

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS
WESTERN SECTION

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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.

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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,

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SVS-5500/B

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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

21173004

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

21173005

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

21173006

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;
Ditcheck, 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

21173007

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

21173008

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

21173009

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

21173010

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

21173011

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

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

21173015

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

21173016

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; Tmiisevønsen, 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

21173018

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
1977

21173019

Summary of the Studies Conducted on the
Pharmacokinetics/Metabolism of Vinyl Chloride in Rats
Watanabe, PG; Hefner, RE; Zempel, JA; Pegg, DG; Park,
CN; Gehring, PJ
1977

Pulmonary Tumors Induced in Mice by Vinyl Chloride
Monomer
Suzuki, Y
Envir. Research, Vol. 16
1978, July

Living with Carcinogens
Parkes, HG
1974

A Statistical Assessment of the Quantitative Uptake of
Vinyl Chloride Monomer from Aqueous Solution
Withey, JR; Collins, ST
J. of Tox. and Envir. Health, Vol. 2

Congenital Central Nervous System Malformations and
Vinyl Chloride Monomer Exposure: A Community Study
Edmonds, LD; Anderson, CE; Flynt, JW Jr.; James, LM
Teratology, Vol. 17
1978

Angiosarcoma of the Liver in PVC Fabricators
Baxter, PJ
Lancet
1976, Jan. 31

Fate of Vinyl Chloride Following Inhalation exposure
in Rats
Watanabe, PG; McGonan, GR; Madrid, EC; Gehring, PJ
Tox. and Applied Pharm., Vol. 39
1976

Epidemiological Study of the Mortality of Workers
Exposed to Vinyl Chloride VC in the FRG
Reinl, W; Weber, N; Greiser, E
1977

Development of Hepatic Angiosarcoma in Man Induced by
Vinyl Chloride, Thobotrast and Arsenic
Popper, H; Thomas, LB; Telles, NC; Falk H; Selikoff, IJ
Amer. J. of Pathology, Vol. 92, No. 2
1978, Aug.

An Epidemiologic Investigation of an Excess Lung
Cancer Risk in a Synthetic Chemicals Plant

21173020

Waxweiler, RJ; Smith, AH; Tyroler, HA; Falk, H
1978

Lung Cancer at a Polyvinyl Chloride PVC Polymerization
Facility
Falk, H; Waxweiler, RJ; Herbert, J; Kuschner, M;
Auerbach, O; Makk, L; Tamburo, C
1979

Capillary Abnormalities in Polyvinyl Chloride
Production Workers
Maricq, HG; Johnson, MN; Whetstone, CL; Leroy, EC
JAMA, Vol. 236, No. 12
1976

Hepatosplenic Angiosarcoma: Report of a Case and
Review of the Literature
Libeskind, M; Lugagne, F; Malbran, J; Villemant, JF;
Guyet-Rousset, P
Gastroenterol. Clin. Biol., Vol. 1
1977

Chromosomal Analyses in Vinyl Chloride Exposed Workers
Richardson, CR; Anderson, D; Paddle, GM; Adams, WGF
Mutation Research, Vol. 57
1978

Comparison of the Fate of Vinyl Chloride Following
Single and Repeated Exposure in Rats
Watanabe, PG; Zempel, JA; Gehring, PJ
Toxicology and Applied Pharmacology, Vol. 44
1978

Polyvinyl Chloride Pneumoconiosis: Epidemiological
Study of Exposed Workers
Dust, PVC; Mastrangelo, G; Manno, M; Marcer, F;
Bartolucci, GB; Gemignani, C; Saladino, G; Simonato,
L; Saia, B
JOM, Vol. 21, No. 8
1979

Influence of Polyvinyl Chloride PVC Dust on Rat
Respiratory System
Popow, J.
1969

Toxicology, Carcinogenicity and Reproductive Effects
of Single and Multiple Exposures to Vinyl Chloride in
Rats and Mice
Hehir, RM; McNamara, BP; McLaughlin, J, Jr.; Willigan,
DA; Bierbower, G; Hardisty, JF
1980

21173021

Induction of Gene Mutations and Gene Conversions by
Vinyl Chloride Metabolites in Yeast
Am Cancer Research, Vol. 36
1977

Mortality Experience of Workers Exposed to Vinyl
Chloride Monomer in the Manufacture of Polyvinyl
Chloride in Great Britain
Fox, AJ; Collier, PF
Brit. J. of Indus. Med., Vol. 34
1977

Mortality and Cancer Morbidity in a Group of Swedish
VCM and PVC Production Workers
Byren, D; Engholm, G; Englund, A; Westerholm, P
Envir. Health Perspectives, Vol. 17
1976

Polyvinyl Chloride Pneumoconiosis
Arnaud, A; DeSanti, P; Garbe, L; Payah, H;
Charpin, J.
Thorax, Vol. 33
1978

The Chemistry and Biogenesis of the S-Containing
Metabolites of Vinyl Chloride in Rats
Green, T; Hathway, DE
Chem. Biol. Interactions, Vol. 17
1977

Comparative Mammalian Metabolism of Vinyl and
Vinylidene Chlorides in Relation to Oncogenic Potential
Hathway, DE
Envir. Health Perspectives, Vol. 21
1977, December

Monitoring Liver Disorders in Vinyl Chloride Monomer
Workers Using Greyscale Ultrasonography
Williams, DMJ; Smith, PM; Taylor, KJW; Crossley, IR;
Duck, BW
Brit. J. of Indus. Med., Vol. 33
1976

21173022

Angiosarcoma of the Liver Following Vinyl Chloride
Exposure
Block, JB
JAMA, Vol. 229, No. 1
1974

Clinical and Morphologic Features of Hepatic
Angiosarcoma in Vinyl Chloride Workers
Makk, L; Delorme, F; Creech, JL; Ogden, II; Fadell,
EF; Songster, CL; Clanton, J; Johnson, MN;
Christopherson, WM
Cancer, Vol. 37, No. 1
1976

Angiosarcoma of the Liver in the Liver in the
Manufacture of Polyvinyl Chloride
Creech, JL; Johnson, MN
JOM, Vol. 16, No. 3
1974

Mortality Experience of a Cohort of Vinyl Chloride
Polyvinyl Chloride Workers
Holson, HJ; Hammond, EC; Seidman, M; Selikoff, IJ
Annals NY Academy Sciences

Characteristics of Cases of Angiosarcoma of the Liver
Among Vinyl Chloride Workers in the U.S.

Resolution of Dose Response Toxicity Data for
Chemicals Requiring Metabolic Activation: Example
Vinyl Chloride
Gehring, PJ; Watanabe, PG; Park, CN
Human Response
1977

Effect of Occupational and Nonoccupational Factors on
the Respiratory System of Vinyl Chloride and Other
Workers
Gamble, J; Liu, S; McMichael, AJ; Waxweiler, RJ
JOM, Vol. 13, No. 10
1976

21173023

Hemangiosarcoma of the Liver
Landrigan, PJ
CDC
1974

Hepatic Angiosarcoma in a Vinyl Chloride Worker
Williams, NJ; Evans, DMD
New York Academy Med., Vol. 52, No. 4
1976

The Value of Predictive Experimental Environmental
Carcinogeneses an Example: Vinyl Chloride
Maltoni, C
Ambio, Vol. 4, No. 1
1975

Vinyl Chloride and Angiosarcoma
Block, JB
J. of Kentucky Med. Assoc.
1974

On the So-called Vinyl Chloride Disease
Juhe, S; Lange, GE; Stein, G; Veltman, G
Deutsche-Medizihische-Wochenschrift, Vol. 98, No. 43
1973

Chronic Toxic Liver Damage in the Case of Workers in
PVC Production
Teller, HJ, et al.
Deut. Med. Wochenschr., Vol. 98, 2311-4
1973

Vinyl Chloride Monomer Levels in Edible Fats
Fuchs, G; Gawell, BM; Albanus, L; Slorach, S
VAR FODA 27-(3)-134-145
1975

An Epidemiological Study of Vinyl Chloride Exposed
Workers in Italy
Bertazzi, PA; Villa, A; FOA, V; Saia, B; Fabbi, L;
Mapp, C; Marcer, C; Manno, M; March, M;
Mariani-Bottasso, F.
Arh. Hig. Rada. ToxsiKol, Vol. 30
1979

Polyvinyl Chloride Biomedical Products: Toxicity
Testing and Identification of Additives
Geertz, H; Dyer, K; Johnson, D; Miller, B; Taylor, B;
Sharp, W
Trans. Amer. Soc. Artif. Int. Organs, Vol. 20
1974

21173024

Angiosarcoma of the Liver in Workers Who have
Prolonged Contact with Vinyl Chloride: Epidemiology
Program VC Workers
Nakk, L; Delorme, F; Creech, JL
TOME, Vol. 104
1975

Toxicology of Plastics Having Contact with Blood:
Report Program Progress
Josefhson, AM.
1975

Epidemiological Studies of Vinyl Chloride Health
Effects in the United States
Roy. Soc. Med., Vol 69
1976

Experimental Chronic Poisoning with Vinyl Chloride
(Monochlorethene)
Proban, L; Suci, I; Pislariu, V; Ilea, E; Pascu, L
Annals New York Academy of Sciences

Pneumoconiosis Caused by the Inhalation of Polyvinyl
Chloride Dust
Szende, B; Lapis, K; Nemes, A; Pinter, A
Med. Lavoro, Vol. 61, No. 8-9
1970

The Toxicity of Vinyl Chloride as Determined by
Repeated Exposure of Laboratory Animals
Torkelson, T; Oyen, F; Rowe, VK
AIHA, Vol. 22, No. 5
1961

Investigation of the Diseases Produced by Vinyl
Chloride
Drejmin, I; Valaskai, M
Med. Intern, Vol. 15
1963

Mortality and Cancer Morbidity in Workers in the
Swedish PVC Processing Industry
Monberg, B; Elofscot, S; Holmlund, L; Maasing, R;
Holima, G; Westerholm, P
APME Mtg. Sweden
1979, June 8

Supplemental Answer to Interrogatory No. 15: BFG states
that during the relevant time period (1969 to 1973), its
liability insurance coverage is through Kemper.

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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.

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