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Installation of Toxicity Control Biomonitor at the river Rhine using luminescent bacteria.

The Water works Amsterdam takes surface water from the Rhine at the location Nieuwegein (the Netherlands) for the production of drinking water. The water quality of the Rhine can fluctuate due to the input of effluents from SWTP (22 million people are living in the catchment area), and due to agricultural and industrial activities along the Rhine. This is why the Water Works Amsterdam operates an extensive Early Warning System (EWS), including chemical (e.g. GCMS, LCMS) as well as biological systems: fish, daphnia, algae and now also bacteria.

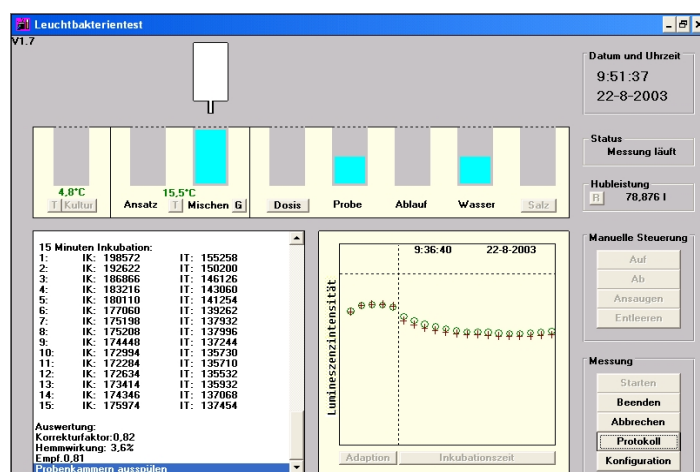
The light bacteria Biomonitor: this completely automated system uses freshly cultivated light emitting bacteria (*Vibrio fischerii*) as a biological sensor. By measuring the light loss in the prepared sample compared to a control sample (drinking water), the toxicity of the sample can be measured. Pollution in the sample intensifies the loss of light in the bacteria. By using freshly cultivated bacteria in the specially designed Bioreactor, the performance is comparable to e.g. the Microtox™ (using freeze-dried bacteria) according to ISO 11348 - 3.



In close co-operation with the laboratory 'Het Waterlaboratorium' (Haarlem), several improvements were supplied for this application. More data are presented for a better alarm evaluation and a procedure was added to maintain a stable level of viable bacteria added to the sample. The use of dynamic alarm levels make it now possible to implement this system completely operational in to the early warning network of the Water Works Amsterdam.

After an extensive test evaluation the biomonitor proved to be an easy to operate on-line Early Warning System. Reasons to choose the instrument were:

- fast response time
- low maintenance
- high reliability of the hardware
- low, overall running costs
- easy to operate.



More information about this article or other bioassay subjects can be supplied, please contact us by fax, telf. or e-mail .