

TOXIC TORT LITIGATION

DIOXIN AS A BYPRODUCT CONTAMINANT IN PENTACHLOROPHENOL USED IN WOOD PRESERVATIVES

A major break through in understanding the effect of dioxin exposure was published in December 1995 by Dieter Flesch-Janys and others, "*Exposure to Polychlorinated Dioxins and Furans (PCDD/F) and Mortality in a Cohort of Workers from Herbicide-producing Plant in Hamburg, Federal Republic of Germany,*" 142 *American Journal of Epidemiology* 1165-1175 (December 1, 1995). Dr. Flesch-Janys reports a significant finding: a dose-relationship between dioxin and cancer and heart disease mortality for workers of a pesticide manufacturing plant located in Hamburg, Germany, that had produced phenoxy herbicides including 2,4-D, chlorophenols, and other herbicides and insecticides known to be contaminated with dioxins and furans for a period of thirty-two years. Apparently, from this study and others it has been revealed that the manufacture of Pentachlorophenol produces byproduct contaminants including dioxin and furan which are known and feared cancer causing agents in humans.

Pentachlorophenol ("PCP") is an extremely dangerous carcinogen when it is used to preserve wood. *Environmental Health Criteria 71, Pentachlorophenol, World Health Organization, Geneva, 1987, pp. 11-12.* Pentachlorophenol has been used for years to preserve telephone poles, fence posts, and water-exposed decking. In the 1960's it was introduced to preserve finished mill work, siding, casements, mullions, and to treat perimeter wall logs in log home kits marketed to the public.

Pentachlorophenol is a halogenated hydrocarbon, composed of a benzene ring to which is attached a hydroxide radical making a phenol which is then chlorinated. By-product contaminants of the process include tetrachlorophenol, hexachlorobenzene and various **dioxins and furans. These chemicals are without any doubt the most toxic chemicals ever known to mankind.** Nobody ever voluntarily places oneself in contact with any material that has even 1 part in 1,000,000,000,000 of dioxin, because it is a proven carcinogen. Hexachlorodibenzodioxin appeared in commercially produced Pentachlorophenol in the United States during the 1970's in amounts ranging up to 100 parts per million. Concentrations at this high level are outrageously dangerous.

Pentachlorophenol by itself is a known and proven carcinogen. It is readily absorbed by the lungs, skin and stomach. While there may be differences in the biological response of rabbits and humans to a 10% solution of pentachlorophenol, the probable oral and dermal lethal doses for a 150 pound person, based on the animal toxicity literature, are 1.09 ounces orally and 4.4 ounces dermally. Very little is needed to kill. The body absorbs PCP and discharges it in a number of ways. While much of it excreted in urine. It accumulates in tissues, particularly muscle, bone marrow, and fat. *Braun, et al., The Pharmacokinetics and Metabolism of Pentachlorophenol in Rats [1977], Toxicol. Appl. Pharmacol. 41:395-406.* That is where it does long term damage to the formulation of blood cells. The "no effect" and "lethal" dose limits of Pentachlorophenol are not greatly different. For example, at a dose of 80 milligrams per kilogram, no experimental animals died. At a dose of 100 milligrams per kilogram 83% died, and at 110 milligrams per kilogram 100% died. *Kehoe, et al., Toxic Effects Upon Rabbits of*

Pentachlorophenol and Sodium Pentachlororphenate [1959], J. Ind. Hyg. Tox. 21: 160. This is important to understand: Substantial amounts of Pentachlorophenol can be absorbed with no observable effect.

German literature reports health problems due to residential exposure to PCP. Brandt and Schmidt, in an article entitled *Chronische Lebererkrankung durch langjährige Intoxikation im Haushalt mit Pentachlorophenol [1977], Deutschen Gesellschaft für innere Medizin, pp. 1609-11*, reported fluctuating abnormal liver enzymes directly associated with moving into and out of a dwelling which had its interior treated with PCP. Later, Gebefugi reported health problems associated with residential interior exposure to Pentachlorophenol. *Gebefugi, et al., Occurrence of Pentachlorophenol in Enclosed Environments [1979] Ecotoxicology and Environmental Safety 3:269-300.* The health effects observed in both the occupational and residential exposures, especially those related to the skin and respiratory tract are best explained by laboratory findings involving immune system studies of laboratory animals. In a series of experiments reported in the early 1980's, Nancy Kirkvliet, et al., found that technical grade Pentachlorophenol causes immune suppression in animals which she has linked to dioxin contaminants contained in Pentachlorophenol and found that hepta and hexa dioxin are implicated. *Kerkvliet, et al., Humoral Immunotoxicity of Polychlorinated Diphenyl Ethers, Penoxypheols, Dioxins and Furans Present as Contaminants of Technical Grade Pentachlorophenol [1985], Toxicology, 36:307-24;* (see extensive articles cited).

Pentachlorophenol was first known as a carcinogen in 1978. *Greene, et al., Familial and Sporadic Hodgkin's Disease Associated with Occupational Wood Exposure, The Lancet, September 16, 1978, pp. 626-27; Goldstein, et al., Effects of Pentachlorophenol on Hepatic Drug/Metabolizing Enzymes and Porphyria Related to Contamination with Chlorinated Dibenzo-p-Dioxins and Dibenzo-Furans [1977] Biochem. Pharmacol. 26:1549-57.*

Adverse health effects associated with exposure to dioxins and furans, such as found in Pentachlorophenol, are well documented. *Schwetz et al., The Effect of Purified and Commercial Grade Pentachlorophenol on Rat Embryonal and Fetal Development [1974], Toxicology and Applied Pharmacology 28:151-61.* Dioxins have been considered carcinogens in rodents since the late 1970's. *Kociba, et al., Results of a Two Year Chronic Toxicity and Oncogenicity Study of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin in Rats [1978], Toxicology and Applied Pharmacology 46:279-303; Van Miller et al., Increased Incidence of Neoplasms in Rats Exposed to Low Levels of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin [1977], Chemosphere 10:625; Muranyi-Kovacs, et al., Bioassay of 2,4,5-Trichlorophenoxyacetic Acid for Carcinogenicity in Mice [1976] British Journal of Cancer 33:626.*

The United States Department of Agriculture has vigorously opposed the use of both Pentachlorophenol for residential use and warned that this product "should never be used inside . . . for any reason." *U.S.D.A. Forest Service Forest Products Laboratory, General Technical Report FPL-11, Protecting Log Cabins from Decay [1977], p.2.*

Numerous studies associate occupations in the lumber and sawmill industry with acute leukemias, Hodgkin's and non-Hodgkin's lymphomas, and multiple myelomas. *Milham, Study of Mortality Experience of AFL-CIO United Brotherhood of Carpenters and Joiners of American, 1969-70* [1974], DHEW Pub. No. 74-129, Springfield, Virginia, National Technical Information Service; *Jappinen, et al., Cancer Incidence of Workers in Finnish Sawmill* [1989], *Scand. J. Work Environ. Health* 15:18-23; *Morton and Marjanovic, Leukemia Incidences By Occupation in Portland-Vancouver Metropolitan Area* [1984] *Am. J. Ind. Med.* 6:185-205; *Burkart, Leukemia in Hospital Patients with Occupational Exposure to Sawmill Industry*[1982], *West. J. Med.* 137:440-441; *Erickson, et al., Study on Malignant Mesenchymal Tumors of Soft Tissues and Exposure to Chemical Substances* [1979], *Lahartidningen* 76:3872-75; *Hardell, Malignant Lymphoma of Histiocytic Type and Exposure to Phenoxyacetic Acids or Chlorophenols* [1979], *Lancet* i:56; *Milham and Hessler, Hodgkin's Disease in Woodworkers* [1967] *Lancet* ii: 136-37. Exposures to chlorophenol herbicides in the lumber industry have been the principal cause of the increased risk of hematopoietic cancers. Erickson, *ibid.*; Hardell, *ibid.* Hardell in a 1981 study of forestry workers exposed to chlorophenols found an eight-fold increase in soft tissue sarcomas and malignant lymphomas due to herbicides containing chlorophenols, primarily PCP. *Hardell, et al., Malignant Lymphoma and Exposure to Chemicals, Especially Organic Solvents, Chlorophenols and Phenoxy Acids: A Case-Control Study* [1981], *British Journal of Cancer*, 43:169-76. The State Department of Health study, *supra*, of the reported cancers at Simpson's Arcata mill shows the latency period from exposure to this carcinogen, until the clinical detection of cancer, was fourteen to seventeen years. Today Pentachlorophenol is recognized as a Proposition 65 Carcinogen by the State of California.

Undoubtedly, when technical Pentachlorophenol is sold to manufacturers of wood preservatives zero testing for the dioxin and furan contaminants are performed. Therefore, it is possible that the PCP imbued wood preservatives sold and used today stealthily contain some of the most rabid cancer causing agents known to man, and their insidious nature will not become known to those poor souls whose cancers are a result, for nearly two decades.

It is for this reason *inter alia* that a number of toxic tort suits have been initiated, and settled for significant sums or significant awards won by verdict at trial, relating to PCP, particularly in California. See: *A Developing Toxic Tort: Lumber Mills, Log Cabins, Leukemia, Lymphomas and Soft Tissue Sarcomas - The Case Against Pentachlorophenol*, 21 *CTLA Forum* 195 (1991). The primary legal causes of action have been negligent failure to warn, breach of warranty, and sale and use of a defective product.

The lesson to be learned from all of this is that the continued sale and use of PCP containing wood preservatives could easily result in the creation of a lethal health hazard, and therefore, lead to significant legal liability in a subsequent tort action for those who sell or use it.

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