



Sensing toxicants in
Marine waters makes
Sense using biosensors

Monitoring seawater chemical and ecological status in real time and in-situ

SMS delivers a novel automated networked system enabling daily in-situ monitoring of seawater in coastal areas by the automated detection of a series of emerging pollutants. Using innovative analyzers and in-situ probes, a wide spectrum of compounds that have detrimental effects on the marine environment such as nutrients, toxic algae, algal toxins, herbicides, flame retardants, and pharmaceuticals are detected.





ON-LINE FULLY
AUTOMATED
IMMUNOMAGNETIC
ASSAYS COUPLED TO
COLORIMETRIC
OPTICAL DETECTION
OF PRIORITY
POLLUTANTS AND
HARMFUL ALGAE

Innovative Sensors

- Algal toxins (Saxitoxin, Okadaic acid & Domoic acid)
- Toxic algal species (*Alexandrium minutum*, *Pseudo-nitzschia*, *Dinophysis acuta*, *Dinophysis acuminata*)
- Flame retardants (PBDE)
- Herbicides (Glyphosate)
- Pharmaceuticals (Sulphonamides)

Reference Sensors

- Temperature
- pH
- Salinity
- Dissolved Oxygen
- Turbidity
- Chlorophyll a
- Ammonia
- Nitrate
- Nitrite
- Orthophosphate

Our instrumental prototypes

μ Mac-Smart

Key features: portable analyser completely automating complex analytical methods, with the capability to be used on board of floating platforms and coastal buoys for unattended measurements.



μ Mac-Smart

WIZ Probe

Key features: in-situ field deployable probe automating complex analytical methods for long-term unattended measurements.



WIZ Probe

The Challenge

The increasing demand by citizens and environmental organizations for the protection, preservation and possible restoration of the marine environment has made seawater quality assessment and control urgent priorities of the EU. At the same time, the Blue Growth Strategy aims to support the growth of maritime activities in a way that is compatible with environmental sustainability. The **SMS** project will promote the development of novel sensing devices for seawater quality monitoring. In consequence, **SMS** results are expected to have a major impact on economic activities such as tourism, fisheries, aquaculture, and to create novel business opportunities.

Project Objectives

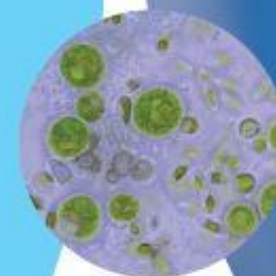
SMS is going to deliver a novel automated networked system that will enable real-time in-situ monitoring of seawater chemical and ecological status in coastal areas by the detection of a series of pollutants. The compounds specifically targeted by the project are indicated as priority substances and/or "emerging pollutants" by the Water Framework Directive. They cover a wide spectrum of chemicals and biological threats that have detrimental effects on the marine environment such as algal toxins, antifouling agents, flame retardants and pharmaceuticals, as well as toxic algal species, that will be measured using innovative automated measurement modules.

Methodology



The **SMS** integrated water quality monitoring system allows in situ sampling and analysis in a single unit.

The wireless transmission capability for real-time data, as well as remote access to collected data and remote management of biosensors allow for automated water quality monitoring and an alarm system, informing the user when pollution limits would be reached.



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PROJECT PARTNERS

