



What's that smell?

What do we see?

Taste and odour are important parameters regulated by drinking water legislation.¹ These parameters are primary sensory indicators of water quality for consumers and are thus crucial to their perception of water quality. Current methods for assessing taste and odour rely on organoleptic evaluation, which is inherently subjective and may vary depending on the skills and sensitivity of individual panellists, even when trained. As a result, both regulators and drinking water companies may benefit from more objective and reliable assessments.

What lies behind this?

Many substances occur in drinking water, some of which negatively influence its taste and odour. While not necessarily linked to water safety, these substances contribute to the negative perception of drinking water quality, encouraging consumers to find alternative solutions such as bottled water. However, the environmental impact associated with the consumption of bottled water exceeds that of drinking water considerably due to higher energy consumption and waste production.² In addition, the drinking water sector is under increasing pressure and scrutiny due to the manufacturing and release of harmful chemicals in the

environment, which affect the quality of our water sources and the confidence of consumers in tap water. While organoleptic evaluation is a useful tool to ensure good water taste and odour, alternative approaches could provide more objective and robust assessments of these important water quality parameters.

Why is this interesting?

Recently, analytical methods have been developed to specifically target and quantify substances responsible for water taste and odour in drinking water.² These substances can be detected at levels below odour threshold values – the concentration at which 50% of an odour panel can detect an odour deviation – resulting in a more objective and reliable assessments. Furthermore, this method offers a more robust approach to track the sources of these organoleptic substances, which may occur in drinking water depending on the composition of the water source, the distinct water treatment processes, and the different materials used in the distribution network. These compounds can also contribute to unpleasant odours around water treatment plants, affecting nearby residents. Some other unknown substances may also influence the taste and odour of drinking water. The use of analytical techniques such as high-resolution mass spectrometry, in combination with novel ionization sources,³ can improve the detection and identification of these substances.

Strategic questions for the water sector

- Are there alternative methods to assess drinking water taste and odour?
- Can these methods contribute to more standardised assessments and ensure consistent drinking water quality across the Netherlands?
- What are the sources of these substances and how can we prevent their occurrence in drinking water?
- Which water treatment processes are most effective in removing compounds responsible for undesirable taste and odour?
- Is it possible to identify unknown compounds linked to undesired organoleptic profiles?
- Is it possible to reduce the impact of unpleasant organoleptic compounds released from water treatment plants on nearby residents?

Interpretation

	Laag	Middel	Hoog
Impact			
Likelihood			

Follow up/monitoring

We advise further assessing the requirements needed for the development of this method and evaluating its implementation in the water sector.



Meer lezen

1. *Drinkwaterbesluit [Drinking Water Decree]*. Staatsblad 2011, 293. Available at: overheid.nl
2. Mol, Z., Walgraave, C., De Pril, R., Van Langenhove, H. and Demeestere, K., 2024. Trace analysis of taste and odour compounds in drinking water by stir bar sorptive extraction followed by thermal desorption-gas chromatography-mass spectrometry (SBSE-TD-GC-MS). *Science of The Total Environment*, 955, p.176878.
3. Gu, T., Sun, J., Wang, S., Duan, X., Li, H., Liu, C. and Chen, D.D.Y., 2025. Real-time monitoring of tea volatiles using soft ionization by chemical reaction in transfer with an online sampling interface. *Green Analytical Chemistry*, 14, p.100290.

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