

# The Porto Protocol

More than just a commitment.



## Case Study

### **Environmental Waves - Algae bloom elimination in Fervença river**

In the warmer months there have been algae blooms in rivers, lakes, ponds, canals, reservoirs or dams, more frequently and with an ever-greater extent.

Whenever an algae bloom occurs, we will also have the presence of cyanobacteria in lesser or greater concentration. There are several species of cyanobacteria, being extremely toxic and others non-toxic.

Harmful Algal Blooms (HAB) of toxic cyanobacteria have a negative and immediate impact on water quality and compromise its safety, due to the release of toxins (hepatotoxins, neurotoxins and dermatotoxins) in the water that are dangerous for both people and animals, leading to health problems in people and even death of small and medium sized animals. Harmful blooms could thus lead to immediate closure and prohibition of access to recreational areas (river beaches, urban parks, etc.), may lead to an increase in the costs of treatment of this water for consumption or even prohibition of its use.

There are several solutions in the market for the removal of algae bloom:

- mechanical removal that can lead to the release of large amounts of toxins;
- addition of chemicals, some of them harmful to the environment. This solution also leads to the release of a large amount of toxins into the environment.

With these solutions, mechanical removal or addition of chemicals, there is no growth inhibiting for the new algae bloom, so they will reappear again.

Environmental Waves offers ultrasonic solutions, an environmentally friendly technology that achieves up to 90% reduction in existing algae bloom and inhibits the growth of new ones.

We present two sets of pictures, one from May 2017 before the application of ultrasound, and the others ones from end August 2017 in each you can see the results of the ultrasound use.

The equipment is easy to install and operate, the electrical consumptions are insignificant.

The following advantages are highlighted:

- Adaptability, since it can be placed anywhere on the banks of a river or lake;
- Very low maintenance;
- Very low operation cost.

Ultrasound can be applied in:

- Reservoirs;
- Lakes;

- Golf courses;
- Rivers;
- Dams;
- Irrigation canals.

