Monsanto

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SUBJECT PCB PLANNING TASK FORCE
TRANSFORMER FLUID RETROFIT OPPORTUNITY

REFERENCE

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Please review the attached outline regarding a transformer fluid retrofit program. Be prepared to comment on it at the task force meeting -- Friday, January 16.

Dick/kk

Richard J. Davis

kk

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PCB PLANNING TASK FORCE

TRANSFORMER FLUID RETROFIT OPPORTUNITY

There are some one hundred thousand askarel transformers in place in the United States containing a total of about three hundred million pounds of PCB base fluid. These transformers are valued at an estimated one billion dollars. Seventy percent of them are less than ten years old. Top up for these transformers represents about one million pounds per year of fluid. Replacement over ten years would represent a demand of thirty million pounds per year of dielectric fluid plus whatever flushing medium is needed.

If there is some broad national program to drain the PCB base fluids out of these transformers, and if Monsanto has a PCB replacement fluid program for new transformers, what should Monsanto's role be regarding the retrofit opportunity?

1. No participation;
2. Sell fluid to transformer manufacturers;
3. Sell fluid to transformer users;
4. Dispose of the PCB's if they are drained;
5. Involve in a service of retrofit?

back-up

These and other postures are possible. The following outlines the issues to be resolved to answer this question.

Product

1. Do we have a proved, environmentally qualified transformer fluid? Accepted as fire resistant by FM?

2. Is it compatible with askarel transformer (design insulation, sealants, etc.)? Some or all transformer models?

3. Is it suitable for top up in askarel transformers?

4. If not, is it suitable after a reasonable drain and flush procedure?

5. What would the flush fluid be?

6. How does our fluid compare to potential competition?

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Market Volume and Timing

1. Where are these (domestic) transformers? Type, size, user, location, age, fluid fill.

2. What is the total quantity of askarel in them?

3. What volume of fluid would be needed for top up or flush and replace? When?

4. What pressures or legislation are state and federal agencies likely to impose?

Procedure

1. Will transformer users have to dispose of their askarel because of a law or because of unavailability of a compatible top up fluid?

2. Will replacement fluids allow top up; or drain, flush and fill?

3. If top up, who supplies the fluid and instructions for retrofit to the transformer user:

   - transformer manufacturers (including Allis Chalmers and others who once made them),
   - fluid manufacturer or
   - service companies.

4. If drain, flush and replace, who performs the service?

5. What roles do the transformer manufacturers want to play?

Incineration

1. What incineration load will result? Volume, timing, storage.

2. What incineration capacity is needed in what locations? What is available (Monsanto, G.E., others)? How will capacity be increased sufficiently?

Manufacturing

1. How will we manufacture/purchase the needed volumes of flushing and replacement fluids?

Law

1. Who is responsible for performance of each transformer retrofitted?

2. Who will be responsible for PCB entering the ecology during draining, flushing, transportation, storage and incineration of askarels?

Public Relations

1. What would be the risks to Monsanto's image if we were to handle and transport PCB's and concentrate volumes at incineration sites?

Economics

1. Sales of fluids for retrofit programs?

   Profit opportunity.

   New capital required.

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