

## The Problem

- a) Possible Health Effects:
  - i) Health Impacts of Artificial Turf: "Numerous studies have shown that chemicals identified in artificial turf, including polycyclic aromatic hydrocarbons (PAHs), phthalates, and per- and polyfluoroalkyl substances (PFAS), are known carcinogens, neurotoxicants, mutagens, and endocrine disruptors. However, few studies have looked directly at health outcomes of exposure to these chemicals in the context of artificial turf." (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10262297/>)
  - ii) Most if not all artificial turf fields contain PFAS
    - (1) EPA has just reduced the safe levels of PFAS (4/2024):  
<https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>
    - (2) We are spending a lot of resources addressing our PFAS water problems but artificial turf fields are only making it worse.
    - (3) "Toxic forever chemicals detected on kids' skin after playing on turf fields":  
<https://thenationaldesk.com/news/spotlight-on-america/toxic-forever-chemicals-detected-on-kids-skin-after-playing-on-turf-fields-health-concerns-pfas>
  - iii) Hotter playing surface: Natick Health Department recorded temperatures on the artificial turf of 150 degrees when it was 90 degrees out.
  - iv) Other health resources:
    - (1) General
      - (a) Center for Environmental Health:  
<https://ceh.org/yourhealth/everything-you-need-to-know-about-artificial-turf>
      - (b) National Center for Health Research:  
<https://www.center4research.org/nchr-letter-dc-city-council-artificial-turf/>
    - (2) Phillies Players' Cancer Cluster:  
<https://www.sbnation.com/mlb/2023/3/10/23634124/artificial-turf-cancer-deaths-phillies-players>
- b) Cost:
  - i) Natural soil-based fields can be less than 33% of the cost of a premium artificial turf field and 50% the cost of a basic artificial turf field based on a 16-year annualized cost. Premium synthetic products claiming lower heat indexes, more reflective surfaces using infills of coated crumb rubber, silica or coated sand, Nike Grind, organic cork, thermoplastic elastomer (TPE), or propylene ethylene diene monomer (PEDM) ([https://www.mvcommission.org/sites/default/files/docs/Cost Artificial Turf. September 2016.pdf](https://www.mvcommission.org/sites/default/files/docs/Cost%20Artificial%20Turf.September%202016.pdf))
    - (1) Other resources:

(a) "Synthetic turf costs more to install, ALMOST as much to maintain, and HAS TO BE replaced once it wears out."  
<https://www.safehealthyplayingfields.org/cost-grass-vs-synthetic-turf>

ii) We are spending hundreds of thousands of dollars on PFAS filtration and we're introducing more PFAS into the water system with our current artificial turf fields.

c) Climate and Environmental Effects:

i) "An average 80,000 sq ft. field contains 40,000 lbs. of plastic carpeting and 400,000 lbs. of infill, all of which are made from fossil fuels"  
(<https://www.beyondplastics.org/fact-sheets/synthetic-turf>)

ii) The total lifecycle cost of constructing, maintaining and replacing an artificial turf field (after 8-10 years) can generate up to 527 tons of CO<sub>2</sub>.

iii) "The material also emits high levels of methane, a potent greenhouse gas, and sheds microplastics and other chemicals into waterways"  
(<https://www.theguardian.com/environment/2022/sep/30/boston-bans-artificial-turf-toxic-forever-chemicals-pfas> ).

iv) "A study by the Connecticut Department of Environmental Protection identified concerns related to a number of chemicals. They noted high zinc concentrations in stormwater as a particular concern for aquatic organisms. They also noted the potential for leaching of high levels of copper, cadmium, barium, manganese and lead in some cases."  
(<https://qba.org/blog/artificial-turf-fields-health-and-environmental-concerns/> ).

v) Sierra Club article: <https://www.sierraclub.org/maryland/synthetic-turf>

vi) Artificial turf ends up in landfills:  
<https://www.ydr.com/in-depth/news/2019/11/18/old-artificial-turf-fields-pose-huge-waste-problem-environmental-concerns-across-nation/2314353001/>

d) Irreversibility

i) Once you install synthetic turf it is difficult to return to natural grass because the microorganisms in the soil are killed.

e) PFAS Free Artificial Turf?

i) Melanie Taylor, president and CEO of the Synthetic Turf Council, which represents the industry, disclosed in a letter to California legislators last year that the industry would need until at least until 2026 to develop testing protocols and PFAS-free turf.

(1) <https://gridphilly.com/blog-home/2024/07/01/there-is-no-such-thing-as-pfas-free-synthetic-turf-the-city-is-installing-it-anyway/>

(2) <https://documents.coastal.ca.gov/reports/2023/12/W13.1a/W13.1a-12-2023-coresp.pdf>

- ii) 9/30/22: In Portsmouth, NH, city officials thought they had ordered a PFAS-free artificial turf field, but later testing revealed that it contained high levels of the chemicals.
   
[\(https://www.theguardian.com/environment/2022/sep/30/boston-bans-artificial-turf-toxic-forever-chemicals-pfas ,](https://www.theguardian.com/environment/2022/sep/30/boston-bans-artificial-turf-toxic-forever-chemicals-pfas)
  
[https://www.eenews.net/articles/our-community-has-been-deceived-turf-wars-mont-over-pfas/ \)](https://www.eenews.net/articles/our-community-has-been-deceived-turf-wars-mont-over-pfas/)
- iii) 7/25/24: "City officials believed a new South Philly turf field was PFAS-free. Not true, experts say."
   
<https://www.msn.com/en-us/news/us/city-officials-believed-a-new-south-philly-turf-field-was-pfas-free-not-true-experts-say/ar-BB1qD1vl>
  - (1) Sprinturf was the manufacturer. Also did Kansas City Chiefs field.
- iv) TURI and PFAS: <https://www.turi.org/publications/pfas-in-artificial-turf-carpet/>
- f) Playable Hours
  - i) Marblehead: In 2018, fields were closed five days due to rain and twice due to extreme heat. [\(https://www.turi.org/publications/organic-grass-playing-fields/ \)](https://www.turi.org/publications/organic-grass-playing-fields/).
- g) Legal Risks
  - i) "Turf wars: The courtroom battle over artificial turf safety may be closer than we think":
   
<https://www.reuters.com/legal/legalindustry/turf-wars-courtroom-battle-over-artificial-turf-safety-may-be-closer-than-we-2023-07-05/>
  - ii) <https://www.fmglaw.com/business-litigation/pfas-chemicals-playing-tough-on-turf-fields/>

## Solutions

- a) A comprehensive review and development of our playing fields using natural grass. It is healthier, less expensive and better for the environment
   
[\(https://www.turi.org/publications/athletic-playing-fields-2/ \)](https://www.turi.org/publications/athletic-playing-fields-2/).
  - a. Three Massachusetts Communities that Maintain Athletic Fields Organically
   
<https://www.youtube.com/watch?v=Cmjv1qteLho>
  - b. <https://www.turi.org/publications/building-an-organic-maintenance-program-for-athletic-fields-guidance-from-experts-and-experienced-communities/>
  - c. Natural Grass Advisory Group (Support for Improving High-Use Natural Grass Fields): <https://www.naturalgrass.org/services>
- b) Other towns with a moratorium or use only grass fields
  - a. Wayland 3-year moratorium:
   
[https://www.wayland.ma.us/sites/g/files/vyhlif9231/f/uploads/article\\_23.pdf](https://www.wayland.ma.us/sites/g/files/vyhlif9231/f/uploads/article_23.pdf)

- b. Concord:  
<https://www.sierraclub.org/loma-prieta/blog/2024/05/artificial-turf-wars-people-fighting-protect-their-communities>
    - c. Sharon:  
<https://www.sierraclub.org/loma-prieta/blog/2024/05/artificial-turf-wars-people-fighting-protect-their-communities>
    - d. Grass fields in Marblehead since 2002:  
<https://www.turi.org/publications/organic-grass-playing-fields/> ,  
<https://www.youtube.com/watch?v=Cmjv1qteLho>
    - e. Grass fields in Springfield since 2014, MA:  
<https://www.turi.org/publications/natural-grass-playing-field-case-study-springfield-ma/>, <https://www.youtube.com/watch?v=Cmjv1qteLho>
    - f. Grass fields in Martha's Vineyard 2017:  
<https://www.youtube.com/watch?v=Cmjv1qteLho>
    - g. MA in General:  
<https://www.wgbh.org/news/local/2022-05-10/more-games-or-more-grass-field-turf-wars-play-out-across-massachusetts>
    - h. Southwest PA:  
<https://www.turi.org/publications/natural-grass-playing-fields-selected-case-studies-from-southwest-pennsylvania/>
- c) General Resources
  - a. Toxic Use Reduction Institute (UMASS Lowell):
    - i. <https://www.turi.org/publications/artificial-turf/>
    - ii. <https://www.turi.org/publications/athletic-playing-fields-2/>
    - iii. <https://www.uml.edu/research/lowell-center/athletic-playing-fields/>