FROM & LOCATION: R.A. Vodden (Ruabon)

26th January, 1970

cc: J.W. Barrett, London
H.N. Dahlstrom, Brussels
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AROCLOR - ENVIRONMENTAL CONTAMINATION. STATUS REPORT OF EUROPEAN STUDIES - 25 January, 1970

REFERENCE: RAV/BRG

TO: R.A. BAXTER, Ruabon
D.S. CAMERON, Brussels
W.H. RICHARD, St. Louis

1. Biodegradation.

Further work has confirmed that, in the presence of biphenyl, some of the P.C.B. isomers are degraded biologically by biphenyl-adapted micro-organisms. In particular, 2-4'-dichlorobiphenyl appears to be readily degraded. With Aroclor 1242, peak 1, which probably corresponds to 2,4'-dichlorobiphenyl, virtually disappears in a few days under similar conditions, and peak 4, which probably corresponds to a mixture of tri- and tetra-chlorisomers shows significant degradation, but does not disappear completely. Attempts to degrade 2-4'-dichlorobiphenyl, using synthetic sewage instead of biphenyl have not so far been successful.

2. Newport Plant.

Analysis of effluent samples from the Newport plant have shown that P.C.B.'s (measured as Aroclor 1242) were present at levels up to about 500 parts per billion (10^9). Investigation also revealed that P.C.B.'s were present in surface drainage which by-passed the main effluent system. Steps have been taken to re-route some surface drains so that Aroclor-contaminated drainings are intercepted by the interceptor pit. Some modifications are in hand to improve the effectiveness of the interceptor pit and the Analytical Department at Newport is being equipped to measure Aroclor in the effluent so that effective control of the situation can be established. It has been tentatively agreed that a maximum level of 10 parts per billion (measured as Aroclor 1242) will be the plant effluent goal. Samples will be taken and analysed on a daily basis.

Analyses of water in the vicinity of the solid waste disposal site near Pontypridd did not reveal significant quantities of P.C.B. Newport Analytical will check on this site from time to time, but present indications are that this is not a significant source of pollution.

Mud samples from the Severn Estuary, analysed at Ruabon, showed levels of P.C.B.'s (1242) comparable with those found in earlier measurements at St. Louis, viz. 1-2 p.p.m. These levels will be checked by Newport Analytical at monthly intervals.

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The level of P.C.B.'s at the top of the interceptor pit has been determined at weekly intervals. This appeared to fluctuate up to about 13 p.p.m. Newport Analytical will continue to sample and analyse at weekly intervals to establish a basis for regular cleaning and disposal of Aroclor waste from the interceptor pit.

3. Technical Visits and Discussions.

A meeting has now been arranged with representatives of the Ministry of Agriculture, Fisheries and Food (Fisheries Laboratory) for January 27th to discuss the implications of finding P.C.B.'s in wild-life, particularly marine.

Information from the Salmon and Freshwater Fisheries Laboratory of the same Ministry indicates that Aroclor 1262 is not toxic to Harlequin fish (Rasbora heteromorpha) up to a concentration of 100 p.p.m.

Tests on Rainbow Trout (Salmo gairdnerii) with Aroclor 1262 showed no mortalities after five weeks, but after six days the fish had accumulated the Aroclor up to a concentration 100 times that of the aquaria. Figures for the concentration of Aroclor in the water were not given, but were presumably effectively that of saturated solution, viz. 50-100 p.p.b.

4. Liaison with Bayer, Prodelec and Caffaro.

Meetings with Bayer and Prodelec have resulted in a greater awareness of the problem by their managements. They seem willing to co-operate to establish a common basis for dealing with the pollution problem. A meeting of all European producers is being arranged for February 9/10 in Frankfurt, at which Monsanto will make a presentation summarising the technical knowledge available and discuss the need for education and positive action in dealing with customers.

5. P.C.B. Disposal at Customer Plants.

Analyses of samples from effluent at the N.C.R. emulsion plant at Borehamwood have shown quite high levels of Aroclor 1242. The mud in the stream taking surface water drainage contains 150 p.p.m.

This problem will be discussed with N.C.R. on 26th February.

B.I.C.C. have informed us that they wish to instruct their customers on how to dispose of Aroclor-impregnated capacitors. We have been shown a draft of their proposal for comment.

Action Plan

(1) Continue biodegradation studies and include other isomers.

(2) Continue to monitor Newport Plant effluent and take action to reduce level of P.C.B.'s to 10 p.p.b.

(3) Continue discussion with other European producers to establish concerted action in dealing with pollution.

(4) Advise customers on disposal procedures and on Plantkeeping necessary to avoid pollution.

(5) Co-operate with Ministry of Agriculture, Fisheries and Food.

(6) Investigate incineration as a means of disposal.

p.p. B.W. Griffiths

H.A. VODDEN