

Real Grass Athletic Fields vs. Synthetic Turf (ST) with Plant-Based Infill (PBI), Such as Cork, Coconut, Corkonut

For annotated citations, please refer to the document, "Information about Plant-Based Infills (PBI): Cork, Coconut and Corkonut Infills."

SYNTHETIC TURF
Skin Injury References

EXPOSED SKIN/BODY EFFECTS

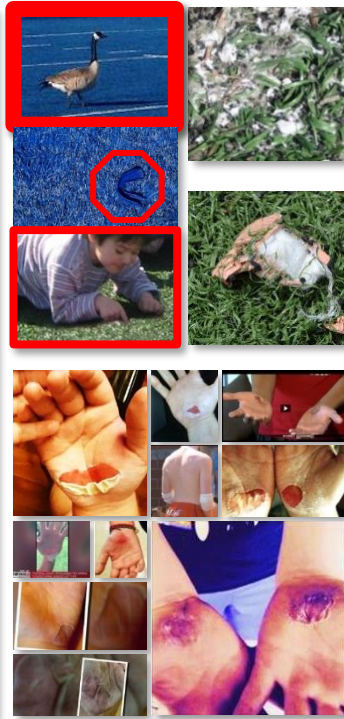
*MSHSAA Guidelines
**Universities like BYU: athletic fields unusable above 120° F.

105 °F* (heat index)
cancel sport
115 °F
burns, heat stroke

122 °F**
<10 MINUTES
injure/burn
131 °F
2nd degree burn

140 °F
3 SECONDS
2nd degree burn
5 SECONDS
3rd degree burn

162 °F
human tissue
destroyed on
contact,
may cause
nerve damage



Marquette High School (kids playing at Lafayette) 7/2016

Grass = 111 °F

FieldTurf with GreenPlay (corkonut) = 140 °F

Air Temp = 97 °F



"The skin is all ripped off; it's pretty disgusting. It's like walking on hot coals with your skin ripping and slowly cracking, constantly."
- Australia NT Striker, Michelle Heyman

"I don't want no FieldTurf. It's bad on your knees."
- Steelers CB, Ike Taylor

CALIFORNIA PROPOSITION 65 WARNING
This product contains crystalline silica which is "known to the State of California to cause cancer and other substances which are known to the State of California to cause cancer, birth defects and reproductive harm"



"Natural grass is so much better to play on – players love playing on the natural grass compared to a [synthetic] surface," – Steelers QB, Ben Roethlisberger

Brady wants real grass at Gillette!
"I think everybody likes grass...easier to land on the grass than landing on the [synthetic] (turf). I think everybody would love a good grass surface to play on. That'd be great...European soccer teams get all the grass when they come...Good point, right?" – Patriots QB, Tom Brady

"If that game had been on grass, I guarantee you that Rob and Coby would still be playing right now."
– Cardinals RB, Michael Pittman

"It should be grass stains, not blood."
– USWNT Forward, Abby Wambach

"Every game, every team should have grass, without a doubt."
– Former Galaxy Midfielder, David Beckham

"On grass, you get the stains to let you know you're getting down and dirty, you're playing good, you're flying around on the field making plays and it just feels good."
– LB, RB, Chika Nwabuko















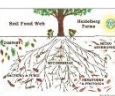

















Webb tore ACL playing on M&T Bank Stadium's [synthetic] surface in 2009, 2012.
"They say injuries happen more on [synthetic] turf than on grass. Simple as that."
– Ravens CB, Lardarius Webb

"I played real aggressively on [synthetic] turf for nine years. I'm lucky I'm still walking the way I'm walking now. I'm still walking, at least."
– former Rays, Carl Crawford

Playing biggest tournament, 2015 WWC, on synthetic turf:
"...is unacceptable. The game is completely different. It's FAKE, so you don't know how it's going to bounce...it's terrible on your body, the constant pounding..."
– USWNT Forward, Sydney Leroux

"As a footballer, you never want to be on [synthetic] turf, ever."
– Red Bulls Striker, Thierry Henry

"You go out on [synthetic] turf, all you get is a turf burn."
– LB, RB, Chika Nwabuko

Real grass	ALL synthetic turf, including PBI	Additional Problems with PBI
 <p>Surface loved overwhelmingly, by both professional athletes and children</p>	 <p>Surface hated overwhelmingly, by both professional athletes and children</p>	<p>Deceptive advertising – sold as “organic” but totally unregulated, chemically treated at factory and required after installation</p>
 <p>Performance is competitive with examples of over 1,000 hours/year</p>	 <p>Performance is irrelevant when considering toll on children’s bodies. The more field is used, the faster it races to the end of its useful life.</p>	<p>Performance is high risk – experimental. limited data on long-term use</p>
 <p>Injury rates much lower than ST*</p>	 <p>Injury rate: 88% higher ACL sprains and 22% higher concussions*</p>	<p>Breakdown, compaction, loss of infill, early degradation leaves students at greater injury risk</p>
 <p>Cost is millions cheaper in short- and long-term – install/maintain*</p>	 <p>Cost is millions more expensive in short- and long-term when considering install/maintain*</p>	<p>Much higher cost than tire crumb. Requires more maintenance; must be watered, requiring purchase of equipment and infrastructure</p>
 <p>When bare soil is covered with grass: NO RISK of lead exposure, even if soil approached lead limit.</p>	 <p>Children exposed to lead as plastic grass fibers break down due to friction from play, wear and tear, and abrasive silica sand</p>	<p>Materials are abrasive, accelerating break down of plastic turf fibers, and increasing lead exposure</p>
 <p>Boost children’s immune and respiratory systems, reduces allergies and asthma, and improves mood</p>	 <p>Respiratory problems include lung damage, fluid build-up in lungs, silicosis. Chronic exposure to multitude of unregulated, toxic chemicals, through skin, ingestion and inhalation.</p>	<p>Requires higher percentage of silica sand than tire crumb. Crystalline silica, contained in materials, is a known carcinogen; respiratory problems include lung damage, fluid build-up in lungs, silicosis</p>
 <p>If properly built and maintained, grass can last essentially forever. It’s a plant.</p>	 <p>End of life approx. 8-12 years. 600,000+ lb synthetic turf carpet and infill must be disposed of in landfill. Replace, replace, replace. It’s a product.</p>	<p>Requires annual top off average 3.5 tons due to floating/migrating particles</p>
 <p>Field care can utilize an organic (third-party certified), approach. Grass cleans itself because of soil system</p>	 <p>Field care requires the use of many various chemicals, at least one identified by EPA as a high human health risk. Synergistic interactions unknown.</p>	<p>Chemical treatments such as pesticides, antimicrobials, pre-emergent herbicides, flame retardants and antifungal/antimold agents also used.</p>
 <p>Temperatures are refreshing, always 30-50 degrees cooler than ST!</p>	 <p>Temperatures are 140 °F and higher on sunny days; directly related to the sun, all infills.</p>	<p>Temperatures of PBI are still 140 °F and higher on sunny days. Actual recorded temperatures differ from industry claims.</p>
 <p>N/A</p>	 <p>Contains known carcinogens, endocrine disruptors and other unregulated toxins.</p>	<p>Massive quantities of pulverized, chemical-laced dust are inhaled by children every use.</p>
 <p>N/A</p>	 <p>2nd and 3rd degree burns are occurring at high rates.</p>	<p>Applies</p>
 <p>N/A</p>	 <p>Deep abrasions (turf burns), at high rates; layers of skin are removed</p>	<p>Applies</p>
 <p>N/A</p>	 <p>Cleats and water bottles melt</p>	<p>Applies</p>
 <p>N/A</p>	 <p>Staph/MRSA bacteria thrive; athletes at 7x risk of Staph/MRSA infection*</p>	<p>Applies</p>
 <p>Absorbs 16.9 tons of CO₂</p>	 <p>Carbon footprint so enormous, must plant 1,861 trees/field every 10 years</p>	<p>Applies</p>
 <p>Environmental factors – grass filters water, allows healthy ecosystem</p>	 <p>Environmental factors – where we live, eat and drink – negatively affected by its runoff; in ways unknown</p>	<p>Applies</p>

*Independent studies, not funded by industry