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ARTICLES

ON DANGEROUS GROUND? THE TURF WAR OVER CRUMB RUBBER: POTENTIAL LIABILITY FOR MANUFACTURERS AND MUNICIPALITIES?

Dr. Sharlene A. McEvoy

INTRODUCTION

There is an ongoing trend across the United States for athletic fields and playgrounds to install crumb rubber in lieu of natural grass surfaces. There are conflicting studies as to whether this material is safe and if continuous exposure can lead to cancer in those who use these play areas.

I. WHAT IS CRUMB RUBBER?

Crumb rubber consists of small pieces of rubber used to fill the spaces between artificial blades of grass on athletic fields and playgrounds. These small particles are made from old car and truck tires. The rubber contains such dangerous chemicals as benzene, lead, mercury, and PAHs (polycyclic aromatic hydrocarbons).¹

The material has only been in use for ten to fifteen years and has replaced other artificial surfaces like Chem Grass and Astro Turf.² Crumb rubber is said to provide more cushioning so that injuries can be avoided. Crumb rubber is also less expensive to maintain than a grass surface.³

The Synthetic Turf Council, the industry representative, estimates that there are over 11,000 crumb rubber sports fields nationwide. In 2013 alone, there were over 1200 fields installed.⁴

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1. *Synthetic Turf Lawsuits: Can Artificial Grass Cause Cancer?* CLASSACTION.ORG (October 9, 2014), <https://www.classaction.org/artificial-turf-lawsuit>.
 2. SYNTHETIC TURF COUNCIL, <http://www.syntheticurfCouncil.org/page/FAQs> (last visited Nov. 7, 2017).
 3. *Id.*
 4. William L. Anderson and Emma K. Burton, *Turf Wars: The Attack on Crumb Rubber Synthetic Turf*, LAW 360 (Dec. 14, 2015), <https://www.law360.com/articles/737107/turf-wars-the-attack-on-crumb-rubber-synthetic-turf> (hereinafter “Turf Wars: The Attack on Crumb Rubber Synthetic Turf”).

A. *Are These Fields Dangerous?*

As of 2016, there has been no definitive study linking crumb rubber to human health problems. In fact, several studies have found the opposite. In 2006, the Norwegian Institute of Public Health found that health problems were unlikely from either skin contact or inhalation of volatile chemicals.⁵ In 2007, a report by the California Office of Environmental Health Hazard Assessment (COEHHA) found only a minimal risk of cancer from ingesting pellets⁶ and the following year, the New York State Department of Health found that “ingestion, dermal or inhalation exposures to chemicals in or released from crumb rubber”, did not pose “a significant public health concern”.⁷ In 2008, the Consumer Product Safety Commission found that the lead content in the turf posed no risk and approved its use for children and adults.⁸ The following year the Environmental Protection Agency found that the health risks from inhalation, ingestion, and skin contact were “below levels of concern”.⁹ In 2010, a Connecticut Department of Public Health study found no elevated health risks for children and adults playing on crumb rubber fields.¹⁰

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5. Norwegian Institute of Public Health and the Radium Hospital, *Artificial Turf Pitches - An Assessment of the health risks for football players* (Jan. 2006), http://www.isss-sportsurfacescience.org/downloads/documents/74wa3x7e22_fhiengelsk.pdf.
 6. Office of Environmental Health Hazard Assessment, *California Office of Environmental Health Hazard Assessment, Evaluation of Health Effects of Recycled Waste Tires in Playground and Track Products*, 38-39 (2007), <http://www.calrecycle.ca.gov/Publications/Documents/1206/62206013.pdf>.
 7. Elizabeth Denly, Katarina Rutkowski, Karen M. Vetrano, Ph.D., TRC, *A Review of the Potential Health and Safety Risks from Synthetic Turf Fields Containing Crumb Rubber Infill* ES – 3 (May 2008), <https://www.groundsmastrubbermulch.com/docs/resources/Review-of-the-Potential-Health-and-Safety-Risks-from-Synthetic-Turf-Fields-Containing-Crumb-Rubber-Infill.pdf>.
 8. *CPSC Staff Finds Synthetic Fields OK To Install, OK To Play On*, CONSUMER PRODUCT SAFETY COMMISSION (July 30, 2008), <https://www.cpsc.gov/content/cpsc-staff-finds-synthetic-turf-fields-ok-to-install-ok-to-play-on>.
 9. Environmental Protection Agency, *A Scoping-Level Field Monitoring Study of Synthetic Turf Fields and Playgrounds*, OFFICE OF RESEARCH AND DEV. U.S. ENV'T. PROT. AGENCY, vi (2009), https://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=524979.
 10. NANCY SIMCOX, ET. AL., *ARTIFICIAL TURF FIELD INVESTIGATION IN CONNECTICUT FINAL REPORT 12* (U. Conn., 2010).

Despite the fact that no study has linked crumb rubber to health risks, critics point to such anecdotal evidence as that of Amy Griffin, an associate head coach for the University of Washington's women's soccer team, who, in 2014, compiled a list of fifty soccer players across the country who have cancer. She believes that there is a link between their illnesses and the rubber turf.¹¹ As of January 2016, that number of sick athletes had grown to 203, of which 123 have blood cancers. There are 159 cancers among soccer players and 97 of those are goalkeepers who have the most contact with the synthetic field.¹² Of the 159 soccer players with cancer, 63 have lymphoma and 34 have leukemia, which is atypical for the 18-22-year-old age group.¹³

One cancer victim is Justin Lewis, who suffers from lymphoma. His mother wonders if his playing time on the crumb rubber field at Fairfield University caused his illness. Justin complained about the fact that crumb rubber pieces got all over everything and that the playing surface got very hot in the summer. On a 90-degree day, the field temperature can reach over 140 degrees.¹⁴ Other complaints about the playing surface include blisters on soles of the feet and the pungent smell of the turf burning in the sun which gives off strong fumes.¹⁵

In the wake of the many complaints about crumb rubber in 2015, the Connecticut Department of Public Health backed away from its 2010 dismissal of the health risks. A statement from a DPH spokesman said:

These concerns 'raise important questions about the safety of these fields and suggest more comprehensive study is warranted.' The 2010 risk assessment of five artificial turf fields in Connecticut does not provide conclusive

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11. Dan Anello, *National Litigation Firm Flood Law Group LLP Comments on Washington School's Decision to Pull Plug on Crumb Rubber Infill*, Cision (Oct. 22, 2014), <http://www.prweb.com/releases/crumb-rubber-cancer/flood-law-group/prweb12251771.htm>.
 12. Nancy Alderman, *Pay Attention To Illnesses, Synthetic Turf*, N.H. Register (Jan. 17, 2016), <http://www.nhregister.com/opinion/article/Letter-to-the-Editor-Pay-attention-to-illnesses-11336733.php>.
 13. Nancy Alderman, *On Synthetic Turf, Is Connecticut Health the New Flint, Michigan?*, N.H. Register (Jan. 28, 2016), <http://www.nhregister.com/columns/article/Forum-On-synthetic-turf-is-Connecticut-health-11333332.php>.
 14. Jan Ellen Spiegel, *A Shifting Ground for Artificial Turf in Connecticut*, THE CT MIRROR (Feb. 12, 2016, 1:25 PM), <https://ctmirror.org/2016/02/12/a-shifting-ground-for-artificial-turf-in-connecticut/> (hereinafter "A Shifting Ground for Artificial Turf in Connecticut").
 15. *Id.*

evidence about the safety of artificial turf fields. Like all scientific studies, Connecticut's assessment had limitations. For example, it did not specifically evaluate the risks from dermal exposure or ingestion of the crumb rubber. The data are from a small number of fields and days of sampling.¹⁶

B. Why the Enthusiasm for Crumb Rubber?

Old tires are a burden on landfills and grinding them into beads for use on fields provides a way to recycle them. In addition, the artificial fields require no water and no maintenance. Drainage is not an issue, so there are no muddy fields or frozen surfaces.

Since the fields require little maintenance, more teams can play different sports more frequently.¹⁷ Pesticides are banned in Connecticut for use on city fields, day care centers, and athletic facilities used by kindergarteners through eighth grade.¹⁸ Fields used by high school students are not subject to the pesticide ban so those players are subject to chemical exposure on grass fields.

The price of installing a typical crumb rubber field is \$1 million, but over time that money is recouped by the savings incurred in not having to maintain the facilities in the future.¹⁹ Another purported benefit of crumb rubber fields is that the surface may help prevent injuries to athletes because of the "bouncy" qualities of crumb rubber as opposed to grass.²⁰

C. The Downside of Crumb Rubber Fields

A chemical analysis on crumb rubber infill used in children's playgrounds conducted by Yale University scientists analyzed 14 samples of infill from five different installers of synthetic turf fields and found 96 chemicals in the material.²¹ Of the 96 chemicals found, 47 had no toxicity assessments done

16. *Id.*

17. *Id.*

18. *Id.*

19. *Id.*

20. *Hamden Officials Make Case for Crumb Rubber Turf*, NEW HAVEN REGISTER (Jan. 26, 2016, 6:19PM), <http://www.nhregister.com/connecticut/article/Hamden-officials-make-case-for-crumb-rubber-turf-11333689.php>.

21. Nancy Alderman, *A Generation of Children Are Playing On Toxic Grounds*,

to determine the health effects, 49 had toxicity testing done but some tests were incomplete, and “therefore all health effects are not fully known.”²² Of the 49 chemicals tested, 10 are probable carcinogens” and 19 are irritants.²³ These irritants affect the eyes and the skin and some cause asthma symptoms.²⁴ The scientists concluded that “persons playing on the synthetic turf fields with rubber tire infill or toddler playgrounds surfaced with rubber tire mulch are being exposed concurrently to multiple chemicals.”²⁵

II. LAWS AND REGULATIONS

Under a revised rule of the Resource Conservation and Recovery Act (RCRA), recycling of hazardous waste is lawful and thus exempt from the law. Ironically, the end product is more toxic. An Environmental Protection Act regulations states: “If a hazardous secondary material has been reclaimed and made into a product that will be used by children, and that product contains hazardous constituents that are not in analogous products, that product will likely need to be closely scrutinized.”²⁶ The EPA does not prevent incorporating hazardous substances into the material and does not oversee the recycling that leads to crumb rubber. Thus, the manufacturers of crumb rubber are not subject to federal regulation under RCRA.

III. CURRENT LITIGATION

In Protect Glen Ellyn Parks, Inc. v. Glen Ellyn Park District²⁷, residents opposed to the Park District’s plans to put crumb rubber on an athletic field filed suit to halt its installation at Newtown Park. Before filing suit, the residents urged the District’s Board of Commissioners to reconsider its plan “citing health and environmental concerns.”²⁸ The District said that because

NEWS TIMES (Dec. 22, 2015, 12:00AM),
<http://www.newstimes.com/news/article/Nancy-Alderman-A-generation-of-children-are-6713286.php>.

22. *Id.*

23. *Id.*

24. *Id.*

25. *Id.*

26. Office of Resource Conservation and Recovery, *Revisions to the Definition of Solid Waste Final Rule Compilations: The Legitimate Recycling Standard*, U.S. Environmental Protection Agency, 11 (2010), nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1009SKS.TXT.

27. *Protect Glen Ellyn Parks, Inc. v. Glen Ellyn Park District*, No. 2015CH001011 (July 17, 2015).

28. Alex Keown, “Residents File Suit to Stop Artificial Turf Plan at Newton Park,” CHICAGO TRIBUNE (June 16, 2015, 3:41AM), <http://www.chicagotribune.com/suburbs/glen-ellyn/news/ct-gle-glen-ellyn-turf-field-lawsuit-tl-0604-20150602-story.html>.

the money had been spent and contracts were already signed, it was too late. Residents living near the proposed site were forced to file a case to stop it.

The lawsuit claimed that artificial turf uses “‘crumb rubber infill made from used automobile tires and contains volatile organic compounds’ that are harmful to residents living near Newtown Park.”²⁹ The plaintiffs also claimed that the material used in the turf could easily break free and spread beyond the confines of the field, by wind and rain, into neighboring yards and the DuPage River.³⁰

The complaint alleged three causes of action: public nuisance, trespass, and private nuisance. The plaintiffs claim that the public has a right to a healthy environment and to be free of the health and environmental hazards posed by chemical exposure and other dangers from artificial turf.³¹ The complaint also alleged that installing the artificial turf field would result in the infill entering the neighboring land and the airspace above the property. Finally, the plaintiffs argued that the infill would substantially and unreasonably interfere with a neighboring resident, Nancy Perlman’s use and enjoyment of her land.³²

The suit sought a preliminary and permanent injunction, but the judge ruled that the plaintiffs failed to prove the synthetic field would cause any irreparable harm because the plaintiff’s health concerns “were based on speculation and conjecture rather than evidence.”³³ The Park District cited findings from the departments of health in California, Connecticut, and New York, which concluded that there were no health concerns with the turf.³⁴ Ironically, a California state investigation found that the infill at the Mission Recreation Center in San Francisco had lead levels of 17,000ppm when the

29. *Id.*

30. *Id.*

31. *Id.*

32. *Id.*

33. Alex Keown, *Judge rules artificial turf can be installed as planned at Newtown Park*, CHICAGO TRIBUNE (June 16, 2015, 6:54PM), <http://www.chicagotribune.com/suburbs/glen-ellyn/news/ct-gle-glen-ellyn-turf-installation-newton-park-tl-0618-20150616-story.html>; See *Group claims controversial Lincoln Park soccer field is toxic*, Chicago Sun Times (Oct. 14, 2008), <http://www.suntimes.com/news/metro/1221547.lincoln-park-soccer-101408.article> (Another case was filed in Chicago in 2008 after the Park District approved a plan to install an artificial turf field at Lincoln Park. Protect Our Parks, a non-profit, and a neighbor filed suit against various municipal defendants and the turf manufacturer alleging that the field was toxic because the turf contains lead and that there can be serious health problems when turf’s chemical compounds are released into the air and water threatening Lake Michigan due to drainage from the field.).

34. *Id.*

California standard at the time was 300ppm. Then California Attorney General, Edmund G. Brown, Jr. settled a case against Field Turf, Astro Turf LLC, and Beaulieu Group because they had failed to warn about the lead in the material. The manufacturers agreed to lower the lead in their product and replace the turf in fields believed to be unsafe.³⁵

In 2014, the Sierra Club's San Francisco Bay Chapter and others appealed a Superior Court decision, allowing the San Francisco Recreation and Park Department (SFRPD) to ignore the fact that the artificial turf material proposed for soccer fields at the west end of Golden Gate Park exceeds the safety thresholds for toxic chemicals set by the Bay Area Air Quality Management District (BAAQMD). The SFRPD admitted in California Environmental Quality Act documents that the turf proposed for the Beach Chalet soccer fields exceeded BAAQMD's Acute Hazard Index by 200 percent.³⁶

IV. THE FUTURE OF CRUMB RUBBER FIELDS

After thousands of these fields have been installed throughout the country, in early 2016, the Environmental Protection Agency (EPA), the Center for Disease Control (CDC), and the Consumer Product Safety Commission (CPSC) announced a plan to study crumb rubber fields and playgrounds. Elliot Kaye, Chairman of the CPSC, stated that "there is a growing number of cancer cases in children and young adults who were exposed to the recycled rubber surfaces for prolonged periods of time and with the product being used on playgrounds and athletic fields, the long term health effects are impacting children of all ages".³⁷

35. [No. 24] CLASS ACTION ON BEHALF OF PLAYERS AFFLICTED WITH CANCER WHO HAS SPENT EXTENDED TIME ON ARTIFICIAL TURF FIELDS. CLASSACTION.ORG HAS ISSUED AN ALERT HEADLINED "SYNTHETIC TURF LAWSUITS: CAN ARTIFICIAL GRASS CAUSE CANCER?", <http://synturf.org/lawsuits.html> (last visited Jan. 3, 2018).

36. [No. 23] SAN FRANCISCO, CALIFORNIA: BEACH CHALET IS BACK IN COURT, <http://synturf.org/lawsuits.html> (last visited Jan. 3, 2018); *See generally* [No. 22] FORMER KANSAS CITY CHIEFS PLAYERS CLAIM ARTIFICIAL-SURFACE FIELDS CONTRIBUTED TO CONCUSSIONS, <http://synturf.org/lawsuits.html> (last visited Jan. 3, 2018) (discussing suits regarding the health effects of crumb rubber fields are not confined to the carcinogenic properties of the material; suits have been brought regarding concussions caused by the surface); *See generally* [No. 26] SOUTH DAKOTA SUPREME COURT AWARDS \$500,000 OVER TURF INJURY, <http://synturf.org/lawsuits.html> (last visited Jan. 3, 2018) (discussing broken leg in two places due to football player's cleats caught in artificial turf).

37. Laura Johnson, *Commentary: Voices Have Been Heard on Crumb Rubber*,

The EPA had endorsed the use of crumb rubber as a viable way to dispose of millions of tires and as a way to reduce injuries, but EPA scientists have concluded that there is a presence of harmful compounds at high or extremely high levels in the material.³⁸ A 2015 study found that PAHs (Polycyclic Aromatic Hydrocarbons) are continuously released from rubber through evaporation, and that those who use these playgrounds and fields “are exposed to chronic toxicity from PAHs.”³⁹

So, what can be done while waiting for the federal agencies to complete their study of the problem? Health officials recommend that after playing on the fields and before eating, athletes change out of their clothing and clean any cuts or scrapes. They should try not to swallow the tiny beads.⁴⁰ Signs should also be posted at the fields warning users of the above precautions.

Some suggest that children should be kept away from these surfaces entirely. Clearly, there should be a moratorium on the installation of new fields pending the government agencies study. Should the government find that crumb rubber is carcinogenic, there will be lawsuits against the manufacturers and entities that installed the fields.

There have been a few cases challenging the installation of these fields but there is no epidemiology linking the artificial material to cancer, so any personal injury lawsuit would fall short on the issue of causation.⁴¹ There can be, however, lawsuits filed seeking damages for medical monitoring, failure to warn, or “possible” violations of consumer fraud or advertising statutes. These lawsuits will be harder for turf companies to fight and if crumb rubber is found to contain carbon nanotubes (CATs), which poses risks similar to asbestos fibers, there will be even more problems for the industry.⁴²

CONCLUSION

Currently communities who have already installed these fields face growing pressure and questions about the alleged health risks. Those districts who are deciding whether to go forward with plans for a crumb rubber surface are likely to encounter strong opposition. Should the federal agencies decide that this material is harmful, millions of dollars will have to be spent by tax-

Commentary Opinion My Edmonds News, (Feb. 24, 2016), <http://myedmondsnews.com/2016/02/commentary-voices-have-been-heard-on-crumb-rubber/>, (hereinafter “Voices Have Been Heard on Crumb Rubber”).

38. *Id.*

39. *Id.* (Release of Polycyclic Aromatic Hydrocarbons (PAHs) and Heavy Metals from Rubber Crumb in Synthetic Fields).

40. *See supra* note 37; *see also* Letter from Nancy Alderman, President, Environment and Human Health, Inc., N.H. Register, Nov 9, 2016 at A10.

41. *See* source cited *supra* note 4.

42. *Id.*

payers to remove the material and rebuild the fields and playgrounds.

Getting rid of used tires was an environmental issue for many years. Jeff Ruch, a lawyer for the environmental advocacy group Protecting Employees Environmental Responsibility (PEER) stated, “the use of tires on playfields was a solution to a solid waste problem that had a public-health blind spot.”⁴³ He criticized the policy in the United States which holds that “a chemical is innocent until proven guilty.” Chemicals and other substances are put on the market, health problems occur, and only then is there is a government response.⁴⁴ This is a mistake that has been made repeatedly. Consider the list of products once considered safe: DDT, cigarettes, MTBE, radiation, x-rays, DES, and other medications before the public eventually learned otherwise.⁴⁵

Litigation could be prevented, and public funds and lives could be saved if the United States adopted the Precautionary Principle developed in the 1980s to guide decisions regarding ecological and health policies in the agencies of the European Union.

When a new device, activity or policy is proposed and before it is implemented, those who will provide and profit from it must prove conclusively that it is not harmful. The burden of proof should be on those proposing and promoting the innovation. Those who question or oppose the innovation should not be required to prove that it is harmful.⁴⁶

43. Johnson, *supra* note 37.

44. *Id.*

45. See Nancy Alderman, *Synthetic Turf Industry Now Pushing New Rubber Material As Safer, Is It?*, N.H. REGISTER June 28, 2016 at A6. (As the public becomes more aware of the dangers of crumb rubber, the industry is pushing a more expensive alternative *EPDM rubber (ethylene propylenediene monomer rubber). Like crumb rubber EPDM contains “harmful chemicals and carbon black.” The EPDM Safety Data Sheet for EPDM says the product is a possible cancer hazard and can be an irritant to lungs, eyes and skin.”).

46. Ronald E. Koetzsch, *Saying Good-bye to WiFi – A Waldorf School Takes a Precautionary Step*, PARENTS FOR SAFE SCHOOLS (June 1, 2014, 8:14 PM), <http://parentsforasafeschool.blogspot.ca/2014/06/a-waldorf-school-takes-precautionary.html>.

