

**Testing Toys for Toxins  
Science Factory and Oregon Toxics Alliance  
December 13, 2008**

The doll was a beauty. Her carefully painted face ranked high in artistic merit, as well as significant amounts of all the eight toxins we targeted. She was one the most toxic toys of all . . . or so it seemed.

On a cold day in December, when we knew snow was on the way, several of volunteers from the Science Factory and the Oregon Toxics Alliance gathered to test toys for toxins. The tool we used was a NITON analyzer loaned to us by Thermo Fisher Scientific. Shaped like a morbidly obese gun, it sends data to a nearby laptop which displays both the parts per million of specific toxins and the on-board camera's view of the small section being tested.

We used the analyzer to detect eight of the toxins considered to be particularly taboo in toys: cadmium, lead, chromium, mercury, arsenic, barium, selenium and antimony. It was quick: forty-five seconds for a valid read-out. More than one analysis was completed on many toys, since they are often composed of more than one color or material.

We tested forty-two toys. Considering the number of toys for sale in our stores, it is important to emphasize that we can't make generalizations to all toys from this small testing event. However, from our relatively tiny sample, we know that toxins in toys are not rare occurrences.

### **Lead**

We expected to detect lead in toys, since so much has been written about lead in toys and children's jewelry. One out of six toys we tested had a least one spot on the toy containing lead levels above what is considered safe by the American Academy of Pediatrics. Lead is frequently found in surface colorants, as well as contained within the metal or plastic form. We were stunned by the particularly high amounts found on the doll's face, as well as some 4" red, orange, and yellow plastic balls.

### **Barium**

Seven out of ten toys contained barium. It appeared to be in the surface colorant, as well as a component of the plastic itself. One extraordinary case was that of a "science experiment" for casting a dinosaur out of what appeared to be plaster. One would assume it to be non-toxic plaster-of-paris ( $\text{CaSO}_4$ ), yet it contained a very high amount of barium. The powder could have been inhaled or tasted by the child. For sure, it would have been handled in both dry and wet form.

### **Chromium**

We detected chromium at about the same rate as barium in toys: Seventy-five percent. Particularly alarming were the extremely high amounts in the 4" plastic balls.

### **Cadmium, Arsenic, Selenium, Mercury and Antimony**

The analyzer detected the presence of toxins in only a couple of toys for each element. The doll, balls and a soft plastic snake were most often the culprits.

### **The challenge of knowing what is safe for children**

According to the Center for Environmental Health ([www.ceh.org](http://www.ceh.org)) "The federal standard of safety for lead in paint is 600 parts per million. Washington has set that level for lead for paint, but hasn't set one for toys. The American Academy of Pediatrics has set a standard for toys, and it's much lower than the government's lead-in-paint standard -- only 40 parts per million. Other experts say there's no safe level of lead for something a child might put in his or her mouth.

The red/orange/yellow balls are a good example of the challenge of determining how toxic a toy might be. Apparently, the high lead content contained in the plastic matrix had not leached out, because the purple and blue balls had no significant amount of lead detected despite the fact that all the balls had been used and stored together for some time. There was no apparent abrasion or oxidation. The balls were too large for a small child to find tempting to suck on or chew. The chance of breaking down the plastic through saliva contact seemed slim. Yet, because the balls had not been tested to determine their safety for small children might it be best to error on the side of precaution?

The paint on the doll's face presents yet another challenge in determining its safety. Would it be a collector's doll, placed on a shelf? If it were it a favorite of a five-year old who mostly dressed it, arranged its hair and had tea parties with it, there might be little concern for the child's safety. Yet a toddler might be fascinated with its face, planting on it many slobbery and lovingly long "smackaroos." That could be a problem, particularly if the toddler was teething and enjoyed a long gnaw as well as a kiss. The paint could chip off or dissolve. The toxins could be ingested and potentially harm the child. Although we know the parts-per-million of the specific toxins in the paints, is the total quantity available for ingestion large enough to present a problem? Again, is it better to error on the side of precaution?

Young children are particularly susceptible to toxins from toys. Not only are they very likely to mouth an object, their bodies are more susceptible to toxins because of their small size, and their hours of contact with toys can be many. Exposure to something toxic has a greater impact on a 30 pound child than a 100 pound child.

After a day of testing, it became evident that there is not enough information available world-wide about how easily the toxins contained in or on the toys can impact children's health. Although we may be able to identify the presence and amount of a specific

element, like lead, very little information is available to help us determine the exact safety level of each toy for a child of a particular age.

### **Toy Manufacturers – a varied lot**

We know from our conversations with the representative from Thermo Fisher Scientific that many toy companies are using the NITON analyzer to help determine the safety of their toys. Yet they are faced with serious challenges in the production of consistently reliable products because of the sometimes unreliable quality of ingredients used to make a specific toy. For example, a conscientious toy maker could order a refill of colorant from a producer who in the past provided their non-toxic “red.” Yet the wholesale producer could have run out of an ingredient and slyly substituted one made with barium. The color appears the same, but it’s toxic. Unless each batch of colorant is tested for toxins, the toy maker may inadvertently make a toxic toy.

Two “Mom and Pop” toymakers dropped by to test their products. They are concerned about new laws for toy safety, even though their goal is to provide safe children’s products. Testing is relatively expensive, so frequent testing of new supplies would financially threaten their ability to stay in business, regardless of their desire to provide toys that would improve rather than harm a child’s life. For more information about this problem, go to Healthy Child Healthy World’s Web site and read “Toxic toy bill turns into a toxic mess.”

[www.healthychild.org/blog/comments/toxic\\_toy\\_bill\\_turns\\_into\\_a\\_toxic\\_mess/](http://www.healthychild.org/blog/comments/toxic_toy_bill_turns_into_a_toxic_mess/)

Then there are the manufacturers and merchants who are only interested in a quick buck and would rather pay a fine than pay increased cost for non-toxic materials.

### **It’s Not Easy Being Green**

For those of us who are aware of the potential of toxins in toys to harm our children, it is extremely frustrating that we don’t have the information we need to know how best and when to protect them.

However, we can:

- Shop with merchants who make an effort to provide non-toxic toys.
- Talk to local crafts people to better understand their challenges in the manufacture of safe toys and children’s products.
- Stay alert and be informed.

Far too little research has been completed that helps us evaluate the safety of materials used for toy production. Yet there are Web sites that can be very useful, if you’re able to take the time to do some sleuthing.

- Canada is ahead of our federal government in identifying toys and children's products that are unsafe. Here you can find toy recalls from around the world, [www.toysafetyrecalls.ca/](http://www.toysafetyrecalls.ca/).
- The NOW program on PBS covered "Finding Non-toxic Toys". Their Web site offers additional helpful links. <http://www.pbs.org/now/shows/412/toxins-in-toys.html>
- Several national nonprofit organizations make a concerted effort to provide information about the safety of particular toys.
  - Center for Environmental Health [www.ceh.org](http://www.ceh.org)
  - Ecology Center's ([www.ecocenter.org](http://www.ecocenter.org)) project called Healthy Toys ([www.healthytoys.org](http://www.healthytoys.org) )
  - American Academy of Pediatrics ([www.aap.org/topics.html](http://www.aap.org/topics.html))
  - Health Child Healthy World ([www.healthychild.org](http://www.healthychild.org) )

### **In a Nutshell**

Determining the safety of children's products is a challenge on many fronts. We need more research, increased testing of products, better dissemination of information, fairness to small manufacturers, more government involvement regarding trade issues, increased involvement of retailers---and that's just the beginning of a long "to do" list.

Right now, to reach our goal of safe children's products, we know it must involve our informed participation. With our diligence, today's children's will have far safer toys for their children.

***Barbara Allen (retired special educator and former board member of the Oregon Toxics Alliance)***