SB 47 – Turf Fields Containing Crumb Rubber from Used Tires

IN BRIEF

Prohibits the installation of new fields & playgrounds containing waste tires for two years (Jan 1, 2016 – Jan 1, 2018) while the state conducts a comprehensive study on potential health impacts. Fields and playgrounds made from alternative materials not containing waste tires are not subject to the moratorium. Fields and playgrounds made from waste tires that are already under construction, or where a contract has been signed for installation prior to Jan 1, 2016 are not subject to the moratorium.

THE ISSUE

In 2010, then Attorney General Jerry Brown settled a case with the nation's largest makers and installers of turf fields requiring them to reduce levels of lead in their products. The settlement required companies to reformulate their products to reduce lead levels to negligible amounts and established the nation's first enforceable standards applicable to lead in artificial turf. Brown brought the case in 2008 against these companies for excessive lead levels after testing by the Center for Environmental Health found high concentrations of lead in their products. Brown's office confirmed these findings in independent tests.

In recent years there has been an increased concern about the health impacts on frequent users of turf fields made from waste tires.

In a 2012 study published in Chemosphere titled, "Hazardous organic chemicals in rubber recycled tire playgrounds and pavers", the presence of hazardous organic chemicals in surfaces containing recycled rubber tires were investigated. Direct material analyses using solvent extraction, as well as SPME analysis of the vapour phase above the sample, were carried out. Twenty-one rubber mulch samples were collected from nine different playgrounds. All samples were extracted by ultrasound energy, followed by analysis of the extract by GC–MS. The analysis confirmed the presence of a large number of hazardous substances including PAHs, phthalates, antioxidants (e.g. BHT, phenols), benzothiazole and derivatives, among other chemicals. The study evidences the high content of toxic chemicals in these recycled materials. In addition, SPME studies of the vapour phase above the samples confirm the volatilisation of many of those organic compounds. The study found that "uses of recycled rubber tires, especially those targeting play areas and other facilities for children, should be a matter of regulatory concern."

A report from the Swedish Chemical Agency (KEMI) found that tires contain over 60 different substances—40% is rubber; the rest is carbon black, high aromatic oils, sulfur and various metals. Rubber is elastic polymers. The most common types of synthetic rubber are styrene-butadiene rubber and ethylene propylene rubber. Vulcanizing agents are used in manufacture, and fillers, antioxidants and plasticizers are added for technical properties. A large number of high aromatic oils are added, including polyaromatic hydrocarbons, phthalates that can leach into water, phenols, metals including zinc, and low concentrations of lead. Synthetic turf often contains rubber granules from waste tires, which in turn contain several particularly hazardous substances. The Swedish Chemical Agency recommends that rubber granules from waste tires not be used in synthetic turf.

The 2007 Connecticut Agricultural Experiment Station report found out-gassing and leaching from synthetic turf rubber crumbs under aqueous ambient temperatures. Several compounds were present, but four compounds gave the highest responses on GC/Mass spectrographic analysis. The four compounds conclusively identified with confirmatory tests were: benzothiazole; butylated hydroxyanisole; n-hexadecane; and 4-(t-octyl) phenol. Approximately two dozen other chemicals were indicated at lower levels. These chemicals were released in laboratory conditions that closely approximate ambient conditions. Those chemicals identified with confirmatory analytical studies at the Connecticut Agricultural Experiment Station study have the following reported actions:

Benzothiazole: Skin and eye irritation, harmful if swallowed. There is no available data on cancer, mutagenic toxicity, teratogenic toxicity, or developmental toxicity.

Butylated hydroxyanisole: Recognized carcinogen, suspected endocrine toxicant toxicant, gastrointestinal toxicant, immunotoxicant, neurotoxicant, skin and sense-organ toxicant.

There is no available data on cancer, mutagenic toxicity, teratogenic toxicity, or developmental toxicity.
n-hexadecane: severe irritant based on human and animal studies. There is no available data on cancer, mutagenic toxicity, teratogenic toxicity, or developmental toxicity.
4-(t-octyl) phenol: corrosive and destructive to mucous membranes. There is no available data on cancer, mutagenic toxicity, teratogenic toxicity, or developmental toxicity.
The study also detected metals that were leached from the tire crumbs. Zinc was the predominant metal, but selenium, lead and cadmium were also identified.

The University of Washington Women's Soccer Coach, Amy Griffin, has been keeping a list of athletes who developed cancer after playing on turf fields containing waste tires. So far she has identified 126 athletes, 109 of which are soccer players, 10 were football players, and six were field hockey and lacrosse players, who have developed different forms of cancer including lymphomas (51), leukemia (19), brain (10), testicular, (9), sarcoma (9), thyroid (6) and many more.

ALTERNATIVES AVAILABLE

Not all turf fields contain crumb rubber from waste tires. There are several companies that offer turf field and playground products made from natural materials:
http://www.limontasport.com/
http://www.brock-international.com/
http://www.usgreentech.com/

Example 1
A typical new synthetic turf sports field measuring 80,000 sq. ft. can cost a customer between $800K - $1.2M. An alternative surface system made from natural materials not containing waste tires would only represent a 3-4% increase in the overall price of a project.

This comparison evaluates the costs for a first surface installation, removal and disposal, and then a second surface installation. This evaluation is critical to understand the true long-term costs of rubber crumb from waste tires as compared to more sustainable solutions. There are actually many landfills that do not accept crumb rubber, which increases the transport costs to move the material to a more distant disposal site.

Landfill disposal costs vary quite a bit across the state of California. This comparison uses a current conservative cost of $30.00 / ton with compounded inflation / increases of 4% per year. The resulting estimated disposal costs in 2023 will be $41.00 per ton when today's new fields will begin to be disposed of.

Example 2
Cost comparison between the same turf using SBR waste tire crumb ruber vs. an organic alternative:
Turf- 45 oz., 2-1/2" monofilament utilizing 3 pounds of sand per square foot as ballast:
- 5 pounds of SBR per square foot @18 cents/pound= $0.90 per square foot
- 2 pounds of Organic per square foot @75 cents per pound= $1.50 per square foot

The up-front cost differential for an 80,000 square foot field is $48,000:
- SBR- $0.90 x 80,000= $72,000
- Organic- $1.50 x 80,000= $120,000

This $48,000 will be offset at the end of life cycle by the average disposal cost of a field with SBR that ranges between $40,000- $50,000.

MORATORIUMS IN OTHER JURISDICTIONS

In 2009 the Los Angeles Unified School District and the City of New York banned waste tires from turf fields. LAUSD board member Marlene Canter said, "The health of our students is more important than any other issue. You should never equate economics with health. In no way should we be skimping on something like this that could affect our kids."

In February 2015, Montgomery County, Maryland, the most populous county in the state with over 1 million residents, approved a ban on waste tires in turf fields and instead required plant-derived materials for infill in future turf field projects.

CA SUBSIDIZES WASTE TIRE INDUSTRY

The state of California provides millions of dollars every year to schools and local governments to purchase turf fields and playground material made from waste tires. The state also provides millions to companies that make products from waste tires.

Tire-Derived Product (TDP) Grants
This grant program provides funding to certain entities for tire-derived products made from 100 percent California generated waste tires. Projects generally fall into one of three categories: agricultural/landscape, recreational, or transportation.

Tire Incentive Program
This grant program provides funding to eligible businesses to use crumb rubber in eligible products or substitute crumb rubber for virgin rubber, plastic, or other raw materials in products. The program's goal is to increase demand for crumb rubber and promote higher value products.

SUPPORT

Partial List:
Action for Nature
Brock International
California Native Plant Society
Center for Environmental Health
Coalition for San Francisco Neighborhoods
Coalition to Save Ocean Beach / Friends of Sutro Heights Park
D5 Action
Environment and Human Health, Inc.
Environment California
Francisco Heights Civic Association
Golden Gate Audubon Society
Golden Gate Park Preservation Alliance
Haight Ashbury Neighborhood Council
Healthy Soccer SF
Hellas Sports Construction
Limonta Sport USA
Public Employees for Environmental Responsibility
Safe Healthy Playing Fields Coalition
San Francisco Green Party
San Francisco Latino Democratic Club
San Francisco Tomorrow
Sierra Club California
SF Ocean Edge
SFPARKS
SPEAK
Synturf.org
Take Back Our Parks
The Turf Authority
Turf Grass Forum
and over 100 individuals

FOR MORE INFORMATION

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