In this issue, William L. Anderson and Cheryl A. Falvey discuss the potential emergence of toxic tort claims relating to crumb rubber used for artificial turf playing surfaces. The article provides the background on the health issues and studies to date, why the existing studies do not support the claims, and where the investigations are likely headed, as well as a discussion of litigation realities and defenses. Crumb rubber will also be the subject of an IADC Webinar this fall.

Crumb Rubber Turf Wars: The Synthetic Turf Fields Investigation

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Member participation is the focus and objective of the Toxic and Hazardous Substances Litigation Committee, whether through a monthly newsletter, committee Web page, e-mail inquiries and contacts regarding tactics, experts and the business of the committee, semi-annual committee meetings to discuss issues and business, Journal articles and other scholarship, our outreach program to welcome new members and members waiting to get involved, or networking and CLE presentations significant to the experienced trial lawyer defending toxic tort and related cases.

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All those beautiful artificial turf fields popping up everywhere these days have transformed the sports and playground surface industry – the artificial fields stay green all year round, work well in any kind of weather, never turn to mud or dust, and require no herbicides or fertilizers to maintain. No wonder these fields now cover the football stadium surfaces of many college and pro teams, as well as thousands of local community soccer fields and playgrounds.

But the promise and advantages these fields bring to sports is being threatened by currently unsupported allegations of a darker side of the turf field lurking beneath the surface – or more accurately, in the surface of these fields. The fields use a material called crumb rubber, made from tiny bits of ground up tires, to provide the “infill” necessary to support the grass blades and to cushion impacts. In part led by a monograph published in 2007 by the EHHI, a group of advocates has mounted an increasingly aggressive attack on crumb rubber. Those advocates claim that crumb rubber contains carcinogens and either could or actually is causing cancers and other health problems for players and children who use these fields. Many of the news stories cite to a group of over 150 soccer players identified with cancer, and many of them goalies, who understandably spend more time on the turf surface.

The crumb rubber material consists of chopped or ground up tire bits, so the material itself is likely no more dangerous than a tire itself. But in the ground up form, crumb rubber lays loose on these fields, sprays up when balls strike it, and routinely clings to the shoes, clothing, and skin of players. Many soccer moms and dads have no doubt cleaned it off their own children’s clothing at home. And thus crumb rubber presents an attractive target for adverse health claims – a strange material (what are these small black pellets?), known to contain certain carcinogens, used on fields where children play, and which attach to skin and clothing or could presumably be ingested.

For some years the challenge to crumb rubber had little traction. But NBC news picked the story up in October 2014 and again a year later in a series of specials. That and other media helped generate Congressional attention. After requests from certain members of Congress, three federal agencies – the CPSC, EPA, and the CDC – recently announced a joint health investigation. California’s OEHHA has also announced a three-year investigation, in which EPA will assist. The studies will examine the way in which the fields are used, likely sources of exposure, and the contents of crumb rubber, and may also include a component focused on monitoring actual releases. The CPSC has advised Congress that crumb rubber is one of its two top priorities for 2016-2017, so the agency investigation is not an inconsequential
effort.¹ No litigation has yet ensued over these health claims, other than a short burst of activity some years ago focused on lead in the grass itself. But some plaintiff firms are trolling, and the investigations could prompt medical monitoring or other litigation.

This article provides background on the health issues and studies to date, why the existing studies do not support the claims, and where the investigations are likely headed. We include a section on the regulatory status and another on litigation, if it occurs. In the world of emerging torts, crumb rubber has moved into the top echelon of potential new sources of claims.²

I. Crumb Rubber – What Is It and Where Is It Used?

Crumb rubber is made of the car and truck tires that formerly filled the nation’s landfills, or even worse piled up on roadsides and empty lots. Today, used tires are ground up and recycled to create, among other things, the infill for synthetic turf. Tires are reduced down to tiny, granular rubber pieces, with 99 percent or more of the steel and fabric removed from them. In artificial turf, the recycled crumb rubber acts as a sort of synthetic dirt that fills the space between and supports plastic blades of grass. The use of crumb rubber is not limited to synthetic sports fields – it has covered playgrounds and running tracks for well over a decade.

Because of its advantages over natural or other synthetic turf, as well as its success as a means to recycle scrap tires (between 20,000 and 40,000 tires are ground up per football field³), the use of crumb rubber has become widespread. Many local playing fields have it in place today, and a large number of universities and professional sports leagues have installed crumb rubber football, soccer, baseball, field hockey, and other fields. The industry group Synthetic Turf Council reports that there are over 12,000 synthetic fields installed in parks, schools, and sports facilities across the United States,⁴ with many more being installed every year.

II. The Spread of the Attack on Crumb Rubber

The criticisms of crumb rubber have existed for a number of years but began to coalesce after the EHHI’s extensive review and critique in 2007.⁵ The EHHI review identified

² For a review of the current science and litigation issues in further detail, see the recent Law360 article on crumb rubber by one of the authors (William Anderson and Emma Burton, Turf Wars: The Attack on Crumb Rubber Synthetic Turf, Law360 Dec. 14, 2015 (https://www.crowell.com/files/20151214-Turf-Wars-The-Attack-On-Crumb-Rubber-Synthetic-Turf-Anderson-Burton.pdf)).
⁵ David Brown, Artificial Turf: Exposures to Ground Up Rubber Tires – Athletic Fields, Playgrounds,
some of the substances in crumb rubber as known or potential carcinogens. In 2015 EHHI commissioned a laboratory study by the Yale School of Forestry and Environmental Studies that confirmed the presence of a group of known or suspected carcinogenic chemicals in several samples of crumb rubber.\(^6\) The Yale study did not, however, address the concentrations available or whether actual field conditions would produce hazardous levels of these materials. The Mount Sinai Children’s Environmental Health Center similarly published a report in 2009 stating that substances in crumb rubber “are known to cause birth defects … and even cancer” at high levels, and recommended that alternatives be used. That publication recommended that crumb rubber fields contain warnings not to use turf on hot days or for “passive recreation” (lying down) and to monitor young children for ingestion. Similar publications typically name some of the rubber constituents, couple that with the rubber pellet contact that occurs on playing fields, and argue for use of alternatives to “avoid the risk.”

The product likely does contain a number of materials known or suspected as carcinogens, but it seems unlikely that those carcinogens would pose a risk to field users. Tires contain a number of chemical ingredients at issue, including carbon black (30%), lead, zinc and other heavy metals, and oils with PAHs and VOCs, some of which are known or suspected carcinogens. Butadiene and styrene are apparently key components. These materials are bound up in the rubber matrix. The risk of release of these materials is very low, consistent with background exposures to similar substances.

That is the conclusion, at least, of many national and state health agency reviews to date. In contrast to the EHHI and Mt. Sinai publications, these reviews have consistently concluded that there is no cause for concern. They include investigations by the California Office of Environmental Health Hazard Assessment,\(^7\) the State Department of Health of New York,\(^8\) the Consumer Product Safety Commission (“CPSC”),\(^9\) the New York State Department of Environmental Conservation,\(^10\) the New York City Department of Health and Mental Health and Human Health, Inc. (2007).

\(^6\) One portion of the Yale study superheated crumb rubber (300° C) to obtain identifiable levels of these carcinogens. [https://environment.yale.edu/benoit-lab/research/other/](https://environment.yale.edu/benoit-lab/research/other/); [http://www.ehhi.org/turf/new_study_jun2015.shtml](http://www.ehhi.org/turf/new_study_jun2015.shtml).


\(^8\) “A Review of the Potential Health and Safety Risks from Synthetic Turf Fields Containing Crumb Rubber Infill,” N.Y. City Dept. of Health & Mental Hygiene (May 2008).


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Hygiene, the United States Environmental Protection Agency ("EPA"), the Connecticut Department of Public Health, the California Office of Environmental Health Hazard Assessment ("OEHHA"), the Robert Wood Johnson Medical School, and the Norwegian Institute of Public Health. The Synthetic Turf Council has compiled more than fifty relevant studies on its website. One typical conclusion is that of the City of Toronto:

Available evidence does not indicate that playing on third generation artificial turf will result in exposure to contaminants at levels that pose a significant risk to human health provided it is properly installed and maintained and users follow simple hygienic practices. While there are still some uncertainties regarding impacts from exposure to some substances found in artificial turf (carbon nanotubes, lead and other metals, latex, some metals, and polyaromatic hydrocarbons, for example), standard hygienic measures will minimize any of these risks. Under such conditions, and in the cases where use of natural turf is not possible or practical, the benefits from increased physical activity on fields are expected to outweigh the risks from exposure to toxic substances.

And even where chemicals are released from crumb rubber, the New York City Department of Health and Mental Hygiene concluded that "ingestion, dermal or inhalation exposures to chemicals in or released from crumb rubber do not pose a significant public health concern."

The Toronto report is one of several recent reports associating carbon nanotubes (CNTs) with crumb rubber. But to date the authors have not located any evidence that either tires or crumb rubber are made with CNTs. These reports may have confused CNTs with tire constituent carbon black, a totally different material. If CNTs become part of the allegations, crumb rubber may take on some aspects of asbestos litigation, because a series of articles have claimed that certain

15 B. Pavilonis, et al., Bio-accessibility and Risk of Exposure to Metals and SVOCs in Artificial Turf Field Fill Materials and Fibers, Risk and Analysis (June 2013).
kinds of CNTs would act like asbestos in the human body.\textsuperscript{19}

The studies and health department conclusions have not stopped the mounting criticism. In the last few years, allegations of a “cluster” of soccer players with cancer have appeared, and the numbers have grown to about 150 today as more such case reports are identified. While there is no evidence that these cancers are arising from contact with crumb rubber, that figure is frightening to a lay person and has helped generate the current interest. The father of one such soccer/football player, for example – a former National Health Service chief executive –, is claiming in the UK media that his son’s cancer was caused by crumb rubber.\textsuperscript{20}

What impact is all of this having? Many cities and communities around the country are increasingly faced with angry parent groups and others demanding alternative forms of infill or asking that warning signs be posted on synthetic turf fields. At least one such community did in fact put warning signs up.\textsuperscript{22} Many other schools and communities are looking to replace grass fields and are faced with the complicated science and health claims as their boards and councils decide what to do. The pressure on this product and its users is going to increase exponentially in coming months as news trickles out from the various investigations and the media and Members of Congress keep up the drumbeat.

IV. The Regulatory Initiatives and Likely Course

Despite the studies above, several government agencies have been under pressure to take a closer look. The key concern is that the existing studies may not be sufficient to rule out possible harm, and many people, understandably, want agency declarations that crumb rubber is “safe” for their children to play on. California’s OEHHA was the first to commit to a thorough


investigation in mid-2015, with a focus on actual field sampling and preparation of a protocol for biomonitoring (but stopping short of actual biomeasurements). EPA is assisting OEHHA. OEHHA expects to complete the study in July 2018.

The CPSC responded to Congressional requests by joining in a coordinated effort with EPA and the CDC. Jointly the agencies have announced a federal investigative plan that is focused on identifying the gaps in scientific information, in part because “the existing studies do not comprehensively evaluate the concerns about health risks from exposure to tire crumb.” The plan keys in on classifying the chemical compounds, potential emissions and their toxicity as well as identifying the likely pathways of exposure. The ATSDR – an arm of the CDC – has issued a public notice that in conjunction with EPA it has begun the process of conducting two studies on crumb rubber, one to characterize field use of crumb rubber and testing of material, and the second to explore possible exposure routes.

The CPSC prides itself on being a science and data driven agency. There is no mention of any potential rulemaking in the current action plan, presumably because the scientific results will necessarily drive any decision with regard to agency action. The plan for scientific action acknowledges further work that may be necessary before moving forward to regulate, including identifying potential biomarkers of exposure, collecting preliminary biomonitoring data, analyzing samples of recycled tire crumb used on playground surfaces, and evaluating the feasibility of conducting an epidemiologic study. In its February 2016 budget request, CPSC has asked for an additional $3 million earmarked for healthy children and the study of both nanotechnology in consumer products and crumb rubber in artificial turf fields and playgrounds.

Should the CPSC eventually determine that it should move forward with rulemaking to address a potential cancer risk from crumb rubber exposures, it would have to follow a specific statutory process and appoint a Chronic Hazard Advisory Panel (CHAP) to study the issue and make recommendations. See 15 U.S.C § 2080. The CHAP panel would have to review the scientific data on toxicity and exposure to determine the carcinogenic risk and report its determination to the CPSC. Any regulatory action would occur by rulemaking after receipt of the CHAP report and peer review of the science behind any regulatory determination.

For these reasons regulatory action at the federal level will not happen anytime soon. Years of scientific research and participatory process will inform any decision to move

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forward with rulemaking. California, an important bellwether state on chemical exposure issues, could get out ahead of the federal government in taking action because they are not constrained to follow the disciplined CHAP process and scientific peer review required at the federal level. In the interim, though, public statements of concern by agency heads and Members of Congress, even if based on partial or flimsy science, could raise the risks of litigation and cause even more difficulties for schools and communities considering the use of crumb rubber fields.

The questions regarding crumb rubber have spread to Europe, with a series of recent articles in the UK and a recent call for investigation from the European Commission.26

V. Litigation Realities and Defenses

To date, the only litigation involving crumb rubber synthetic turf has focused on lead in the grass itself, and that litigation resolved in the mid-2000s when the manufacturers removed the lead content in new product.27 The Canadian women’s soccer players also filed a lawsuit before the last World Cup, but that lawsuit complained merely that the women were required to play on synthetic turf while the men continued to play on grass. The alleged but unproven “cluster” of

soccer players with cancer has not yet produced any litigation, and activity on the plaintiff websites remains modest.

Nevertheless, the campaign against this product has many of the earmarks of orchestrated efforts to build consensus for litigation against the product. The Congressional attention and pronouncements, calls for hearings, alleged clusters of victims, declaring all the existing studies “inconclusive” or “inadequate,” and the media’s version of events are all indicative of past efforts to demonize targeted chemicals or products prior to the initiation of litigation.

Whether any litigation ensues, however, is still much in doubt. Litigants would face some substantial hurdles, first among them the lengthy series of independent studies and health board reviews finding no cause for concern. It is also difficult to prove in court an actual link between cancer and a claimed exposure, made more problematic here by several factors. For instance, to date the cancer claims have not focused on any one cancer or type of cancer but apparently include all forms of cancer. The plaintiffs’ experts will face greater scrutiny if they cannot isolate a specific cancer resulting from a toxic exposure. In addition, the typical latency between an exposure and cancer is decades, but crumb rubber has not


27 Consent Judgment as to Defendant Astroturf, LLC, People of the State of California et al. v. Beaulieu Group, LLC et al. (No. RG 08407310, Super. Ct. Alameda County, Aug. 13, 2009)).
been on the market long enough to connect these recent cancers with players using the fields only in the last few years.

Add to this the reality that no study to date has shown any releases of the carcinogenic materials in anything but highly inconsequential amounts. Success in a lawsuit would require a rather extreme version of the any exposure theory to succeed. A class action would be difficult to sustain, given the different manufacturers, the potentially different content of crumb rubber material, the varying circumstances of exposure, and the many alternative possible causes of cancer to consider. Medical monitoring litigation would involve a large number of potential litigants/patients for monitoring, with no clear link with any single cancer, and speculative claims of causation. And the fields themselves are not an easy target – they are beneficial for communities and schools, they provide children year-round exercise. Any mass replacement program would be enormously expensive for cash-strapped colleges, school districts, and cities.

Similar hurdles, however, do not always stop litigation – if the investigations come back with strong statements of concern, or if an epidemiology study claims to find a link, crumb rubber litigation in some form could be upon us. In the interim, the real burden of this storm of speculation about the product falls on the governments, schools, and sports teams who have to deal with the accusations and threats to expensive fields that otherwise are providing many benefits.
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