

AR 226 - 3409



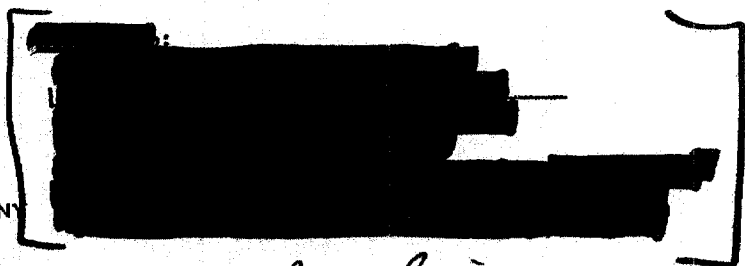
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ES-3373 REV. 1-75



E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE 19898
CENTRAL RESEARCH & DEVELOPMENT DEPARTMENT
HASKELL LABORATORY
FOR
TOXICOLOGY AND INDUSTRIAL MEDICINE



*file - fluorochemical on
French & Richardson. Have a file
July 23, 1979*

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

MEMO TO: F. E. FRENCH, JR.

FROM : B. C. MC KUSICK

Blair Kennedy

RECEIVED
JUL 24 1979
BRUCE W. KARRH, M.D.

DISCUSSION OF FLUOROchemicals 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 perfluorooctanoic acid 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 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).

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

BETTER THINGS FOR BETTER LIVING ... THROUGH CHEMISTRY

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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>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 [redacted] 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 [redacted] Griffith said he would send me details on this.

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3M will start a metabolism study of radiolabeled $C_7^{15}C^*O_2H$ in rats soon. This may show where [REDACTED] is being stored in the body.

Studies of [REDACTED] 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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