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MEETING REPORT

MEETING: Second Informal Discussion on Analytical Problems of Polychlorinated Biphenyls and Pesticides.

HELD AT: Shell Research, Sittingbourne.

ON: September 29th 1970.

ATTENDED BY: D.W.H. Casey, Newport
E. Parry, Ruabon
R.A. Lidgett, Ruabon

INTRODUCTION

This meeting was the second on "Analytical Methods and Wildlife" called by the Ministry of Agriculture and Fisheries and was attended by approximately 40 representatives of Government, Industry and the Conservation Agencies.

Little new information on environmental studies was given, emphasis largely being placed upon analytical methods.

DETAIL

1. Analytical Work at Unilever Research - D. Sissons, G.M. Telling

At least until the end of 1970 Unilever are spending much of their effort on the improvement of analytical methods and are applying S.C.O.T. column gas chromatography and mass spectrometry to the examination of fish residues.

The aim of this work is to follow changes in p.c.b. composition during progress through the food chain in order to identify degradable and non-degradable components. Chromatograms were shown and copies of these are attached.

Telling emphasised that the work has shown significant differences between various fish samples and made the point that the degradation of a lower chlorinated p.c.b. could give rise to a chromatogram similar to a higher p.c.b.

Although this possibility has been mentioned by Bailey (Min. of Ag. & Fish) in private discussion, it does not yet appear to have been grasped by the other workers at the meeting. That it has now been emphasised is certain to generate interest in 1242 distribution.

Unilever are also attempting to characterise pure p.c.b.s by 220 MI N.M.R. and mentioned that this may eventually be used for small samples (whether it was envisaged that NMR could be applied to residue work was not ascertained).

2. Possible Mode of Entry of P.C.B.s into the Environment - A.V. Holden

This report had little new information and appeared to be more a means of starting discussion.

Sewage sludge from Glasgow, London and other large cities has been analysed and shown to contain p.c.b.s (supposedly 1254, 1260). Levels for Glasgow are equivalent to 1 ton/year dumped at sea. P.C.B.s. have not yet been detected in the Clyde estuary (limit of detection 1 in 10^n) nor in fish in the Bristol Channel.

Again it was questioned as to whether the materials identified as 1254 and 1260 were not in fact lower p.c.b.s that had been degraded and this possibility was agreed by Holden.

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3. Work on P.C.B.'s at Utrect - Prof. van Genderen

Professor van Genderen discussed the work that has been done in attempting to relate the chick edema factor with chloro dibenzofuran impurities present in p.c.b.'s. Much of this work is already known to Monsanto through M.C. and M.C.L. visits to Utrecht and has been reported. The fact that Monsanto material contained considerably less toxic impurity was stated.

Discussion of this report was unexpectedly short, the suggestion that p.c.b.s contained further toxic components to complicate analysis/toxicology data appeared to be very unwelcome news!

4. Monsanto Analytical Methods - R.A. Lidgett

A brief description of the analytical methods used in Monsanto was given and the "P.C.B. Methodology Package" was offered to those requesting it. Discussion covered the use of high resolution columns and was continued privately with Unilever and the Ministry of Agriculture and Fisheries (Tolworth).

GENERAL

Progress in p.c.b. analysis appears to be slowing down. New methods such as dihydrochlorination to bicyclohexyl, N.M.R. for characterisation etc. are being applied but only by a few workers mainly with "industrial" objectives. Of the Government laboratories active in the U.K. Tolworth appears to be maintaining a steady output and will be using their own g.c./m.s. by early 1971.

A short paper was also given by Dr. Franklin of Chelsea College on the study of the toxicity of p.c.b.s on rats. This work has only recently been initiated and Dr. Franklin will supply Monsanto with results of his work as they become available.

R. A. Lidgett

R.A. LIDGETT

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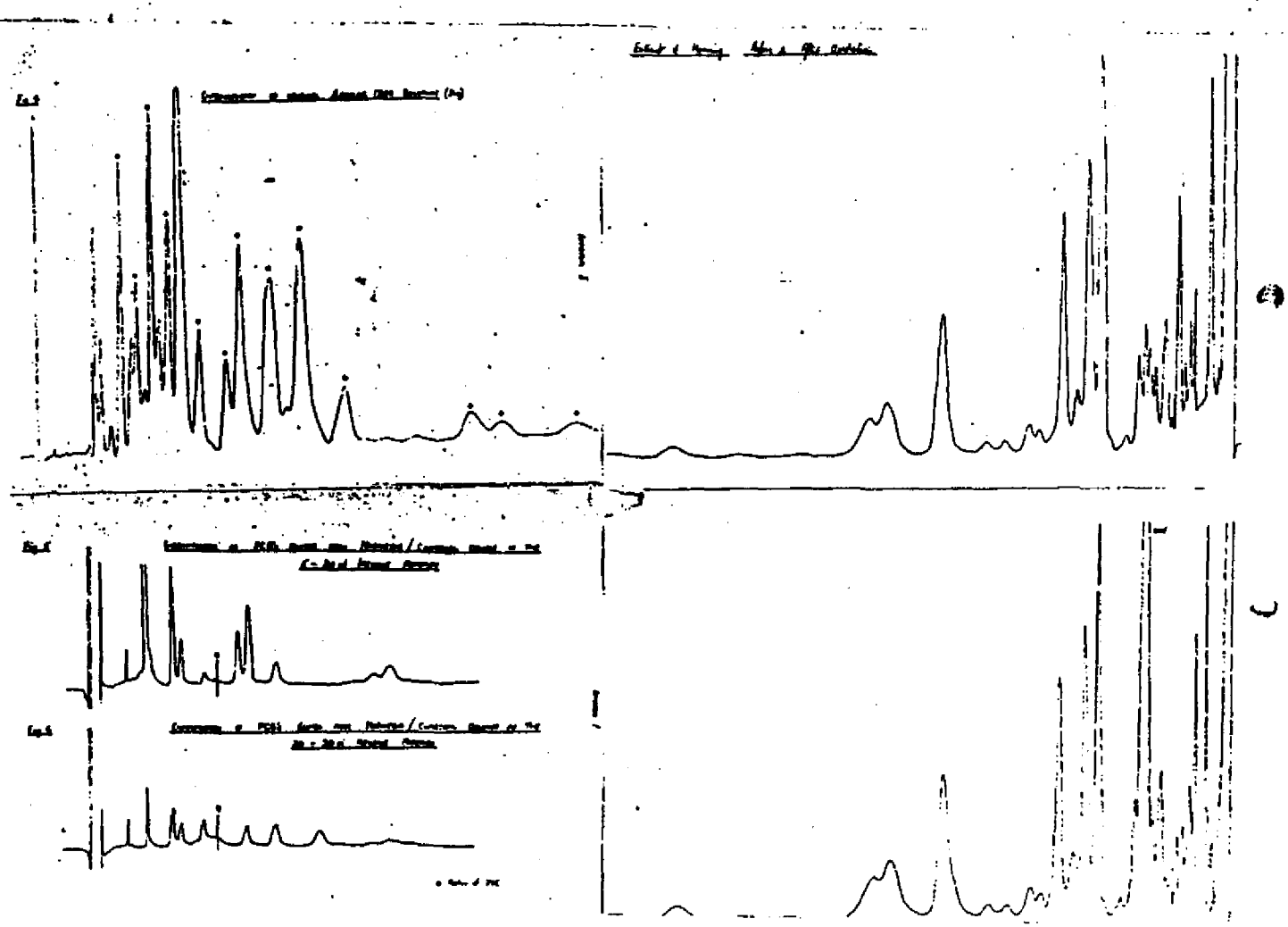

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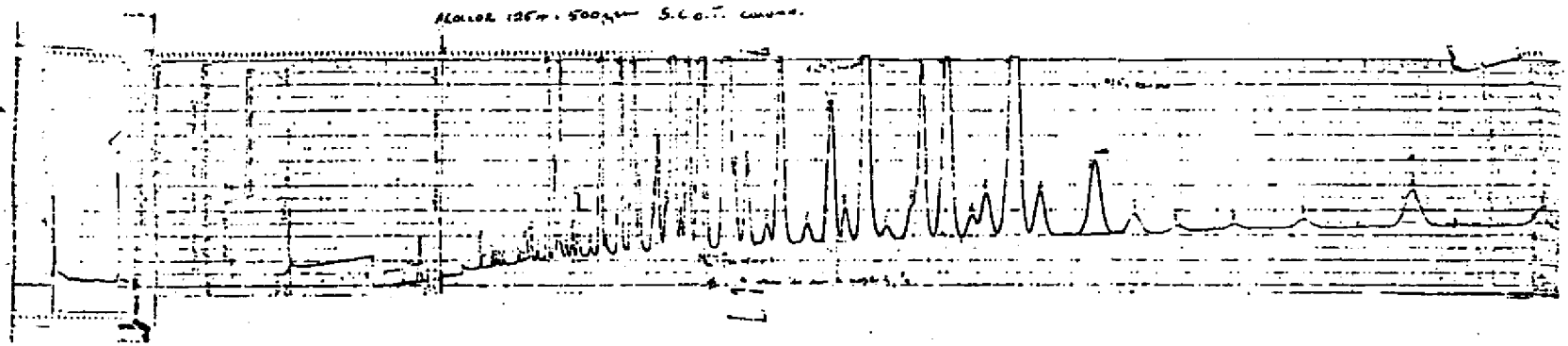

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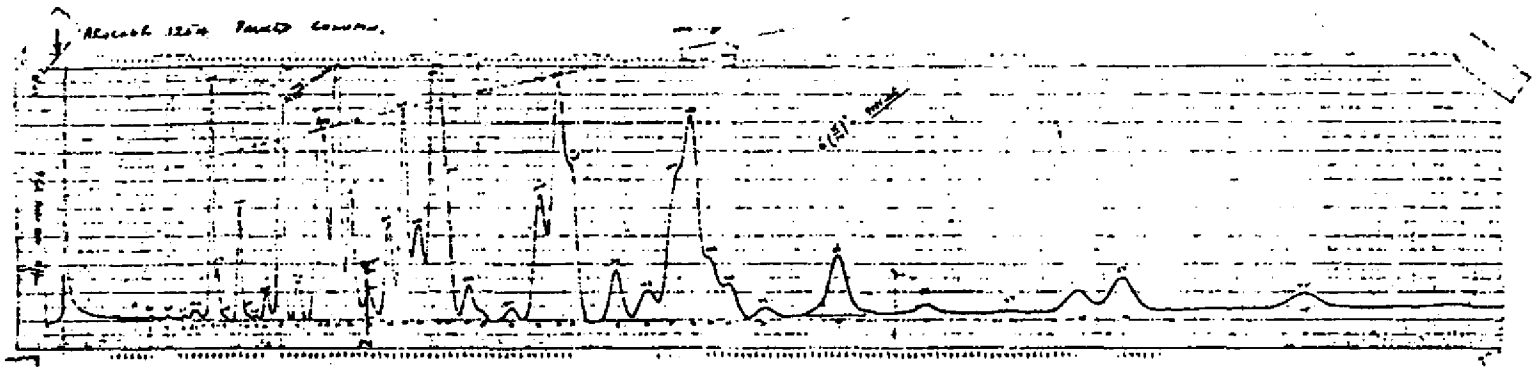

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