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**Bcc:** Maier, Brent[Maier.Brent@epa.gov]
**From:** Maier, Brent
**Sent:** Fri 2/12/2016 6:50:18 PM
**Subject:** Federal Research Action Plan on Recycled Tire Crumb Used on Playing Fields and Playgrounds

Dear Colleagues:

Please find below the **Federal Research Action Plan on Recycled Tire Crumb Used on Playing Fields and Playgrounds** that I thought your office might find of interest. Please let me know if you have any questions or need any additional information.

Regards,

Brent Maier

Congressional Liaison

science in ACTION

INNOVATIVE RESEARCH FOR A SUSTAINABLE FUTURE

**Federal Research Action Plan on Recycled Tire Crumb Used on Playing Fields and Playgrounds**

## Background

Concerns have been raised by the public about the safety of recycled tire crumb used in playing fields and playgrounds in the United States. Limited studies have not shown an elevated health risk from playing on fields with tire crumb, but the existing studies do not comprehensively evaluate the concerns about health risks from exposure to tire crumb.

## Federal Research

Because of the need for additional information, the U.S. Environmental Protection Agency (EPA), the Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry (ATSDR), and the U.S. Consumer Product Safety

Commission (CPSC) are launching a multi-agency action plan to study key environmental human health questions. This coordinated federal action includes outreach to key stakeholders, such as athletes and parents, and seeks to fill important data and knowledge gaps, characterize constituents of recycled tire crumb, and identify ways in which people may be exposed to tire crumb based on their activities on the fields. The Federal Research Action Plan includes numerous activities, including research studies. While additional research questions may require evaluation beyond this year, the information will help answer some of the key questions that have been raised.

**Objectives**

The specific objectives of this research effort are to:

•□□□□□□□□ Determine key knowledge gaps.

•□□□□□□□□ Identify and characterize chemical compounds found in tire crumb used in artificial turf fields and playgrounds.

•□□□□□□□□ Characterize exposures, or how people are exposed to these chemical compounds based on their activities on the fields.

•□□□□□□□□ Identify follow-up activities that could be conducted to provide additional insights about potential risks.

**Research Summary**

***Conduct Data and Knowledge Gap Analysis:*** The Agencies will evaluate the existing scientific information related to recycled tire crumb used in artificial turf fields and other types of playing fields to build on current understanding of the state-of-the-science and inform the research activities.

***Outreach to Key Stakeholders, Including Parents and State Agencies:*** EPA, ATSDR, and CPSC will convene discussions with members of the public and organizations with an interest in studying tire crumb. These parties have ongoing tire crumb studies or can provide expertise to inform the federal study. The agencies will meet with:

•□□□□□□□□ ***Athletes, parents, and coaches*** to get first-hand perspectives on potential exposures.

•□□□□□□□□ ***Government agencies*** to discuss the federal research, share relevant information from state-level studies, request support, and identify current best practices for minimizing exposures. One important state partner is California. California's Office of Environmental Health Hazard Assessment has an in-depth tire crumb study underway. This study includes a series of scientific studies to determine if chemicals in tire crumb can potentially be released under various environmental conditions and what, if any, exposures or health risks these potential releases may pose to players who frequently play on artificial fields constructed with tire crumb. The evaluation includes expert solicitation and stakeholder participation to help guide the design and EPA and other federal agencies are actively engaged in that process.

•□□□□□□□□ ***Industry representatives*** to better understand the manufacturing process and use parameters for recycled tire crumb used in artificial turf and for recycled tire-derived playground surface materials.

***Testing of Tire Crumb to Characterize Chemicals, Potential Emissions, and Toxicity:*** The agencies will test different types of tire crumb. These tests – along with existing scientific information from the literature – will help us better understand the tire crumb materials. For example, this will help the scientists working on this effort to understand chemicals that are found in tire crumb and might be emitted from the material. It will also help us understand if chemicals can be released from tire crumb when a person comes into contact with them – for example, when tire crumb comes in contact with sweat on the skin or are accidentally ingested by athletes playing on turf fields. Once we better understand what chemicals are in tire crumb, we will also be able to search existing databases of information to understand the potential health effects of those chemicals. Some examples of research activities are listed below.

•□□□□□□□□ Based on information obtained through the efforts described above, evaluate various manufacturing process (for example, the tire crumb manufacturing process and the tire-derived playground surface materials manufacturing process), including an analysis of the diversity of these processes, material blends, components of the material (metals, volatile and semi-volatiles, particulate matter).

•□□□□□□□□ Conduct laboratory analyses to characterize components of the chemicals in newer and older (aged) tire crumb materials at different temperatures.

•□□□□□□□□ Determine the rate at which tire crumb components are absorbed by the body using simulations of biological processes in the lab, for example simulations of activities in the stomach as well as salivating and sweating.

•□□□□□□□□ Evaluate potential cancer and non-cancer toxicity of key tire crumb constituents based on existing databases of information.

***Launch Pilot-Scale Study to Characterize Exposure Under Use Conditions:*** The agencies will conduct several activities to better understand potential exposures that may occur when individuals frequently use artificial turf fields. Scientists will identify various exposure scenarios (ways in which people may be exposed based on their activities on the fields) and then design and conduct a pilot-scale exposure study to characterize people's exposures on these fields. This work will consider possible ways that one may be exposed – including by breathing, accidentally ingesting, or physical contact with tire crumb. Some examples of research activities are listed below.

•□□□□□□□□ Develop exposure scenarios, paying particular attention to high-end exposure scenarios.

•□□□□□□□□ Identify activity patterns for athletes and other relevant populations.

o Estimate nature, duration, and frequency of exposures.

o Evaluate other relevant factors, such as the standard operation and maintenance of the fields (e.g., replacement of materials, use of biocides) and how the materials change over time.

•□□□□□□□□ Design and conduct pilot-scale exposure study to characterize exposures on select playing fields, considering all relevant routes of exposure (inhalation, dermal, oral). -

•□□□□□□□□ Develop methods, as necessary, for measuring exposure to both targeted and non-targeted analytes.

***Public Comment Opportunities***: Some studies that are part of this research plan will be posted for public comment through a Federal Register Notice (available at Regulation.Gov). For example, one study will gather data from facilities that manufacture crumb rubber materials, and another study will gather activity data from persons who routinely perform activities on artificial turf fields with tire crumb. The number and geographic region of the fields that will be sampled as well as the number of field users who will be surveyed will be described in the Federal Register Notice.

***Additional Research Activities:*** EPA, CDC/ATSDR, and CPSC have set an ambitious schedule for this effort in 2016. A number of additional activities may also be initiated during this time, depending upon further consideration of their value to the overall effort, their feasibility, the availability of resources, and other factors. Additional research could include identifying potential biomarkers of exposure, collecting preliminary biomonitoring data, analyzing samples of recycled tire crumb used on playground surfaces, and evaluating the feasibility of conducting an epidemiologic study. CPSC is exploring conducting a survey of parents to get first-hand perspectives on potential exposures from playground surface materials. As part of this coordinated effort, CPSC plans to conduct additional work on the safety of playgrounds.

**Timeline and Deliverables**

By the end of 2016, the agencies anticipate releasing a draft status report that describes the preliminary findings and conclusions of the research through that point in time. The draft status report will summarize the agencies' progress in: (1) Identifying key constituents of concern in recycled tire crumb used in artificial turf fields; (2) Assessing potential exposures to potentially harmful constituents; (3) Conducting an initial evaluation of potential cancer and non-cancer toxicity of key chemical constituents; and (4) Identifying follow-up activities that could be conducted to provide additional insights about potential risks. The results of the preliminary work on recycled tire-derived playground surface materials will also be described. The report will also outline any additional research needs and next steps.

**More Information**

Information and updates about this research will be posted to EPA's website – http://www.epa.gov/TireCrumb

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