

Fact Sheet

Health and Safety Considerations Associated with the Use of Recycled Waste Tires for Playground Surfacing

Background

The Kansas Department of Health and Environment (KDHE), Bureau of Waste Management (BWM) has awarded over \$2,600,000 in waste tire recycling grants to municipalities and school districts across the state to partially fund the purchase of products made from waste tires, including playground surfacing. Current scientific evidence indicates that playground use of products made from crumb rubber or tire shreds is safe. Several studies have been performed that demonstrate the safety of playground surfacing products made from recycled tires (see list of studies and links at the end of this Fact Sheet).

Need for Tire-Derived Product Market

Nearly 2.9 million waste tires are generated by Kansans every year. Without strong markets for recycled products or other effective solutions, we could see an increase in illegal tire piles and associated health and environmental hazards, such as mosquito breeding and fires. The purpose of the grant program has been to stimulate the market for recycled rubber products as an alternative to landfilling or illegal management practices.

Use of Recycled Tires for Playground Applications

KDHE supports the use of waste-tire-derived products over alternative products for playground applications because it is a durable product; it provides increased fall protection; and it inhibits mold, weed and fungus growth. In addition, it is a proven method of managing waste tires in an environmentally responsible manner.

Recycled rubber has been shown to provide safety benefits to children and others on playgrounds due to its ability to cushion the skull from head impacts and prevent other injuries due to a fall. According to a study conducted by Center for Disease Control (CDC) scientists and the National Program for Playground Safety (a non-profit organization based at the University of Northern Iowa), shredded rubber performed best in a CDC-funded test of loose-fill playground surfacing materials.

Environment and Health Studies

The Environmental Protection Agency (EPA) and some states have conducted studies to investigate environmental and health concerns related to recycled waste tire products. The studies covered leaching, off gassing, dermal absorption, and ingestion.

An EPA study conducted from August to October 2008 found that the concentrations of materials present in recycled waste tire products were below levels considered harmful. While this study did not find evidence of health risks connected to recycled tire rubber playground surfaces, EPA did recommend continued study in this area.

A 2010 study from Connecticut concluded: "No volatile organic compounds have been identified as risks to surface and groundwater resources; zinc has been identified as a potential risk to surface waters. However, the storm water discharges from artificial turf fields would not be expected to regularly exceed this zinc limit. No other metals have been identified as a risk to groundwater or surface waters. Storm water best management

practices should be incorporated into the design of the drainage system for artificial turf fields as it should for parking lots, playgrounds, etc.” The study did not identify any levels of organic compounds in storm water runoff that presented a potential contamination risk to surface waters.

Other Potential Concerns

Natural rubber is made of latex and some people may have allergic reactions caused by skin contact. KDHE is unaware of any occurrences of latex allergy or any other allergic reactions associated with contact with recycled rubber products.

In response to safety concerns related to daytime heating during hot Kansas days, all grant recipients that purchase uncoated, uncolored “all black” rubber material installed as playground surfacing are required to post warning signs explaining the potential buildup of heat on the surface.

The potential for harm from chemical exposures is very low based upon all available studies. Proper maintenance is required to keep loose playground surfacing material at the minimum depth to provide fall protection benefits.

Continued Monitoring

KDHE will remain vigilant regarding future studies and reports on potential environmental and health effects related to the recycling of waste tires or use of tire-derived products. However, at the present time, there is inadequate evidence to modify the recycled tire product grant program or restrict the use of recycled waste tire products. If new reliable information is obtained that alters the “safe” conclusion set forth in this Fact Sheet, KDHE will update this document and disseminate information to potential users of recycled rubber products.

Questions regarding tire-derived products and tire grants in general can be directed to BWM at 785-291-3746.

References:

A Scoping-Level Field Monitoring Study of Synthetic Turf Fields and Playgrounds

U.S. Environmental Protection Agency, 2009

http://www.epa.gov/nerl/download_files/documents/tire_crumbs.pdf

Artificial Turf Study: Leachate and Stormwater Characteristics

Connecticut Department of Environmental Protection, July 2010

http://www.ct.gov/deep/lib/deep/artificialturf/dep_artificial_turf_report.pdf

A Study to Assess Potential Environmental Impacts from the Use of Crumb Rubber as Infill Material in Synthetic Turf Fields

New York State Department of Environmental Conservation, June 17, 2008

http://www.dec.ny.gov/docs/materials_minerals_pdf/tirestudy.pdf

A Review of the Potential Health and Safety Risks from Synthetic Turf Fields Containing Crumb Rubber Infill

New York City Department of Health and Mental Hygiene

http://www.nyc.gov/html/doh/downloads/pdf/eode/turf_report_05-08.pdf

Evaluation of Health Effects of Recycled Waste Tires in Playground and Track Products

State of California Integrated Waste Management Board

<http://www.calrecycle.ca.gov/publications/Detail.aspx?PublicationID=1206>

Toxicological Evaluation for the Hazard Assessment of Tire Crumb for Use in Public Playgrounds,

Detlef A. Birkholz , Kathy L. Belton & Tee L. Guidotti

Journal of the Air & Waste Management Association, July 2003, p. 903-907