SUPPLEMENT TO QUESTION 8

The market for this chemical will be strictly controlled. It will be sold only to Dow Chemical Company who will convert it to the phenylphenols. Dow has signed a "Hold Harmless" agreement with Monsanto and has agreed to dispose of all byproducts from their process by incineration. They have set target specifcations on chlorinated biphenyls in phenylphenols as follows:

Monochlorobiphenyls	<10 ppm
Dichlorobiphenyls	< 5 ppm
Individual higher chlorinated biphenyls	< 0.1 ppm

Of the phenylphenols, the ortho-phenylphenol isomer will be used as a component of garmicidal compositions and as a dye carrier in the textile industry. The para-phenylphenol isomer will be used as an intermediate in the manufacture of miscellaneous resin coatings. The ortho isomer will be the prepondarant product at 8 to 18 M lbs/yr while the para isomer will be produced at 1 to 2 M lbs/yr.

We have calculated (conservatively) that the use of o-phenylphenol from this source in the textile industry should not cause over a 1.0 ppm increase in the PCB content of fish. This calculation is based on 20 M lb/yr usage of o-phenylphenol containing 5.0 ppm of dichlorobiphenyls by one mill located on a small river (650 cubic feet/sec. average flow). This would give a 0.1 ppb concentration of dichlorobiphenyls in the water and (applying an enrichment factor of 10^4) a concentration of 1.0 ppm in fish in the river. This also assumes no loss of dichlorobiphenyls by evaporation or bacterial action (dichlorobiphenyls have been shown to be biodegradable and are the most volatile of the PCBs).

The accidental spraying of garmicidal aerosols on food could cause intake of PCBs by humans. We calculate that this hshould not amount to more than 2 nanograms of dichlorobiphenyls in a serving or a concentration of 5 to 10 ppb. This calculation is based on a spray of 15 g of an aerosol containing 0.25% o-phenylphenol over a surface of 170 ft^2 and an exposed surface of 1.0 ft^2 per serving of 0.5 lbs. of food.

		If	Go to:
5.	Is it likely the degradation products from the "closed-loop" disposal system could be harmful to humans?	Yes -Recycle Degradation Products to 2. Continue at 6. (No)	7
6.	Is it likely that the product will degrade in the environment or in any of the currently used disposal systems?	Yes -Recycle Degradation Products to 1. Continue at 7. No	7

ITEMS 7 THROUGH 10 ARE TO ESTABLISH HAZARDS OF PRODUCTS AND DEGRADATION PRODUCTS TO PLANTS, ANIMALS OR ECOSYSTEMS.

7.	Is it probable that the product or degradation products are harmful to plants and animals at concentrations to which they are likely to be exposed?	Yes (No)	8 9
8.	Recognizing the hazards to plants and animals, can procedures be devised at reasonable costs to render the material innocuous?	(Yes) See attached supplament No -Do Not Sell	
9.	Is it likely that harmful secondary reaction products could be formed from the harmless parent material as a result of a chemical, biochemical, or biological activity in the environment?	Yes -Recycle the By-product at 1 & 7. Continue at 10. (No)	10
10.	Is there reason to suppose that the material could have deleterious effect on the ecosystem, e.g., through concentration in the food chain, antagonism, synergism, abiotic reactions, chelation or plain physical concentration even though the material was not directly toxic to the biota?	(Yes) -Recycle to 8. Continue at 11. No	11
11.	Have procedures been devised to handle catastrophes in the production, storage, or transportation of the product?	(Yes) -Sell	
12.	Is it necessary to restrict sales to specific end uses?	Yes - Sales will be restricted to Dow Chemical Co. for conversion to phenylphenols.	

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Environmental Compatibility Assessment Scheme

Instructions:

Answer each question in turn, "yes" or "no". Each answer is provided with a directive concerning the question to be answered next; the logic of the scheme assumes that questions skipped would be answered "no" and can thus be ignored. The last question, No. 12, should be considered if it is decided to make and sell materials which are very useful but potentially dangerous to man or his environment. When applying this form, consideration must be given to the product Monsanto supplies, product impurities, as well as thefinal or end product that enters the environment.

ITEMS 1 THROUGH 3 ARE TO ESTABLISH THE HAZARDS TO HUMANS OF PRODUCTS, PRODUCT IMPURITIES, BY-PRODUCTS OR MANUFACTURING AND DEGRADATION PRODUCTS.

	If	Go to:
1. Is the material so physiologically inert that there need be no concern about health hazards to humans?	Yes (No)	4 2 & 3
2. a) Is the material toxic to persons as a result of a single contact with high concentrations?	No	Rat oral LD_{50} = 1790 mg/kg Rabbit Skin LD_{50} = 2000-3160 mg/kg Vapor Inhalation - 6 hr exposure of rats had no effect.
b) Is the material toxic to persons at lesser concentrations following repeated or prolonged exposure?	No	See Industrial Biotest Report Nos. 89888 and C9885
c) Is the material likely to be carcinogenic, teratogenic or mutagenic?	No	
3. Recognizing the hazards to people, can procedures be devised for safe handling at reasonable cost?	(Yes) No -Do Not Sell	4

ITEMS 4 THROUGH 6 ARE TO ESTABLISH IF CONSIDERATION HAS BEEN GIVEN TO DISPOSAL, DEGRADATION PRODUCTS OF DISPOSAL AND ENVIRONMENTAL DEGRADABILITY.

	If	Go to:
4. Can "closed-loop" disposal provisions be developed for the product so it will never reach the environment?	(Yes) No	5 6

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