In early 1973, the Michigan Chemical Company accidentally shipped polybrominated biphenyls (PBB), a fire-retardant chemical, to the Farm Bureau instead of magnesium oxide.

- The PBB was mixed into livestock feed and consumed by cattle, pigs, and chickens. Contaminated milk, meat, and other farm products were sold throughout the state until the accident was discovered about a year later.
- The major acute health effects reported were skin rashes, hair loss, and memory problems, though these effects were mainly transient.
- PBB is stored in adipose tissue and remains in the body for many years. PBB has endocrine modifying properties and has been shown to mimic estrogen, to block androgens, and interfere with thyroid function in animal models.

To study the long-term health effects of the PBB exposure, the Michigan Health Department created a registry of more than 6,000 people who consumed the contaminated farm products or worked at the chemical plant.

- The children of exposed women may have been exposed to PBB in the womb and through breast milk. The children of exposed men may have been exposed by PBB brought home on clothing.
- The health effects of PBB are still being investigated but research has identified several notable findings among the exposed population. (Research Findings listed on second page.)
- Most of the findings are based on studies that compared PBB registry members with high blood levels of PBB to those with low (or non-detectable) levels of PBB.
- Other risk factors for the health outcomes were considered in analyses and adjusted for, when possible.


For more information please visit
www.PBBregistry.emory.edu
Research Findings related to the Michigan PBB Contamination

• More thyroid problems were been found among those in the PBB Registry, particularly those most highly exposed.¹

• Children of women with high exposure to PBB were more than twice as likely to have lower Apgar scores at birth.²

• Women with high PBB exposure and recent weight loss had shorter menstrual cycle lengths and longer bleed lengths than women with low exposure. The recent weight loss may have released PBB from adipose tissue into circulation.³

• Higher risks of breast cancer,⁴ lymphoma and gastrointestinal cancers⁵ have been found. In fact, the International Agency for Research on Cancer has recently classified PBB as a probable human carcinogen.⁶

• PBB can cross the placenta and has been detected in breast milk of highly exposed mothers. Children born to highly exposed mothers were more likely to have PBB detected in their blood than children of mothers with lower exposure and those who were breastfed were more likely to have PBB detected in their blood than children who were not breastfed.⁷

• Breastfed daughters exposed to high levels of PBB in utero had an average age of menarche approximately one year earlier than breastfed daughters exposed to low levels of PBB in utero or daughters who were not breastfed.⁸

• Daughters exposed to higher levels of PBB in utero, now of reproductive age, were three to four times more likely to experience miscarriages compared to daughters with low in utero exposure. Exposure during infancy to PBB-contaminated breast milk further increased this risk.⁹

• Sons of women highly exposed to PBB were twice as likely to report a genitourinary condition (hernia, hydrocele, cryptorchidism, hypospadias, or varicocele), than sons of low exposed women.¹⁰

References


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