Monsanto

FROM (NAME & LOCATION) W. B. Papageorge B2SK

DATE : August 25, 1975

SUBJECT : EPA PCB STUDY -- VERSAR, INC. WITH J. FAUCETT ASSOCIATES, INC.

REFERENCE :

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Attached is an outline which I am told summarizes the scope of the PCB study being prepared by Versar and Faucett for EPA. Final report is due to EPA on October 31, 1975.

Also attached is a questionnaire which we have been asked to complete. Some of this information has been released to others in the past. Comments regarding our participation are requested before assignments are delegated to contributing individuals.

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1. Describe your manufacturing process and show the flow diagram in block form.

2. Give material balance for your process and identify products, by-products and wastes.

3. Loss of PCB and amounts to the environment during manufacturing.

4. In-process and end-of-process controls.

5. Can these controls be further maximized?

Why needed? — Does it contribute to subject

6. How much PCB is lost in handling, packaging, and shipping?

7. What are the means by which PCBs are supplied to the users?

? 8. Available information on Dupont's use of PCBs in their NR-140 product. ?

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9. What are the impurities in PCBs and their quantities? ?

What does this mean. This refers to furans & dioxins

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10. What is the biodegradability of PCBs, their purified isomers, and impurities?

11. What are the production, distribution, and uses of PCBs?

a) Most recent (72-75) U.S. production by PCB grade.

b) Most recent world production. ?

c) Most recent domestic sales by use category.

d) Most recent exports.

e) Most recent domestic sales by grade.

f) Identification of PCB users. ? — already given to US Govt. — get from them.

g) Applications in which PCBs are considered essential.

h) Known foreign producers of PCBs.

i) End uses of imported PCBs. ?

j) Quantities of imported PCBs. ? US Govt should find out. We do not know.

k) Major importing company.

l) Users of imported PCBs. ?

m) Prices of each PCB category.

n) Prices of imported PCBs.

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12. What are the replacements for PCBs?

a) Available replacements and costs for each PCB category.

b) Advantages/disadvantages of these replacements.

c) Replacements under development by category and their projected availability.

d) Projected advantages/disadvantages of these new replacements.

e) Who were the major customers of PCBs by use category prior to 1971?

f) What are the replacements which Monsanto recommended to these customers?

13. How do PCBs move through the environment?

a) Amounts entering air, land, water.

b) Retention time or half life by type.

c) Gradients as they move through the environment.

d) Availability of a transport model.

e) Relationship of DDT movements in the environment to those of PCBs.

f) Movement of PCB biodegraded products.

g) Movement of PCB impurities through the environment.

14. What is the toxicity of PCBs?

a) Toxicity studies since 1972.

b) Toxicity of PCB biodegraded products

c) Effects of PCB impurities on toxicity.

d) Synergistic effects with toxic substances and pharmaceutical drugs.

e) Methods of PCB detoxification.

15. What is your assessment of health hazards related to PCBs?

a) Accumulation in the food chain.

b) Is direct contact from production, handling of wastes, and fishmeal processing a problem?

16. What are the regulatory actions relative to PCBs?

a) Measures taken by manufacturers.

b) Measures taken by U.S. Government.

c) Custom regulations.

d) Measures taken by foreign nations.

e) International agreements.

17. What is the market for PCBs?

a) Projected future domestic PCB production.

b) Projected future domestic demand.

18. What are the alternative control strategies?

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Domestic

a) Total ban

b) Selective ban - use in transformers and capacitors only.

c) Selective ban - use in transformers and capacitors purchased by the utility industry.

d) Selective ban plus bonding and labeling

Imports

a) Total ban

b) Selective ban - use in transformers and capacitors only.

19. In your opinion, what is the most feasible alternative?

No comment — Monsanto will soon be discussing with USGovt.

Refering to 18 above (b) is most feasible

20. What is the effect of the proposed guidelines (.01 ppb in lakes & rivers) on your manufacturing process?

21. PLEASE SUGGEST OTHERS WE MIGHT TURN TO WITH THESE QUESTIONS.

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OUTLINE OF DRAFT REPORT FOR PCB STUDY

I. INTRODUCTION

II. EXECUTIVE SUMMARY

III. CONCLUSIONS

IV. RECOMMENDATIONS

V. CHEMICAL & PHYSICAL PROPERTIES OF PCBs

- Domestic PCBs
  - . classification
  - . structure
  - . properties
  - . impurities
  - . biodegradability
  - . purified isomers

- Imported PCBs
  - . classification
  - . structure
  - . properties
  - . impurities
  - . biodegradability
  - . purified isomers

VI. MANUFACTURING PROCESSES

- Monsanto's Process
  - . raw material
  - . products and by-products
  - . catalyst
  - . loss of PCB during manufacturing of end products
  - . in-process and end of process controls
  - . can control be further maximized (in-process and end of process controls)
  - . handling packaging and shipping
  - . means by which PCB is supplied to the users

- Dupont's NR-140
  - . raw material
  - . products and by-products
  - . process conditions
  - . catalyst
  - . wastes

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VII. PRODUCTION, DISTRIBUTION AND USES OF PCBs

- Most recent (72-75) U.S. production by PCB grade
- Most recent world production
- Most recent domestic sales by use category
- Most recent exports
- Most recent domestic sales by grade
- Identification of PCB users
- Applications in which PCBs are considered essential
- Known foreign producers of PCBs
- End-uses of imported PCBs
- Quantities of imported PCBs
- Major importing company
- Users of imported PCBs

VIII. REPLACEABILITY OF PCBs

- Replacements available for each PCB category
- Advantages/disadvantages of these replacements
- Replacements under development by category and their projected availability
- Projected advantages/disadvantages of the new replacements

IX. QUANTITY AND ENTRY OF PCBs INTO THE ENVIRONMENT

- Air, Water and Land
  - . quantities of PCBs entering the atmosphere
  - . sources
  - . areas of U.S. with the highest PCB levels
  - . behavior patterns
  - . life cycle
    - (a) what happens to biodegraded products and do they enter the food chain ?
    - (b) retention time
  - . food contamination

X. SUMMARY OF PCB TOXICITY

- PCB toxicity to living organism
  - . plankton
  - . fish
  - . mammals
  - . human
  - . plants
- Synergism with other toxic substances and pharmaceutical drugs
- Methods available for PCB detoxification and removal

XI. ASSESSMENT OF HEALTH HAZARDS

- Movement and disposition of PCBs in the environment
- Through accumulation of food chain
- Direct contact with production application, and handling waste and fishmeal processing plants
- The effects of accumulation in different cell systems

XII. REGULATORY ACTIONS ON PCBs

- Measures taken by manufacturers
- Measures taken by U.S. Government
- Custom regulations
- Measures taken by foreign nations
- International agreements

XIII. THE MARKET FOR PCBs

- Projected future domestic PCB production
- Projected future domestic demand
- Relationship of production and demand

XIV. ALTERNATIVE CONTROL STRATEGIES

- Possible alternatives
  - . total ban
  - . selective ban
    - (a) use in transformer and capacitors only (Monsanto's voluntary restriction of sale)
    - (b) use in network type transformers and in large utility capacitors in assigned locations where organizational and physical resources to control PCB entry into the environment is possible
  - . selective ban plus bonding and labeling—
  - . eliminate PCBs in service in non-electrical service
  - . import restrictions
    - (a) ban
    - (b) imported PCBs to be used in electrical service only
- Most feasible alternatives
- Effect of proposed guidelines (0.01 ppb in rivers and lakes with 0.02 ppb max)

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XV. COST OF FEASIBLE ALTERNATIVES

- Transient cost
- Long run cost
- Direct cost plus Foregone Benefits
- International competition and balance of payments

XVI. BENEFITS OF FEASIBLE ALTERNATIVES BY TYPE (LIFE, HEALTH RECREATION, FOOD PRODUCTS)

- Most probable
- Risk reduction

XVII. RELATIONSHIP OF COST/ BENEFIT

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