



DuPont

DuPont
Chestnut Run Plaza
P.O. Box 80713
Wilmington DE, 19880-0713

AR226-1662

October 3, 1994

Dr. Jack A. MacPherson, Group Leader
First Brands Corporation
7201 Adams Street
Willowbrook, IL 60521

Dear Dr. MacPherson:

Your 9/2/94 phone call indicated that First Brands is planning to use Teflon® K-20 PTFE fluoropolymer dispersion as a dedusting agent on clay particles which are to be sold as cat litter. You were concerned because the Material Safety Data Sheet (MSDS) indicates that K-20 contains <0.2% of ammonium perfluorooctanoate (APFO), and the exposure limit section of the MSDS indicates that the ACGIH TLV, Notice of Intended Changes (1993-1994) will carry an A3 designation.

As noted in the ACGIH definition that I faxed to you, A3 indicates the following:

"A3 - Animal Carcinogen: The agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) that are not considered relevant to worker exposure. Available epidemiological studies do not confirm an increased risk of cancer in exposed humans. Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure."

In deciding whether or not to use K-20 in your proposed application, you need to consider the potential risks to:

1. First Brands employees who manufacture your product.
2. Cats who use the litter for urination and defecation.
3. Cat owners who may handle the litter.

The DuPont MSDS for K-20 indicates the hazards faced by industrial employees who handle K-20 and tells the precautions which

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should be taken. The APFO concentration in K-20 is similar to that in most PTFE dispersions which are widely used commercially.

The following may help you put the risks that cats or cat owners face in perspective as you evaluate the possible use of K-20 for this application.

1. Your proposed use of 1 lb (dry weight) PTFE per ton of clay, would give 0.05% PTFE on the clay.
2. Using K-20 as your source of PTFE, this would give less than 2 ppm APFO on the clay.
3. K-20 is sold as a 33-34% dispersion in water. You say that the water is soaked up by the clay. APFO is water soluble, and therefore should be soaked up by the pores in the clay along with the water. Therefore the amount of APFO on the surface of the clay should be much less than 2 ppm.
4. The OSHA Hazard Communication Standard does not require listing carcinogenic components on a MSDS if the concentration is less than 0.1% (i.e., <1,000 ppm).
5. The OSHA Hazard Communication Standard does not consider ACGIH class A3 as establishing that a substance is a carcinogen.
6. A 2-year feeding study in rats at doses of 30 and 300 ppm APFO in the diet produced evidence of liver injury. Liver tumors were not seen in the 30 ppm group and the incidence of tumors was slightly increased in the 300 ppm group. While no toxicity data are available for cats, rodents are generally considered to be more susceptible to the type of injury produced by this class of chemical than humans, dogs or monkeys. You should be a better judge than we of whether ingestion is a likely route of exposure for either cats or humans.
7. The purpose of the K-20 is to minimize dust formation. Potential exposure to APFO by inhalation can be estimated by the following method of calculation, using your actual measurements of cat litter dust in the air where I have used 10 mg/m³, which is the ACGIH TLV (8-hr TWA) for Particulates Not Otherwise Classified (This is a fairly high dust concentration):
 - (a) A human breathes 10 m³ of air in an 8-hr day.
 - (b) There is 1.7 ppm APFO on the cat litter.

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If concentration of cat litter dust in the air were 10 mg/m³, then the calculated amount of APFO inhaled in an 8-hour day would be:

$$10 \text{ mg/m}^3 \times 1.7 \times 10^{-6} \times 10 \text{ m}^3 = 1.7 \times 10^{-4} \text{ mg}$$

The current ACGIH TLV for APFO is 0.1 mg/m³ (8-hr TWA), but the intended change for 1993-1994 is a TLV of 0.01 mg/m³ (8-hr TWA).

Using this latter number, in an 8-hr day a person could inhale

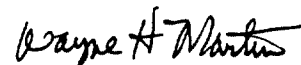
$$0.01 \text{ mg/m}^3 \times 10 \text{ m}^3 = 0.1 \text{ mg APFO}$$

which "represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse health effects" (quote from ACGIH definition of TLV). This is 590 times the calculated amount that would be inhaled if a person inhaled a concentration of cat litter dust of 10 mg/m³ for an 8-hour day.

8. The most likely route of exposure is skin contact. APFO can be absorbed by the body through skin contact. Exposure by this route depends on amount of time the skin is in contact with the cat litter, and the concentration of APFO on the surface of the litter (see #2 and #3 above).

I hope the above information will be useful to First Brands in deciding whether or not to use Teflon® K-20 in your proposed application.

Sincerely,



Wayne H. Martin
Fluoroproducts
Regulatory Affairs

cc: D. B. Jones, Delaware Marketing Services
206 Weldin Bldg., 3411 Silverside Road
Wilmington, DE 19810

WHM/jks
WHM33-94

bcc: D. L. Peet
R. L. Ritchey
D. N. Washburn
Y. H. Kim
R. Valentine
J. F. Dickey

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