GOAL OR OBJECTIVE: Non-biodegradable chlorinated biphenyls replaced in all Pydraul fluids.

File PCB Pollution - Replacement

Comments & Suggestions:

a) Add-Control of disposal and recycle of hydraulic fluid.

Prefer to put this as one of the considerations for selection of alternate formulations. For example: Ease of recoverability and disposal.

Steps to take or alternate actions for control of disposal and fluid recycle should be a separate decision regardless of specific formulation being marketed.

b) Define measure of biodegradability.

It has been suggested that the ideal rate of biodegradation should (1) match soft alkylbenzene sulfonate in river water, (2) all degradation products should go to HCl, CO_2, H_2O and (3) no refractory isomers.

However, in practice this may not be completely attainable (thus the need for consideration of controlled recovery and disposal).

One comment indicated that in the "lake study" isomers of 1242 were not found as were isomers of 1254 and 1260. 1242 should have been present in the greatest amount since its sale in various fluids in these areas was greatest. This would indicate possible natural degradation of 1242. Or something near the biodegradability of 1242 might be a measure of biodegradation level desired.

Another measure of biodegradability would be that it didn't enter into and become concentrated in a life chain.

Things to Consider

1) Biodegradability

a) See comments on definition of objective

b) All Monsanto produced components must be biodegradable. Want all purchased components biodegradable. On this last point Monsanto might not be liable as a producer if suits were brought as a result of the use of components produced by others; however, we would be in a bad position if the use of these were withdrawn by the producer and there were no acceptable substitutes.

2) Legal and Government Action

a) Want to be within proposed laws on biodegradability or presence of a particular component type.

b) Must not violate current laws on presence of a particular component.

c) No fluid would be within present laws on discharging to streams and lakes.

d) Want to minimize risk of pollution suits.

e) Want to avoid FDA putting tolerance on PCB's in food.

3) Company (or Fluids Business Group) Image

No particular comment on this. Most questions covered by comments on government & legal action & customer acceptance.

4) Customer Acceptance

a) Minimum property, appearance, irritation and odor change from current fluids.

b) Want to keep in fluid line $\geq$ 5 yrs.

5) Competitive Situation

a) Expect less use of pollution-ecological aspects by competition due to their possible loss of business by general tightening of laws on discharges of any material.

b) Want to keep Monsanto fluids somewhat unique rather than me-toos.

6) Toxicity

a) Acute toxicity must be same general level as current Pydrauls.

b) Degradation products should not be toxic - especially with respect to effects on bacteria of secondary sewage systems.

c) Immediate toxic effects on wildlife or waterlife before materials biodegrade should be minimum (another reason for control of disposal and reclamation).

d) What should BOD and/or COD level be?

7) Ease of Recovery or Stream Cleanup

Want to be able to clean effluent stream readily (no difficult emulsions).

8) Profitability

Want minimum raw material cost.

Want selling price like current fluids

Must maintain minimum 40% gross profit.

9) Performance

Want Lubrication = to current fluids $\cong$ phosphate esters.

Must have FR $\geq$ Pydraul 312.

Fluid life (acid, oxid., hyd. stab.) $\geq$ Pydraul 312.

10) Raw Material Availability

Quantity - Tables of proposed formulations being prepared.

Timing - Want enough to charge formulations by 10/30/70.

Must have enough to charge formulations by 12/31/70.

11) Misc.

Wants and Musts may be different for each fluid - MCS 979, MCS 153, Pyd. A-200/312/135/150/281/540.

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