

# Back to Grass

Taylor McFarland | NJ Sierra Club



**SIERRA CLUB**  
NEW JERSEY CHAPTER

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# Artificial Turf







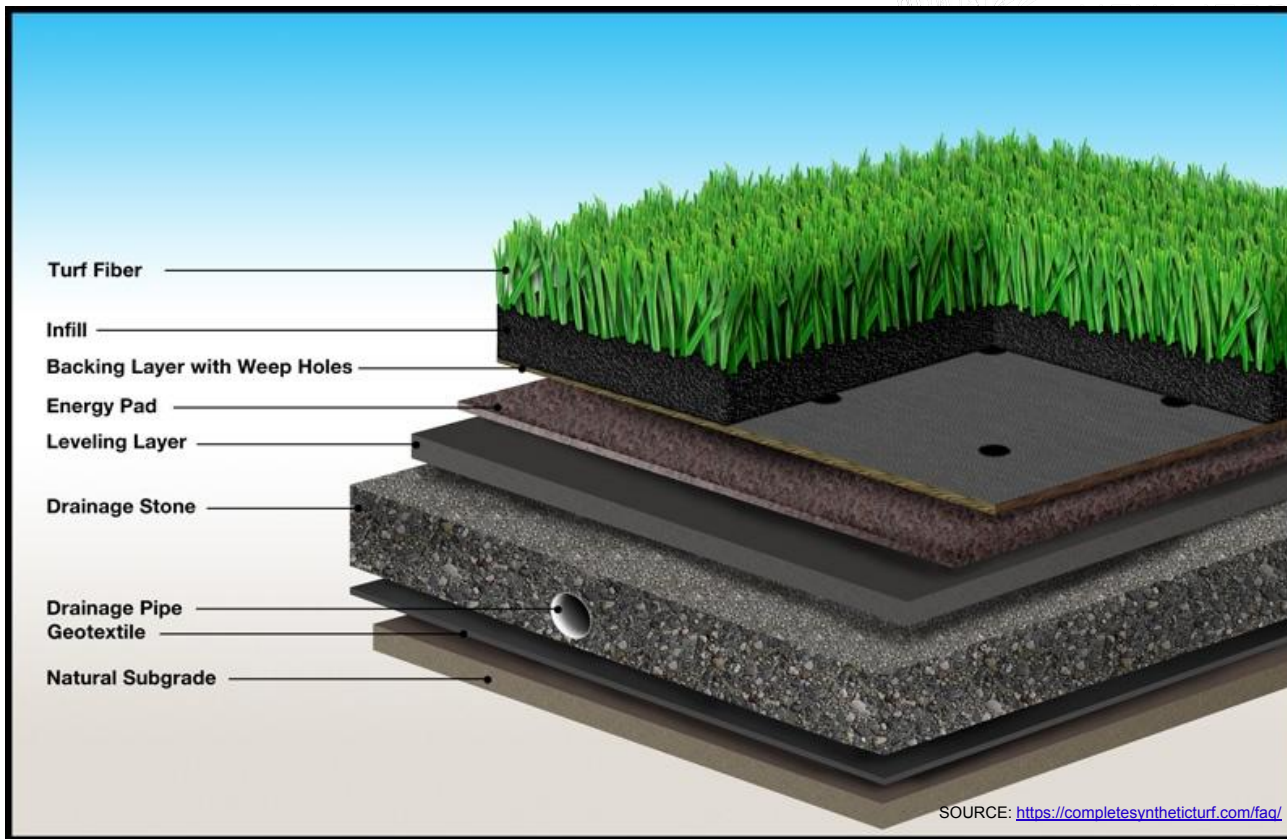
# What is it?

**Artificial turf** is a synthetic surface designed to resemble grass, used in sports arenas, residential lawns, and commercial spaces.

The **artificial turf blades** are primarily made from plastic, specifically polyethylene. A common infill used is crumb rubber, made from recycled tires



# What is it?





# Environmental & Health Impacts





# Environmental & Health Impacts

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- A regular-sized artificial turf field contains **40,000 lbs of plastic**
- Each synthetic turf field loses **0.5 to 8.0%** of its blades annually, yielding **200 to 3200 pounds** of plastic waste to our environment per year
- These microplastics migrate off the field into air, soil, waterways and ocean

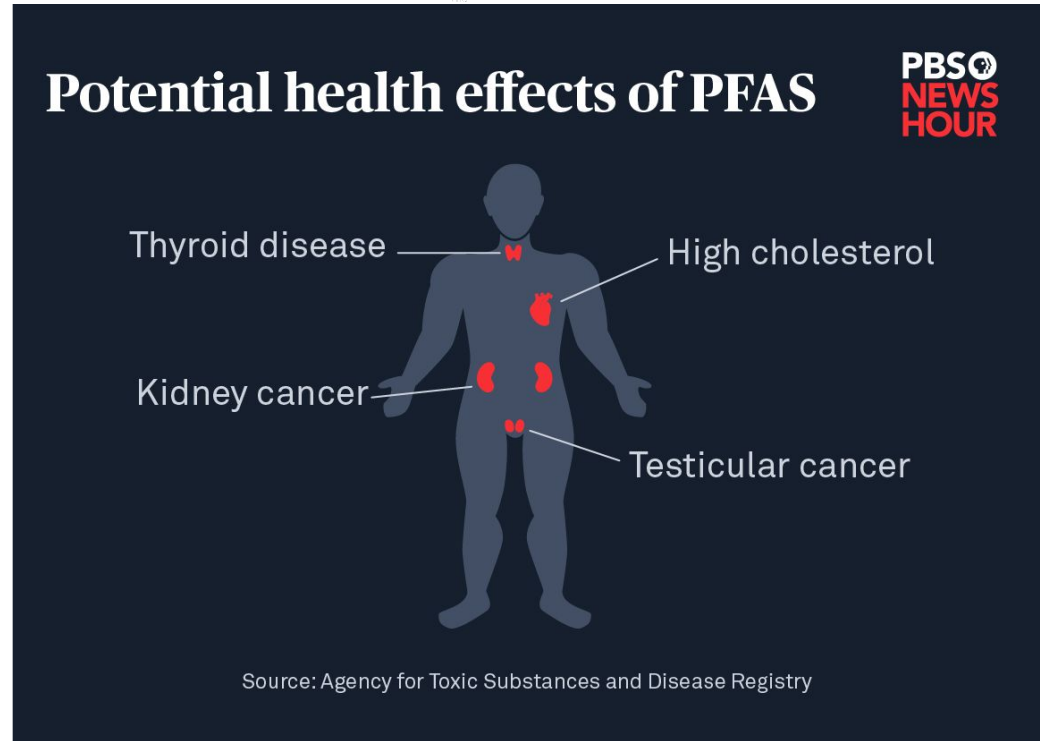




# Environmental & Health Impacts



- **Microplastics** from artificial turf can be inhaled or ingested by humans and animals, potentially causing health issues depending on the size and concentration
- These plastic artificial turf blades contain harmful chemicals such as **PFAS** that is known to be harmful to human health and the environment.
- **PFAS** are known and suspected carcinogens, neurotoxins, endocrine disrupting compounds, and respiratory irritants.



# Environmental & Health Impacts

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- A regular sized artificial turf field contains **150,000 pounds of crumb rubber**
- A European Commission report in 2018 estimated that **1 to 4 percent of field infill needs to be replaced** yearly due to migrating off-site or compacting.
- The infill that keeps the field's plastic blades in place typically measures 0.5-0.3 millimeters in size, therefore meeting the technical definition of microplastics in the European Union

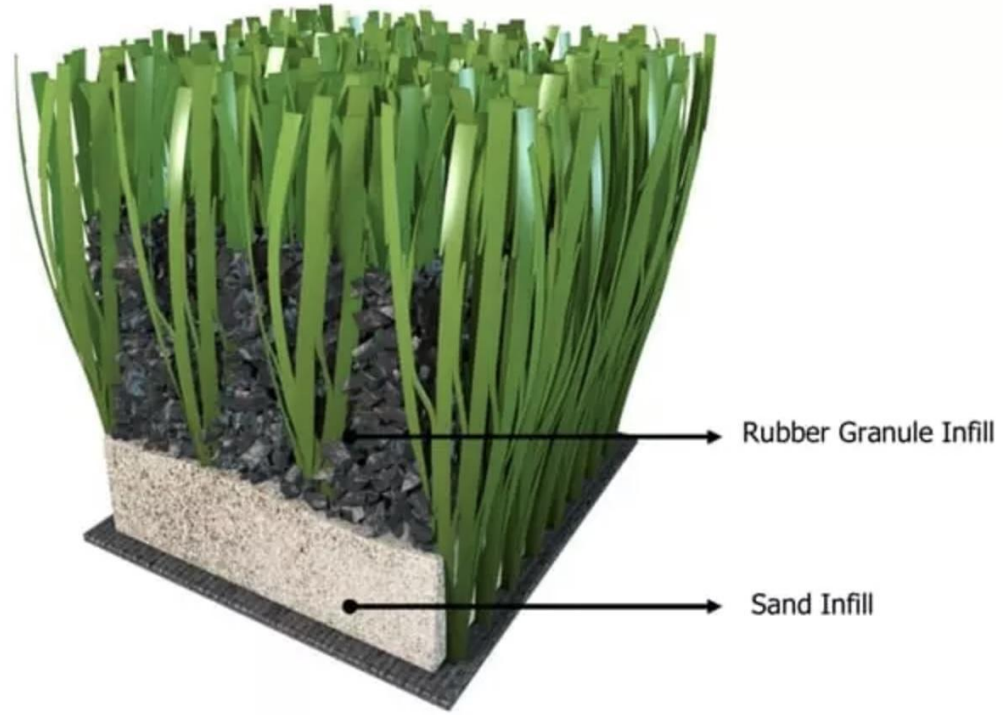






Photo Credit - Jean Wells  
Lehmborg



Photo Credit - Jean Wells Lehmborg



Photo Credit - Jean Wells  
Lehmborg

Kehler Field in Westfield



# Environmental & Health Impacts

## *Extreme Temperatures on Artificial Turf Field*

- Artificial turf can be **20–70° F** hotter than natural grass.
- For example, on a 96°F day, artificial turf can reach temperatures of up to 158°F
- Elevated surface temperatures on sports playing fields have been shown to contribute to heat-related illness
- Playing on synthetic turf can melt shoes, blister hands and feet, and induce dehydration and heatstroke.
- Climate impacts exacerbate heat related stresses for athletes



Allen High School cornerback's cleat after practicing on artificial turf field in Texas

[www.safehealthyplayingfields.org](http://www.safehealthyplayingfields.org)



## Environmental & Health Impacts



Photo Credit: Jean-Pierre Leinberg



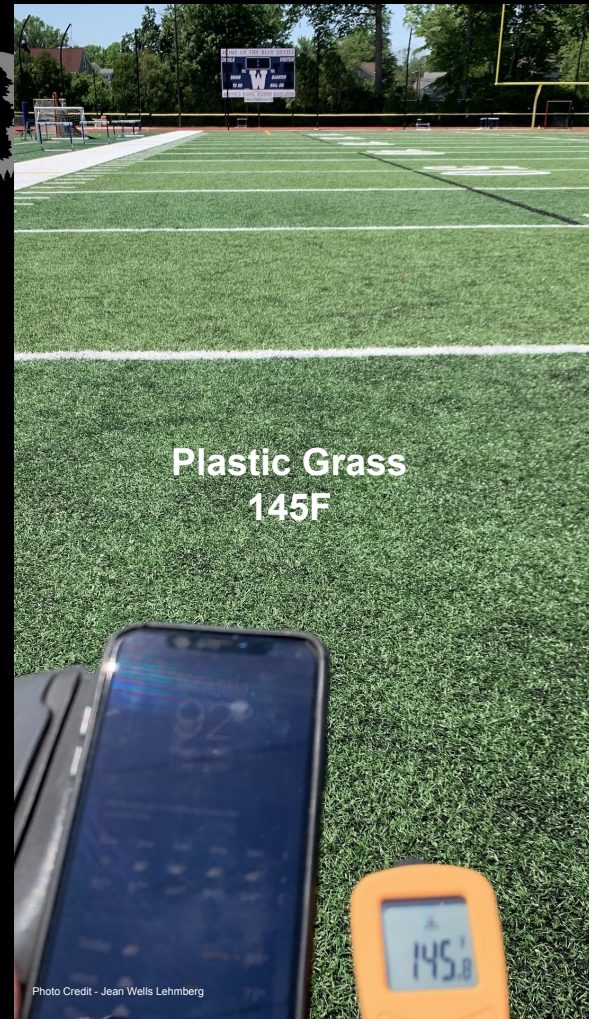
Location: Kehler Field, Westfield, NJ

Date: June 21, 2024

Time: 2:27 pm

Air Temp 96F







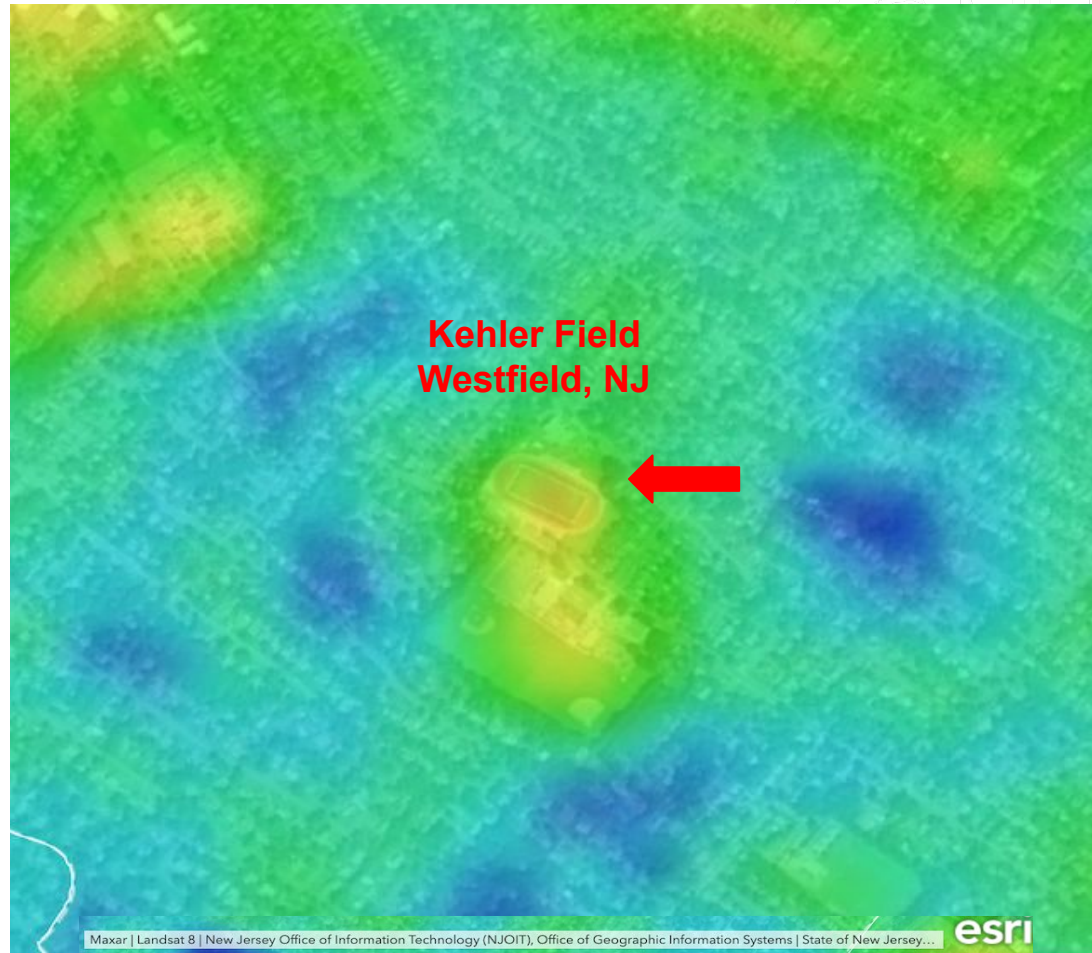
# Health Impacts

## *Heat Related Illness & Deaths*

- Heat stroke is the third-most common cause of sudden death among high school athletes behind cardiac arrest and traumatic brain injuries
- Sixty-seven high school athletes have died from exertional heat illness since 1982, according to the National Center for Catastrophic Sport Injury Research.
- 52% of those deaths happened in August during pre-season
- 94% of those deaths were football linemen



# Artificial Turf Fields Form Heat Islands





# Environmental Impacts, Waste



- A synthetic turf field lasts **8 to 10 years** on average
- Thousands of pounds of infill and plastic carpet must be removed and replaced at disposal
- Mixed plastic waste, such as synthetic turf, is not recyclable using conventional methods
- Sent to landfills or dumped illegally



*Photo courtesy of Amanda Farber*

# Economic Analysis

*Natural grass is cheaper than artificial turf over the long term*



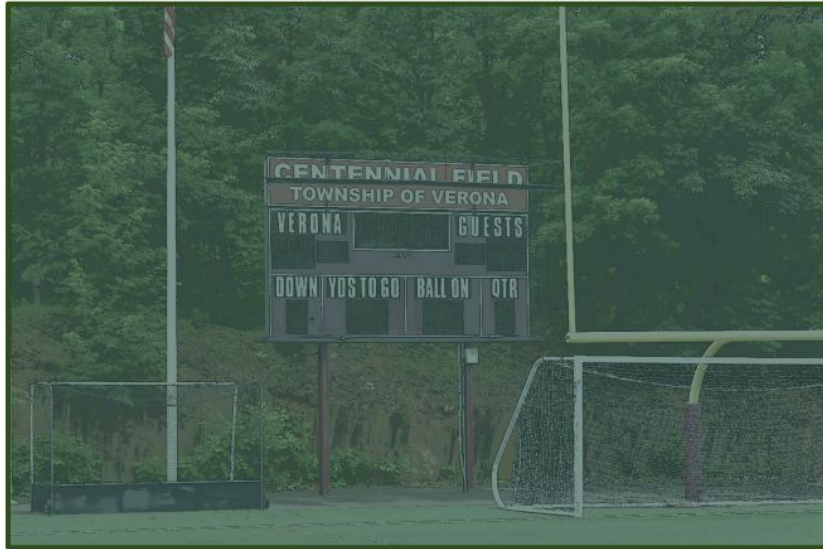


## NATURAL GRASS – A FAR MORE COST-EFFECTIVE OPTION

<b>20-YEAR TOTAL COST OF OWNERSHIP</b>		
	<b>Artificial Turf</b>	<b>Natural Grass</b>
Field Construction	\$2,700,000	\$430,000
Stormwater Management	\$670,000	\$670,000
Contingency (15%)	\$505,171	\$165,000
Annual Maintenance (x20)	\$506,000	\$1,194,000
Carpet Replacement (x2)	\$1,400,000	\$0
Debt Service	\$1,355,541	\$442,750
Total Costs	\$7,136,712	\$2,901,750

\*Natural Grass is a pervious surface and may not require Stormwater investment. Included as a worst-case scenario.

# Verona Study



**Artificial Turf and Natural Grass:**  
*a comparative analysis of environmental impact,  
chemical exposure, injury, surface heat, playable hours  
and cost*

PSEG Institute for Sustainability Studies Green Teams Project  
Summer 2024



## Conclusion

- Natural grass was more cost-effective in the long run, even when the high cost of hiring a professional was taken into account
- A well maintained natural grass field, was also found to contain fewer compounds that harm the environment and human health and have lower levels of emissions over its lifetime
- Safety considerations as a whole also favor natural grass fields
- Although technologies exist that decrease the heat on artificial turf fields, they still do not decrease heat to levels comparable to natural grass fields





The image shows three large rolls of artificial grass lying on a lush green lawn. The rolls are unrolled from the left, showing the dark, woven backing and the vibrant green, grass-like fibers. The foreground is filled with the texture of the grass, and the background is softly blurred, emphasizing the rolls. The lighting is bright and natural, suggesting a sunny day.

**Pending Proposals**



# Pending Proposals

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## *Middlesex County sports complex for Thomas Edison Park*



The park already has several playing fields, over a dozen tennis courts, a running track, baseball fields, and a parking lot for 300 cars. Middlesex County's proposal includes building 14 new artificial turf sports fields, 16 tennis courts, parking for 1,350 cars, and more.

The expanded active sports facilities planned at Thomas A. Edison Park, a Middlesex County property, in Edison.  
*Provided By The County*



# Pending Proposals



## *Ridgewood proposal on historic Schedler property*

- Besides the environmental & public health impacts, the site is completely inappropriate due to its historical significance given its Revolutionary War history.
- May 29th - the State Department of Environmental Protection's Historic Preservation Office sent a letter to Ridgewood stating the artificial turf field constitutes an "encroachment" on the historic structure.
  - Steps include: analysis of alternative plans initially proposed in 2017, remediation plan for contaminated soil and more
- June 19th Council meeting is being rescheduled.



## MetLife Stadium to put in grass field for 2026 World Cup, stick with turf for NFL season



By **Charlotte Carroll** and **Melanie Anzidei**  
March 25, 2024

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# What you can do



# What you can do

- Present the FACTS to your mayor, town council, school board of ed and school administers
  - Bipartisan support- Show them the economic analysis and heat impacts
- Help us pass local ordinances that would put a moratorium or full ban on artificial turf
- Support legislation that would ban artificial turf and prohibit Green Acres from funding artificial turf development
  - Green Acres Resolution **SR113(Mukherji)**
  - Artificial Turf Ban bill **S3783(Mukherji)**
- Join our coalition calls every month to learn more about our campaign to promote safe playing fields in New Jersey





## Talk to Natural Grass Experts



Keith Fisher

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Sports Field Manager

Employers: New York Yankees & Lakewood  
BlueClaws, Central Regional School District



[Back to Grass Webinar with Keith Fisher](#)

# Fighting Toxic Artificial Turf

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**Tell Your Municipalities to Support  
Natural Grass over Artificial Turf!**

→ [sc.org/NoToxicTurf](https://sc.org/NoToxicTurf)



**Tell Your Municipalities to  
Support Natural Grass over  
Toxic Artificial Turf!**





# Questions?

