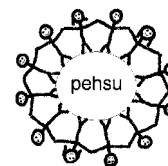




Children's
Environmental
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**Pediatric Environmental
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Philip Landrigan, MD,
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March 5, 2009

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PEHSU Medical Director
Assistant Professor,
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Sam Delson
Deputy Director for External and Legislative Affairs
Office of Environmental Health Hazard Assessment
California Environmental Protection Agency

Joel Forman, MD
Pediatric Faculty
Associate Professor,
Pediatrics and Community
and Preventive Medicine

Dear Deputy Director Delson,

Re: Health hazards of synthetic turf fields

**Jacqueline Moline,
MD, MSc** Occupational
and Environmental
Medicine Faculty
Associate Professor,
Community and Preventive
Medicine

Over the past five years, several hundred artificial turf fields have been installed on the East Coast. Cities, towns and school districts installed these fields in an effort to improve the quality of playing fields and to accommodate ever-expanding sports programs. The newest generation of these fields have been constructed of a material termed “crumb rubber”, which is made from ground up car and truck tires.

Bambi Fisher, LCSW
Project Coordinator
Pediatric Social Worker

Damiris Perez, MPA
PEHSU Program
Coordinator

The Clinical Center of Excellence in Children’s Environmental Health at Mount Sinai School of Medicine in New York has received numerous phone calls from parents and physicians concerned about potential hazards to children’s health associated with the wide-scale use on school grounds and in parks properties made of crumb rubber. This has prompted the Center to undertake a detailed assessment of the risks and benefits of artificial fields. The findings we present today are the result of this evaluation.

Perry Sheffield, MD
Fellow in Pediatric
Environmental Health

Amir Miodovnik, MD
Fellow in Pediatric
Environmental Health

Our most global finding was that decisions to install synthetic turf fields were for the most part made with very little due diligence. A number of these very expensive fields were installed with little or no consideration of possible negative effects. Now, we are suddenly, and belatedly, beginning to realize that synthetic turf fields may, in fact, be associated with health problems in children.

Angkana Roy, MD
Fellow in Pediatric
Environmental Health

**Michele La Merrill,
PhD** Fellow in Pediatric
Environmental Health

The most important of the health hazards that we identified through our study are:

1. Extreme heat. On hot summer days, temperatures of over 130 degrees Fahrenheit have been recorded a few feet above the surface of synthetic turf fields – precisely at the altitude where children play. Vigorous play in these conditions conveys a very real risk of heat stress or heat stroke.

2. MRSA skin infections. Outbreaks of skin infections caused by methicillin-resistant *Staphylococcus aureus* (MRSA) have been documented in children who play on synthetic turf fields (reported in the *New England Journal of Medicine*, February 2005).

3. Inhalation and ingestion of toxic and carcinogenic chemicals. The major chemical components of crumb rubber are styrene and butadiene, the principal ingredients of the synthetic rubber used for tires in the United States. Styrene is neurotoxic. Butadiene is a proven human carcinogen. It has been shown to cause leukemia and lymphoma. The crumb rubber pellets that go into synthetic turf fields also contain lead, cadmium and other metals. Some of these metals are included in tires during manufacture, and others picked up by tires as they roll down the nation's streets and highways. There is a potential for all of these toxins to be inhaled, absorbed through the skin and even swallowed by children who play on synthetic turf fields.

Lead was recently found in synthetic turf fields in New Jersey at levels so high that several fields were closed by the state Health Department. This is extremely alarming since lead is a highly toxic chemical and brain injury is the most serious consequence of pediatric lead poisoning. Young children are especially vulnerable to lead because their brains are rapidly growing and developing, and because their normal hand-to-mouth behavior increases the risk that they will take lead into their bodies from the environment. Even low-dose exposure to lead can possibly cause loss of IQ, shortening of attention span and disruption of behavior as well as increased risk of dyslexia and school failure.

4. Transportation home of crumb rubber pellets. Crumb rubber pellets do not remain on the artificial turf fields. These pellets are picked on children's shoes, clothing and skin. They are then tracked into children's homes and cars, and they are carried into the places where children live, play, eat and sleep. Thus exposure can continue for many hours beyond the time that a child spends in play on the synthetic turf field.

5. Escape of chemical hazards from fields to the environment. A number of the toxic and chemical components of the crumb rubber that is installed in synthetic fields are soluble in water. When rain and snow fall on synthetic fields, these materials can leach from the fields to contaminate ground water and soil.

6. Disposal. A further unresolved issue is what to do with the toxic components of synthetic turf fields 10 or 20 years from now when the fields reach the end of their usable life-span and need to be dismantled. Will the crumb rubber need to be dealt with as hazardous waste, since it contains toxins and carcinogens? Will it need to be placed in a hazardous waste landfill? What will disposal cost? Who will pay? None of those questions have been properly considered.

The potential long-term consequences of exposures to synthetic turf fields have not been carefully assessed by independent third parties before synthetic turf fields were installed. Citizens and school boards should question the wisdom of installing synthetic turf until a credible independent study has been conducted and published.

For these reasons, we recommend to carefully weigh the risks and benefits of artificial turf prior to wide scale implementation. Due diligence is critical. We must protect, increase and upgrade the limited number of natural grass fields currently available to our children. We would be more than happy to answer any questions that you might have.

Sincerely,

Philip Landrigan, MD, MSc
Project Chief, Chairman, Department of Community and Preventive
Medicine

Maida Galvez, MD, MPH
PEHSU Director, Assistant Professor in Community and Preventive
Medicine

Joel Forman, MD
Associate Professor in Pediatrics and Community and Preventive Medicine

CC: Dennis Ragen
Assistant Attorney General
State of California

Mary Swan Bell
Speech, Language, Hearing
Marin County Parent