PITCH IN

KIMO

Fidra

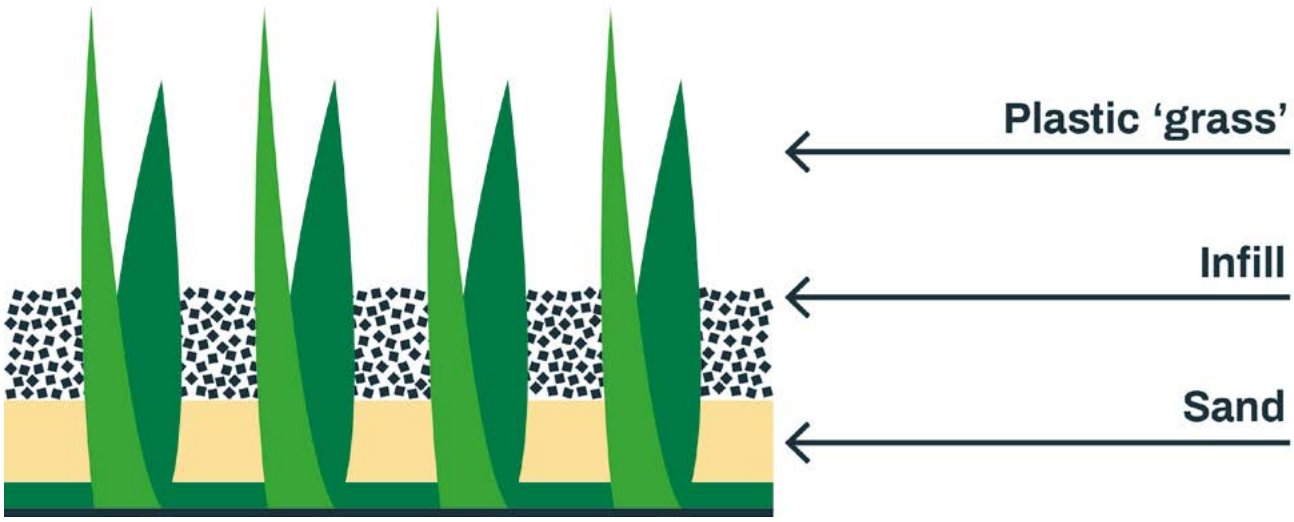
Microplastic Pollution from Artificial Pitches:

A briefing for Local Authorities and other Pitch Owners in Scotland

Did you know that 3G pitches using loose microplastic infill are a source of plastic pollution?

Nearly 300 full-size and up to 1000 mini-pitches across Scotland use 3G artificial turf[1]. Popular as a durable and reliable all-year round playing surface, their potential environmental impacts have only recently been recognised.

Microplastic from 3G turf



Many artificial sports pitches use third generation (3G) technology, which means fine granules are added as a **performance infill** to make a more comfortable playing surface. Although alternative options are available, the vast majority[2] of pitches in Scotland still use microplastic as infill. The most common type is 'rubber crumb' from old vehicle tyres: a synthetic microplastic known as Styrene Butadiene Rubber (SBR).

1 Hann et al. 2019 Understanding Microplastics in the Scottish Environment

2 According to FIFA (2017), across Europe, 95% of performance infill used is microplastic, with only 3% using organic infill.

Over time these loose granules can easily escape the pitch by a variety of pathways:

- Removed through pitch and site maintenance such as drag brushing, leaf-blowing or snow clearance.
- Washed off the pitch by heavy rainfall or flooding.
- Dispersed off pitch edges during play and use.
- Carried off by players in shoes, socks and kit.
- Lost during installation, storage, refilling or on removal and disposal of the pitch.

Recent estimates suggest between 443 and 1,772 tonnes of microplastic is lost each year from artificial pitches in Scotland alone, around half of which ends up in the environment[3]. Across Europe emissions add up to 16,000 tonnes per year, over four times greater than the pollution caused by microbeads in cosmetics (already banned in the UK)[4].

Once off the pitch microplastic can build up in nearby soils, in local water courses or washes down the drain with the potential to end up at sea.

Microplastic does not break down but can break up into smaller fragments. It can be mistaken for food by wildlife and has been found in the stomachs of fish in rivers near 3G pitches[5]. Rubber crumb has also been shown to leach harmful chemicals and toxic heavy metals, contaminating surround soils and water, impacting soil health and the wildlife that lives there[6].

Solutions

Simple actions at each stage of a pitches life can be taken by decision makers, designers, pitch owners, pitch users and maintenance teams to help stop microplastic pollution.

Fidra and KIMO have created comprehensive best practice guidelines to help those in charge of pitches reduce microplastic loss. For the latest information on microplastic-free alternatives, and case studies showing what communities are doing to tackle microplastic loss visit www.fidra.org.uk/pitch-in

Important steps to consider include:

Pitch choice	The best way to avoid microplastic pollution is not to use plastic in the first place. We would always encourage communities to consider natural pitches as an option, particularly in areas where greenspace is limited. Where an artificial pitch is chosen, performance infill doesn't have to be microplastic either - a range of natural, biodegradable alternatives are available and used effectively across Europe, as are infill-free options. These options could work for your local pitch.
Pitch Design	Where microplastic is still used, pollution can be reduced through physical barriers around pitch edges and filters in drains. This is best included within initial design although simple measures can also be retrofitted if a pitch has already been built.
Installation and Disposal	Microplastic must be kept in mind during installation and removal of pitches. Spills should be avoided where possible and quickly dealt with where they do occur.
Maintenance and Use	Where microplastic is still used, changes to pitch maintenance routines and practices can be simple but important to stop further microplastic loss. Raising awareness with users can help to reduce losses to drains at home.

3 Hann et al. 2019 Understanding Microplastics in the Scottish Environment
4 Estimated by European Chemicals Agency (ECHA) 2020.
5 From field study conducted in Norway, as referenced within Sundt et al. 2016, p.95
6 Pochron et al. (2017), "The Response of Earthworms (Eisenia Fetida) and Soil Microbes to the Crumb Rubber Material Used in Artificial Turf Fields."

TAKE ACTION: Follow our Pitch In Code of Conduct to be part of the microplastics solution

Owners and managers of 3G pitches, including Local Authorities, have the responsibility and opportunity to recognise the risk of microplastic loss and make decisions which benefit both the user and the environment. Start here:

1. Use our Cleaner Pitch Guidelines to help identify where you can make an impact.
2. Follow our Code of Conduct to make sure you are doing all you can to reduce the risk of microplastics.

The "Pitch in" Code of Conduct

Avoid microplastic where possible:

- [ ] When planning a new pitch, consider opting for natural grass pitches, organic infills, or non-infill pitches to avoid loose microplastic.
- [ ] Where a pitch is due to be refurbished, consider whether organic infills or non-infill alternatives fulfil the requirements for your pitch.

Where microplastic is still used, take all necessary precautions to stop its loss to the environment.

- [ ] Incorporate mitigation measures in any new pitches built by specifying requirements during the procurement process and sharing Pitch-In best practice guidelines with pitch designers and planners.
- [ ] Incorporate microplastic mitigation during the next refurbishment cycle of any existing 3G artificial pitches within your local authority area, by specifying requirements during the procurement process.
- [ ] Promote Pitch-In best practice guidelines for pitch maintenance with contractors and discuss options to adapt procedures to reduce risk of loss.
- [ ] Implement temporary reduction measures where feasible. As a minimum each pitch should be fitted with portable brushing stations for pitch users and filters in nearby drains.
- [ ] Promote the Pitch In community toolkit and supply information notices on all managed pitches and changing rooms to raise awareness with users. For example, you can use our Pitch In Poster, available online.

Take advantage of our resources to help you to tackle microplastic loss:

- Cleaner Pitch Guidelines
- Information about alternative infills
- Posters
- Case studies

Visit www.fidra.org.uk/artificial-pitches/industry-action/ to find all these resources and more.

Why take action?

Here are some examples of why it's a great time to commit to tackling this problem for local authorities:

- **Sustainable Procurement Act**[7]: Procurement should consider social, environmental, and economic wellbeing impacts of the product or service. Microplastic pollution should be tackled as a part of these environmental considerations, which specifically include waste management and biodiversity protection.
- **The Scottish Government** has investigated microplastic from pitches through two recently commissioned studies[8]. Broader regional restrictions on microplastic are also being considered[9]. Taking action will ensure you stay one step ahead of any regulation.
- **2020/21 are Scotland's Years of Coasts and Waters**[10] - Why not make this the time you take action to tackle microplastic pollution from pitches to protect your local water courses and soils?

Who are we?

Fidra is working for a healthy environment and sustainable societies through our projects to reduce plastic and chemical pollution.

KIMO is an international network of local governments, working together for healthy seas, clean beaches, and thriving coastal communities.

Get in touch:

Please tell us you're taking part! We're always looking for more case studies.

@Fidratweets

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7 (Procurement Reform (Scotland) Act 2014)
8 Resource Futures 2019 ; Hann et al. 2020
9 E.g. the European Chemicals Agency is proposing a broad restriction on microplastics which includes infill from pitches.
10 https://www.visitscotland.org/news/2020/themed-years-update---year-of-coasts-and-waters