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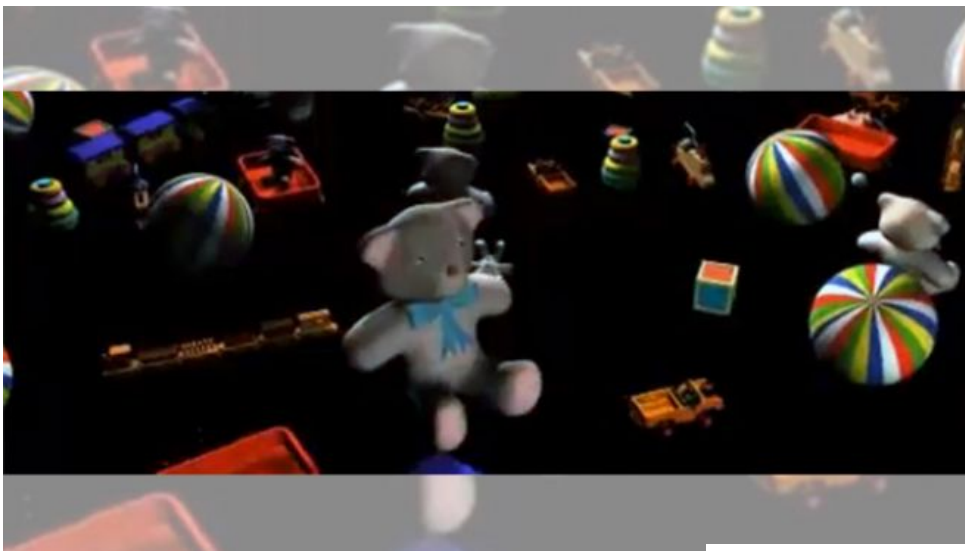
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# Unwrapping the dangers of heavy metals in toys

By Sarah Witman Published December 21, 2012 Inside Science News Service



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Despite the best intentions of parents, relatives, and friends, seemingly safe toys given to children this holiday season could contain another difficult-to-recognize surprise: unsafe levels of lead, mercury, cadmium, selenium, barium and arsenic.

Toys can present many risks to children, and the problem isn't confined to seemingly obvious dangerous items -- such as the Red Ryder BB gun coveted by 9-year-old Ralphie Parker in the popular holiday movie "A Christmas Story." Other dangers include choking on broken pieces, electric shocks, strangulation from cords or string, and hearing damage from loud noises.

But the greatest risk to children may come from the chemical makeup of the toys themselves.

#### SUMMARY

Toys' lead levels now closely monitored, but other metals don't receive the same oversight

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broken pieces,

electric shocks, strangulation from cords or string, and hearing damage from loud noises.

The Consumer Product Safety Commission's records show that in 2007 alone, 157 types of toys were recalled, 99 types of which were related to lead toxicity. That meant about 6 million children's playthings were pulled off store shelves for lead paint or lead components.

Despite the Consumer Product Safety Improvement Act in 2008, which said every children's toy in the United States must be tested by an independent body, there were still 45 types recalled between 2008 and 2011 for toxicity issues.

Lead is perhaps the best-known menace, and has been on the Consumer Product Safety Commission's "naughty list" for years. The commission currently regulates lead at 100 parts per million, or ppm, as part of adopting the American Society for Testing and Materials' standards for testing heavy metals in children's toys in February 2012.

Stephanie Goodson, a pediatrician and clinical instructor at the University of Michigan, said 100 ppm is still too high, since the best amount of lead exposure for a child is zero.

The body needs a certain amount of metals to function properly. This is why food labels commonly boast about the iron and zinc content found in them. But toxic heavy metals work differently, accumulating in the body and inhibiting normal, healthy processes. This can cause illness in people exposed to high amounts.


Screening children for lead is an everyday occurrence in Goodson's profession, and she has studied its effects in full.

"We see a child who has elevated blood [lead] levels, particularly in the synthesis of hemoglobin," Goodson said, referring to a substance in blood cells that carries oxygen. "The lead blocks its ability to synthesize this protein, because it binds onto the enzyme, so therefore children become quite anemic from lead toxicity."

Goodson explained that children react more negatively than adults to lead exposure. In children, lead is a potent neurotoxin, a term that comes from the Greek word for nerve and the Latin word for poison.

It damages the developing brain, and can continually affect behavior and cognitive ability into adulthood. Children exposed to lead when they are young are more likely to develop reading disabilities by high school and are less likely to graduate, according to the University of Michigan Health System.

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Like a tongue stuck to a frozen flagpole, lead binds tightly to bones and releases its hold very slowly over time. This process takes much longer for children. While lead can escape soft tissues like the liver and brain in a few months, it clings to children's bones for 30-40 years, Goodson said.

Regulatory and safety organizations have long addressed lead levels in toys, but some other metals are not overseen in the same way. Regulations on other toxic heavy metals like cadmium and barium are still voluntary, Goodson said. This means that companies are legally free to swap out lead for a substance that could be equally destructive to a child's body, or pick and choose the standards that are enforced.

In legal terms, this could be something as minute as saying a company should not use dangerous levels of cadmium versus they shall not. Goodson calls this practice "trad[ing] one evil substance for another."

Gene Rider is the president of an Illinois-based division of Intertek, an international corporation that researches and tests products, including toys. They also offer a variety of services to businesses such as workshops on toy safety. Rider's company instructs toymakers to "design safety and quality into the product." And he's not pointing the finger at the elves in Santa's workshop.

Intertek's research shows that 75 percent of recalls and injuries were a result of design problems, not manufacturing issues.

While a factory may misstep by using lead-contaminated paint, whether buying the wrong type or mixing leftover leaded paint with lead-free, Rider said that an error in the design will have a greater scale of impact. Manufacturers can only do their jobs "as long as the engineering specs specify that it needs to be lead-free paint or heavy metal-free paint," he said.

Intertek shares its research with local governments and agencies in order to better inform regulation. Rider feels that safety breaches in toy manufacture could be prevented by more research as well as better training for engineering and business students.

"We shouldn't be making the same mistake others have made," Rider said.

[Healthfinder](#), a government-run public safety website, says that reading labels is the best way to protect against heavy metals in toys. The site tells parents and gift-givers that when the American Society for Testing and Materials' logo or initials appear on a toy's tag, the toy has been tested for lead, phthalate, and choking and laceration hazards

Several other organizations also post updates on newly recalled toys, from the Consumer Product Safety Commission and Safe Kids USA to parent-run blogs. Prevent Blindness America also offers a host of toy-buying tips on its website and in print publications.

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