

SYNTHETIC TURF – VIOLATION OF YOUR MS4 PERMIT?

Friends of Sligo Creek & Safe Healthy Playing Fields Inc

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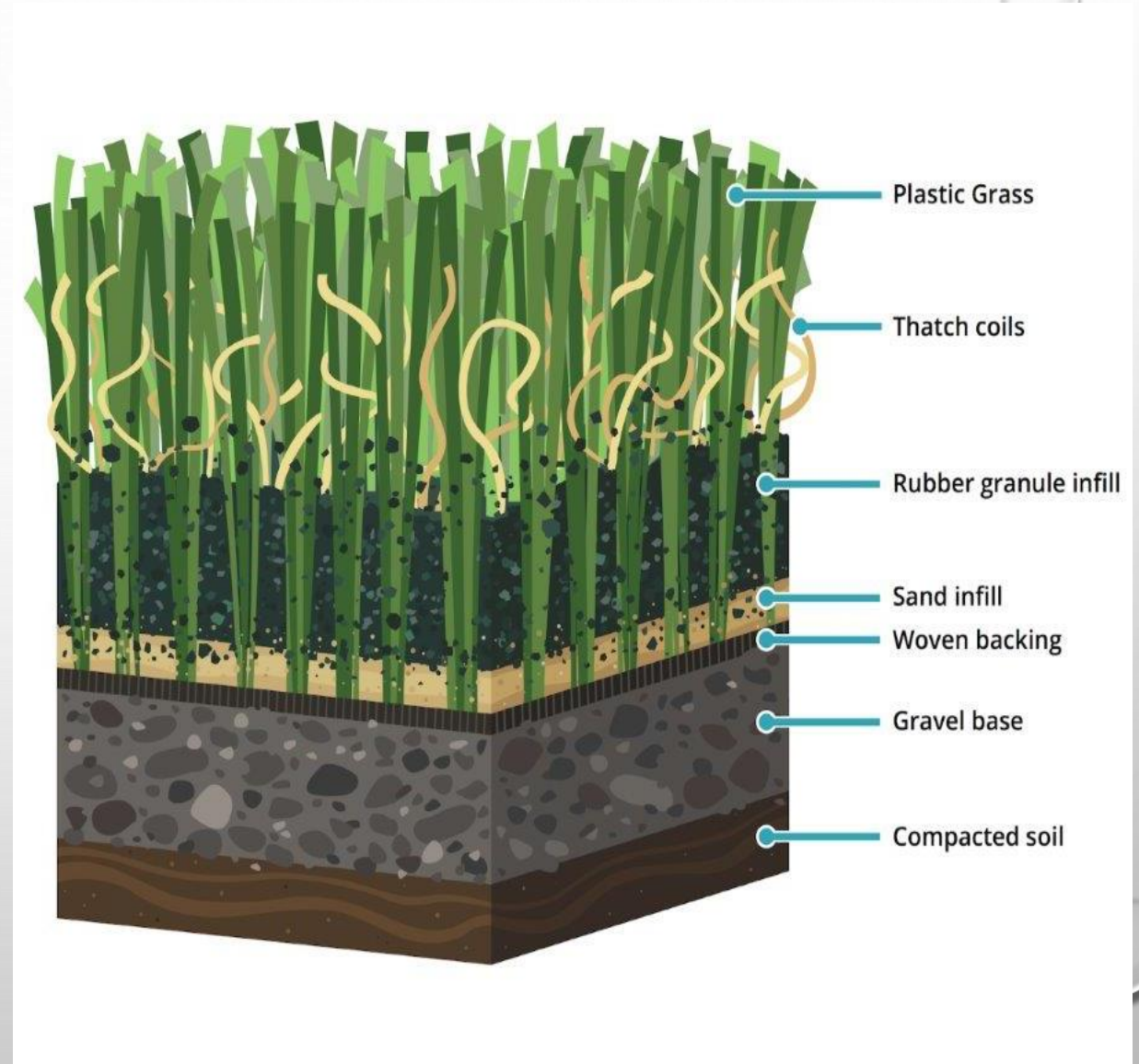
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WHAT IS SYNTHETIC TURF?

Average field-
80,000 square feet

= 40,000 pounds of
plastic backing and blades

= 400,000 pounds of
infill (tire waste, silica
sand, or other infill
material)



MS4 Permit Requirements

Example: Montgomery County's new MS4 Permit 20-DP-3320 MD0068349

- **Part VII.A. Montgomery County shall prohibit non-stormwater discharges into, through, or from its MS4.**
 - Consistent with §402(p)(3)(B)(iii) of the CWA, the County shall take all reasonable steps in compliance with the terms of this permit to minimize or prevent the contamination or other alteration of the physical, chemical, or biological properties of any waters of the State, including a change in temperature, taste, color, turbidity, or odor of the waters or the discharge or deposit of any organic matter, harmful organism, or liquid, gaseous, solid, radioactive, or other substance into any waters of the State, that will render the waters harmful to:
 1. Public health, safety, or welfare;
 2. Domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial use;
 3. Livestock, wild animals, domestic animals, or birds; and
 4. Fish or other aquatic life.

<https://www.epa.gov/npdes/stormwater-discharges-municipal-sources>

What is the problem with Microplastics?

Definition: Microplastics are extremely small pieces of plastic debris and fibers in the environment resulting from the breakdown during use and disposal of manufactured polymer products

Problems: Physical and chemical accumulation and harm to living organisms - aquatic or terrestrial when they pollute WATER, SOIL, AIR.

Sources: manufactured polymer products (e.g plastic carpeting and tires)

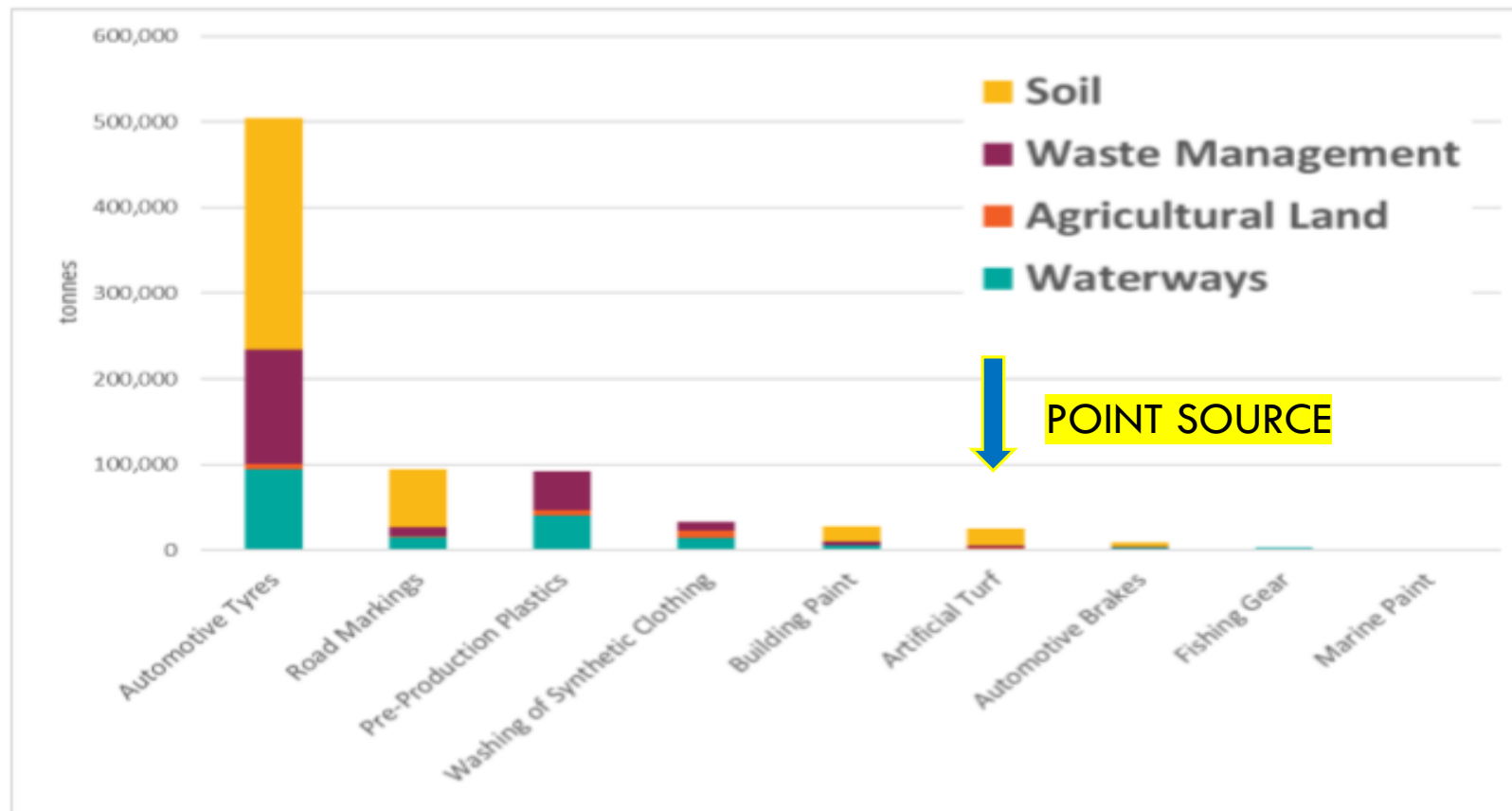
- **“Wear and tear”** Pollution: created over the lifecycle of a product through wear and tear (e.g. tires, synturf plastic carpet AND infill)
- **INTENTIONAL** Microplastics- added to the product and not firmly bound to it (e.g. Synturf infills)
- **WASTE**- End of life plastic items break down over time to form microplastics. (SYNTURF DUMPED EVERY 8-10 years - plastic carpeting with infill)

Microplastic Sources-wear and tear

Report: Eunomia 2018

https://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/pdf/microplastics_final_report_v5_full.pdf

Figure 1 - Source Generation and Fate of Microplastics from Wear and Tear in the EU (midpoint)



Source: Eunomia modelling

Synturf Microplastic Sources: Plastic Carpet Fibers Disintegrating





➔ **SYNTHETIC TURF INFILL:**

⊕ NIKEGRIND – MANUFACTURING WASTE

⊕ TIRE CRUMB – SHREDDED TIRE WASTE

⊕ ENVIROFILL – PLASTIC COATED SILICA SAND

**WHERE DO SYNTURF PARTICLES, FIBERS and other substances go?
“Drains to Waterways”**



SYNTURF INDUSTRY PRESENTATION-the pollution problem

1-5 tonnes of microplastic per year per field- Where does it go?



Scale and Scope of Synturf Installations

Sources:

Synthetic Turf Council
Eunomia2018 report for the EU

- USA - 15,000-20,000 synturf athletic fields installations
 - approximately 72 million square feet
 - *mostly tire crumb for infill*
- 2018 estimated total synthetic field material in the US: 4,760,000,000 pounds (FOREVER WASTE)
- Europe - over 50,000 synturf fields installed
 - approximately 336 million square feet

DISPLACING Grass and soil which would otherwise filter pollutants and oxygenate

“SUPER SOURCE” OF MICRO-PLASTICS

Magnitude of the Synthetic Turf Problem
Sources - Eunomia2018, industry reports

EACH synturf installation is a concentrated point source of microplastic pollution:

- wear particles (fibers from grass blades)
- intentionally added particles (infill)
- disintegrating solid waste -fibers and particles (Dumped, landfilled or burned AND REPLACED **EVERY 8-10 Years**)

Synturf plastic carpet: ~ 40,000 pounds of plastic fiber at installation.

- Worn fiber loss approximately 0.5-8% annually depending on the product and use = **500-3200 pounds of disintegrating plastic pile per year leaves each field.**

Infill granules: 120 -220 tonnes of tire crumb or other infill at installation

- 1% - 4% of the total infill installed per year estimated to migrate off = **1.5- 5 tonnes tire crumb per year.**

- Manufacturers report around 3% loss per year.

**Synthetic Turf: THIS IS NOT SEDIMENT! THIS IS
MANUFACTURED WASTE! And should be treated
as such in stormwater permit enforcement.**



SYNTHETIC TURF IMPACTS- MICROPLASTIC “TROJAN HORSE”

Synthetic turf also delivers a concentrated source of tire and plastic microparticles/fibers to places and watersheds that would otherwise see little such particulate matter contamination at schools, parks and stream valleys.



BMPs and Microplastics/Fibers from Synthetic Turf

There is no evidence that stormwater management devices effectively capture migrating rubber and plastic particles, fibers and related pollutants from synturf carpet or infill.

Migration can occur:

- During installation
- Routine maintenance including weekly field grooming, infill replenishment and redistribution
- Adhering to synturf field users
- Rain events or high winds,
- End of life removal (every 8-10 years; sometimes more often)

For microplastics that are captured by stormwater management devices near synturf fields, where does the plastic mix end up after the BMPs are cleaned and filter media disposed?

- Landfill? Composting and back into environment?



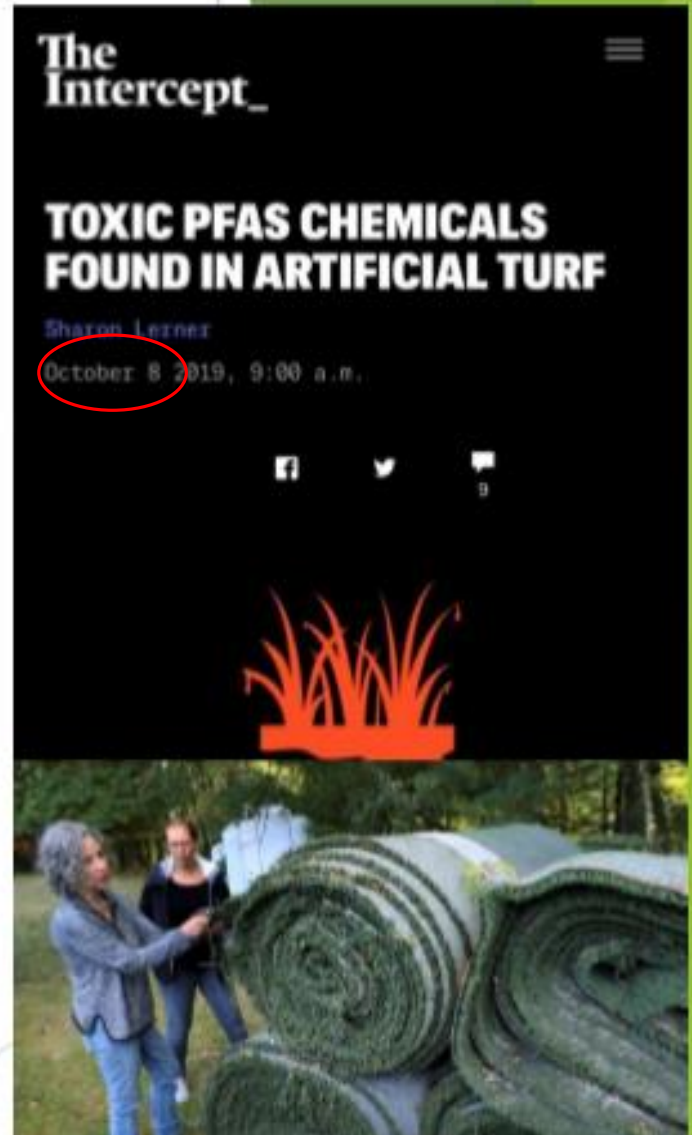
Dec 04, 2019

Hidden gotcha in artificial turf installations

With heightened awareness around the country about the health effects of PFAS, calculations for what artificial turf installations actually cost over their full life-time may send a shock through the artificial turf industry

Pete Myers

 Print  PDF  Email



Undisclosed Toxins in Synthetic Turf

Plastic Synturf Carpet:

Hormone disrupting chemicals, neurotoxins, immune system disruptors, carcinogens,

Such as:

- phthalates,
- anti-oxidants,
- plasticizers,
- heavy metals in pigments (lead, Cadmium..)
- PFAS chemicals

Tire Crumb:

Over 300 toxins including:

- Fine particles- carbon black
- Neurotoxins (e.g. lead)
- carcinogenic hydrocarbons + aldehydes,
- hormone disrupting phthalates, volatile organic compounds (VOCs)
- aquatic toxins such as
 - zinc
 - recently identified 6PPD highly toxic to salmon (other fish?)

EVOLVING SYNTHETIC TURF and MICROPLASTICS REGULATION

- **USA- few and mostly local** (e.g Montgomery County MD- 2015 Council Resolution banned the use of tire crumb and specified plant-based infill in publicly funded Synthetic Turf installations).
- **European Chemicals Agency (ECHA) to limit the use of intentionally added microplastics in products – including artificial turf pitches (fields) – to avoid or reduce environmental pollution.**
- **Artificial turf pitches are a significant source of microplastic pollution** in the environment, shedding between approximately 20,000-70,000 tonnes of microplastics per year.
- Car tires used for these artificial grass pitches are not intended for skin contact and the carpets may also contain potentially harmful chemicals from plastic.

Wear and tear: https://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/pdf/microplastics_final_report_v5_full.pdf

_intentional microplastics: <https://echa.europa.eu/da/-/rac-backs-restricting-intentional-uses-of-microplastics>

[HTTPS://PLASTICCHANGE.ORG/KNOWLEDGE-CENTER/COULD-THIS-BE-THE-END-OF-MICROPLASTICS-IN-ARTIFICIAL-TURF-PITCHES/](https://plasticchange.org/knowledge-center/could-this-be-the-end-of-microplastics-in-artificial-turf-pitches/)

Are you violating your MS4 Permit?

- **Part VII.B. Duty to Mitigate**

- Montgomery County shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that **has a reasonable likelihood of adversely affecting human health or the environment.**

Are you violating your MS4 Permit?

- **Part IV D.3, Illicit Discharge Detection and Elimination**
 - The County shall implement an inspection and enforcement program to ensure that all discharges **into**, through, or from the MS4 that are not composed **entirely of stormwater** are either **issued a permit by the Department or eliminated**.
 - Would the county give a permit for discharge of tons of tire crumb, microplastics and toxic chemicals such as PFAS into any stormwater BMP? If they are how are they justifying it? Could that change?
 - Is elimination better and easier?

Are you violating your MS4 Permit?

- **Part IV D.3, Illicit Discharge Detection and Elimination**

- Is it within the spirit of the MS4 permits to **knowingly create an illicit discharge** and then use expensive (and often poorly maintained) BMPs to mitigate?

Remember:

- Stormwater BMPs are last stage efforts **intended to capture background pollutants, not illicit discharges.**
- There is no independent empirical evidence demonstrating removal rates by any stormwater BMP of microplastics or tire crumb and related toxic substances such as PFAS and heavy metals draining from synturf.
- The illicit discharge impact will be amplified if BMP filter media are composted and reused in the environment (for example introducing these pollutants to grass fields) .

Are you violating your MS4 Permit?

- **Part IV.F .3.d. Anacostia Trash TMDL**

- Are constantly shedding synthetic turf fields in line with county efforts to: *“to reduce trash, floatables, and debris, and show progress toward achieving the annual trash reduction allocation required by the Anacostia trash TMDL”*?
- Will PFAS, tire crumb, and other synturf microplastics go back into the environment when BMP filter and soil media are composted and used for gardening?
- Will PFAS –laden filter media taken to a landfill end up in leachate and then back into our streams post-WWTP treatment?
- **Are PFAS in synturf destined to be the new PCBs?**

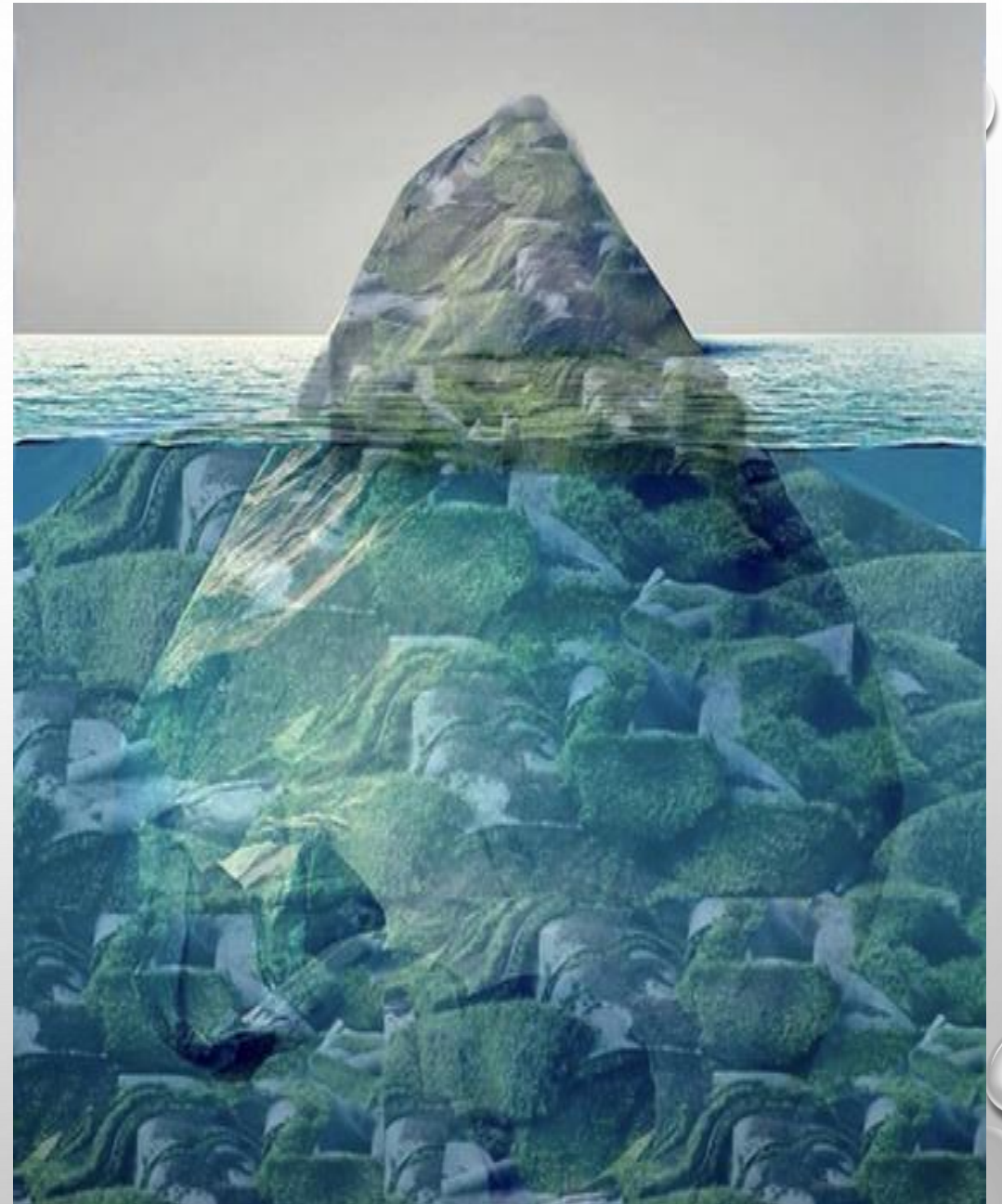
SOLUTION?
CHOOSE
Natural Grass



Healthy Building Network and Toxics Use Reduction Institute (TURI) recommend **choosing natural grass** over synthetic turf.

- High quality fields can be achieved on natural grass without the use of synthetic pesticides or fertilizers
- Synthetic turf carpet, infill, and shock pads can contain hazardous chemicals. Hazardous chemicals may also be used during production, installation, and maintenance of these fields.
- ‘Organic’ infills still can carry chemical hazards if chemically treated.
- Organic infills do not avoid the concerns related to the synthetic turf carpet and shock pad, including lack of end-of-life recycling options.

TIP OF THE TURF-BERG?!



RESOURCES

Information about synthetic turf and alternatives:

Safe Healthy Playing Fields www.safehealthyplayingfields.org

Sierra Club www.sierraclub.org/Maryland/synthetic-turf

Friends of Sligo Creek www.friendsofsligocreek.org

National Center for Health Research
www.center4research.org, www.stopcancerfund.org

Environment and Human Health www.ehhi.org

Synthetic turf related information: www.synturf.org

REPORT TOXIC content, INJURY due to Heat, Hardness, Abrasiveness

www.saferproducts.gov

Microplastic Pollution resources- synthetic turf

Wear and tear: https://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/pdf/microplastics_final_report_v5_full.pdf

intentional microplastics: <https://echa.europa.eu/da/-/rac-backs-restricting-intentional-uses-of-microplastics>

[HTTPS://PLASTICCHANGE.ORG/KNOWLEDGE-CENTER/COULD-THIS-BE-THE-END-OF-MICROPLASTICS-IN-ARTIFICIAL-TURF-PITCHES/](https://plasticchange.org/knowledge-center/could-this-be-the-end-of-microplastics-in-artificial-turf-pitches/)

Information on municipal stormwater MS4 permits:
<https://www.epa.gov/npdes/stormwater-discharges-municipal-sources>

VIDEO OF DC AREA SYNTURF FIELDS – POLLUTION: <https://m.youtube.com/watch?v=7oVzxFVKRlw>