

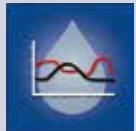


Online Services

Where can I find surface water data on the internet?

You want to know the current water temperature of the Alster? You are interested in learning more about oxygen levels in the Elbe? The online services of the Water Quality Monitoring Network will provide the answers. They will also tell you more about the quality of Hamburg's surface waters.

Use the smartphone app "Gewässerdaten Hamburg" [surface water data Hamburg] to call up the latest water temperature, pH value or oxygen level data. The app will also give you access to the archive that contains the water data collected in the past.



Or you can go to www.gateway.hamburg.de via "HamburgService" and access the database of the Water Quality Monitoring Network directly. Simply enter "Gewässerdaten Hamburg" [surface water data Hamburg] in the search bar.

All online services are provided free of charge.

Surface Water Protection

Why do we need a Water Quality Monitoring Network?

- To detect incidents and illegal discharges as early as possible
- To meet the requirements of the EU Water Framework Directive
- To assess the potential risks associated with discharges
- To gain information about the sources of water pollution
- To deter and prevent illegal discharges or other forms of water pollution through continuous surface water monitoring
- To identify short-term and long-term changes in the water quality and based on the findings take water management measures
- To assess the effectiveness of surface water protection measures (for example Hamburg thermal regime plan)
- To protect drinking water production areas

Information

Where can I get more information?

Up-to-date data and more detailed information about the Water Quality Monitoring Network are available at www.hamburg.de/wasserguetemessnetz.

If you have any further questions, please contact us - we will be happy to assist you:

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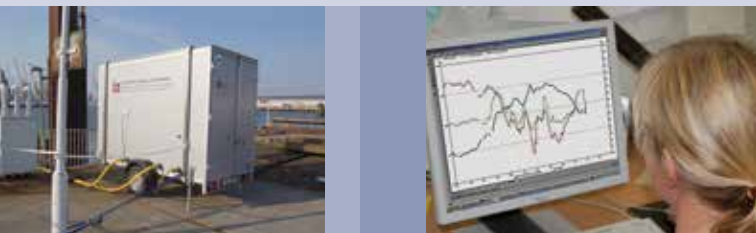
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HAMBURG WATER QUALITY MONITORING NETWORK

Elbe and tributaries

Monitoring • Alarms • Water Conservation





Monitoring

Why is the Water Quality Monitoring Network so important?

Time and again, maritime accidents and industrial incidents have led to serious pollution of surface waters causing fish to die and inflicting other damage to aquatic habitats.

Continuous surface water monitoring is a must to be able to respond to incidents fast and take the appropriate measures to limit harmful consequences. Established in 1988, Hamburg's Water Quality Monitoring Network currently has ten measuring stations in place along all major flowing surface waters.

The EU Water Framework Directive, which came into force in 2000, explicitly sets out that early warning systems must be in place (Article 11(3) letter (l)). Moreover, Hamburg's surface waters are continuously monitored to avert and prevent danger (e.g. illegal discharge) as well as to monitor short-term and long-term changes in water quality (trend monitoring).

Based on the data collected appropriate surface water management measures can be taken.

Measuring Systems

What are monitoring stations for?

The ten stations on the Elbe, Bille, Alster, Wandse, Tarpenbek and Ammersbek automatically and continuously collect chemo-physical data, such as **oxygen level, pH value, conductivity, turbidity and temperature**, 24 hours a day.

On top, the major stations - Bunthaus, Seemannshöft and Blankenese on the Elbe, Fischerhof on the Bille and the station on the Wandse – have a biological early warning system in place that can detect toxic substances in water. These stations are fitted with automatic samplers that collect samples in the event of an incident for detailed laboratory analysis.

Some stations are equipped with devices that measure UV absorption rates and TOC (total organic carbon) levels and monitor nutrient levels (nitrates and phosphates).

All measured values are initially stored on station servers before they are transmitted to the central server via LTE. If an alarm is triggered, the alarm signal is transmitted in the same way.

Bio Testing Equipment

How does the biological early warning system work?

As the technical requirements are complex, the continuous surface water monitoring systems capture only some measurands over longer periods of time. Germany alone produces over 50,000 different chemicals that enter surface waters via different routes, for example when accidents or leakages occur, cargo is moved through the port or chemicals are used in agriculture.

To be able to identify specific acutely toxic substances or substance mixtures among the wide range of harmful substances, the Network employs what is known as biological effect monitoring, in this case automatic testing systems that rely on water fleas (*Daphnia magna*) and green algae (*Chlorella vulgaris*) to measure pollution levels.

- 💧 The **Daphnia toximeter** is fitted with a camera that monitors the movements of Daphnia. If their behaviour changes significantly, acute surface water pollution is likely to have occurred.
- 💧 The **algae toximeter** indicates damage to algae if the photosynthetic rate declines.

Warning

What happens if an alarm is triggered?

If the measuring systems supply monitoring data that fall outside the normal statistical range, a message will be sent to the Water Quality Monitoring Network centre. If several measurands simultaneously show unusual variations, a special software module developed in Hamburg will automatically trigger an alarm.

Once an alarm has been triggered, time is of the essence. The damage caused and the source and type of pollutants must be identified. If the central server receives an alarm, it will automatically forward it to the employees, either by mail or SMS, who will then take the appropriate measures. At the same time, the station's system will automatically take "alarm" samples. The samples will be chemically analysed to determine the type of contamination. The analysis results may help to identify the source right away.

The Water Quality Monitoring Network with its biological early warning system ensures that sudden surface water pollution can be detected early and addressed immediately. However, it is not only toxic effects that may cause concern. Often a lack of oxygen, particularly in the summer months, may be to blame.

