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

- The PBB was mixed into livestock feed and consumed by cattle, pigs, and chickens. Contaminated farm products were distributed 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, and prevalent regardless of the level of PBB exposure.
- PBB is stored in adipose tissue and remains in the body for many years. PBB impacts the endocrine system and has been shown to interfere with steroid hormones estrogen and testosterone, as well as thyroid function in animal models.

Michigan PBB Contamination – Quick Facts

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 utero and through breast milk. The children of exposed men may have been exposed to 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 and adjusted for, when possible.

*Chang et al, 2020. Serum concentrations of polybrominated biphenyls (PBBs), polychlorinated biphenyls (PCBs) and polybrominated diphenyl ethers (PBDEs) in the Michigan PBB Registry 40 years after the PBB contamination incident. Environment International 137:105526.

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

- More thyroid problems were found among those exposed to higher levels of PBB and differences in thyroid hormones were associated with PBB exposure in childhood.¹
- Children of women with high exposure to PBB were more than twice as likely to have lower Apgar scores at birth.²
- Among women exposed as children, PBB levels were associated with differences in menstrual hormone levels.³
- Higher risks of breast cancer,⁴ lymphoma and gastrointestinal cancers⁵ were associated with PBB exposure. The International Agency for Research on Cancer and the US National Toxicology Program have classified PBB as a likely human carcinogen.⁶
- PBB can cross the placenta and has been detected in breast milk of exposed mothers. Children born to highly exposed mothers were more likely to have PBB detected in their blood, and children of highly exposed mothers who were also 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 two to four times more likely to experience miscarriages compared to daughters with low in utero exposure.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 lower exposed women.¹⁰

References


For more information please visit [www.PBBregistry.emory.edu](http://www.PBBregistry.emory.edu)