

# WATER SANITATION



Contaminated water



Deaths of Fish

## The problem

The limnological conditions found in our lakes, dams and ponds are frequently characterised by the excessive introduction of nutrients and harmful substances. This results in eutrophication within the water and the subsequent formation of sapropel. During the summer months, very heterotrophic bodies of water often have oxygen concentrations of  $< 0.5 \text{ mg/l}$  at a depth of about 0.5 m.

As the depth of the water increases, an oxygen content of almost zero is reached. Because of these anaerobic conditions, putrefaction processes are found to prevail in the water at times. Digester gases such as hydrogen sulphide and other harmful substances are released as a result of this. Health risks, unpleasant smells, fish deaths and restrictions on use as drinking water are the result.

## The solution

Depending on the state, size and use of the water, HERBST UMWELTECHNIK GMBH provides various water sanitation processes.

The most important sanitation processes are:

### Mechanical sanitation processes

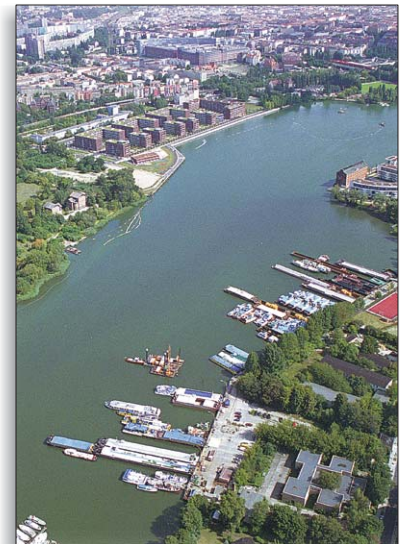
During these processes, the digested sludge is sucked off and mechanically dewatered and the resultant water, which is rich in harmful substances, is purified.

### Chemical/biological processes

During these processes, nutrients and hydrogen sulphide are adsorptively bound and then biologically decomposed.

### Combined processes

These processes combine various sanitation processes.



Partial view of the sanitised Rummelsburg Bay in Berlin



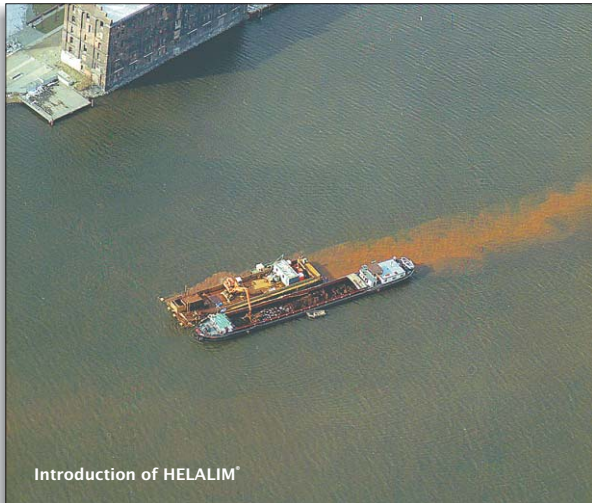
## We provide the quality solution

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# SUMMARY OF PROCESSES

## The HELALIM® process

This economic process can be used for the lasting sanitation of stagnant water whose body and/or depth is sufficiently large to create stable biological conditions for the natural purification of the water.



As a result of the introduction of iron and/or nitrate compounds into the upper nutrient-rich layers of sediment, the transport of nutrients and harmful substances into the body of water is greatly reduced by chemical and physical processes.

Thus, the nutrient phosphorous or phosphate, which restricts the growth of algae, is found adsorbed to iron compounds.

The consequences are a lower level of turbidity and the increased transparency of the water, particularly during periods of algal bloom.

In this case, the oxygen which is released on to the water by the ambient air is often sufficient to maintain the regenerative biological processes. If this is not the case, the supply of oxygen to the body of water can be increased by means of circulation or aeration.

## The suction dredger process with mechanical sludge dewatering

If the introduction of nutrients and/or harmful substances causes the bottom of a body of water to be covered with a layer of digested sludge whose thickness precludes the self-regeneration of the water, these sediments should be removed from the water in a way which causes as little disturbance as possible.

Using the suction dredging method, the release of nutrients and harmful substances during the removal of the sediment is reduced to a fraction of that found with the traditional grab dredging process. In this way, partial overfertilisation of the water which would be contrary to the aim of sanitation can be prevented.

If no rinsing surfaces are available in the immediate vicinity of the water or if it is a matter of contaminated sediment, the sediment can be dewatered using a suction dredger which is connected to a mechanical dewatering plant. This results in the production of a compact, transportable filter cake which, depending on its composition, can immediately be recycled or removed. The filtrate water which results from the dewatering process undergoes chemico-physical treatment so that it can be safely returned to the water.

