

Subject: FM-3422  
 Rat Toxicity Study  
 Request A67820  
 April 6, 1978

cc: H.E. FREIER 201-1S  
 J.D. LAZERTE 236-1  
 B.W. NIPPOLDT 201-1S  
 R.A. PROKOP 236-3B  
 F.A. UBEL 220-2E  
 D.G. WEIBLEN 201-1S

TO: J.E. LONG 220-2E

FROM: JON BELISLE 201-1S

Samples of serum from the rats surviving the IRDC 90 day sub-acute rat toxicity study (reference 137-086) were received for determination of 3422. The analytical results were reported to you in my letter of March 13. In that letter, I speculated the presence of metabolized 3422 and suggested characterization for FC - 95.

Having developed a new sample handling technique appropriate for the above type of sample, the serum samples were analyzed for total fluoride content.

RAT	DOSE (ppm)	3422 in serum (ppm) <sup>①</sup>	TOTAL FLUORIDE IN SERUM (ppm)
Male	0	0	0.6
Male	100	< 0.1	100
Male	300	< 0.1	285
Female	0	0	--
Female	100	< 0.1	120
Female	300	< 0.3	335

<sup>①</sup> reported in March 13, 1978 letter.

FLUORINE - - - N M R

The serum samples were further characterized for fluorine by NMR (Richard Newmark). To the male serum - 0 ppm 3422 dose level was added FC-95 (C<sub>8</sub>F<sub>17</sub>SO<sub>3</sub>K) and the sample prepared for NMR. The male serum - 300 ppm 3422 was prepared for NMR.

**Exhibit**  
**1166**  
 State of Minnesota v. 3M Co.,  
 Court File No. 27-CV-10-28862

3MA10035579

## RESULTS

The F/NMR spectrum of the 2 samples were identical (slight difference seen in branching). This means that the serum contains  $C_8F_{17}SO_3^-$  that the rat has metabolized from 3422.

## DISCUSSION

I would suggest that this study feeding FM-3422 ( $C_8F_{17}SO_2-N(C_2H_5)CH_2CH_2OH$ ) and a previous study with mice feeding FC-807 ( $C_8F_{17}SO_2N(C_2H_5)CH_2CH_2OP-$ ) in which both serums were found (F/NMR) to contain  $C_8F_{17}SO_3^-$  is a significant finding. It implies that any 3M product bearing the  $C_8F_{17}SO_2NCH_2-$  group upon exposure to rats or mice would generate  $C_8F_{17}SO_3^-$  which accumulates in the animal's blood and tissue (see liver analysis to be reported later).

The next step would be to extrapolate these findings to man per Guy and Taves research. Thus, I have suggested before and will state again the significance of characterizing those previous samples from 3M employees exposed to 3 M's skin protectants and carpet treatment products. If  $C_8F_{17}SO_3^-$  is found in these persons blood, then the public health issue becomes simply one of frequency and type of exposure to 3 M products.

  
Jim Belisle

JB/jb