NTA FACTSHEET #2

NATURAL TURF ALLIANCE

Supported by Lawn Solutions Australia

MICROPLASTICS & PFAS: HIDDEN POLLUTION FROM SYNTHETIC TURF

Why microplastic and chemical pollution matters for communities and councils.

Few issues illustrate the hidden costs of synthetic turf more starkly than its contribution to microplastic pollution and PFAS contamination. While synthetic turf is often promoted as a durable, low-maintenance solution, the environmental and health legacy it leaves behind is now impossible to ignore. Every field laid represents a long-term source of microplastics and toxic "forever chemicals" that persist in our soil, waterways, and even our bodies.

By contrast, natural turf is regenerative. It doesn't shed plastic, it doesn't leach PFAS, and it actively filters out pollutants from stormwater. For the councils and communities already grappling with environmental liabilities, the choice between natural and synthetic is not just about playability, it's about the future health of ecosystems and people.

Evidence and Analysis

Microplastic Shedding

Studies show that synthetic turf fields release 1–5 tonnes of microplastics every year through fibre breakdown and crumb infill migration. These particles wash into surrounding drains, creeks, and waterways, where they persist for decades. Once embedded in soils or aquatic systems, they disrupt natural processes, reduce fertility, and pose risks to wildlife.

Stormwater Impacts

Monitoring by AUSMAP (Australian Microplastic Assessment Project) found over 100,000 microplastic particles captured in a single stormwater pit trap downstream from a synthetic field. Floods and heavy rainfall events magnify this problem, carrying infill and plastic fragments far beyond the field boundary.

PFAS Contamination

Synthetic grass fibres and rubber crumb infill frequently contain per- and polyfluoroalkyl substances (PFAS), known as "forever chemicals" because they do not break down in the environment. These compounds bioaccumulate in living organisms and have been linked to increased cholesterol, immune dysfunction, cancer, and developmental issues.

Global Context

Internationally, the tide is turning. The European Union has committed to phasing out PFAS in artificial surfaces. Several US states have introduced restrictions or bans on synthetic turf containing PFAS. In Australia, a partial PFAS ban comes into effect in July 2025, but it does not yet extend to turf fibres or crumb infill.

CASE STUDY

Tempe Recreation Reserve, Sydney

In 2022, heavy rainfall at Tempe Recreation Reserve in Sydney caused cork infill to migrate off a synthetic field into surrounding waterways. Monitoring revealed declining oxygen levels and widespread microplastic contamination downstream. What was intended as an "eco-friendly" infill became an environmental liability.

This case highlighted two truths: first, that even so-called sustainable infills are unstable under Australian weather conditions; and second, that once pollutants escape, councils are left with the clean-up bill and reputational damage.

In a northern Sydney council location, stormwater trap sampling found up to 70,000 rubber crumb particles and over 50,000 synthetic grass particles in a single trap, clearly illustrating the scale of microplastic loss from synthetic turf.

AUSMAP's ongoing monitoring has consistently recorded synthetic turf materials in urban aquatic environments across NSW, highlighting widespread contamination concerns. Local councils, including Ku-ring-gai Council, are now partnering with AUSMAP and the EPA on projects to mitigate microplastic contamination from synthetic sports fields.

Impacts and Implications

Health and Safety

PFAS exposure has been linked to long-term health conditions including immune suppression, thyroid disease, and cancer. Children are particularly vulnerable due to higher absorption rates and greater contact with surfaces during play. Microplastics can act as carriers for other toxic chemicals, amplifying risks throughout the food chain.

Social Equity

Communities expect public spaces to be safe. When synthetic turf introduces contamination risks, casual users, families, pet owners, and walkers may be effectively excluded. Natural turf, by contrast, improves soil and water health, providing safe and inclusive spaces for recreation.

Financial Costs

- **Councils** face significant costs for stormwater filtration, site remediation, and long-term waste management.
- **Insurance** premiums may increase where synthetic turf poses contamination risks.
- **Legal** challenges from residents or environmental groups add further liability.

Environmental Degradation

Soil Microplastics alter soil structure, reducing its capacity to absorb water and nutrients.

Waterways Plastic particles persist for decades, harming aquatic species and reducing water quality.

Biodiversity Plastic fragments degrade habitats and introduce toxins into ecosystems already under stress.

> Many synthetic sports fields in NSW feature long synthetic blades supported by infill… Currently, there is insufficient information and a lack of standards about the materials, and chemical composition of synthetic turf.
>
> **NSW Chief Scientist & Engineer, 2022**

Key Takeaways

Natural Turf is Pollution-Free

It doesn't generate microplastics or leach PFAS.

Synthetic Turf is an Ongoing Contaminant

Every field releases tonnes of plastics annually.

Councils Face Liability

From stormwater remediation to legal action, synthetic turf creates hidden long-term costs.

Policy Alignment

Councils aiming for sustainability must reject PFAS-containing materials and plan for clean, natural alternatives.

Recommendation

Councils and decision-makers should practice the following:

1. **Ban PFAS-based turf products** in procurement policies.

2. **Require microplastic risk assessments** as part of any sportsfield planning.

3. **Invest in best-practice natural turf**, which improves soil and water quality while supporting high carrying capacity.

4. **Advocate for stronger state and federal regulation** of synthetic turf imports containing PFAS.

References

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4. Independent review into the design, use and impacts of synthetic turf in public open spaces. October 2022. NSW Chief Scientist and Engineer.

5. Mounting evidence for problematic synthetic turf rubber crumb. AUSMAP Sep 2023 https://www.ausmap.org/post/synthetic-turf-rubber-crumb-nsw-government-action

Visit the NTA Document library: **https://naturalturfalliance.org/document-library/**

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This Fact Sheet has been developed with the support of Lawn Solutions Australia, the nation's largest network of turf specialists.
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Natural Turf Alliance Inc (NTA) is a Registered Association consisting of community groups committed to preserving and developing natural grass open spaces including sporting fields.
Our core focus is engaging with local councils and sporting groups in relation to best practice natural turf construction and maintenance.