



Frequently Asked Questions about Crumb Rubber Infill

The Synthetic Turf Council (STC) believes that independent, science-based information should be the foundation of any discussion regarding the safety of synthetic turf with crumb rubber infill. The STC and the synthetic turf industry take very seriously the health, safety, and welfare of those who play and stay active on synthetic turf. As the synthetic turf industry's trade association, it is our responsibility to address the issues raised in recent media reports in an objective and balanced manner.

What is crumb rubber?

Crumb rubber is derived from scrap car and truck tires that are ground up and recycled. The steel and fiber tire components are removed during the process and the rubber pellets are sorted by size. Each year, over 30 million used auto and truck tires are used to produce the crumb rubber infill for synthetic turf fields.

Why is crumb rubber the most widely-used infill for synthetic turf sports fields?

Serving to protect the players and enhance the game, crumb rubber infill is a durable, high-performing and low-cost infill that provides shock absorption, traction, and foot stability. It also extends the life of synthetic turf systems, which utilizes a long pile height and needs to be supported with infill materials for directional stability and structural integrity, as well as resiliency. When a lush grass sports field cannot be maintained because of high usage or climatic conditions, synthetic turf is the best option to allow continuous play throughout the year and in virtually all weather conditions.

Over 98% of all synthetic turf sports fields in the world use crumb rubber for the infill, including many NFL franchises, as well as member associations and teams of the Union of European Football Associations, Fédération Internationale de Football Association (FIFA), the International Rugby Board and other international sports federations.

Is crumb rubber safe?

Crumb rubber has been critically examined and studied since the late 1980's. More than 60 independent and credible studies have validated the safety of synthetic turf with crumb rubber infill, including those conducted by the U.S. Consumer Product Safety Commission, U.S. Environmental Protection Agency; departments of health and the environment in New York, New York City, Connecticut, and California; and private universities, such as the University of California-Berkeley. Here is what some of those studies say:

- “Based on the available literature on exposure to rubber crumb by swallowing, inhalation and skin contact and our experimental investigations on skin contact we conclude, that there is not a significant health risk due to the presence of rubber infill for football players an artificial turf

pitch with rubber infill from used car tyres.” (*Hofstra University-Environmental and Health Risks of Rubber Infill, 2007*)

- A comprehensive study was conducted to examine what could be extracted in biofluids from infill and turf products...and the associated risk ... to children and adult athletes. Concentrations of PAHs were generally below the LOD [level of detection] for all targeted compounds.... Similarly, the metal concentrations measured in field samples indicate that the risk would be *de minimus* among all populations expected to use artificial turf fields. (*Brian T. Pavilonis, et al, Environmental and Occupational Health Sciences Institute, Robert Wood Johnson Medical School, 2013 Society of Risk Analysis*)

For more independent research on synthetic turf and crumb rubber infill, please visit the STC website: <http://www.syntheticurfCouncil.org/?page=Research>

Does crumb rubber in synthetic turf sports fields elevate a child’s risk of developing cancer?

There is no research that directly links crumb rubber exposure to cancer. In fact, a 2010 review conducted by the University of California, Berkeley is among the most comprehensive reports to date, reviewing the existing studies from the past 12 years, as well as containing independent analysis. Here are some of their findings:

- “Ingestion of a significant quantity of tire shred did not elevate a child’s risk of developing cancer, relative to the overall cancer rate of the population.” (*Rachel Simon, University of California, Berkeley, Review of the Impacts of Crumb Rubber in Artificial Turf Applications, February 2010*)
- Furthermore, “regular exposure (e.g. regular play on ground rubber filled athletic fields) to ground rubber for the length of one’s childhood does not increase risk of cancer above levels considered by the state of California to be *de minimus* (i.e., a lifetime excess cancer risk of 1 in 1 million).” (*Prepared for Rubber Manufacturers Association by Cardno ChemRisk, Inc., a global independent scientific consulting firm, August 1, 2013*)

What are the medical professionals and research scientists saying about the health effects of exposure to crumb rubber?

- **Dr. Robert Hayashi, the Director of Pediatric Hematology and Oncology at St. Louis Children’s Hospital** stated to KSDK –TV in St. Louis “*there’s no scientific evidence to believe it’s true. Despite all the things we do all of us are at risk for developing cancer every day and I think we still have to be able to live our lives and let our children thrive in a healthy environment.*” He went on to say, “*if you consider the other dangers of playing sports, like traumatic brain or bone and joint injuries, those risks far outweigh the risk of participating on a crumb rubber field.*”

- **Dr. Northfelt, an Oncologist at the Mayo Clinic in Mesa, AZ** told Fox 10 News *“Parents should be more concerned about pesticides on natural grass. Lowering exposure to pesticides is one reason schools say they installed [synthetic] turf fields.”*
- **Dr. Wendy LeBolt physiologist, soccer coach, mother, and founder of Fit2Finish.com**, stated in a recent blog, *“Turf allows kids to play more games and coaches to hold more practices. This mean our kids are more active, and that is a very good thing. Because the risk of not playing means more sitting at home watching TV or screen-surfing. With those come overweight, obesity, diabetes, heart disease, stroke, arthritis, other joint ailments, just to name a few. In short, I say the benefit to spending more time in the game far surpasses the risk.”* (of playing on a synthetic turf field with crumb rubber infill)
- **Dr. Abhinav Deol, Karmanos Cancer Center, Detroit’s Wayne State University**, stated in a Vinton, Iowa newspaper *“The health benefits of playing sports far outweigh keeping your kids indoors. The data is not there to support keeping kids from playing on artificial turf.”*

How does crumb rubber impact the environment?

Crumb rubber infill used in synthetic turf play fields is an environmental success story because every year the crumb rubber infill diverts about 30 million used car and truck tires from landfills, conserves billions of gallons of water by reducing the need to irrigate, and avoids the use of pesticides and fertilizers.

What options are available to avoid the landfill?

Here is a list of viable reuse and recycling options for crumb rubber:

- Infill for synthetic turf sports fields
- ADA-compliant playground and other poured-in-place surfacing
- Rubber-modified asphalt for roads and speed bumps
- Sports mats and equestrian surfaces
- Topdressing on natural turf sports fields and landscape to improve durability and performance

What other infill options are available?

Other infill materials include silica sand, Ethylene Propylene Diene Monomer (EPDM), Thermoplastic Elastomers (TPE), and organic infills, which are noted in the STC’s *Suggested Guidelines for the Essential Elements of Synthetic Turf Systems*, here:

http://www.syntheticurfCouncil.org/?page=Technical_Guidelines

Additionally, synthetic turf sports systems with shock pad underlayment provide unique benefits and require significantly less infill material.

How can I learn more about crumb rubber?

Please visit the STC website for independent and science-based research, technical guidelines, case studies, test results, news releases, and glossary of terms, here:

<http://www.syntheticurfCouncil.org/?page=CRI>.

The STC represents companies who consult, design, install, test, maintain and reclaim synthetic turf sports systems, as well as manufacturers and suppliers of related materials and equipment. To search for a product or service, please visit the Buyers' Guide and Member Directory to find member companies that meet your synthetic turf needs: <http://stc.officialbuyersguide.net/>