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Information related to Per and Polyfluoroalkyl Substances (PFAS) Related to Artificial Turf

Executive Summary

Scientists are still learning about the health effects for exposures to different PFAS. Scientific studies have shown that PFAS in the environment may be linked to harmful health effects in humans. Concerns have been raised by the public and policy makers about the potential health risks from playing on synthetic turf fields in the U.S. containing tire crumb rubber. The possibility that artificial turf fields may contain PFAS is an area of active research. Studies to date have not shown an elevated health risk from playing on fields with tire crumb rubber, but the existing studies have been limited. To date, research on this topic is limited to a single, peer-reviewed study which showed that the presence of fluorinated substances in artificial turf fields does not pose an exposure concern to users of the fields. Further research is needed to determine what effects the use of turf fields have on human health.

1. At this time, scientists are still learning about the health effects of exposures to mixtures of different PFAS.
2. While it is difficult to show that substances directly cause health conditions in humans, scientific studies have shown that exposure to some PFAS in the environment **may be linked** to harmful health effects in humans and animals. More research is needed to better understand the health effects of PFAS exposure (Agency for Toxic Substances and Disease Registry [ASTDR], 2022).

One way to learn about whether PFAS will harm people is to do studies on lab animals.

- Most animal studies have tested doses of PFAS that are higher than the doses people experience from environmental exposure.
- These animal studies have found that PFAS can cause damage to the liver and the immune system.
- PFAS have also caused low birth weight, birth defects, delayed development, and newborn deaths in lab animals.

Humans and animals react differently to PFAS, and not all effects observed in animals may occur in humans. Scientists have ways to estimate how the exposure and effects in animals compare to what they would be in humans.

Additional research may change our understanding of the relationship between exposure to PFAS and human health effects (ATSDR, 2022).

3. Concerns have been raised by the public about the potential health risks from playing on synthetic turf fields in the U.S. containing tire crumb rubber. Studies to date have not shown an elevated health risk from playing on fields with tire crumb rubber, but the existing studies have been limited. (U.S. Environmental Protection Agency, 2022).
4. The possibility that artificial turf fields may contain PFAS is an area of active research. Concerns were first raised in 2019 after a number of media outlets reported that testing by nonprofit organizations had

identified low levels of PFAS in several artificial turf fields located in Massachusetts. However, because the PFAS concentrations detected in the Massachusetts fields are within the range of “background” PFAS concentrations detected in soils (collected from pristine remote areas) and in surface waters (collected near urban areas) as a result of atmospheric deposition, it is impossible to determine whether the PFAS originated from the turf or from other sources such as atmospheric deposition. (Connecticut Department of Public Health, [CTDPH],2023).

5. To date, research on this topic is limited to a single, peer-reviewed study. Results of this study, conducted by researchers from public health departments and universities in Sweden and Canada, indicate that the fluorinated substances (fluoropolymers) measured in the artificial turf fields appear to be bound to the components of the artificial turf and do not leach into the environment. Further, they are not the type of fluorinated chemicals that transform in the environment into harmful PFAS. For all these reasons, this peer-reviewed study shows that the presence of fluorinated substances in artificial turf fields does not pose an exposure concern to users of the fields (Lauria et. al. 2022).

6. In regards to CT DPH’s support of the use of Artificial Turf Fields, the CT DPH does not endorse any consumer product, including Artificial Turf. The CT DPH provides information on its web page to summarize currently available information and offer suggestions for ways to minimize potential exposure to crumb rubber chemicals. (CTDPH, 2023).

References

Agency for Toxic Substances and Disease Registry (2022) What are PFAS?

<https://www.atsdr.cdc.gov/pfas/health-effects/overview.html>

Agency for Toxic Substances and Disease Registry (2022) What are the health effects of PFAS?

<https://www.atsdr.cdc.gov/pfas/health-effects/index.html>

Connecticut Department of Public Health (2023.) Artificial Turf Fields;

<https://portal.ct.gov/dph/Environmental-Health/Environmental-and-Occupational-Health-Assessment/Artificial-Turf-Fields>

United States Environmental Protection Agency (2022) Federal Research on Recycled Tire Crumb Use on Playing Fields; <https://www.epa.gov/chemical-research/federal-research-recycled-tire-crumb-used-playing-fields>