



*Not Really  
Greener  
Lead in Artificial Grass*



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June, 2008

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# Introduction

Lead is a stunningly toxic metal. A long list of problems has been linked to lead exposure: lowered intelligence, behavior problems, cancer, high blood pressure, kidney problems, anemia, cavities, and delayed puberty. Infants and children are particularly susceptible to lead's toxic effects.

While lead is a mineral that occurs naturally in our soils, people's activities have caused our exposure to lead to dramatically increase. Levels in our environment are about 1000 times what they were a few hundred years ago.

According to the American Academy of Pediatrics lead is "a serious threat to children's health." The Academy reiterates what researchers and government agencies have concluded: "there is no 'safe' level of lead exposure." This toxic metal should not be a part of anything commonly used in homes and accessible to children.

In this report we discuss our testing of artificial grass products – mostly green indoor/outdoor carpet and artificial lawns - with lead-containing pigments.

# Testing of Artificial Turf in New Jersey

Testing by the New Jersey Department of Health and Senior Services found lead in an artificial turf field in Newark, New Jersey in the summer of 2007. Subsequent testing of a dozen other New Jersey fields found two other fields with lead problems. Lead concentrations in the New Jersey fields were about 4,000 parts per million, ten times the level specified by New Jersey's residential soil cleanup criteria.

Since the original testing, the Department of Health and Senior Services has determined that dust from artificial turf fields is also contaminated with lead. The Department also showed that the lead in artificial turf is biologically available after it's ingested.

# What We Did

In order to expand on these results from New Jersey, we tested a variety of home-use artificial grass products that are available in California.

We tested about 50 different products with an x-ray fluorescence analyzer and then sent some of the grass samples to a commercial lab to verify our results. The commercial lab also used a simple test to measure the accessibility of the lead in the samples.

# Lead in Artificial Grass

## Products with lead concentrations above 600 parts per million

Ace Hardware indoor/outdoor carpet
“Myrtle Beach” AstroLawn
Atlas “Riviera/Ivy” indoor/outdoor carpet
Best Turf for Less
SYNLawn “Blue”
Forever Lawn artificial playground grass
Indoor/outdoor Grass Rug (Orchard Supply Hardware)
“Top Sail” Turf (Lowe’s)
NewGrass “LP Rye” artificial lawn
ProGreen “LST 69” artificial lawn
Shaw indoor/outdoor carpet
Synthetic Turf International polypropylene putting surface
Turfheadquarters.com “Bonalawn”
U.S. Turf Company “Tour Green”
Beaulieu of America indoor/outdoor carpet

# Not Good for Children

Lead has a profound ability to damage children's intellectual and behavioral development. Children who have been exposed to higher levels of lead score lower on IQ tests than children with less exposure. Children with higher exposures are also more impulsive and have shorter attention spans.

Recent research has documented that lead exposure causes significant problems for children as they grow and develop:

- Scientists at Duke University found that increased blood lead levels in toddlers (1 to 2 years old) were linked with lower test scores in fourth grade.
- A 2007 study led by a scientist at the Harvard School of Public Health found that lead exposure in children ages 5 to 10 was linked with lower scores on IQ tests, lower scores on standardized reading and math achievement tests, decreased attention, and memory problems.
- Recent research looked at children and teens ages 4 to 15 who participated in a national monitoring program at the Center for Disease Control and Prevention. The study showed that lead exposure may be responsible for Attention Deficit Hyperactivity Disorder (ADHD) in almost 300,000 children.
- University of Cincinnati researchers found that arrest rates of young adults (both for violent crimes and all arrests) were linked to the blood lead levels of these adults when they were children. Higher childhood lead exposure was associated with higher arrest rates.

# Not Good for Adults Either

Lead also causes a wide spectrum of health problems in adults.

One significant disease caused by lead exposure is cancer. The International Agency for Research on Cancer, the U.S. Environmental Protection Agency, and the National Toxicology Program, have all identified lead as a cancer causing chemical.

Lead also reduces our ability to have healthy children. Two recent studies, one from the Taiwan Institute of Occupational Safety and Health and the other from Brown Medical School, showed that women with higher lead exposures were more likely to have infertility problems. A third study, led by a researcher from the Harvard School of Public Health, found that mothers with higher lead exposure during the first part of their pregnancies were more likely to have babies with slower mental development.

Because of these kinds of problems, the state of California has identified lead as a chemical that causes developmental toxicity.

Other important diseases are also linked to lead exposure. Researchers from Tulane University and Johns Hopkins University recently showed that low level lead exposures are linked to a greater risk of heart attacks and strokes. Other recent studies showed that lead exposure increases blood pressure problems, accelerates kidney failure in patients with chronic kidney disease and is linked to an increased risk of Lou Gehrig's disease.

# Future Action

During the past decade, the Center for Environmental Health has successfully negotiated agreements with manufacturers of other products that contain toxic chemicals. These agreements reduced the amount of toxic chemicals in children's medicines, wood play equipment, lunchboxes, jewelry, and candy. We used California's Safe Drinking Water and Toxic Enforcement Act of 1986, commonly known as Proposition 65, to initiate these actions. We are taking the same action with the artificial grass with lead hazards.

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