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CC: J. W. Amacher
T. L. Miller
File: 11-0-4

PLASTICS DEPARTMENT

February 18, 1970

COMPANY CONFIDENTIAL

TO: J. MITCHELL, JR. 
PLASTICS DEPARTMENT
EXPERIMENTAL STATION

FROM: W. E. HILTON
FLUOROCARBONS DIVISION
WASHINGTON WORKS

(8-181-7239)

REQUEST FOR TOXICOLOGICAL INFORMATION
"TEFLON"® DIVISION CHEMICALS

Past studies made at Haskell Laboratory have indicated that ammonium perfluorooctonate (C-8 APFC), which is used in the preparation of "Teflon"® dispersions, is highly toxic when inhaled and moderately toxic when injected. However, data are not available on the chronic local or chronic systemic effect of the compound in the solid state or dissolved in "Teflon" dispersions.

A review of the medical history of employees in the dispersion's area revealed that with the exception of two cases of dermatitis, which were probably due more to temperature and moisture than specific chemicals, there have not been any indications of toxicological effects of chemicals. The plant Medical group is aware of the potential effects of the area chemicals and monitor area employees, both individually and statistically.

We are interested in determining the systemic effect for repetitious skin contacts of short duration with C-8 APFC powder and with the aqueous dispersion of polytetrafluoroethylene containing C-8 (or chlorendic acid). We are also interested in determining the chronic effect of inhalation of minute quantities of C-8 APFC. In addition to knowing these effects, we would like guidance on the personnel equipment necessary for adequate protection against these effects. Would you determine the cost of each separate study, the potential for beneficial data

3/3/70 RSW handling cost estimates & proposals

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2/19/70*

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beyond our ability to extrapolate existing qualitative data, and if the following data is sufficient for Haskell Lab's purposes.

C-8 APFC Charging

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Haskell Number _____

HASKELL LABORATORY FOR TOXICOLOGY AND INDUSTRIAL MEDICINE

SAMPLE SUBMITTED FOR TOXICITY EVALUATION

Department Plastics Division Fluorocarbons Location Washington Works

Systematic Name of Chemical:

Ammonium Perfluorooctanoate

Synonym, Product Name and/or Designations:

3M's Wetting Agent FC-143, C-8 APFC

Formula:

$\text{CF}_3 (\text{CF}_2)_6 \text{COONH}_4$

Sample: Code No. _____ Lot No. _____ Amount _____

Grade _____ Color White Form _____ Mol. Wt. _____

Special Handling Requirements _____

Is it explosive in air? No in oxygen? ? if so, at what concentrations? _____

Active Ingredient C-8 APFC 95 %

Composition, if a mixture (are percentages by weight or volume?)

C-8 95% Minimum

C-6 5% Maximum

Impurities (Identity and amounts; are percentages by weight or volume?)

C-6 5% Maximum

Properties: Decomposes: 150°C @ 25°C Negligible (Attach VP curve if available)
MP _____ BP _____ VP _____ @ Max. Process Temp. 100°C
2% Aqueous Solution

Sp.Gr. _____ pH⁴ Min Vapor Density (air = 1) _____

Flash Point (Open cup) _____ (Closed cup) _____

Solubility (Quantitative, if possible) in water Yes Acetone _____

Ethanol _____ Vegetable oil _____ Other Solvents _____

Proposed Use:

Ingredient in Polymerization Recipe

Present Stage of Development: Research _____ ~~Service~~ _____ Mfg. _____ Sales _____

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Employee Exposure

1. Concentration of material in process 1200 PPM
2. Solvent and other chemicals present Water, Disuccinic Acid Peroxide
3. Is exposure by inhalation skin absorption other _____
4. Maximum temperature of material in process 100°C
5. Is the compound present in the atmosphere in the form of vapor No
mist No dust Slight
6. Maximum concentration likely to be present in atmosphere Unknown
7. What type of ventilation is in use? High Volume
8. What type of protective clothing is worn? Gloves, Goggles, Dust Mask
9. Exposure is for _____ hours _____ minutes per day See Attached Letter

Consumer Exposure

By Employee

What is possibility of:

- | | | |
|-----------------|----------------|--|
| 1. Ingestion | Very Slight | NOTE: See Attached Letter for Write-Up |
| 2. Inhalation | Minor Quantity | |
| 3. Skin contact | Fair | |
| 4. Eye contact | Slight | |

Experience to Date

Have any clinical signs of toxicity such as headaches, difficulty in breathing, dizziness, nausea, skin or eye irritation, etc., been reported by persons who have been in contact with the chemical? If so, please list them and describe circumstances under which they occurred.

No

NOTE: Haskell Laboratory will retain the unused portion of stable, nonflammable, nonvolatile, low toxicity samples for 5 years unless requested to return to sender immediately after testing. After 5 years, the samples will be discarded or returned to the appropriate department. It is suggested that the sender also retain a suitably identified portion of the sample sent for toxicity evaluation for his own future reference.

Signature W. E. Hilton Date 2/13/70

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TABLE I

Ammonium Perfluorooctanoate (C-8 APFC)

Formula: $\text{CF}_3 (\text{CF}_2)_6 \text{COONH}_4$

Manufacturer: 3M (FC-143)

Previous Tests:

Inhalation, MR No. 1198, Haskell Laboratory Report
No. 160-69

Oral, MR No. 604, Haskell Laboratory Report No. 55-61.

Chlorendic Acid

Formula: $\text{C}_9\text{H}_4\text{O}_4\text{Cl}_6$

Manufacturer: Hooker Electrochemical Company

Previous Tests:

Oral, MR No. 604, Haskell Laboratory Report No. 1-63.

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