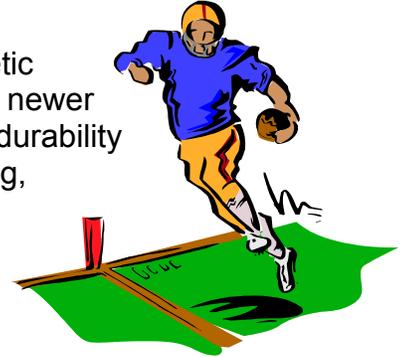




New Jersey Work Environment Council (WEC) Fact Sheet

Be Aware of Artificial Turf Hazards

A small but growing number of school districts, municipalities, and universities in New Jersey are switching from traditional grass athletic fields to artificial turf. Changed considerably since 1960s AstroTurf, newer synthetic grass is touted for advantages like shock-absorption and durability in varied weather conditions. There is no need for mowing, watering, pesticides, or fertilizer and therefore the turf is advertised as environmentally friendly. While these advantages have powerful appeal, synthetic turf comes with an unfortunate host of established and potential health and environmental risks.



A modern artificial field surface has three layers – drainage, shock absorbing, and surface. The surface has polyethylene plastic blades that simulate grass and a several inch layer of “infill” that keeps the blades upright. The infill varies by manufacturer and may include ground-up recycled tires, ground-up soles of athletic shoes, silica sand, and/or new thermoplastic or rubber material. This “crumb rubber” has been found to contain toxic materials such as:

- **Toxic metals** including zinc, lead, arsenic, cadmium, and chromium which have many harmful effects on humans and the environment.
- **Carcinogens** including polycyclic aromatic hydrocarbons (PAHs).
- **Latex and other rubbers** which can cause allergic reactions.
- **Phthalates** which have adverse effects on the reproductive organs, lungs, kidneys and liver.

Crumb rubber can degrade from weather and microbes, producing new chemicals. Toxic components can be breathed in, accidentally ingested, contact the skin, and leach into surface water and groundwater. Besides toxicity, other problems with artificial turf include:

- **Crumb rubber doesn't stay in place.** It can move around on the field and sticks to the skin, shoes, and clothing of staff and students who use the fields. It can end up inside schools, vehicles, and homes.
- **Excessive heat.** Artificial surfaces are dramatically hotter than natural grass fields, reaching temperatures up to 150 degrees Fahrenheit and possibly contributing to burns, dehydration, and heat exhaustion. They may be too hot to play on at times. Watering cools them down but they heat back up quickly.



- **High cost.** Artificial fields cost in the range of one-half to two million dollars.
- **Friction.** Some types of artificial turf can cause skin abrasion to a greater extent than natural grass.
- **Sanitation.** Dog, goose, and other droppings do not decompose on artificial turf.
- **Maintenance.** The crumb rubber may need to be raked to maintain a uniform depth. Solvents and adhesives may be needed to repair seams. Leaves, gum, and other debris need to be regularly removed or they may clog the drainage system.
- **Short Life.** Artificial turf has a life expectancy, with proper maintenance, of five to ten years compared to at least 15 years for grass fields.
- **Disposal.** One football field contains approximately 120 tons of crumb rubber or 26,000 recycled tires. Crumb rubber takes more than 25 years to break down completely.
- **Unpleasant odor.** The odor is especially a problem in indoor installations.
- **Loss of habitat.** Artificial turf does not support birds, animals, or insects.
- **Combustibility.** While shredded tires will burn at a much lower rate than chunk tires, crumb rubber can certainly be made to burn by arson, producing smoke and toxic air, soil, and water pollutants.

Caution Advised

Although the desire to improve access to sports fields is clearly well-intentioned, the risks that accompany synthetic turf need to be carefully considered. Issues of toxicity, movement, heat, cost, friction, sanitation, lifespan, maintenance, warranty, disposal costs, odor, loss of habitat, combustibility, should be thoroughly addressed before any decision to purchase is made. The community should carefully consider all the options including natural grass.

There are many manufacturers of artificial turf with different products and advertising claims. It is reasonable to expect vendors to identify the chemical ingredients of all turf components and provide a Material Safety Data Sheet on each component, especially the crumb rubber. If the crumb rubber is of unknown composition, that should raise a serious warning.

Tires are known to contain over 60 different substances. Typically, forty-five percent is vulcanized or cross-linked polymer, forty-five percent is carbon black, and the rest is dispersing oil, sulfur, synthetic fibers, pigments, processing chemicals and steel or fiberglass. Tire manufacturers use a variety of formulation recipes and Ingredients are often kept secret. Therefore the company that produces the crumb rubber will most likely have to analyze its composition on a regular basis to provide accurate information on ingredients, since different batches can be expected to vary in content.

When it comes to synthetic turf, the most sensible approach may be to follow the precautionary principle of assuming something involving chemicals is hazardous until scientific evidence proves that it is not. Some public health professionals are calling for a moratorium on installing any new fields that use ground-up rubber tires until the hazards are better understood. Some are also recommending that exposures to already installed fields that contain rubber-tires should be limited.

For More Information

Synthetic Turf: Health Debate Takes Root, 2008
Environmental Health Perspectives, published by the National Institute of Environmental Health Sciences.

www.ehponline.org/docs/2008/116-3/toc.html

Artificial Turf: Exposures to Ground-Up Rubber Tires, 2007
Environment and Human Health, Inc.,

www.ehhi.org/reports/turf/

Toxicants in Artificial Turf, 2007
Rachel's Democracy & Health News #937
Environmental Research Foundation

www.rachel.org/bulletin/index.cfm?St=4

This fact sheet was prepared by the New Jersey Work Environment Council (WEC). WEC is an alliance of labor, community, and environmental organizations working together for safe, secure jobs, and a healthy, sustainable environment. WEC links workers, communities, and environmentalists through training, technical assistance, grassroots organizing, and public policy campaigns to promote dialogue, collaboration, and joint action.

Contact WEC to request a speaker for a meeting or information about membership affiliation.

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