

Cynulliad Cenedlaethol Cymru | National Assembly for Wales  
Y Pwyllgor Newid Hinsawdd, Amgylchedd a Materion Gwledig | Climate  
Change, Environment and Rural Affairs Committee  
Ymchwiliad Microblastigau | Microplastic Inquiry  
Ymateb gan : Dŵr Cymru  
Evidence from : Dŵr Cymru

1. Thank you for inviting Dŵr Cymru Welsh Water to submit evidence to the important inquiry into microplastics being undertaken by the National Assembly's Climate Change, Environment and Rural Affairs Committee.
2. These comments are from Dŵr Cymru Welsh Water, the statutory water and sewerage undertaker that supplies over three million people in Wales and some adjoining parts of England. We are owned by Glas Cymru, a single purpose, not-for-shareholder company. We provide essential public services to our customers by supplying their drinking water and then carrying away and dealing with their wastewater. In this way we make a major contribution to public health and to the protection of the Welsh environment. Our services are also essential to sustainable economic development in Wales.
3. Our answers to the four questions posed by the Committee are below.

**Question 1 - To what extent are microplastics, including synthetic microfibers, a problem within Wales' aquatic environment? How does this impact on environmental and human health?**

4. The accumulating body of academic research seems to suggest that microplastics may have become ubiquitous in the aquatic environment. The presence of microplastics in the marine environment is well documented in popular media, there is less evidence on the presence and quantity of microplastics in the freshwater environment.
5. With regard to the aquatic environment of Wales the best data we are aware of is contained within a recent paper from Cardiff University (<https://orca.cf.ac.uk/113345/8/Windsor%20et%20al%20TOTEN%20Microplastics.pdf>) which assessed microplastic ingestion by riverine macroinvertebrates in South Wales and observed that microplastics were identified in approximately 50% of macroinvertebrate samples; that ingestion of microplastics was observed in all taxa, across all sites, and that there was no difference in microplastic burden observed downstream of sewage treatment works.
6. With regard to human health: We understand that the World Health Organisation (WHO) is to launch a review into the potential health risks of plastic in drinking

water, assessing the latest research into the spread and impact of microplastics. WHO research is generally very authoritative, so its review is an important step forward.

7. The UK water industry has commissioned its research arm, UKWIR, to undertake research into the presence or risks arising from nanoparticles and microplastics in our processes. This is described in more detail below in our answer to question 3.
8. In February 2018, the European Commission announced a proposal to update the EU's Drinking Water Directive and has published an initial draft, which is available here. [https://eur-lex.europa.eu/resource.html?uri=cellar:8c5065b2-074f-11e8-b8f5-01aa75ed71a1.0016.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:8c5065b2-074f-11e8-b8f5-01aa75ed71a1.0016.02/DOC_1&format=PDF) . It usually takes several years of negotiation and redrafting before a proposed Directive is formally adopted, at which point it becomes an obligation on Member States. Assuming that an updated Directive is eventually adopted, the UK will have left the EU by that time. However, it is interesting to note that the Commission's proposal includes references to microplastics, including the need for further research, demonstrating the increasing international recognition that this is an area warranting greater understanding of the scale of the problem and its implications.

#### **Question 2 - What are the main sources of microplastic pollution, including microfibers?**

9. The most comprehensive study that we are aware of is "*Investigating Options for Reducing Releases in the Aquatic Environment of Microplastics Emitted by Products*" published in February 2018. It was prepared for the European Commission by ICF in association with Eunomia and partners, and focuses on microplastics that are created throughout the life cycle of a product from wear and tear.
10. The report concluded that automotive tyres, loss of pre-production plastic pellets, road markings and the washing of synthetic clothing are the largest contributors of microplastics to the aquatic environment in Europe. The report may be accessed here: <http://www.eunomia.co.uk/reports-tools/investigating-options-for-reducing-releases-in-the-aquatic-environment-of-microplastics-emitted-by-products/>
11. To our knowledge, there is little reliable data on the proportion of microplastics in the environment arising from the abrasion of larger (macro) plastics such as marine litter.

#### **Question 3 - How comprehensive is our knowledge about the scale of microplastic pollution and its effects? What should the research priorities be?**

12. The UK water industry wants to develop a better understanding of the occurrence and types of plastics in its processes. Largely at the instigation of Dŵr Cymru, the water sector has commissioned its research arm, UKWIR, to undertake a major research project in this area.

13. The project, entitled "*Sink to River - River to Tap - A review of Potential Risks from Nano-particles and Microplastics*", began in April. It is designed to give the water industry a clearer understanding of any presence or risks arising from nanoparticles and microplastics.
14. The project will assess the quantity and type (and hence potential source) of microplastics in - treated wastewater effluent; discharges from the sewerage system; drinking water leaving water treatment works (should any be found); sludges arising from water treatment; and treated sewage sludge (biosolids).
15. The project will also help to confirm the best analytical methods to assess the type, the size and the quantity of microplastics throughout the whole water and sewerage system. There is a fundamental challenge for the research community to develop and define analytical techniques to quantify and enumerate microplastics.
16. In addition, Exeter University, in conjunction with UKWIR as industrial collaborator, are offering a four year fully funded PhD opportunity on microplastics in wastewater which will look at the complexities involved in the microplastics quantification, characterisation and toxicity potential assessment and then explore the effectiveness of available treatments.
17. Subject to approval by UKWIR Board, and taking on board the findings from the current project, there will be further research on microplastics starting in 2019.
18. More research is needed to understand the proportion of microplastics arising from macro-plastic abrasion in the environment.

**Question 4 - What is currently being done to minimise the release of microplastics into the environment? What more can be done, and by whom, to address this issue within Wales?**

19. It is Dŵr Cymru's view that the only way to reduce the problem of plastics, including microplastics, entering the aquatic environment is by tackling the problem at source. Dŵr Cymru therefore very much welcomed the Welsh Government's ban that came into force at the end of June 2018 on the manufacture or supply of personal care products plastic microbeads in 'rinse off' personal care products. The Welsh Government's long-established plastic bag levy was also very far-sighted.
20. We believe that, as a general policy, the use of non-biodegradable products - including plastics - in nonessential products should be discouraged, particularly if they are likely to find their way into the aquatic environment and there are already environmentally-friendly alternative materials. Priority for action should be given to products where alternatives already exist.
21. Cotton buds are a good example. Their plastic stems blight many beaches (see <https://www.cottonbudproject.org.uk/news/item/44-mcs-gbbc-report-2016.html>).

Paper is a well-established, biodegradable alternative material for cotton buds and they are already stocked by many retailers. We understand that the Scottish Government and Defra are proposing legislation to ban plastic cotton buds and we would welcome a similar move here in Wales.

22. Although plastic items should not be disposed of into the sewer, many items are unfortunately flushed down the toilet. Our wastewater treatment processes and screens catch most plastics of a certain size: for example, our treatment processes catch most items of over 6mm in two dimensions and current estimates within the ICF report mentioned above are that 80% to 95% of plastic microfibrils are retained within the treatment process.
23. However, most sewage treatment processes rely on settling out solids: materials that are more buoyant may pass through the treatment process and enter the aquatic environment. There are no waste water treatment processes specifically designed to capture plastic microbeads, so waste water treatment is currently not a viable, reliable intervention. Nor is there a nationally agreed methodology for measuring microplastics (or plastics more generally) before and/or after treatment.
24. In terms of items that should not be disposed of down the drain, the water industry is having to cope with increasing numbers of wet wipes and other products which contain plastics being flushed into our sewers. Many wet wipes contain plastic fibres and, because they are often used to cleanse cosmetics, they are also a vehicle for the transmission of cosmetics microbeads into the sewer. Wet wipes are the cause many sewer blockages, especially when combined with fats and grease also illegally put into the sewer to form “fatbergs” (there are around 2,000 sewer blockages every month in Wales).
25. Through our “Let’s Stop the Block” campaign, Dŵr Cymru tries to educate our customers about the problems caused by what we call sewer misuse, such as sewer blockages and, in turn, flooding, as well as environmental issues. In a pan-industry initiative in which Dŵr Cymru is playing a leading role, the sewerage sector has made a concerted effort during the last year or so, taking every media and other opportunity to educate the public about the impact of sewer misuse, particularly through the disposal of wet wipes.
26. A recent example was the Volvo Ocean Race’s visit to Cardiff Bay. One of the themes of Volvo’s event was the need to reduce plastic pollution in our oceans. Dŵr Cymru took the opportunity to hold interactive sessions which were attended by over 500 adults and children, informing them about the water cycle and the environmental impacts of sewer abuse. We also handed out reusable plastic bottles as we are keen to promote the “water refill” message as a way of reducing plastic bottles in the environment.

27. Our experience of educating customers tells us that making the connection between individual behaviours and consequence for services and the environment does make a difference. If people realise that inappropriate disposal of personal products can harm the environment, they will be less likely to do so.
28. The water industry has been working with the manufacturers of products such as wet wipes (which get flushed down peoples' toilets), on a joint "flushability" test and related logos for over four years – reaching agreement on this has not been possible. We would therefore ask Government to consider regulatory options to ensure that all wet wipe type products that fail the new Water Industry flushability test have to display a clear, bold and prominent 'do not flush' logo on all packaging. This would support our message, and allow customers to respond in a responsible way.
29. I hope that this evidence will inform your understanding of the sewerage industry's perspective on this issue and the various measures we are already taking. I stand ready to appear before your Committee to elaborate on this evidence if you would find that useful.

Steve Wilson,  
Managing Director of Waste Water Services