

EPA Report Finds No Significant Difference in Chemical and Metal Exposure Between Natural Fields and Synthetic Fields with Recycled Crumb Rubber



In April 2024, the Environment Protection Agency (EPA), in collaboration with the Centers for Disease Control and Prevention (CDC), the Agency for Toxic Substances and Disease (ATSDR) and Consumer Product Safety Commission (CPSC), released the largest tire crumb rubber study ever conducted in the United States.

The study explored chemical exposure levels associated with synthetic turf fields that use recycled tire crumb rubber, which is the same as other types of recycled rubber. The EPA found low chemical levels in athletes who regularly use synthetic turf fields. The report also found no significant differences in PAH (polycyclic aromatic hydrocarbon) levels between turf and natural field users, and no significant increase in metal exposure levels for turf field users.

Study Overview

The EPA conducted a study to assess the safety of synthetic turf fields using recycled tire crumb rubber. Researchers conducted biomonitoring on participants who regularly used synthetic or natural grass fields to determine chemical and metal exposure levels. Methods included questionnaires, air samples, urine samples, and blood samples.



Main Findings

The study found that the exposure to chemicals from recycled tire crumb rubber was minimal and comparable to natural grass fields. Key findings include:

Urinary PAH Concentrations

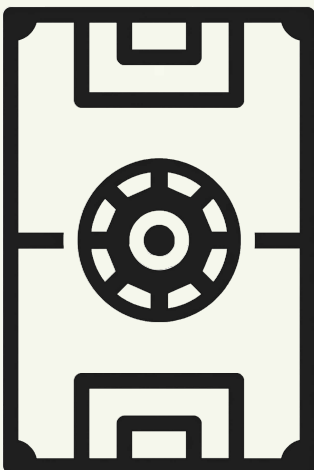
- There were **no significant differences** in pre- and post-activity urinary PAH concentrations between users of synthetic turf and natural grass fields.¹

Metal Concentrations

- There was **no significant increase in metal concentrations** in blood samples after field use,² and concentrations were similar to those in the general population.³ Exposures to zinc and lead are expected to be **lower than background environments**.⁴

Other Key Takeaways

- **Finds low chemical exposure levels:** Chemicals present in recycled tire crumb rubber are at low levels.
- **Determines turf comparable to natural grass:** The exposure levels for synthetic turf users are similar to those for natural grass field users.
- **Controlled for background chemicals:** Some detected chemicals originate from other environmental sources, not solely from the crumb rubber, indicating broader environmental exposure rather than field-specific risks. Metals (including lead)⁵ and PAHs are also often found in natural grass fields.⁶
- **Supports findings from previous studies:** The findings are consistent with earlier studies by the [Netherlands National Institute for Health and Environment](#), [National Toxicology Program](#), and [European Chemicals Agency](#).



Endnotes



1. *Synthetic Turf Field Recycled Tire Crumb Rubber Research Under the Federal Research Action Plan: Final Report Part 2 – Exposure Characterization (Volume 2)*. EPA/600/R-24/020.2 (2024): 1, 21, 30.
2. *Synthetic Turf Field Recycled Tire Crumb Rubber Research Under the Federal Research Action Plan: Final Report Part 2 – Exposure Characterization (Volume 1)*. EPA/600/R 24/020.1 (2024): 122.
3. Ibid: xxix.
4. Ibid: xxviii.
5. Ibid: 100.
6. Ibid, Volume 2: 31.