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DATE February 16, 1979

SUBJECT Monsanto Studies on the Toxicology of
Crude Orthochlorophenol

TO J.S. Metcalf, B2NK

The toxicology studies on crude orthochlorophenol sponsored by Monsanto Company consist of an acute toxicity screen and a "21-day Chick Edema Study in White Leghorn Chickens".

The acute oral LD50 of undiluted crude orthochlorophenol in rats is 40 mg/kg(1). This value is considerably below that reported in the literature (600-800 mg/kg)(2). Orthochlorophenol is corrosive causing necrosis of the gastrointestinal tract in rats administered the undiluted material. The disparity between Monsanto's LD50 and those reported in the literature arises (in the latter case) from administering orthochlorophenol in corn oil solution which decreases its acute toxicity.

When undiluted orthochlorophenol was applied to rabbit skin for 24 hours, the LD50 was between 1000 and 1580 mg/kg (3).

Orthochlorophenol was corrosive to rabbit skin and eyes when tested according to FHSA guidelines (4).

Exposure of 6 adult male rats to crude orthochlorophenol vapor (3.1 mg/l or 592 ppm) for 6 hours at ambient temperature resulted in the death of all animals. At necropsy, these animals exhibited hemorrhages in the lungs and liver and acute gastrointestinal inflammation (5). No mortality was observed in rats exposed to 2.0 mg/l (382 ppm) of crude orthochlorophenol for one hour at ambient temperature (6). In an earlier acute screen, 6 hours exposure to pure (98%) orthochlorophenol vapor (3.2 mg/l or 611 ppm) did not induce any mortality in test animals (7). Crude orthochlorophenol contains 25% free phenol which may be more toxic by inhalation than orthochlorophenol.

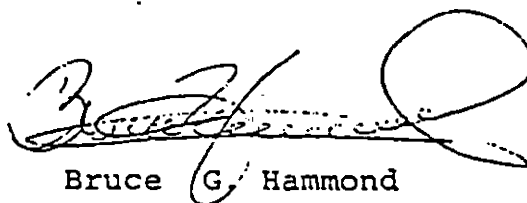
It has been our experience that no adverse health effects have been reported in workers exposed to 1 ppm monochlorophenols in manufacturing plants. In subacute inhalation studies, exposure of various species (monkey, rat, mouse) to 5 ppm of phenol for extended periods (up to 90 days) did not induce any changes in such parameters as mortality, hematology, clinical chemistry, urinalysis, post-mortem pathology and histopathology (8).

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Various lots of parachlorophenol, orthochlorophenol, dichlorophenol and chlorophenol still residues were evaluated for dioxin content using the "Chick Edema Factor" bioassay (Official Method of Analysis of the Association of Official Analytical Chemists, 11th Edit. Bioassay Method 31, pp. 466-468, 1970) (9). Under the conditions of this test, incorporation of the test material in the feed (500, 1500 ppm) did not induce mortality or increase pericardial fluid in the test animals.



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- (1) Younger Laboratories report Y-78-74A
- (2) NIOSH Register Toxic Effects of Chemical Substances (1977)
- (3) Younger Laboratories report Y-78-74A
- (4) Younger Laboratories report Y-78-74A
- (5) Younger Laboratories report Y-78-74A
- (6) Younger Laboratories report Y-78-74A
- (7) Younger Laboratories report Y-75-238, 238A
- (8) NIOSH Criteria Document on Phenol
- (9) Industrial BIO-TEST reports, BTL-74-106, BTL-75-103, BTL-74-107,
BTL-75-55, BTL-74-104

Proceedings subject to