

What are Artificial Turf and Playgrounds Made Of? Can They Cause Cancer? Obesity? Asthma? ADHD? Lower IQ?

Is your child playing on rubber and plastic instead of grass? Grass has been replaced with artificial materials at schools and parks all over the country and especially in Washington D.C., Maryland, and Virginia. but there is growing evidence they can be harmful to children and adults.

Regardless of what they look like, all artificial fields and playgrounds are made with materials that can be dangerous to people of all ages.

Many athletes don't like artificial turf, and only 2 professional ballparks now use it. In addition to plastic "grass," rubber, silica, and other materials are used to keep the "grass" in place and provide more cushioning. Unfortunately, artificial turf increases "turf burn" abrasions from sliding, puts additional stress on joints, and can become dangerously hot in the sun. It may also cause cancer and other serious long-term health problems.

Recycling Tires from Playgrounds

More than 20 million recycled rubber tires are processed every year for playground surface cover and sports surfaces.

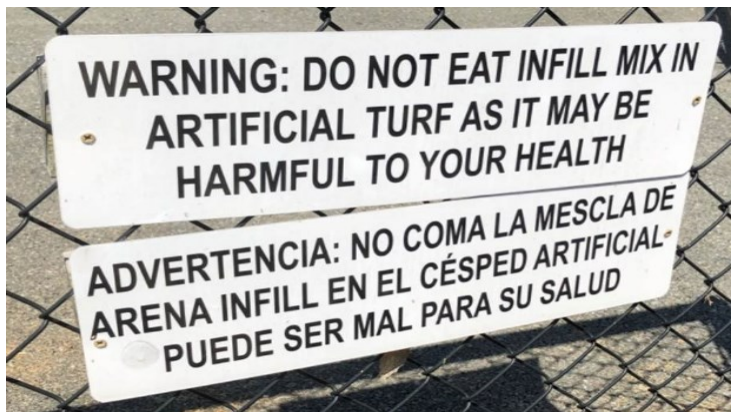
Using tire scraps seemed like a great idea at first – keeping them out of landfills and providing a potentially softer landing on the playground. It was known that burning old tires released harmful, smelly chemicals into the air and ground water, but parents didn't realize that recycled tires and new rubber used on fields and playgrounds (such as pictured below) can also be dangerous. You may think of rubber as a



natural product from rubber trees – but rubber is a mix of latex from rubber trees mixed with petroleum products. That means it can include lead, phthalates, polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and other chemicals known or suspected to harm human health. **For example, phthalates are chemicals that affect hormones and many have been banned from children's toys because they can increase the risks of obesity, early puberty, attention problems, and cancer.** The EPA warns that breathing air contaminated with PAHs may increase the chance of developing cancer, and the U.S. Agency for Toxic Substances and Disease Registry warns that PAHs may increase the risk of cancer and birth defects.

Why Aren't They Proven Safe?

There is no government agency that requires synthetic playground surfaces to be tested before they can be sold. In fact, the materials used are often not made public – justified as "trade secrets." However, some researchers independently have examined the safety of these playground surfaces, resulting in signs like the local one below.



It would not be ethical to conduct a study exposing children to tire shreds, knowing they could be unsafe, so the California Office of Environmental Health Hazard Assessment conducted three studies that mimicked children's exposures instead. Results showed that a single incident of eating or touching tire shreds would probably not harm a child's health, but repeated or long-term exposure might. Five chemicals, including four PAHs, would get on children's skin if they played on these surfaces. One of the PAHs, "chrysene," was higher than the level considered safe, and could increase the chances of a child developing cancer.



In addition, only 10 of the 32 playgrounds studied met California’s safety standard for falls, which meant that falling on these hard surfaces could cause a brain injury of other serious harm. In contrast, all five surfaces made of wood chips met the safety standard.

In Washington, D.C., 37 of their 51 artificial turf fields failed 2017 safety tests, due to hardness scores above 165 (see the sign above). In 2019, Washington, D.C. admitted that 17 of their playgrounds have dangerously high levels of lead. Also in 2019, the nonprofit Ecology Center tested the crumb rubber that was found on the broken rubber surfaces of several playgrounds in Washington, D.C. They found that some of the pieces had dangerously high levels of lead.

A 2015 report by Yale scientists analyzed 14 different samples used for school athletic fields and playgrounds. They detected 96 chemicals, most of which have never been carefully studied, so their health risks are unknown. However, 20% of the chemicals that had been tested are considered to probably cause cancer. In addition, 40% are irritants that can cause breathing problems such as asthma, and can irritate skin or eyes.

What About your Schools or Parks?

These are a few of the many materials to be concerned about:

- Loose tire shred (rubber mulch) or “crumb” on a surface that can be raked, including artificial “grass” fields.
- Tire shreds that are combined with a binder and then poured onto a permanent surface.
- Tiles made from tire shreds and binder that have been factory-molded, then glued to a playground surface.
- Colorful rubber that is “poured in place” (PIP), which is not necessarily made from tires but can contain many of the same dangerous materials.

How to Protect your Children

Children are much more likely to be harmed by exposure to chemicals in their environment than adults because they are smaller (so the exposure is greater) and because their bodies are still developing. Pregnant women should be even more careful to avoid these exposures.

Parents in many communities are persuading local officials to conduct safety tests on artificial turf fields every year, and to install grass or wood chips because they are safer in terms of chemical exposure, heat, and if their children fall.

Meanwhile, here are some tips for parents from the Consumer Product Safety Commission:

1. Children should avoid mouth contact with playground surfacing materials. Some of these materials are small and look like seeds, mulch, or small candies. They may pose a choking hazard as well as a dangerous chemical exposure.
2. Avoid eating food or drinking beverages while directly on playground surfaces, and wash hands before handling food.
3. Limit the time at a playground on hot days. Children tell us they can often see the heat waves rising off the fields on warm, sunny days.
4. Clean hands and other exposed skin after visiting the playground, and consider changing clothes if marks or dust from the rubber is visible on fabrics.
5. Clean any toys that were used on a playground after the visit.

These safeguards will help reduce your child’s exposure, but if they are playing on one of these fields or playgrounds for hours every week, there is still reason for concern.

That’s why our Center has testified before the Washington, D.C. City Council and the Maryland Senate and House of Delegates and why we are working with parents across the country who seek our help in convincing their communities to choose grass and avoid artificial turf.



Local children (seen above) are playing with tire crumbs that washed off from the artificial turf onto their playground.