



# SIERRA CLUB

## MARYLAND CHAPTER

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November 4, 2016

Dear President Loh,

I am writing to express the Sierra Club's support for the proposal submitted by UMD student leaders to research safety and address problems with synthetic turf on University of Maryland's athletic fields with the ultimate goal of returning to healthful natural grass.

The Sierra Club shares the students' concern about the environmental and health impacts of the use of synthetic turf. While the Sierra Club do not normally contact the University on such matters, we have observed that even commonly associated problems with synthetic turf fields that affect player health and safety, such as heat, hardness, increased injury, and toxic exposures – have not received the attention, institutional action and scientific scrutiny they deserve, and may not be on your radar. We have summarized our understanding of the issue and some of the key concerns below.

First, what is "synthetic turf"? The complex product known as synthetic or artificial turf (aka "synturf") is a plastic carpet on a rock base with finely shredded material dumped on top as cushioning and to sift down between the blades to hold them upright. More specifically plastic fibers are attached to a urethane backing and rolled out on a rock drainage layer (which replaced the soil and previous drainage). Rarely, a synthetic foam pad will be rolled out on top of the rocks before the rug is rolled out. Pulverized waste tires (tire crumb), often mixed with silica sand and occasionally other materials (such as cork/coconut husks) is the most common infill.

People assume that the safety of the plastic and infills of synturf are ensured by federal oversight since it is a consumer product that both children and older students interact with intimately and often. But in the United States synturf and its infills are entirely unregulated. There are no required standards for safety, no regulations for toxic content, no required testing or monitoring for accessibility of toxic ingredients or for level of hardness. The only warranty requirements are to ensure the field (rather than the athletes) survive its 8-year warranty period intact. It is entirely "buyer beware" for a complex, unpredictable product with infills such as tire waste (typically 150-200 tons from 10s of thousands of car and truck tires per field) never meant for human use, containing variable levels of known hazardous substances and many undisclosed ingredients.

Tire companies report a troubling list of ingredients but refuse to disclose all constituents of solid tires meant for road use and the synthetic turf industry is not required to assess or disclose the full content of the pulverized tire crumb that they are spreading on athletic fields.

However, the EPA reported (and other studies have found)<sup>1</sup> that a single field can have "substantial variability" in its materials and in the "concentrations of contaminants," listing at least 32 potential toxic

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<sup>1</sup> EPA 2009 and follow up reports (see: <http://www.peer.org/news/news-releases/epa-retracts-synthetic-turf-safety-assurances.html>)

ingredients (many known and suspected carcinogens, neurotoxins and hormone disrupting chemicals and heavy metals ) including but not limited to: lead, arsenic, benzene, cadmium, mercury, toluene, acetone, aniline, barium, benzene, benzothiazole, carbon black, chloroethane, chromium, cobalt, copper, isoprene, latex, manganese, mercury, methyl ethyl ketone, methyl isobutyl ketone, naphthalene, nickel, phenol, pigments, polycyclic aromatic hydrocarbons (highly carcinogenic), styrene-butadiene, toluene, trichloroethylene and Zinc along with halogenated flame retardants

"You pick up rubber off a field and you don't know what that piece of rubber came from," said Dr. David Brown, retired, toxicologist from the Agency for Toxic Substances and Disease Registry (ASTDR) of the Centers for Disease Control and Connecticut's former head of environmental epidemiology and occupational health. "It's not a manufactured item. It's a waste. There isn't quality control."

The presence of lead (a highly neurotoxic heavy metal for which there is no safe exposure level) in synthetic turf plastic and tire crumb is just one example of a constant, unacceptable and unpredictable hazard. The industry originally asserted that all new fields after 2008 would be lead-free BUT they now say that is not true: in addition to studies showing lead, even in new fields, the representative of leading synturf vendor FieldTurf said in March 2016 on video to the MD state legislature: "Yes, our product contains lead" <sup>2</sup>.

In spite of the proliferation of synthetic turf with tire crumb infill around the country, and the concerns raised, there are no local, or large-scale national, studies on the exposed athletes themselves, or animal surrogates to assess the possible health issues associated with inhalation, ingestion or contact with plastic and tire dust. Research to date has been based on modeling with assumptions of single ingredient exposures and are inconclusive, contradictory and limited in scope.

So with all these problems, how did synturf gain such a hold on sports fields? First many in the environmental community, and the EPA itself, were too quick to accept 'recycling' claims by industry and the EPA recycling division, without questioning the content of tires and plastic. They initially, therefore, overlooked the health and environmental impact of human contact with tires in an inhalable, ingestible form. Such a use was never intended when tires were manufactured. Second, in many cases, incorrect economic assertions drove the initial decision to switch to synturf due to promised increased playability and supposed lower maintenance. However, the promises of cost savings from artificial turf are exaggerated as outlined in many places including Forbes magazine <sup>3</sup>. The repeated hefty replacement costs (every 8 years, half a million dollars or more with hundreds of tons of plastic and tire crumb to be disposed of) are also not considered over the long term. Costs to keep players safe from the unique hazards of synthetic turf and tire crumb are still not required or factored in. Keeping players safe from injury along with maintenance and testing to ensure athlete safety include attention to heat, hardness, abrasions and toxic exposures. Most institutions are not aware of nor have made provisions for addressing these issues.

More and more professional athletes have begun voicing dislike playing on artificial turf. It increases the severity of abrasions due to sliding, puts additional stress on joints, is a harder surface to hit and heats up to skin blistering levels in the sun (for a compilation see<sup>4</sup>). Prior to the 2015 Women's World Cup an international group of women teams actually petitioned then filed suit against soccer's international governing body (FIFA) to use grass instead of synthetic turf, but were ignored by FIFA and played the

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<sup>2</sup> see video at <<https://youtu.be/btyqgPwG6sE> > and "A recent admission about artificial turf has Maryland lawmakers asking for more information":

<<http://wtop.com/montgomery-county/2016/03/md-lawmakers-seem-information-artificial-turf-schools/>>

<sup>3</sup> as outlined in Forbes magazine Sep 28, 2014 on the financial shell-game:

<http://www.forbes.com/sites/mikeozanian/2014/09/28/how-taxpayers-get-fooled-on-the-cost-of-an-artificial-turf-field/>

<sup>4</sup> for a compilation on players concerns see <http://www.synturf.org/playersview.html>

tournaments on memorably blistering hot synthetic turf fields. USA team star Abby Wambach called playing on synturf “a nightmare”<sup>5</sup>:

About half the NFL stadiums switched to synturf over the past 10 years and now the pendulum is swinging back to grass again. Close to home - the Baltimore Ravens made the switch from turf back to natural grass, citing especially player preference and concerns<sup>6</sup>. College teams have also begun shifting back to natural grass (for example the University of Mississippi<sup>7</sup> <sup>8</sup>.

While you may not be aware of the growing concern around artificial turf, the health issues in particular are finally gaining the public attention that they deserve: e.g. for a good review of the issues outlined above and the rising concern about increasing rates of cancers among the young athletes exposed most intensely and longest to tire crumb infilled synturf fields see USA Today 2015<sup>9</sup>; ESPN 2015<sup>10</sup>; and the National Center for Health Research<sup>11</sup> just to name a few.

Finally: State-of-the-art grass fields, built for durability, high traffic and rain playability in many cases have been found to be cheaper and more cost-effective and certainly more sustainable than synturf fields. One local Soccerplex field has won “Field of the Year” from the Sports Turf Managers Assn. and its sand-based and native soil fields have been used successfully during a downpour of 6 inches of rain <sup>12</sup>.

In short: Synthetic turf is a quick but potentially harmful as well as unsustainable fix for poorly constructed and overworked natural turf fields. We encourage the University of Maryland to get and stay ahead of the curve on the wave of institutions returning back to natural grass. With its long tradition of high-quality agricultural research program this return is also a good fit with UMD’s academic goals.

Thank you for taking the time to read these concerns. As you know Sierra Club has applauded the Universities sustainability efforts in the past, including recognizing UMD in its list of Green Schools in 2015. We appreciate the school’s ongoing work and hope this letter and the student campaigns and advocacy can bring synthetic turf into the spotlight in your ongoing work to make UMD an environmental leader.

Sincerely,  
Josh Tulkin



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<sup>5</sup> <http://www.nbcnews.com/storyline/artificial-turf-debate/us-soccer-star-abby-wambach-playing-turf-nightmare-n371906>

<sup>6</sup> Baltimore Ravens return to grass after synturf <<http://www.baltimoreravens.com/news/article-1/New-Field-Gets-Rave-Reviews-From-Players-After-Stadium-Practice/1f593309-8a25-42af-9b68-6e7c57bbf7f1>>

<sup>7</sup> University of Mississippi returns to grass after synturf  
[http://www.al.com/sports/index.ssf/2016/06/kenyan\\_drake\\_gives\\_thumbs-up\\_t.html](http://www.al.com/sports/index.ssf/2016/06/kenyan_drake_gives_thumbs-up_t.html)

<sup>8</sup> For earlier reporting on the conversion to natural grass, see <<http://www.synturf.org/sayno.html>> (Item No. 169 - posted March 2016)

<sup>9</sup> For safety study review with lead focus see: USAToday 2015:  
<<http://www.usatoday.com/story/news/2015/03/15/artificial-turf-health-safety-studies/24727111/>>

<sup>10</sup> For a review with a focus on cancer clusters see: ESPN 2015: <<http://www.espn.com/espnw/news-commentary/article/14206717/how-safe-fields-where-play>>

<sup>11</sup> National Center for Health Research review: < <http://center4research.org/child-teen-health/early-childhood-development/caution-children-at-play-on-potentially-toxic-surfaces/>>

<sup>12</sup> Montgomery County Soccerplex fields durable and sustainable even in rain  
<<http://www.soccerwire.com/news/weathering-the-storms-how-md-soccerplex-stayed-open-last-weekend-amid-six-inches-of-rain/>>