



**CHEMTrust**

Protecting humans and wildlife  
from harmful chemicals

## Call for evidence response

### European Chemical Agency call for evidence on the use of intentionally added microplastic particles in products of any kind

#### Response from CHEM Trust

Submitted 11 May 2018

#### GENERAL COMMENTS

CHEM Trust has previously highlighted the increasing concerns about the use and presence of microplastic particles in the environment and advocated for urgent regulatory responses at national and EU level. It is obvious that the envisaged restriction for intentionally added microplastic particles is only a first step among many others that need to follow, but it is a very relevant one. The provided background document is a very useful compilation in support of the EU-wide restriction.

Microplastic particles have characteristic properties which are equivalent to those of vPvB substances, even leading to contamination of remote regions far away from exposure sources, as recently report from Artic Sea ice (I. Pelken et al: Arctic sea ice is an important temporal sink and means of transport for microplastic, and corresponding concerns about the harmful impacts, Nature Communications, volume 9, Article number: 1505 (2018) doi:10.1038/s41467-018-03825-5).

The background report concluded on Page 78 in section 4.3 "In view of these considerations, though some effects and therefore possible impacts (risks) to the aquatic environment are expected, it is not possible at this stage to derive specific thresholds or establish a dose (concentration) response relationship."

CHEM Trust therefore supports an approach that would treat microplastics as vPvB substances or PBT substances which requires emission reductions and minimisation. The uncertainties in the risk assessment are too high to be able to derive a reliable no-effect concentration (e.g. PNEC).

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More research will in any case be useful to further evaluate details about ecological or human health effects. However, this should not delay regulatory measures given the widespread exposure in combination with the fact that researchers have already found that microplastics can concentrate various polluting chemicals (like PCBs, PAHs and brominated flame retardant PDBEs), and that ingestion of these plastics by fish then leads to contamination of their tissues. Research on amphipods and microplastics contaminated with PDBEs has found similar results, with the amphipods eating the contaminated microplastics (for details see <http://www.chemtrust.org/wp-content/uploads/chemtrust-response-eac-microplastics-apr16.pdf>).

### For more background:

Frederic Gallo, Cristina Fossi, Roland Weber, David Santillo, Joao Sousa, Imogen Ingram, Angel Nadal and Dolores Romano. Marine litter plastics and microplastics and their toxic chemicals components: the need for urgent preventive measures. *Environmental Sciences Europe* December 2018, 30:13 <https://link.springer.com/article/10.1186/s12302-018-0139-z>:

Rios, L.M., Jones, P.R., Moore, C. and Narayan, U.V., 2010. Quantitation of persistent organic pollutants adsorbed on plastic debris from the Northern Pacific Gyre's "eastern garbage patch". *Journal of Environmental Monitoring*, 12(12), pp.2226-2236.  
<http://pubs.rsc.org/-/content/articlelanding/2010/em/c0em00239a/unauth#!divAbstract>

Ma, Y., Huang, A., Cao, S., Sun, F., Wang, L., Guo, H. and Ji, R., 2016. Effects of nanoplastics and microplastics on toxicity, bioaccumulation, and environmental fate of phenanthrene in fresh water. *Environmental pollution*, 219, pp.166-173.  
<https://www.sciencedirect.com/science/article/pii/S0269749116318838>

Koelmans, A.A., 2015. Modeling the role of microplastics in bioaccumulation of organic chemicals to marine aquatic organisms. A critical review. In *Marine anthropogenic litter* (pp. 309-324). Springer, Cham.  
[https://link.springer.com/chapter/10.1007/978-3-319-16510-3\\_11](https://link.springer.com/chapter/10.1007/978-3-319-16510-3_11)

## SPECIFIC INFORMATION REQUESTS

**1: Our working definition. Our objective is to adopt an appropriate, unambiguous, definition of intentionally added microplastic particles that adequately reflects the potential risks to the environment and human health posed by these materials. We would welcome views on how intentionally added microplastics should be defined.**

In CHEM Trust's view the restriction on intentionally added microplastic particles should be as comprehensive as possible.

We therefore support the fact that the proposed ECHA definition does not introduce a lower size limit. This is very relevant, e.g. for the appropriate coverage of nanoparticles and their translocation processes as described in the background report. (see *'Intentionally added microplastics'* page 77: "The process (translocation) appears to be size-dependent, whereby microplastics of size <10µm may have the potential to translocate whereas larger particles may not."). Moreover, we would like to bring to your attention a recent study by Mattsson et al. 2017 that demonstrates that "plastic nanoparticles are transferred up through a food chain, enter the brain of the top consumer and affect its behaviour, thereby severely disrupting the function of natural ecosystems".

Mattsson, K., Johnson, E.V., Malmendal, A., Linse, S., Hansson, L.A. and Cedervall, T., 2017. Brain damage and behavioural disorders in fish induced by plastic nanoparticles delivered through the food chain. *Scientific Reports*, 7(1), p.11452.

<https://www.nature.com/articles/s41598-017-10813-0>

<http://www.chemtrust.org>

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In addition, CHEM Trust would like to propose extending the definition proposed by ECHA to read

**“Any polymer-containing solid or semi-solid particle having a size of 5mm or less in at least one external dimension.... or any other polymer-containing substances capable of giving rise to such particles once released to the environment.”**

This would ensure that the definition also covers substances that can become a source of microparticles independent of the kind of polymer, aggregation state and solubility. One important aspect to include in the considerations are liquid polymers which are frequently used in cosmetic products, see Greenpeace Germany report from 2017.

<https://www.greenpeace.de/sites/www.greenpeace.de/files/publications/s02031-greenpeace-report-plastik-kosmetik-oekotox-21070522.pdf>

Moreover, it would be an important complementary measure to finally include registration requirements for polymers in REACH. This would help close knowledge gaps regarding hazard and exposure data of polymers in general and also increase the information in the supply chain. See e.g. ‘Technical assistance related to the review of REACH with regard to the registration requirements on polymer’(2015).

<http://ec.europa.eu/environment/chemicals/reach/pdf/FINAL%20REPORT%20POLYMER%20SI671025.pdf>

## **2: The specific uses of intentionally added microplastics in products, specifically the types of products they are intentionally added to and the following additional information:**

We have noticed that the uses of glitters as mentioned in the background material/report refer only to cosmetics, toilet cleaners and personal care products. We recommend to include glitters used in the context of arts and crafts in the list in order to cover all uses. Glitters have already been found in sludge in a recent report Norwegian Institute for Water Research (of microplastics 1.7%) (Lusher et al 2017).

Lusher, A.L., Hurley, R., Vogelsang, C., Nizzetto, L. and Olsen, M., 2017. Mapping microplastics in sludge. Norwegian Institute for Water Research.

<http://www.miljodirektoratet.no/no/Publikasjoner/2018/April-2018/Mapping-microplastics-in-sludge/>

## **3: The technical function provided by the microplastic particles in products.**

## **4: Potential alternatives to the use of microplastic particles in products.**

**5: Information on other socio-economic impacts on society of a possible restriction in terms of costs and benefits to any affected actors, e.g. producers, professionals, consumers, or any other relevant actors (such as the producers of alternatives). The information could also include key economic parameters such as turnover of the concerned sector(s), the number of people employed, current share of products containing microplastics, etc.**

As a general comment we would like to recommend that considerations about the necessity and essentiality of the use of the product for society will be included. Is the product and its use needed? Are alternative products needed?

**6: Available analytical methods for detecting and characterising microplastic particles in products.**

We would like to bring to your attention the recent publication by Erni-Cassola et al. 2017 about a new protocol to detect lower size microplastics in the range of 1 mm to 20 µm. Erni-Cassola, G., Gibson, M.I., Thompson, R.C. and Christie-Oleza, J.A., 2017. Lost, but Found with Nile Red: A Novel Method for Detecting and Quantifying Small Microplastics (1 mm to 20 µm) in Environmental Samples. Environmental science & technology, 51(23), pp.13641-13648. <https://pubs.acs.org/doi/abs/10.1021/acs.est.7b04512>

**Under additional information: upload our papers to previous CHEM Trust submission about microplastics (only space for 1):**

CHEM Trust response to UK House of Commons Environmental Audit Committee inquiry on the environmental impact of microplastics, April 2016  
<http://www.chemtrust.org/wp-content/uploads/chemtrust-response-eac-microplastics-apr16.pdf>