



ECOLOGYCENTER

Healthy People, Healthy Planet

February 9, 2024

Marnie Crouch, Chair
Hamilton Planning Board
577 Bay Road, Hamilton, MA 01936

Re: Hamilton Wenham School District Athletic Field Project on Bay Road

To Chair Crouch and the Hamilton Planning Board:

I am providing the following comments in reference to the presence of PFAS in artificial turf.

Our organization has been researching PFAS content in commercial and residential indoor carpet, as well as synthetic artificial turf, for over 10 years. We have analyzed 100's of residential carpet samples and dozens of synthetic artificial turf samples. This work, carried out with external contract labs and university-based scientists, includes testing carpet and synthetic turf fiber for individual PFAS chemicals, total oxidizable precursors (TOP assay), total organic fluorine, and absorbable organic fluorine (AOF) as indicators of PFAS presence in carpets.

The turf industry can conduct elemental organic fluorine and absorbable organic fluorine testing for all products. The targeted testing results provided by the turf industry are inadequate to support a “PFAS-free” claim. Total fluorine testing is now required for certification systems for PFAS-free firefighting foams and PFAS-free food packaging. This is the industry standard for other types of products and should be the standard for polymer-based products like turf as well.

Of the nine synthetic turf fibers we tested in 2020, fluorine was detected in 100%. Fluorine levels ranged from 44 to 255 parts per million. Additional tests not detailed here on two samples found evidence of organic fluorine, supporting the likelihood that PFAS is present. These turf samples included both new and installed product. This sampling is limited and does not represent the entire market. However, we continue to conduct ongoing testing of samples and testing of additional samples had similar findings. *We have not tested a turf product that is “PFAS-free” to date.* This highlights the need for companies to provide precise and meaningful test results if they claim PFAS-free.

Total fluorine tests do not tell us exactly which PFAS chemicals are present, but based on industry literature and statement, we believe a likely source of the detected fluorine is processing aids used in producing synthetic turf fibers. PFAS-based processing aids are not included in commonly used test methods and thus can be missed.

For this reason, it is critical for companies to conduct testing of fibers using an appropriate method. Most manufacturer-provided test results we have reviewed used a method designed for water testing. While this method is not designed specifically for solid polymer samples, it has been widely and appropriately used to look at PFAS in a variety of matrices. However, these tests are limited due to the fact they can detect only a portion (typically 24 – 70 compounds, depending on the lab) of the hundreds of possible PFAS chemicals that may be present.

The testing method that has typically been used by companies attempting to demonstrate PFAS-free composition is EPA Method 537.1, "Determination of Selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry."

Due to the limited number of chemicals it can detect, this US EPA method is not sufficient to demonstrate a carpet or turf fiber is PFAS-free. We routinely request contract labs run both EPA Method 537.1 and one or more of the total fluorine methods to document the presence or absence of PFAS. We often see that the targeted analysis for individual PFAS chemicals significantly underreport the actual PFAS content of products in which PFAS is used. In addition to the two methods that measure total fluorine, other techniques can measure total organic fluorine, thus ensuring results are not skewed by the possible presence of inorganic fluorine (which is distinct from PFAS). A company claiming PFAS-free turf fiber should thus be able to produce testing results showing less than 1 part per million of total organic fluorine or total fluorine.

The California Proposition 65 and US EPA's Method 537 are not relevant standards for asserting a product is PFAS-free. California Proposition 65 only regulates few PFAS chemicals. US EPA's Method 537 is a test method not even a definitive list of chemicals. The list of chemicals that can be analyzed by US EPA's Method 537 is limited by the availability of laboratory reference standards for the many hundreds of PFAS chemicals that should be analyzed for. Labs routinely use US EPA's Method 537 (with modifications) to analyze up to ~70 PFAS chemicals, depending on the lab. As I stated earlier, recent PFAS-free certification standards (*GreenScreen Certified*) for both firefighting foams and food packaging have specified total elemental fluorine testing.

Given the concerns around groundwater contamination, as well as athlete health, your boards should require reliable third-party testing using both one of the total fluorine methods and one of the targeted methods:

To certify a product to be PFAS -free, we would recommend the following tests:

1. Combustion Ion Chromatography OR Oxygen Flask Combustion and Ion-Selective Electrode to identify elemental and organic fluorine content;
2. Modified EPA method 1621 for absorbable organic fluorine (AOF);
3. It is also helpful to run EPA Method 537.1 modified for polymers with the ability to detect 40 PFAS compounds; AND a TOP Assay to identify the presence of some PFAS precursors.

In addition to our academic collaborators, we have found a range of third-party labs capable of conducting this type of analysis. These include, but are not limited to: Eurofins Australia or Test America (Sacramento); Galbraith Labs; ALS Environmental; and SGS. Please feel free to contact me directly if you have further questions.



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