Communication from Public

Name:	Annie Stuart
Date Submitted:	06/27/2024 03:14 PM
Council File No:	24-0602
Comments for Public Posting:	Re: Artificial Turf Thank you for taking up this issue. Testing for the presence of PFAS is a good first step. However, with what we now know about the dangers of artificial turf, it is time to dispense with this product altogether. In addition to the health dangers of PFAS, artificial turf: • Increases the risk of skin burns and heat stress • Requires large amounts of water for its maintenance • Can contribute to concussions, joint injuries, and skin infections • May cause breathing problems due to off-gassing • Contains plastic, contributing to the climate crisis • Creates microplastics, harming waterways, humans, and other species • Kills soil microbes, lessening carbon sequestration • Is not recyclable, requiring landfilling or incineration, which releases planet-warming gases and toxic chemicals If these dangers are not addressed, the risks of lawsuits will surely grow. No new installations of artificial turf! Sincerely, Annie Stuart

Re: Artificial Turf

Thank you for taking up this issue.

Testing for the presence of PFAS is a good first step. However, with what we now know about the dangers of artificial turf, it is time to dispense with this product altogether.

In addition to the health dangers of PFAS, artificial turf:

- Increases the risk of skin burns and heat stress
- Requires large amounts of water for its maintenance
- Can contribute to concussions, joint injuries, and skin infections
- May cause breathing problems due to off-gassing
- Contains plastic, contributing to the climate crisis
- Creates microplastics, harming waterways, humans, and other species
- Kills soil microbes, lessening carbon sequestration
- Is not recyclable, requiring landfilling or incineration, which releases planet-warming gases and toxic chemicals

If these dangers are not addressed, the risks of lawsuits will surely grow.

No new installations of artificial turf!

Sincerely,
Annie Stuart

Communication from Public

Name:	Katherine Pease
Date Submitted:	06/27/2024 03:15 PM
Council File No:	24-0602
Comments for Public Posting:	Please find attached a letter of support for the motion from Heal the Bay, LA Waterkeeper, and NRDC.

June 27, 2024

Los Angeles City Council
Energy & Environment Committee
John Ferraro Council Chamber
Room 340, City Hall
200 North Spring Street, Los Angeles, CA 90012

Re: Support for Council File #24-0602 (Blumenfeld, Yaroslavsky, & Hernandez)

Submitted online

Dear Honorable Chair Yaroslavsky and members of the LA City Council Energy and Environment Committee:

On behalf of Heal the Bay[1], Los Angeles Waterkeeper[2], and NRDC we offer our strong support for Councilmember Blumenfeld's Motion (#24-0602) concerning artificial turf and protection of environmental and public health.

The proposed motion is a critical first step in compiling information and recommendations on artificial turf to move towards a future that prioritizes environmental and public health. Artificial turf has negative impacts on our waterways, watershed health, and communities. Artificial turf is made from rubber and plastic with unknown additives, is often coated with PFAS (a toxic forever chemical that is becoming all too pervasive in our ecosystems), and contains significant quantities of microplastics. When it rains, all of these pollutants from turf enter stormwater and make their way into nearby rivers, creeks, and the ocean, further polluting our region's already impaired waterways. These pollutants will also likely enter our groundwater system through infiltration beneath the artificial turf fields, contributing contamination to a vital source of local sustainable water supply that will become ever more necessary as climate change exacerbates drought conditions over the coming decades. Artificial turf does not promote, and in fact inhibits, biodiversity and soil health, both critical components to maintaining healthy ecosystems and communities.

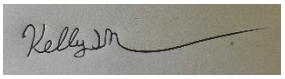
We ask that a timeline be defined for the motion, preferably to be set at 90 days, to be able to move forward expeditiously on this important topic.

[1] Heal the Bay is a non-profit environmental organization with nearly 40 years of experience dedicated to making the coastal waters and watersheds of Greater Los Angeles safe, healthy, and clean. We use science, education, community action, and advocacy to fulfill our mission.
[2] LA Waterkeeper is a non-profit organization with more than 30 years of experience serving as LA's water watchdog, safeguarding the regions inland and coastal waters using the law, science and community action. LA Waterkeeper works to eliminate pollution, achieve ecosystem health for our waterways and secure a resilient, multi-benefit, low-carbon water supply to the region.

In summary, the undersigned organizations strongly support the artificial turf motion and we urge you to vote yes. We look forward to continuing our strong working relationship with the City to protect the health of the Santa Monica Bay.

Sincerely,

Katherine Pease, PhD
Director of Science & Policy
Heal the Bay



Kelly Shannon
Associate Director
Los Angeles Waterkeeper

Mark Gold, D.Env.
Director of Water Scarcity Solutions
NRDC

Communication from Public

Name:	Kathryn Dressendorfer
Date Submitted:	06/27/2024 05:05 PM
Council File No:	24-0602
Comments for Public Posting:	On behalf of the Surfrider Foundation Los Angeles Chapter, we are writing in support of Councilmember Bob Blumenfield's Artificial Turf motion, LA City Council File 24-0602. The Surfrider Foundation advocates for protecting clean water and preventing plastic pollution to support healthy, resilient coasts for everyone to enjoy. Artificial turf is a source of plastic pollution through plastic infill and turf material, pollutes waterways with PFAs and other chemicals, increases stormwater runoff, and contributes to the urban heat island effect. Surfrider's Ocean Friendly Gardens program advocates for the use of nature-based stormwater capture, native & climate-appropriate plants, and preventing water pollution from landscapes. California native plants and drought-tolerant grasses use less water, thrive in our climate, recharge our groundwater, and provide food and habitat for local wildlife. These alternatives not only prevent water pollution but also reduce the amount of waste that ends up in landfills, as artificial turf is not recyclable and has a limited functional lifespan. Thank you for your consideration of Councilmember Bob Blumenfield's Artificial Turf motion, LA City Council File 24-0602.

SURFRIDER FOUNDATION
LOS ANGELES

26 June 2024

Dear Los Angeles City's Energy & Environment Committee:

On behalf of the Surfrider Foundation Los Angeles Chapter, we are writing in support of Councilmember Bob Blumenfield's Artificial Turf motion, LA City Council File 24-0602.

The Surfrider Foundation advocates for protecting clean water and preventing plastic pollution to support healthy, resilient coasts for everyone to enjoy.

Artificial turf is a source of plastic pollution through plastic infill and turf material, pollutes waterways with PFAs and other chemicals, increases stormwater runoff, and contributes to the urban heat island effect.

Surfrider's Ocean Friendly Gardens program advocates for the use of nature-based stormwater capture, native & climate-appropriate plants, and preventing water pollution from landscapes. California native plants and drought-tolerant grasses use less water, thrive in our climate, recharge our groundwater, and provide food and habitat for local wildlife. These alternatives not only prevent water pollution but also reduce the amount of waste that ends up in landfills, as artificial turf is not recyclable and has a limited functional lifespan.

Thank you for your consideration of Councilmember Bob Blumenfield's Artificial Turf motion, LA City Council File 24-0602.

Sincerely,

Eugenia Ermacora

Los Angeles Chapter Manager
Surfrider Foundation

Kathryn Dressendorfer

Southern California Ocean Friendly Gardens Coordinator
Surfrider Foundation

Communication from Public

Name:	Aleksandar Pavlovic
Date Submitted:	06/27/2024 08:39 PM
Council File No:	24-0602
Comments for Public Posting:	Please review the official statement in the attached letter document. On behalf of the Executive Steering Committee and Board President of Resilient Palisades.

Dear Members of the Los Angeles City Council:

Thank you for the opportunity to submit these comments on behalf of Resilient Palisades, an all-volunteer 501(c)(3) non-profit organization which brings together neighbors and local institutions to address the climate and ecological crisis. We are harnessing our collective energy to help build a resilient future for Pacific Palisades and for the city and parkland that surrounds us. Let this letter be record of our support of Councilman Blumenfield motion CF24-0602:

A Resolutions to Ensure Safe Drinking Water and Reduce Risks from Artificial Turf.

The Impact of Artificial Turf on Health and the Environment

Reasons to Halt the Use of Artificial Turf

Artificial turf is not only environmentally harmful but also poses significant human health concerns. The typical lifespan of an artificial turf field is 8 to 15 years, but in areas like Pacific Palisades, exposure to marine salinity and sun deterioration may significantly reduce this lifespan. This introduces natural budgetary cycle considerations.

Flood Mitigation Considerations

Artificial turf is considered an impervious surface, meaning it prevents or significantly impedes the infiltration of water into the underlying soil- recharging the aquifer . The installation of artificial turf can lead to increased stormwater runoff and associated flooding risks. For example, just this year, the Palisades received 12 inches of rain in less than 24 hours. According to Penn State Extension, one inch of rainfall on an acre of impervious surfaces produces 27,000 gallons of stormwater to manage. Stormwater runoff from one acre of impervious surface is equivalent to the runoff from 20 acres of grassland. A properly designed and maintained grass field would eliminate approximately 30:1 ratio of stormwater management, reducing millions of gallons of stormwater runoff per year.

Impact on Soil Health

Soil are an ecosystem of microorganism- bacteria, fungi, and other microscopic organisms that break down "waste" and (re) cycle it into nutrients for vegetation= (soil food web -Nature based solutions/compost). Artificial turf, being an impermeable surface, seals off the soil, preventing these communities from performing their essential functions such as evapotranspiration and water retention.

Given the current arid environment due to climate challenge and the city's efforts to cool communities, it seems incomprehensible to install artificial turf. It produces more heat, does not allow water retention, and off-gases significantly more than methane. Additionally, it increases biodiversity loss, kills trees, and

significantly harms the environment, air, and water quality, not to mention the devastating human health concerns.

In coastal communities such as Pacific Palisades, we are additionally subject to marine environments and flood protocols. The California Coastal Commission conditioned a 3-acre baseball field at UCSB for natural grass only, citing concerns about micro-plastics (Dec 13, 2023). Fields with natural turf grass managed organically can actually collect, filter, and store stormwater, serving as a piece of stormwater management.https://documents.coastal.ca.gov/reports/2023/12/W13.1a/W13.1a-12-2023-report.pdf

Micro-plastics and Water Contamination

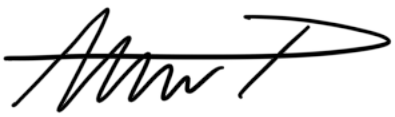
Artificial turf is made from plastics, per- and polyfluoroalkyl substances (PFAS), a class of thousands of synthetic forever chemicals that are not easily broken down and are known carcinogens. Over time, artificial turf breaks down into micro-plastics, which then enter our air and water cycles. Current water filtration systems, whether municipal or home-based, struggle to filter these particles out of our drinking water. Recent EPA findings state that no levels of PFAS are safe. Estimates suggest that, between our water and the food we eat, each of us consumes between 0.1 to 5 grams of plastic per week—roughly the volume of a credit card. Filtered water is a privilege that not all Southern California or Los Angeles communities have. CA's biodiversity, in one of the five worldwide biodiversity hotspots, we should take all measures to protect this significant flora, funga and fauna not harm it by reducing its viability and our own. AT our municipal water (Hyperion Water Reclamation) doesn't have the ability to filter PFAS see green tip a few months back). These micro-plastics will persist in our waterways for generations without solid science leading the way all astroturf fields tested have found PFAS- even the ones that stated they had none.

Artificial turf has been shown to cause more injuries to recreational users, including leg, ankle, and foot injuries, as well as burns. The surface of artificial turf can be up to 37 degrees hotter than asphalt and 86.5 degrees hotter than natural turf grass. Anything over 120 degrees Fahrenheit can cause skin burns/ infections within 2 seconds of contact. Without regular watering, the soil beneath artificial turf becomes compacted and as hard as concrete, increasing the risk of injuries for users of these fields raising labially concerns. In addition having to cool a plastic carpet and then clean with potable water does not seem cost effective given all the ecological negative impacts. I hope LA city council will move to halt the use of Astroturf in LA and beyond!

Sincerely,

Executive Steering Committee

Aleksandar Pavlović
Board President
resilientpalisades.org
aleksandar@resilientpalisades.org



Communication from Public

Name:	Nikki
Date Submitted:	06/27/2024 08:50 PM
Council File No:	24-0602
Comments for Public Posting:	Please listen to the science in support counsel file 240602. There is no question that artificial turf is bad for the children playing on it, bad for mitigating heat in our cities while increasing plastic polution of our environment and contributing to global warming. It is also killing billions of soil dwelling organisms that help absorb carbon and using valuable water resources to keep it cool. The council members are in a unique position to hold the line on future destruction of the planet. This might seem like one small thing but it contributes to the totality of the way the earth is being destroyed for future generations but all these little ways add up. We need a different mindset on how we manage the planet. We should be looking at all things in the framework of how it affects the natural word that sustains us. It is unfortunate that so many cannot look to the future when deciding how to act today. Personal wealth should not override the goal of maintaining a livable world for the future

For more information contact
Terry Saucier terrysaucier@gmail.com
Kathy Schaeffer kathys3115@gmail.com

ARTIFICIAL TURF FACT SHEET

Artificial Turf is NOT the Solution – Nature-based Solutions Are!

The Climate Reality Project, Los Angeles and San Fernando Valley Chapters, the Los Angeles Neighborhood Council Sustainability Alliance, and other coalition partners support a ban on new installations of artificial turf due to human health hazards, environmental contamination, and negative impacts on wildlife. We support natural grass fields and planting of native California plants.

All artificial turf contains hazardous (PFAS) chemicals. PFAS "forever chemicals" have been identified as carcinogens, neurotoxins, and hormone disruptors that can cause thyroid disease, decreased fertility, early puberty, impaired vaccine response, and are associated with learning and behavioral problems in infants and children, as well as a long list of cancers. PFAS microplastic exposure can occur through inhalation, ingestion, and dermal (skin) absorption. Children and athletes playing on artificial turf are subject to all three routes of exposure. PFAS chemicals bioaccumulate, and are therefore especially harmful to children who are still developing.

Artificial turf is too hot, too hard, and may come with liability Issues. It can reach temperatures up to 80º higher than the air temperature, readily reaching 160ºF or 180ºF and more. This can lead to serious thermal burns and heat stress. Turf burns from friction and non-contact lower extremity injuries are also more frequent on synthetic grass. It has also been found to cause a "heat island effect," raising the surrounding temperature in the local environment. Artificial turf uses an inordinate amount of water for cooling before use on hot days. With time, it can become extremely hard, increasing the risk of concussions. There are also liability risks – the EPA has begun issuing regulatory limits on some PFAS; California is proposing more stringent regulations, and there have been class action suits for contaminated water and exposure to artificial turf's PFAS cancer-causing chemicals.

Artificial turf pollutes local waters, soil, and air. Unlike natural grasses and surfaces, artificial turf is an impervious surface (per State of Calif and US EPA), negatively affecting the recharging of groundwater and increasing the risk of flooding. Stormwater run-off from artificial turf can cause PFAS to leach into groundwater, contaminating our drinking water. The EPA has recently reported there is no "safe" amount of PFAS for drinking water. Artificial turf sheds microplastics that pollute the soil and waterways, where they can end up in our oceans, never breaking down. The California Coastal Commission recently vetoed UC Santa Barbara's proposed 3-acre artificial turf baseball field because of its negative impacts on water and mandated that they use natural grass. Artificial turf can't be recycled and will end up in our landfills, where it will continue to pollute the environment. Artificial turf also off-gasses ethylene and methane (contributing to the climate crisis) versus real grasses and plants, which serve as a carbon sink.

Nothing lives in plastic grass. California is one of the world's 36 biodiversity hotspots with more native plant species than any other state in the U.S. Not only does artificial turf not support life, it actually kills the soil and the living organisms in it for generations to come. Artificial turf takes away habitat from insects, birds, and local wildlife, contributing to the loss of biodiversity. Studies also show that children benefit from interactions with natural surfaces and nature.

Artificial turf playing fields cost more than natural grass fields. Studies show that over time, artificial turf can cost 2 to 4 times more than properly installed and maintained natural grass fields; synthetic turf is a poor investment. When comparing natural grass playing fields to artificial turf, it is important to compare the entire product life cycle including the capital cost of installation, annual maintenance, sod replacement as needed for natural fields, and surface/in-fill replacement of the synthetic fields, as well as disposal of artificial turf (removal, transport, and landfill fees).

Summary – Artificial turf is **NOT** a safer playing surface, does not significantly reduce water usage, and is not a sound investment. Installing artificial turf does not take into account the true cost to our children's health and the health of our environment. The solution is nature-based solutions – California native plants and drought-tolerant grasses that use less water, thrive in our climate, recharge our groundwater, and provide food and habitat for local wildlife.

RESOURCES – Health & Environmental Impacts

CalMatters, ***Once it was hailed as a drought fix—but now California's moving to restrict synthetic turf over health concerns***, 10/18/23, by Shreya Agrawal https://calmatters.org/environment/2023/10/california-synthetic-turf-pfas/

Safe Healthy Playing Fields, Inc., https://www.safehealthyplayingfields.org/ Fact Sheets and Articles, https://www.safehealthyplayingfields.org/fact-sheets

Public Employees for Environmental Responsibility, Artificial Turf fact sheet, https://peer.org/wp-content/uploads/2022/10/PEER_fact_sheet_ArtificialTurf_v03-1.pdf, articles https://peer.org/?s=artificial+turf

TURI Toxics Use Reduction Institute UMASS Lowell, Athletic Playing Fields Selecting Safer Alternatives: resources on artificial turf impacts on human health and the environment, and cost of installation and maintenance of artificial turf vs natural grass, https://www.turi.org/Our_Work/Community/Athletic_Playing_Fields

Beyond Plastics, Synthetic Turf is Hazardous fact sheet, https://www.beyondplastics.org/fact-sheets/synthetic-turf

National Center for Health Research, 4/18/22, NCHR Letter to Board of Los Gatos Union School District outlining artificial turf health concerns, Dr. Diana Zuckerman, President, NCHR https://www.center4research.org/nchr-letter-to-members-of-the-board-of-the-los-gatos-union-school-district-on-artificial-turf-and-playgrounds/

Associated Press, ***EPA to limit toxic "forever chemicals" in drinking water***, 3/14/23, by Michael Phillis https://apnews.com/article/epa-pfas-forever-chemicals-water-contamination-regulations-560d0ce3321e7fa8ed052f792c24f16f; **Associated Press**, ***Toxic "forever chemicals" about to get their first US limits***, 3/2/23, by Michael Phillis, https://apnews.com/article/pfas-epa-water-regulations-d2d5052c36a5a95f4e56866f028c9c4f

CHE Collaborative for Health and Environment Environmental Health Impacts Synthetic Turf & Safer Alternatives Webinar, 1/27/22,Toxics Use Reduction Institute (TURI); Northeastern University; Ichan School of Medicine Mount Sinai, https://www.healthandenvironment.org/assets/images/webinarimages/Artificial%20Turf%20Q&A_FINAL.pdf

Is Artificial Turf & Grass Toxic?, The Filtery, 8/23/23, by Jeanne Yacoubou, MS, https://thefiltery.com/is-artificial-turf-grass-toxic/

Risky Play, A stew of toxic chemicals lurks in artificial turf. Some experts worry they could be linked to cancer in young athletes, Philadelphia Inquirer, 2/20/24, Barbara Laker and David Gambacorta, https://www.inquirer.com/news/pennsylvania/inq2/pfas-artificial-turf-cancer-athletes-pennsylvania-nj-20240220.html

National Football League Players Association, 9/30/20, NFLPA President JC Tretter, calls for NFL clubs to change all field surfaces to natural grass due to increased rate of lower extremity injuries on artificial turf fields https://nflpa.com/posts/only-natural-grass-can-level-the-nfls-playing-field

Opinion: ***Pediatricians Warn That Synthetic Turf Is Especially Dangerous For Children And Teens***, AmherstIndy, 12/2/2022, by Maura and Art Keene, cites Environmental Health Center at the Icahn School of Medicine Mt. Sinai Hospital in N.Y., https://www.amherstindy.org/2022/12/02/opinion-pediatricians-warn-that-synthetic-turf-is-especially-dangerous-for-children-and-teens/

COST OF ARTIFICIAL TURF PLAYING FIELDS VS NATURAL GRASS

TURI Athletic Playing Fields ***Selecting Safer Alternatives,*** **TURI Report #2018-002** December 2018 (updated April 2019), https://www.turi.org/var/plain_site/storage/original/application/b9727dedf5860ae7e83e3226d058b7ee.pdf

Safe Healthy Playing Fields Factsheet, https://mail.google.com/mail/u/0/#sent/KtbxLwGnQSdjQxnGLghCXMvsvtvkZRbdQq?projector=1&messagePartId=0.2

LEGISLATION / ORDINANCES

Statewide 2023 (Passed SB676, Proposed AB1423, SB499)

City of Millbrae Artificial Turf Ordinance (2023) prohibits installation of synthetic turf and artificial grass landscaping effective 1/1/24, https://www.ci.millbrae.ca.us/276/Prohibition-of-Artificial-Turf

California Coastal Commission, 11/30/2023, Notice of Impending Development UCS-NOID-0002-23 (Baseball Stadium Turf) for Public Hearing and Commission Action 12/13/2022, Commission vetoes UCSB's proposed 3-acre artificial turf baseball field due to negative impacts on water, and mandates natural grass https://documents.coastal.ca.gov/reports/2023/12/W13.1a/W13.1a-12-2023-report.pdf

RESOURCES FOR ALTERNATIVES

Osborne Organics, https://osborneorganics.com/

Toxics Use Reduction Institute, UMass Lowell - Organic Grass Care https://www.turi.org/Our_Work/Community/Topic_Areas_and_Past_Grants/Healthy_Schools/Organic_Grass_Care

Communication from Public

Name: Cheryl Auger
Date Submitted: 06/27/2024 11:26 PM
Council File No: 24-0602
Comments for Public Posting: We are writing in support of LA City Agenda Item 2, Motion 24-0602 to transition away from future installations of synthetic grass / artificial turf citywide, and identify incentives and rebate programs to remove and replace synthetic turf / artificial grass, and encourage the transition to California friendly landscaping. With the growing awareness of the climate crisis, cities and agencies are implementing artificial grass as a means to reduce water consumption. While initially it seems like a great way to save water, this solution is actually mired in unintended consequences including: -killing microorganisms, wildlife habitats and biodiversity below every artificial turf installation -emitting toxic leachate in runoff to nearby fields and storm drains -creating heat islands as the heat is absorbed by these fields which is exacerbated by the fact that trees and other shade plants don't grow in artificial turf -contributing to warming temperatures -impacting the health of users -increasing the cost of maintenance A study conducted at Brigham Young University found that "The surface temperature of the synthetic turf was 37° F higher than asphalt and 86.5° F hotter than natural turf." Artificial turf is a silent but significant contributor to our climate demise. Research indicates we need more real turf and have shown reduced global warming in countries where agriculture has intensified. Synthetic turf, which off gasses methane and ethylene and contains PFAS, has known public health dangers, especially to our youth who have prolonged exposure to these fields. Artificial turf is being assessed for its health impacts from known carcinogens & neurotoxins: lead, mercury, cadmium, PAHs, VOCs, SVOC, phthalates, benzene, toluene, and carbon nanotubes. A study published by the National Library of Medicine identified 306 chemical constituents of crumb rubber infill from 20 publications. Utilizing a computational program to predict carcinogenicity and genotoxicity, 197 of the identified 306 chemicals met their carcinogenicity criteria. Of these, 52 chemicals were also classified as known, presumed or suspected carcinogens by the US EPA and ECHA. In addition, cities and agencies prefer artificial turf for its low maintenance but in reality, the cost to implement and maintain these fields is almost equivalent to installing and maintaining natural turf fields. Also the impacts of heavy rains and winds are more disastrous for artificial turf fields,

and unquestionably, our futures are filled with atmospheric rain and wind storms. In addition, with lower snowpacks forecasted, capturing groundwater will be imperative for future water supplies and artificial turf interferes with groundwater capture. In addition, artificial turf sports fields actually need to be watered to keep temperatures down during summer months. Here's a summary from a letter submitted to Glendale Community Services and Parks showing the reality of maintaining an artificial turf field. "A well-maintained Shawgrass field requires the following. (1) The field must be swept with a machine, once per week. (2) The field must be groomed with a towed apparatus after each 48 hours of play (approximately every 4-5 days). If this grooming is not done, the condition of the infill and overall feel of the field will be affected, and it will shorten the lifespan of the installment. (3) Artificial turf fields may require patching of damaged areas and drainage repairs. (4) Sanitation of the artificial grass is a particular concern. While contaminants like blood and saliva rinse off real grass, synthetic grass doesn't share this trait. Messes that could potentially be a health hazard need to be cleaned and the surface sanitized. (5) Though not required, it is recommended that the field be watered regularly to maintain the safest level of play, as the field will hold more moisture. If the field is not watered regularly, the turf will harden. (6) In the warmer months, to mitigate surface temperatures, Shaw recommends watering the field for 5-10 minutes each morning when the dew point has not been reached to satisfactorily moisten the field. If the field is watered in this way, it can cool approximately 20-30°F, which may in fact not be enough to cool the field to below 120°F or the cooling may not last the entire day. (7) Lastly, artificial turf surfaces need to be replaced after 8 years, on average." Studies show that the non-intuitive process of planting these areas with grasses actually contribute to a healthier environment including reducing climate emissions. Adding artificial turf to fields will reduce our ability to capture stormwater, sink carbon and host vast amounts of biodiversity at each site. It will also reduce the microclimates that are able to hold and release moisture to help preserve biodiversity and reduce warming. It is for these reasons that we urge LA City Councilmembers to pass Motion 24-0602 to replace artificial turf.

June 27, 2024

Councilmember Bob Blumenfield
LA City Council District 3

Dear Mr. Blumenfield and Energy and Environment Committee Members,

We are writing in support of LA City Agenda Item 2, Motion 24-0602 to:

- transition away from future installations of synthetic grass / artificial turf citywide, and
- identify incentives and rebate programs to remove and replace synthetic turf / artificial grass, and
- encourage the transition to California friendly landscaping.

With the growing awareness of the climate crisis, cities and agencies are implementing artificial grass as a means to reduce water consumption. While initially it seems like a great way to save water, this solution is actually mired in unintended consequences including:

- killing microorganisms, wildlife habitats and biodiversity below every artificial turf installation
- emitting toxic leachate in runoff to nearby fields and storm drains
- creating heat islands as the heat is absorbed by these fields which is exacerbated by the fact that trees and other shade plants don't grow in artificial turf

- contributing to warming temperatures
- impacting the health of users
- increasing the cost of maintenance

A study conducted at Brigham Young University found that “The surface temperature of the synthetic turf was 37° F higher than asphalt and 86.5° F hotter than natural turf.”[1] Artificial turf is a silent but significant contributor to our climate demise. Research indicates we need more real turf and have shown reduced global warming in countries where agriculture has intensified.[2]

Synthetic turf, which off gasses methane and ethylene and contains PFAS, has known public health dangers, especially to our youth who have prolonged exposure to these fields. Artificial turf is being assessed for its health impacts from known carcinogens & neurotoxins: lead, mercury, cadmium, PAHs, VOCs, SVOC, phthalates, benzene, toluene, and carbon nanotubes. A study published by the National Library of Medicine identified 306 chemical constituents of crumb rubber infill from 20 publications. Utilizing a computational program to predict carcinogenicity and genotoxicity, 197 of the identified 306 chemicals met their carcinogenicity criteria. Of these, 52 chemicals were also classified as known, presumed or suspected carcinogens by the US EPA and ECHA.[3] [4]

In addition, cities and agencies prefer artificial turf for its low maintenance but in reality, the cost to implement and maintain these fields is almost equivalent to installing and maintaining natural turf fields. Also the impacts of heavy rains and winds are more disastrous for artificial turf fields, and unquestionably, our futures are filled with atmospheric rain and wind storms.[5] In addition, with lower snowpacks forecasted, capturing groundwater will be imperative for future water supplies and artificial turf interferes with groundwater capture.[6]

In addition, artificial turf sports fields actually need to be watered to keep temperatures down during summer months. Here’s a summary from a letter submitted to Glendale Community Services and Parks showing the reality of maintaining an artificial turf field.

“A well-maintained Shawgrass field requires the following.

(1) The field must be swept with a machine, once per week.

(2) The field must be groomed with a towed apparatus after each 48 hours of play (approximately every 4-5 days). If this grooming is not done, the condition of the infill and overall feel of the field will be affected, and it will shorten the lifespan of the installment.

(3) Artificial turf fields may require patching of damaged areas and drainage repairs.

---

[1] Synthetic Sports Fields and the Heat Island Effect
[2] Global Green Up Slows Warming

[3] The toxicity to the people and the environment
[4] Evaluation of potential carcinogenicity of organic chemicals in synthetic turf
[5] Artificial Fields after a flood
[6] Synthetic Turf costs more money

(4) Sanitation of the artificial grass is a particular concern. While contaminants like blood and saliva rinse off real grass, synthetic grass doesn't share this trait. Messes that could potentially be a health hazard need to be cleaned and the surface sanitized.

(5) **Though not required, it is recommended that the field be watered regularly to maintain the safest level of play, as the field will hold more moisture. If the field is not watered regularly, the turf will harden.**

(6) In the warmer months, to mitigate surface temperatures, Shaw recommends watering the field for 5-10 minutes each morning when the dew point has not been reached to satisfactorily moisten the field. If the field is watered in this way, it can cool approximately 20-30°F, which may in fact not be enough to cool the field to below 120°F or the cooling may not last the entire day.

(7) Lastly, artificial turf surfaces need to be replaced after 8 years, on average.”.

Studies show that the non-intuitive process of planting these areas with grasses actually contribute to a healthier environment including reducing climate emissions. Adding artificial turf to fields will reduce our ability to capture stormwater, sink carbon and host vast amounts of biodiversity at each site. It will also reduce the microclimates that are able to hold and release moisture to help preserve biodiversity and reduce warming. It is for these reasons that we urge LA City Councilmembers to pass Motion 24-0602 to replace artificial turf.

Sincerely,

Cheryl Auger, President
Ban SUP (Single Use Plastic)

Jenn Engstrom, State Director
CALPIRG

Elise Kalfayan, GEC board member
Glendale Environmental Coalition

Alison Waliszewski, Director of Policy and Programs
5 Gyres Institute

Chris Peck, President
Urban Ecology Project

Ruth Richardson
Rooted In Resistance

Jennifer Tanner
Indivisible California Green Team

Anita Ghazarian, Environmental Lead

Indivisible Alta-Pasadena

Jessica Craven, Los Angeles
LACDP member, AD 52

Kate Grodd, Los Angeles

Helen Eigenberg, Los Angeles
Hang Out Do Good

Jennifer Levin, Los Angeles
Hang Out Do Good

Katherine Palardy, Los Angeles

Andrew Hansen, Los Angeles

Eileen Hatrick, Los Angeles
Retired School Principal

Wendy Legacki, Los Angeles
350 Southland Legislative Committee

Beth Elder
Ban SUP member
Indivisible AltaPasadena member
ACT Pasadena member

Isabel Storey
LACDP Member, AD 51

Debra Burroughs

Glo Moss

Candace Seu

Communication from Public

Name:

Date Submitted: 06/28/2024 08:30 AM

Council File No: 24-0602

Comments for Public Posting: Not all artificial turf has PFAS and/or lead in their materials. There is verified test data from independent labs proving the material is lead and pfas free and most of the concerns are actually about the crumb rubber infill used for athletic fields. By banning all artificial turf you are effectively destroying an industry which has already started to negatively impact our already struggling economy. There needs to be a public distinction made so the media hype will stop scaring potential customers away from getting bids from local contractors who are suffering financially from the irresponsible blanket claims being made. As for the heat element, concrete and asphalt get just as hot and there's no action to ban these materials. There are ways to quickly cool turf.

Test Report No.: 70.431.23.16030.02

Date: 2023-11-10

Applicant:	TURF DISTRIBUTORS
Address:	42505 RIO NEDO, TEMECULA, CA 92590
Product Name:	ARTIFICIAL GRASS
Model No.:	Eco 85 Silver Putt,Eco 48 Silver,Eco 108 Gold,Eco 59 Silver Hybrid,Eco 94 Gold,Eco 96 Gold,EVO001,EVO002,EVO003,EVO004,EVO005,EVO006,So Natural 70,Eco 72 Silver,Eco 74 Silver,Eco 82 Silver,So Natural 90,Eco 56 Silver ,Natural 105
Receipt Date of Sample:	2023-10-24
Date of Testing:	2023-10-24 ~ 2023-11-10
Sample Submitted:	The sample(s) was (were) submitted by applicant and identified.
Test Result:	Refer to the data listed in following pages

Test Item	Conclusion
1. Client's Requirement- PFCAs Content	Pass

Remarks: 1. MDL = Method Detection Limit
2. ND = Not Detected (<MDL)
3. ≤ Less than
4. 1 mg/kg = 1 ppm = 0.0001%

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
Testing Center

Prepared by:

Jenny Yao
Technical Engineer

Authorized by:

Sawyer Tang
Technical Manager

Note:
(1) The TÜV SÜD Certification and Testing (China) Co., Ltd. "General Terms & Conditions" applied.
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For further details, please see "Testing and certification regulation", chapter A-3.4
For full version, please visit: EN : https://www.tuvsud.cn/zh-cn/resource/terms-and-conditions—en ; SCN: https://www.tuvsud.cn/zh-cn/terms-and-conditions ; TCN: https://www.tuvsud.com/zh-tw/terms-and-conditions
(2) The results relate only to the items tested.
(3) The test report shall not be reproduced except in full without the written approval of the laboratory
(4) Disclaimer Measurement Uncertainty:
Unless otherwise agreed upon, Pass or Fail verdicts are given based on the measured values without any considerations of measurement uncertainties.
Please note, every test method has a measurement uncertainty which has been evaluated by the laboratory according to ISO/IEC 17025 requirements. By taking measurement uncertainties into account it might happen that measured values can neither be assessed as Pass nor as Fail.

Greater China

Test Report No.: 70.300.23.10245.01 R1

Dated: 2023-10-24

PFOS, its salts and related compounds					
Perfluorooctanesulfonic acid (PFOS) Note 1		1763-23-1	mg/kg	0.01	ND
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)		4151-50-2	mg/kg	0.01	ND
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)		31506-32-8	mg/kg	0.01	ND
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)		1691-99-2	mg/kg	0.01	ND
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)		24448-09-7	mg/kg	0.01	ND
Perfluorooctane Sulfonamide (PFOSA)	Note 25	754-91-6	mg/kg	0.01	ND
Sum of Perfluorooctane sulfonates (PFOS) and its derivatives			mg/kg	-	ND
PFOA, its salts					
Perfluorooctanoic acid (PFOA)	Note 2	335-67-1	mg/kg	0.01	ND
PFOA-related compound					
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	Note 3	39108-34-4	mg/kg	0.01	ND
Methyl perfluorooctanoate (Me-PFOA)		376-27-2	mg/kg	0.1	ND
Ethyl perfluorooctanoate (Et-PFOA)		3108-24-5	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorodecyl acrylate (8:2 FTA)	Note 3	27905-45-9	mg/kg	0.1	ND

Test Report **No.: 70.300.23.10245.01 R1**

Dated: 2023-10-24

Greater China

Test Item(s)		CAS NO.	Unit	MDL	001
1H,1H,2H,2H-Perfluorodecyl methacrylate (8:2 FTMA)	Note 3	1996-88-9	mg/kg	0.1	ND
Perfluoro-1-iodooctane (PFOI)		507-63-1	mg/kg	0.1	ND
2H,2H Perfluorodecane Acid (H_2PFDA / 8:2 FTCA)	Note 3, Note 11	27854-31-5	mg/kg	0.01	ND
1H,1H,2H,2H-Perfluoro-1-decanol (8:2 FTOH)	Note 3	678-39-7	mg/kg	0.1	ND
Sum of PFOA-related compounds			mg/kg	-	ND
C9-C14 PFCA, their salts					
Perfluorononane Acid (PFNA)	Note 4	375-95-1	mg/kg	0.01	ND
Perfluorodecane Acid (PFDA)	Note 4	335-76-2	mg/kg	0.01	ND
Perfluoroundecanoic Acid (PFUnDA)	Note 22	2058-94-8	mg/kg	0.01	ND
Perfluorododecanoic Acid (PFDoDA)	Note 4	307-55-1	mg/kg	0.01	ND
Perfluorotridecanoic Acid (PFTrDA)	Note 24	72629-94-8	mg/kg	0.01	ND
Perfluorotetradecanoic Acid (PFTDA)		376-06-7	mg/kg	0.01	ND
Perfluoro-3,7-dimethyloctanoic Acid (PF-3,7-DMOA)		172155-07-6	mg/kg	0.01	ND
Sum of C9-C14 PFCA, their salts			mg/kg	-	ND
C9_C14_PFCA_related_substances					
Perfluorodecane sulfonic Acid (PFDS)	Note 10	335-77-3	mg/kg	0.01	ND
1H,1H,2H,2H-Perfluoro-1-dodecanol (10:2 FTOH)		865-86-1	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorododecylacrylate (10:2 FTA)		17741-60-5	mg/kg	0.1	ND
1-Iodo-1H,1H,2H,2H-perfluorodecane (8:2 FTI)		2043-53-0	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorodecyltriethoxysilane (8:2 FTSi(OC_2H_5)$_3$)		101947-16-4	mg/kg	0.1	ND
2H,2H,3H,3H-Perfluoroundecanoic Acid (H4PFUnDA / 8:3 FTCA)	Note 12	34598-33-9	mg/kg	0.01	ND
1H,1H,2H,2H-Perfluorododecyl methacrylate (10:2 FTMA)		2144-54-9	mg/kg	0.1	ND
1H,1H,2H,2H-perfluorotetradecan-1-ol(12:2 FTOH)		39239-77-5	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2FTS)		120226-60-0	mg/kg	0.01	ND
1H,1H,2H,2H-Perfluorododecyl iodide (10:2 FTI)		2043-54-1	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorotetradecyl iodide (12:2 FTI)		30046-31-2	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	Note 3	39108-34-4	mg/kg	0.01	ND

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Test Report **No.: 70.300.23.10245.01 R1**

Dated: 2023-10-24

Test Item(s)	CAS NO.	Unit	MDL	001
1H,1H,2H,2H-Perfluorodecyl acrylate (8:2 FTA) Note 3	27905-45-9	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorodecyl methacrylate (8:2 FTMA) Note 3	1996-88-9	mg/kg	0.1	ND
2H,2H Perfluorodecane Acid (H_2PFDA / 8:2 FTCA) Note 3, Note 11	27854-31-5	mg/kg	0.01	ND
1H,1H,2H,2H-Perfluoro-1-decanol (8:2 FTOH) Note 3	678-39-7	mg/kg	0.1	ND
Sum of C9-C14-related substances		mg/kg	-	ND
PFHxS, its salts				
Perfluorohexanesulfonic acid (PFHxS) Note 7	355-46-4	mg/kg	0.01	ND
PFHxS-related compounds				
N-Methylperfluoro-1-hexane sulfonamide (N-Me-FHxSA)	68259-15-4	mg/kg	0.01	ND
N-[3-(dimethylamino)propyl] tridecafluorohexanesulphonamide (N-AP-FHxSA)	50598-28-2	mg/kg	0.01	ND
Perfluorohexane sulfonamide (PFHxSA)	41997-13-1	mg/kg	0.01	ND
2-[methyl[(tridecafluorohexyl) sulphonyl]amino]ethyl acrylate)) (N-MeFHSEA)	67584-57-0	mg/kg	0.5	ND
Other PFAS				
Perfluorobutane acid (PFBA) Note 13	375-22-4	mg/kg	0.01	ND
Perfluorobutanesulfonic acid (PFBS) Note 5	375-73-5	mg/kg	0.01	ND
1,1,2,2,3,3,4,4,4-nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide (PFBS-NC_3H_8O)	34454-97-2	mg/kg	0.01	ND
Perfluoropentane acid (PFPeA) Note 17	2706-90-3	mg/kg	0.01	ND
Perfluorohexane acid (PFHxA) Note 6	307-24-4	mg/kg	0.01	ND
Perfluoroheptane acid (PFHpA) Note 14	375-85-9	mg/kg	0.01	ND
Perfluoroheptanesulfonic acid (PFHpS) Note 8	375-92-8	mg/kg	0.01	ND
7H-Dodecanefluoroheptane acid (7HPFHpA)	1546-95-8	mg/kg	0.01	ND
1H,1H,2H,2H-Perfluorooctanesulphonic acid (6:2 FTS) Note 26	27619-97-2	mg/kg	0.01	ND
1H,1H,2H,2H-Perfluorooctylacrylate (6:2 FTA)	17527-29-6	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluoro-1-hexanol (4:2 FTOH)	2043-47-2	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluoro-1-octanol (6:2 FTOH)	647-42-7	mg/kg	0.1	ND
2,3,3,3-tetrafluoro-2-(heptafluoropropoxy) propionic acid, its salts and its acyl halides (HPFO-DA) Note 9	13252-13-6	mg/kg	0.01	ND

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Test Report **No.: 70.300.23.10245.01 R1**

Dated: 2023-10-24

Test Item(s)	CAS NO.	Unit	MDL	001
1H, 1H, 2H, 2H-Perfluorohexanesulfonic Acid (4:2 FTS)	757124-72-4	mg/kg	0.01	ND
Perfluorooctane sulfonamidoacetic acid (FOSAA)	2806-24-8	mg/kg	0.01	ND
N-Methylperfluoro-1-octanesulfonamidoacetic acid (N-MeFOSAA)	2355-31-9	mg/kg	0.01	ND
N-Ethylperfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	2991-50-6	mg/kg	0.01	ND
Perfluoropentane sulfonic acid (PFPeS) Note 18	2706-91-4	mg/kg	0.01	ND
Perfluorononane sulfonic acid (PFNS) Note 19	68259-12-1	mg/kg	0.01	ND
Perfluoroundecane sulfonic acid (PFUnDS) Note 16	749786-16-1	mg/kg	0.01	ND
Perfluorododecane sulfonic acid (PFDoDS) Note 20	79780-39-5	mg/kg	0.01	ND
Perfluorotridecane sulfonic acid (PFTrDS) Note 21	791563-89-8	mg/kg	0.01	ND
2-Perfluorohexyl ethanoic acid (6:2 FTCA)	53826-12-3	mg/kg	0.01	ND
3-Perfluoropentyl propanoic acid (5:3 FTCA)	914637-49-3	mg/kg	0.01	ND
Perfluorohexadecanoic Acid (PFHxDA)	67905-19-5	mg/kg	0.01	ND
Perfluorooctadecanoic Acid (PFODA)	16517-11-6	mg/kg	0.01	ND
bis(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl) hydrogen phosphate (8:2 diPAP) Note 15	678-41-1	mg/kg	0.01	ND
1H,1H,2H,2H-Perfluorooctyl methacrylate (6:2 FTMA)	2144-53-8	mg/kg	0.1	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	mg/kg	0.01	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	377-73-1	mg/kg	0.01	ND
Perfluorodecyl iodide (PFDI)	423-62-1	mg/kg	0.1	ND
Perfluoro-4-methoxybutanoic acid (PFMBA)	863090-89-5	mg/kg	0.01	ND
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	151772-58-6	mg/kg	0.01	ND
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	mg/kg	0.01	ND
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	763051-92-9	mg/kg	0.01	ND
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	113507-82-7	mg/kg	0.01	ND
3-Perfluoropropyl propanoic acid (3:3FTCA)	356-02-5	mg/kg	0.01	ND
3-Perfluoroheptyl propanoic acid (7:3FTCA)	812-70-4	mg/kg	0.01	ND
Perfluoropentadecanoic Acid (PFPeDA)	141074-63-7	mg/kg	0.1	ND

Test Report **No.: 70.300.23.10245.01 R1**

Dated: 2023-10-24

Greater China

Test Item(s)	CAS NO.	Unit	MDL	001
1H,1H,2H,2H-Perfluorohexyl methacrylate (4:2 FTMA)	1799-84-4	mg/kg	0.1	ND
2-(N-ethylperfluorooctanesulfamido) ethyl acrylate (EtFOSAC)	423-82-5	mg/kg	0.1	ND
1H,1H,2H-Heptadecafluoro-1-decene (PFDE)	21652-58-4	mg/kg	0.1	ND
Perfluorooctyl triethoxysilane (POTS)	51851-37-7	mg/kg	0.1	ND
Perfluorododecyl iodide (PFDoDI)	307-60-8	mg/kg	0.1	ND
11H-Perfluoroundecanoic acid (11H-PFUnDA) Note 23	1765-48-6	mg/kg	0.1	ND

Notes :

(1)PFOS refer to its salts/derivative including

PFOS-K CAS No.: 2795-39-3

PFOS-Li CAS No.: 29457-72-5

PFOS-Na CAS No.: 4021-47-0

PFOS-NH_4 CAS No.: 29081-56-9

PFOS-$NH_2(C_2H_4OH)_2$ CAS No.: 70225-14-8

PFOS-$N(C_2H_5)_4$ CAS No.: 56773-42-3

PFOS-$N(C_{10}H_{21})_2(CH_3)_2$ CAS No.: 251099-16-8

POSF CAS No.: 307-35-7

POSF-Mg CAS No.: 91036-71-4

(2)PFOA refer to its salts/derivative including

PFOA-Na CAS No.: 335-95-5

PFOA-K CAS No.: 2395-00-8

PFOA-Ag CAS No.: 335-93-3

PFOA-F CAS No.: 335-66-0

APFO CAS No.: 3825-26-1

PFOA-Li CAS No.: 17125-58-5

(3) PFAS classified as both PFOA-related compounds and C9-C14 PFCA-related substances.

8:2 FTS refer to its salts including

8:2 FTS-K CAS No.: 438237-73-1

8:2 FTS-NH_4 CAS No.: 149724-40-3

8:2 FTS-Na CAS No.: 27619-96-1

(4)PFNA refer to its salts including

PFNA-Na CAS No.: 21049-39-8

PFNA-NH_4 CAS No.: 4149-60-4

PFNA-K CAS No.: 21049-38-7

PFNA-Li CAS No.: 60871-92-3

PFNA-Ag CAS No.: 7358-16-9

(5)PFDA refer to its salts including

PFDA-Na CAS No. 3830-45-3

PFDA-NH_4 CAS No: 3108-42-7

PFDA-K CAS No: 51604-85-4

PFDA-Ag CAS No: 5784-82-7

PFDA-Li CAS No: 84743-32-8

(6)PFDoDA refer to its salts including

PFDoDA-NH_4 CAS No: 3793-74-6

PFDoDA-Na CAS No: 60872-01-7

(7)PFBS refers to its salts/derivative including

PFBS-K CAS No.: 29420-49-3

PFBS-H_2O CAS No.: 59933-66-3

PFBS-Li CAS No.: 131651-65-5

TPS-PFBS CAS No.: 144317-44-2

PFBS-$S(CH_3)_2C_6H_5$ CAS No.: 220133-51-7

PFBS-$P(C_4H_9)_4$ CAS No.: 220689-12-3

PFBS-$N(C_2H_5)_4$ CAS No.: 25628-08-4

PFBS-F CAS No.: 375-72-4

PFBS-NC_4H_9O CAS No.: 503155-89-3

PFBS-Mg CAS No.: 507453-86-3

PFBS-NH_4 CAS No.: 68259-10-9

PFBS-$SC_{18}H_{23}O$ CAS No.: 209482-18-8

PFBS-Cl CAS No.: 2991-84-6

PFBS-NaCAS No.: 60453-92-1

PFBS-$I(C_6H_4)_2(C_4H_9)_2$ CAS No.: 194999-85-4

PFBS-$NH(C_2H_5O)_2$ CAS No.: 70225-18-2

(8)PFHxA refers to its salt including

APFHx CAS No.: 21615-47-4

Greater China

Test Report No.: 70.300.23.10245.01 R1

Dated: 2023-10-24

PFHxA-Na CAS No.: 2923-26-4

PFHxA-K CAS No.: 3109-94-2

PFHxA-F CAS No.: 355-38-4

PFHxA-Ag CAS No.: 336-02-7

PFHxA-Li CAS No.: 90430-61-8

(9)PFHxS refers to its salts including

PFHxS-Na CAS No.: 82382-12-5

PFHxS-K CAS No.: 3871-99-6

PFHxS-Li CAS No.: 55120-77-9

PFHxS-NH_4 CAS No.: 68259-08-5

PFHxS-BTPP CAS No.: 1000597-52-3

PFHxS-$N(C_4H_9)_4$ CAS No.: 108427-54-9

PFHxS-$N(C_2H_5)_4$ CAS No.: 108427-55-0

PFHxS-NC_4H_9 CAS No.: 1187817-57-7

PFHxS-$(NC_{10}H_{14})_3C_5H_4$ CAS No.: 1310480-24-0

PFHxS-$(NC_8H_{10})_2C_{13}H_{12}$ CAS No.: 1310480-27-3

PFHxS-$(NC_8H_{10})_2C_{17}H_{12}$ CAS No.: 1310480-28-4

PFHxS-$C_{42}H_{70}O_{35}$ CAS No.: 1329995-45-0

PFHxS-$C_{48}H_{80}O_{40}$ CAS No.: 1329995-69-8

TPS-PFHxS CAS No.: 144116-10-9

PFHxS-$C_{44}H_{57}N_2O_2$ CAS No.: 1462414-59-0

PFHxS-$I(C_6H_5)_2$ CAS No.: 153443-35-7

PFHxS-TMA CAS No.: 189274-31-5

PFHxS-$NH_2(CH_3)_3$ CAS No.: 202189-84-2

PFHxS-$I(C_6H_4)_2(C_4H_9)_2$ CAS No.: 213740-81-9

PFHxS-Ga CAS No.: 341035-71-0

PFHxS-$S(C_7H_7)_2C_6H_5$ CAS No.: 341548-85-4

PFHxS-Sc CAS No.: 350836-93-0

PFHxS-Nd CAS No.: 41184-65-0

PFHxS-Y CAS No.: 41242-12-0

PFHxS-$S_2(C_6H_5)_4(C_6H_4)_2$ CAS No.: 421555-73-9

PFHxS-$I(C_6H_4)_2(C_5H_{11})_2$ CAS No.: 421555-74-0

PFHxS-F CAS No.: 423-50-7

Greater China

Test Report No.: 70.300.23.10245.01 R1

Dated: 2023-10-24

PFHxS-S(C_6H_4)$_3$(C_4H_9)$_3$ CAS No.: 425670-70-8

PFHxS-Zn CAS No.: 70136-72-0

PFHxS-NH(C_2H_5O)$_2$ CAS No.: 70225-16-0

PFHxS-N(C_2H_5)$_3$ CAS No.: 72033-41-1

PFHxS-I(C_6H_4)$_2$(C_4H_9)$_2$ CAS No.: 866621-50-3

PFHxS-S(C_6H_5)$_2C_7H_7$ CAS No.: 910606-39-2

PFHxS-S(C_6H_5)$_2C_{10}H_9O_2$ CAS No.: 911027-68-4

PFHxS-Cs CAS No.: 92011-17-1

PFHxS-$SC_{28}H_{31}O_4$ CAS No.: 928049-42-7

PFHxS-Cl CAS No.: 55591-23-6

(10) PFHpS refers to its salts including

PFHpS-Na CAS No.: 21934-50-9

PFHpS-K CAS No.: 60270-55-5

PFHpS-NH_4 CAS No.: 68259-07-4

PFHpS-Li CAS No.: 117806-54-9

(11) HFPO-DA refers to its salts including

HFPO-DA-NH_4 CAS No.: 62037-80-3

HFPO-DA-K CAS No.: 67118-55-2

HFPO-DA-F CAS No.: 2062-98-8

(12) PFDS refer to its salts including

PFDS-Na CAS No.: 2806-15-7

PFDS-K CAS No.: 2806-16-8

PFDS-NH_4 CAS No.: 67906-42-7

(13) H2PFDA / 8:2 FTCA refer to its salt/derivative including

8:2 FTCA-P(C_4H_9)$_4$ CAS No.: 882489-14-7

(14) H4PFUnDA/ 8:3 FTCA refer to its salts including

H4PFUnDA-K CAS No.: 83310-58-1

(15) PFBA refers to its salts including

PFBA-NH_4 CAS No.: 10495-86-0

PFBA-Na CAS No.: 2218-54-4

PFBA-K CAS No.: 2966-54-3

PFBA-Ag CAS No.: 3794-64-7

PFBA-Li CAS No.: 4146-76-3

(16) PFHpA refers to its salts including

PFHpA-Na CAS No.: 20109-59-5

PFHpA-K CAS No.: 21049-36-5

PFHpA-NH_4 CAS No.: 6130-43-4

PFHpA-Cs CAS No.: 171198-24-6

PFHpA-Ag CAS No.: 424-05-5

PFHpA-Li CAS No.: 60871-90-1

(17) 8:2diPAP refers to its salts including

8:2diPAP-Na CAS No.: 114519-85-6

(18) PFUnDS refers to its salts including

PFUnDS-Na CAS No.: 441296-91-9 (anion)

(19) PFPeA refers to its salts including

PFPeA-Na CAS No.: 2706-89-0

PFPeA-K CAS No.: 336-23-2

PFPeA-NH_4 CAS No.: 68259-11-0

PFPeA-Li CAS No.: 198482-22-3

PFPeA-Ag CAS No.: 2795-30-4

(20) PFPeS refers to its salts including

PFPeS-Na CAS No.: 630402-22-1

PFPeS-K CAS No.: 3872-25-1

PFPeS-NH_4 CAS No.: 68259-09-6

(21) PFNS refers to its salts including

PFNS-Na CAS No.: 98789-57-2

PFNS-NH_4 CAS No.: 17202-41-4

PFNS-K CAS No.: 29359-39-5

(22) PFDoDS refers to its salts including

PFDoDS-Na CAS No.: 1260224-54-1

(23) PFTrDS refers to its salts including

PFTrDS-Na CAS No.: 174675-49-1

(24) PFUnDA refers to its salts including

PFUnDA-Na CAS No.: 60871-96-7

PFUnDA-NH_4 CAS No.: 4234-23-5

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PFUnDA-K CAS No.: 30377-53-8

(25) 11H-PFUnDA refers to its salts including

11H-PFUnDA-K CAS No.: 307-71-1

11H-PFUnDA-NH_4 CAS No.: 5081-02-7

(26) PFTrDA refers to its salts including

PFTrDA-NH_4 CAS No.: 4288-72-6

(27) PFOSA refers to its salts including

PFOSA-Li CAS No.: 76752-79-9

(28) 6:2 FTS refers to its salts including

6:2 FTS-Na CAS No.: 27619-94-9

6:2 FTS-K CAS No.: 59587-38-1

6:2 FTS-NH_4 CAS No.: 59587-39-2

Remark: Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w =0) stated in ILAC-G8:09/2019.

- End of Test Report -