Polychlorinated Diphenyl Ethers (PCDE)

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Polychlorinated diphenyl ethers (PCDE) are common impurities in chlorophenol formulations, which were earlier used as fungicides, slimicides, and as wood preservatives. PCDEs are structurally and by physical properties similar to polychlorinated biphenyls (PCB). They have low water solubility and are lipophilic. PCDEs are quite resistant to degradation and are persistent in the environment. In the aquatic environment, PCDEs bioaccumulate. These compounds are found in sediment, mussel, fish, bird, and seal. PCDEs show biomagnification potential, since levels of PCDEs increase in species at higher trophic levels. PCDEs are also detected in human tissue. Despite the persistence and bioaccumulation, the significance of PCDEs as environmental contaminants is uncertain. The acute toxicity and Ah-receptor-mediated (aryl hydrocarbon) activity of PCDEs is low compared to those of polychlorinated dibenzo-\(p\)-dioxins (PCDD) and dibenzofurans (PCDF). Due to structural similarity to thyroid hormone, PCDEs could bind to thyroid hormone receptor and alter thyroid function. Furthermore, PCDEs might be metabolized to toxic metabolites. In the environment, it is possible that photolysis converts PCDEs to toxic PCDDs and PCDFs.

**Keywords.** PCDE, Sources, Toxicology, Levels, Fate

1 Structure and Nomenclature ............................................ 159
2 Production and Formation ............................................ 160
3 Occurrence in Products and Emissions ............................ 165
3.1 Chlorophenol Formulations ........................................ 165
3.2 PCBs ........................................................................... 166
3.3 PCDE Derivatives ...................................................... 167
3.4 Combustion ............................................................... 168
4 Properties and Reactions .............................................. 168
4.1 Vapor Pressures .......................................................... 169
4.2 Melting and Boiling Points ............................................. 170
4.3 Water Solubility .......................................................... 170
4.4 Chromatographic, MS, and NMR Properties ................. 170
4.5 Photochemical Reactions ............................................... 171
4.6 Thermal Reactions ...................................................... 172
5 Toxicology and Metabolism

5.1 Acute Toxicity

5.2 Genotoxicity, Carcinogenicity, Mutagenicity, and Teratogenicity

5.3 Immunotoxicity and Developmental Toxicity

5.4 Ah-Receptor-Mediated Enzyme Induction

5.5 Thyroid Hormone Receptor-Mediated Effect

5.6 Estrogen Receptor-Mediated Effects

5.7 Metabolism and Excretion

6 Analytical Methodology

6.1 Extraction

6.1.1 Abiota

6.1.1.1 Sample Pretreatment

6.1.1.2 Extraction

6.1.2 Biota

6.1.2.1 Sample Pretreatment

6.1.2.2 Extraction

6.2 Cleanup

6.2.1 Bulk Matrix Removal

6.2.2 Adsorption Chromatography

6.2.2.1 Silica Gel

6.2.2.2 Florisil

6.2.2.3 Alumina

6.2.2.4 Carbon

6.3 Analysis

7 Environmental Levels

7.1 Sediment

7.2 Aquatic Organisms

7.2.1 Mussels

7.2.2 Fish

7.2.3 Seals

7.3 Birds

7.4 Humans

8 Environmental Fate

8.1 Bioaccumulation

8.2 Biomagnification

9 Future Research

References