

PHYSICIAN'S FACT SHEET

VELSICOL CORPORATION WORKERS' CHEMICAL EXPOSURES AND HEALTH ISSUES

Purpose

The intended audience for this document is past Velsicol Chemical Corporation (a.k.a. Michigan Chemical Corporation) workers and their physicians. This document briefly summarizes what has been published about workers' past chemical exposures at the Velsicol Chemical Corporation in St. Louis, Michigan. It includes findings from the 1977 National Institute for Occupational Safety and Health (NIOSH) Health Hazard Evaluation that was conducted at the Velsicol plant in St. Louis. For the benefit of workers, the Michigan Department of Community Health has also included some basic explanations about how chemical exposures may relate to health outcomes. For a more complete and technical summary, the document entitled *Technical Summary of Velsicol Corporation Workers' Chemical Exposure and Health Issues* can be obtained at www.michigan.gov/mdch-toxics or by calling 1-800-MI-TOXIC.

Basic overview of chemical exposure related to health outcomes

For a chemical to harm a person's health, the chemical must enter a person's body and reach a quantity that will cause a particular type of harm. The type of harm that may be caused will depend on how the chemical enters the body (inhalation, ingestion or skin contact), how much chemical enters the body, how long a person is exposed, and how often that exposure occurs. Larger quantities of chemical, longer exposure times, and more frequent exposure events are associated with a greater risk of negative health effects.

If a person is exposed to an exceedingly large quantity of chemical, health effects may occur immediately (acute effects) or many years later (chronic effects) or both. Acute effects are easier to link to a given chemical exposure event. Chronic health effects are very difficult, if not impossible, to link to a past chemical exposure. A negative health effect may be caused by a combination of factors such as a person's lifestyle, genetics, current health condition, as well as past chemical exposures.

Chemicals at the St. Louis plant

Records indicate that the following chemicals were in use at the Velsicol Plant in the six on-site production areas. These materials and production processes were used to produce between 30-40 chemicals at the St. Louis facility. Production periods for the chemicals varied depending on market need; specifically, polybrominated biphenyl (PBB) was only manufactured from 1971-1974. Not all workers would have been exposed to all chemicals, nor does exposure necessarily mean a negative health outcome would occur.

In 1977 the National Institute for Occupational Safety and Health (NIOSH) documented the following 27 chemicals used in production processes:

- Benzene
- Bromine
- BTCM (Bromotrichloromethane)
- Carbon Tetrachloride
- DDT
- DEC (Di-Ethyl-Amino-Ethyl-Chloride)
- DIC (Di-isopropyl Amino-Ethyl Chloride Hydrochloride)
- DMC (Beta Dimethyl Amino Ethyl Chloride Hydrochloride)
- DMIC (Beta Dimethyl Amino Isopropyl Chloride)
- DMPC (Gamma-Dimethyl Amino Propyl-Chloride Hydrochloride)
- Ethylene Dichloride
- Firemaster BP 4A (Tetra-Bromo Bis Phenol)
- Firemaster 680, 100, 695 (PBB)
- HBCD (Hexabromocyclododecane)
- HCL (Hydrochloric Acid)
- Hydro-Bromic Acid or Hydrogen Bromide (H Br) Gas
- Iodine
- Lead
- Methenol or Methyl Alcohol
- Methyl Bromide
- PHT₄ (Tetrabromophthalic-Anhydride)
- Sulfuric Acid or Liquid SO₃
- TRIS (2, 3-Dichloropropyl) Phosphate
- Yttrium or other rare earths
- Magnesium Oxide
- Calcium Chloride
- Phenol

Workplace exposures that exceeded recommended standards, as determined by NIOSH in 1977, included ethylene dichloride, carbon tetrachloride, and sulfur dioxide. Other high exposures of concern for which no exposure standards existed include: hexabromocyclododecane, trimethylene chlorobromide, bromotrichloromethane, and tetrabromophthalic anhydride.

Health effects observed during the 1977 NIOSH Investigation.

- 147 (81%) employees with acneform skin lesions
- Many employees showed signs of occupational liver disease: 152 (84%) with enlarged livers and 18 to 61 (10.1 to 33.9%) with abnormal liver enzymes
- 50 (27.6%) found to have obstructive pulmonary disease
- 48 (26%) with high blood pressure and 23 (22.5%) with elevated blood levels of low density lipoprotein (LDL)
- 24 (61.5%) of 39 employees tested had abnormal blastogenesis indicating suppressed immune system function
- Up to 52 (29.2%) individuals with abnormalities in their red blood cell indices
- 108 (60.7%) with band neutrophil white cells in peripheral blood
- Impaired performance on psychomotor dexterity test
- High incidence of psychological complaints

Note: percentages vary depending on the number of individuals tested.

For Further Information

You can request a copy of the technical summary from the Toxicology and Response Section, MDCH
 Capitol View Bldg, 4th Floor
 201 Townsend St.

Lansing, MI 48913 or call 1-800-MI-TOXIC or go to www.michigan.gov/mdch-toxics.