Monsanto

FROM (NAME & LOCATION): R. M. Kountz (4-8151) - General Offices (Zone 266)

DATE: June 18, 1970 cc H. S. Bergen

SUBJECT: Biodegradability of Aroclor

REFERENCE:

TO : Dr. R. E. Howard

I have become increasingly concerned about biodegradability of Aroclor. All comments I have heard indicate that someone is doing something, but no one seems to know results. It was reported that MCS-1016 (1242B) takes 2000 times longer to biodegrade than SAB. If we assume that SAB takes one day, then it would take 5.5 years for Aroclor to degrade. Thus it seemed paradoxical that anyone would consider Aroclor biodegradable.

It has now been reported that Aroclor 1242, 1254, and 1260 have been found in the environment. Accordingly, I could visualize Monsanto spending $500,000 or more to install distillation facilities that would be valueless because the material is not biodegradable.

This paper is to briefly record discussions I had June 15 with Scott Tucker, Organic Research, and Bob Swisher, Inorganic Research.

Information from Scott Tucker

At South Second Street, Research has set up test units which have a volume of 1.5 liters. Normally, units are charged with 0.5 liters of activated sludge and one liter of waste. The only test work there, so far, for Aroclor has been comparative tests of Aroclor 1242 with LAS (Linear Alkylation Sulfonate).

Waste samples tested were:

1. Twenty milligrams of LAS per liter of water.
2. One milligram of 1242 per liter of water.

After test unit is charged, air is bubbled through each unit for 23 hours. The waste is allowed to settle for one hour, after which the top clear liter is removed for analysis and another batch of prepared material is charged.

In these tests, the LAS was gone in 24 hours. After a few days, the Aroclor reached a steady state level which was seen each day thereafter.

A conclusion could be quickly drawn that some parts of Aroclor 1242 are one-twentieth as biodegradable as LAS. This is not

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conclusive, however, until volatility is checked, optimum feeding rate is established, elements or isomers remaining are characterized.

Information from Bob Swisher

The way I understand it, Bob Swisher helped Scott Tucker set up the waste-testing units. Bob seems to be regarded as the expert in the BOD test operations.

First of all, SAB is not water-soluble. The soap companies sulfonate SAB to produce LAS.

When it was found that LAS disappears in 24 hours with activated sludge, no further testing on the material was done. It is felt that the LAS probably disappears in 8 to 12 hours.

Bob feels that some parts of 1242 are biodegradable, but nothing conclusive can be said now. If MCS-1016 is proven biodegradable with activated sludge, then the rate in a natural environment should be proportional to the ratio of bacteria in the activated sludge to the less concentrated bacteria in the environment.

One conclusion that Bob draws from external laboratory reports is that no one really knows what Aroclor they find since each is a mixture of isomers. All Aroclors contain common isomers.

Conclusion

If the Aroclor distillation project is being based on test work to date, we are on shaky ground. The laboratory work should be expedited.

I plan to follow up my discussion with Scott Tucker to see what his schedule is on testing MCS-1016.

R. M. Kountz

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