

European Risk Assessment Study on Synthetic Turf Rubber Infill (ERASSTRI)

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European Synthetic
Turf Organisation

www.theesto.com
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Concerns with crumb rubber used as infill material in synthetic turf pitches

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2014 – 2017 : **Civil society concerns** over use of recycled rubber in infill for synthetic turf pitches raised

2016 : **European Commission request** to ECHA to assess whether the presence of certain substances in recycled rubber granules used as infill in synthetic turf could pose a risk to human health.

- NL's report - 2016 - found no-risk under current PAH's levels, but it sees a need to regulate further
- ECHA report - 2017- found no-risk under current PAH's levels, but it sees a need to regulate further
- ETRMA contributed to ECHA's report with sharing data of rubber crumb uses, composition and market.

Sept 2017: ECHA- NL's authorities propose a restriction on PAH

2017 – Similar work launched at the USA

ZEMBLA Kort: Tot op de bodem

13 OKTOBER 2017 - LEESTIJD: 1 MINUUT

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Bekijk hier de samenvatting van de ZEMBLA-uitzending 'Tot op de bodem':



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Related Topics:

Feder
Recycled Tire Crumb Used
on Playing Fields

Subject: Request to the European Chemicals Agency



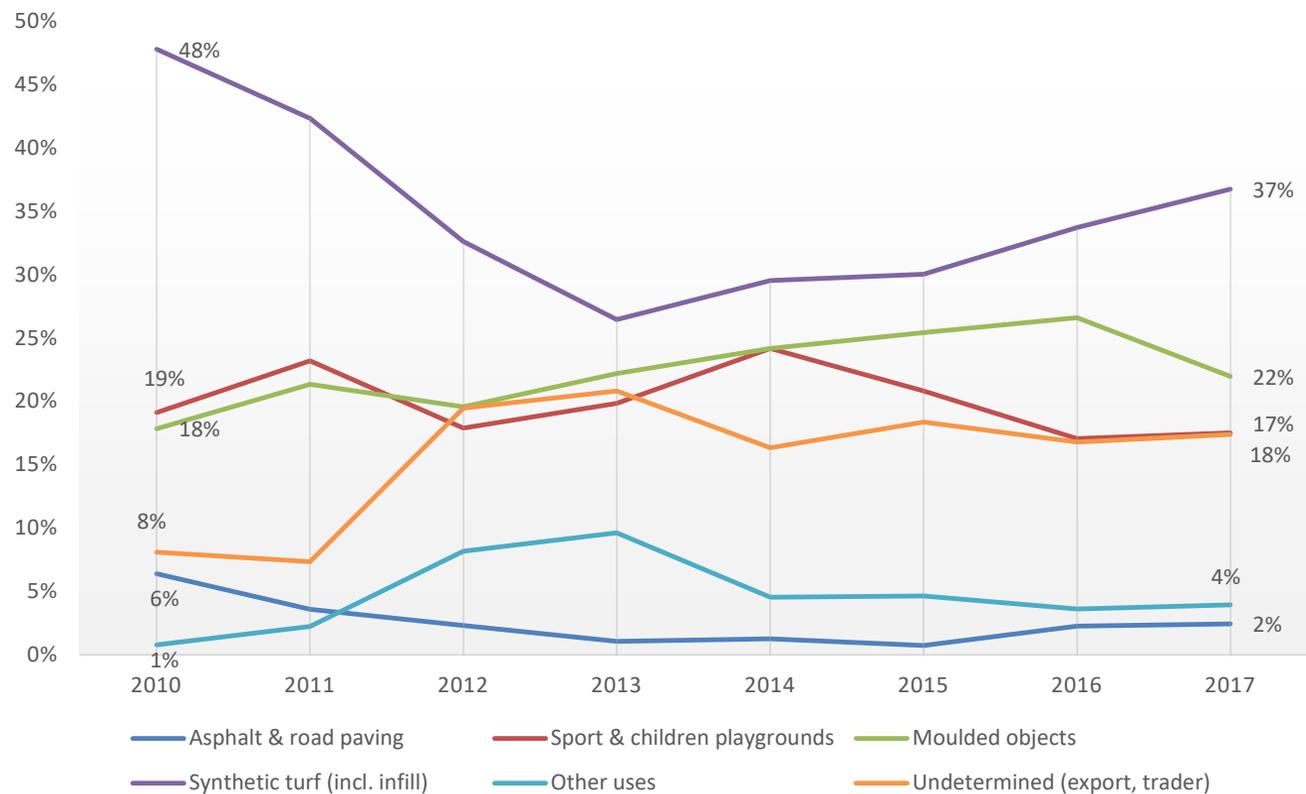
EUROPEAN COMMISSION
Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
Consumer, Environmental and Health Technologies
Directorate-General for Environment
Green Economy
Directors

Brussels,
GROW/D1/GL/ds
grow.ddg1.d.1(2016)3061412

NOTE FOR THE ATTENTION OF
MR G. DANCET, EXECUTIVE DIRECTOR ECHA

ELT Granulation Market Trends

Evolution of ELT granulation markets (4 to 5 ELTcos)



	2010	2011	2012	2013	2014	2015	2016	2017
	μ	μ	μ	μ	μ	μ	μ	μ
Sport & children playgrounds+ Synthetic turf (incl. infill)	67%	66%	50%	46%	54%	51%	51%	54%

Annex XV restriction proposal submitted by The Netherlands in August 2018 – Hereunder the restriction text to be included in Annex XVII of the REACH regulation

<p>Polycyclic-aromatic hydrocarbons (PAH)</p> <ul style="list-style-type: none">(a) Benzo[a]pyrene (BaP) CAS No 50-32-8(b) Benzo[e]pyrene (BeP) CAS No 192-97-2(c) Benzo[a]anthracene (BaA) CAS No 56-55-3(d) Chrysen (CHR) CAS No 218-01-9(e) Benzo[b]fluoranthene (BbFA) CAS No 205-99-2(f) Benzo[j]fluoranthene (BjFA) CAS No 205-82-3(g) Benzo[k]fluoranthene (BkFA) CAS No 207-08-9(h) Dibenzo[a,h]anthracene (DBAhA) CAS No 53-70-3	<ol style="list-style-type: none">1. Granules or mulches shall not be placed on the market for use as infill material in synthetic turf pitches or in loose form on playgrounds and in sport applications if these materials contain more than 17 mg/kg (0.0017 % by weight of this component) of the sum of the listed PAHs.2. The restriction shall apply 12 months after its entry into force
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Annex XV restriction proposal - Key points of the Socio Economic and Human Health assessment

Two major restriction options were analyzed, one proposing a 17 ppm threshold and other 6.5 ppm threshold for the sum of the 8 REACH PAH

- Restriction option 1 (RO1) - 17 mg/kg (0.0017 %) of the sum of REACH-8 PAHs. The specific limit value reflects the 95th percentile of the REACH-8 PAH sum concentration in measurements taken from synthetic turf pitches. Cancer risk below of $2,6 \times 10^{-6}$ considered "**virtually negligible**"
- Restriction option 2 (RO2) - 6.5 mg/kg (0.00065 %) of the sum of REACH-8 PAHs. The specific limit value reflects the REACH-8 PAHs sum concentration below which the lifetime excess cancer risk of all individuals exposed is below 1×10^{-6} considered **no-risk**

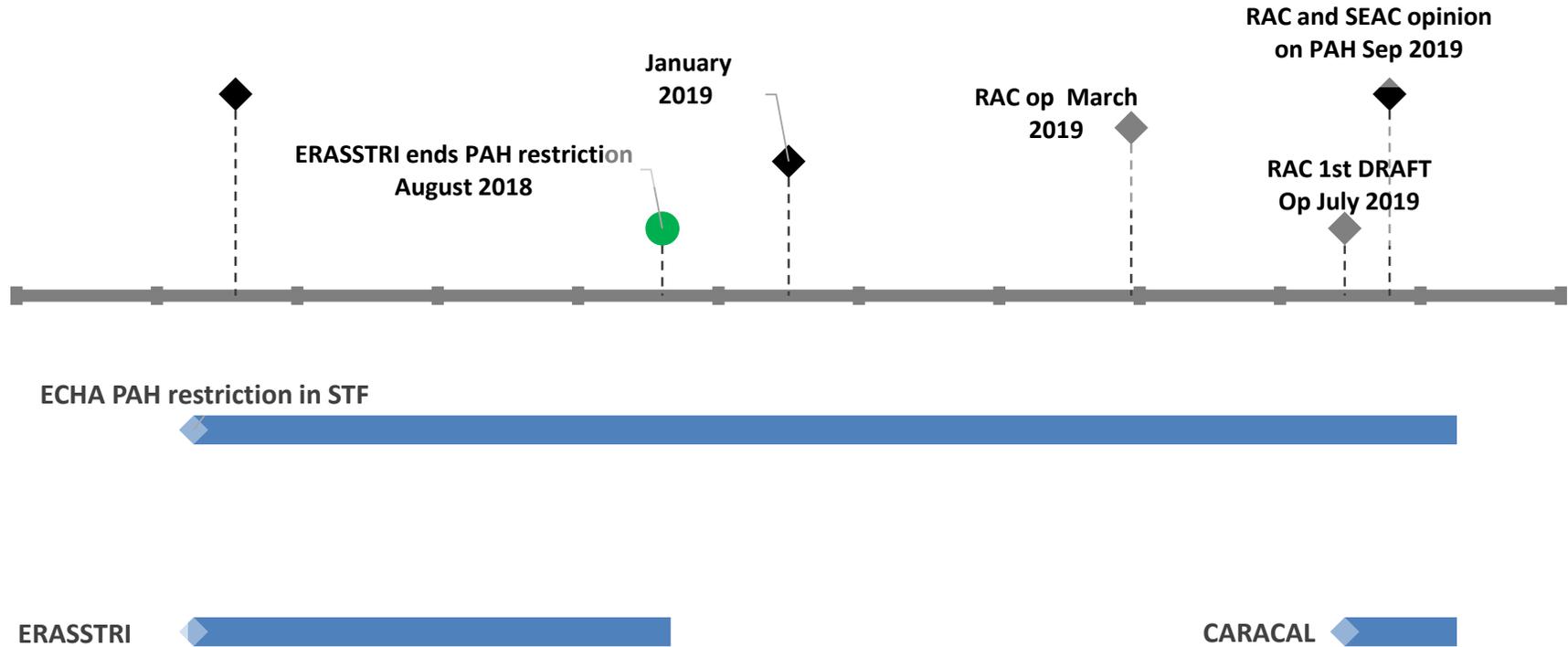
Authorities finally choose and propose 17 ppm options based on:

- (very) High PAH concentrations and consequent risk levels are avoided for the population that comes into contact with granules or mulches in sport and play applications.
- The residual cancer risk from PAH exposure will be at an acceptable level.
- Societal concern related to human health effects may be reduced as high PAH concentrations are reduced in a 10 year period as high PAH concentrations are avoided.
- No major additional administrative burden on public authorities expected in terms of cost for implementation, monitoring, inspection and enforcement.
- Relatively limited societal costs that are assessed to be affordable

ECHA has opened a public consultation with targeted questions in order to help The Netherlands

1. Do you have information on the PAH content of infill material not derived from ELT?
2. Do you have information on analytical methods and/or costs of testing for PAHs in ELT granules and/or infill material not derived from ELT?
3. Do you have any information on the current practices and measures used to control worker exposure during the installation and maintenance of synthetic turf pitches, playgrounds, or in other applications?
4. Do you have any information on the typical duration and frequency of exposure of professional football players and/or other athletes to synthetic turf pitches/sporting areas containing rubber granules in your Member States?
5. Section 1.5.3 of the report contains information on the measured PAH concentrations from 1 234 ELT infill samples mainly taken in the Netherlands. Do you consider the presented measurement data to be representative of the EU as a whole? If you have any additional information on measured PAH concentrations from infill used in synthetic turf pitches that has not yet been taken into consideration, please submit.
6. **Apart from the proposed restriction described above, the report also details a second restriction option (RO2). RO2 would envisage a lower concentration limit of 6.5 mg/kg. What are the impacts (positive and negative) on your industry/organisation (manufacturer, distributor, importer, sports club/community owning the field) of a 6.5 mg**

Timeline: EU COM to restrict substances present in crumb rubber used as synthetic turf infill



ERASSTRI - European Risk Assessment Study on Synthetic Turf Rubber

Key figures

8

Partners: Recyclers (16) –Installers (3) – ELT Mgt Cos (8) – ETRMA (28 partners) ESTO – (72 partners)

Overall budget: 850k €

Scientific Advisory Board: Prof NOWAK (U.Munich)
Prof DERUDI (Politecnico Milano)
Prof BORDADO (IST,Lisboa)

Research Team: FoBIG, Eurofins and Labosport

Study signed 1 March 2017; 2 year duration;

ERASSTRI - European Risk Assessment Study on Synthetic Turf Rubber Infill

Objective:

understanding the content of PAH's and other substances in rubber crumb

- The project will assess the exposure and potential risks to human health associated with the use of ELT (End-of-Life Tyres) derived rubber used in synthetic turf fields. It will last for two years, 2017-2019.
- The deliverables include an extended literature review on the content of substances in ELT rubber, setting up and testing representative samples of ELT derived rubber from sports fields and recycling facilities, and a discussion on the potential risk associated.
- The study will deliver the **most representative characterization of ELT derived rubber in Europe.**
- The project results shall be published, peer reviewed in relevant scientific Journal

* *CRIP Crumb Rubber Industry Platform*

Samples from recycling facilities in Europe



Country	Number of uncoated samples	Number of coated samples
Austria	1	-
Belgium	1	-
Denmark	1	-
France	2	-
Germany	2	1
Greece	1	-
Italy	2	1
Netherlands	2	-
Poland	2	-
Portugal	3	1
Romania	1	-
Spain	4	1
Sweden	1	-
United Kingdom	2	-

Samples from sports fields in Europe



No.	Infill material	Indoor/ outdoor	Country	Sports
1	coated	outdoor	Italy	football
2	coated	outdoor	Italy	football
3	coated	outdoor	Italy	football
4	coated	outdoor	Italy	football
5	coated	outdoor	Italy	football
6	coated	outdoor	Italy	football
7	coated	outdoor	United Kingdom	rugby
8	coated	outdoor	France	football
9	coated	outdoor	France	football
10	coated	outdoor	Switzerland	football
11	non-ELT	outdoor	United Kingdom	unknown
12	non-ELT	outdoor	Poland	football
13	non-ELT	outdoor	Poland	football
14	non-ELT	outdoor	Belgium	rugby
15	non-ELT	outdoor	Belgium	rugby
16	non-ELT	outdoor	Switzerland	football
17	non-ELT	outdoor	France	football and rugby
18	non-ELT	outdoor	Switzerland	football
19	non-ELT	outdoor	France	football
20	non-ELT	outdoor	France	football

Samples from sports fields in Europe cont'



No.	Infill material	Indoor/ outdoor	Country	Sports
21	uncoated	outdoor	Italy	football
22	uncoated	outdoor	United Kingdom	diverse
23	uncoated	outdoor	United Kingdom	School based sports
24	uncoated	outdoor	United Kingdom	diverse
25	uncoated	outdoor	United Kingdom	unknown
26	uncoated	outdoor	United Kingdom	unknown
27	uncoated	outdoor	United Kingdom	unknown
28	uncoated	outdoor	United Kingdom	diverse
29	uncoated	outdoor	United Kingdom	Largely Football, other grass based activities
30	uncoated	outdoor	United Kingdom	Largely Football, other grass based activities
31	uncoated	outdoor	United Kingdom	School based sports
32	uncoated	outdoor	United Kingdom	all sports
33	uncoated	outdoor	France	football
34	uncoated	outdoor	Spain	football
35	uncoated	outdoor	France	football
36	uncoated	outdoor	Spain	football
37	uncoated	outdoor	France	football

Samples from sports fields in Europe cont'



No.	Infill material	Indoor/ outdoor	Country	Sports
38	uncoated	outdoor	Spain	football and rugby
39	uncoated	outdoor	Spain	rugby
40	uncoated	outdoor	France	rugby
41	uncoated	outdoor	Portugal	football
42	uncoated	outdoor	France	football
43	uncoated	outdoor	Germany	football
44	uncoated	outdoor	Denmark	football
45	uncoated	outdoor	Denmark	football
46	uncoated	outdoor	Germany	football
47	uncoated	outdoor	Portugal	football
48	uncoated	outdoor	Portugal	football
49	uncoated	outdoor	Spain	football
50	uncoated	outdoor	Denmark	football
51	uncoated	outdoor	Denmark	football
52	uncoated	outdoor	Italy	football
53	uncoated	outdoor	Belgium	football
54	uncoated	outdoor	Belgium	football
55	uncoated	outdoor	Portugal	football
56	uncoated	outdoor	Switzerland	football
57	uncoated	outdoor	United Kingdom	School based sports
58	uncoated	outdoor	Belgium	football
59	uncoated	outdoor	France	football
60	uncoated	outdoor	France	Football
61	uncoated	indoor	United Kingdom	unknown
62	uncoated	indoor	United Kingdom	football
63	uncoated	indoor	Germany	football
64	uncoated	indoor	Portugal	football
65	uncoated	indoor	Portugal	football
66	uncoated	indoor	Portugal	football
67	uncoated	indoor	Portugal	football

- Labosport 7 sub-samples collected on 7 locations of a field.
- One composite sample is generated from the 7 sub-samples.
- Two parts of the composite sample are sent to: EUROFINS, the appointed laboratory for substance characterization and for specific analysis.
- The third part is used internally by labosport for identification analysis, it includes:
 - Particle size distribution (EN 933-1),
 - Shape (EN 14955),
 - Color (Visual),
 - Visual observation,
 - Density (EN 1097-3),
 - TGA (FIFA TEST METHOD 11),



Example sub-samples collection in sport fields collection

Methodology used to collect sport field samples

 **CEN/TC 217/WG 6 N 164**

CEN/TC 217/WG 6
Outdoor synthetic surfaces

Email of secretary:
Secretariat: BSI (United Kingdom)

TG 1 - Method for the sampling of Sports Field Performance Infill - Draft 22-07-2018

Document type: Working draft

Date of document: 2018-07-30

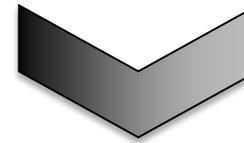
Expected action: INFO

Background:

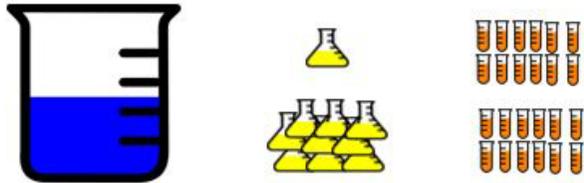
Committee URL: <https://cen.iso.org/livelink/livelink/open/centc217wg6>

Standardised procedures for sampling from:

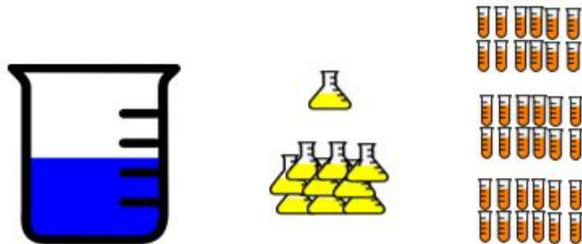
1. Production
2. From big bags
3. From small bags
4. From fields



ECHA- REACH

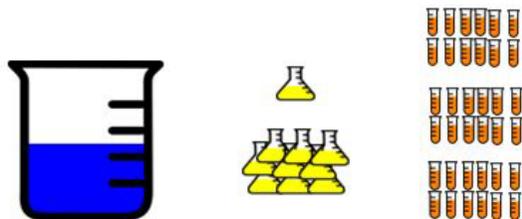


Sweat PAH and Phthalates: According of the BFR: 20% Ethanol. Extraction time 4h/37°C with dynamic conditions: orbital shaker. Removal of test specimen, addition of internal standard and clean-up through SPE-cartridge. Evaporation of solvent under nitrogen stream. Dissolution of residue in toluene and analysis by GC/MS

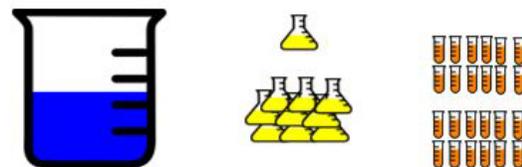


Sweat other parameters: DIN EN 1811:2015-10

Phase 4 bioaccessibility: overview test and samples gastric and saliva bio elution

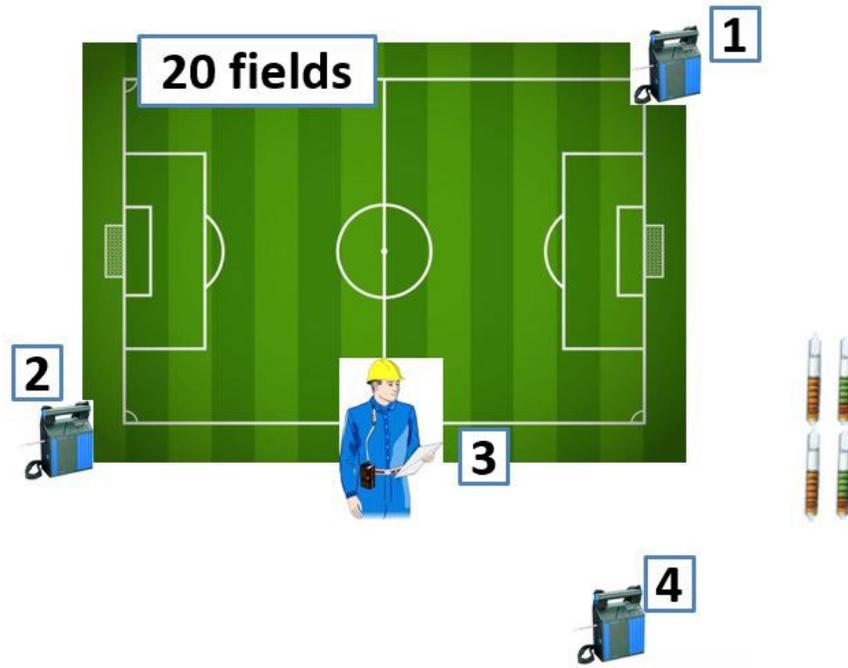


simulant gastric: DIN EN 71-3:2013+A1:2014



64 LFGB B 82.92.-3 / DIN 53160
Teil 1 = Colourfastness of articles
for common use with artificial
saliva

Biomonitoring: overview of air monitoring



2 workers,
2 days,
2 sites



Dermal: overview dermal monitoring

Step 1



Step 2



Step 3



2 teams
10 persons aprox
2 samples per person

Next Steps: Building the exposure scenarios

Exposure groups. For exposure estimation and risk assessment it is crucial to define which exposure groups should be considered. Exposure groups under consideration are

- Children different ages
- Goalkeeper starting training at age 7
- Adults, professional players
- Workers installing the fields
- Maintenance workers, taking care for the artificial turf fields on a regular basis

The input parameters for estimating exposure will be either generated from the results of the air monitoring, wipe sampling, bioaccessibility tests, or used as suggested by RIVM or ECHA (ECHA, 2017; RIVM, 2017).

The report will specify, justify and discuss the selection of input values.

ERASSTRI study phases and status

Deliverables - phase	Timeline	
Phase 1: Literature review and planning	Q1 2017	
Literature review	Q1 2017	
Substance selection	Q3 2017	
Sampling plans and questionnaires	Q3 2017	
Draft exposure scenarios (to be further developed)	Q2 2018	
Phase 2: Sampling and materials analysis	Q4 2017	
Sampling at ELT recyclers	Q4 2017	
Sampling at sports fields	Q4 2017	
Physico-chemical identification		
Phase 3: Weathering/ aging and chamber experiments	Q1 2018	
Phase 4: Bioaccessibility	Q2 2018	
Phase 5: On-site monitoring	Q3 2018	
Phase 6: Exposure and risk assessment	Q4 2018	
Toxicological hazard assessment (reference values)		
Exposure assessment, Risk characterisation and Publication		



Thank you !



European Synthetic
Turf Organisation