HB1147: Environment - Playground Surfacing Materials - Prohibitions
House Environment and Transportation Committee
For: February 28, 2024
Position: FAVORABLE
Submitted by: Kathleen Michels PhD
On behalf of One Montgomery Green

Good afternoon Chair Korman, Vice Chair Boyce and honorable members of the committee,

The grass roots nonprofit One Montgomery Green* www.onemontgomerygreen.org urges this committee to support HB1147, to establish limits on three dangerous chemicals in playground materials: Lead, Polycyclic aromatic hydrcarboens (PAHs) and Per- and Polyfluoroalkyl Substances - PFAS.

This bill creates a set of measurable standards for safer playgrounds for our most vulnerable community members: children. **Such standards are made necessary by the increasing use of synthetic plastic and waste rubber materials over the past decade which contain the toxic substances addressed in this bill.** Prior to that time most impact protective surfaces were of natural materials. Importantly, the obligation for showing compliance with these protective standards rests with the parties best situated to formulate the materials to be used, namely the producers and suppliers.

There is currently no statewide inventory of Maryland's playgrounds and none that documents their surface materials. Playgrounds may have play surfaces covered in natural and/or synthetic materials which are now required to be ADA-compliant surfaces include natural-surface materials like engineered wood fiber (EWF) and synthetic poured-in-place (PIP) surfaces. Playgrounds may also have loose fill material such as shredded mulch or loose tire 'chunks' or 'shreds.'

The increasing use of PIP and other forms of tires is concerning. Years of research confirm that tires contain alarming levels of **carcinogens**, **heavy metals** and **endocrine disruptors**,as well as contributing to **microplastic contamination** of air, soil and water.

HB1147 regulates playgrounds to protect children from toxic exposure:

Children, and especially younger children, are uniquely vulnerable to the health effects of toxic environmental exposures, which can occur through ingestion, inhalation or dermal uptake. This vulnerability is due in part to their close interaction with playground surfaces, the developmentally appropriate tendency to put their hands or objects in their mouths, their rapidly developing organ systems, and their immature detoxification mechanisms. Children also breathe faster per pound of body weight increasing the likelihood of inhalation exposure.

Materials with high levels of lead, PAHs and/or PFAS are unacceptable for use on playgrounds:

It is important to note that while the three chemicals proposed in this bill can be measured separately, a child's exposure is cumulative, and synergistic.

1. Lead:

Of the three chemicals addressed in HB1147, lead is the most studied. According to the Centers for Disease Control and Prevention and the World Health Organization, there is no known safe level of lead exposure. Relatively low levels of lead exposure that were previously considered 'safe' have been shown to damage children's health and impair their cognitive development

The effects of this neurotoxicant are well documented and include

- Developmental delay and learning difficulties
- Weight loss, sluggishness and fatigue
- Abdominal pain, vomiting, constipation
- Hearing loss, seizures, unconsciousness

And at high levels lead poisoning can be fatal.

Even very low levels of exposure can cause this damage over time. As observed across the medical field, the only solution to lead poisoning is prevention. HB1147 moves us significantly toward that goal.

Many children visit playgrounds several times a week or even daily from a very early age, continuing on through elementary school exposure during recess and at before- and after-school activities.

In the DMV area, local jurisdictions have struggled for at least five years with community-led finding of high lead levels in local playgrounds and schools, including in Montgomery County, Prince George's County, and Washington, D.C.

2. Polycyclic Aromatic Hydrocarbons - PAHs

Polycyclic aromatic hydrocarbons (PAHs) are a class of over 100 highly carginogenic chemicals that occur in coal, crude oil, and gasoline.

According to a peer-reviewed, published study,

> "Noticeably, cancer risk is approximately 10 times higher in poured rubber surfaced playgrounds than in uncovered soil playgrounds." The authors also write that "skin is the primary site of direct contact with PAH derivates" while noting that the "carcinogenic abilities of the derivatives are usually 10 to 1,000-fold higher than that of parent PAHs."

PAHs are recognized as a "widespread environmental carcinogen" and PAHs in ambient air are associated with increased cancer incidence in exposed populations. "Positive associations have been reported between ambient PAHs and breast cancer, childhood cancers and lung cancer. Epidemiological studies have shown that PAHs are associated with reduced lung function, exacerbation of asthma, and increased rates of obstructive lung diseases and cardiovascular diseases. Limited epidemiological evidence also suggests adverse effects on cognitive or behavioral function in children." The European Union has enacted strict limits on PAH exposure, including specifically rubber granules and mulches used as infill on artificial sports pitches and playgrounds.

A peer-reviewed, published study over a decade ago confirmed "the presence of a large number of hazardous substances including PAHs, phthalates, antioxidants (e.g. BHT, phenols), benzothiazole and derivatives," citing the "high content of toxic chemicals." "The analysis of commercial pavers (recycled rubber tire tiles) showed unexpected results with extremely high PAH levels [...] All the 16 priority PAHs were found in all the samples…"

It concludes that given "the presence of a high number of harmful compounds, frequently at high or extremely high levels, in these recycled rubber materials [they] should be carefully controlled, and their final use should be restricted or even prohibited in some cases."

3. Per- and Polyfluoroalkyl Substances - PFAS

PFAS refers to a class of 12,000 or more chemicals known to provide heat, stain and water resistance. Because their strong carbon-fluorine bond is difficult to break down, they are referred to as "forever chemicals."

PFAS have been linked to a wide range of health problems in animal and human studies including kidney and testicular cancer, hormone and endocrine disruption, liver and thyroid problems, reduced vaccine effectiveness, reproductive harm and abnormal fetal development. As the science has evolved, the EPA-issued health advisories reflect findings that they are more toxic at lower levels than scientists previously knew. While there is little evidence yet of PFAS linked specifically to tires, there are certainly questions: No less than the NFL Players Association medical director called on manufacturers to disclose if there is PFAS present in the plastic carpet *or infill material* - meaning pulverized tires. And the questions continue to mount. In 2023, over 270 PFAS-related bills were introduced in state legislatures.

More recently…

** More recently, tires were identified as the source of 95% mortality among endangered coho salmon due to an additive, 6PPD, found in all tires. While 6PPD is not addressed in HB1147, it adds to the weight of concerns created by exposing children to these surfaces. A 2022 study found 6PPD in urine samples from adults, children and pregnant women. The authors wrote:

"Considering that 6PPD-Q was a lethal toxicant to multiple aquatic species, the potential human health risks posed by its long-term exposure require urgent attention."

Conclusion

Maryland needs HB1147 because the science on the toxic load of tire-based playgrounds has only grown. This bill is an important step in setting safety standards on materials commonly used across our state. By enacting HB1147, Maryland can secure safer playgrounds, healthier children, and a healthier environment.

As the national leaders in epidemiology and pediatrics of the Icahn School of Medicine at Mount Sinai concluded, "**given the hazards associated with recycled tire rubber, it is our recommendation that these products never be used as surfaces where children play.**"

Please see below for additional references and photos to illustrate the text above.

Your support for this legislation can save lives and improve the health of children in communities throughout Maryland. Officials in communities all over the country have been misled by the hype around plastic synthetic turf carpeting, tire rubber surfacing and related playground products. They were erroneously told that these products are safe. On the contrary, there is clear scientific evidence that these materials are harmful. How harmful they are in combination with other exposures and which children are most affected is not clear but our children should not be the research guinea pigs in unsanctioned and uncontrolled experiments with their health because of perceived convenience for adults. Our children deserve better. That is why we urge this committee to give HB1147 a favorable report.

Kathleen Michels, PhD
Chair, Advocacy and Outreach Committee
One Montgomery Green
advocate@onemontgomerygreen.org
301-922-3816

**NOTE: One Montgomery Green (OMGreen)is a 501C3 grassroots non-profit which seeks to catalyze the county's transition to a sustainable economy, facilitate environmental responsibility among businesses, residents, and government, and increase the quality of life for all Montgomery County residents. Every OMG sustainability initiative begins with a foundation of diversity, justice, equity and inclusion woven throughout the process, which reflects the eclectic background and culture of the residents of Montgomery County, MD.*
OMGreen is dedicated to engaging the community in education and outreach that promotes sustainable communities with a "visibly green" and healthy environmental footprint. In an effort to empower and educate the public to better adapt and mitigate the impact of climate change, OMGreen has two main projects; a climate resilience project whose goal is to engage and educate communities by creating an assessment tool and a response plan that addresses climate change vulnerabilities, resilience, and adaptation; and the Clean Headwaters Program, a six- session

course offering high school students an opportunity to perform hands-on community monitoring to assess the extent of plastic pollution of local streams.

RESOURCES:
Bottom line- Note that its not that natural materials are not better for kids, accessibility and maintenance on playsurfaces (e.g. engineered wood fiber for playgrounds and grass for fields) it is NOT that they can't make grass better and more durable , its that they CHOOSE not to do so . Grass fields and natural surfaced playgrounds are a public good, plastic fields and tire rubber playgrounds are a public harm. Plastic disintegrates. Grass grows and provides health and environmental benefits. There is no real choice . For playfields- the choice is only to do grass better for the health and safety of the children and adults playing. "Real Grass for Real Kids!"

Tire rubber bans for playsurfaces- given all the problems with plastic carpets tire waste bans are not sufficient to keep children or the environment safe but they ARE necessary to do so and are the most harmful part of the synthetic turf product and playground surfacing. Tire crumb is toxic and polluting everywhere: see https://e360.yale.edu/features/tire-pollution-toxic-chemicals and the other references below. According to researchers and regulators: "**The granular infill material used on artificial sport surfaces {is the} the largest source of intentional microplastics in the environment".**

MORE RESOURCES on Tire Toxins
Tires are a veritable Pandora's Box of toxic substances. There are many studies warning of the human and environmental health risks of exposure to plastic and especially tires with their hundreds of intrinsic or added toxic substances Tire wear partiicles are not only pollution from cars but concentrated on most synthetic turf as 40,000 tires worth of granulated tire crumb infill, For some toxic health impact information:

- Yale 360 on toxic tire pollution: https://e360.yale.edu/features/tire-pollution-toxic-chemicals
- **Europe has banned tire crumb infill for a reason across the whole EU* -** tire crumb runs off and pollutes air soil water AND the athletes . There is no system possible to prevent that . In practice and by the industry's own admission- several tons of tire crumb need to be replaced on a synturf each year as it ages because of the tire crumb it loses to the environment (air, soil, water and athletes). See the photos for example on the safe healthy playing Fields website and Facebook page. also see https://www.sciencedirect.com/science/article/pii/S0269749123010965

- :**Road Hazard-Evidence Mounts on Toxic Pollution from Tires,** JIM ROBBINS, SEPTEMBER 19, 2023 Researchers are only beginning to uncover the toxic cocktail of chemicals,

microplastics, and heavy metals hidden in car and truck tires. But experts say these tire emissions are a significant source of air and water pollution and may be affecting humans as well as wildlife. "...tire rubber contains more than 400 chemicals and compounds, many of them carcinogenic, and research is only beginning to show how widespread the problems from tire dust may be..... "

- According to researchers and regulators: "**The granular infill material used on artificial sport surfaces {is the} the largest source of intentional microplastics in the environment"** This is a problem precisely because of its high level of toxic substances and demonstrated toxicity to living organisms of which this is yet another route:

- **Emerging Health Risks of Crumb Rubber Inhalation of Environmentally Persistent Free Radicals via Saliva During Artificial Turf Activities** https://pubs.acs.org/doi/10.1021/acs.est.3c03278 Qian'en Huang, et al * in Environ. Sci. Technol. 2023, Crumb rubber (CR) is a commonly used infill material in artificial turf worldwide. However, the potential health risk associated with exposure to CR containing environmentally persistent free radicals (EPFRs) remains under investigation. **Our study provides insights into a new pathway {saliva} of human exposure to crumb rubber with environmentally persistent free radicals in artificial turf infill, indicating an increased human health risk of CR exposure.**

Some regulations/ bans of the past decade you may want to refer to:

- 2023: https://ec.europa.eu/commission/presscorner/detail/en/ip_23_4581 .. 27Sept 2023 the Commission takes another major step to protect the environment by adopting measures that restrict microplastics intentionally added to products under the EU chemical legislation REACH. ..,The adopted restriction uses a broad definition of microplastics – it covers all synthetic polymer particles below five millimetres that are organic, insoluble and resist degradation. The purpose is to reduce emissions of intentional microplastics from as many products as possible. Some examples of common products in the scope of the restriction are: **The granular infill material used on artificial sport surfaces – the largest source of intentional microplastics in the environment…** There has long been a concern about the use of crumb rubber in sports fields, initially the concerns were about the PAH content. Research by the ECHA Risk Assessment Committee suggested that lower limits were required, and the amount of PAH in tire crumb would remain too high
- 2023: New York State – Bans any carpeting containing PFAS chemicals – including Artificial Turf Carpet Systems: https://www.cps.bureauveritas.com/newsroom/new-york-governor-signs-pfas-bans-apparel-and-carpet PFAS Bans in Apparel (Bill A07063A) and Carpet (Bill A09279A)
- 2018 Westport, CT https://www.westport-news.com/news/article/RTM-proactively-bans-crumb-rubber-artificial-turf-13464197.php
- 2017 Minneapolis, MN https://www.minneapolisparks.org/_asset/4nxzf4/3-14-2017-Crumb-Rubber-Fact-Sheet_FINAL.pdf

- 2016 Hartford, CT Banned crumb rubber infill and petroleum based turf. https://ctmirror.org/2016/02/12/a-shifting-ground-for-artificial-turf-in-connecticut/
- 2015 Montgomery County, MD https://www.nbcnews.com/news/us-news/turf-war-one-suburb-bans-crumb-rubber-another-says-it-n436111
- 2015 Edmonton, WA https://sportsturfonline.com/2015/12/15/wa-city-council-bans-crumb-rubber-turf/77248/

PLASTIC SYNTURF CARPETING: PFAS and Other toxins in synthetic turf plastic carpeting

1a. **PFAS-free is a myth :**South Philly synturf field tested PFAS-free- Not true experts say2024
https://drive.google.com/file/d/1jroueeCkm9vii5WmSqwrvi8pJBr877qN/view?usp=drivesdk
City officials believed a new South Philly turf field
was PFAS-free. Not true, experts say.

1b. For the sheer volume of PFAS and Phthalate chemical containing synthetic turf fiber pollution see:
https://www.sciencedirect.com/science/article/pii/S0269749123010965
Environmental Pollution Volume 334, 2023 ; **The dark side of artificial greening: Plastic turfs as widespread pollutants of aquatic environments☆**
William P. de Haan a, Rocío Quintana b, César Vilas c, Andrés Cózar b, Miquel Canals a, Oriol Uviedo a, Anna Sanchez-Vidal a
Abstract: Artificial turf (AT) is a surfacing material that simulates natural grass by using synthetic, mainly plastic, fibers in different shapes, sizes and properties. AT has spread beyond sports facilities and today shapes many urban landscapes, from private lawns to rooftops and public venues. Despite concerns regarding the impacts of AT, little is known about the release of AT fibers into natural environment. Here, for the first time, we specifically investigate the presence of AT fibers in river and ocean waters as major conduits and final destination of plastic debris transported by water runoff. Our sampling survey showed that, AT fibers – composed mainly of polyethylene and polypropylene – can constitute over 15% of the mesoplastics and macroplastics content, suggesting that **AT fibers may contribute significantly to plastic pollution. Up to 20,000 fibers a day flowed down through the river, and up to 213,200 fibers per km2 were found floating on the sea surface of nearshore areas. AT, apart from impacting on urban biodiversity, urban runoff, heat island formation, and hazardous chemical leaching, is a major source of plastic pollution to natural aquatic environments.**

The above is a follow up on warnings provided by many previous studies including:
Sports -Is **Artificial Turf Toxic?** https://www.good.is/sports/artificial-turf-toxic The chemicals used to make fake grass may pose health risks to athletes
Stuart Shalat 03.07.17 Final report Stern and Shalat- evaluation of potential exposures to lead and other metals as the result of aerosolized particulate matter from artificial turf playing fields2011 to NJDEP
https://rucore.libraries.rutgers.edu/rutgers-lib/46036/

OTHER PROBLEMS-
Plastic synturf carpets with any infill:

SHPFI video shorts on heat, toxicity, injury and waste/disposal on our YouTube channel. Six videos, 2-3 minutes each: https://www.youtube.com/channel/UCiizCSpTZpK_-95zTZkxe2g/videos They're 1-2 years old and the evidence has only piled up.

HEAT: #NoChildFriedOutside !
There are myriad studies and information on the fact that plastic and tire waste surfacing are hotter than asphalt and create heat islands for kids to play on in the sun- like stove tops. See www.safehealthyplayingfields.org and other sources but here is a Link to the Synturf **cool infill fraud lawsuit** just filed in South Carolina- it illustrates the sheer gullibility of parks and school systems around the country in accepting whatever the synturf industry tells them without asking for proof before laying out many $Millions
https://www.thestate.com/news/local/education/article282917573.html
SC school district sues for $3.7M false claims on synthetic turfs- too hot-need irrigation-The State 13Dec2023
$3.7M turfs with TCool were supposed to keep Midlands high school fields cool. They don't, suit says
BY ALEXA JURADO DECEMBER 13, 2023

More RESOURCES - some **grass vs synturf information and other summary comparisons** to help in your letters, testimony etc.
Chemical and Heat Hazards of Artificial Turf Athletic Fields and Better natural Grass alternatives:

- Green Kids: https://greenkidsdoc.wordpress.com/2021/01/06/chemical-and-heat-hazards-of-artificial-turf-athletic-fields/
- Playing on Plastic-Artificial Turf Hazards and Safer Alternatives -Collaborative for Health & Environment ; https://www.healthandenvironment.org/join-us/blog/playing-on-plastic-artificial-turf-hazards-and-safer-alternatives
- CHE_TURI-Massey etc al..Environmental Health Impacts of Synthetic Turf and Safer Grass Alternatives. https://www.healthandenvironment.org/webinars/96595
- Citizens Campaign for the Environment: www.citizenscampaign.org; The Problems with Artificial Turf webinar. https://youtu.be/w24A3Th8JDE
- Dr. Phillip Landrigan discusses Artificial Turf on School Grounds: https://m.youtube.com/watch?v=rT4jKG_88pI OR https://youtu.be/rT4jKG_88pI
- Dr Sarah Evans on Synturf: https://www.greenstreetnews.org/post/toxic-turf-with-dr-sarah-evans
- Sierra Club MD: www.sierraclub.org/maryland/synthetic-turf

- Safe Healthy Playing Fields Inc. www.safehealthyplayingfields.org

Grass field information and presentations:

- **STMA** presentation: https://docs.google.com/presentation/d/1SO5O4ots9Djtt4nx0sI2feyAtIkGFyXd/edit?usp=drivesdk&ouid=102469267051132519795&rtpof=true&sd=true
- **Field Fund** Links: https://www.fieldfundinc.org/
- **Ian Lacey- A** compelling presentation from a grass pro: https://drive.google.com/file/d/1P5JbwMUEijj3cKYhE_E5fpNiZbr45Ql2/view?usp=drivesdk
- **MCCPTA presents Grass Fields 101**: Let's Grow! With Jerad Minnick and Ryan Bjorn current and former sports field managers of the Montgomery Soccerplex ; https://www.youtube.com/watch?app=desktop&v=sAqMvUhs-V4&feature=youtu.be ; details on common sense maintenance for durable grass fields https://youtu.be/sAqMvUhs-V4 at 42:20 ; Aeration , aeration , aeration ! "The challenge we have is not the vegetation so much as the soils and drainage. A deep tine aerification program is simple and cost effective Better draining soils = less closures."
- **Somerville example** here: http://www.thesomervilletimes.com/archives/82416
- **Last word from the National Park Service:** Federal Mall in DC report: https://www.nps.gov/nationalmallplan/Documents/FEIS/Volume%202/2_Summary_of_Comments_and_Responses.pdf Anonymous Commenter*: "The use of artificial turf should be explored for the Mall. There are varieties that look like real turf and are low maintenance.* NPS Response: QUOTE: ***"The National Park Service has explored using artificial turf, but it does not meet the criteria for durability, maintainability, and sustainability. Artificial turf is hotter than natural turf, and it does not meet objectives to improve water infiltration. We will continue to examine the use of new technologies to increase durability in natural turf. This topic has been added to the considered but dismissed section for the following reasons: technical infeasibility, inability to meet project objectives, and duplication of other less damaging alternatives"*** END QUOTE

BANS on Rubber or plastic play surfaces:

Jurisdictions That Have Banned Crumb Rubber Infill (or Synthetic Turf)

2008 New York City
http://www.asgi.us/506/lausd-so-calif-school-bans-crumb-rubber.html

2009 Los Angeles Unified School District
http://www.asgi.us/506/lausd-so-calif-school-bans-crumb-rubber.html
SB47-Hill.
Failed https://leginfo.legislature.ca.gov/faces/billHistoryClient.xhtml?bill_id=201520160SB47

2011 Glendale, CA http://www.digitaljournal.com/article/314592

2015 Montgomery County, MD https://www.nbcnews.com/news/us-news/turf-war-one-suburb-bans-crumb-rubber-another-says-it-n436111

Edmonton, WA https://sportsturfonline.com/2015/12/15/wa-city-council-bans-crumb-rubber-turf/77248/

2016 Hartford, CT Banned crumb rubber infill and petroleum based turf. https://ctmirror.org/2016/02/12/a-shifting-ground-for-artificial-turf-in-connecticut/

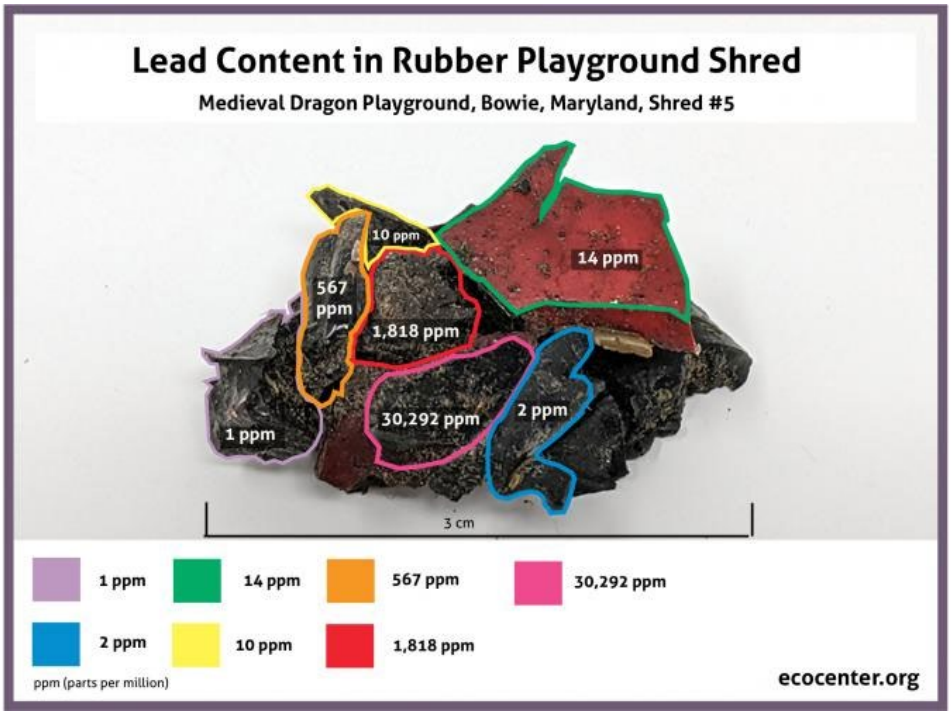
2017 Minneapolis, MN https://www.minneapolisparks.org/_asset/4nxzf4/3-14-2017-Crumb-Rubber-Fact-Sheet_FINAL.pdf

2018 Westport, CT https://www.westport-news.com/news/article/RTM-proactively-bans-crumb-rubber-artificial-turf-13464197.php

2023: New York State – Bans any carpeting containing PFAS chemicals – including Artificial Turf Carpet Systems: https://www.cps.bureauveritas.com/newsroom/new-york-governor-signs-pfas-bans-apparel-and-carpet PFAS Bans in Apparel (Bill A07063A) and Carpet (Bill A09279A)

2023: https://ec.europa.eu/commission/presscorner/detail/en/ip_23_4581 .. 27Sept 2023 the Commission takes another major step to protect the environment by adopting measures that restrict microplastics intentionally added to products under the EU chemical legislation REACH. ..,The adopted restriction uses a broad definition of microplastics – it covers all synthetic polymer particles below five millimetres that are organic, insoluble and resist degradation. The purpose is to reduce emissions of intentional microplastics from as many products as possible. Some examples of common products in the scope of the restriction are: **The granular infill material used on artificial sport surfaces – the largest source of intentional microplastics in the environment…** There has long been a concern about the use of crumb rubber in sports fields, initially the concerns were about the PAH content. Research by the ECHA Risk Assessment Committee suggested that lower limits were required, and the amount of PAH

https://thewash.org/2019/11/06/slow-city-response-to-dangerous-playground-conditions/



https://www.ecocenter.org/new-study-lead-crumb-rubber-playgrounds-maryland-and-virginia

As unitary synthetic surfacing begins to age, it may deteriorate and expose the loose-fill cushioning layer underneath. This layer is typically made with shredded waste tires.