, VN;
Magnuson, HJ; Whitehouse, WM
1969

Occupational Acroosteolysis: Part III. A Clinical
Study
Dodson, VN; Dinman, BD;
Whitehouse, WM; Nasr, ANM; Magnuson, HJ
Arch Environ Health, Vol. 22, pp. 83-91
1971, January

Occupational Acroosteolysis: Part I. An
Epidemiological Study
Dinman, BD; Cook, WA;
Whitehouse, WM; Magnuson, HJ; Ditchcock, T;
Arch Environ Health, Vol. 22, pp. 61-73
1971, January

Mutagenicity of Vinyl Chloride, Vinylidene Chloride
and Chloroprene in V79 Chinese Hamster Cells
Drevon, C; Kuroki, T
Vol. 67, pp. 173-182
1979

Hepatic Macromolecular Binding Following Exposure to
Vinyl Chloride
Watanabe, PG; Zempel, JA; Pegg, DG; Gehring, PJ
1977, April 5

Mutagenicity in Vitro and Potential Carcinogenicity of
Chlorinated Ethylenes as a Function of Metabolic
Oxirane Formation

Greim, H; Bonse, G; Radwan, Z; Reichert, D; Henschler, D
Vol. 24, pp. 2012-2017
1975, July

Life-Span Oral Toxicity Study of Vinyl Chloride in Rats
Feron, VJ; Hendriksen, CFM; Speek, AJ; Til, HP; Spit, BJ
1978, October

Final Report of Audit Task Group on Lifetime
Inhalation Study on Vinyl Chloride at Industrial
Bio-Test Labs, Inc.
1978

Vinyl Chloride Pathology Report
1979, January 9

Chronic Vapor Inhalation Toxicity Study with Vinyl
Chloride (Ethylene Derived) in Albino Rats, Albino
Mice and Golden Hamsters
1975, September 23

Chronic Vapor Inhalation Toxicity Study with Vinyl
Chloride
1973, February

Protocol Amendments and Communication for the VCM
Long-Term Inhalation Study
1973 to 1978

Vinyl Halides Carcinogenicity
NIOSH and OSHA Current Intelligence Bulletin No. 28
1978, September 21

Occupational Acroosteolysis: Report of 31 Cases
Wilson, RH; McCormick, WE; Tatum, CF; Creech, JL
JAMA, Vol. 201, pp. 577-581
1967, August 21

Cardiovascular Disease and Environmental Exposure
Rosenman, KD
Vol. 38, pp. 85-97
1979

Health Hazard Evaluation/Toxicity Determination
Report: Gates Rubber Company
Gunter, BJ; Lucas, JB
NIOSH, Report No. H.H.E. 74-61-232
1975, November

Volatile Materials from Geon Hi-Temp
Crider, LB
1966, June 30

Oncogenic and Mutagenic Risks in Communities with
Polyvinyl Chloride Production Facilities
Infante, PF
New York Academy of Science
1975

Mutagenicity of Vinyl Chloride Chloroethyleneoxide
Chloroacetaldehyde and Chloroethanol
Malaveille, C.; Bartsch, H.; et al.
Biochemical and Biophysical Research Communication
1975

Pneumoconiosis Formed After Inhaling
Polyvinyl-Chloride Dust
Szende, B.; et al.
Orvosi-Hetilap, Vol. 112
1971

Pharmacodynamics and Uptake of Vinyl-Chlorine Monomer
Administered by Various Routes to Rats
Withey, J., Jr.
J. of Tox. and Envir. Health, Vol. I
1976

Proportional Mortality Among Vinyl Chloride Workers
Monson, RR; et al.
Lancet
1974, August 17

A Surface Active Agent Involved in PVC Induced
Haemolysis
Richards, RJ; Desai, R; Rose, FA
Nature, Vol. 260
1976, March

Genetic Risks of Vinyl Chloride
Infante, PF; et al.
Lancet, Vol. 1 No. 7978
1976, June

Mutagenicity of Chloroacetaldehyde, A Possible
Metabolic Product of 1,2-Dichloroethane
(Ethylene-Dichloride), Chloroethanol (Ethylene
Chlorohydrin), Vinyl Chloride, and Cyclophosphamide
McCann, James; et al.
Proc. Nat. Acad. Sci., USA, Vol. 72, No. 8
1975, August

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The Biological Fate in Rats of Vinyl Chloride in
Relation to its Oncogenicity
Green, T; Hathway, DE
Chem. Biol. Interactions, Vol. 11
1975

Observations on the Oral Administration and Toxicity
of Vinyl Chloride in Rats
Feron, VJ; et al.
Fd. Cosmet. Toxicol., Vol. 13
1975

Proportional Mortality Among Vinyl Chloride Workers
Monson, RR; Peters, JM; Johnson, MN
Environmental Health Perspectives, Vol. 11
1975, June

Preliminary Studies on the Fate of Inhaled Vinyl
Chloride Monomer (VCM) in Rats
Hefner, RE; Watanabe, FG; Gehring, PJ
Environmental Health Perspectives, Vol. 11
1975, June

Biochemical Toxicology of Unsaturated Halogenated
Monomers
Jaeger, RJ, et al.
Environmental Health Perspectives, Vol. 11
1975, June

Pulmonary Function Defects in Non-Smoking Vinyl
Chloride Workers
Miller, A.
Environmental Health Perspectives, Vol. 11
1975, June

Vinyl Chloride Dependent Mutagenesis: Effects of
Liver Extracts and Free Radicals
Garro, AJ; et al.
Mutation Research, Vol. 38
1976

Mutagenic and Carcinogenic Effects of Vinyl Chloride
Bartsch, H; Montesano, R
Mutation Research, Vol. 32
1975

Mortality Study of Workers in the Manufacture of Vinyl
Chloride and its Polymers
Tadershan, IR; Gaffey, WR
JOM, Vol. 16, No. 8
1974

Final Report on Mortality Study Covering Employees of
FVC Fabricators
Chiazzi, et al.
ORC: Mortality PVC Fabricators - Final Report
1976

Quantitative Risk Assessment for Community Exposure to
Vinyl Chloride
Kuzmack, AM; McGaughy, RE
EPA: Risk of Living by VC-PVC Plants
1975

Hepatic Angiosarcoma Associated with
Androgenic-Anabolic Steroids
Falk, H; Popper, H; Thomas, LB; Ishak, KG
Lancet
1979, November 24

Vinyl Chloride Exposure in a Controlled Industrial
Environment
Ott, NG; Langner, RR; Holder, BB
Archives of Environmental Health, Vol. 31
1975, July

Ten Cases of Angiosarcoma of the Liver in Shawinigan,
Quebec
Delorme, F; Theriault, G
Montreal Medical Society
1976

Malignant Tumors Resulting from Imbedding Plastics in
Rodents
Oppenheimer, BS; Oppenheimer, ET; et al.
Science, Vol. 129
1953, November 11

Elevated CEA Levels in Polyvinyl Chloride Workers
Theriault, L; Delorme, F
Biomedicine, Vol. 25
1976

Fate of (14-C) Vinyl Chloride After Single Oral
Administration in Rats
Watanabe, PG; McGowan, GR; Gehring, PJ
Toxicology and Applied Pharmacology, Vol. 36
1976

Proposal for a Council Directive on the Approximation
of the Laws of the Member States Relating to Materials
and Articles Containing Vinyl Chloride Monomer and
Intended to come in contact with foodstuffs

European Economic Community Determination Official
1976

Risk Benefit Analysis for Toxic Chemicals: Vinyl
Chloride
Wilson, R
Harvard University
1976

Accidental Poisoning by Vinyl Chloride: Report of Two
cases
Danziger, R.
Canadian Medical Association J., Vol. 82
1960

Vinyl Chloride Experiments on Small Animals
Mastromatteo, E.
1959

Acute Response of Guinea Pigs to Vapors of Some New
Commercial Organic Compounds
Patty, PA; Yant, WP; Waite, CP
Public Health Reports, Vol. 45, No. 34
1930

Ethylene Oxide Toxicity; A Biological Model for the
Study of Tissue Reactions to Retained Ethylene Oxide
Andersen, S.
1969

Pathology of Vinyl Chloride
Viola, PL
La Medicina Del Lavoro, Vol. 61, No. 3
1970

Effects of Vinyl Chloride in Man: A Cytogenetic
Follow-up Study
Hansteen, IL; Hillestad, L; Tmiisevensen, E; Heldaas,
SS
Mutation Research
1978

Angiosarcoma of the Liver in Vinyl Chloride/Polyvinyl
Chloride Workers
Spirtas, R; Kaminski, R.
JOM, Vol. 20, No. 6
1977, June

Carcinogenicity of Vinyl Chloride and Vinylidene Chloride

Lee, CC; Bhandari, JC; Winston, JM; House, WB; Dixon, RL; Woods, JS
Toxicology and Environmental Health, Vol. 4
1978

Smoking and Occupational Cancers

Hoffmann, D.;
Preventive Medicine, Vol. 5, No. 2
1976

Squamous cell Carcinoma of the Buccal Mucosa
Associated with Chronic Oral Polyvinyl Chloride
Exposure: Report of a Case

Casterline, CL; Casterline, PF; Jaques, DA
Cancer, Vol. 39
1977

In Vivo Observations of Skin Capillaries in Workers
Exposed to Vinyl Chloride - An English American
Comparison

Maricq, MR; Darke, CS; Archibald, RM; Leroy, EC
Brit. J. Indus. Med., Vol. 35
1978

Report on a Case Control Study Covering White Female
Employees of PVC Fabricators

1977

Mortality Among Employees of PVC-Fabricators

Chiazze, L; Nichols, WE; Wong, O
JOM, Vol. 19, No. 9
1977

Angiosarcoma of the Liver: An Epidemiologic Survey

Brady, J; Liberatore, F; Harper, P; Greenwald, P;
Burnett, W; Davies, JNP; Bishop, M; Polan, A; Vianna, N
J-O-F NCI, Vol. 59, No. 5
1977

Urinary Glycosaminoglycan Patterns in Angiosarcoma of
the Liver

Curran, KL; Kupchella, CE; Tamburro, CH
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Holima, G; Westerholm, P
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Supplemental Answer to Interrogatory No. 15: BFG states
that during the relevant time period (1969 to 1973), its
liability insurance coverage is through Kemper.

Supplemental Answer to Interrogatory No. 34: BFG states that as a chemical manufacturer it makes reasonable efforts to keep current as to the results of any research or other studies which are of interest to the chemical industry generally, including studies relating to the health effects of chemical exposure. To the best of BFG's current knowledge, it first became aware of the reports and studies at or about the time they were published.

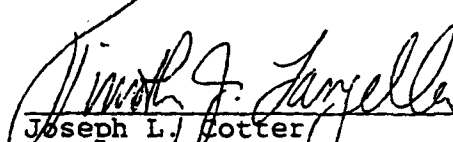
Supplemental Answer to Interrogatory No. 42: BFG states that since knowledge of angiosarcoma of the liver was a sudden discovery, information on all aspects of the potential danger or lack of danger attributed to VCM was delivered orally to BFG employees at the plants. Concurrent to these discussions with BFG employees, BFG customers were advised orally and by mail of developments as they occurred and became known by BFG. Non-plant personnel of BFG received copies of the information mailed to BFG customers. Copies of the communications to BFG customers will be made available to plaintiff for review and inspection in the Health and Environmental Services Department at BFG's Corporate Headquarters in Bath, Ohio at a time mutually agreeable to the parties.

Supplemental Answer to Interrogatory No. 54: BFG states that to the best of its knowledge Edward Begnaud, now deceased, was responsible for product labeling. In addition, see Supplemental Answer to Interrogatory No. 42.

Supplemental Answer to Interrogatory No. 55: BFG has many formal and informal relationships with various governmental agencies, trade associations, industry groups and universities. It is accordingly impossible to respond fully to this interrogatory as framed. To the extent the information sought by this interrogatory is contained in documents of BFG, those documents will be made available to plaintiff for review and inspection at BFG's Corporate Headquarters in Bath, Ohio at a time mutually agreeable to the parties.

The B.F. Goodrich Company

By its attorneys,

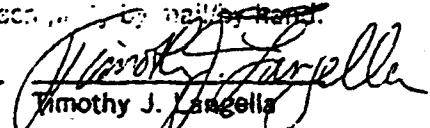
 10/22/87
Joseph L. Potter
Timothy J. Langella
GOODWIN, PROCTER & HOAR
Exchange Place
Boston, MA 02109
(617) 570-1000

SVS-5503/B

CERTIFICATE OF SERVICE

I hereby certify that on this day a true copy of the above _____ was served upon the attorney of record at _____ by _____.

Dated: 10/22/87


Timothy J. Langella

October 19, 1987

Additional Comments on
Interrogatory Responses for Cullinan

Set I

2. The only record of sales of VCM to Monsanto for the period in question is in the microfilm records. Those records show a sale of 925,270 lbs. of VCM in 1974 to the Indian Orchard facility. This sale and sale of other materials to all Monsanto facilities from 1974 to 1980 are shown in copies of those records which are in your possession.

Sales to the Texas City, Texas facility occurred only in two years. In 1979, 100 lbs. of Geon PVC Dispersion Resin was sold. In 1976, 25 lbs. of Goodrite 3114X1 Plastic Antioxidant was sold. These amounts would appear to be for evaluation purposes only.

Set II

15. Our basic insurance coverage from 1953 to 1980 is as follows:

1953 to 7/1/74	fully insured by Kemper
7/1/74 to 8/31/75	self insured to \$250,000
9/1/75 to 6/30/79	self insured to \$1,000,000
7/1/79 to 6/30/80	self insured to \$1,200,000
7/1/80 to 12/31/80	self insured to \$1,300,000

This insurance coverage is presently a subject of litigation. Excess layers of insurance are explained in the attached documents (Federal Express).

- 16., 20., 70. Questions dealing with our response to governmental agencies and the VCM issue.

All information we've been able to locate regarding these questions is contained in the attachments to my letter to Tim Langella dated 9/19/86. Further identification of the B.F. Goodrich employees identified in those documents is as follows:

BFG19357

22196028

Anton Vittone, President, deceased
R. D. Buehler, Director of Government Relations,
deceased
J. L. Nelson, Division Vice President, Manufacturing,
retired
W. C. Becker, Assistant General Counsel, retired
R. W. Strassburg, Director of Environmental Affairs,
retired
P. J. Weaver, Director of Industry Affairs, retired
M. N. Johnson, M.D., retired

35. See documents produced to Tim Langella on 9/19/86.
Specifically, letter to customers dated 1/23/74.
Additional data is in Medical Department files.
37. Medical Department files.
38. Other than information generally contained in the Medical
Department files, attached is a letter on this issue which
has recently been uncovered. This is an internal report
written by W. E. McCormick, former Director of Industrial
Health at B.F. Goodrich. The letter notes presence of
malignant tumors in rats at extremely high levels of VCM.
Angiosarcoma of the liver was not noted as one of the
results. This information was previously produced in the
booklet "Vinyl Chloride and Cancer - A Study In
Prevention," The B.F. Goodrich Company, July 1976.
42. Due to the fact that knowledge of angiosarcoma of the
liver was a sudden discovery, information on all aspects
of danger or lack of danger attributed to VCM was
delivered orally to B.F. Goodrich employees at the plants.
Concurrent to these discussions, our customers were
advised orally and by mail of developments as they
occurred. Non-plant personnel at B.F. Goodrich received
copies of the information mailed to our customers. Copies
of letters mailed to our customers and distributed
internally are contained in the letter dated 9/19/86 to
Tim Langella.
54. To the best of our knowledge, Edward Begnaud, now
deceased, was responsible for product labeling.

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Dr. P.L. Viola, of the Regina Elena Institute for Cancer Research, Rome, Italy, met with the Occupational Health Committee of MCA, and its PVC sub-committee, on May 5 and 6 in Washington, D.C. His visit here was under the sponsorship of five PVC producing companies within MCA, including The B.F. Goodrich Company. The meeting resulted from a decision reached several months ago that it was necessary for a personal meeting with Dr. Viola and several members of the Occupational Health Committee. Dr. Viola presented a paper at the 1970 10th International Cancer Congress in Houston, indicating that he had found carcinogenic characteristics to be associated with vinyl chloride vapors. The Occupational Health Committee of MCA has had this matter under consideration for several months in an effort to develop a recommended program for the PVC industry and it was felt that a personal meeting with Dr. Viola was necessary before proceeding further with any recommendations.

Dr. Viola has the responsibility for the medical activities of Solvay & Cie in Italy and, in addition, has an association with the Regina Elena Cancer Research Institute. As a result of the acroosteolysis problem, he began investigation several years ago with vinyl chloride exposures to animals and believes that he has produced bone changes in rats somewhat comparable to human acroosteolysis. In conducting these investigations he observed the production of tumors in rats in approximately ten months' time when exposed to vinyl chloride vapors at a level of 30,000 ppm. The tumors were malignant and occurred at the base of the ear and in the lungs. Some 70% of the animals initially exposed (26) were affected. He has conducted further studies at lower concentrations and has found similar tumors at 10,000 ppm and perhaps at 5,000. The latter experiment is still underway and will not be completed until September.

Dr. Viola is firmly convinced that vinyl chloride is a carcinogen to rats at high levels. He also believes that there is a definite threshold for all carcinogens and sees no basis for the argument made by many cancer investigators that this is not true. He has seen no evidence of human cancer resulting from vinyl chloride exposure. The vinyl chloride he used in his investigations was derived from acetylene and contained approximately 3% of impurities.

It was the consensus of the Occupational Health Committee (and I concur in this) that Dr. Viola's information is quite foreboding for the PVC industry. The committee believes that the matter should be further investigated in this country and has asked MCA to invite proposals from interested cancer investigative groups. The committee felt that a study ranging from 12-24 months using mice and rats at three different levels of exposure, and using both acetylene-derived and EDC-derived vinyl chloride, should be undertaken. As soon as the proposals are in hand, it is planned to present the entire matter to the PVC representatives whose companies are within MCA. The recommendations of the Occupational Health Committee will be made at that time to the industry with the hope that they will be accepted.

W. E. 'McCormick'

mj
5-14-71

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JUL 7 1971

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