



Artificial Turf Fields: Not So Green and Not So Safe (Part 2)



Dr. Kate Thomsen and Silky

In the last issue I reviewed the lead hazard posed by the first generation synthetic turf fields. More recent fields are made of polyethylene "grass" fibers with a crumb rubber infill strewn throughout the field to hold it down and increase shock absorption. A typical field will contain 120 tons of crumb made from 26 - 40,000 minced up car and truck tires. These crumbs release a plethora of toxic, cancer-causing, mutation-triggering chemicals and metals. Few research studies have been done, and there is no agreement on the best methodologies to ascertain the possible effects on human and environmental health. The Synthetic Turf Council, a trade group representing manufacturers and installers of artificial turf fields, the multi-billion dollar sports industry, and the lucrative tire recycling industry has a massive campaign to spread crumb rubber everywhere they can – telling consumers and our policy makers it is safe.

In a 2009 report commissioned by the New York State Department of Health, there were 65 chemicals identified in the air above a four-year-old field and 85 over a one-year-old field, including volatile organic compounds (VOCs), semi-volatile compounds (sVOCs), and particulate matter (PM). "The New York State (2009) report describes the most comprehensive study performed to date on the new generation of artificial turf containing recycled crumb rubber infill. ...the relatively large number of TICs (tentatively identified compounds)... indicates that

these fields release many unidentified VOCs and sVOCs ("unknowns"). ...It is likely that the health risks posed by these chemicals, if any, will not be known for the foreseeable future. The presence of a relatively large number of unidentified organic chemicals in the air over these fields is a potential health risk that cannot be evaluated at present."

From the Environment and Human Health report, "In summary, the toxic actions of concern from the materials that were released from recycled crumb rubber include: Severe irritation of the respiratory system, Severe irritation of the eyes, skin and mucous membranes, Systemic effects on the liver and kidneys, Neurotoxic responses, Allergic reactions, Cancers, Developmental effects."

There is a misperception that the Environmental Protection Agency has "approved" the use of synthetic turf. It has not. In response to consumer concerns about safety, the EPA developed a workgroup to initiate a limited scale scoping study to determine how to test for toxicity issues. In their 2009 report, it states "...given the very limited nature of this study... and the wide diversity of tire crumb material, it is not possible to extend the results beyond the four study sites or to reach any more comprehensive conclusions without the consideration of additional data. In reviewing the literature, EPA believes there is no definitive study that fully addresses all the questions regarding safety considerations associated with the use of synthetic turf and/or crumb rubber fields. As a further complication, characteristics and performance of grass blades may need to be considered separately from those of crumb rubber infill. However, both the Consumer Product Safety Commission and the Centers for Disease Control recommend that young children wash their hands frequently after playing outside and al-

ways before they eat. EPA also recommends these practices." That does not sound like an endorsement to me.

With regard to other species: "the majority of ecotoxicology research regarding tire rubber has evaluated either plant toxicity or aquatic toxicity. Little or no work has been done to consider toxicity of tire rubber to birds, mammals or reptiles. In sufficient quantities (e.g. 25-50% by volume), tire rubber incorporated into soil will inhibit plant growth, produce chlorosis, or can cause plant death. The detrimental impacts are attributed to zinc leached from the rubber. ... Chemicals toxic to aquatic life can be leached from tire rubber, but dilution within natural systems is thought to commonly be sufficient to prevent toxic effects. It is also not clear to what extent chemicals that leach from rubber used in artificial turf could reach bodies of water where aquatic life could be put at risk.

Injuries to athletes are also a concern. Abrasions known as "turf burn" are extremely common. Turf burns are potential sites of infection. Traction related sprains and strains are also more common on synthetic turf fields. One study showed National Football League players were 27% more likely to sustain a lower extremity injury (anterior cruciate ligament of the knee and ankle eversion sprain) when playing on artificial turf. In a survey of NFL players, 82.4% said that artificial turf surfaces were more likely to contribute to injury, 89.1% said it caused more soreness and fatigue, and 69.4% said they prefer a grass field to synthetic turf.

Other health hazards include heat related illness and allergy. Artificial turf gets extremely hot on hot summer days (170 degrees at turf level and 138 degrees at head level on a 98 degree day). Dehydration, heat stroke and burning feet are concerns. Latex allergy is also possible as tires

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- * The incidence of childhood leukemia has risen 62% from 1973 - 1999
- * The incidence of childhood brain cancer has increased 40% from 1973 - 1994
- * The prevalence of Autism and autistic spectrum disorders has increased from 4-5 per 10,000 children to 1 in 150 children since the early 1980s
- * Childhood asthma has doubled from 1982 - 1993
- * The rate of preterm birth has increased 23% from the mid 1980s to 2002
- * Infertility affects 5-10% of all couples
- * Birth defects are seen in 3-5% of all babies
- * Sperm counts have decreased at a rate of 1% yearly from 1934 - 1996

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do contain latex. More and more people have an allergy to latex and it can appear at any time.

So are there alternatives? There are. There is a synthetic turf product made by TargaPro. The EcoGreen66® is sustainable and safe (no lead, no urethane, no carcinogens) The infill is called Organite and it is anti-microbial. The product is recyclable. Italgreen also has a recyclable non-chemical infill material called GeoFill. It is composed of shredded coconut husk and peat with natural herbicides and pesticides. Target technologies makes an infill from EPDM (ethylene-propylene-diene rubber) which, is virgin rubber. It is not recyclable. Terra XPS, Holo, Forgrin, and Runplast are infills made with TPE (thermoplastic elastomer) made from plastic. TPE is recyclable. EPDM and TPE have some potential chemical safety concerns though. The natural turf grass field provides a less abrasive surface for play than a synthetic surface. Studies by the USGA have shown turfgrass to be a natural filter of environmental

pollutants. There are no disposal issues with natural turf-grass field material. Natural grass cools the environment and recycles CO2. It has no odor and, with integrated pest management techniques, can be maintained with organic herbicides and pesticides. A drainage system can make this field dry just as fast as synthetic turf and the right grass or sod can make a thick and even playing field. It doesn't have to be locked up, it's not flammable, and you can lie on it, look up at the stars and not feel as if you may have compromised your health.

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