

CHEMICAL INJURY FROM XYLENE

We are pleased to have been asked to provide some information on this health issue.

The goal in writing this article is to make Histotechnologists aware of the potential danger to their health as a result of daily exposure to xylene.

Xylene is the hydrocarbon, dimethylbenzene. It occurs naturally in petroleum and coal tar. It is ubiquitous in the environment, being one of the 25 most commonly used chemicals in manufacturing in North America. It is a constituent of paint, lacquers, varnishes, inks, dyes, adhesives, cleaning fluids, aviation fuel, tobacco and as an additive in gasoline. It is also used in the preparation of pharmaceuticals, synthetic textile fibers, hydrogen peroxide, insecticides, quartz crystal oscillators, perfumes and leather processing. In the clinical laboratory xylene is used in processing, staining and slide preparation.

There is evidence to suggest that the acute toxicity of xylene is greater than the acute toxicity of toluene or benzene

Most exposures to xylene occur by inhalation. It may also be absorbed through the skin. Xylene vapors are irritating to the skin, eyes and lungs. If xylene contacts the skin or eyes it may cause burning pain and can also damage the cornea of the eye.

Breathing xylene vapors in small amounts may cause headaches, euphoria, a light headed feeling, dizziness, drowsiness or nausea. With exposure to large amounts, xylene may cause stumbling, irregular heart beats, fainting or even death.

Repeated exposure to xylene can cause permanent damage to the brain, heart, muscles, liver and kidneys. It also accumulates in adipose tissue.

Other symptoms include post nasal drip, nose bleeds, fatigue, nasal congestion, coughing, wheezing, dry eyes, throat discomfort, voice changes, burning chest, substernal pain and pressure, malaise, frequent chest infections, tremors, blurred vision, shortness of breath, irritability, general weakness, loss of memory and tinnitus. Breast fed children whose mothers have inhaled xylene are at risk of xylene poisoning because xylene contaminates breast milk. Although there is no evidence that it causes birth defects in humans, xylene can pass through the placental barrier into the developing embryo and has been reported to cause developmental anomalies in certain animals.

Ethanol or aspirin may prolong the half life of xylene in the body

Because xylene is heavier than air, fumes tend to accumulate or layer in low work areas. Fume hoods are unable to exhaust heavier than air fumes at levels below the hood opening. Ventilation equipment should be at that low level and the air should be vented directly outside.

Until recently there has been no definitive chemical test to prove xylene poisoning. Diagnosis has been based on anecdotal history and physical symptoms. There is currently a pilot study, which indicates there may be some correlation to the presence of methylhippuric acid in the urine of someone suffering from xylene poisoning. Because there may never be a definitive test, there will be a continuous challenge for a worker to prove that a chemical injury has occurred. Also, the scope of the situation is difficult to define because many laboratory problems are either suppressed or not reported.

The best defense to protect your own health is to be very aware of air quality in the laboratory, any symptoms that persist in the workplace and slowly abate when away from the work environment and

reactions to products and chemicals outside the work environment which may contain xylene.

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