Sent to Pickard, Pallen Easley
Weber & Hussey 8/2 -
& P. Graham - 8/10/76

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 29 1976

THE ADMINISTRATOR

Dear Senator Pearson:

I am writing to keep you informed about the Environmental Protection Agency's continuing efforts to reduce and hopefully eliminate polychlorinated biphenyls (PCBs) from our environment. The following briefly describes the results of our collaborative efforts with industry and other Federal agencies over the past several months to evaluate proposed substitutes for current uses of PCBs. While I cannot report that acceptable substitutes have been found for all present applications of PCBs, I think that you will be as encouraged as I am with the progress that has been made to date.

As you know, despite sharply reduced production of PCBs since 1970 and restriction of their uses to essentially closed systems, the environmental levels of PCBs have not diminished as anticipated. Because of PCBs' known reproductive and other chronic effects and animal studies that indicate that PCBs may be carcinogenic, EPA is convinced that the risks to human health warrant control of all possible sources of exposure to PCBs. In view of this, EPA and representatives of the electrical power generating industry, Monsanto Chemical Company, and other chemical companies have been evaluating possible substitutes for the remaining industrial uses of PCBs in transformers and capacitors.

Polydimethyl siloxane, a silicone product which has a long history of usage, is being proposed by several companies for use in transformers. After several briefings by industry representatives and review by EPA staff, EPA concluded that "despite the incompleteness of our knowledge concerning the environmental effects of polydimethyl siloxane fluids, we believe that the available information indicates that these fluids are far preferable to PCBs for use in transformers from the environmental viewpoint." At the same time, EPA urged further investigation of the health and ecological aspects of these fluids. This response was published in the Federal Register (Vol. 41, No. 112, pages 23225-23226). A complete transition from PCBs to substitute fluid in transformers would take several decades as the average life of a transformer is over 20 years, with some lasting as long as 60 years.

While PCBs' flame resistance is a key feature in transformer use, PCBs in capacitors are valued primarily because of their dielectric properties. In general, PCBs in capacitors are used to impregnate paper or foil through which electrical current will flow. In contrast to the long life of transformers, capacitors have an average useful life of about ten years. Capacitors are used in adjusting high and low voltage power to the desired level, such as in ballasting in fluorescent lamps and in air conditioner and industrial equipment motors. Several substitutes for PCBs in capacitors have been proposed, but none has yet been agreed upon as satisfactory. Because of the diversity of capacitors in terms of size and location, EPA anticipates that various substitutes will be adopted for different categories of capacitors.

EPA has rejected some suggested substitutes largely because they were too closely related to PCBs. A substitute proposed by the Prodelec Company, Chloralkylene, is a mixture containing polychlorinated biphenyl compounds and alkylchlorobiphenyl isomers. While these compounds may be less highly chlorinated than most commercial PCBs, as EPA explained in a letter to Prodelec, "We do not share the view that the degree of chlorination is the only determining factor in considering the environmental acceptability of this class of chemicals." This letter was published in the Federal Register cited above. Similarly, EPA considers alkylated biphenyls or terphenyls blended with trichlorobenzenes, which are under consideration as substitutes for PCBs in Europe, as too closely related to PCBs.

One promising alternative to PCBs in capacitors is phthalates. Dioctyl phthalates and diisonyl phthalates are being used in capacitors in Japan. The Japanese experience with phthalates in capacitors is still too limited, however, to evaluate phthalates' performance. In this country, while the Underwriters Laboratory has indicated that at the present time it would not approve of phthalates in small capacitors on the basis of flammability testing, some have suggested that these compounds could be used in small capacitors if there are reliable circuit interrupters in case of fire. Preliminary studies in this country of phthalates in large capacitors continue to be encouraging.

Several other possible PCB substitutes are being investigated, but any judgements concerning their potential for use as dielectrics in capacitors would be premature. A butylated monochlorodiphenyl oxide fluid is being used by at least one company in capacitors in selected field installations. A few companies have been investigating synthetic hydrocarbons, usually those with paraffinic bases. One company began tests on a proprietary sulfone-hydrocarbon mixture, but has since abandoned these efforts, at least temporarily, because of cost considerations. Some long term, related research involves the use of dry film capacitors. Marketing of such capacitors, however, appears to be quite far in the future.

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As indicated in part by the number of substitutes for PCBs in transformers and capacitors under consideration, industry has devoted considerable resources to the pursuit of acceptable substitutes. While EPA has been evaluating the environmental effects of proposed substitutes, the Energy Research and Development Administration is assessing the non-environmental safety hazards that may be associated with them. EPA plans to continue to encourage and coordinate these efforts and will promptly report to you any further developments of significance. I hope that you find this information helpful.

Sincerely,

Russell E. Train

Honorable James B. Pearson
Committee on Commerce
United States Senate
Washington, DC 20510

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This letter was also sent to:

Honorable Warren G. Magnuson
Honorable Harley O. Staggers
Honorable Samuel L. Devine
Honorable Gaylord Nelson
Honorable William Proxmire
Honorable Edward M. Kennedy
Honorable John D. Dingell
Honorable Les Aspin

With copies to:

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