April 17, 1969

404-Ja4-3292-Ext 296

Mr. J. W. Denuiger
Georgia Department of Agriculture
Laborstory Division
19 Hunter Street, S. W
Atlanta, Georgia

Dear Mr. Denuiger:

Confirming our telephone conversation last week I requested that samples of several of our polychlorinated biphenyls (Aroclors) be forwarded to you. I hope that you have received the samples by now.

I have enclosed a table which shows the general physical characteristics of the Aroclors. The information typed at the bottom of these pages show the results of acute animal toxicity studies including the oral LD_{50} in rats and the minimum lethal skin dose when applied to rabbits. You will note that these results were obtained using undiluted samples or as a corn oil suspension-solution depending on the viscosity and solubility of the materials.

A second enclosure shows the results of studies involving chronic inhalation. Although the data certainly show that the vapors can not be considered "non-toxic" the safe levels are such that the materials should not be considered "highly toxic". More importantly, the vapor pressure of even the liquid Aroclors are so low that there is no significant hazard from inhalation if the Aroclors are at ambient temperatures. The Table referred to abovelbears this out if one refers to the extremely high distillation ranges for the materials which are liquid at room temperature and distillation is only possible under high vacuum for the waxy or resinous membersaf the series.

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As I told you on the telephone the number designations are significant. The 1200 series refers to biphenyls with the last two numerals indicating the percentage of chlorination. For example, Aroclor 1242 is biphenyl chlorinated to the extent of 42%. The 5400 series are terphenyls with the last two numerals indicating the degree of chlorination.

All of the PCB's are slightly soluble in water. Some recent data we have developed indicate for example that Aroclor 1242 is soluble to the extent of 203 (plus or minus 10) parts per billion.

Aroclor 1248 is soluble to the extent of 106 (plus or minus 14) ppb.

Aroclor 1254 is soluble to the extent of 50 (plus or minus 2) ppb.

The PCB's find primary use in applications requiring chemical stability, good dielectric properties, fire resistance, low volatility and water insolubility. When used as dielectric fluids PCB is hermetically sealed in capacitors and transformers, designed for 20 to 30 years life at temperatures at or near ambient temperatures.

Plasticizer PCB is found primarily as a plasticizer for surface coatings such as corrosion resistant paints, industrial adhesives and as a sealant such as window sealants. These applications do not include automobile tires, ~~or floor tile~~ plastic films nor containers These applications of PCB emphasize its inertness and low volatility to provide long service life for the product without loss of flexibility. In normal use, PCB plasticizer applications are ambient temperature environments presenting no special health problems. In view of PCB's chemical inertness, we would anticipate no problems associated with the environment from refuse dumps.

PCB finds further application in industrial (excluding aviation) hydraulic and heat transfer systems. As in the case of dielectric applications, these systems are designed for essentially indefinite fluid life.

I believe the above covers the important points which we discussed. I hope that perhaps in June or July I can visit your laboratory to discuss any other questions or thoughts you have concerning the interfering substances you have found in your insecticide residue analysis.

Sincerely,

Elmer P. Wheeler
Manager, Environment Health

EPW:cjs

Enclosures