

AR 226 - 1459



E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE 19898

PLASTIC PRODUCTS AND RESINS DEPARTMENT

CC: R. E. JACKSON
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E. D. CHAMPNEY
J. C. LEITINGER/M. S. EATON - WW
W. A. BOWER/R. J. BURGER - WW
C. H. FOSHEE - WW
J. F. DOUGHTY - WW
S. N. BOYD - CD&P
B. C. MC KUSICK - CR&D, HASKELL
B. W. KARRH - ER
J. B. ARMITAGE

PERSONAL & CONFIDENTIAL

July 18, 1979

TO: J. W. RAINES
FROM: L. F. PERCIVAL LFP

RECEIVED
JUL 20 1979
BRUCE W. KARRH, M.D.

MINUTES
REVIEW OF PRELIMINARY DATA
ORGANIC FLUORINE LEVELS IN BLOOD - WASHINGTON WORKS

- Ref: (1) Letter J. F. Doughty to L. F. Percival,
"Data on C-8 Exposure", 7/17/79.
(2) Letter Dr. Y. L. Power, M.D. to W. A. Bower,
9/20/78.

R. E. Jackson, J. W. Raines and I met with Dr. B. W. Karrh and B. C. McKusick on 7/18 to review the data in References 1 and 2.

Meeting with 3M Company - A meeting is planned* with 3M Company (the C-8 manufacturer) on 7/20 to review any new 3M data and results from blood tests run at Chambers Works. It was agreed that B. C. McKusick would report Washington Works' blood data as results of a preliminary study; process data will not be given. McKusick will report to PP&R any findings from the meeting that are significant regarding plans outlined below.

Further Blood Sampling at WW - It was agreed that additional blood samples should be taken at WW to meet the following objectives:

- Check all individuals currently exposed to C-8 in the semiworks (total 8), FEP polykettle operator (total 13) and TFE polykettle operator (total 13).
- Verify that fluorine in blood levels is due to C-8 exposure rather than from other fluorochemicals. About 4 samples should be taken from "Teflon" Monomer operators (or other personnel from the "Teflon" area) with no potential for C-8 exposure for at least 10 years.

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*Meeting was arranged May 1979.

THERE'S A WORLD OF THINGS WE ARE DOING SOMETHING ABOUT

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- Define the biological decay, or buildup, rates of fluorine in blood. WW should develop a program to define decay rates or buildup of fluorine in blood by a careful review of work histories and blood sampling of certain individuals selected from list described below. We should attempt to determine if fluorine in blood levels increases with increasing lengths (years) of exposure in the jobs with C-8 exposure. We should also sample a few individuals who have left jobs with C-8 exposure for different lengths of time (years). Development of such a program will require careful planning and we would like to review it as soon as practical.

CD&P has agreed to continue to analyze samples for PP&R.

To help meet the above objectives, lists should be prepared of all jobs (including mechanics) and personnel assigned these jobs who would have been routinely potentially exposed to C-8 for a significant period for the past 10 years.

Communication with Washington Works' Employees - Present status should be communicated to affected employees at an appropriate time. Public Affairs (C. Perry) is working with information in Reference 1 and 2 to assist in statements to employees. The statements should be cleared with J. W. Raines before being used.

Medical Follow-up - Dr. B. Karrh will review data summarized in Reference 2 directly with Dr. Power and request additional medical analyses as needed.

Dordrecht and Spruance (Textile Fibers) - We agreed to defer sampling Dordrecht until further sampling has been completed at WW. McKusick is advising Textile Fibers Department of our present status. Some sampling of affected Spruance employees is indicated.

"Teflon" Customers - Any communication will be deferred until plant studies are more complete.

Notification of EPA (Section 8(e) - Toxic Substances Control Act) - The "Substantial Risk" Committee will review next week to decide if a report under 8(e) is required. This will also be discussed with 3M.

LFP:ldb

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E. I. DU PONT DE NEMOURS & COMPANY
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WILMINGTON, DELAWARE 19898
CENTRAL RESEARCH & DEVELOPMENT DEPARTMENT

HASKELL LABORATORY
FOR
TOXICOLOGY AND INDUSTRIAL MEDICINE

Copies to:

S. N. Boyd, Jr., CD&P, B-16234

B. W. Karrh, M.D., ERD, N-11400

A. A. Wright, Fibers, N-4522

J. W. Raines, PP&R, D-12017

F. J. Marascia/R. D. Richardson/R. E. Read, CD&P

H. E. Simmons/M. S. Sadler, CR&D, D-6032

C. F. Reinhardt/G. L. Kennedy, CR&D, Haskell

*file - fluorochemical on
fluorochemical. Here a file
July 23, 1979*

C O N F I D E N T I A L

MEMO TO: F. E. FRENCH, JR.
CD&P, B-17249

FROM : B. C. MC KUSICK

B. C. McKusick

RECEIVED
JUL 23 1979
BRUCE W. KARRH, M.D.

DISCUSSION OF FLUORO-CHEMICALS WITH 3M

On July 20, S. N. Boyd, G. L. Kennedy, F. J. Marascia, B. C. McKusick, R. E. Read, and R. D. Richardson of Du Pont met in Chicago with F. D. Griffith, L. C. Krogh, R. A. Prokop, and F. A. Ubel of 3M.

Richardson described measurements of organic fluorochemicals in blood of fluorosurfactant production employees at Chambers Works*. In contrast to experience at 3M, concentrations are normal. A retroactive study of medical records found no adverse health effects. The blood analysis program has been discontinued.

Kennedy described Haskell's subacute toxicity studies of CD&P fluorochemicals*. They are consistent with 3M animal data.

Prokop of 3M described a gas chromatographic method to determine per-fluorooctanoic acid (FC-143) in blood, urine, liver, and other biological materials. It can measure as little as 1.5 ppb. A paper has been prepared (copy attached) that should appear in about six months.

Ubel, the 3M medical director, said that no adverse liver effects or other health effects have been found among employees in FC-143 operations. Blood levels of organofluorine in employees have changed little despite steps to lessen exposure. Blood levels of employees moved to locations outside the fluorochemical area have dropped only slightly, although measurable amounts of organic fluorine is excreted. This was illustrated by data on an employee who had been in the fluorochemical area for 15 years and had the highest blood level of any (Table I).

EID107173

(*Transparencies attached to copies of French, Simmons, & Reinhardt.)

July 23, 1979

TABLE IORGANOFLUORINE IN ONE EMPLOYEE

<u>Date</u>	<u>Blood Concentration, ppm</u>			<u>Urine Conc., µg/24 hr.</u>
	<u>RF</u>	<u>F-</u>	<u>FC-143</u>	<u>RF</u>
July 76:	39	0.05		
Oct 77	40	.03		
Apr 78	71		53	
May 78	67			
(At this point, he was transferred to another area)				
June 6, 78	66			484
June 13, 78	71			272
July 78	66			160
Aug 78	55			175
Oct 78	59			160
Jan 79	45			220
Apr 79	47			

3M got blood samples from 8 peasants in a Chinese village 30 miles from Canton. The organic fluorine was significantly lower (0.004-0.017 ppm), than values found in developed countries (e.g., 3M found 0.002-0.13 in 106 members of the general U.S. population).

Ubel said that a University of Minnesota professor is doing an epidemiology study of 4000-5000 employees who have worked at the oldest and biggest 3M plant manufacturing fluorochemicals. Nothing noteworthy has shown up, but the study has a long way to go.

A year ago all employees in fluorochemical manufacture were told the results of the blood study. 3M recently told them about it again. About 60 employees in the fluorochemical area have had blood organic fluorine measured. All who have been found to have elevated organic fluorine blood levels have been informed of the fact and told that 3M does not know what it means, but that no adverse health effects have been related to it. The employees have taken the information calmly.

Griffith, 3M manager of toxicology, reported data on 90-day studies of FC-143 in rats and monkeys (see attachment). The effects were similar to what Du Pont saw with similar materials. Thus, the liver was the main target organ.

There was no significant difference in effects between male and female rats, but males retained about 100 times more FC-143! Griffith said he would send me details on this.

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MEMO TO: F. E. FRENCH, JR.

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July 23, 1979

3M will start a metabolism study of radiolabeled $C_{7,15}F_{15}C^*O_2H$ in rats soon. This may show where FC-143 is being stored in the body.

Studies of FC-143 dust on animal skin indicates it does not penetrate the skin easily.

3M indicated interest in another review in about a year, or whenever one company has interesting results.

BCM/bjd

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