

**UNITIKA LTD.**

# Unirelief

## (Water quality continuous monitoring device)

- Fish can indicate danger.

### Overview (Technical principles, actions, etc.)

Today, the quality of water sources surrounding us cannot be regarded as safe, considering the toxicants and poisons flowing into waters due to earthquakes, factory accidents and other disasters. Large-scale fish death has also occurred caused due to illegal chemical dumping. To address such water-quality contamination disasters, a water quality monitoring method using fish as a sensor is regarded as the best method of monitoring overall safety of water. Traditionally, fish samples have been kept in a water tank where river water or other sources are introduced to detect water quality problems from the behavior of the fish sample. However, this method relies heavily on human visual sense. Considering sudden water pollution, detection may be delayed, and nighttime monitoring is difficult.

UNITIKA has developed a water quality continuous monitoring device, Unirelief, which rarely sends a wrong signal, and promptly sends a correct alarm in the case of an emergency. Using two indications, the abnormal behavior and death of fish, water quality is automatically and continuously monitored to detect poisoning.

### Features

When fish show abnormal behavior due to toxic substance inflow, a pre-alarm (yellow lamp) is activated, and when fish die, an alarm (red lamp) is activated to immediately send a signal indicating an emergent water-source disaster.

Constant monitoring to detect toxic substances is difficult by conventional methods, which rely on human visual sense.

The Unirelief enables automatic continuous monitoring after placing fish samples into a monitoring water tank.

By analyzing water sampled by the automatic sampling device, causes of accidents can be diagnosed. Since measurement is conducted for swimming fish under natural conditions, the fish do not suffer stress. The same fish samples can be kept for long periods of time.

Even if the fish in the monitored water tank cannot be seen due to influent thick suspension or soiled water tank walls, water quality monitoring is possible.

Fish samples such as those of goldfish can be used for monitoring purposes.

㊦





## Principle

---

When fish gulp, move their gill covers or swim, electric potential is generated. The device sensor installed in the water tank detects the electric potential (action potential), and the device measures the level of action. When this level of action surpasses the upper limit of the action level under normal conditions, the fish are regarded as behaving abnormally and a pre-alarm signal is sent. When the level of fish activity falls to zero, the fish are regarded having died and an alarm is sent. In this way, the device monitors the water quality continuously.

When pre-alarm and alarm signals are sent, the water in the tank can be automatically sampled at respective timings.

## Use application

---

1. Continuous monitoring of drinking water resources in water purification plants and food plants requiring sanitation, etc
2. Continuous monitoring of water for fish cultures, etc.
3. Continuous monitoring of wastewater from production plants to check for toxic substances
4. Continuous monitoring of water environment such rivers, lakes, ponds, etc.
5. Toxicological test for new chemical substances

**UNITIKA LTD.**

(UNITIKA PLANT ENGINEERING CO.,LTD.)

<http://www.unitika.co.jp/upec/index.html>

E-mail: infokanri2074@upec.unitika.co.jp

5 Uji-Tonouchi, Uji, Kyoto, 611-8555 Japan

TEL: +81-774-25-2074 FAX: +81-774-25-2354