INTRODUCTION

• Recycled tire crumb rubber (TCR) is often used as infill material in synthetic turf playing fields.
• Concerns have been raised about the safety of this material. U.S. research studies examining crumb rubber constituents have been relatively small, restricted to a few fields or material sources, and measured a limited number of constituents.
• A multi-agency Federal Research Action Plan on Recycled Tire Crumb Rubber Used on Playing Fields and Playgrounds was developed to investigate key factors that could impact the environment and human health. https://www.epa.gov/chemical-hazard-research/federal-research-recycled-tire-crumb-playing-fields
• Tire crumb rubber samples from tire recycling plants will provide information on constituents in unused material while samples collected from outdoor and indoor synthetic turf fields will provide a better understanding of constituents potentially available for exposure.

GENERAL APPROACH

• TCR samples were collected from nine tire recycling plants and 40 synthetic turf fields across the U.S.
• Characterization includes direct measurement of metal and SVOC constituents of tire crumb rubber, studies of VOC and SVOC emissions and emissions rates from tire crumb rubber, and bioaccessibility testing of metal and SVOC constituents.
• A combination of targeted quantification analysis, suspect screening, and non-targeted approaches are applied for VOCs and SVOCs.
• Physical characteristics such as particle size are examined to better understand potential exposures.

SAMPLE COLLECTION

<table>
<thead>
<tr>
<th>Tire Recycling Plants</th>
<th>Number of Fields</th>
<th>Total Number of Fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Midwest</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Midwest</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Total Number of Fields</td>
<td>25</td>
<td>50</td>
</tr>
</tbody>
</table>

Figure 1. Numbers and Types of Recycling Plants and Field for Tire Crumb Rubber Sample Collection

SAMPLE PREPARATION

Chemical and Physical Analysis Methods for Characterizing Tire Crumb Rubber Used in Synthetic Turf Fields
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ACKNOWLEDGEMENTS

• The authors gratefully acknowledge the contributions of the following individuals:...