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## Toxics can affect kids, adults differently

By Blake Morrison and Brad Heath, USA TODAY

Outside almost every school in the country, the model used by USA TODAY indicates the presence of at least one or two chemicals capable of causing a variety of ailments. Whether the chemicals could cause harm depends on which are in the air and at what levels.

Some chemicals, such as butadiene, are classified as known carcinogens by the federal government. Even very small amounts of butadiene can slightly increase the risk of contracting cancer; authorities usually become concerned when the levels are high, especially if people are exposed to those levels for a long time. The monitoring that led to the closure of an elementary school in Addyston, Ohio, found butadiene levels that would cause a cancer risk far higher than what Ohio considers acceptable.

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Other chemicals have more limited effects. They can irritate the eyes or cause headaches, even at heavy doses. Still others, such as ozone, can exacerbate asthma, a leading medical cause of school absences, the American Lung Association says.

For those, regulators try to determine how much of a chemical a person can be exposed to without getting sick, a value the U.S. Environmental Protection Agency calls a "reference concentration."

Most assessments are based on the effect chemicals might have on adults, as shown in workplace studies.

"It's one thing to be able to detect the chemical," says Melanie Marty, a toxicologist with the California EPA. "It's another thing to know whether the concentration to which the kids are exposed is going to be harmful."

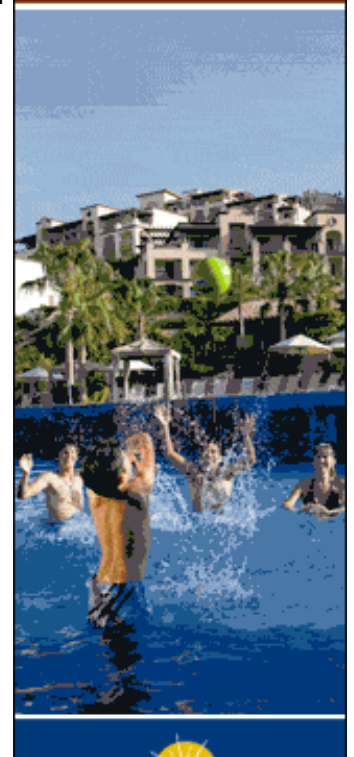
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children can be. The U.S. Centers for Disease Control and Prevention says kids have died after being exposed to vapors of the chemical "that caused only minor nose and throat irritation in adults." The chemical, used to make plastics and rubber, was found in the air outside the Addyston school.



Philip Landrigan, a physician at Mount Sinai School of Medicine in New York, says chemicals could interact to pose greater dangers.

"The fundamental problem is truly how little we know about interactions," Landrigan says. "When you compound that situation by simultaneously exposing children to a number of chemicals, there are just gaps in knowledge that (are) really of grave concern."

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