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PENTACHLOROPHENOL - RESPONSE TO INTERROGATORIES

June 3, 1983

The following statements are relevant to the Amicus Curiae Reply Brief, filed by L. T. Winberry, March 2, 1983.

1. AF.33. Statement: "A finding of 8.7 ppm pentachlorophenol (PCP) in a wood sample is indicative of the fact that the sample has been exposed to PCP."

Response: The validity of a analytical method is determined by both its precision to correctly identify a chemical structure/compound and by its sensitivity to the concentration of the compound. Unfortunately, many of the methods, especially earlier methods, used in the analysis of PCP, measured compounds (artifacts) containing phenol but were not specific to PCP. Indeed, many types of trees naturally produce and accumulate phenolic compounds. Recently, the two laboratories that analyzed the more than 60 wood samples germane to this Brief arrived at results for some of the samples that were not in agreement. Upon investigation of the methods, it was found that the method used by the one laboratory was measuring an artifact and not PCP. The estimated concentration of that artifact was 10 ppm, expressed as PCP; but in fact the sample did not contain PCP. Thus, a single value of 8.7 ppm unsubstantiated by other methods and other wood samples should be suspect.

2. UP.44. References to PCP produced in 1940s.

Response: The commercial synthesis of pentachlorophenol is accomplished by direct chlorination of phenol. Purification of the crystalline pentachlorophenol is accomplished following steam distillation in a closed system. The technical product is formulated for commercial use by the addition of petroleum solvent carriers. During the past thirty years significant changes have occurred in the quality control of the synthesis of commercial PCP and in the petroleum carriers. These changes in chemical industrial technology have resulted in significant decreases in the presence of toxic contaminants. The toxicity problems with PCP in the 1940s and 1950s can be directly linked to heavily contaminated product and any statements in the literature about handling freshly PCP-treated wood in the 1940s should not be applied to commercial products produced by the chemical industry years later.

3. UP.56. Statement: "... heat generated by the saw may decompose pentachlorophenol with production of other toxic chlorine compounds."

Response: This statement attributable to Lt. Col. Denne, 1958, should not be accepted as fact, but rather as an opinion. Data obtained since 1958 indicate that temperatures obtained in sawing wood are almost always insufficient to result in combustion of the wood, a requirement for the generation of sufficient temperatures to volatilize PCP and initiate chemical changes. Combustion studies of wood (saw dust) impregnated with PCP resulted in no increase in toxic contaminants and in the case of octachlorodibenzo-p-dioxin (OCDD) possibly resulted in a decrease in concentration.

4. UP. 68-69. Reference to statements attributable to the EPA RPAR of pentachlorophenol.

Response: The Rebutable Presumption Against Registration (RPAR) was the Environmental Protection Agency's formal review of the benefits versus risks of continued use of a pesticide. This action began when EPA concluded it had found some evidence (including alleged) of potential health or environmental hazards (usually from laboratory studies) on the basis of certain risk criteria as defined in the Code of Federal Regulations. Notice of an RPAR did not represent a ban or cancellation of the product's use. Producers of a product had the primary responsibility for assembling evidence to challenge EPA's allegations of possible health or environmental risk. Evidence attesting to economic or other benefits derived from use of a pesticide was provided primarily by those experienced in its use including scientists, grower organizations, agribusiness and individuals users. The point to be made in that statements is an RPAR were frequently made without scientific support. Hence, RPAR statements should be viewed with caution.

5. UP. 70 and 72. Statement: "Technical PCP is contaminated with 2,3,7,8-TCDD."

Response: The 1980 USDA Cooperative Impact Assessment Report on Pentachlorophenol concluded:

"The highly toxic 2,3,7,8-tetrachlorodibenzo-p-dioxin has never been found in penta of U.S. manufacture and furthermore, has not been detected as a pyrolytic or photolytic product of penta decomposition."

6. UP.77. Statement: "One of the risks of harm created by exposure to wood previously treated with pentachlorophenol is the development of tumors."

Response: This statement focuses on the word "risk" and ignores the reality of "dose" and "species". The National Academy of Science in March 1983 noted that the dominant analytic difficulty in assessing risk is pervasive uncertainty. Risk assessment draws extensively on science and a strong scientific basis has developed for linking exposure to chemical to chronic health effects. However, data may be incomplete and there is often great uncertainty in estimates of the types, probability and magnitude of health effects associated with a chemical agent and of the extent of current and possible future human exposures. These problems have no immediate solutions, given the many gaps in our understanding of the causal mechanisms of carcinogenesis and other health effects and in our ability to ascertain the nature or extent of the effects associated with specific exposures. Because our knowledge is limited, conclusive direct evidence of a threat to human health is rare. Fewer than 30 agents definitely linked with cancer in humans; in contrast, some 1,500 substances are reported carcinogenic in animal tests, although they include substances tested in studies of questionable experimental design. We know even less about most chemicals; only about 7,000 of the over 5,000,000 known substances have ever been tested for carcinogenicity. A small fraction of those theoretically under regulatory jurisdiction which people may be exposed.