SESSION 1 - CURRENT CHALLENGES WITH MONITORING OF PARAMETERS

- **Should the bathing water directive require more frequent monitoring to better ensure protection of health and the environment?**
- **Should the requirements for monitoring and managing cyanotoxins be strengthened?**

Summary of the issue

Developments in science and policy since the entry into force of the BWD – such as those summarised by the WHO in its 2018 Recommendations on parameters for bathing water quality for use in the BWD, and its 2021 Guidelines on Recreational Water Quality – suggest several changes to current monitoring requirements. Two main issues concern the number of samples collected to monitor faecal bacterial parameters, and the monitoring and management framework for cyanobacteria.

Sampling frequency – The Bathing Water Directive (BWD) requires a minimum of four samples per bathing season, including one taken shortly before the start of the season. This translates to a minimum of about one sample per month during the bathing season at many sites. In 2018, WHO recommended increasing the annual minimum number of samples to 20 per bathing season. Presentations at the November 2021 workshop also supported an increase. With monthly sampling, an estimated 15-20% of bathing sites are potentially wrongly assessed. As a result, the health of bathers is at risk. Many Member States already carry out monitoring more frequently at many sites, including sites subject to short-term pollution events and sites where water quality is poor. According to the EEA, seven Member States already report more than 20 samples per year. Nonetheless, increased monitoring would lead to higher costs. Some Member States have put forward alternative solutions such as increasing sampling in inverse relationship to the water quality classification (given the lower health risk of misclassification for higher rated sites) or raising the number of samples by increasing the number of bathing seasons to be included in the bathing water quality assessment of a site. A closely related issue is the length of the bathing season: evidence indicates that bathing outside the summer season, including year-round bathing, has increased in many Member States, suggesting a need for a longer bathing season at least at some sites. The number of samples might therefore also be increased through extending the bathing season, in some cases.

Cyanobacterial blooms - Cyanotoxins from harmful algal blooms (HAB) are currently considered under the BWD as part of the bathing water profiles. It calls for visual monitoring to be carried out where a potential for proliferation is identified, and for adequate monitoring measures to be taken in case proliferation occurs and entails actual or probable health risks. However, WHO work recommends that a new and separate classification and management system for freshwater cyanobacteria be established for locations where a risk of cyanobacterial blooms has been identified. The WHO 2021 Guidelines thus suggest guideline values for four different cyanotoxins and/or cyanobacterial volume, associated with a model for an alert level system. This suggestion received support at the November 2021 workshop. A soon-to-be-published JRC report will provide conclusions on the need for harmonised monitoring and vigilance levels across the EU. In addition, the report will present novel techniques: satellite-based systems, metagenomic approaches and predictive models related to address bloom events.

Main results of consultations

- In an interview with experts from the European Microbiology Expert Group, it was suggested that monitoring frequency could be specified in the BWD rather than the minimum number per bathing season, as the bathing season can vary across Member States.

- In the *Online Public Consultation*:

    - Just under 50% of respondents said that the frequency of monitoring should be increased, while 42% said it should be decreased.
    - Just under 50% of respondents reported that they visit bathing sites all year long, and 21% said that they did so for more than one season.

- In the roadmap consultation, 25 out of the 52 responses called for monitoring beyond the current bathing season.

SESSION 2 - RISK-BASED APPROACH TO ADDRESS ADDITIONAL PARAMETERS AND EMERGING POLLUTANTS

- **Should the Bathing Water Directive introduce a requirement to assess risks on a site-by-site basis to strengthen protection against other microbial hazards and pollutants of emerging concern?**

Summary of the issue

WHO's 2021 Guidelines on recreational water quality introduced the concept of recreational water safety plans (RWSP) as a tool for assessing and managing risks associated with recreational uses of water. The assessment of risks in the RWSP framework considers all potential risks affecting the site according to the features identified in a survey and ranks them according to likelihood of occurrence and severity of harm. A risk management strategy can then be drawn up, identifying appropriate control measures to prevent these risks from occurring and related operational monitoring. This would ensure that monitoring and management efforts are allocated to where this is most needed.

In addition to the faecal bacteria covered by the BWD, WHO identified other problematic microbial hazards, which for European waters, are principally swimmers' itch (schistosomes) and *Vibrio* (both marine and freshwater). The 2021 WHO Guidelines note that no dose-response relationship can yet be established for these hazards, so no guideline values are provided and systematic monitoring is not recommended. Instead, WHO recommends taking a site-specific approach to these threats by including them in the bathing water profile and considering them in the risk assessment for RWSP.

Chemicals in water are currently not addressed under the BWD, but are instead covered under the Directive on Environmental Quality Standards, the Water Framework Directive, and the Drinking Water Directive. Due to the diversity of chemicals potentially present in bathing water and the cost that monitoring for all of them would entail, a risk-based, site-specific approach appears desirable. WHO work therefore suggests applying a screening guideline (20 times the limits for drinking water) to sites where an initial survey indicates a potential risk (e.g. quarry or mining pit, proximity of industrial site). If this guideline value is exceeded, monitoring could be considered.

Beach sand is considered a relevant parameter by WHO, given the that it may contain bacterial enterococci as well as parasites, fungi or helminths, which all pose direct human health risks and can also be a cause of contamination via diffuse pollution of bathing water. They therefore recommend that beach sand should be considered in water quality management through consideration in RWSP. If warranted following a risk-based approach, a provisional guideline value of 60 CFU/g of intestinal enterococci is advised and, in European sites, 90 CFU/g of sand for fungi.

Aesthetics and nuisance aspects are partially covered by the BWD, which requires bathing waters to be inspected for "*pollution such as tarry residues, glass, plastic, rubber or any other waste*", and for appropriate management measures to be taken. However, such parameters are not necessarily included in the bathing water profile, and no systematic monitoring is carried out. WHO recommends they be included in the system assessment of a beach and, if warranted by the risk assessment, that operational monitoring be implemented in order to adopt relevant management measures.

For other parameters, such as viruses, antimicrobial resistance, pharmaceuticals, or microplastics, evidence does not yet support the need for additional regulation. More research is needed to establish their human health impacts in bathing water and define standard analytical and monitoring methods.

Main results of consultations

- In the *Online Public Consultation*:
    - Almost 63% of respondents considered that the current faecal bacteria parameters were insufficient to ensure sufficient protection of human health
    - Over 41% of respondents considered that the 2021 WHO Guidelines' call for the adoption of a risk-based approach through RWSP should be included in EU legislation, while just over 28% thought it should be left to the Member States to decide. A further 25% did not know.

SESSION 3 - CRITERIA FOR THE IDENTIFICATION OF BATHING SITES, INCLUDING PUBLIC PARTICIPATION

- **Do the definitions for designating bathing sites need to be stricter to increase consistency across EU and effectiveness?**
- **Should the requirement to encourage public participation in the designation of bathing sites be more clearly specified to encourage greater public engagement?**

Summary of the issue

Identification of bathing sites - According to Article 1(3) of the BWD, a bathing water is 'any element of surface water where the competent authority expects a large number of people to bathe and has not imposed a permanent bathing prohibition, or issued permanent advice against bathing'. Article 2(4) further states that 'large number' means, "a number that the competent authority considers to be large, having regard to past trends or to any infrastructure or facilities provided, or other measures taken to promote bathing". The BWD thus grants Member States considerable discretion in defining 'large number' at national level.

Evidence shows that some waters which meet the requirements of the BWD are not identified as bathing waters by Member States. This appears to be linked to the way Member States have specified the concept of 'large number', and the use of additional criteria to identify bathing waters and may reflect the financial implications of identification. The 2019 Compliance Report showed that only a few Member States have specified, either in law, guidance, or practice, the meaning of 'large number' by providing a reference number of bathers – varying between 10 and 300 – to determine whether the number of expected bathers should be considered large or not and that most "leave it to the discretion of the local authorities". In addition, several Member States use other criteria when identifying a bathing water, which may restrict the number of bathing waters identified. Designating a bathing site under the BWD instigates monitoring and management obligations. The financial costs related to the proper implementation of the Directive seem to play an important role in identification of bathing waters in several Member States and may sometimes lead to a decrease of monitoring due to policy decisions.

Public participation - Article 11 of the BWD requires Member States to encourage public participation and provide opportunities for the public concerned to find out how to participate, and to formulate suggestions, remarks, or complaints, in particular for the establishment, review and updating of lists of bathing waters – but it does not specify how this should be done. The 2019 Compliance Report also found that in most of the Member States (79%), the national law required the annual list of bathing waters to be subject to a formal public consultation. Despite this, in some Member States, a lack of easily accessible information and of the opportunity to comment were acknowledged, and some consultations received a low number of contributions. In addition, in a small number of Member States, the 2019 Compliance Report found that public consultation was limited to the online publication of the annual list of bathing waters and an option for the public to submit comments (which was not always easily accessible).

Main results of consultations

- In the *targeted consultation* of MS authorities:
    - Over 60% of Member States stated that it was likely that bathers bathe in areas not designated under the BWD as official bathing water sites
    - Over 70% of Member States stated that their definitions of "bathing water" and "large number of bathers" did not go beyond the definitions in the BWD
    - 48% of Member States stated that that the BWD has had low achievement regarding the involvement of the public in the decision-making process
- About 85% of the respondents to the Online Public Consultation said that they had never participated in a public consultation regarding the identification of bathing waters.

SESSION 4 - MANAGING POOR AND SUFFICIENT BATHING SITES

- **Does the BWD need to do more to ensure all bathing waters meet at least "sufficient" quality urgently, learning from the good practices adopted by some Member States?**

Summary of the issue

Pursuant to Article 2(7) (f) and (i) of the BWD, identification of the causes and action to reduce the risk of pollution are part of the management measures Member States are required to take under certain circumstances. Article 5(3) of the BWD requires Member States to "ensure that, by the end of the 2015 bathing season, all bathing waters are at least 'sufficient'" as well as "take such realistic and proportionate measures as they consider appropriate with a view to increasing the number of bathing waters classified as 'excellent' or 'good'". Article 5(4) of the BWD provides where bathing waters are classified as 'poor', Member States must identify the causes and reasons for not achieving a 'sufficient' quality status and take measures to prevent, reduce or eliminate the causes of pollution, among other measures. In such cases, Member States shall ensure that the conditions listed in Article 5(4) are satisfied with effect from the following bathing season.

The data reported by the Member States shows that, although both the number and share of bathing waters classified as "poor" (and thus below "sufficient") have decreased since 2006, the objective to ensure that all designated sites were at least "sufficient" was not achieved in 2015 nor in 2020 (the last year for which data are available). While the implementation of other pieces of EU water legislation – such as the Urban Waste Water Treatment Directive – has played a key role in the overall improvement of bathing water quality across the EU, these data highlight the importance of specific measures under the BWD aimed at preventing the risk of pollution, as envisaged in its Article 2(7)(i). The 2019 Compliance Report, however, indicates that measures taken by Member States to mitigate pollution for 'poor' bathing waters, as set out in the bathing water profiles, are often vague and sometimes insufficient.

The practices of Member States differ and indeed some have gone beyond the Directive's requirements by establishing general procedures for management measures under the BWD. The 2019 Compliance Report highlights Ireland, where a management plan is required, which is then reviewed and the implementation assessed; Portugal, where a programme of measures must be developed and approved; and Sweden, where the authorities responsible for bathing waters at risk/classified as poor are contacted by the national authority to ensure that they are aware of the requirements and that they undertake the necessary measures. Nonetheless, the 2019 Compliance Report found few examples of measures to reduce pollution at source. Some of those (e.g. in the Netherlands and in France) address immediate issues such as preventing and reducing pollution by reducing birds at the site, adding rubbish bins and toilets for beach users and limiting the access of cattle and other animals to water in order to reduce marine litter and the amount of human and animal waste in bathing water. In addition, subsequent interviews with stakeholders showed that water utilities often perceive the BWD as a trigger for investments to solve local problems, in particular to address wastewater overflows.

Main results of consultations

- In the *targeted consultation* of MS authorities:
    - Almost 50% of Member States stated that "the presence of pollutants which cannot be mitigated without significant costs" and almost 40% stated that "lack of financial resources" were "very important" challenges when it comes to ensuring all bathing waters are at least "sufficient"
- About 50% of the respondents to the *Online Public Consultation* said that the managing of bathing sites in the EU, in particular regarding pollution management measures, was "not satisfactory" or "could be improved".

SESSION 5 - DIGITALISATION FOR BETTER INFORMATION AND MANAGEMENT

- **Should the BWD consider the use of modelling systems, in particular for short-term pollution events, to complement monitoring information?**
- **What requirements, if any, should be included to use improved digital methods of communicating information about bathing water quality to bathers in view of enhancing health protection levels?**

Summary of the issue

Member States and stakeholders are putting in place digital solutions for bathing water management, in areas such as modelling short-term pollution events and providing information to the public.

Modelling systems - Modelling has been piloted for combined sewer overflows (CSOs) from waste water treatment plants that could lead to short-term pollution events at bathing sites. For example, the LIFE iBathwater project[1] is developing such models in Barcelona and Berlin. In another type of modelling, research projects have built systems for bathing sites – considering physical factors such as rainfall, wind and currents – to predict water quality at the sites; the latter can include modelling for specific risks, such as cyanobacteria. Modelling is site-specific and typically requires intensive monitoring to provide good learning data for machine learning systems. Once in place, modelling can work together with monitoring, could reduce monitoring and could optimise monitoring for short-term pollution events or cyanobacteria blooms. Modelling could be linked to remote sensing data, for example for cyanobacteria blooms.

Digitalisation - Some Member States, regions and local authorities have embraced new digital methods, using apps and social media to inform the public about water quality. These methods raise public awareness. Moreover, they can be used to convey real-time data to bathers – for example, warning them of short-term pollution events or cyanobacteria blooms. In addition, all Member States currently use websites to provide information on bathing water quality; however, the level of detail and the ease of use vary.

While new digital methods of communication cannot replace traditional methods – including signs at bathing sites – as some bathers are less tech-savvy, the methods can be combined, for example with QR codes on physical signs that lead interested bathers to detailed apps or websites.

Main results of consultations

- In the *BWD Evaluation Workshop*[2], 66% of the respondents stated that the negative impacts of cyanobacteria bloom could 'maybe' be reduced with adequate monitoring and predictive modelling, 7 % did not know, 15 % replied 'no' and only 2 % replied 'yes'.

- In the *Online Public Consultation*:

    - Over 90% of respondents to the OPC said that the BWD has provided, either to a large extent or to some extent, better and earlier information to citizens about the quality of bathing water
    - About 50% of respondents said they were either satisfied or very satisfied with the accuracy of information available on national websites, though 17% indicated they were not aware of these websites.
    - The largest share of respondents, 66%, indicated that they checked bathing water quality from information directly available at the beach.

[1] https://www.ibathwater.eu/?lang=en

[2] Detailed workshop summary available at: https://circabc.europa.eu/ui/group/65764c73-4a57-45dc-8199-473014cf65bf/library/68fb45c1-46a1-4902-ba7f-3c235fceef5c/details