

12 Things You Should Know About Artificial Turf

1. Toxic tire scraps don't belong on playing fields. Most artificial turf fields use shredded or "crumb" rubber from recycled tires as an infill or cushioning material. Up to 40,000 used tires can be utilized for a single field. The crumb rubber contains a myriad of toxic, restricted use chemicals, including heavy metals, benzene, carbon black and volatile organic compounds (VOCs). Many of the chemicals are known carcinogens, neurotoxins and endocrine disruptors. Student athletes can be exposed to these highly toxic substances through inhalation, skin absorption and accidental ingestion, all of which can easily occur during normal sports activities.

2. Temperatures on artificial turf fields can rise to unsafe levels. The surface temperature of artificial turf fields on hot, sunny days can reach 180F or higher. High-powered water cannons can be used to cool down unsafe surface temperatures, but this is only temporary, as it takes only about 20 minutes for the temperature to rebound to the unsafe level. On hot, sunny days, water cannons must be used repeatedly to keep field surface temperatures down and reduce the risk of serious heat related illnesses as well as burns to the soles of the feet of the athletes. The leaching of volatile and semi-volatile chemicals coming from the plastic surface and the crumb rubber infill is also exacerbated by high temperatures.

3. Artificial turf may require the use of disinfecting chemicals (pesticides). Some artificial turf manufacturers recommend regular disinfection to remove disease-causing pathogens from body fluid spills such as blood, vomit, sweat and saliva. The use of these chemical pesticides can present their own health risks, whereas natural grass fields have the advantage of soil microbial activity, which helps to break down contaminants through natural processes. Additionally, skin abrasions (turf burns) are more common on artificial turf fields and are typically larger in size, providing more opportunity for antibiotic resistant infections, including MRSA. Medical experts have found that staphylococci and other bacteria can survive for more than 3 months on polyethylene plastic, the material used in the manufacture of artificial turf carpets and grass blades.

4. Artificial turf fields produce unusual and more severe injuries. Compelling data demonstrates that joint injuries (especially ankles and knees) are more common and more severe among athletes playing on these surfaces. The G-max rating - the ability to absorb impact - changes as the materials are compacted, often leaving an unsafe, harder surface that makes injuries more likely and more severe. A painful and debilitating condition called "turf toe" is unique to athletes playing on artificial turf, and many professional athletes report increased fatigue and greater muscle soreness when playing on these surfaces.



5. Initial cost, maintenance and replacement costs are higher for artificial turf fields. The cost of an artificial turf field can be well over one million dollars. Maintenance costs include cleaning and disinfecting, anti-static and flame retardant chemical applications, painting, brushing, replacement of crumb rubber infill, seam repair, water cooling and weeding. Conservative estimates for proper maintenance are around \$100,000 annually. This cost is more than three times the cost of proper maintenance of natural grass fields. Artificial turf fields have a lifespan of 8 to 12 years and must be replaced due to compaction and worn fibers. The cost to remove and dispose of the old field and replace the carpet and infill is more than \$500,000.

6. Artificial turf is not a solution for the problem of chemical pesticides. The often-used argument that artificial turf decreases the use of chemical pesticides wrongly assumes that these chemicals are required for natural grass. They are not. In fact, organically maintained natural grass uses no chemical pesticides, and new technologies and equipment make maintaining natural grass playing surfaces easier than ever before. These fields can stand up to heavy use and are completely safe for users, from young soccer players to high school football teams.

7. Artificial turf fields have been found to contain lead.

The pigment used in older artificial turf fields may contain lead. As the fields age and the elements fade and break down the plastic, it begins to powder, making the lead more accessible. The crumb rubber may also contain lead from tire balancing weights and lead paint residue picked up from road surfaces. Lead is a potent neurotoxin and even tiny amounts can affect the brain, especially in young children. There is no safe lead exposure level for children.

8. Artificial turf fields contribute to a warming planet. Artificial turf fields retain heat due to the plastic and infill components and become significantly hotter than natural grass, contributing to the "heat island effect." In fact, thermal images generated from NASA satellite maps show artificial turf fields as hot spots, areas of concentrated heat. In addition, these fields, made from petroleum, are unable to convert carbon dioxide into oxygen and store carbon in their biomass as grass fields do.

9. Emerging health impacts of artificial turf are causing concern among parents, coaches and school administrators. There have been reports of higher than usual cases of lymphoma and leukemia among athletes using artificial turf fields, especially soccer goalies. While no studies to date have confirmed a link, common sense tells us that chemicals in these and other artificial turf field components that are known to cause cancer and other health problems should be avoided wherever possible.

10. Per- and polyfluoroalkyl substances (PFAS), also known as "forever" chemicals, have been found in many turf fields. PFAS do not break down in the environment because of their strong carbon- fluorine bond, therefore accumulating in the environment and in 99% of Americans. Exposure has been linked to cancer, liver damage, decreased fertility, asthma and thyroid disease.

Recent studies have detected PFAS on the hands of athletes playing on artificial turf.



11. Few studies exist for alternative infill materials. Plastic coatings on crumb rubber as well as other plastic infill alternatives (EPDM, TPE) often contain flame retardant chemicals and are composed of chemicals like styrene and butadiene, which are classified by the World Health Organization (WHO) as carcinogens. While infill from natural cork or coconut hulls may possibly

reduce heat exposure, there is insufficient data concerning potential chemical exposures, leaching and off-gassing.

12. Artificial turf fields contribute to plastic pollution. As artificial turf is manufactured primarily from plastic, the degradation of the fields over time results in the shedding of tiny plastic particles, called micro- and nanoplastics (MNPs). Emerging research shows that there may be serious potential health risks from exposure to MNPs and their many hazardous chemical components. Athletes are exposed through pathways of inhalation, skin absorption and accidental ingestion.



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