

Phosphine pesticide used to kill bedbugs causes Fort McMurray baby's death

Clear, colourless gas would have accumulated in apartment over a number of days

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Four children remain in separate Alberta hospitals, following the death of a baby, after all were exposed to an illegally-imported pesticide used by their mother to kill bedbugs in a Fort McMurray apartment.

- [Pesticide blamed in 8-month-old's death in Fort McMurray](#)
- [Five children in hospital after 'unknown' spill in Fort McMurray apartment](#)

An eight-month-old girl died Monday after she was exposed to phosphine, a fumigant.

The insecticide was brought into Canada illegally from Pakistan to fight a bedbug infestation, said the children's aunt, Shazia Yarkhan.

The parents took the children to hospital Sunday. Two boys, aged two and six years old, were taken to the Stollery Children's Hospital in Edmonton. Two others, aged four and seven, are in a Fort McMurray hospital.

Zaid Suliaman, the president of the Pakistani Cultural Association in Fort McMurray, told CBC News the conditions of the two children in Fort McMurray are improving. He said the two children sent to Edmonton remain in critical condition.

The children's mother was under observation in hospital on Monday, but has since been released.

How pest control substance works

When used for pest control, phosphine, which is a gas in its natural state, is typically sold as a powder that is combined with either calcium or aluminum and compacted into tablets.

"When you add water to this, when it's in a very humid environment, it releases phosphine gas —and the phosphine gas is toxic to any animals," University of Guelph toxicologist Keith Solomon said Tuesday.

"It gets into the lungs, and then gets into the tissues in the lungs, and then starts to destroy, basically, the energy production in the cells. This causes cell damage and eventually the death of the individual."

The gas, which is colourless, also acts on the nervous system in a manner similar to sarin gas, an outlawed chemical weapon, said. Dr. James Kehrer, a pharmacy professor at the University of Alberta.

Once the gas was released, Kehrer said all family members would have inhaled it over several days — but noted that since it is a heavy gas, it would have been more concentrated near the floor where the children would have played.

Kehrer noted that air circulation in the building has likely cleared the phosphine from the family's apartment by now, and should not pose a risk to others living in the building.

"People often think that the chemicals you can buy on your own are not as potent, and they're oftentimes right about that ... but trying to use more potent chemicals — that requires a professional," Kehrer said.

"Because, as in this tragic case, you can see there are consequences for using things without knowing how dangerous they can be."

Phosphine use in Canada

Canada's Workplace Hazardous Materials Information System (WHMIS) classifies phosphine as a poisonous material with immediate and serious effects. Its health effects are listed as "very toxic."

In Canada, phosphine is used to fumigate grain storage elevators, said Solomon.

It has to be used carefully and by people who have a licence, he added.

Special precautions must be taken to ensure the area fumigated has been carefully ventilated before people re-enter the space, he said.

"It's in the most toxic group of pesticides registered in Canada," said Solomon. "You need to be a licensed applicator — you need to have training."

Use approved in other countries

Although not widely available in Canada, phosphine has been approved for use in other countries, both in agricultural and domestic environments.

The difference, Solomon said, is largely a result of how buildings are constructed.

"The real problem here is that it might be usable in this context in a country where buildings are not well sealed, but there's really good sealing here in Canada because of the wintertime ... it keeps it in the building — and this increases the risk of exposure," said Solomon.

"It's indeed a very sad situation for this family."

However, Solomon said the situation could have ended even more badly.

"It could have been [worse] if [the phosphane] was in the hand luggage and it got wet on the airplane, you could have had a whole airplane full of dead people."

In Thailand, phosphane was blamed in the [mysterious deaths of two Quebec sisters](#), as well as several other tourists in 2012.

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