FROM (NAME & LOCATION): V. W. Saeger, E. M. Emery - Technology Department - South Second St.

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SUBJECT: BIODEGRADATION TESTING OF MCS 1016 AND AROCLOR 1242

REFERENCE:

cc R. E. Keller
R. H. Munch
W. B. Papageorge
E. S. Tucker

TO : W. R. Richard WRICH
T-380

The following summarizes the biodegradation testing status on MCS 1016 and Aroclor 1242. A more detailed progress report will be issued next week covering the biodegradation testing program in general.

With respect to MCS 1016 and Aroclor 1242, semi-continuous activated sludge units were started on August 10, 1970 at a feed rate of 1 mg of test material per day. Routine feeding and periodic sampling on the units have continued since that time. In the accompanying tables, the overall disappearance rate data obtained in the analyses together with other parameters are given. It was apparent after a 5-week period of sampling and analysis that the disappearance rate data being generated had a high degree of scatter. For this reason, various changes in apparatus and procedure were and are being tried to determine the source of the scatter.

The first change which suggested itself was the addition of stirring to the sludge units. It was felt that the aeration alone was not giving sufficient agitation to ensure representative sampling of the units. All units have since been modified to permit magnetic stirring. This appeared to have some salutary effect, but by no means eliminated the scatter. The method of sampling was next investigated. Initially sampling had been carried out with a wide-bore pipette. Since each unit is equipped with a side-arm for draining, testing was carried out to determine if sampling through the side-arm gave more consistent data. The results again were not conclusive. At the present time, the effect of the LAS addition used as a control is being investigated. For the time being, feeding of LAS has been stopped. It is felt that the LAS because of its surfactant properties could be affecting the adsorption of the test material on the sludge. This could lead to scatter since the LAS concentration decreases during the cycle from its feed level value to essentially zero.

An examination of the chromatograms does give a positive indication that biodegradation is occurring for both materials. Taking the ratio of

selected component peak heights relative to the major component peak height common to both materials shows that the ratios are changing during a test cycle. Differences between the two materials are not significant at this stage.

It should be pointed out that since the composition of the two materials are not drastically different, differences in biodegradation rates may not show up until a much longer period of feeding has expired.

V. W. Saeger

E. M. Emery

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