

Submission to the NSW EPA's 'NSW Plastics: Next Steps' Program

From: Natural Turf Alliance Incorporated

Comprehensive Assessment of the Environmental Impact of Synthetic Sports Fields in New South Wales

1. Introduction

This submission addresses a critical environmental issue in New South Wales (NSW) – the impact of microplastics from synthetic sports fields. As part of the 'NSW Plastics: Next Steps' initiative, this document aims to provide a comprehensive analysis, backed by research and expert opinions, to guide policy decisions.

The design and use of synthetic turf on community sporting fields and any environmental impacts are assessed as part of the planning process under the Environmental Planning and Assessment Act 1979

Local councils are usually the consent authority for approving developments under the Environmental Planning and Assessment Act 1979. Councils are also the appropriate regulatory authority under the Protection of the Environment Operations Act 1997 for pollution issues caused by the installation or use of synthetic turf.

According to EPA NSW's website:

The potential impact of microplastics and the chemical components of synthetic turf on NSW waterways and soils is not well understood. Work is needed to understand potential risks, to determine appropriate mitigation measures, and if needed, develop guidance material for local councils and those responsible for community sports fields.

2. Background

Synthetic sports fields have become commonplace in NSW due to their durability and low maintenance requirements. Based on information from the NSW Chief Scientist's report on synthetic turf, as of the report's publication, there are 181 synthetic turf sports fields in New South Wales. This number represents a dramatic increase from just 24 fields in 2014 and 30 in 2018.

Expert advice to the Chief Scientists' report estimated that a synthetic turf field without structures to reduce infill loss will wash tens to hundreds of kilograms of infill per year into stormwater systems or waterways. The amount of turf fibres lost from a synthetic turf field is likely to be in the 100s of kilograms per year, with the amount increasing for fields near the end of life or under poor maintenance. International studies have also found a large difference between the amount of microplastics shed from different types of synthetic turf.

This significant growth in the number of synthetic sports fields underscores the urgency of addressing the environmental and health concerns associated with these installations. Key findings from AUSMAP research reveal the extent of microplastic pollution attributed to these fields.

3. Problems and Challenges

The environmental impact of microplastics from synthetic sports fields is multifaceted and significant:

Infill Loss and Waterway Contamination: Synthetic fields without adequate containment measures can lose significant amounts of rubber crumb infill. The NSW Chief Scientist's Report highlights that a single field can contribute tens to hundreds of kilograms of infill to stormwater systems annually. These particles, often small enough to bypass filtration systems, end up in waterways, contributing to widespread aquatic microplastic pollution.

Fibre Shedding and Wildlife Impact: The shedding of synthetic turf fibres, especially in older or poorly maintained fields, is substantial. The loss can amount to hundreds of kilograms per year, increasing the burden of microplastics in the environment. Wildlife, both terrestrial and aquatic, can ingest these fibres, leading to ingestion and entanglement, and potentially causing harmful physical and toxicological effects.

Long-Term Ecological Consequences: The breakdown of these microplastics leads to secondary microplastics that are more challenging to manage and have unknown long-term ecological consequences. They can absorb and concentrate toxins from the environment, posing further risks to wildlife and, potentially, human health through the food chain.

Variability in Microplastic Shedding: Different types of synthetic turf vary significantly in the amount of microplastics they shed. This variability poses a challenge in regulating and managing these materials, as not all synthetic fields are created equal in their environmental impact.

End of Life Issues: Given the use of synthetic turf in public and private settings is increasing across NSW, a staged plan across government and non-government settings and sectors is required to develop appropriate standards and end of life solutions. At present, there is no policy or process in place to deal with end-of-life recycling or disposal of synthetic turf, which will become more significant over time.

4. Detailed Findings and Data

The issue of microplastic pollution from synthetic sports fields is underpinned by significant data and findings:

Infill Loss Quantification: The recent NSW Chief Scientist's Report on Synthetic Turf indicates that a typical synthetic turf field can lose tens to hundreds of kilograms of infill annually. This infill, primarily composed of rubber crumb, is a significant source of microplastic pollution. For example, a study examining a standard football field (approx. 7,140 square meters) found that up to 5% of the infill could be lost each year, equating to hundreds of kilograms of microplastic particles.

Fiber Shedding Analysis: Research has shown that the shedding of turf fibres is a critical issue, especially as fields age. An estimated hundreds of kilograms of fibres can be lost per field per year, with the rate of loss increasing dramatically for fields over five years old or those under poor maintenance regimes. These fibres contribute to the growing burden of microplastic pollution in terrestrial and aquatic environments.

Toxicological Risks: Studies have identified various toxicological risks associated with the microplastic and other components of synthetic turf. For instance, some rubber crumb infills have been found to contain heavy metals and hazardous chemicals (PFAS), which can leach into the environment, posing risks to soil and water quality, as well as to human and animal health.

Waterway Contamination: Investigations into stormwater runoff from fields reveal that microplastics from synthetic turf readily enter water systems. For example, a study in a metropolitan area showed a significant increase in microplastic concentration in water bodies adjacent to synthetic sports fields, highlighting the direct pathway of these pollutants into aquatic ecosystems (AUSMAP).

5. Proposed Solutions

Addressing the issues associated with synthetic sports fields requires a multi-faceted approach:

Moratorium and Review of Standards: A moratorium on the development of new synthetic turf fields will provide a necessary pause, allowing for a thorough review of current standards and practices. This period can be used to develop more stringent guidelines that focus on reducing microplastic pollution.

Advanced Containment Measures: For existing fields, advanced containment measures should be implemented. These could include physical barriers to prevent infill escape, improved drainage systems to capture microplastics, and regular maintenance to reduce fibre shedding.

Research into Alternatives and Impacts: Significant investment in research is needed to understand the full scope of environmental impacts and to develop alternative approaches to management of sports fields, including utilising recent advances in natural turf maintenance. . This research should also focus on the lifecycle of synthetic turf, exploring options that are more sustainable and have a reduced environmental footprint.

Public Awareness and Education: Public awareness campaigns can play a crucial role in mitigating the impact of synthetic fields. Educating the public, especially field managers, landscapers and users (including sports clubs), about the importance of proper maintenance of natural turf fields and the environmental risks associated with synthetic fields can lead to more responsible use.

Policy and Regulatory Frameworks: Developing comprehensive policy and regulatory frameworks is crucial. These should include standards for manufacturing, installation, maintenance, and end-of-life management of synthetic turf fields. Policies should also encourage the use of environmentally friendly alternatives where possible.

Council Guidelines for Synthetic Fields: Following the NSW Chief Scientist's Report on Synthetic fields, the NSW Department of Planning has apparently developed guidelines for the development and management of synthetic fields. These guidelines need to be published urgently as synthetic field development currently continues without any guidelines or regulations in NSW.

Collaboration with Industry and Stakeholders: Collaborating with manufacturers, environmental groups, and local communities is essential. These collaborations can lead to innovations in field design, development of eco-friendly materials, and effective strategies for end-of-life management.

End of life management: When installing synthetic turf, there should be strict rules to ensure it's used and disposed of properly, so it doesn't harm the environment or become a waste problem. Manufacturers should be responsible for safe recycling or disposal of synthetic turf. This approach is about being responsible with synthetic turf, thinking about the future, and fitting it into the state's broader environmental goals.

6. Conclusion

The environmental impact of microplastics from synthetic sports fields is a pressing issue that requires immediate attention and action.

The EPA and NSW government have the opportunity to lead in developing and implementing policies that could significantly reduce microplastic pollution and set a precedent for environmental stewardship.

7. References

[NSW EPA's 'NSW Plastics: Next Steps' Program](#)

[AUSMAP Research on Synthetic Turf Rubber Crumb](#)

[NSW Chief Scientist's Report on Synthetic Turf](#)

[International studies on synthetic turf and microplastic pollution](#)

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