

CHARACTERIZATION OF PCBs IN SOIL AND SOIL LEACHATE IN FORMER AIR BASE, PHILIPPINES

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ABSTRACT

Polychlorinated Biphenyls (PCBs) are families of man-made organic chemicals with 209 chlorobiphenyl isomers. PCBs were banned in 1979 due to its toxicity and persistence in the environment. Variations of PCBs are determined in soils and plants. Bioaccumulation factors between plants and soils are assessed which indicated potential routes of exposure to food chain. Sources of PCBs in the Philippines come from transformer servicing facilities, electric utilities, transformer repair, reconditioning and retro-filling facilities. Degradation of PCB Aroclors and congener patterns are investigated from known contaminated site at former Military Air Base. Total organic carbon was negligible. Particle size distribution within the contaminated area was 4% gravel, 79% sand and 17% silt and 0% clay while particle size outside the perimeter fence was 40% gravel, 46% sand and 14% silt and 0% clay. Moisture results ranged from 15% to 30%. The great percentage of more chlorinated congener such as heptaCB is a result from Aroclor 1260. Longer retention times of PCBs in the environment especially the higher chlorobiphenyls are confirmed over decades of exposure. Surface soil obtained the highest leachate median value in PCBs. Roots had the highest BAFs PCB concentrations for *Duranta plumieri* and *Lantana camara*. Proliferation of PCBs is an important environmental concern that may pose an environmental and health hazards.