DEPARTMENT of the INTERIOR

news release

FISH AND WILDLIFE SERVICE

For Release February 24, 1975 McGarvey 202/343-5634

PROCESS TO REMOVE TOXIC DIOXINS FROM HERBICIDES IS PATENTED

A process for removing one of the most toxic contaminants known to man from the common brush killing herbicide 2,4,5-T has been submitted for patenting by the U.S. Fish and Wildlife Service. The toxic dioxin is an undesirable chemical contaminant that forms when the herbicide is made.

The process was developed at the Fish-Pesticide Research Laboratory in Columbia, Missouri. It could have widespread use for removing dioxins and other contaminants from industrial chemicals and in decontaminating the U.S. Air Force's current inventory of 2.3 million gallons of "herbicide orange" valued commercially at $24 million. Herbicide orange was formerly used by the U.S. Air Force to reduce jungle growth in Vietnam. One plan expected to be suggested at an EPA hearing next month calls for incinerating the herbicide orange and dumping it at sea. Disposal costs for the contaminated herbicide are estimated at several million dollars if the toxic dioxins cannot be removed.

The process was discovered while Fish and Wildlife Service scientists were working on techniques for separating pesticides and fat extracted from fish tissue. It was found that microgram quantities of the poisonous contaminant were absorbed on small columns of charcoal derived from coconut, and could not be removed even after exhaustive extraction or chemical treatment of the charcoal. Other charcoals, made from a vegetable base, were tried with unsatisfactory results--solvents could wash the contaminant

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out. Coconut charcoal is effective in absorbing dioxins because of coconut's particular chemical matrix. Coconut charcoal is sold for a variety of filtering purposes, but a relatively small amount of the filter is needed for use with herbicide orange.

Subsequent tests with two coconut charcoal columns were effective in removing more than 99 percent of the contaminant--known as TCDD--from herbicide orange which was supplied by the Air Force. In the second approach, 99-plus percent of the TCDD was again removed when a column of charcoal was heated to 100 degrees centigrade and the undiluted herbicide was passed through.

The remaining herbicide orange can be rinsed from the charcoal with acetone without removing the contaminant. The contaminant can then be incinerated at high temperatures to destroy the toxic TCDD. (Matters on disposal and/or reuse of the charcoal still require additional investigation.)

Applied on a large scale the process can be used to clean up large amounts of herbicide orange and has the potential for salvaging millions of dollars worth of contaminated herbicide and making it environmentally less hazardous. Also the use of this process can decrease the hazards of handling and working with TCDD by researchers in toxicological and analytical studies.

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