

**Background:** The European Chemicals Agency (ECHA) proposed a ban on microplastics, which specifically targets artificial turf infill made from recycled tires (SBR) as the “largest single source” of microplastic pollution in Europe. ECHA stated that through the artificial turf pitches up to 16 thousand tonnes of infill material is released per year, which eventually ends up in waterways as a microplastic pollutant [1]. This figure is contested [2] and definitive science on infill loss and the environmental impacts from the various types of artificial pitches is lacking. The ECHA ban will affect more than 50,000 football pitches covering an area over 110 million sq. meters in Europe<sup>1</sup> [3].

There are two options for the future of artificial turf in Europe:

## 1. Define containment measures to reduce the amount of microplastic infill that escapes the pitch.

Conventional assumptions and data suggest about 3% of infill is lost per year [3, 4] amounting to 3000-5000 kg of infill needing to be replaced per full size pitch per year [5, 6, 7].

These assumptions are contested. As shown in the figure to the right, an alternative interpretation suggests only 600-1200 kg of infill needing replacement per year and the majority of this is due to compaction [2]. Compaction implies the infill remains on the pitch and does not pollute the environment.

## 2. Find an alternative to SBR infill that is economically viable, healthy, safe for the players, and reduces environmental impacts.

So far, all tested alternatives are either expensive, unsafe for the players, or environmentally problematic in their own way [8, 9]. An environmental impact assessment, summarized in the figure to the right shows the lower overall environmental impact of artificial turf compared to conventional grass per hour of use. This analysis assumes full usage of each pitch type, with much more intensive usage possible for artificial pitches, but it does not consider the benefits from using recycled tires (SBR) for infill and instead assumes new plastics are used [10].

**Conclusion:** The ECHA ban on SBR infill will likely have far-reaching consequences for football clubs and players across Europe. A better understanding of the environmental impacts of SBR infill and a rigorous assessment of alternative infills is needed before this ban takes effect. The

Energieinstitut at JKU Linz will test a promising alternative in cooperation with the Norwegian Football Federation (NFF) in the “SDG Strikers” ERASMUS+ EU funded project. The study will test woodchip infill and will include piloting the product on Norwegian pitches and an environmental assessment.

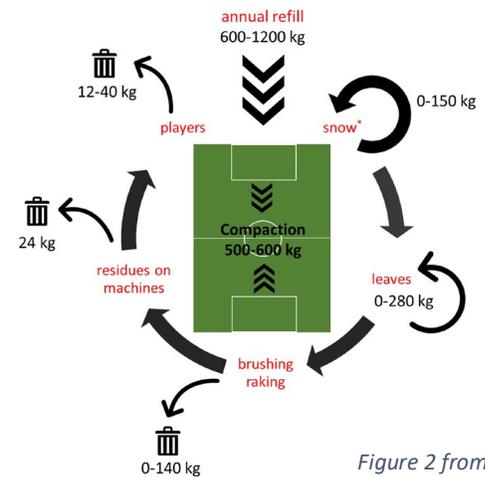


Figure 2 from [2]

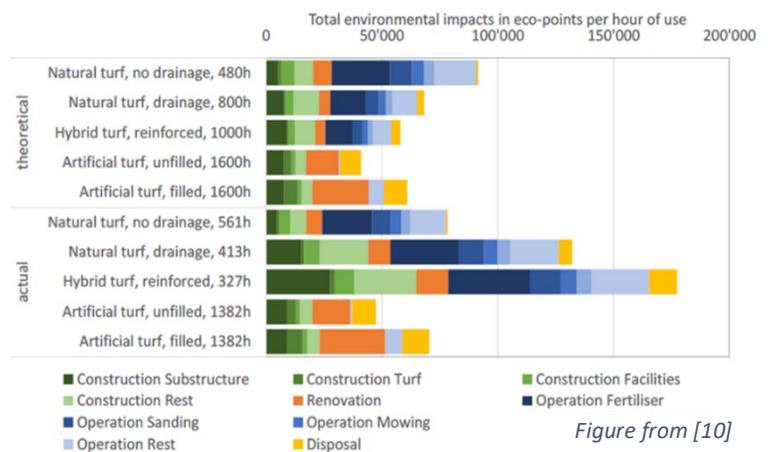


Figure from [10]

<sup>1</sup> EU-27 + UK + Norway + Switzerland, figures based on a 2012 survey of pitches.

[1] ECHA 2019, <https://echa.europa.eu/documents/10162/05bd96e3-b969-0a7c-c6d0-441182893720>; [2] Verschoor et al (2021), DOI: <https://doi.org/10.1186/s12302-021-00459-1>; [3] Hann et al. (2018), [https://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/pdf/microplastics\\_final\\_report\\_v5\\_full.pdf](https://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/pdf/microplastics_final_report_v5_full.pdf); [4] Kole et al. 2017, DOI: 10.3390/ijerph14101265; [5] Kjær 2013, <http://regnvandskvalitet-abc.teknologisk.dk/media/1037/miljo-og-sundhedsskadelige-stoffer-i-draevand-fra-kunstraesbaner.pdf>; [6] Lassen et al. 2015, [https://orbit.dtu.dk/files/118180844/Lassen\\_n\\_et\\_al.\\_2015.pdf](https://orbit.dtu.dk/files/118180844/Lassen_n_et_al._2015.pdf) OR ISBN: 978-87-93352-80-3; [7] Magnusson et al. 2016, [https://www.ccb.se/documents/ML\\_backgrund/SE\\_Study\\_MP\\_sourc es.pdf](https://www.ccb.se/documents/ML_backgrund/SE_Study_MP_sourc es.pdf); [8] Bauer et al. 2017, <https://www.miljodirektoratet.no/globalassets/publikasjoner/m955/m955.pdf>; [9] Magnusson et al. 2020, ISBN: 978-91-7790-627-8; [10] Itten et al. 2021