

# FACT SHEET

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Connecticut Department of Public Health  
Environmental & Occupational Health Assessment  
Program  
410 Capitol Avenue MS# 11EOH, PO Box 340308  
Hartford, CT 06134-0308  
(860) 509-7740  
<http://www.dph.state.us>

## Artificial Turf Fields: Health Questions

Cities and towns across Connecticut have increasingly opted for replacement of grass fields with a form of artificial turf that uses recycled rubber tires. The tires are processed into crumb rubber and used as an infill material to cushion the playing surface. Stated advantages over natural grass fields are reduced watering and maintenance, avoiding the need for pesticides, reduced injuries, and an “all-weather” playing surface. Questions have been raised regarding health, safety and environmental aspects of the rubber infill material. Rubber contains industrial chemicals that can be released into the air during playing and which may run off into the environment in rainwater. This fact sheet focuses upon the potential health effects to athletes and spectators using these fields, many of whom are school-age children.



### What Chemicals Can Be Released By The Infill Material?

Some chemicals in rubber vaporize to form a gas (volatile organic chemicals or VOCs such as toluene and benzothiazole), while others remain in the solid-phase (e.g., metals, polycyclic aromatic hydrocarbons or PAHs). Given the variety and types of chemicals involved, it is not surprising that some have toxic or carcinogenic activity when tested in laboratory animals. VOC release from crumb rubber infill is expected to be greatest in sunny, hot weather. Particle release may be affected by the number of athletes using the field and the intensity of their exercise. Temperature gradients and wind will generally afford rapid dilution and low concentrations in the breathing zones of athletes.

### How Can People Be Exposed To Rubber Chemicals At Artificial Turf Fields?

**Inhalation and ingestion exposures are possible.** Because their play may create airborne particles and because of their high ventilation rate, athletes are expected to receive the greatest exposure. Athletes may also inadvertently ingest dust particles that cling to hands and clothing. Those on the sidelines or grandstands will receive lower exposures. It is also possible that if young children accompany parents to these fields, they may swallow the infill material itself, although the ingestion of whole granules is not likely to be a frequent occurrence. This possibility may increase if artificial turf fields are placed at elementary schools and playgrounds. Since the particles cling to shoes and clothing, it is possible for the infill material to be tracked into homes after leaving the field. This is expected to cause much less exposure than from the fields themselves.

## Are People Exposed To These Chemicals In Other Ways?

**Yes.** Most of the chemicals emitted from the rubber granules are quite common in urban and suburban air. Some comes from rubber itself as roughly 1-2% of the respirable dust in Los Angeles is estimated to come from the wearing of tires. Other sources for these chemicals are also quite common including car exhaust, furnaces, consumer products, flooring and foods. For example, studies in California demonstrate that rubber-based resilient flooring off-gases benzothiazole and other rubber-related VOCs. These materials are commonly used indoors in schools.

## Is There A Health Risk?

**Based upon the current evidence, a public health risk appears unlikely. However, there is still uncertainty and additional investigation is warranted.** A variety of governmental bodies including Norway, Sweden, New Jersey and California have recently reviewed the health issues; their assessments have not found a public health threat. Sources of exposure unrelated to artificial turf fields are likely more important than the turf fields for many chemicals. While DPH does not believe there is a unique or significant health threat from chemical releases that can be inhaled or ingested, the uncertainties warrant further investigation.



## Should Towns Continue To Install This Type Of Artificial Turf Field?

**DPH's review does not find any reason to stop installation of these fields.** Currently there are no federal or state limits on the installation of crumb rubber-based turf fields. Therefore, it is up to towns to make a case-by-case decision on whether artificial turf is the right choice for a particular setting. While we see no health evidence to stop installations, DPH acknowledges that much of the information is very recent and this area is rapidly evolving. Additionally, the potential exposures and risks have not been fully characterized. DPH recommends that towns consider these uncertainties as part of the array of issues evaluated when deciding whether to install artificial turf fields (e.g., cost, maintenance, public acceptability).

## Where Can I Get More Information?

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Division of Environmental Epidemiology and Occupational Health  
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