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Federal Office for the Environment FOEN

Air

> *Microplastics can become airborne by resuspension, sometimes in the form of particulate matter. However, microplastics account for only a small proportion of all particulate pollution.*
> *Particulate matter in the air is a complex mixture. It enters the environment directly via combustion processes (e.g. diesel engines, wood-fired heating systems) or the mechanical abrasion of tyres, brakes and road markings which is resuspended in the environment.*

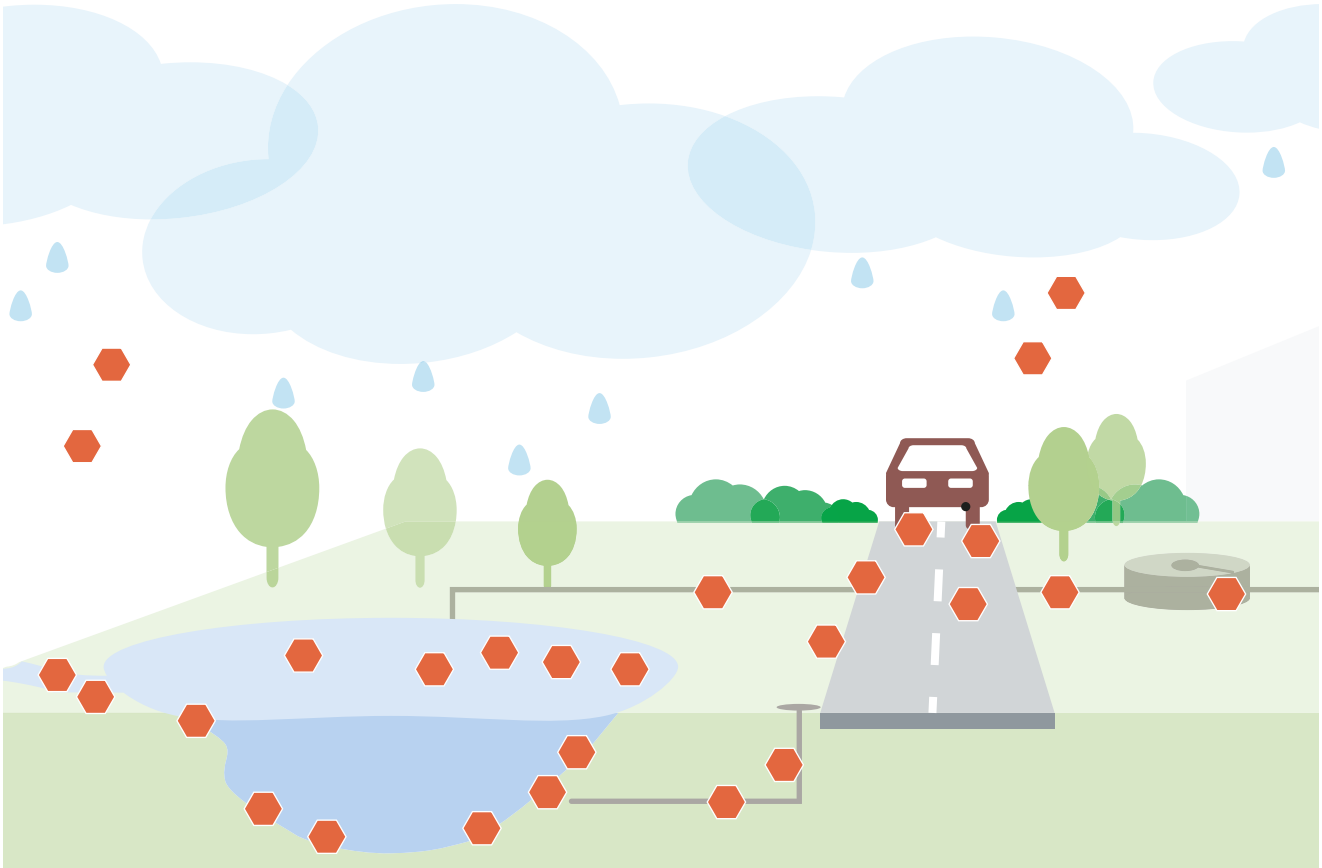
How plastics enter the air

The main source of airborne microplastics is road traffic. Tyres, brake pads and road markings are partially composed of plastics which abrade and become airborne through resuspension.

Pathways and behaviour of plastics in the air

Microplastics do not accumulate in the air as they do in water and soil. They are carried in the air over varying distances depending on the weight of the particles and wind

Important sources of plastics in the air



Graphic: FOEN/shutterstock

conditions. Larger particles are deposited in the immediate vicinity whereas smaller ones are dispersed over a wide area before ultimately entering the soil or watercourses. Microplastics can even reach remote areas in this way. Littered waste (macroplastics) can also be transported by air, so air carries both microplastics and macroplastics.

One example is tyre abrasion: according to a model calculation[1] just under three quarters passes into road embankments (the 5 metres adjacent to each side of the roadway), around 5% enters other soil and 20% is carried into surface waters. In the process, the tyre abrasion particles remain in the air for several days before being deposited onto soils or into watercourses *(see "Tyre abrasion" factsheet).*

Impact of microplastics in the air

Small airborne plastic particles are considered particulate matter. Particulate matter can be inhaled and high levels can be harmful to health. Depending on the particle size, particulate matter is designated as PM10 (inhalable) or PM2.5 (respirable). Particles with a diameter of less than 10 or less than 2.5 thousandths of a millimetre are classed as PM10 or PM2.5 respectively. According to our current knowledge, microplastics account for only a small part of particulate pollution.

The Swiss Federal Ordinance on Air Pollution Control sets limits for PM10 and PM2.5 and other air pollution indicators which must be complied with. Compliance with the immission limits should in general protect humans, animals, plants and soil from the harmful and onerous effects of air pollution.

Possible measures to reduce plastic pollution

Sources and pathways for airborne plastics	Measures to reduce input
Abrasion of brakes, tyres and road markings	· Use low-abrasion brake pads, tyres and road markings · Lightweight cars, correct tyre pressure, narrow tyres, regenerative braking · Drive smoothly (avoiding stop-and-go)
Resuspension	· Drive at lower speeds · Street cleaning, including waste water treatment · Treatment of contaminated road runoff

1 Press release Empa, 14.11.2019: Model calculation of tyre abrasion in Switzerland

Further information

- FOEN information for specialists on fine particles
- FOEN information for specialists on transport policy and spatial planning (in German, French and Italian)
- FOEN information for specialists on waste water treatment (in German, French and Italian)

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Link to PDF file:
www.bafu.admin.ch/plastics