

Brussels, Belgium

1st December, 1946

Aroclor Sweden

Wright

G. E. Buchanan & St. Louis

A. Arpino - Brussels

Dr. Ernst Kelly - St. Louis

D.V.M. Hardy - London

E.A. Steenrod - St. Louis

THIS COPY FOR

Dear George,

I attach a copy of a letter received from Ola Palm in Stockholm. I have sent copies of this letter also to the appropriate departments within our own organization. In consideration of the importance we are placing on development of the Swedish market for Aroclor over the next five years, we would be grateful if you could arrange for this information to be considered by the appropriate departments in St. Louis and their comments transmitted to us as soon as possible.

Based on the recommendations made by our medical departments we shall have to decide whether to arrange for publication of data in Sweden or not.

In relation to the specific problem mentioned of disposal of used materials, we would be interested to learn how this problem is handled in America. In the U.S. many companies have been burying material in drums, material in the drums having been absorbed into vermiculite or some similar porous material. Has any entirely safe method been developed for the disposal of waste Aroclor?

Best wishes.

GB.

per D. Wood.

P.S. Thinking of the total quantities of Aroclor used in Sweden compared with the much larger volumes of Pentachlorophenol and Sodium Pentachlorophenolate, for water treatment in the paper industry and as preservative in the timber industry. Is it likely that the chlorinated phenols show similar chromatographic traces to the chlorinated bi-phenols?

PLAINTIFF'S
EXHIBIT

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For the attention of Mr. D. WOOD

Dear David,

re: ARCCLORES

*Diphenyl
lipids*

As mentioned, there has been some publicity in Sweden concerning investigations made at the Institution of Analytical Chemistry at the Stockholm University. These have revealed that a group of products called Polychlorinated Bi-Phenols - PCB for short - accumulated in certain organs of animals. They are said to be related to DDT and equally poisonous.

The findings were discussed at a meeting of scientists at the Wenner-Gren Centre in Stockholm on November 22. Below please find a translation of an article in the Swedish daily paper "Dagens Nyheter":-

"It is found in salmon and in pike. It is found in sea eagle living on fish. It is found on the surface of the needles of the fir trees, that is in the air. It is found in the hair of a five months baby..."

The scientists working with biocides have for a long time seen this something as unknown "peaks" on their gas chromatographs and at a meeting at the Wenner-Gren Center, Research Assistant Sören Jensen of the Institution for Analytical Chemistry at the Stockholm University could reveal the identity of these peaks. It has been found that they consist of a group of poisons, Polychlorinated Biphenols (for short PCB) which are closely related to, and equally poisonous as, DDT.

PCB is broken down considerably slower than DDT and gives rise to damage of liver and skin. PCB is not

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used as a herbicide. It is not manufactured in Sweden but is supposed to be used by the industry to quite some extent. No special industry can so far be accused of being the source of contamination.

Research Asst. S. Jensen has tested 200 fishes and a number of birds. He has taken several samples of air and has reached the conclusion that PCB is equally common in Nature as chlorinated hydrocarbons of the type of DDT, DDE, and Lindane. Even fish in Laddjojaure in Lapland contain PCB. Mr. Jensen has also found that PCB does not appear in animals living on a vegetarian diet, such as the elk.

In the course of his work, Mr. Jensen has not found anything indicating that the source of contamination comes from agricultural additives. It is, however, obvious already now that PCB is most frequently found in organisms living in water or feeding from water animals. In all examined pikes PCB was found. In a sea eagle found dead outside Stockholm it was found that the liver contained 30 mg of mercury per kilo, 76 mg DDT and considerably more PCB. The exact figure has not yet been determined.

PCB is found in water and in air, and not only in the Swedish air, but also in e.g. London air. Mr. Jensen has not yet been in London for sampling but could identify the poison by studying a gas chromatogram of air published in a British technical journal.

Mr. Jensen has also examined the hair of his family and himself and has found PCB on all samples. Most PCB was found in the hair of his wife but most sensational was that the girl aged 5 months had more PCB in her hair than her brothers and sisters of 3 and 6 years. Probably the girl had got the poison via the mother's milk.

In the State Museum Mr. Jensen has examined the whole collection of sea eagles dating back to 1880. By testing it could be established that PCB was present only in birds from 1944 and thereafter while birds collected before 1944 were quite free from PCB.

The use of PCB in Sweden is not established in detail. According to American sources these types of products are used in the manufacture of a variety of heat-resistant materials. They are used for electrical insulation, for fire-proof heat transport in hydraulic oils, in lubricating oils used at high

temperature and pressure, in paints and as pigments in various plastics. PCB is not imported only as such. It is also part of several finished products. Nothing is known as to the way in which it reaches the water and the air. According to Mr. Jensen, products containing PCB should have this openly declared.

PCB is equally harmful whether absorbed via the skin, through the food, or by inhalation. In contact with the skin it can cause edema. For DDT the highest permissible concentration in the air has been set at 0.5 - 1 mg/cu.metre. For PCB it has been mentioned to be 0.5 mg/cu.metre. Mr. Jensen will now try to get more complete analytical material. He hopes eventually to be able to disclose the source of the contamination and will also increase his cooperation with toxicologists and geneologists."

Another daily paper, Svenska Dagbladet, has a similar article. Here it is mentioned that Mr. Jensen, working under Laborator (Professor) Gunnar Widmark, has disclosed facts which will have far-reaching importance since the findings have proved a new source of pollution of the nature.

One of the participants at the meeting was Dr. A.V. Holden of Scotland, scientific contact man between the twelve C.E.C.D. countries, who has established coordinated analysis of chemicals used and found in nature.

I suppose there is no doubt that what has been termed Polychlorinated Biphenyls is equal to Aroclor. There is also no doubt that the published facts will cause considerable unrest in several quarters. We probably will have to have Aroclor registered with the Swedish Board of Poisonous Substances and the industry will have to be particularly careful in handling the material. The problem in some cases of course may be the disposal of used material. I understand that there hardly exists a convenient method of destroying Aroclor and that possibly burying unuseable material may be the only answer.

We shall be glad to hear from you soon.

Yours sincerely,

RISING & STRAND
 HENRY STRAND

