

Scituate School Bond - Save Our Schools!

Frequently Asked Questions Artificial Turf Fields

1. What are artificial turf fields (ATFs)?

Artificial turf fields (ATFs) are synthetic alternatives to natural grass fields.

2. What are ATFs composed of?

Components of ATFs include artificial grass fibers (blades), crumb rubber infill, and sand infill overlaid on a carpet-like backing that holds the turf together. The grass fibers are typically made of nylon, polyethylene, or polypropylene, and the crumb rubber infill used to soften the surface is most often made of recycled tires

3. Are chemicals present in ATF components?

Yes, ATF components, such as crumb rubber infill, have been found to contain chemicals including semi-volatile organic compounds (including polyaromatic hydrocarbons, or PAHs), volatile organic compounds (VOCs), and metals.

4. Have studies been done to determine if ATFs impact health?

Several studies evaluating potential exposure opportunities to constituents in ATFs have been conducted by state (e.g., California, New York, New Jersey, Connecticut and federal agencies (e.g., U.S. Environmental Protection Agency), as well as academic researchers (e.g., Rutgers Robert Wood Johnson Medical Center).

5. How have these studies evaluated exposure opportunities at ATFs?

The studies that have been conducted measured concentrations of chemicals in the air above ATFs as well as in the components of the ATFs. In addition, some studies have evaluated the potential for these chemicals to actually enter the body and reach a susceptible organ (e.g., bioavailability studies).

6. How do public health agencies evaluate whether exposure can result in health effects?

Public health agencies evaluate concentrations measured in studies and compare them to well-established, health-based standards or guidelines (developed through comprehensive research by federal or state governments) or they conduct evaluations using standard risk assessment methods to estimate health risks from environmental exposures.

7. What is a risk assessment?

The term “risk assessment” refers to a process of assessing and evaluating the potential health effects that may result from an environmental exposure. Risk assessments take into consideration information about the toxicity of a contaminant, the estimated amount of

contaminant that someone may be exposed to, the sensitivity of an individual to the contaminant (e.g., children are generally more sensitive to environmental contaminants than healthy adults), and other factors.

8. What assumptions have been used in risk assessments done for ATFs?

Exposure assumptions that have been used include assuming someone plays on the field for 3-5 hours a day, 4-5 days a week, 8-12 months a year, and 12 (child) to 30 years (adult). Such assumptions are designed to be conservative and consider worst-case scenarios.

9. What do the available studies that have been conducted on exposure opportunities to ATFs and health impacts show?

Although exhaustive research has not been completed, the available studies have shown that although ATF components contain chemicals in the material itself, exposure opportunities at levels measured do not suggest that health effects are likely.

10. What are the findings of studies that evaluated exposure opportunities based on measurements of constituents (e.g., in air, dust) at ATFs?

Results of samples taken at or above (e.g., air) ATFs and analyzed for VOCs, SVOCs, metals, and particulate matter that can be inhaled into the lungs suggested that adverse health effects were unlikely to occur. These include studies conducted by the Connecticut Health Department, the New York State Health Department, and the California Office of Environmental Health Hazard and Assessment.

11. What are the findings of studies that have evaluated ingestion or inhalation of, and/or skin contact with constituents in ATFs?

The Rutgers study evaluated whether exposures to SVOCs or metals in ATF components might suggest exposures of health concern via ingestion, inhalation, or dermal contact. They concluded that overall the opportunities for exposure to constituents in these fields presented very low risk among all populations that would use ATFs. Authors of a study in the Netherlands reported that results of urine testing indicated that uptake of PAHs among participants, following playing on an ATF with crumb rubber infill, was minimal.

12. What are the findings of studies that evaluated exposures to bacteria?

The California Office of Environmental Health Hazard and Assessment tested for bacterial contamination at both natural grass fields and ATFs. They found fewer bacteria detected on artificial turf compared to natural turf, and therefore less likely to result in infection risks to athletes using ATFs that may have skin abrasions.

13. Have epidemiological studies been conducted to determine if ATF exposures are associated with the occurrence of cancer in children?

Some recent media reports have raised concerns about the possible association between playing on ATFs and the development of cancers. It is important to note that the types of cancers reported are among those that have been more prevalent in children for many years. To date, no epidemiologic studies have evaluated the occurrence of cancer among athletes or others who play on ATFs.

14. How common is it for children to get cancer?

Although cancer is much less common among children than older adults, unfortunately 1 in 285 children in the U.S. will be diagnosed with cancer before the age of 20. Leukemia is the most common cancer diagnosed in children and teens, accounting for almost 1 out of 3 cancers in this age group. From 1975 to 2010, the overall incidence of pediatric cancer in the U.S. increased slightly, by an average of 0.6 percent per year.

15. Has the potential for the development of cancer been assessed using standard risk assessment methods for exposure opportunities associated with ATFs?

Several studies, including those conducted by officials in New York City, New York State, Connecticut, California, the U.S. Environmental Protection Agency, and Norway, have conducted cancer risk assessments based on opportunities for exposures at ATFs. These evaluations were based on testing results from different kinds of fields under a variety of weather and use conditions. These risk assessment studies all indicate that the use of ATFs is not associated with elevated cancer risk.

16. Are there steps that can be taken to reduce exposure opportunities to ATF components?

Yes. Common sense steps can be taken to minimize potential exposures to chemicals that may be present, such as washing hands after playing on a field and before eating (particularly for younger children with frequent hand-to-mouth activity) and taking off shoes before entering the house to prevent tracking in any crumb rubber particles.

17. How is the AFT maintained and is it expensive?

The cost of maintaining is minimal. The primary maintenance item is removing leaves and other debris which may stray onto the field. AFT is also brushed (every 4-6 weeks depending on use) to redistribute infill material that may have migrated.

18. Does it cost more to maintain ATFs versus Natural Grass?

Annual Maintenance Cost - Turf versus Natural Grass		
Mowing Equipment	\$7,068	
Labor Cost (\$20/Hour)	\$6,000	\$1,000
Clipping Removal \$2,861.00 -	\$2,861	
Fertilization \$4,856.00 -	\$4,856	
Overseeding \$466.00 -	\$466	
Coring \$2,848.00 -	\$2,848	
Topdressing \$9,565.00 -	\$9,565	
Thatch Removal \$185.00 -	\$185	
Monitor Irrigation \$846.00 -	\$846	
Equipment Depreciation and Fuel \$3,500.00 \$1,500.00	\$3,500	\$1,500
Water Cost \$5,400.00 -	\$5,400	
Sub Total	\$43,595	\$2,500
Re-Striping Field Lines:		
Labor	\$5,800	\$1,000
Material	\$3,105	\$1,500
Total	\$52,500	\$5,000

18. What is the cost and viability and sustainability of coconut husk filler?

Coconut husks cost more as part of a synthetic turf field. They require a pad which is approximately \$1.00 per square foot. In addition the coconut infill is going to add \$50,000.00 to \$60,000.00 so overall depending on design you will be looking at an additional \$150,000.00. You may also need to replenish the infill after a few years for \$40-\$50,000.00 Coconut infill also retains water and will freeze when it hits 32 degrees. The benefits are it is clearly cooler in the summer. Crumb rubber fields can get quite hot in the summer months. This is a benefit in March as crumb rubber infill fields warm up and are playable many weeks earlier than natural fields.

19. Can you design a field to capture runoff rainwater?

Yes you can design the field to drain into a cistern to irrigate the other fields. It will change the design scheme of the field and will increase cost. The synthetic field will have to be designed a bit differently

Who should I contact for more information?

If you have any questions, you may contact the following:

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Massachusetts Department of Public Health, Bureau of Environmental Health