
Public Comment: Artificial Turf Microplastic/PFAS in the Bay

From Robert Hall <bilgepump100@sbcglobal.net>

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To BCDC Public Comment <publiccomment@bcdc.ca.gov>

 1 attachment (455 KB)

KCR Response to SFRPD Artificial Turf Standards Presentation.pdf;

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I'd like to submit a comment regarding artificial turf microplastic/PFAS in the Bay, as reported by the San Francisco Estuary Institute.

On 12/18/25, San Francisco Recreation and Park presented their artificial turf standards to the Rec/Park Commission. The following is our response. Some of it focuses on the Bay. We ask that the BCDC speak out about adding more microplastic and PFAS contaminants to the Bay. SFPUC says they have no plans to totally filter for these contaminants that will flow to the Bay.

Our response is in the attached PDF. Let me know if you'd like me to share it with you in another format.

Bob Hall

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KCR Response to SFRPD Artificial Turf Standards Presentation

Keep Crocker Real is pleased to offer a response to [information presented](#) to the Recreation and Park Commission by Dan Mauer and David Teter on December 18, 2025, regarding RPD's artificial turf standards.

Please note our comments include links to independent research and reference materials. By contrast, the plastic grass industry is largely unregulated and is able to shield product ingredients under claims of "confidential business information." As a result, independent scientists and researchers have been forced to spend significant time, public resources, and consumer dollars reverse-engineering products to identify chemicals such as PFAS in artificial turf. The plastic grass industry has actively resisted regulation. For example, the Synthetic Turf Council (STC) opposed the inclusion of artificial turf in the California Department of Toxic Substances Control's (DTSC) 2021–23 Priority Product Work Plan, which would have enabled an independent study and potential regulation. The STC did not succeed, and artificial turf is currently under analysis by DTSC—a process likely to lead to regulation. This raises a critical question: will fields currently installed meet future regulatory standards and be safe for our children and their environment?

Notably, the consultant hired by the STC to oppose DTSC's study and potential regulation is the same consultant employed by RPD for more than 15 years: David Teter. We identify this as a potential conflict of interest.

While Sunshine Laws do provide the public some access to RPD artificial turf management activities, RPD's artificial turf standards and policies remain largely inaccessible and opaque to residents, voters, and taxpayers.

The following findings put forth by Keep Crocker Real, together with the information presented by Mr. Mauer and Mr. Teter demonstrates an organization repeatedly reacting rather than leading—leaving park users, neighbors, young athletes, and groundskeepers to serve as de facto test subjects while RPD's long-term preferred vendors develop fixes or adjust chemical-laden products after problems emerge. When it comes to FieldTurf, Verde Design and Mr. Teter, RPD is loyal to the core. Diversity of viewpoints are much needed. The public should not to rely exclusively on the marketing representatives of a multi-billion dollar plastic industry.

We all want RPD to thrive and serve the public effectively, and this response is not intended as an indictment of the entire park system. We love our parks. Rather, our hope is that RPD will provide greater transparency and clarity around its artificial turf standards so decision-makers are better equipped to shape sound guidelines and policies as RPD rapidly expands its portfolio of plastic fields, playgrounds, driving ranges and dog parks to more than 70 acres.

A Primer on Plastic

The recent seizure of Venezuelan oil reserves is a sign of things to come. More oil wars, human and environmental harm. Commercial manufacturing of plastics began in the 1950s, and production increased 250-fold as the petroleum industry pivoted toward plastics. Plastics break down into microplastics and nanoplastics and persist in the environment for decades. Please see [this brief](#)

[slideshow](#) by epidemiologist and pediatrician Philip John Landrigan, which outlines the health harms we face across the plastic life cycle.

Information on the exact chemical formulations used to enhance the plastics that make up artificial turf is often limited and inconsistent. However, frequent additives include the following chemical classes: per- and polyfluoroalkyl substances (PFAS) used to reduce product surface defects; ortho-phthalates to improve plastic processing; colorants to achieve desired coloration; antioxidants to withstand weathering; and stabilizers to prevent degradation from sun exposure (3M 2016; Hansen et al. 2014; Nilsson et al. 2008). Additionally, Zuccaro et al. (2023) detected several fluorotelomer alcohols (FTOHs)—known to degrade into more harmful PFAS—in artificial turf blades. With this complex mix of chemicals, it's easy to see why Monsanto chose the name “Chemgrass” as the first marketed artificial turf product.

Infill Inconsistencies

Historically, crumb rubber has been used as infill and is made from shredded waste tires. [It has been found to contain hazardous chemicals](#), including arsenic, cadmium, chromium, lead, vanadium, zinc, 6PPD, acetone, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and a variety of uncategorized chemicals, including vulcanization compounds used in rubber curing. The [broad category](#) of SVOCs includes polycyclic aromatic hydrocarbons (PAHs), phthalate esters, and chemicals that may be applied to crumb rubber as biocides during the life of the artificial turf. Health effects associated with these chemicals and heavy metals include birth defects, cancer, nervous system damage, immune system suppression, and endocrine disruption. A [recent study](#) evaluated the potential carcinogenicity of 306 chemicals found in tire crumb and found that 197 met certain carcinogenicity criteria, while 58 were already listed as carcinogens by a government agency.

In the RPD artificial turf standards presentation, Mr. Mauer stated that RPD is moving away from rubber crumb infill in favor of cork and sand, without explaining why. Two playfield sites are still using rubber tire crumb, and remnants of crumb rubber are [scattered throughout the gardens](#) at Raymond Kimball Park, where worn plastic turf was recently replaced with new plastic. It took 23 semitrucks to haul the worn plastic carpet away. It remains unclear whether the shift to cork and sand is driven by cost savings, ease of maintenance, or growing public concern—such as the work of former professional soccer player and coach [Amy Griffin](#), who has documented an expanding list of young athletes diagnosed with cancer.

At the same presentation, Mr. Mauer referenced California's Office of Environmental Health Hazard Assessment (OEHHA) draft report, highlighting its conclusion that there were no significant health risks in rubber tire crumb infill. However, Jocelyn Claude, a staff toxicologist for the state, [clarified](#) that the report examined only tire infill and should not be interpreted as an official California endorsement of synthetic turf. She also noted that OEHHA did not evaluate the plastic turf blades, where PFAS chemicals have been detected. Amy Kyle, a UC Berkeley environmental health scientist and independent scientific adviser on the OEHHA panel, [stated](#) that she and other advisers raised concerns during public discussions about several aspects of the study's design and methodology—concerns that were largely ignored. For example, when a UC Berkeley laboratory analyzed chemical signatures in the infill, it detected more than 400 chemicals but was able to identify only about 180 of them.

Cork infill also [raises health concerns](#). Respiratory disease has been documented in cork workers exposed to cork dust. A 1973 study concluded that workers in the cork industry may suffer from various health

complaints related to inhalation of cork dust, stating that “workers in factories where cork is processed and transformed into commercial products may acquire incapacitating disease of the respiratory tract.” Respiratory disease associated with cork dust exposure is known as suberosis. Fungi that frequently colonize cork appear to play a role in this disease, although its exact mechanisms are not fully understood.

All infill materials carry environmental, maintenance, financial, practical, or health and safety concerns. Even so-called natural infills, including [BrockFILL, have tested positive for PFAS](#). We are particularly concerned about Mr. Mauer’s reference to RPD operations mixing cork and sand back into the earth without any microplastic filtration process. RPD should not be returning microplastic contaminants to the soil. Please develop safeguards around this concerning idea. Mr. Mauer did not mention what kind of sand he was referring to: regular sand, silica sand or acrylic-coated sand with its microplastic issues.

It is staggering to consider how much money, time, and public resources have been invested in developing alternative infills and “improved” plastic carpets in an effort to make artificial turf perform like natural grass. Plastic will never be real grass. Imagine what could have been achieved if those resources had instead been invested in maintaining and improving real grass playing fields for children.

PFAS Problems

There seems to be a new study on PFAS published almost every week. One of the [most recent studies](#) found that infant mortality was nearly 191% higher among babies whose mothers were exposed to PFAS through contaminated drinking water, compared with comparable populations. In the context of plastic playing fields, PFAS were not even considered until a [2019 test](#) by a concerned environmental group detected PFAS in artificial turf. This likely means San Franciscans were exposed to PFAS on our playing fields for at least 17 years before the issue began receiving attention. That exposure continues today, and the plastic sports field industry has still not been able to demonstrate that truly PFAS-free artificial turf exists.

According to the U.S. Environmental Protection Agency (EPA), there are now nearly [15,000 identified PFAS](#), and that number continues to grow rapidly. For context, in 2020 the EPA had identified approximately 12,039 PFAS. As more PFAS are identified, health concerns are also increasing as their toxicities are studied and better understood. The scope and urgency of the PFAS problem is emphasized by Dr. Graham Peaslee, Concurrent Professor of Chemistry and Biochemistry at the University of Notre Dame and a leading researcher on PFAS in consumer products. While Mr. Teter claimed in his presentation that FieldTurf has voluntarily removed all the “bad” PFAS, Dr. Peaslee [has stated](#) that PFAS are all bioaccumulative and persistent, and that “as much as we can study, it’s all toxic... so there’s no such thing as a good PFAS at this point.” Dr. Peaslee has also described PFAS as “probably the largest pollution problem facing the U.S.” Vasilis Vasiliou, chair and professor of environmental health sciences at Yale School of Public Health, told [Newsweek](#), “What we need now is stronger regulation, expanded monitoring, investment in water treatment, and a rapid phase-out of non-essential PFAS uses.”

Another critical point Dr. Peaslee raises is that PFAS are not acute toxins; they are chronic toxins, meaning their harmful effects arise from long-term exposure. This means that the impacts on children who play on plastic grass for years may not become apparent until much later—possibly years or even decades after exposure.

When PFAS are combined with microplastics, lead, and other chemicals found in artificial turf systems, additional human health concerns arise due to the potential synergistic effects of mixed toxins. These effects can be further exacerbated by years of cumulative exposure. [As noted by Environment & Human Health, Inc. \(EHHI\)](#), an international task force of 170 cancer scientists known as the Halifax Project concluded: “Chemicals can sometimes act together to cause cancer, even when low-level exposures to individual chemicals might not be cancer-causing, or carcinogenic.”

PVDF-HFP, a type of PFAS, has been identified as a chemical used in the [manufacture](#) of plastic grass blades. Dr. Peaslee has also stated that the production of PVDF-HFP itself requires the [use of other PFAS](#). PVDF-HFP—and any other PFAS present—has the potential to leach from artificial turf components throughout the entire useful and post-use life of a field, exposing both the environment and players to toxicity, even at minute levels.

PFAS in plastic grass systems can leach from the time of manufacture, throughout use, and ultimately at disposal. If there is any doubt that this occurs on the field, consider that typical warranties allow for up to 50% blade loss over the warranty period (generally eight years). Where do those PFAS-laden macro-, micro-, and nanoplastic fragments go? Given the sheer size of sports fields—often around two acres—this represents a substantial amount of disintegrating plastic and PFAS entering the environment and potentially our children.

In a recent [webinar](#), Dr. Peaslee provided a “back-of-the-envelope” estimate illustrating the scale of the problem. Using the EPA’s regulatory limit of 4 ng/L for PFOA and PFOS, he estimated that just 12 milligrams of PFAS leaching from a single soccer field per year could contaminate approximately 800,000 gallons of runoff. To put this into perspective, one teaspoon is about 5,000 milligrams—meaning that only 12 milligrams (about 3/1250ths of a teaspoon) can contaminate hundreds of thousands of gallons of water. Compounding this concern, PVDF-HFP used in plastic grass manufacturing is suspected of degrading into the highly toxic PFOS.

Only a small fraction of PFAS have been studied to date. The vast majority—thousands upon thousands—cannot even be individually identified because no testing methods yet exist for them. Even among the roughly [80 PFAS that can currently be detected](#) (RPD tests for only 40), many have not been extensively studied for human health effects. Given that every PFAS studied so far has been found to be harmful in some way, this alone should be reason enough not to install PFAS-laden plastic grass in our playgrounds, dogparks, and sports fields—particularly when plastic turf is a nonessential outdoor surface and a viable, safer alternative already exists: real grass.

Mr. Teter pointed out the presence of PFAS in Tesla battery packs. Are PFAS found in many products? Yes. But society is only beginning to grapple with the scale of the PFAS problem, and the discussion is increasingly focused on essential versus non-essential uses. Plastic grass is a non-essential and unnecessary product. Many large corporations recognized the risks of PFAS years ago and have already phased them out or are [actively removing them from their products](#), including Starbucks, McDonald’s, Yum Brands, Lululemon, L.L. Bean, and Patagonia.

The plastic grass industry actively opposed California Assembly Bill 1423, which would have limited PFAS in artificial turf systems and better protected children. Although the bill passed the Legislature, it was vetoed by Governor Newsom in 2023—not because he disagreed with its intent, but because it lacked regulatory oversight. As a result, the issue was referred to the California Department of Toxic Substances

Control (DTSC), which is already studying artificial turf with an eye toward regulation. Whether through future legislation or DTSC action, regulation is coming.

During the AB 1423 process, an industry lobbyist attempted to raise the proposed PFAS limit for plastic grass to 100 ppm, referring to “environmental PFAS” in the same misleading way the industry has long referred to “background PFAS” to downplay PFAS content in their products. The lobbyist also sought to delay implementation dates, claiming the industry needed more time to find suitable PFAS replacements. In reality, the industry has had decades to address this issue, and these arguments effectively acknowledged the very PFAS content and levels that the industry had long denied.

Tightening Testing Protocols

Mr. Teter claimed RPD has the most stringent testing program in the United States. Our review indicates there is significant room for improvement. At a minimum, and consistent with currently available testing methods, the following tests should be performed on all artificial turf components—including carpet, backing, infill, shock pads, and adhesives—by laboratories that are fully independent of the artificial turf industry and its promoters. This is necessary to credibly demonstrate whether components are truly PFAS-free. Mr. Mauer mentioned that RPD uses Brock shock pads which have been shown to [contain PFAS](#) in the past.

Children are uniquely vulnerable to chemical exposures. Not only are their minds developing, but their bodies also readily absorb contaminants through the lungs, digestive tract, skin, and eyes. Installing plastic grass knowingly places children at heightened risk of exposure and effectively turns them into both recipients and vectors of toxic pollution.

Artificial turf manufacturers can adjust their products to pass narrow tests, and many existing tests are not anchored in real-world conditions. Factors such as sunlight, heat, rain, fog, and mechanical abrasion are often ignored. Testing protocols can also be manipulated—for example, by using deionized water instead of environmentally relevant extraction solutions (such as pH 4.2), altering method detection limits (MDLs), selecting inappropriate test methods, or analyzing only a limited subset of PFAS.

Surface Hardness Testing

Mr. Mauer said RPD tests for surface hardness every two years. This is insufficient and could result in avoidable injuries. Fields should be tested upon installation and then monitored regularly. [The Sports Field Management Association](#) (SFMA) [states](#):

Field hardness levels should be tested upon installation of the field, then continue once per year or more. ASTM standards recommend measuring field hardness at least once per year. While these are the written recommendations, testing once per year is not likely to hold up in a liability court case. To ensure field safety, sports turf managers at all facility levels are advised to test throughout the season.

Practical Recommendations for a Defensible Testing Program

Before concluding that artificial turf poses “low risk,” as Mr. Teter has in some of the internal testing documents we acquired, we recommend, at a minimum, the following study elements:

1. **Transparency and data review:** Obtain and review complete raw laboratory reports for existing modified EPA Method 537 analyses, including MDLs, recoveries, and blanks. Full transparency is essential.
2. **Bulk and precursor assays** on representative samples (both virgin and field-aged), including:
 - Total Fluorine (combustion-IC)
 - Extractable Organic Fluorine (EOF)
 - TOP assay (to convert PFAS precursors into measurable PFCAs/PFSAs)
 - Non-targeted high-resolution mass spectrometry (HRMS) screening for unknown compounds and oligomers
3. **Field-aged sampling:** Collect turf from installed fields of varying ages, along with adjacent soils and stormwater runoff, and analyze all samples using both targeted and bulk methods.
4. **Accelerated weathering and leaching studies:** Subject samples to UV exposure, heat, and mechanical abrasion, followed by synthetic rainfall leachate collection and analysis.
5. **Dust, particle, and inhalation pathways:** Sample turf-derived dust and analyze PFAS concentrations and particle size distributions; include artificial lung fluid bioaccessibility testing.
6. **Human exposure modeling:** Use measured concentrations in dust and leachate to estimate child and athlete exposure via ingestion, inhalation, and dermal contact, and compare results to health-based guidance values.
7. **Mass balance reporting:** Compare Total Fluorine, EOF, and targeted PFAS results to identify unexplained fluorine. Any unexplained organofluorine must be further investigated.
8. **Independent laboratory work and peer review:** Conduct all testing through accredited laboratories and subject study design and results to independent scientific peer review.

Artificial Turf Task Force Findings

Mr. Mauer mentioned that a Task Force had been assembled to guide best practices and policies. While these findings are not shared with the public, a Sunshine request turned up a document from 2019 titled, “[Draft Review of San Francisco Policies Related to Synthetic Turf Field Drainage and Groundwater Quality Protection.](#)” The draft memo included representatives from RPD, PUC and DPH. Based on a review of San Francisco Public Utilities Commission (SFPUC) sampling data, interdepartmental policy documents, and relevant literature, the Task Force found that artificial turf installations present unresolved risks to water quality, groundwater protection, and public health that are not fully addressed by existing standards or proposed updates.

Documented contamination of synthetic turf drainage

SFPUC field sampling of synthetic turf drainage in San Francisco detected contaminants at concentrations that equaled or exceeded drinking water standards, including the semi-volatile organic compound bis-(2-ethylhexyl)-phthalate (DEHP), a plasticizer commonly associated with rubber and plastic materials. In multiple early-season storm events, DEHP concentrations exceeded the drinking water maximum contaminant level (MCL), with one sample measured at more than an order of magnitude above the standard. These exceedances occurred four or more years after field installation, demonstrating that synthetic turf can remain an ongoing source of contamination rather than a short-term or construction-related issue

Persistent leaching associated with material degradation

Sampling results indicate that elevated concentrations of dissolved metals and organic compounds occur years into the service life of synthetic turf fields. This pattern suggests continued material degradation and release of constituents over time, contradicting assumptions that synthetic turf becomes inert or chemically stable as it ages. The presence of contaminants well after installation raises concerns regarding long-term exposure pathways and lifecycle impacts that are not currently addressed in artificial turf standards.

First-flush contamination is likely underestimated

The Task Force finds that contaminant concentrations in synthetic turf drainage are highest during narrow early-season storm “first flush” events, following extended dry periods. SFPUC has acknowledged that required sampling protocols may not reliably capture these peak conditions, meaning that existing monitoring approaches may underestimate maximum contaminant loading. This limitation reduces confidence that current testing requirements are sufficiently protective of groundwater and downstream waters.

Groundwater protection remains unresolved and inconsistent

San Francisco policies promote stormwater infiltration through green infrastructure while simultaneously requiring protection of groundwater resources, particularly within the Westside Groundwater Basin, which is used and planned as a potable water supply. The Task Force finds that this policy conflict has not been resolved for artificial turf systems. Existing guidelines lack clear, site-specific standards demonstrating that soil filtration, biological treatment, and vertical separation distances are adequate to remove dissolved organic contaminants and metals prior to groundwater recharge

Reliance on natural attenuation lacks local validation

Assumptions that dilution, adsorption, and degradation will sufficiently attenuate synthetic turf contaminants before reaching groundwater are largely theoretical and not validated under San Francisco hydrogeologic conditions. The reviewed materials acknowledge uncertainty regarding the effectiveness of these processes for dissolved contaminants, and some studies warn that factors such as acidic

rainwater or groundwater may increase leaching rates. The Task Force finds that reliance on generalized attenuation assumptions is insufficient for protecting local groundwater resources

Alternative infill materials are not proven risk-free

While alternative and organic infill materials are often proposed as lower-impact substitutes for crumb rubber, the Task Force finds no evidence that any infill material is free from potential contaminants. SFPUC documentation indicates that even non-SBR infills may leach chemicals of concern and that long-term performance and degradation pathways for these materials remain uncertain. Substitution of infill materials alone does not eliminate the need for comprehensive environmental review and monitoring.

Cumulative and lifecycle impacts are not addressed

Synthetic turf fields are typically replaced approximately every ten years, yet routine maintenance and replacement activities do not trigger stormwater or groundwater review under current policies. With several dozen acres of synthetic turf already installed in San Francisco and additional projects proposed, the Task Force finds that cumulative contaminant loading and long-term environmental impacts are not adequately evaluated in existing standards.

Data gaps and lack of interdepartmental consensus persist

The Task Force finds that key datasets remain limited in scope, that earlier sampling results were not fully analyzed for several years, and that interdepartmental consensus on synthetic turf drainage policy has not been achieved. Advancing or expanding artificial turf standards without resolving these gaps risks institutionalizing practices that may not be protective of environmental or public health interests

Unproven Recycling Claims

Mr. Mauer stated that RPD has been recycling artificial turf for the past ten years. However, a 2019 [investigative article](#) reported that RPD had shipped loads of worn artificial turf more than 8,000 miles to Malaysia. It remains unclear whether RPD verified that actual recycling occurred at the destination. The plastics industry frequently uses the term “recycled” in misleading ways. There is no credible evidence that artificial turf is truly recycled at scale. While a small fraction may be repurposed, the overwhelming majority ultimately ends up in landfills.

Mr. Mauer now asserts that RPD is working with FieldTurf to recycle turf through Circular Polymers, a company whose parent organization is currently undergoing [bankruptcy proceedings](#). However, Joanne Brasch, Director of Advocacy at the California Product Stewardship Council, stated in an email to a Keep Crocker Real member: *“Circular Polymers is a collector, sorter, and pre-processor; they do not actually recycle.”* Mr. Mauer suggested that processed plastic would be used in products such as Trex decking. This process is more accurately described as downcycling—the conversion of materials into lower-quality

plastics that remain toxic, combustible, continue to shed microplastics, leach hazardous chemicals, and cannot themselves be recycled, ultimately ending up in landfills.

Notably, Trex has publicly stated that it does not accept synthetic turf materials. When asked directly, [Trex responded](#): *“Synthetic turf is not something we can accept into our process. There is no way to separate the polyethylene backing from the nylon fibers, and it would contain environmental contamination that our system cannot handle.”*

Scientific research further undermines claims that recycling artificial turf is environmentally benign. One study found that plastic recycling facilities may be a significant source of microplastic pollution in receiving waters, particularly particles smaller than 10 micrometers (Brown et al. 2023). The same study suggests that workers at recycling facilities may also be exposed to microplastics through inhalation. Additional research from China has demonstrated that microplastics have reached virtually all waterways (Zhang et al. 2018), raising serious concerns that artificial turf contributes to widespread and persistent environmental contamination.

Regardless of disposal method or location, every artificial turf field will continue to release PFAS and plastic pollution throughout its use phase and for hundreds of years afterward. Even if artificial turf were recycled, each successive manufacturing cycle would redistribute—and potentially concentrate—PFAS and other toxic chemicals into new products, perpetuating the problem rather than solving it.

It’s worth noting that California has laws regulating greenwashing claims.

FieldTurf’s History: Deceive and Adapt, Try Again

In an exercise to evaluate standards, it's fair to take a closer look at the company San Francisco taxpayers send millions of dollars to for the purchase of plastic fields. RPD has maintained a long-term relationship with its artificial turf supplier, FieldTurf. FieldTurf, a subsidiary of the multinational corporation Tarkett, has faced legal scrutiny in the past for selling defective products—and, more troublingly, for continuing to sell those products after it became aware of the defects. The company has also been caught making troubling PFAS-free claims.

In 2008, the People of the State of California—represented by Attorney General Edmund G. Brown Jr., the Los Angeles City Attorney, and the Solano County District Attorney—[filed a lawsuit](#) against FieldTurf USA, Inc. The complaint alleged violations of California’s Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) and the state’s Unfair Competition Law. At the time, lead was commonly added to artificial turf fibers to maintain vibrant coloration, and independent testing—including testing conducted by the state—found that some FieldTurf products contained lead levels far above health-based standards. The case was resolved through a settlement in which FieldTurf paid penalties

and agreed to reduce lead content in its products. Despite this history, RPD continued to rely on FieldTurf as a preferred vendor.

A 2016 *Voice of San Diego* [investigation](#) found that more than 20 taxpayer-funded artificial turf fields in San Diego County, installed with FieldTurf products, deteriorated prematurely—often within just a few years and well before their eight-year warranties expired. Public records showed that local schools paid tens of millions of dollars for turf that faded, balded, and shed fibers under normal use. FieldTurf offered failing customers either free replacement with the same defective material or a costly upgrade to supposedly more durable turf; some districts paid extra despite still being under warranty. Although the company acknowledged the defects and even sued its own supplier, many taxpayers were left to absorb the costs of repeated replacements.

Additional litigation followed a six-month NJ Advance Media [investigation](#) in 2024, which found that FieldTurf made millions selling high-end turf to schools and municipalities nationwide while allegedly knowing the product would fail prematurely. The turf product Duraspine reportedly lasted only about half as long as promised, deteriorated rapidly, and left athletes vulnerable to injury.

FieldTurf has also faced scrutiny for claims that it sells “PFAS-free” artificial turf. In a letter dated October 25, 2019, [FieldTurf assured the Portsmouth City Council](#) that its products were “free of PFAS, PFOS, and fluorine.” However, after installation, testing revealed that the turf was not PFAS-free. This raises serious questions about why FieldTurf represented its products this way when the company understood how consumers interpret “PFAS-free” and knew PFAS were used in the manufacturing process.

In 2025, FieldTurf again attempted to advance PFAS-free claims in Palo Alto. The city consulted a university professor to independently evaluate FieldTurf’s PFAS testing results and concluded that the manufacturer’s claims were [unsubstantiated](#). The review found that the turf fibers are primarily composed of a fluorinated polymer—polyvinylidene fluoride hexafluoropropylene (PVDF-HFP)—which the California Department of Toxic Substances Control (DTSC) has identified as an intentionally added PFAS in artificial turf.

Microplastic Management Mayhem

In Mr. Mauer’s presentation, very little was said about microplastic management standards. Yet in reality, loose artificial turf blades and infill are extremely difficult to control once they begin to shed. Fortunately, regulatory agencies are paying increasing attention to this problem. The California Department of Toxic Substances Control (DTSC) has [identified microplastics](#) as a serious concern because of their environmental persistence, mobility, particle size, and potential to harm human health and the

environment. Under California regulations, microplastics meet the hazard traits of environmental persistence and mobility (Cal. Code Regs., tit. 22, §§ 69405.3 and 69405.6). Because they move easily through environmental media, microplastics have become ubiquitous across ecosystems. They are now found in food supplies, can become airborne and inhaled, and have even been detected in umbilical cord blood, indicating fetal exposure. Data show that more than 4,000 species, including humans, have been exposed to microplastics, and that some of these exposures are harmful. Microplastics also meet the particle size and fiber dimension hazard trait because plastics readily degrade into microscopic particles in the environment (Cal. Code Regs., tit. 22, § 69405.7).

San Francisco's wind and fog further complicate microplastic containment in our coastal environment. A regulation-size artificial turf field [contains](#) roughly 40,000 pounds of plastic carpet and more than 400,000 pounds of infill. As these materials degrade, they generate secondary microplastics from the turf blades, backing, and shock pads. A 2017 study found that a single synthetic turf field loses [0.5–0.8% of its blades each year](#), equivalent to 2,000–3,000 pounds of microplastic fibers annually per field. A 2025 California Coastal Commission (CCC) [report](#) adds that up to 300 million plastic fibers can be lost from a single full-size soccer field each year.

That same CCC report concludes that stormwater best management practices designed to capture microplastics from artificial turf have not been shown to be reliably effective. Only about 16% of turf fibers released from fields enter stormwater drains; most are transported off-site by wind, surface runoff, and players' clothing. The report also notes that plastic granules, shreds, turf fibers, netting, and thin plastic materials are especially prone to shedding, and that liquid-applied plastic products—such as binders, coatings, and stabilizers—can also release microplastics over time through wear and weathering.

Critically, artificial turf fibers are commonly made of polyvinylidene fluoride hexafluoropropylene (PVDF-HFP), which DTSC has identified as an intentionally added PFAS in turf. This raises a fundamental question about RPD's standards: how does RPD currently collect and dispose of the plastic blades that are groomed or blown off the field?

Research by the San Francisco Estuary Institute confirms that artificial turf fibers are [ending up in San Francisco Bay](#). Fortunately, the California Ocean Protection Council has recently adopted the state's first [Microplastics Strategy](#), which may provide a framework for improving RPD's currently inadequate microplastic containment and elimination practices.

Artificial Turf Injury Risk

San Francisco athletes have a legitimate complaint about RPD groundskeepers not being adequately trained or equipped to manage gopher activity. While experts recommend installing gopher wire 16 to 24 inches below the playing surface to reduce injury risk, much of the public discussion this fall has focused instead on artificial turf-related injuries. These include the widely reported "turf toe" injury

sustained by the San Francisco 49ers' quarterback and the season-ending ACL tear suffered by rookie defensive end Mykel Williams while playing on FieldTurf plastic at MetLife Stadium.

Dr. Brian Feeley, an orthopedic surgeon at the University of California, San Francisco, [has stated](#) that his research shows ACL and Achilles tendon injuries are more likely on artificial turf and more likely to require surgery. "Artificial turf doesn't release cleats as easily," he explained. "That puts more torque and strain on the knees and ankles." Dr. Feeley has also warned of serious long-term consequences: "*An ACL injury as a young athlete can keep you from playing at the next level and lead to arthritis in your 30s.*"

Artificial turf has also been identified as a [potential source](#) of Staphylococcus aureus and methicillin-resistant Staphylococcus aureus (MRSA) infections, particularly due to skin abrasions and turf burns that commonly occur during play.

State of the Art Natural Grass

Many of us relish the memories of playing in grass, dirt, mud, rain and snow as kids. Those were the best times of our lives, however, times change and park management and some parents would prefer a playing environment that only *appears* to be more antiseptic, given the reality of chemical issues associated with plastic and rubberized surfaces. Maximizing hours of play and reducing maintenance by staff seems to be the top RPD priorities, according to Mr. Mauer's presentation. Since this was an artificial turf standards presentation we didn't get to hear about how RPD maintains its natural grass fields. We can point out, in the case of Crocker Amazon, the fields were last re-sodded 30 years ago. That's a long, chemical-free benefit from a space that offers more than just baseball for the community and wildlife that lives there 24/7/365. Contrast that to the razor and blade, constant-need-for-replacement model the plastic fields require.

Mr. Mauer mentioned that natural grass fields wear out. What he didn't mention was the seen and unseen microplastic breakdown of artificial turf blades which we've covered in other sections of this response. We'd like to demonstrate that a well-equipped, properly trained groundskeeping crew can get a lot of playable hours out of natural grass fields. In this section, we offer performance metrics from natural grass experts who properly designed, constructed, and maintained natural grass playing fields – including through organic turf management – as a viable, sustainable, and affordable alternative to artificial turf.

The following are success metrics from [natural grass experts](#)

Expert: JERAD MINNICK- MARYLAND SOCCERPLEX

>500 matches/yr/field

25-30 hrs/week, spring/fall

40-50 hrs/week, weekends

50-60 hrs/week, summer

40-50 hrs/week, summer camps (8hrs/day, 7days/week)

Play 16 weeks straight in spring; 6 weeks of camp only; 14 weeks in fall

Had a 21% increase in games 2023-2024 and found a way to accommodate increase

Have not had to replace a single soccer field (have 20) in 24 years

No games cancelled for rain (one for tornado; one for electrical storm)

11 FTEs for 160 acres of park: 50 acres of playing turf. Well below industry average even for RPD. Most professional facilities have 2 people/field; SoccerPlex has 0.5FTE/field, seasonal staff for events. Rely on technology: robotic line painters; compaction testing weekly to decide decompaction program and schedule to minimize diesel fuel use and best manage staffing (SoccerPlex is a non-profit; "runs lean and mean.")

Expert: PAM SHERRATT- OH STATE UNIVERSITY

25-50 hrs/week

Often no money from rental income goes back into field maintenance she has found; usage levels are high, maintenance levels are very low.

Expert: SUN ROSSLEIN- JEFFERSON COUNTY SCHOOL DISTRICT, CO

Centralized soccer and football stadiums for 6 high schools

30-35 football games/season

60 soccer games in 8 weeks

Boys/girls LaCrosse

Girls flag football

24 yr old stadium, just completed 2nd re-sod between hashes in 24 yrs.

Soccer field has never been resodded

Soccer stadium- 30 hrs/week

Football stadium- ~25hrs/week

Spring, LaCrosse on football field- ~35hrs/week

Games every nite/week, often double or triple headers

Only close fields due to lightening or heavy snow

Down time/resting fields: during sports season, Sunday; summers (schools out of session), usually rent out fields, renovate, recuperate.

Artificial Turf Industry: Natural Grass is Best

Even leaders within the artificial turf industry acknowledge the superiority of natural grass for athlete safety. Dan Sawyer, CEO of Brock—manufacturer of BrockFILL and supplier of RPD’s turf shock pads—[has stated](#) that *“all athletes prefer natural grass”* and that *“natural turf will always outperform, on a pretty significant level, the safety values you get when you compare it to synthetic turf.”* [AstroTurf](#), another industry leader, similarly recognizes natural grass as the gold standard. These statements, however, are typically framed only in terms of injury and performance. What’s often overlooked is that natural grass is also the gold standard for environmental and human health. Our children and youth deserve this holistic standard—one that means zero PFAS exposure, zero toxic additives, and zero petrochemical macro-, micro-, and nanoplastics.

Mr. Mauer also referenced a common plastics-industry talking point regarding pesticide use on natural grass. We would welcome greater transparency about RPD’s actual pesticide practices, as a West Sunset groundskeeper told us in-person that pesticides are not permitted on those fields. Plastic grass proponents frequently focus on fertilizers and pesticides used on grass while ignoring the fact that, with modern turf management practices and improved grass varieties, these inputs can be significantly reduced or eliminated. What they fail to acknowledge is that artificial turf itself is made entirely of chemicals—hundreds, if not thousands, across its various components. There are [approximately 16,000](#) plastic chemicals, of which 4,200 are considered hazardous and 3,600 remain unregulated. Artificial turf systems commonly include antimicrobials, heat reflectants, UV stabilizers, colorants, binders, and other additives. In general, the more functions manufacturers claim their turf can perform, the more chemicals are added.

In addition, artificial turf maintenance often involves cleaners, solvents, antistatic agents, and antimicrobial products. Many of these substances are stored in fluorinated plastic containers that can leach PFAS into their contents, creating yet another pathway for PFAS to enter soils, groundwater, and the broader environment. And even if every component of artificial turf were somehow PFAS-free, the product would still be a petrochemical plastic surface that sheds pollution.

Benefits of Properly Managed Natural Grass

Properly managed natural grass fields:

- Provide equitable access to healthy playing surfaces for thousands of athletes

- Naturally cool the environment through evapotranspiration
- Produce oxygen and improve air quality
- Sequester carbon and reduce pollution
- Trap dust, dirt, and pollen
- Reduce glare and light reflection
- Absorb sound
- Filter stormwater and reduce flooding
- Break down organic chemicals and organic matter
- Stabilize soil and reduce erosion through root systems
- Support biodiversity above and below ground
- Strengthen surrounding trees and ecosystems
- Reduce the risk of heat, non-contact, and concussion injuries
- Promote mental wellness and reduce stress-related muscle tension
- Lessen ADHD symptoms in children and improve focus
- Foster appreciation of nature
- Enhance community appeal and property values
- Sustainable
- Do not leach microplastics or PFAS into the environment

Cost is rarely mentioned by RPD when comparing artificial turf and natural grass, yet it's far from insignificant. At a Santa Clara city budget meeting, the [City's Director of Parks and Recreation stated](#):

"Synthetic fields on the market are far and away more expensive than grass. Grass grows. We can add seed, soil, sun, water, and rest it. Synthetic turf does not regenerate. Every 8 to 10 years it must be replaced—and that's just the turf. There's also the mat, with a 20- to 25-year lifespan, and the substrate that must be addressed every time the mat is removed.

Just replacing the synthetic turf on a standard soccer field alone exceeds \$1 million. Across multiple facilities, replacement costs quickly reach \$3–5 million."

Finally, we recommend that RPD seek guidance on natural grass best management practices from the [Turfgrass Resource Institute \(TURI\)](#) and the [Sports Field Management Association](#), while investing in career development and training for groundskeepers and maintenance staff. One underutilized strength of RPD is its ability to cultivate a strong volunteer program of community-based, amateur groundskeepers. Parents and students who are passionate about sports are often willing to contribute time and earn service hours—many of which are now encouraged or required by schools.

Water, Fire and Carbon Pollution

Water Use and Water Contamination

Mr. Mauer presented artificial turf as a water-saving solution. This claim collapses once the full lifecycle water footprint of plastic grass is considered.

Independent lifecycle estimates indicate that approximately 3,744 liters (989 gallons) of [water](#) are required to manufacture one square meter of artificial turf. Applied to a regulation-size soccer field (about 81,000 square feet), this equates to nearly 7.5 million gallons of water consumed before the field is even installed. According to Alm (2016), manufacturing just one artificial turf field uses as much water as maintaining a natural grass field for four years. This alone undermines the premise that synthetic turf is a water-conservation strategy.

More importantly, every gallon of water that comes into contact with artificial turf becomes contaminated. Manufacturing water, maintenance water, rainfall, stormwater runoff, and landfill leachate are all exposed to:

- Microplastics
- PFAS (“forever chemicals”)
- Plasticizers, stabilizers, dyes, and flame retardants

Rain that falls on artificial turf fields does not soak into soil or get filtered by living roots and microbes. Instead, it mobilizes contaminants and carries them directly into San Francisco’s storm drains and Bay.

A single artificial turf soccer field is estimated to leach approximately 12 milligrams of PFAS per year (Based on the U.S. Environmental Protection Agency’s drinking water limit of 4 parts per trillion for PFOS and PFOA). That amount of PFAS is enough to contaminate approximately 800,000 gallons of water annually. These chemicals persist indefinitely.

RPD’s artificial turf standards do not account for this permanent water contamination load.

Wastewater Treatment Limitations

Mr. Mauer indicated that RPD captures and routes water from their plastic fields directly into our sewage system. San Francisco’s wastewater system is not equipped to remove artificial turf pollutants.

The San Francisco Public Utilities Commission (SFPUC) [states clearly](#) that technology capable of removing or destroying PFAS at the required scale, cost, and effectiveness does not currently exist. PFAS are extremely persistent, and standard wastewater treatment processes do not break them down. Routine PFAS monitoring by SFPUC only began in 2025, and the agency is still gathering baseline data.

Wastewater treatment plants do remove some microplastics through settling and biological processes—but a significant fraction still passes through into receiving waters. [Studies show](#) that San Francisco’s treatment plants discharge measurable microplastics into the Bay, often at higher levels than many other U.S. facilities.

Phthalates, plastic additives, and other emerging contaminants associated with plastic turf are inadequately removed by conventional treatment processes.

Importantly, SFPUC [does not plan to upgrade](#) its facilities to remove microplastics or PFAS. Instead, its strategy is to control pollution at the source. This makes RPD's expansion of artificial turf—one of the largest sources of microplastic and PFAS pollution in urban parks—directly incompatible with regional water quality goals.

Fire Risk and Toxic Smoke

The artificial turf fire started by illegal fireworks this summer at [Diablo High](#) is one recent example of how RPD's expansion of artificial turf could create a growing fire and public safety hazard in a city that frequently celebrates with illegal fireworks..

San Francisco firefighters have responded to [multiple fires](#) involving synthetic playground and turf surfaces, including repeated blazes at Lafayette Elementary School and Lincoln Park, which left melted plastic, burned synthetic rubber, and toxic debris behind. These fires have become more frequent and more intense and it's not fair for taxpayers and donors to keep paying for replacement materials while being forced to endure toxins that are released into the air. The City is now spending approximately \$4 million to [resurface and repair](#) 13 neighborhood playgrounds including Alta Plaza, Alamo Square, St. Mary's Square, McCoppin Square, and playgrounds in the Mission, Sunset, Eureka Valley, and Potrero Hill. These will, no doubt, expand RPD's plastic and rubber footprint.

Artificial turf and playground surfaces contain flammable plastics and synthetic rubber treated with chemical [flame retardants](#), including:

- Polybrominated diphenyl ethers (PBDEs)
- Hexabromocyclododecane (HBCD)
- Organophosphate flame retardants

These chemicals are associated with endocrine disruption, neurodevelopmental harm, and potential carcinogenic effects. When synthetic turf burns, it releases toxic smoke and contaminated runoff, creating emergency hazards for residents, first responders, and the environment.

Carbon and Climate Pollution

Artificial turf is a fossil-fuel product from cradle to grave. Its climate footprint extends far beyond installation.

The lifecycle includes:

- Hydraulic fracturing (“fracking”) for oil and gas
- Petrochemical refining
- Ethane cracking into plastic resin pellets
- Turf fiber and backing manufacturing
- Shock pad and infill production
- Global shipping
- Maintenance and grooming
- Landfilling or illegal dumping

- Centuries of degradation

As [plastics degrade](#), they [emit methane and ethylene](#), two powerful greenhouse gases. Methane traps over 90 times more heat than carbon dioxide in the near term, and land-based plastics emit twice as much methane and 76 times more ethylene as plastics in marine environments.

In April 2024, Lawrence Berkeley National Laboratory reported that greenhouse gas emissions from plastics are now four times higher than those from the aviation industry.

None of this pollution is included in RPD's artificial turf standards or environmental reviews. And it's worth noting that most of RPD's plastic fields are placed in neighborhoods with high historic [environmental injustice harms](#).

Heat and Urban Climate Stress

Artificial turf also intensifies urban heat. San Francisco's own [Heat Index Map](#) shows bright pink "hot spots" across synthetic turf and playground surfaces. Unlike living grass, plastic turf absorbs and re-radiates heat, raising surface and air temperatures, increasing dehydration risk, and worsening heat-related illness—especially for children.

Biodiversity Loss

The climate crisis and the plastic pollution crisis are together driving unprecedented biodiversity loss worldwide. At Crocker Amazon Park alone, more than 100 trees are slated for removal, 20 acres of living soil will be destroyed, and wildlife will be displaced—including the Tricolored Blackbird, a species listed as [threatened](#) under the California Endangered Species Act.

Mr. Mauer has stated that each of these historic trees chopped down for the artificial turf design footprint—many planted by WPA workers in 1938 as part of this cultural landscape—will be replaced on a two-for-one basis. Yet RPD's own renovation renderings unrealistically depict these replacements as 30–50-foot-tall mature trees, not saplings that would take decades to provide comparable ecological value. Josh Klipp, a member of San Francisco's Urban Forestry Council, has noted that since 2017 the City has barely planted trees at all and has largely failed to honor its promised two-for-one replacement policy. If RPD's motivation is to reduce maintenance, it is also worth noting that surrounding plastic fields with trees that drop pine needles, acorns, and leaves would create ongoing conflicts with artificial turf operations.

It is not only trees and shrubs that will be lost. The park's expansive lawn currently supports a vibrant food web and serves as critical foraging habitat for Red-tailed Hawks, swallows, Black Phoebes, American Robins, Northern Flickers, West Coast Lady butterflies, Fiery Skippers, and many other species.

Because nearly all plastic ever produced still exists, the ecological consequences of replacing living landscapes with plastic in our open space-starved city are profound.

None of RPD's artificial turf standards evaluate impacts on adjacent sensitive sites, including the La Grande Community Garden and Hummingbird Farm, both of which depend on clean soil, water, and air.

Scientific evidence increasingly links synthetic turf and microplastic pollution to [declining bird populations](#), [microplastic accumulation in pollinators such as bees](#), [impaired plant photosynthesis](#) and damage to ocean ecosystems. By 2021, researchers estimated more than 1,500 species had already [ingested microplastics](#). These particles have been found from the summit of Mount Everest to the depths of the Mariana Trench, and most recently in the air [exhaled](#) by dolphins through their blowholes—a stark reminder that plastic pollution now permeates every corner of the biosphere. Artificial turf itself has been found to [reduce sparrow populations](#).

Conclusion

In San Francisco, we value recreation—but we also demand healthy human environments and thriving nature. San Franciscans expect the Recreation and Park Department's standards to be world-class. We are a city that bans plastic bags and plastic straws, promotes Zero Waste, adopted a Biodiversity Resolution and committed to an ambitious Climate Action Plan. We even recently celebrated our firefighters receiving PFAS-free protective gear because we recognize the dangers of toxic chemicals.

San Francisco prides itself on being future-focused and science-driven. By contrast, artificial turf increasingly looks like cigarettes, leaded gasoline, and asbestos insulation—products once widely accepted, now understood as dangerous relics of the past. We hope you join us and [these national orgs](#) in encouraging the playfield standard to be natural grass.