

EXECUTIVE SUMMARY

Introduction

Perfluorooctanoic acid (PFOA) and its salts are fully fluorinated organic compounds that can be produced synthetically or through the degradation or metabolism of other fluorochemical products. PFOA is primarily used as a reactive intermediate, while its salts are used as processing aids in the production of fluoropolymers and fluoroelastomers and in other surfactant uses. In recent years, less than 600 metric tons per year of PFOA and its salts have been manufactured in the United States or imported. Most of the toxicology studies have been conducted with the ammonium salt of perfluorooctanoic acid, which is referred to as APFO in this report.

Environmental Fate and Effects

PFOA is persistent in the environment. It does not hydrolyze, photolyze or biodegrade under environmental conditions.

Groundwater samples taken near fire-training areas that used fire-fighting foams containing perfluorinated surfactants had elevated PFOA concentrations many years after the foam use. This demonstrates the following: (1) PFOA either existed in--or was formed via degradation of--the surfactants, (2) PFOA or its precursors migrate through the soil, and (3) PFOA persists in groundwater.

Several wildlife species have been sampled around the world to determine levels of PFOA. PFOA has rarely been found in fish sampled from the U.S., certain European countries, the North Pacific Ocean and Antarctic locations, or in fish-eating bird samples collected from the U.S., including Midway atoll, the Baltic and Mediterranean Seas, and Japanese and Korean coasts. PFOA was found in a few mink livers from Massachusetts, but not found in mink from Louisiana, South Carolina and Illinois. PFOA concentrations in river otter livers from Washington and Oregon States were less than the quantification limit of 36 ng/g, wet wt. PFOA was not detected at quantifiable concentrations in oysters collected in the Chesapeake Bay and Gulf of Mexico of the U.S. coast.

The concentrations of PFOA in surface water, sediments, clams, and fish collected from locations upstream and downstream of the 3M manufacturing facility at Decatur AL have been determined. Of the three downstream water and sediment sampling locations, the two closest to the facility had PFOA surface water concentrations significantly greater than the two upstream sites; the three downstream locations also had sediment concentrations significantly greater than the upstream sites. The small sample size prevented determination of significance for fish whole body PFOA concentrations. The average PFOA concentration in clams was not significantly different between the upstream and downstream locations.

Based on available laboratory data, APFO does not appear to bioaccumulate in fish. In a study of fathead minnows, the calculated BCF for APFO was 1.8. In a study of carp, the BCF ranged