

Turf Wars: The Attack On Crumb Rubber Synthetic Turf

Law360, New York (December 14, 2015, 11:26 AM ET) --



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A large number of sports teams and local governments have installed synthetic turf made with “crumb rubber” on playing fields and playgrounds in recent years to obtain the advantages of all-season use and lower maintenance costs. In recent months, however, the media and a growing group of critics contend that the crumb rubber used in these fields, essentially ground up tires, contains carcinogens and other harmful substances and is potentially dangerous to children and other users. Critics want the fields removed or warning signs installed, or are actively opposing installation of new fields.

The scientific studies to date show no actual link between crumb rubber and human health effects. But the movement against crumb rubber fields is nevertheless escalating. NBC is leading the charge, with a series of articles in October and members of Congress have since called for investigations by the U.S. Consumer Product Safety Commission and U.S. Environmental Protection Agency. ESPN also ran an investigative piece raising questions.[1] California has initiated its own investigation. Communities and schools who have these fields in place or are considering them are under pressure from local activists, parents and interest groups to move to alternatives. This article provides a brief survey of the crumb rubber issue, scientific studies and the potential risk of litigation arising from these developments.

Synthetic Turf Fields and the Health Claims

“Crumb rubber” is the term used to refer to the small bits of rubber that provide infill for certain types of synthetic turf. Soccer parents are familiar with crumb rubber because their kids often bring the little bits home attached to shoes and clothing. The material is made from recycled tires — a good thing, considering that used tires were largely filling up landfills before the synthetic turf option came along.



The use of this material is quite widespread. Many local playgrounds and playing fields have it in place today and a large number of universities and even the NFL and FIFA have installed crumb rubber football, soccer, baseball, field hockey and other fields. Over 11,000 artificial turf playing fields have been installed nationally, with more than 1,200 installed in the U.S. in 2013 alone (although not all include crumb rubber), according to the industry group Synthetic Turf Council. The fields provide significant advantages for all weather use and reduced maintenance.

Not everyone is happy, though. In October 2014, for example, a group of women's international soccer players filed suit against FIFA and the Canadian Soccer Association alleging gender discrimination because World Cup games for women took place exclusively on artificial surfaces, while the men's games were played on grass. Other suits have focused on lead in the "grass" part of turf, turf performance and physical injury.

But the real threat to this product is the recent spate of news articles and congressional interest in claimed adverse health effects. A soccer coach at a large Division 1 university maintains a running list of current and former soccer players diagnosed with cancer — 153 at last count.[2] There is no evidence, however, that these cancers are caused by or even linked to artificial turf fields, but virtually every news article mentions them. The NBC News stories prompted several members of Congress to write the CPSC and EPA demanding "answers" on the safety of crumb rubber. The safety issue is thus a "hot topic" among law and policy makers nationwide.

Not surprisingly, the little pellets contain a wide variety of chemicals with imposing names, including heavy metals, polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs), because tires themselves are made from complex petroleum products. Some studies claim that a small number of the chemicals found in crumb rubber pellets are known or probable human carcinogens and others have well-known potentially toxic effects at sufficient doses, e.g., mercury, lead, benzene, PAHs and arsenic. All of these materials are bound up in the rubber matrix, but some of them potentially could off-gas from fields in small amounts, especially in hot weather.

What the Studies Say

Over the past decade, researchers and health agencies have conducted numerous studies to evaluate the human health risks of crumb rubber. None of these studies to date have identified any association between between exposure to chemicals in artificial turf and any adverse health effects:

- A 2006 data collection by The Norwegian Institute of Public Health on dermal and inhalation exposure to chemicals in turf found health effects "unlikely" from dermal contact with crumb rubber or inhalation of volatile chemicals.[3]

- A 2007 report by the California Office of Environmental Health Hazard Assessment (OEHHA) identified only a de minimis risk of cancer at most from ingestion of pellets.[4]
- A 2008 literature review by the State Department of Health of New York concluded that “ingestion, dermal or inhalation exposures to chemicals in or released from crumb rubber do not pose a significant public health concern.”[5]
- A July 2008 statement by the CPSC found no risks associated with lead content in synthetic turf and approved the use of synthetic turf by children and adults.[6]
- A May 2009 report of independent tests conducted by New York state health agencies identified no significant health concerns.[7]
- A 2009 U.S. Environmental Protection Agency scoping study of the health risks from inhalation, ingestion, and dermal contact found every test result to be “below levels of concern.”[8]
- A July 2010 study by the Connecticut Department of Public Health on children and adults playing on crumb rubber fields showed “no elevated health risks” and exposures to be within background urban levels and “below target risks associated with many air toxics regulatory programs.”[9]
- An October 2010 study commissioned by California OEHHA found no inhalational hazard from VOCs released from crumb rubber fields.[10]
- A December 2014 published report from researchers with the Robert Wood Johnson Medical School tested fluids taken from players on turf fields but showed PAHs and volatile organics below measureable levels and metals below concentrations associated with human health risk.[11]

By contrast, a recent report from the Connecticut nonprofit group Environment & Human Health Inc. (EHHI) offers a blistering criticism of crumb rubber, based largely on an unpublished Connecticut Agricultural Experiment Station test commissioned by EHHI that showed “releases” of four potential carcinogens when crumb rubber was heated to about 120 degrees in an enclosed chamber.[12] The Mount Sinai Children’s Environmental Health Center also reported that substances in crumb rubber “are known to cause birth defects ... and even cancer” at high levels and recommended that alternatives be used.[13] The reported group of soccer players with cancer is at this point an informal and anecdotal gathering of case reports without a demonstrated connection to playing on crumb rubber fields.

Some recent articles make the claim that crumb rubber may contain carbon nanotubes (CNTs). CNTs have come under scrutiny as posing risks similar to those of asbestos fibers.[14] None of the above or other studies or reports specifically addresses (CNTs), but then there is no confirmed evidence that crumb rubber even contains CNTs. If allegations of CNTs in crumb rubber find traction, any challenges or litigation would likely incorporate the world of asbestos medicine and experts.

Current Investigations and Litigation Risk

The health investigations summarized above have not alleviated the concerns over field users’ health. The primary complaint is that no study has *proven* that crumb rubber will not cause cancer and there have been no long-term studies. Crumb rubber is an attractive target for those who raise these kinds of “fear” attacks on products, first because it is ubiquitous in synthetic fields, second because it clings to clothing and bodies and third because it contains known carcinogens and other substances with off-putting names.

The media activity from NBC and others has generated additional investigations. Chief among them is the California OEHHA’s forthcoming three-year study of synthetic turf’s “potential” health risks, with input on study design and interpretation from the EPA.[15] Several members of Congress from both parties responded to NBC stories recently by asking both the CPSC and EPA to conduct studies and/or vouch for the safety of crumb rubber. The EPA is going to assist in the California effort in lieu of its own study,[16] but the agency also must provide answers to several congressional questions about crumb rubber safety. The CPSC has also indicated a willingness to provide technical assistance to the OEHHA study and pledged to end “the uncertainty surrounding crumb rubber.”[17]

All of this activity is often the precursor to litigation. Several plaintiff law firms are, in fact, currently soliciting individuals who have cancers and other diseases they believe may have been caused by synthetic turf playing fields. But to date, actual litigation has been very limited. None of the players on Coach Amy Griffin’s list have yet to file suit. With no epidemiology linking artificial fields to disease, an actual causation lawsuit would be difficult to prove. And the studies cited above — finding no reason for concern — would provide potential defendants with significant responsive material. In similar contexts, however, lawsuits have alleged a need for medical monitoring, warnings or possible violations of consumer fraud or advertising statutes. These types of lawsuits are sometimes difficult to dismiss without extensive expert and fact discovery.

In the meantime, the schools and local communities who already have these fields installed are likely going to face growing pressure over alleged health effects. Communities around the country are also trying to decide whether to install crumb rubber fields in the face of significant opposition from community and parent groups. All of these entities need to be prepared to offer a coherent response to the claimed health effects. Any attempt to replace or remove these fields would arguably be a

significant waste of taxpayer and school resources, but the entities pursuing crumb rubber now have the ear of Congress, the CPSC and the EPA. The “turf wars,” as some have started calling them, may well be just beginning.

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