PCB - Monsanto U.K.

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MONSANTO CHEMICALS LIMITED
RESEARCH AND DEVELOPMENT DEPARTMENT
RUABON

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FUNCTIONAL FLUIDS - R & D, EUROPE

Electrical Fluids

One technical service request has been completed and reported. Two more requests are being progressed.

Three further samples of alkyl aryl silicate have been prepared from octyl phenol and TEOS. Although initial values of dissipation factor at 25°C were low, all three samples showed an irreversible degradation in dissipation factor at higher temperature. Insufficient sample volume was available for clean up with activated alumina.

A verbal report on the Monsanto sponsored project at ERA indicates that, after difficulties in winding capacitors using Hercules film, capacitor units have been wound using BXL film and impregnated with MCS717. These units are now being tested and impregnation with Aroclor 1242/TCB is in progress. The project is now expected to be completed by the end of June.

Electrical - Plastic Films

Measurements of compatibilities of 44 polypropylene samples from B.C.L. have now been completed and results of most of them have been sent to B.C.L. We are awaiting their comments on the significance of these results.

Discussions with Brittains, the capacitor paper manufacturers, have revealed that they have no plans for a plant in India, contrary to earlier reports. They have established metallising plant in the U.K. and have worked with B.C.L. polypropylene film. They have commented that B.C.L.'s 8 micron film is not compatible with Aroclor. We are investigating this.

Biodegradation

The programme of work studying the biodegradation of Aroclors and substitute products has continued. The pure biphenyl degrading culture provided by Prof. Evans of Bangor University has been used for most of the studies currently in progress. The work to date supports the thesis that the sites of chlorination have a predictable effect on the degradability and we are synthesising one or two key isomers in an attempt to clinch this theory.

Recent contact with Prof. Evans at Bangor has revealed another culture, isolated from soil, which appears to be even more active in degrading chlorinated biphenyls. We are now studying this new culture.

Work on the degradation of the chlorodiphenyl ethers supplied by M.C. has been inconclusive so far due to analytical problems, but this work is continuing.

Environmental Studies

Recent contacts with government laboratories and conservationists have revealed more information on the presence of PCB's in the environment and on the current studies in this field.

We have received a draft copy of a report on the "Deaths of Cornish Seals" from the Natural Environment Research Council (NERC). This report draws attention to the fact that the blubber of these seals contained around 150 ppm. PCB compared with 350 ppm in seals from East Anglia and about 50 ppm from seals in Northern waters. The report concludes that deaths were due to starvation brought about by the separation of seal pups from their mothers.

A new factor in wildlife pollution has emerged from studies carried out by the Nature Conservancy. This has shown that some of the highest levels of PCB (ca 900 ppm) occur in the livers of fresh-water fish-eating birds in England. Previously we had thought that the problem in the UK was confined mainly to the marine environment.

Workers at the Ministry of Agriculture Infestation Control Laboratory have discovered PCB (corresponding to Aroclor 1242) in cardboard packaging used for a wide range of food and pharmaceutical products. We confirmed their finding. A note on this observation is being published shortly in Chemistry & Industry by the Ministry of Agriculture workers.

The Ministry of Agriculture Fisheries & Food Laboratory at Burnham-on-Crouch are continuing their investigation into sources of P.C.B. pollution. They are currently looking at mussels taken from a number of sites in the Severn Estuary/ Bristol Channel including sites near the Newport plant and the Wiggins-Teape effluent outfall. Results on this are not yet available, but we will probably receive samples from them for analysis.

Apart from Scandinavia and the Netherlands, continental countries in Europe show little interest or activity in dealing with PCB pollution. Very little information is available on wildlife and fish contamination in Europe generally. This probably accounts for the relatively poor response of the other European producers of PCBs to generate actions to deal with the problem.

Further limited trials on incineration of Aroclor wastes by Purle Waste Disposal Ltd. have been initiated. Analysis of scrubber liquor obtained when burning Aroclor 1254 have proved negative. Further samples and analyses are awaited.

H.A. VODDEN