



Study on microplasty draws wrong conclusions

Paints and coatings are not a significant source of microplastics in the environment. The recently published study of the Alfred-Wegener-Institute shows methodological shortcomings and is in contradiction to much more comprehensive studies on the origin of microplastics in the environment.

The issue of plastic waste in the environment is a pressing global issue. The main source of microplastics in the environment is the breaking down of plastic waste. Even though there is no scientific evidence that microplastics can pose a risk to humans and animals, plastic litter generally does not belong in the environment.

It is a well-known phenomenon that particles such as Sahara dust, volcanic ash or sulphur dioxide from coal-fired power plants are distributed by air over thousands of kilometers. It has also long been known that such substances are washed out by rain or snow and can therefore be found, for example, in snowy areas.

The study "White and wonderful? Microplastics prevail in snow from the Alps to the Arctic" ([link](#)) has now investigated the distribution of microplastics and, by evaluating a limited number of samples from the Arctic and from Bremen and Bavaria (both Germany), has put forward the thesis that paints and coatings – under the heading "varnish" – would be a main source of microplastics. Following a review of the study by experts, this thesis cannot be upheld.

The thesis is based on the assumption that all finds of polyacrylates, polyurethanes and alkyd resins could be summarized under the collective term "varnish". The author obviously refers to another current study by the Alfred Wegener Institute in which a method for the analysis of different plastics is presented (so-called FTIR spectroscopy, [link](#)). This study has shown that the waveform of polyacrylates, polyurethanes and alkyl resins is very similar and therefore cannot be distinguished with this method. For technical reasons, these three polymers are therefore listed as one group. In fact, however, polyacrylates and polyurethanes are used in many products and do not only refer to paints and varnishes.

For example, polyacrylates are used in cosmetics (e.g. hair gel), detergents, cleaning agents, as lubricants for skis and in medical technology (e.g. lenses and glasses). A well-known application is "plexiglass" (polymethyl methacrylate). In the textile sector, they are used for the consolidation of nonwovens, for textile flocking, as coatings for wax cloths and umbrellas and as impregnating agents for rainwear, shoes, etc.

Polyurethanes are also contained in many different products, e.g. in kitchen or household sponges, in shoes (e.g. rubber boots) or in cosmetic articles (e.g. make-

up, lipstick, nail varnish). Polyurethane foams are used in shipping (e.g. in fenders; rubbing strips on ships are also made of polyurethane), in the construction industry (e.g. as assembly foam and insulating materials) and they form mattresses, car seats and seating furniture. Polyurethanes are also found in hoses, floors, adhesives, skis, running tracks in stadiums and as microfoam for breathable membranes in rainwear.

Paints and varnishes contain polymeric binders, so that abrasion and weathering can lead to a limited discharge of plastic particles. However, experts assume that many of the particles listed under the collective term "varnish" are due to the degradation or mechanical abrasion of other products. Relevant and extensive studies (e.g. [Bertling 2018](#), [Eunomia 2018](#)) confirm this assessment and assume that paints and varnishes contribute a maximum of 2% to the formation of primary microplastics. Only a small part of the microplastic in the environment is primary microplastic, the vast majority of which is so-called secondary microplastic, which results from the decomposition of plastic waste.

The result of the study is also corrupted by the fact that only three significant samples out of a total of 22 show a comparatively high proportion of polymers collectively referred to as "varnish" (i.e. Ice floe 9, Bremen, Bavaria 3). On the one hand, these three "outliers" distort the picture because hardly any microplastic particles were found in most samples in the Arctic. The large differences in the findings on the ice floes indicate that either a single event or a contamination was the cause of the single sample with high findings or that simply the number of samples was too small to be statistically significant.

The paint and coatings industry takes the measured results of the current study seriously. The experts of the paint industry have been dealing with the topic of microplastics for a long time. The development of ever more durable and sustainable paints and coatings remains one of the most important goals.

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