

# New York State Department of Environmental Conservation

## Division of Solid and Hazardous Materials, 9<sup>th</sup> Floor

625 Broadway, Albany, New York 12233-7250

Phone: (518) 402-8651 • FAX: (518) 402-9024

Website: [www.dec.ny.gov](http://www.dec.ny.gov)



Alexander B. Grannis  
Commissioner

## Crumb-Rubber Infilled Synthetic Turf Field Study Fact Sheet

### Overview of the Study

The Department of Environmental Conservation (DEC) is conducting a study due to recent public health and environmental concerns about exposure to chemicals found in the crumb rubber portion of synthetic turf fields. The study is designed to address: the release of compounds into the ground or surface waters, release of compounds to the air under different temperature conditions, and temperatures and heat measures recorded at field surfaces.

The DEC study includes measurement of the temperatures above nearby grass and the air upwind of these fields. Testing nearby grass will provide a comparison of the temperatures on grass fields. We are testing the air upwind of the field because many of the chemicals present in the synthetic turf fields may also be present in urban air and soil.

### What is synthetic turf?

Synthetic turf has been used since the 1960s, gaining popularity in the 1970s and 1980s with most of its use in professional sports arenas. These older fields were generally comprised of hard mats of nylon grass and many athletes using these fields complained that the surface was harder than grass and caused more injuries.

Newer synthetic turf fields were developed to simulate natural grass fields by using infill material to make the fields softer and by adding plastic grass on the surface. Some fields use infill material made from ground-up tires, called “crumb rubber”, and this type of infill has caused concern about potential chemical releases to the environment. There is also concern that the crumbs may become airborne and could be inhaled.

### Why is synthetic turf used?

The benefits of using synthetic turf over natural grass fields include reduced water needs and maintenance, avoided need for pesticides, herbicides or fertilizer, and an “all-weather” playing surface.

### How are the new fields made?

Although specific field construction varies, most new fields are generally comprised of three layers and use crumb rubber as infill material. The top layer usually consists of plastic fibers attached to a polypropylene or polyester plastic webbing. Between the fibers is a fill of either crumb rubber, flexible plastic pellets, sand, rubber-coated sand or a combination of sand and crumb rubber. Crumb rubber is used to provide extra padding and to keep the grass upright. Below the top layer is a layer of crushed stone with plastic tubing for drainage and rubber padding for shock absorbance. The final layer is commonly comprised of a permeable fabric placed over a stable soil foundation.

### What chemicals are in the crumb rubber?

Crumb rubber is made from recycled tires. Tires are manufactured from natural and synthetic rubber along with many chemical additives, including zinc, sulfur, black carbon, and oils that contain polycyclic aromatic hydrocarbons (PAHs).

### How can people be exposed to the chemicals in the crumb rubber?

To date, studies on the release of chemicals from crumb rubber have reported very low concentration of chemicals. Although exposure to these chemicals is expected to be low, the primary ways that people can potentially be exposed include:

- Incidentally ingesting small amounts by putting fingers in the mouth or not washing hands before eating or after playing on the fields;
- Breathing in small particles of crumb rubber or vapors released from the fields; and
- Consumption or exposure to ground or surface waters that have potentially been impacted by leaching of chemicals from these surfaces, though no known link to this type of contamination has been found to date.

### **Have any studies shown health effects with exposure to crumb rubber chemicals?**

Recently, the New York City Department of Health and Mental Hygiene (NYCDOHMH) commissioned a private consultant to conduct an extensive review of the literature, focusing on the release of chemicals, potential exposures and health effects related to synthetic turf fields. They found eleven human health risk assessments that evaluated exposure to chemicals in crumb rubber. Although each assessment used different approaches, they all had similar conclusions - exposure to the chemicals in crumb rubber is likely to be small and unlikely to increase the risk for any health effect.

### **What is the purpose of the DEC study?**

DEC is conducting this study to assess the issues raised by the public and to address a number of data gaps that have been identified based on a review of existing studies. The NYCDOHMH report addressed data gaps and provides recommendations including:

- The need for ambient air measurements of chemicals potentially coming from new and older outdoor synthetic turf fields, since most of the data reported in the literature comes from indoor fields not exposed to sun, rain, and extreme heat.
- The need to obtain background levels of chemicals which normally exist in ambient air to provide comparative data on exposures related to urban environment.

DEC will also conduct heat stress measures since there are few published reports that quantify heat stress from the use of synthetic turf fields. Also, some reports indicate the surface temperatures of these fields are very high. Finally, DEC will be studying the release of chemicals from these fields during rain events and the release of chemicals from the crumb rubber in a laboratory setting under varying temperatures and acid rain conditions.

### **Where can I get more information?**

For questions about the study plan contact Ly Lim at DEC: 1-518-402-8706

Copy of the study plan can be found here:

[http://www.dec.ny.gov/docs/materials\\_minerals\\_pdf/tirestudy.pdf](http://www.dec.ny.gov/docs/materials_minerals_pdf/tirestudy.pdf)

For health-related questions about synthetic turf fields, contact the Bureau of Toxic Substance Assessment at the New York State Department of Health (NYSDOH): 1-800-458-1158

To learn more about crumb-rubber infilled synthetic turf athletic fields, see the NYSDOH fact sheet at:

[http://www.health.state.ny.us/environmental/outdoors/synthetic\\_turf/crumb-rubber\\_infilled/fact\\_sheet.htm](http://www.health.state.ny.us/environmental/outdoors/synthetic_turf/crumb-rubber_infilled/fact_sheet.htm)

To read the NYCDOHMH literature review report, click here:

[http://www.nyc.gov/html/doh/downloads/pdf/eode/turf\\_report\\_05-08.pdf](http://www.nyc.gov/html/doh/downloads/pdf/eode/turf_report_05-08.pdf)