The danger in mothballs

Exposure to the chemical naphthalene – found in some moth balls, tobacco smoke, emissions from coal- and wood-burning stoves and even some house paints – can damage kids DNA in ways that may raise cancer risk. In a recent study of 113 5-year-olds, researchers from the Columbia Center for Children's Environmental Health (CCCEH) found "chromosomal aberrations" that scramble genetic coding in 30 kids.

Those with higher levels of naphthalene in their urine were more likely to have DNA disturbances of a type called chromosomal translocations known to increase risk for precancers in adults. The researchers are continuing to follow these children. "Translocations can persist for years after exposure. Some accumulated damage will be repaired, but not everyone's repair capacity is the same. Previous studies have suggested that chromosomal breaks can double an adult's lifetime risk for cancer, though implications for children are unknown," lead study author Manuela A. Oquela, M.D., Sc.M., said in a Columbia University press release.

In the meantime, it makes sense to keep naphthalene out of the house.

Moth balls contain either naphthalene or paradichlorobenzene – both of which become a gas when exposed to air, releasing that signature, pungent mothball odor. While plenty of people use mothballs to repel moths in clothing and stored carpets and to keep pests out of the house or garden, they're a health hazard for kids for several reasons. Naphthalene exposure can cause red blood cells to break apart, a condition known as hemolytic anemia. Little kids may eat mothballs or flavors, thinking it's candy.

Babies are especially vulnerable because their bodies are less able to clear naphthalene byproducts formed in blood. Kids with a hereditary defect called glucose-6-phosphate dehydrogenase (G6PD) deficiency are at the highest risk; their red blood cells have little ability to fend off the effects of naphthalene. G6PD deficiency is fairly common, especially in African-Americans in whom 10% carry this trait.

According to the Colorado Division of Public Health, 4000 children per year are exposed to moth balls nationally each year, with over 600 of these cases requiring medical attention. Ingestion of one moth ball can be toxic to a young child, and even lethal if G6PD deficiency is present in that child. A key symptom is jaundice (yellow skin) which can progress to organ damage and death.

Here’s how to cut kids risk for exposure:

- Don’t use mothballs as air fresheners or in home remedies.
- Rethink storing mothballs in the house. According to the Columbia University researchers, "A box of "old fashioned" mothballs contains 366 grams of naphthalene, which is sufficient to raise the average residential indoor air concentration to approximately 200 micrograms per cubic meter over a period of 1 year, though in small homes or apartments this would be expected to be much higher. Exposures of this magnitude are commensurate with industrial exposures to... jet fuels." Everyone in the home is exposed to the vapors if moth balls are not used properly.
- Never sprinkle moth balls in closets, attics, gardens or storage areas.
- Use other methods to repel moths such as cedar chips.
- If clothing or blankets were stored with moth balls, wash and air out before using. Otherwise, exposing babies (or anyone else) in these fabrics can cause exposure to chemicals.