

PFAS in Artificial Turf Fields: Uncertainties and Cause for Concern



What is Artificial Turf?

Artificial Turf (AT) fields are synthetic fields used for athletic arenas and landscaping that are meant to look like natural grass. These fields have a typical lifespan of 8-12 years depending on use and maintenance. AT is made up of 3 layers: infill, fibers, and shockpad. Common infill materials include crumb rubber made from end of life tires, sand, cork or walnut shells. Common types of fibers include nylon, polyethylene, and polypropylene. Foam is most commonly used for the shockpad.

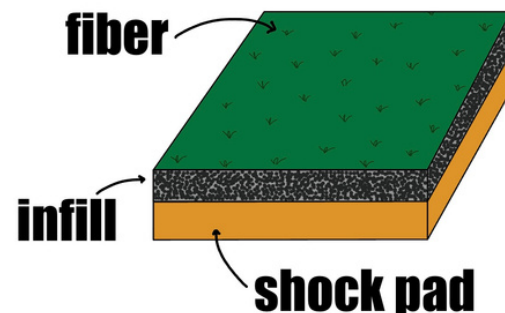
What are PFAS?

PFAS (per- and polyfluoroalkyl substances) are a class of over 12,000 chemicals used in a diverse range of products and industrial processes. PFAS do not naturally degrade in the environment and have been linked to numerous human health effects. PFAS are widely used in AT manufacturing to release plastic fibers from molds and to prevent clogging in the extrusion process. Current U.S. regulations have largely failed to protect public and environmental health from exposure to PFAS. According to the U.S. EPA, there is no safe level of exposure for certain PFAS.

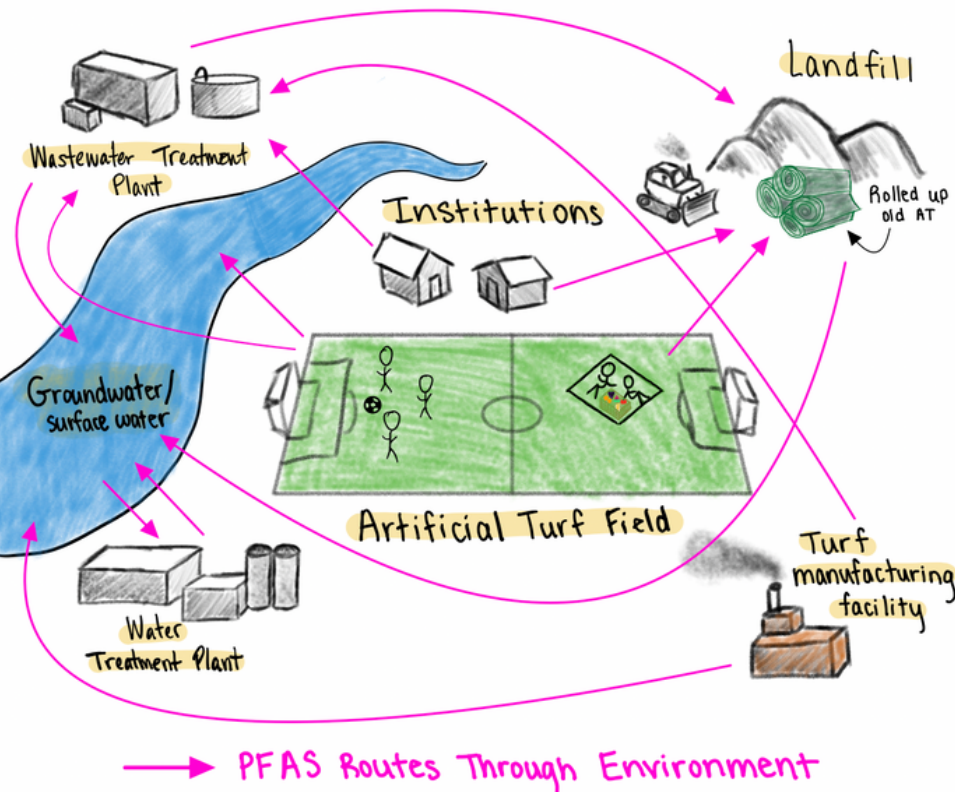
What are general concerns about AT?

Communities, scientists, and athletes are concerned about AT for several reasons:

- **Health concerns** related to heat hazards, injuries, infections and toxic chemical exposure to VOCs, PAHs and heavy metals found in crumb rubber
- **Disposal and claims of "recycling"**
 - An estimated 1,200-1,500 new AT fields are installed every year
 - Old AT becomes plastic waste or is sold in unregulated secondhand markets
 - Some companies claim to have developed tools to recycle materials into new AT. This raises environmental concerns due to melting or incinerating plastic
- **Occupational and local community exposures** from production process
- **Uncertainty about ingredients** due to outsourcing raw materials from other manufactures to make AT and components
- **Chemical runoff** from fields may carry chemical contaminants that leach from AT into nearby groundwater, waterways, and habitats
- **Off-gassing** of VOCs, PAHs, and other toxic chemicals into the atmosphere



Access online version here



PFAS and AT

PFAS in AT have been getting more attention in recent years. However, uncertainties remain regarding the extent to which AT contributes to PFAS contamination of water and to PFAS exposures among people who use AT fields.

- Testing by scientists, NGOs, industry, and municipalities has found fluorine - an indicator of PFAS presence - in AT, through intentional use and/or unintentional contamination.
- Many uncertainties remain surrounding exposure through inhalation, ingestion, and dermal routes. Health impacts from PFAS exposure via AT are also unstudied at this time.

Cities and states are responding: Boston has banned future AT installations. States including CA and VT have also introduced bills banning PFAS in AT. Many municipalities and communities including Portsmouth, NH, Nantucket, MA, and Martha's Vineyard, MA have held hearings regarding PFAS in AT and the concerns that these communities have.

References and More Information

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PFAS Through the Environment graphic designed by Anthony Minichiello, Worcester Polytechnic Institute

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