



# GRASSROOTS Environmental Education

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## **State of Connecticut General Assembly Committee on Children Public Hearing – February 16, 2016 Legislative Office Building, Hartford, CT**

### **Testimony in support of Bill 5139: AN ACT CONCERNING THE USE OF RECYCLED TIRE RUBBER AT MUNICIPAL AND PUBLIC SCHOOL PLAYGROUNDS prohibiting the installation of ground cover that contains shredded or ground rubber recycled from motor vehicle tires in municipal and public school playgrounds.**

Grassroots Environmental Education is a science-based environmental health nonprofit with offices in Connecticut and New York. Grassroots' primary mission is to educate the public concerning common environmental exposures and the link to human health and environmental impacts based on science and our network of leading medical and scientific experts. Grassroots serves local and state governments, school systems, health care professionals and other organizations nationwide.

Grassroots Environmental Education strongly supports Bill 5139 prohibiting the installation of ground cover that contains shredded or ground rubber recycled from motor vehicle tires in municipal and public school playgrounds.

Children are uniquely vulnerable to toxic exposures due to their immature organs and developing bodies which make it more challenging for them to detoxify or eliminate certain toxins. Due to their small size, they receive proportionally greater doses of chemical contaminants found in water, air and food. Even a small exposure occurring during a critical window of a child's development could result in permanent adverse health impacts. Children are also at greater risk due to their play habits and typical hand-to-mouth behavior.

It is imperative to factor the Precautionary Principle into this decision-making process to avoid human activities which may lead to unacceptable harm even in the face of scientific uncertainty.

Used or "scrap" rubber tires present significant problems in solid waste management as their sheer numbers, flammability and indestructible nature makes them persist in the environment. When disposed of in landfills, they take up massive amounts of space, leach toxic chemicals and collect water that creates a fertile breeding ground for disease transmitting mosquitoes. There is a considerable effort to find uses for recycled rubber tires. Historically they have been used as fuel in the paper and cement industries, as

road construction materials and in construction of drainage fields for septic systems, among other industrial applications. But with the growing number of used tires and prohibitions for their disposal in landfills, new markets for this hazardous waste product are actively being sought.

A relatively recent use of ground up used rubber tires, also known as “crumb rubber” is to cushion or infill synthetic turf fields or create playground surfaces. Approximately 40,000 tires can be recycled into crumb rubber pellets to use as infill material for a single field. The Resource Conservation and Recovery Act (RCRA) of 1976, our nation’s primary law governing disposal of solid and hazardous waste, gives the EPA the authority to control hazardous waste from “cradle-to-grave,” including used rubber tires. But it also states that the recycling of a hazardous waste product into a useable consumer product automatically exempts it from RCRA requirements, even if the end product it creates is more toxic than other similar products on the market. This loophole means that no monitoring follows the new products that have been manufactured from recycled hazardous waste, such as synthetic turf crumb rubber infill or recycled rubber playground surfaces.

The exact chemical composition of tires is largely determined by the intended use for the tire and the manufacturing location. Typical tire rubber contains 40-60% rubber polymer, 20-35% reinforcing agents, up to 28% aromatic extender oil, vulcanization additives, antioxidants, antiozonants, and processing aids (plasticizers and softeners). Examples of chemicals of concern in the above categories and their potential health effects include:

- 1,3 Butadiene – human carcinogen
- 4-(t-octyl) phenol – corrosive to mucous membranes
- Arsenic – human carcinogen
- Benzene – human carcinogen, developmental and reproductive toxicant
- Benzothiazole – acutely toxic, respiratory and eye irritant, dermal sensitizer
- Butylated Hydroxyanisole – human carcinogen, suspected endocrine and immune system toxicant
- Cadmium – human carcinogen
- Carbon Black – human carcinogen (makes up to 40% of rubber tires)
- Flouranthene – human carcinogen
- Latex – allergic reactions in susceptible individuals
- Lead – neurotoxin
- Manganese – neurotoxin
- Mercury – neurotoxin
- N-hexadecane – eye, skin and respiratory system irritant
- Octylphenol – endocrine disruptor
- Phthalates – endocrine disruptors, developmental and reproductive toxicants
- Polycyclic Aromatic Hydrocarbons (PAHs) – reproductive and respiratory toxicants, liver toxicants, suspected blood or cardiovascular toxicants
- Styrene – human carcinogen and mutagen
- Toluidine – human carcinogen
- Trichloroethylene – human carcinogen

Crumb rubber pieces can become lodged in mouths, ears and noses, and crumb rubber dust can be easily inhaled as it becomes disturbed during play. Also, many of the above listed chemicals are volatiles (chemicals which outgas), which means that they will create inhalation exposures, especially in warmer temperatures. Given the number of different sources for ground up rubber tires and the unique chemical components of each individual field or playground, an absolute determination of safety is impossible.

And since many of these chemicals are toxic at any level of exposure, the presence of even one of these chemicals on fields where children play should trigger a public health concern.

There have been reports of higher than usual cases of lymphoma and leukemia among athletes using synthetic turf fields, especially soccer goalies. While no studies to date have confirmed a link, common sense tells us that chemicals in tires that are known to cause cancer should be avoided wherever possible.

High temperatures on synthetic turf also pose a health risk. A comprehensive study on the temperature of synthetic turf fields was conducted by Brigham Young University. The researchers found that the amount of light had the greater impact on heating of the fields than air temperature. The hottest surface temperature recorded was 200° F on a 98° F day. Even on cooler days, field temperatures of 120° F to 174° F were recorded. In general, the surface temperature of the synthetic turf was 37° F higher than asphalt and 86.5° F hotter than natural grass. Water canons or other irrigation systems can cool down crumb rubber surfaces for only about 20 minutes. Serious heat-related health problems include dehydration, heat stroke and heat exhaustion. There are also many reports of serious burns on the soles of the feet of players (through socks and shoes) when the temperatures on the turf are dangerously high.

We strongly urge swift passage of Bill 5139 to prohibit the installation of ground cover that contains shredded or ground rubber recycled from motor vehicle tires in municipal and public school playgrounds to protect children's health and safety.

Grassroots Environmental Education is available to answer any questions you may have and provide further documentation.