



Department of Environmental Management
235 Promenade Street
Providence, RI 02908

www.dem.ri.gov



Department of Health
Three Capitol Hill
Providence, RI 02908-5097
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August 15th, 2024

Burrillville Town Council
105 Harrisville Main Street
Harrisville, RI, 02830

To the members of the Burrillville Town Council,

Several stakeholders have brought concerns about the installation of an artificial turf football field at Burrillville High School to the Rhode Island Department of Health and Department of Environmental Management (RIDOH and RIDEM, respectively). RIDOH and RIDEM have reviewed the available scientific literature and case studies of similar fields around the country and in Rhode Island. We request that the Council review the results of our analysis and provided resources to aid their deliberation over the installation of the field.

Potential risks to health

Artificial turf fields contain a variety of chemicals; however, exposure to these chemicals during playtime is unlikely to increase the risk of negative health effects. Artificial turf made of crumb rubber was the subject of a series of studies from the Environmental Protection Agency (EPA) and Centers for Disease Control/Agency for Toxic Substances and Disease Registry (CDC/ATSDR).^{1,2} These studies examined artificial turf fields for the potential to expose people to a variety of chemicals, including metals, polycyclic aromatic hydrocarbons, and volatile organic compounds.^{1,2} They concluded that, while these chemicals are present in the turf, people likely have a negligible (meaning zero or close to zero) amount of contact with the chemicals during play.^{1,2} Since the amount of contact with contaminants is low, the health risks posed by the chemicals are low during playtime.^{1,2}

Per- and polyfluorinated alkyl substances (PFAS) have also been reported in artificial turf in scientific literature.³ PFAS are used during the production of artificial turf to prevent the machines that extrude the plastic from clogging.^{4,5} News reports show that artificial turf fields in Boston⁶, Philadelphia⁷, and Portsmouth (NH)⁸ contain PFAS. PFAS are a group of chemicals known as “forever chemicals” because they do not break down in the environment. Exposure to PFAS over a long period of time can increase the risk for negative health effects such as higher cholesterol levels, lower infant birth weights, weakened immune response, and some cancers, including kidney cancer.⁹ Some types of artificial turf that are advertised as “PFAS free” have still been shown to contain PFAS when tested by independent third parties.^{8,10}

While PFAS is present in artificial turf, exposure during playtime would likely be similar to exposures to the contaminants monitored in the EPA/CDC/ATSDR report. This means that exposures to PFAS during playtime would not likely increase the risk of negative health effects.



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RIDOH and RIDEM are most concerned about the potential for PFAS from the turf field to contaminate groundwater in the area. The scientific literature has yet to produce a study conclusively linking artificial turf fields with PFAS contamination in groundwater. However, sampling data collected by both RIDOH and RIDEM at North Smithfield Junior-Senior High School suggest that the artificial turf field (first constructed in 2007 and upgraded/replaced in 2021) may be partly or wholly contributing to the contamination of nearby private and public drinking water supply wells. In this area, groundwater flows from Well #1 to the artificial turf field and then to Well #2. We call Well #1 “upgradient” and Well #2 “downgradient” based on the groundwater flow and their locations with respect to the artificial turf field. Well #1 is located approximately 1000 feet upgradient of the artificial turf field, so it should not be affected by PFAS from the field. Water from this well has consistently been at or below detection limits (i.e., 2 ng/L or less) for PFAS. Well #2 is located approximately 150 feet downgradient of the artificial turf and exceeds the Rhode Island Drinking Water Quality Standard for PFAS of 20 ng/L. In the most recent sampling (6/12/24), the concentration of PFAS in Well #2 was 61.00 ng/L, which is double the concentration detected in 2019 (30 ng/L). Drinking water is one of the major routes of exposure for PFAS, which have a variety of potential health impacts. The most important of these include suppression of the body’s response to vaccines and disruption of normal liver and kidney function.¹¹

The groundwater quality standard for the sum of regulated PFAS compounds (i.e., PFOS, PFOA, PFNA, PFDA, PFHxS, and PFHpA) is 20 ng/L for the groundwater in the Burrillville area. The [Rhode Island Groundwater Quality Rules](#) (Section 3.14(D)) identify the remedial measures that may be required of facility owners that release a pollutant which results in a violation of the groundwater quality standards. These measures include, but are not limited to, sampling of private wells, installing and monitoring additional wells, providing drinking water to properties that have had their wells impacted, and/or implementing remedial actions to restore groundwater quality. Based on RIDOH’s review, there are private wells supplying about 20 single and multifamily homes within a quarter mile of the proposed location of the artificial turf field. If PFAS is present in the artificial turf and results in PFAS concentrations in groundwater above 20 ng/L, the School District and/or Town may be required to complete the remedial measures noted above.

Pending Ban of Artificial Turf

Rhode Island recently passed the Consumer PFAS Ban Act of 2024 (the “Act”), which bans certain uses of PFAS in covered products by January 1, 2029. This Act defines “artificial turf” as “man-made material which simulates the appearance of live turf, organic turf, grass, sod or lawn” and bans the manufacture, sale, or distribution of artificial turf containing intentionally added PFAS on January 1, 2029. It should be noted that, since artificial turf fields require periodic maintenance (e.g., replacement of the turf), any materials necessary for future maintenance will be subject to this Act.

The following are more resources that the Town Council may wish to examine before installing the artificial turf field:



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- [PFAS Testing in Artificial Turf](#) (UMass Lowell)
- [PFAS in Artificial Turf](#) (Massachusetts Toxics Use Reduction Institute)
- [Considerations for Municipalities and Institutions](#) (Massachusetts Toxics Use Reduction Institute)

Thank you for reviewing this information. Please reach out with any questions.

Sincerely,

Jerome Larkin, MD

Jerome Larkin, MD
Director
Department of Health

Terrence Gray

Terrence Gray, P.E.
Director
Department of Environmental Management



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