Monsanto

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Mr. Joe Buttich
New Jersey Department Of
Environmental Protection
8 East Hanover Street
Trenton, NJ 08625

Dear Mr. Buttich:

In answer to your questions on methods to possibly reduce PCB levels (currently in the 80-100 ppm range) in contaminated heat transfer systems containing hydrocarbon based fluids such as Therminol® 55, I offer the following comments for your consideration.

1. Therminol® 55 is a hydrocarbon based fluid and as such is a very good solvent for PCBs per se. It's in the same PCB solvent category as kerosene, #2 diesel, etc.

2. Any PCB solvent systems will suffer difficulties if you are trying to remove baked-on type material due to decomposition of the original fluids (or solvents). These baked on residues are most probably polymeric materials containing entrained PCBs. Dissolving such polymer coatings by merely pumping a heated fluid over its surface will probably be a difficult and slow process.

3. At these low levels of PCB, part of the problem may be due to flaking-off of particles or dislodging particles of sludge or resins containing PCBs. These could be removed by using an in-line particulate filter. (In some cases with heat transfer system problems, this has reduced PCB levels from the 100-200 ppm level to less than 50 ppm.)

4. One other suggestion would be to incorporate an activiated carbon filter with an affinity for chlorinated compounds or other electro-negative particles in the system in addition to the particulate filter.

5. Removal of any rubber, leather, synthetic, plastic material, etc., seals from the system where practical could also reduce PCB levels in the range under consideration. Some of these seals become super-saturated with PCBs over years of usage and then when "flushed" with new fluids they merely leach out low levels of material during further equipment use with new fluids that have a high PCB solubility.

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Removal of PCBs below 1500-2000 ppm from some old heat transfer systems has been shown to be a very difficult and unpredictable task, even after as many as six or seven flushings. This indicates that the problem is more complex than simple dilution by flushing. However, at these low levels of PCBs there is no PCB hazard to human health or the environment if proper handling and disposal of waste fluids is practiced.

I hope these suggestions are useful.

Sincerely,

John H. Craddock
Product and Environmental
Safety Director

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