DEPARTMENT of the INTERIOR

FISH AND WILDLIFE SERVICE

news release

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SPIN-OFF OF FISH RESEARCH SAVES MILLIONS FOR AIR FORCE

Over 2 million gallons of "Herbicide Orange"--a plant-killing spray, formerly used in Vietnam--can now be salvaged because of a research discovery at the Interior Department's U.S. Fish and Wildlife Service Fish Pesticide Lab in Columbia, Missouri.

As a result the U.S. Air Force has changed its plan to burn 2.3 million gallons of the spray on the open sea near Johnston Island in the Central Pacific on a specially designed vessel. Instead, the Air Force is planning to process the fluid and recover a valuable and safe herbicide, registerable for productive use with a potential net return to the Government of $40 to $100 million.

A process for removing one of the most poisonous chemicals known to man (TCDD) by absorbing it onto coconut charcoal filters was developed almost by accident by David Stalling and Jim Huckins, two chemists trying to separate and measure impurities in fish tissue. TCDD is a chemical poison which is formed when plant-killing sprays are manufactured. It is more poisonous than kepone, and presents handling and storage problems as complicated as those connected with lively nuclear wastes. A recent explosion of a cosmetics plant in Italy which loosed about 4 pounds of TCDD killed chickens and goats and prompted the evacuation of humans for several miles.

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Stalling and Huckins were not working with TCDD when they developed a process to separate impurities from fish tissue. They realized, however, that their research might apply to TCDD-carrying materials such as herbicides. They contacted Air Force officials and received a sample of Herbicide Orange to run experiments with the procedure they had developed.

Tests with two charcoal columns were effective in removing 99 percent of the TCDD from the Herbicide Orange. In subsequent tests, more than 99 percent of the TCDD was removed when a column of charcoal was heated to 100 degrees centigrade and the undiluted herbicide was passed through.

The process is being patented by the U.S. Fish and Wildlife Service. Stalling and Huckins demonstrated their discovery on a laboratory scale for the Air Force. Subsequently, the process was used by a private chemical company to design a pilot plant which successfully demonstrated that large-scale cleanup of Herbicide Orange is not too costly and is safe.

Reprocessing will take place at the present storage sites in Gulfport, Mississippi, and on Johnston Island so that the chemicals will not have to be moved from a monitored area. The empty 55 gallon drums which contained the spray will be recycled into the manufacture of steel following spray rinsing with solvent. The filters and contaminated carbon cartridges remaining from the processing will be sealed and placed in secured, monitored, recoverable storage while studies are conducted on disposing of the spent carbon safely.

This technology for removing impurities may also find future use in manufacturing processes--an innovation which could result in safer herbicides and industrial chemicals.

The Fish Pesticide Lab in Columbia, Missouri, is deeply involved in research on the effect of industrial contaminants on aquatic and land environments. The chronic effects of DDT, mercury, kepone, PCB's, and other contaminants are investigated with respect to fish behavior, reproduction, residue dynamics, and the fate of the pesticide in the environment. Studies of "the broken back syndrome" in catfish have demonstrated the interaction of toxaphene and vitamin C in fish and the resultant effect on bone formation. The analyses and methodologies developed at the lab have helped the Environmental Protection Agency and the Food and Drug Administration to set water quality standards in registering chemicals hazardous to fish and wildlife, and in providing guidelines for the safe use of pesticides with minimal hazards to fish, wildlife, and their habitats.

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