



# **Strategic guidelines for microplastics management in drinking water at the facility level**

## **Project MicroDrink**

*Drafted by University of Ljubljana, supported by Croatian Geological Survey, with input from all project partners.*

## Project MicroDrink

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## 1. Introduction

These Strategic Guidelines support drinking water facilities in preparing for and implementing microplastics (MP) monitoring and management in line with the evolving European regulatory framework.

The MicroDrink project strengthens the understanding, monitoring, and management of microplastics in drinking water across the Danube River Basin by developing harmonised sampling and analytical methods, building laboratory and institutional capacities, and supporting decision-making through tools such as the DMST. Through coordinated pilot activities, national consultations, and transnational knowledge exchange, the project provides practical guidance for water suppliers, authorities, and laboratories in addressing emerging microplastic risks.

This deliverable builds on insights from D3.3.1 Compilation report on microplastics governance strategies for water facilities operators and D3.3.2 Compilation report on the legislation solutions for microplastics, translating them into practical, facility-level actions. The guidelines are consistent with the Drinking Water Directive (EU) 2020/2184 and Commission Delegated Decision (EU) 2024/1441 laying down a methodology to measure microplastics in water intended for human consumption, recognising that Member States are currently in a transitional phase where monitoring is required but binding thresholds and corrective obligations have not yet been defined.

The guidelines are intended for water suppliers, facility managers, laboratories, regulators, and other stakeholders involved in ensuring safe and resilient drinking water systems. They provide a structured approach to integrating microplastics into operational, monitoring, and risk management practices, supporting both compliance and long-term preparedness.

## 2. Legislative and policy framework for microplastic monitoring

The EU has introduced a harmonised methodology for measuring microplastics in drinking water through Delegated Decision (EU) 2024/1441. As a delegated act, it is directly applicable and does not require formal transposition into national law. Most Member States therefore integrate the methodology into existing drinking water legislation, ordinances, or risk-based water safety planning frameworks.

In the Danube Region, national approaches vary. Some countries, such as Germany, have already embedded the methodology in their Drinking Water Ordinance and linked it to Water Safety Plans. Others, including Croatia and Slovenia, are preparing through EU-funded projects and laboratory capacity building but have not yet established binding national requirements. Several Member States, such as Hungary, Czech and Austria, remain at an early stage with no legislative steps initiated. Candidate countries, including Serbia and Bosnia and Herzegovina, are drafting legislation to align with EU practice but have not yet adopted binding rules.

Because binding thresholds for microplastics are not yet defined at EU level, national frameworks currently focus on monitoring, exploratory sampling, and capacity building. Drinking water facilities must therefore prepare for implementation even in the absence of national parametric values, ensuring readiness for future regulatory developments, including the potential inclusion of

microplastics on the EU watch list, a mechanism under the Drinking Water Directive used to identify emerging contaminants that require temporary, EU-coordinated monitoring.

### 3. Strategic vision for drinking water facilities

Across DRB project countries, a common strategic vision is emerging: to build the technical, organisational, and governance capacity required to integrate microplastics into routine drinking water management. This vision emphasises:

- **Laboratory readiness**, including analytical capacity (FTIR, Raman), trained personnel, and quality assurance.
- **Pilot monitoring and baseline data collection**, enabling facilities to understand microplastic occurrence and variability.
- **Gradual integration into Water Safety Plans**, reflecting the risk-based approach of the Drinking Water Directive.
- **Alignment with national methodologies and EU standards**, ensuring comparability and regulatory coherence.
- **A precautionary and adaptive approach**, recognising scientific uncertainty and the evolving regulatory landscape.

This strategic direction supports long-term resilience and prepares facilities for future EU requirements.

### 4. Practical strategic guidelines for drinking water facilities

To effectively prepare for the integration of microplastics monitoring and management, drinking water facilities should adopt a structured set of strategic actions spanning the entire water supply system.

The first step is to establish a clear understanding of existing knowledge and system conditions by reviewing internal data, materials, and operational practices, and by participating in national surveys, questionnaires, and stocktaking exercises to identify gaps, vulnerabilities, and potential microplastic sources. Building on this foundation, facilities should develop monitoring and research capacities aligned with the harmonised EU methodology, including preparing sampling plans, identifying sampling points across raw water, treated water, and distribution networks, and cooperating closely with accredited laboratories capable of applying advanced analytical techniques. Staff training, equipment readiness, and robust data management procedures are essential to ensure reliable and comparable results. As monitoring data become available, facilities should integrate microplastics into system-specific risk assessments and Water Safety Plans, identifying exposure pathways, assessing system vulnerabilities, and implementing mitigation measures such as optimising treatment processes or replacing materials that may contribute to microplastic release.

Communication and awareness-raising are equally important: facilities should develop clear communication protocols for informing consumers, local authorities, and public health bodies,

while also ensuring that operational staff receive targeted training on sampling, handling, and risk management procedures.

Over time, microplastics should be embedded into routine water management through regular monitoring, trend analysis, continuous improvement of operational practices, and systematic updates to Water Safety Plans and internal protocols. By following these strategic guidelines, drinking water facilities can build the technical and organisational capacity needed to manage microplastics effectively and prepare for future regulatory developments.

## 5. Operational responses when microplastics are detected

When microplastics are detected in drinking water, drinking water facilities should follow a structured and proportionate response pathway that supports operational control and transparent communication.

The first step is to verify the findings through confirmation sampling and, where necessary, increase monitoring frequency to better understand temporal and spatial variability. Early communication with regulators, public health authorities, and other relevant stakeholders is essential to ensure coordinated action and maintain public trust.

In the medium term, facilities may need to optimise existing treatment processes, such as adjusting filtration performance or improving coagulation and sedimentation steps, and consider upgrading to more advanced technologies where feasible. Strengthening upstream pollution control through collaboration with wastewater operators, catchment managers, and local authorities can help reduce microplastic inputs at the source.

Over the longer term, facilities should integrate microplastics into their Water Safety Plans, update risk assessments, and contribute monitoring data to national databases to support broader trend analysis and regulatory development. All responses should be proportionate to the assessed risk, aligned with national guidance, and supported by clear documentation and communication strategies to ensure consistent, evidence-based decision-making.

## 6. Conclusions

Microplastics present an emerging challenge for drinking water management, requiring facilities to strengthen their technical, organisational, and governance capacities in anticipation of future regulatory developments. Although the EU has already established a harmonised monitoring methodology through Delegated Decision (EU) 2024/1441, binding thresholds and corrective obligations have not yet been defined, leaving Member States and water suppliers in a transitional phase. In this context, proactive preparation is essential. Facilities should focus on building analytical and operational readiness, developing robust monitoring systems, and integrating microplastics into risk-based management approaches consistent with the Drinking Water Directive (EU) 2020/2184.

The strategic vision emerging across DRB project countries highlights the importance of laboratory capacity, baseline data collection, alignment with EU standards, and a precautionary approach that recognises scientific uncertainty. The practical guidelines in this report provide a structured

pathway for facilities to assess their current status, develop monitoring and research capabilities, strengthen Water Safety Plans, and establish clear communication channels with consumers, regulators, and public health authorities. When microplastics are detected, facilities should follow a proportionate and transparent response pathway that includes verification, treatment optimisation, upstream pollution control, and long-term integration into risk management and national reporting systems.

By following these strategic and operational measures, drinking water facilities can ensure preparedness, support regulatory evolution, and contribute to a more comprehensive understanding of microplastics in drinking water. Ultimately, these efforts will enhance the resilience of drinking water systems, protect public health, and support the gradual development of a coherent European framework for microplastics management.