INDUSTRIAL CHEMICAL PRODUCTS DIVISION FLUORAD BRAND FLUOROCHEMICAL SURFACTANT FC-143

TYPE SURFACTANT: Anionic fluorochemical

APPEARANCE: Light-colored powder

COMPOSITION: 100% Ammonium perfluoroalkyl carboxylates

SOLUBILITY AT 25 C: >100 g in 100 g water.

TOTAL ORGANIC CARBON: 212,000 mg/kg

BIODEGRADATION:

STANDARD METHODS Biochemical Oxygen Demand Test

Chemical Oxygen Demand Biochemical Oxygen Demand	(BOD) 5-Day 20-Day	700 mg/kg
		Nil Nil
Theoretical Oxygen Demand	(ThOD) *	320,000 mg/kg
*Assumes C is mineralized halogen is eliminated as	to CO ₂ , and H to hydrogen halide	H ₂ O, and that and N as NH ₃ .

Shake-Culture Study

Carbon-14 labeled FC-143 showed complete resistance to microbial modification in a 2 1/2-month shake culture study. Starting with a mixed microbial inocula, the procedure involved making "adaptive" transfers at 4-5 day intervals to media containing fresh FC-143, dilute yeast extract, basal salt media. The temperature was 25 C. Reference components (phenol and LAS) were completely degraded in parallel studies. Addition of hydrogen analogs of FC-143 to the FC-143 cultures did not facilitate the degradation of the fluorochemical.

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INDUSTRIAL CHEMICAL PRODUCTS DIVISION FLUORAD BRAND FLUOROCHEMICAL SURFACTANT FC-143 (con't)

PHOTODEGRADATION:

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Irradiation of a 50 ppm aqueous solution of FC-143 for 30 days resulted in no detected photoproducts on analysis by thin-layerchromatography/radioautography, and by gas chromatography of derivatized samples. The irradiation source produced 300 nm and longer wavelength ultraviolet light to simulate natural sunlight.

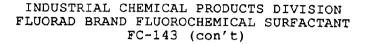
AQUATIC TOXICITY:

Fish

	<u>96-Hr LC</u> 50	<u>95% C.L.</u>
Fathead minnow (<u>Pimephales</u> promelas)	766 mg/l	(743-787 mg/l)
Bluegill sunfish (<u>Lepomis macrochirus</u>)	569 mg/l	(500-646 mg/l)
Invertebrate		
	$\frac{48-\text{Hr EC}_{50}}{(\text{mobility})}$	<u>95% C.L.</u>
Water flea (<u>Daphnia</u> <u>magna</u>)	632 mg/l	(570-699 mg/l)
<u>Green Algae</u>		
	<u>14-Day EC</u> (cell dry ⁵⁰ weight)	<u>14-Day EC50</u> (cell count)
<u>Selenastrum</u> capricornutum	73 mg/l	43 mg/l

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Thirty-Day Egg Fry Study

FC-143 concentrations as high as 100 mg/l had no adverse effects upon the hatchability of eggs or upon the survival and growth of fathead minnow (<u>Pimephales promelas</u>) fry through 30 days of post hatch exposure.

ADSORPTION TO SOIL:

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Soil Adsorption Coefficient (K) 0.38 Organic Carbon Adsorption Coefficient K_{OC} 17

These adsorption coefficients, based on studies utilizing a Brill sandy loam soil and ¹⁴C labeled FC-143, indicate that FC-143 would move readily with groundwater through soil₁₄ K is the ratio of the FC-143 concentration adsorbed to soil (ug ¹²C FC-143/g soil) to the concentration dissolved in water (mg/l) at equilibrium with the soil. K is the adsorption coefficient corrected to reflect the organic content of the soil.

SUBLIMATION:

FC-143 can be sublimed completely and recovered unchanged (as determined by IR Spectrophotometry) at 178 C and atmospheric pressure.

DISPOSAL:

Mix with flammable material and incinerate in an industrial or commercial facility. Combustion products will include HF. Disposal alternative: Dispose of waste product in a facility permitted to accept chemical wastes. Discharge spent solutions to a wastewater treatment system. Reduce discharge rate if foaming occurs. Since regulations vary, consult applicable regulations or authorities before disposal.

U.S. EPA Hazardous Waste No.: None

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