PCB EXPOSURE CONTROL

1. PREMISE

Current data indicates that PCB type materials may be more hazardous to working personnel than had previously been considered. Based on these facts, the control of exposure of workers where PCB's are manufactured or used should be re-examined and made more restrictive. Currently the American Conference of Governmental Industrial Hygienists (ACGIH) shows threshold limit values for chlorodiphenyl (42% chlorine) (Arochlor 1242) of 1 mg/M^3 and for chlorodiphenyl (54% chlorine) (Arochlor 1254) of 0.5 mg/M^3. Very limited analysis in the Arochlor department indicates that the airborne concentrations are below these numbers.

The two routes of entry of importance in PCB manufacture and use are vapor inhalation and skin absorption. Although there is no evidence that skin absorption presents a significant hazard, it is probable that some absorption does occur. Since the vapor concentrations are quite low in the operating department that manufactures this product, some type of biological test is needed to determine if skin absorption is occurring, and if so, to what degree. An analytical program must be devised to determine if PCB analysis of the urine is feasible, and can be used as an exposure indicator.

2. RECOMMENDED METHODS OF CONTROL

A. Urine Analysis for PCB

If, indeed, PCB can be analyzed in human urine and levels can be determined that represent the very best operation from an exposure standpoint, a routine urine sampling program should be initiated with limits established for urinary PCB levels that are unacceptable.

B. Vapor Inhalation

Vapor inhalation is a problem only when Aroclor is heated above ambient temperature. Where vapor exposure is possible, air supplied respiratory protection must be worn. An airborne control limit for all PCB vapor exposure must be set as low as is practicable and certainly below the standard for PCB with the lowest TLV currently listed in 29 CFR 1910.93 which is chlorodiphenyl (54% chlorine) (Aroclor 1254). Routine air monitoring must be conducted.

C. Skin

Any operation, particularly maintenance operations, where liquid PCBs or PCB mists can come in contact with the skin, skin protection including gloves and suitable impervious clothing should be used. Where heated Arpclor is present resulting in vapor exposure, air supplied respiratory equipment and impervious clothing both must be

used. For example, in maintenance work on a chlorinator that has been drained but is still hot, air supplied respiratory protection and impervious clothing should both be used.

D. Exposure Registry

An exposure registry must be established on all PCB workers. All urine sample results, if this method proves effective, all air sampling data must be recorded along with all appropriate health information. This registry would be a composite, therefore, of all medical and health data, all airborne exposure data, and all biological excretion data if appropriate. This registry should be so constructed that each individual employee can have available to him all data that pertains to him for examination or transfer to any subsequent employer.

E. Environmental Contamination

We would recommend that all means be exercised, either through engineering changes or through work practice changes to minimize environmental releases, either by air, water or through solid residues. In short, we would recommend that all means within the limits of economic feasibility be utilized to limit releases of these materials into the environment.

Jack T. Garrett