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July 2019 Report: Tire Crumb Rubber Characterization

Key Takeaways:

- EPA is releasing a new report that addresses exposure (that is, chemicals and how people come in contact with these) to tire crumb rubber on synthetic turf fields. **This report is not a risk assessment**, nor can the information be used to identify a level above which health effects could occur.
- In general, the findings from the report support the premise that while chemicals are present as expected in the tire crumb rubber, human exposure appears to be limited based on what is released into air or simulated biological fluids.
- Only Part 1 is being released today. Part 2 is to be released at a later date. When combined, Part 1 and Part 2 will not constitute a risk assessment.
- Part 1 of this report presents results of the tire crumb rubber characterization research (i.e. what is in tire crumb rubber).

- The scope of this study was finalized, and the work initiated in 2016 at the request of the Obama Administration.

Documents included here:

Tire Crumb Characterization Report (Volumes 1 and 2)

The U.S. Environmental Protection Agency (EPA) and the Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry (CDC/ATSDR) have released the *Synthetic Turf Field Recycled Tire Crumb Rubber Characterization Research Final Report: Part 1 -Tire Crumb Rubber Characterization*. This report is part of the **Federal Research Action Plan (FRAP) on Recycled Tire Crumb Used on Playing Fields and Playgrounds**, a multi-agency research effort by EPA, CDC/ATSDR, and the Consumer Product Safety Commission (CPSC) to characterize the chemicals associated with tire crumb rubber and to identify the ways in which people may be exposed to those chemicals based on their activities on synthetic turf fields and playgrounds. The Part 1 Tire Crumb Rubber Characterization Research Report from EPA and CDC/ATSDR summarizes results for the physical, chemical, and microbiological characterization for tire crumb rubber used on synthetic turf fields. The Part 1 report is being released in two volumes; Volume 1 contains the body of the report; Volume 2 contains the appendices.

Spreadsheet with Bacterial Non-Targeted Analysis Results

The tire crumb characterization research effort included collecting tire crumb rubber from synthetic turf fields to assess microbial populations. Both targeted and non-targeted approaches were used in the assessment. The non-targeted assessment approach included collecting a total of 280 samples from 40 synthetic turf fields which were examined to characterize the microbial community by analysis of the 16S rRNA gene. Collectively, these samples contained 1424 operational taxonomic units (OTUs) or unique bacterial taxa. Classification of these unique taxa was performed using the Ribosomal Database Project Classifier (Michigan State University, Lansing, MI, USA) to the lowest taxonomic level possible. The

OTUs that contribute 90% of the total 16S rRNA gene sequence reads and their count for each synthetic turf field sample, along with their taxonomic classification, is listed in an Excel database that is available here.

Spreadsheet with Toxicity Reference Information

Toxicity reference information was compiled for the potential tire crumb rubber chemical constituents identified in the *State-of-Science Literature Review/Gaps Analysis, White Paper Summary of Results*. Eleven sources of publicly available toxicity reference information were searched. An Excel spreadsheet database was developed that cross-references chemicals in the list of potential tire crumb constituents with toxicity reference data from these eleven sources. The database spreadsheet is available here.

Tire Crumb Characterization Study: Field Collection and Laboratory Standard Operating Procedures (SOPs) Report

Standard operating procedures (SOPs) for sample and data collection and laboratory analysis of tire crumb rubber used by the U.S. Environmental Protection Agency (EPA) were compiled in an EPA report *Tire Crumb Characterization Study: Field Collection and Laboratory Standard Operating Procedures (SOPs)*. The purpose of this document is to publish the various methodologies used by EPA for the sample collection and characterization research activities associated with examining tire crumb rubber material used as infill for synthetic turf fields. While the research-level SOPs detailed in this report are specific to this research effort and have not been validated, they are being made available to provide additional information about the procedures used in this research, and to inform other researchers seeking to collect similar samples and perform multimodal characterization of tire crumb rubber material or similar matrices.

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Synthetic Turf Field Recycled Tire Crumb Rubber Research Under the Federal Research Action Plan - Final Report Part 1 - Volume 1 (PDF)

(334 pp, 13 MB, July 25, 2019 , EPA/600/R-19/051.1)

Synthetic Turf Field Recycled Tire Crumb Rubber Research Under the Federal Research Action Plan - Final Report Part 1 - Volume 2 (PDF)

(456 pp, 22 MB, July 25, 2019, EPA/600/R-19/051.1)

Spreadsheet with Bacterial Non-targeted Analysis Results.xlsx

(176 K, July 25, 2019)

Spreadsheet with Toxicity Reference Information.xlsx

(254 K, July 25, 2019)

Tire Crumb Characterization Study - Field Collection and Laboratory Standard Operating Procedures (SOPs) (PDF)

(508 pp, 8 MB, July 25, 2019, EPA/600/R-18/238)

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