INTRODUCTION

Recycled tire crumb rubber is used as infill material in synthetic turf playing fields in the United States. Concerns have been raised about the safety of this material.

Prior to 2016, a few studies had been conducted in the U.S. examining crumb rubber constituents. These studies had been relatively small, restricted to a few fields or material sources, and measured a limited number of constituents.

This multi-agency research effort, known as the Federal Research Action Plan on Recycled Tire Crumb used on Playing Fields and Playgrounds (FRAP), is focused on assessing potential human exposure, which includes conducting research activities to characterize the chemicals associated with tire crumb rubber and to identify the ways in which people may be exposed to these chemicals based on their activities on synthetic turf fields.

SAMPLE COLLECTION

Numbers and Types of Synthetic Turf Fields and Recycling Plants

METALS AND SVOCs IN TIRE CRUMB

Average Results for Chemicals Associated with Tire Crumb Rubber (mg/kg; with standard deviation)

BIOACCESSIBILITY

Selected Results for % Bioaccessibility of Metals in Three Synthetic Biofluids

DISCUSSION

For comparative purposes, tire crumb rubber samples were collected from nine recycling plants as well as 25 outdoor and 15 indoor synthetic turf fields across the U.S.

Characterization included direct measurement of metal and SVOC constituents associated with tire crumb rubber.

Bioaccessibility testing of metals was performed on tire crumb rubber using three types of simulated biological fluids.

For More Information Please Visit: www.epa.gov/chemicals/tirecrumb

ACKNOWLEDGEMENTS

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Key Messages

- In general, and not unexpected, the study found a range of chemicals (metals and organic compounds) in the crumb rubber samples.

- Chemical concentrations are generally similar to those found in other studies, where these exist.

- While a range of chemicals are present, an emissions of organic chemicals and bioaccessibility of metals are low.

- In general, the findings from this multi-agency research effort will be useful to the public and interested stakeholders for understanding the potential for human exposure to chemicals of potential interest and concern found in tire crumb rubber used on synthetic turf fields.

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