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**Widder et al.**

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(54) **SUBMERSIBLE PORTABLE IN-SITU  
AUTOMATED WATER QUALITY  
BIOMONITORING APPARATUS AND  
METHOD**

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See application file for complete search history.

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(57) **ABSTRACT**

A submersible biomonitoring system for monitoring water quality in situ includes a submersible chamber constructed of a di-electric material and sized to allow suitable signals from one or more aquatic organisms to be received by eliminating cross-talk between cells while allowing ambient conditions to be maintained inside the chamber. The aquatic organism exhibits ventilatory behavior and body movement sensitive to water quality which manifest as electrical signals picked up by electrodes and communicated to a pre-amplifier that conditions the signals for communication to a land-based amplifier and/or controller that is used to interpret the signals to determine when the water to which the organism is exposed has caused physiological stress to the organism.

**10 Claims, 5 Drawing Sheets**

