

The Missing Surface Layer in Water Quality Monitoring

Why effective water monitoring requires more than submerged sensors and laboratory sampling

Earlier surface signals provide valuable operational awareness before subsurface detection and laboratory confirmation



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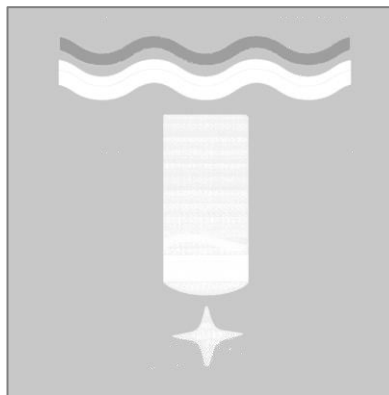


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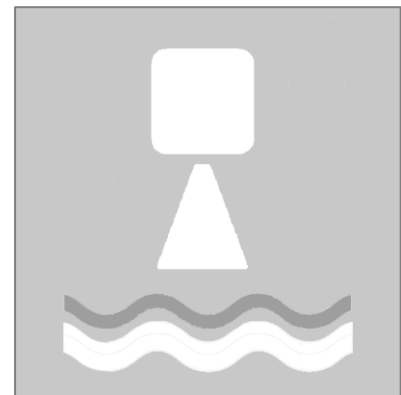
Grab Sampling & Lab Analysis

- Confirmation & compliance
- Episodic, delayed
- Discrete point-in-time measurements



In-Water Sensors & Online Analyzers

- Continuous measurement
- Often miss surface events
- Periodic maintenance required



Surface-First™ Water Intelligence

- Earlier operational awareness
- Continuous, real-time visibility
- No sensor biofouling

Each method serves a different role. No single approach provides complete visibility across all contamination pathways.

Many critical water quality threats — including hydrocarbon sheens, early-stage harmful algal blooms, and dissolved organics — emerge or concentrate at the water surface before mixing into the water column. This **Surface-First** behavior means certain contamination events can be detected earlier at the surface, before they appear in submerged or sample-stream measurements or are confirmed through laboratory analysis. Because this surface layer is often not monitored, these early signals may go unnoticed at the time they first occur.

Most traditional monitoring approaches are optimized for in-water conditions, sample-stream analysis, or post-sampling verification, so detection often occurs only after dilution, dispersion, or operational impact. Adding a Surface-First monitoring layer enhances existing monitoring by improving operational awareness and supporting earlier, better-informed decisions, particularly at intakes and other locations where in-water sensing or sampling may be constrained.

PhotonTec provides Surface-First™ Water Intelligence through non-contact optical sensing that complements submerged sensors, online analyzers, laboratory analysis, and process instrumentation by continuously monitoring the often-unmonitored water surface.