

COMPANY CONFIDENTIAL

May 20, 1974

B. F. GOODRICH VINYL CHLORIDE CHRONOLOGY

Production

- 1938 - BFG began semi-commercial production of PVC resins in Akron, Ohio (< 0.5 MM#)
- 1940 - BFG began commercial production of VCM and PVC in Niagara Falls (12-20 MM#)
- 1942 - BFG began commercial production of VCM and PVC in Louisville, Ky (50-200 MM#)
- 1946 - BFG moved PVC pilot plant operations to Avon Lake Technical Center, Ohio
(< 0.5 MM#)
- 1953 - BFG began commercial production of VCM in Calvert City, Ky. (150-1000 MM#)
- 1953 - BFG began commercial production of PVC in Avon Lake, Ohio (50-100 MM#)
- 1957 - BFG began semiworks plant of VCM via EDC cracking at Louisville, Ky.
- 1960 - BFG began PVC production at Long Beach, Calif. (25-100 MM#)
- 1965 - BFG began PVC production at Henry, Illinois (75-200 MM#)
- 1968 - BFG terminated VCM production at Louisville, Ky. via acetylene
- 1968 - BFG terminated VCM production at Niagara Falls, N.Y.
- 1970 - BFG began PVC production at Pedricktown, M.J. (50-100 MM#)
- 1971 - BFG terminated PVC production at Niagara Falls, N.Y.
- 1974 - Current production capacities - MM#/YR

VCM - Calvert City, Ky.	1000	(all from ethylene)
PVC - Louisville, Ky.	200	(pearl, paste, copolymer, latex)
PVC - Avon Lake, Ohio	300	(pearl, paste, latex)
PVC - Henry, Illinois.	225	(pearl, paste)
PVC - Long Beach, Calif.	175	(pearl)
PVC - Pedricktown, N.J.	<u>150</u> 2050	(pearl, paste mass)

- 1966-69 - BFG development of hydraulic reactor cleaner system, to minimize polymerizer entry.

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Medical History and MCA programs

- 10/58- 21 yr. old employee overcome in reactor (Welland, Ont. plant).
Diagnosis: lack of oxygen, or heart attack.
- 1/59- 43 yr. old employee overcome in gasholder pit (Welland, Ont. plant).
Diagnosis: lack of oxygen.
- 1964 - Dr. John Creech, Louisville plant physician, reports hand problem.
- 1965 - Meetings with Univ. of Cincinnati and Solvay representatives confirm relation of hand problem with PVC reactor cleaners.
- 1966 - Meetings with U.S. - European PVC industry representatives on acroösteolysis.
- 1969 - Report by Univ. of Michigan on epidemiology of acroösteolysis.
- 7/7/70 - At W. E. McCormick's request, MCA called attention of industry to Prof. Viola's report to 10th International Cancer Congress (5%) of 3% VCM inhalation inducement of carcinoma in rats after 10 months.
- 4/71 - Members of Occupational Health and Safety Committee of MCA met with Prof. Viola to discuss current status of his animal experiments - including indication of cancer at levels as low as 5000 ppm VCM.
- 7/9/71 - MCA Technical Task Force for Vinyl Chloride Research organized to undertake USA animal and epidemiology studies. (met with management representatives November 16, 1973).
- 12/14/71 - MCA group learns of European animal studies.
- 4/20/72 - MCA Group delays initiation of USA animal studies until European animal study protocol is determined.
- 1/17/73 - MCA Group learns of preliminary results of European group program showing tumors at as low as 250 ppm exposure levels. (Reported to MCA Group Jan. 30, 1973).
- 1/73 - Intensified VCM air sampling program in BFG's VCM and PVC plants.
- 3/73 - Dr. Creech expresses concern to Dr. Wilson over liver complaints at Louisville.
- 3/26/73 - MCA group proposes going to our Government representatives with both European and U.S. animal test program.
- 4/6/73 - BFG commits funds for support of MCA animal test program.
- 4/18/73 - MCA group obtains industry approval to ask European group to make disclosure to NIOSH.
- 6/15/73 - Trip of MCA Executive representatives to Brussels to gain approval of European group to participate in NIOSH presentation.

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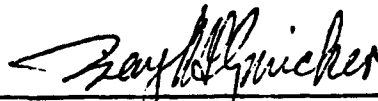
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- 6/29/73 - BFG special VCM/PVC plant managers' meeting to initiate lower VCM exposure program. (50 ppm maximum without protective equipment set as goal for each plant. Century OVA demonstrated as first approach to monitoring and leak detection).
- 7/17/73 - Animal test results and programs reported to NIOSH.
- 9/73 - Dr. Johnson initiated blood test program (SMA 12) at Louisville plant on PVC workers (271).
- 9/73 - Industrial Bio-Test Laboratories program has to be restarted because test animals were stressed in delivery due to Ozark airline strike.
- 11/28/73- MCA group updated on Prof. Maltoni's tests and the rare nature of angiosarcoma and nephroblastoma (in man) was identified. Dr. Johnson summarized these findings in a special meeting with Chemical Company in early December (no tumors at 50 ppm).
- 12/18/73- Dr. Johnson reviewed results of liver tests with Dr. Creech. 55/271 slightly abnormal in liver function tests - retests ordered. Dr. Creech informs Dr. Johnson of 1 death of angiosarcoma of the liver in 3/73, recalling 1 death in 1971 due to the same rare cause. Also a third man is critically ill with similar symptoms.
- 12/21/73- Dr. Johnson reported concerns to Management, and it is agreed to bring in a consultant.
- 12/27/73- Special plant managers' meeting, where all animal and employee medical data was discussed and need for meeting June goals of exposure and work practices was re-emphasized.
- 1/14-15/74
Meeting with Dr. Tabershaw in Berkeley, California
- learned death of December 19 was angiosarcoma.
- 1/18/74 - Management Committee meeting to discuss three deaths.
- 1/20/74 - Management Committee meets with Dr. Tabershaw to discuss course of action.
- 1/21/74 - BFG Board of Directors' Meeting.
- 1/21/74 - Drs. Johnson & Tabershaw consult with Dr. Creech in Louisville.
- 1/22/74 - Drs. Johnson & Tabershaw inform NIOSH.
- 1/23/74 - Drs. Johnson & Tabershaw inform Kentucky Dept. of Labor. Public statement.
- 1/24/74 - Walk-through survey of Louisville by OSHA of Kentucky and NIOSH.
- 1/29/74 - Public release of 4th death in 1968 just discovered.

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- 1/31/74 - NIOSH issues recommended monitoring and control procedures.
- 2/7/74 - Plant Managers' review meeting.
- 2/12/74 - NIOSH meeting in Cleveland to inform industry and labor.
- 2/15/74 - OSHA fact-finding hearing in Washington, D.C.
- 2/15/74 - Press release on 5th death in 1964.
- 2/19/74 - Kentucky OSHA Standard Committee meeting in Frankfort, Ky.
- 3/22/74 - MCA briefing of EPA on vinyl chloride and PVC.
- 4/22/74 - Initiation of MCA metabolic study support at Dow.
- 5/3/74 - Initiation of additional animal tests at 25, 15, 10, 5 and 1 ppm and single high level exposure.
- 5/7/74 - Completion of Tabershaw-Cooper Associates epidemiology study.


 B. M. G. Zwicker

BMGZ:ksc
 5/23/74

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