John Long

From: Stephen Moore [redacted]
Sent: Sunday, February 9, 2020 2:21 PM
To: Mayor; City Council
Cc: City Clerk Contact
Subject: Conway Park and the broader community need

Mayor Curtatone and Members of the City Council,

I write as a resident of Somerville and a parent of two children who will likely participate in many of the athletic opportunities we have including, Somerville Little League, Somerville Babe Ruth Baseball, Somerville Youth Soccer, Somerville Youth Hockey, and Somerville Youth Ultimate. Despite the position many of the leadership of these organizations,

I DO NOT SUPPORT installation of a synthetic turf (**plastic grass**) athletic field at Conway Park (or anywhere for that matter).

I, however, would like to offer my support for something that both meets a long-term solution to athletic field availability and promotes broader community goals that include overall available multipurpose open space and environmental and public health goals.

First let me synthesize, natural grass surfaces offers the community the fulfillment of much broader needs including:

- Natural grass TRAPS carbon.
- Natural grass DECREASES Urban Heat Island Effect.
- Natural grass can be used as GREEN INFRASTRUCTURE.
- Natural grass DECREASES ground-source pollution (with a proper maintenance plan)
- Natural grass DECREASES air-borne pollution (volatile organic compounds)
- Natural grass has NO regenerative carcinogens (respirational via off-gassing and dermatological via abrasion migration, toxicity renews with each sunlight exposure).
- Natural grass requires NO replacement. (lower LCA costs)
- Natural grass has LOWER (overall) maintenance costs (incl. replacement costs)
- Natural grass offers MORE community use options. (passive/recreational uses)
- Natural grass offers MORE species use options (sub-surface organisms as well as surface feeding cycle—overall ecosystem health).
- Natural grass has LOWER rates of player injury (specifically PCL injuries increased almost 3x with plastic grass fields).

BROADER COMMUNITY NEED:

While certainly understood that the *existing* shortage of athletic fields has had a significant impact on ability to plan games and practices, recruit new athletes, and to keep our athletes safe (recognized in both the Master Fields Plan and the Recreation Task Force). But **access to the broader community** was also recognized by the Open Space Master Plan as well. I have both professionally and personally conducted research on this topic, so while I sympathize with the urgency desired, there is more to consider than just "athletics service hours". Any large public expenditure that excludes more broad community use (i.e. picnics, recreating) as well as contributes to increased public health risks such as significant increases in ambient air temperatures and pollution (not informed by companion City documents, see below), not to mention increased long-term replacement costs (that the Master

Plan did not contain a true Lifecycle Cost Analysis showing this significant expense) is NOT a prudent course of action. I beg that ALL Citywide publications get equal time in this decision, so I refer you all to the **Somerville Climate Forward** and **SomerVision2040** efforts, which I had significant contributions to both City plans for how decisions as this can have far reaching consequences.

AVAILABILTY/SERVICE HOURS:
Adding to that, despite information being conveyed about overall maintenance costs comparison, the real data significantly favors natural grass—particularly when you perform proper maintenance as scheduled and organically. There are many local municipalities including Marblehead (a big soccer community) and Western MA that have implemented this in their standard programs and it has shown **competitive** "athletic service hours"--over 1,000 service hours with **NO rest**. Most of these cost comparisons also do not include the time-loss of these fields going off-line during the replacement of these "plastic grass" fields will need to go through.

PUBLIC SAFETY/HEALTH:
And specifically, with Conway, I believe it's in the communities best interest to fully remediate the soils to the suggested 36" depth. This not only increases our public safety but also provides the window for more options (i.e. natural grass) that the 18" depth will not—exclusive to the plastic grass option only. And as pointed out above, is a net higher cost in a full Lifecycle Cost Analysis not to mention the increased mitigation risks. Along with the existing toxicity, its worth remembering that plastic grass itself is toxic. While it has been noted from the City that PFAS is not in the more recent installations, lets ask a couple simple questions knowing the burden of proof for toxicity is on **the public**,

1. What was PFAS used for? (its necessity--to enhance smoothness and reduce friction)
2. What did they replace it with? (because of that necessity)

PLAYER SAFETY:
A study from *Orthopedic Journal of Sports Medicine* showed significant increase in the incidence of upper extremity trauma in university men's soccer players (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5544152/#section17-2325967117719648title).

A study from *The American Journal of Spots Medicine* showed that athletes participating in competitions on artificial turf experienced posterior cruciate ligament (PCL) injuries at 2.94 times the rate as those playing on grass. (https://www.ncbi.nlm.nih.gov/m/pubmed/30995074/)

High synthetic field surface temperatures are directly related to clear, sunny, and hot conditions. Maximum surface temperatures recorded during hot, sunny conditions averaged from 140 to 183°F. (information obtained from the Sports Turf Managers Association). According to the Urban Land Institute, there are 65,000 trips to emergency rooms a year from urban heat. They also estimate that by 2050, the Northeast will have 650 deaths per year from urban heat. Of note here, is in extreme heat events, set to increase number of days—MA will have four days a year above 105 degrees F by midcentury—will mean greater health risk and less availability hours of use. At 1.5 degrees Celsius warming, about 14 percent of Earth's population will be exposed to severe heatwaves at least once every five years, while at 2 degrees warming that number jumps to **37 percent**, (https://climate.nasa.gov/news/2865/a-degree-of-concern-why-global-temperatures-matter/)

CLIMATE RESILIENCE/FISCAL PRUDENCE:
Lastly, I would like to add that we, as a community, should be examining these opportunities with public land to review the potential for climate resiliency efforts. Anywhere we are about to put in significant investment, should also examine how we are implementing climate resiliency infrastructure. Each field should be incorporating stormwater mitigation planning and infrastructure. Not only will this be a prudent use of the effort at hand but has significant "downstream" effects on the significant investments we are making in water and sewer infrastructure currently (and apart from this). It will add capacity and longevity to those systems (existing and future). These fields

can be seen as "green infrastructure". It is fiscally prudent, on top of the community pieces spoken throughout this letter, but a multi-faceted approach may also increase funding sources for the project as it takes on other issues (i.e. climate resiliency) along with the EPA funding being used for the remediation effort. We are talking 25-50 year timetables not 5-10, we don't easily get second cracks at these things.

Please feel free to reach out to me for any more detailed information on any of these topics covered here but overall, please vote to stop plastic grass fields from being installed in our community. There is a better choice and we should take that.

Sincerely,
Stephen Moore

From: Renee Scott
To: City Council; City Clerk Contact
Subject: Conway Park
Date: Tuesday, February 11, 2020 4:00:12 PM

Dear Honorable City Councilors,

It is with sadness that I write this note. The discussion about whether or not we should install artificial turf on any of our grass fields in Somerville should be moot. Unfortunately, it keeps coming back up. As you know, I have serious concerns about artificial turf, especially the heat. We need to understand how the increased heat from removing a cool surface and replacing with one that can easily reach 150 degrees or higher on summer days will affect not just the people playing on it, but also the surrounding neighborhood and Somerville's overall heat problem. At the December community meeting on Conway, a child stood up and commented that two of her friends had suffered from heat-related injuries at a game on Capuano. This is not okay. We really should have a strict guideline like Burlington, MA so we avoid any future issues like that. Luckily, it sounds as though the kids recovered fine, but we don't want the next problem to be someone dying.

And, once we agree that protecting people playing on these fields, especially our children, is paramount, we need to factor in how many days those fields will actually be usable. Burlington, MA, does not allow play on fields when the surface temperature is 121or above. Grass rarely gets above 100 degrees. But artificial turf gets to 121 on pleasant spring days. These fields will not be usable for many, many days a year. And what happens to surrounding areas as their A/C costs go up (if they have A/C)? Heat related illnesses have the hardest impact on the youngest, oldest, and those living with illnesses. How will the city prepare for and care for the additional hospital visits, cooling bills, and poorer health of those near the field?

Additionally, when discussing costs comparisons between grass and turf, the city shows the first 8 to ten years which is the lifetime of the turf. But after that there is a $500k to multi-million replacement cost (or earlier if it gets hard use like ESCS which was replaced after 6 years). We need to look at 40 years out, with anywhere from 3 to 6 replacements, while the grass, if properly maintained, would still be fine. And, the lifecycle cost of turf is really high because even though it's technically recyclable, only one place in the world actually does it and it's in Denmark. So off to the landfill this stuff goes. (If you're told anything else, ask questions. I have and the city just says that the installer said they would recycle the old surfaces but reports from across the country show that isn't happening).

Many different brands of these plastic carpets have been shown to have PFAS in the blades, even though the manufacture said they did not (like with the recycling question, being told by the installer that it's safe is fine, if you also test it yourself. Trust but verify. Is it worth the risk to our kids' health to do anything less?). Remember how doctors said cigarettes were safe? Remember how just in the past ten years we learned that the plastic lining in our food cans had carcinogenic and fertility-interrupting BPA plastic in it? Every year we learn of new horrors from plastic materials. Grass is just grass. Especially if it's organically maintained.

Which leads me to another problem: Lincoln Park is the biggest reason we are told we need a turf field on Conway. Lincoln Park should not have failed. We need to figure out why it did. Organically maintained fields that have followed the three year transition protocol like Springfield and Marblehead did are getting over 1,000 hours of soccer use, without rest, on their fields. Organic grass is thick, tough, durable, and renewable. We don't need artificial turf; we need to maintain our grass correctly so we can get more hours out of it.

We need to take the time to fully look into the implications of the field (heat added to neighborhoods, days it will need to be closed due to heat to avoid injury, real cost over 30 to 40 years and not just until right before it has to be replaced, toxicity). What if we first cleaned PCBs out entirely and then decided? We have 15-17 months of cleaning so why rush this surface decision? We need get this right. If we approve a plan to design a turf field, we can't change our minds later.

This is an equity issue. Artificial turf gets some more use hours for the kids who play organized field sports. Grass gets us a cool, safe, non-toxic, less expensive, living surface for all 81,000 of us. Please do the right thing and vote for long term thinking, not short term. Vote to keep grass on Conway Park.

Warmly,

Renée

From:	Maureen Barillaro
To:	City Council; City Clerk Contact
Subject:	Keep grass on Conway Park!
Date:	Wednesday, February 12, 2020 8:42:01 AM

Dear Trusted Councillors,

This morning I got the best news- no, not that Bernie Sanders came out on top in the NH primary, but that the finance committee made the very tough, but very vital decision not to approve the removal of green space from Somerville with the renovation of Conway Park.

I have been working on the issue of preserving green space in Somerville for many years now and I know the temptation to go with artificial turf is great. There are a lot of people asking for it. It's a quick fix to get the field back in usage in a city that severely lacks playing field space, and in theory it sounds like it's less work and upkeep.

But because it may be easier and people are asking for it, doesn't mean it's the right thing to do for THE OVERALL CITY. A very tiny percentage of people will have access to this field and yet, removing precious and vital greenspace, effects us all. With rising temperatures and climate change accelerating at a frightening pace, we can't keep covering up our living ecosystems with cement, blacktop and plastic.

This artificial turf has to be denied for the health and welfare of all citizens. All sports will STILL be able to accomplish their goals with the grass fields. It takes nothing away from them, and yet the plastic fields takes something away from all of us. Grass is a win win and I appreciate your support on this issue.

Thank you for everything!

Sincerely,

Maureen Barillaro
[redacted]

From:	Deborah Pacini
To:	City Council; City Clerk Contact
Subject:	keeping grass on Conway Park
Date:	Wednesday, February 12, 2020 9:29:24 AM

Dear Counselors,
I'm writing to urge you to reject the current plans to take only 18" of contaminated soil in preparation for laying down artificial turf, rather than the 36" needed for a grass field. The problems with artificial turf—especially its toxicity and its heat retention—are too serious for the city to ignore, especially at a time when Somerville is moving towards preparing for rising temperatures by protecting our existing trees and planting new ones—not to mention, planting new trees on this field will require 36" of clean soil for them to thrive. Similarly, at a time when the city is banning plastic bags and straws because of their impact on the environment, it makes no sense to put down a layer of plastic-like substance on the dwindling green space we have. Please use your vote to move us towards, rather than away from, a healthier and more environmentally sustainable city.

Thank you,
Deborah Pacini
[redacted]

From:	Heidi Friedman
To:	City Council; City Clerk Contact
Subject:	Grass at Conway
Date:	Wednesday, February 12, 2020 3:17:57 PM

Hi, Councilors.

I'm writing to say that I'm in favor of grass at Conway and not artificial turf. I'm aware that there is a shortage of playing field hours and the grass needs time to recover. However, the adverse environmental impacts of artificial turf - from the chemicals it's made out of, its impermeability, risk of injury when falling on it and risk of burns from how hot it gets - necessitate that the city find other ways to increase playing field access. For example, although some risks would remain, I would be more accepting of artificial turf in an in-door arena, that's temperature controlled and not subject to rain.

I know this is a controversial issue and I thank you for hearing my opinion.

Heidi Friedman
[redacted]

From:	Evelyn Rosenthal
To:	City Council
Cc:	City Clerk Contact
Subject:	artificial turf for Conway and other parks
Date:	Wednesday, February 12, 2020 3:22:59 PM

Dear councilors,

I'm writing to express my disappointment that artificial turf is still being considered for the playing fields of Somerville. From all that I have read, it seems that the negatives far outweigh the only seeming positive—hours of availability. The danger to children from overheated turf and possible materials that are dangerous to health, the damage to our environment from heat islands it produces, and the much higher long-term costs when replacement is considered, add up to a clear "no" on artificial turf. In addition, I've learned that we already have 7 artificial turf fields either already installed or planned, and only 5 grass. I hope you will keep the sports-playing children and *all* residents of our city safer by voting for grass fields for Conway Park, and others in the future.

Thank you.

Evelyn Rosenthal
[redacted]

[redacted]

From: Rachel Massey
To: City Council; City Clerk Contact
Subject: artificial turf concerns
Date: Wednesday, February 12, 2020 3:42:44 PM
Attachments: TURI fact sheet - PFAS in artificial turf - February 2020.pdf

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Dear members of the City Council,

I am writing to share my concerns about artificial turf. This note expresses my personal views, but is also informed by research I have conducted on this topic in the course of my work at the Toxics Use Reduction Institute.

Several years ago, I began researching the chemical contents of artificial turf infill made from recycled tires (tire crumb) as well as alternative infills. I expected that with a reasonable amount of research, I would be able to identify a safer alternative to tire crumb. As it turns out, while a number of alternative infills are likely to contain lower levels of toxic chemicals compared with tire crumb, I have not been able to identify an option that is clearly free of health or environmental concerns.

In addition, as I'm sure you know, in sunny, warm weather, artificial turf can become very hot. Some infills absorb somewhat less heat than others, but all artificial turf becomes substantially hotter than natural grass. This is an urgent concern as we face an ever increasing number of very hot days.

Most recently, we have been learning that artificial turf carpet can contain per- and polyfluoroalkyl substances (PFAS). PFAS are highly persistent in the environment and have a range of adverse health and environmental effects. I'm attaching a new fact sheet we've recently completed on this emerging area of concern.

Thank you for taking the time to consider these issues with the care they deserve.

Best wishes,

Rachel Massey
[redacted]

Per- and Poly-fluoroalkyl Substances (PFAS) in Artificial Turf Carpet

Introduction

The Massachusetts Toxics Use Reduction Institute (TURI) has received inquiries from municipalities and community members regarding the presence of per- and poly-fluoroalkyl substances (PFAS) in artificial turf carpet. This brief fact sheet provides some basic background information on PFAS and on recent testing for these chemicals in artificial turf as reported by nonprofit organizations. This information is provided under TURI's mandate to provide information on toxic chemicals and safer alternatives to businesses, municipalities, community members and others.

TURI has conducted background research on health and environmental effects of PFAS in its work with the Toxics Use Reduction Act (TURA) program's Science Advisory Board. TURI has neither conducted nor sponsored any laboratory testing of PFAS in turf or other products.

What are PFAS?

PFAS are a category of chemicals that contain multiple fluorine atoms bonded to a chain of carbon atoms. Thousands of such chemicals exist. A study by the Organization for Economic Cooperation and Development (OECD) identified over 4,700 PFAS-related Chemical Abstract Service (CAS) numbers.[1] PFAS chemicals have properties that can be useful in a variety of settings, such as water and stain resistance. They also pose concerns, including persistence, bioaccumulation, and adverse health effects, as summarized below.

PFAS Nomenclature and Vocabulary

PFAS are sometimes described as "long-chain" or "short-chain" based on the length of the fluorinated carbon chain. They can also be categorized and described based on the number of carbons; for example, a PFAS chemical with an 8-carbon chain may be referred to as "C8." For more information, see the ITRC fact sheet "Naming Conventions and Physical and Chemical Properties of Per- and Polyfluoroalkyl Substances (PFAS)."[2]

PFAS "precursors" are complex chemicals that break down into other simpler PFAS compounds ("degradation products"). In addition, some PFAS are fluoropolymers (longer chains of molecules containing carbon and fluorine).

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UMASS LOWELL
February 2020

Persistence

Although there are thousands of PFAS, most of them break down into a common set of degradation products. These degradation products are characterized by very high persistence in the environment.[3] Persistent chemicals do not break down under normal environmental conditions, and some can last in the environment for hundreds of years or longer.

Bioaccumulation

All PFAS pose some degree of bioaccumulation concern, especially in air-breathing organisms.[3] In other words, they can accumulate in plants, animals, and humans.

Health Effects

Due to widespread contamination of drinking water in some areas of the US, the human health effects of certain PFAS have been studied in depth. Other PFAS have been studied in laboratory animals. Because the class of PFAS is so large, many individual PFAS have not been studied in depth. Researchers have emphasized the need to address PFAS as a group rather than one by one. Health effects documented for some PFAS include effects on the endocrine system, including liver and thyroid, as well as metabolic effects, developmental effects, neurotoxicity, and immunotoxicity.[3]

PFAS have been studied by a number of government entities. For example, OECD has done the most comprehensive work on PFAS as a class; the US Environmental Protection Agency (US EPA) has done extensive research on several PFAS compounds; and certain states have researched individual PFAS chemicals in depth.

Drinking Water Contamination

PFAS have been found as drinking water contaminants in many states. For example, the Massachusetts Department of Environmental Protection (MassDEP) has worked with municipalities to gather data on levels of six PFAS in groundwater and drinking water. According to MassDEP, "since 2013, the sum of the concentrations of the six PFAS compounds above 20 ppt [parts per trillion] have been detected at over 20 PWSs [public water systems] in Massachusetts." MassDEP has issued a proposed regulation that would set a Maximum Contaminant Level (MCL) in drinking water of 20 ppt for the sum of the concentrations of these six PFAS. MassDEP has also finalized and adopted standards for groundwater cleanup.[4]

PFAS Testing

PFAS testing is difficult due to the large number of individual chemicals in the class, as well as the very low concentrations at which adverse effects may occur. Additional difficulties result from the fact that while methods have been developed for testing drinking water (US EPA Methods 537 and 533) and wastewater (US EPA Method 8327*), there are no consistent guidelines for testing solid materials. Some of these difficulties have been addressed through the development of methods for testing the total presence of fluorine-containing organic (carbon-containing) compounds.

In many cases, testing may be conducted for a small group of PFAS that have been a particular focus of regulatory activity. The absence of these chemicals does not indicate that all PFAS are absent. For example, US EPA has published methods for testing just 29 PFAS in water.[5]

Difficulty of Testing Products

Difficulties may be encountered in choosing appropriate test methods for a given material. For example, guidance that has been developed for drinking water is not necessarily applicable to a solid material. In addition, some laboratories use a modified version of an US EPA method; US EPA has not validated these approaches.[5]

In any testing effort, it is important to adopt an appropriate study design. For example, US EPA has provided guidance on approaches to understanding potential leaching of chemicals from liquids, soils and wastes into rainwater. This includes consideration of the acidity of rainwater in certain areas of the US. US EPA recommends choosing an appropriate extraction fluid depending on the relevant environmental conditions in the region.[6]

Total Fluorine Analysis

In addition to testing for individual compounds, it can also be useful to conduct a Total Fluorine Analysis. This can be carried out using Particle-Induced Gamma Ray Emission (PIGE) spectroscopy, and other techniques such as Combustion Ion Chromatography (CIC).

These tests do not look for specific PFAS chemicals. Rather, they look for fluorine atoms as an indicator of the presence of PFAS chemicals. This kind of test can be useful because testing standards have not been developed for all the types of PFAS that are available on the market. These measurements can also be performed on solid samples.

TOP Assay

Another test used to gather information about PFAS present in a sample is a Total Oxidizable Precursor (TOP) assay. This test creates the conditions in which precursors are broken down into degradation products. These degradation products are among the PFAS that can be measured by EPA methods in water. TOP assay enables researchers to detect the presence of precursors, even if they do not know which specific precursors are present.[7]

Understanding Test Results

When interpreting results of testing conducted on products, including turf carpet samples, it is important to understand what test was conducted and what that test has the ability to detect. For example, if a fluoropolymer is present in the product, an appropriate test must be selected to detect its presence.

In summary, lack of detection of one or more specific PFAS does not mean that a material is free of PFAS. To determine whether PFAS are likely to be present, a total fluorine test and/or a TOP assay may be helpful.

Another factor to consider is that in some cases, a test may be carried out only for long-chain chemicals that were used more frequently in the past, or that appear primarily as degradation products in the environment. Knowing the presence of these chemicals is important, but they are not the most likely chemicals to appear in a new product.

PFAS Testing in Artificial Turf Carpet

Determining what chemicals are present in a product can be challenging because chemical contents are frequently not disclosed by the manufacturer. Two nonprofit organizations recently tested artificial turf carpet and found evidence of the presence of PFAS in the material.[8] The nonprofit organizations tested backing of both new turf and older, discarded turf. They also tested a number of samples of artificial grass blades (carpet fibers).

They detected one PFAS chemical in the backing of the new turf sample. Specifically, they detected 6:2-fluorotelomer sulfonic acid (known by the abbreviation 6:2 FTSA). 6:2 FTSA has a 6-carbon chain, and is considered a short-chain PFAS because of the way in which it breaks down. In many cases, short-chain PFAS have been adopted as substitutes for longer-chain PFAS.

They detected perfluorooctane sulfonate (PFOS) in the backing of the discarded, older turf sample. PFOS is a long-chain PFAS that is no longer manufactured in the US due to concerns about health and environmental effects.

They also tested a number of synthetic turf fiber samples and found that all of them contained quantities of fluorine that suggest the presence of PFAS.[9] These quantities were in the parts per million range, but given the large surface areas of a typical turf carpet, researchers note these may represent a source of PFAS in the environment.[1] Research on this topic is still in process and it will be important to review new scientific publications as the work continues.

One possible reason for the use of PFAS in the artificial turf grass blades is to serve as an extrusion aid.[10] That is, PFAS is added to the polymer mixture (which is a non-fluorinated plastic) before it is passed through an extruder. An extruder is manufacturing equipment that melts and forms the polymer mixture into its desired shape. The PFAS helps to prevent the polymer from sticking to the extruder. According to a researcher, artificial turf grass blades were previously made from low-density polyethylene, but the material had poor durability. Newer polymer mixtures have greater durability, but were not compatible with existing extrusion equipment. Therefore, PFAS were added in order to facilitate use of the new polymer mixture with existing equipment.[8,11]

The researchers who conducted this work do not know exactly what types of PFAS may be used as processing aids in this application. They are not present in US EPA's Method 537.1 ("Determination of Selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry"). Thus, using this US EPA method would not be informative in this application. However, the TOP assay allows researchers to confirm the presence of some type of PFAS. According to researchers, preliminary results on two samples indicated the presence of PFBA, PFBS, FPHxA, PFHpA, PFOA and PFOS in turf carpet fibers that had undergone TOP assay.[11]

Learn more about PFAS

Technical fact sheets from the Interstate Technology Regulatory Council (ITRC) are available at: https://pfas-1.itrcweb.org/

Acknowledgements

Dr. Graham Peaslee, University of Notre Dame, provided comments on a draft of this fact sheet. Support for TURI's background research on this topic was provided by The Heinz Endowments.

References

Note: For several points covered in this overview, we have provided the TURA Science Advisory Board's summaries of scientific information as a reference. These summaries draw upon a large set of authoritative government documents and peer reviewed studies.

[1] Organization for Economic Cooperation and Development. *Toward a new comprehensive global database of per-and polyfluoroalkyl substances (PFASs): summary report on updating the OECD 2007 list of per-and polyfluoroalkyl substances (PFASs). ENV/JM/MONO(2018)7. Series on Risk Management No. 39*, http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV-JM-MONO(2018)7&doclanguage=en (2018).

[2] Interstate Technology Regulatory Council (ITRC). Naming Conventions and Physical and Chemical Properties of Per- and Polyfluoroalkyl Substances (PFAS). Epub ahead of print 2011. DOI: 10.1002/ieam.258.

[3] Toxics Use Reduction Institute (TURI). PFAS information reviewed by the Science Advisory Board, https://www.turi.org/Our_Work/Policy/Toxics_Use_Reduction_Act/Councils_and_Committees/TURA_Science_Advisory_Board/PFAS_information_reviewed_by_the_Science_Advisory_Board (2019, accessed 23 January 2020).

[4] Massachusetts Department of Environmental Protection. Summary of Proposed Regulations and Note to Reviewers 310 CMR 22.00: Drinking Water Regulation MassDEP's Primacy Responsibility for Public Water Systems in Massachusetts.

[5] U.S. Environmental Protection Agency Office of Pollution Prevention and Toxics. EPA PFAS Drinking Water Laboratory Methods: Per- and Polyfluoroalkyl Substances (PFAS), https://www.epa.gov/pfas/epa-pfas-drinking-water-laboratory-methods (accessed 23 January 2020).

[6] US Environmental Protection Agency (US EPA). EPA Method 1312: Synthetic Precipitation Leaching Procedure.

[7] Houtz EF, Sedlak DL. Oxidative conversion as a means of detecting precursors to perfluoroalkyl acids in urban runoff. *Environ Sci Technol* 2012; 46: 9342–9349.

[8] Lerner S. Toxic PFAS Chemicals Found in Artificial Turf. *The Intercept*, https://theintercept.com/2019/10/08/pfas-chemicals-artificial-turf-soccer/.
[9] Lerner S. Toxic PFAS Chemicals Found in Artificial Turf. *The Intercept*, 8 October 2019, https://theintercept.com/2019/10/08/pfas-chemicals-artificial-turf-soccer/ (8 October 2019, accessed 31 October 2019).
[10] Kulikov O. Novel processing aids for extrusion of polyethylene. *J Vinyl Addit Technol* 2005; 11: 127–131.
[11] Peaslee GF. personal communication.

The Toxics Use Reduction Institute is a multi-disciplinary research, education, and policy center established by the Massachusetts Toxics Use Reduction Act of 1989. The Institute sponsors and conducts research, organizes education and training programs, and provides technical support to help Massachusetts companies and communities reduce the use of toxic chemicals.

Toxics Use Reduction Institute, University of Massachusetts Lowell • The Offices at Boott Mills West • 126 John Street, Suite 14 Lowell, MA 01852-1152 • (978) 934-3275 • www.turi.org

From: MELISSA MCWHINNEY
To: City Council; City Clerk Contact
Subject: Please -- no artificial turf!
Date: Thursday, February 13, 2020 7:21:35 AM

Dear City Councilors:

Please do not vote for artificial turf at Conway Park.

- Artificial turf is an environmental nightmare! It shreds bits of fake grass everywhere, that flow into our water supply.
- It does not absorb sunlight, which means that it gets much too hot for humans to stand on or play on.
- It creates heat zones, which we do not need at all in a city where trees have disappeared like crazy, and which makes life worse and less healthy for all of us, not just for those who want to play sports. Just look at a thermal map of our city!
- It wears out quickly, so it's a fiscally stupid purchase.
- There is no "away" to throw it to, when its worn out and needs to be thrown "away".

Let's have real grass there! Even if it needs to rest and rejuvenate from time to time, the health of our children and all citizens of our fair city calls for the installation of sod and grass.

Many thanks,

Melissa McWhinney

From: Amy
To: City Council; City Clerk Contact
Subject: comment in support of grass fields at Conway Park
Date: Thursday, February 13, 2020 12:11:07 PM

To the Somerville City Council,

I am writing to support maintaining grass fields at Conway Park rather than converting any of that space to artificial turf. The arguments against turf have been well-stated before both in regards to Conway and the previous discussions on Lincoln Park so I won't go into them in great detail again, but as an urban ecologist the incredible value of any sort of green, natural space for reducing flooding, reducing urban heat and improving human mental and physical health can not be repeated too much! We have so very little of it that turning any of it into turf is just tragic.

I'll write more from my perspective as parent. My kids go to East Somerville and I really hate that they play on the turf field there most days. I've warned them against rolling around on it should any of the plastic bits get into their mouths (not sure if they listen to me of course, and I see other kids rolling around on it all the time). My daughter also plays on a travel soccer team and spends way too much time on the turf fields at Capuano. I am happy that so far she has had no interest in playing goalie, since that is the position that spends the most time on the ground. Though someone's kid is playing goalie at every game even if it's not mine. Those fields also get so hot at the end of the spring and start of the fall seasons - I can't imagine anyone playing safely on them in the height of the summer heat!

I do acknowledge that turf is a part of our current reality as a densely packed urban area. I can see that a tiny grass field outside of ESCS would be very hard to maintain with the amount of activity it gets every school day. I still believe there may be better, healthier options than turf in those kinds of spaces, either now or in the future, but yes there is cause for debate about using turf vs grass in a small space within a school playground. But there is no good argument for using turf at a site like Conway park. A large, healthy grass field can be well-maintained in a site like that, can last far longer than turf, and avoids the health hazards and heat/flooding issues artificial turf creates. Please keep Conway green (not just in color!) and let our kids and adults play there and come home with lovely, natural grass and (soon-to-be-contamination-free) dirt stains rather than coated in nasty pieces of plastic!

Thank you for your continued attention to this issue,
Amy Mertl,

From: Katie Brillantes
To: City Council; City Clerk Contact
Subject: Conway Park
Date: Thursday, February 13, 2020 12:27:31 PM

Dear City Council,

I am writing to request that you vote against artificial turf for Conway Park. I write to you as a soccer mom, 13 year resident of Somerville, and environmentalist.

I understand the complexity of the scarcity of space and competing interests in Somerville. However, as we sit here on this warm February day we must consider how we all impact the future of our world as it relates to climate change. It will not be one public policy decision that makes the difference. Rather, it will be the millions of decisions we make as individuals, policy makers, and communities over years that shape that story.

We know that artificial turf raises the temperature on the playing fields to unsafe levels for our children causing heat exhaustion. We know that artificial turf increases the heat island affect in our cities contributing to climate change. We know that the turf creates a massive amount of waste in our landfills.

As a soccer mom and wife to a soccer coach, we would love to have more play time on our fields. However, the price we must pay for artificial turf is simply to high for the short term benefit of more play time. Making the right decision is never easy. However, voting for natural grass is the right thing to do. It is bold, progressive and forward thinking. It is protecting the most vulnerable populations you serve - the children and future generations.

Thank you for your time and consideration.

Katie Brillantes
[redacted]