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REPORT OF MEETING OF EUROPEAN PCB SUPPLIERS

IN FRANKFURT 9th/10th FEBRUARY 1970

CONFIDENTIAL

Present for Bayer :

Dr. Hoehne	- Plasticizers MTS	
Dr. Knust	- Fluids MTS	
Dr. Wissner	- Manufacturing	
Mr. Joetten	- Plast. Manufacturing	(Part-time)
Mr. von der Forst	- Fluids Manufacturing	(Part-time)
Mr. Martin	- Fluids Marketing	(Part-time)

For Caffaro :

Dr. Marchetti	- Director	(Part-time)
Dr. Casale	- R. & D.	

For Monsanto :

H.N.Dahlstrom
D.S.Cameron
R.A.Lidgett
H.A.Vodden

For Prodelec :

P. Jay	- R. & D.	
Mr. Steinmueller	- Analytical	
G. Crepy	- Marketing	(Part-time)
M. Gilon	- Managing Director	(Part-time)

For Progil :

W.F.Smend	- Director	(Part-time)

SUMMARY

Objectives were to review current work, define what technical information Monsanto and others could provide and to develop a mutual programme for Europe. Monsanto summarized the commercial and technical developments, with special reference to analytical techniques, leading up to the present PCB situation. Detailed technical discussions under the headings of analytical, toxicological, degradation and disposal identified a number of action points - these were mostly to gather and exchange information for deciding upon possible joint actions.

There is no public concern yet in Germany, though Bayer recognize the international implications and are starting to check their own and their major customers' plants, and are also initiating analytical and toxicological programmes. There is no concern in either France or Italy and neither Prodelec nor Caffaro have initiated any work on this subject; their managements are not yet convinced of the need to do so. The French manufacturers of PCB's - Progil and Kuhlmann - have not reacted following our earlier meeting with Prodelec.

Date of the next meeting, when numbers attending would be much smaller, was fixed for 09.00 a.m. on the 14th May in Brussels.

DETAIL

Analytical

1) Monsanto gave details of its analytical methods and agreed to circulate a written description which would be followed by personal exchanges either centrally at Ruabon or by Monsanto visits to the individual laboratories. There was still need for improvements and refinements in analytical techniques in order to increase confidence in quantitative measurements and isomer separation. Confidence increases with practice and it was generally agreed worthwhile to exchange samples and compare results once the exchange on methods had been accomplished.

2) It might be worthwhile to contract out work with, for example, Widmark at Stockholm University, or the University of Utrecht. Widmark was known to be working on low level detection techniques down to 0.05 parts in 10^9. Bayer will check with Widmark and Monsanto with Utrecht and will report on possibilities at the next meeting.

3) Within the next few weeks Unilever are expected to publish details of their analytical method for PCB and chlorinated insecticide residues in wild life tissues. This technique will separate the various chlorinated compounds, and Monsanto will circulate details when they become known.

4) Monsanto was asked what institutes in the United States were working on analytical methods. Mostly this work had been within Monsanto but we would check on outside institutes so as to avoid possible duplication if work was to be contracted out to European institutes.

5) Monsanto has already started sampling effluent from some of it's major U.K. customers, and will continue to do so. Bayer, Prodelec and Caffaro foresee difficulties in this area with customer relations but, hopefully, will be able to make a start. It is important to establish the source of leakages into the environment, and to establish profiles of the industries that are major PCB users. Exchange of information in this area would be worthwhile.

Prodelec may possibly start sampling fish taken from the Mediterranean and off the Rhone estuary, and also river fish taken from the Rhone. Monsanto could possibly help with analysis if Prodelec's own facilities were not able to handle them.

6) It was agreed desirable to exchange information on the various institutions working on PCB residues in wild life in each others domestic markets, paying attention to industrial and commercial laboratories as well as to government institutions and universities. Bayer know there are three or four in Germany as a result of enquiries received for samples; neither Prodelec nor Caffaro are aware of any such work in France or Italy, though Prodelec were asked to supply a sample of a purified isomer to the University of Utrecht - but did not do so. Each company would define the situation in its own domestic market and report at the next meeting.

7) As an ultimate objective of the group it was decided the European producers could fund a complete survey on the presence of PCB's in the marine environment in different parts of Europe. This type of effort would be of such magnitude that it could only be funded and made statistically meaningful by the combined resources of all PCB producers.

Toxicology

1) All recognized that proof of toxicity was a difficult problem - the present indications were there was no acute problem but possible chronic effects were unknown. Persistence rather than toxicity was the crucial issue. Investigation of possible chronic effects was the area where the greatest amount of work was needed.

Work with small mammals and birds was the most important since it seemed evident that there were no acute toxicity problems with fish, except for certain shrimp species. Monsanto agreed to circulate its interim results on small mammals. These were two-year trials and at the six-month stage there were some slight indications of chronic problems but these needed confirming. Monsanto would also define which other U.K. and U.S. institutions were working in this area.

2) Bayer is starting work with small mammals and will circulate data as it becomes available. They also plan trials with PCB paints on the inside of fish tanks, primarily to check migration of PCB from the paint into the water. This investigation might possibly be extended to monitor the build-up of PCB in the fish and the effects of feeding these fish to birds.

Bayer are concerned about the future of plasticizer applications, which account for 20% of their total PCB sales. They have approval from the German Ministry of Health for the use of PCB in chlorinated rubber paints on the inside of drinking water tanks, the important factor being the very low solubility of PCB in water. A U.V.analytical technique with a sensitivity down to 0.02 ppm was developed to check the migration of PCB into the drinking water, but none could be detected. Bayer will circulate details of this technique.

3) Progil have a Pesticides Laboratory and hence the capability to carry out toxicological trials. However, their management are not yet convinced that these are necessary. Trials carried out by Monsanto which might show positive results will carry more weight with them than similar results reported by an institution riding on the pollution bandwagon.

4) Caffaro are not equipped for toxicological investigations and do not envisage becoming involved in this type of work.

5) Exchange of information would be beneficial. Monsanto agreed to circulate the NERC report when it was issued and would also see if it were possible to circulate relevant press cuttings appearing in the U.K. press. Basic details of Bayer's clinical investigation on their plant operators have already been reported but the detailed report will be translated and circulated.

6) Again, longer term objective of the group could be to contract out toxicological work to neutral institutions on an industry basis. Before the scope of this work could be defined all of the above points would need to be clarified.

Degradation

1) A curious feature of published work was that it was invariably the penta and hexa compounds that were reported. Hypothesis for this were discussed. Feeding trials should eventually show whether the compound in the food was the same as the compound found in the animal tissue, or whether there had been some metabolic degradation. Data should be exchanged in this area but it was at present too early.

Controlled trials will not necessarily duplicate nature, since stages in the food chain are omitted. For example, if Trichlor compounds were fed and subsequently found in the tissue it does not mean that the same would necessarily be true in nature.

2) Monsanto was working on what types of micro organisms might be most effective but it was too early to report results. Bayer are doing no micro-biological work but it is planned for the future. Monsanto reported that Unilever claimed access to work purporting to show that the toxicity of PCB is inversely proportional to the number of chlorine atoms.

Disposal - (Transformer Fluids)

1. Bayer incinerate mixed liquid factory wastes with PCB's never accounting for more than 10% of the mixture. They also have facilities to incinerate mixed solid wastes in a rotating tube furnace without added fuel at the same temperature as used for liquids, 1000 - 1200°C. Dry PCB wastes are mixed with readily combustible materials. They are not checking flue gasses for PCB traces but will do so and report result.

Bayer seem the most knowledgeable and experienced in incineration techniques. If required, they would be prepared to discuss details with Monsanto.

2) Prodelec incinerate liquid PCB effluent with the help of fuel boosters as previously reported - their unit handles all chlorinated wastes - but solid wastes such as spent earth are buried on ground adjacent to the factory. Most of the liquid PCB's for incineration are returned transformer fluids that are beyond recovery, (about 20% of returns are in this category). Prodelec are analysing fluo gasses for PCB and will report results.

3) Caffaro have no incineration facilities. Solid effluent is buried, liquid effluent is first barrelled and then buried. In 1969, they received back about 80 tons of transformer askarel for eclamation (approximately 10% of the Italian market), and claimed that everything returned is recoverable.

4) Prodelec repeated their position on the reclamation of transformer askarels in France and urged the need for a broader specification on recovered material, particularly in terms of colour, loss factor and oil content, which they wish to increase to 2%. Other companies will consider this proposal and report at the next meeting. Prodelec are also working on a process to remove oil from transformer askarel and, if successful, will disclose details of it.

5) Bayer reclaimed transformer askarel for their customers until ten years ago, when they gave it up because of cost and quality problems. They have encouraged and helped the larger transformer manufacturers to do this themselves, and they have also helped a small independent company into the reclamation business. Bayer accept the returned material for destruction. Customer pays freight only.

6) Caffaro reclaim transformer askarel as reported above, and are investigating the use of mobile regenerators.

7) In conclusion, it was agreed that the following are the long term objectives of the group under this heading :

   (1) Prevent any arced material from being dumped.

   (2) Exercise central control over disposal in each major area.

   (3) Provide economic incentive for users to return material for reclamation.

   (4) Loosen up specification of returnable material to encourage utilization of reclamation services. Develop common specification.

Disposal - (Capacitor Fluids)

8) Disposal of waste arising in the capacitor industry is a difficult problem. Prodelec repeated G.E.'s view that initial capacitor failures could run as high as 10% with the new Magvar designs whilst the manufacturers became familiar with the new technology.

   Hitherto, no-one had made recommendations for the disposal of capacitor windings and spent earth. Monsanto would now propose landfill; Bayer would recommend incineration; Prodelec would recommend incineration under properly controlled conditions, otherwise landfill. Municipal incineration facilities in Germany are reported to be good, but each company needs to investigate further facilities in its domestic market and report upon them.

9) Disposal of used containers was another problem. Prodelec suggested each company should refuse to deliver to the electrical industry except in bulk containers (i.e. tote bins or tankers), but this was thought impracticable in a number of markets.

The position in the plasticizer outlets was even more complicated due to the greater number and smaller size of customers.

Miscellaneous

1) Each company would appoint one person to act as the focal point for communication and co-operation.

ACTION BY MONSANTO

HAV/RAL	-	Circulate details of analytical method; make follow-up visits to Bayer, Caffaro and Prodelec or arrange combined meeting at Ruabon.
HAV/RAL	-	Circulate details of Unilever analytical method when this is published.
HAV/RAL	-	Arrange exchange of analytical samples and results.
HAV/RAL	-	Determine what analytical contract work the University of Utrecht could undertake if required to do so.
HND	-	Verify which U.S. institutions are working with Monsanto and/or independently on analytical and toxicological problems.
HAV/DSC	-	Define which U.K. institutions (government, university, industrial and commercial) are working on wild life investigations.
HAV/DSC	-	Exchange information on industry profiles as they are developed.
HAV/DSC	-	Circulate interim (six months) report on Monsanto sponsored chronic toxicity investigations on small mammals.
HAV/DSC	-	Define scope of known toxicological investigations in the U.K.
HND	-	Determine scope of known toxicological investigations in the U.S. and establish procedures for channelling this information to Europe on a continuing basis.
HAV/DSC	-	Circulate NERC Report when it issues.
BTG/DSC	-	Arrange exchange of press cuttings.
HND	-	Verify what U.S. information is available comparing residues found in animal tissues following feeding trials with compounds that were added to the food.