

a second aquatic organism disposed in control water while said first aquatic organism is disposed in said water to be evaluated, and comparing said ventilatory parameters of said first aquatic organism with corresponding ventilatory parameters of said second aquatic organism.

29. A method as recited in claim 27, further comprising a step of generating an alarm when one or more of said ventilatory parameters exceeds a corresponding threshold.

30. A method as recited in claim 27, further comprising steps of placing said first aquatic organism in control water; calculating baseline ventilatory parameters of said first aquatic organism; then placing said first aquatic organism in said water to be evaluated.

31. A method as recited in claim 27, further comprising a step of sampling said water to be evaluated when an alarm is generated.

32. A method as recited in claim 27, wherein said determining a plurality of ventilatory parameters comprises identifying whole body movement.

33. A method of evaluating water quality, said method comprising:

measuring electrical signals generated by a first aquatic organism disposed in water to be evaluated;

determining a plurality of ventilatory parameters of said first aquatic organism based on said electrical signals, wherein said plurality of ventilatory parameters comprises ventilatory frequency, average ventilatory depth, and cough rate;

analyzing for high frequency coughs and spike coughs; and

monitoring changes in said ventilatory parameters of said first aquatic organism over time.

34. A method as recited in claim 33 further comprising the step of smoothing the electrical signals generated by the first aquatic organism to remove high frequency coughs after analyzing for high frequency coughs and before determining ventilatory frequency, average ventilatory depth, and cough rate of the first aquatic organism.

35. A method as recited in claim 33, further comprising a step of determining a plurality of ventilatory parameters of a second aquatic organism disposed in control water while said first organism is disposed in said water to be evaluated, and comparing said ventilatory parameters of said first

aquatic organism with corresponding ventilatory parameters of said second aquatic organism.

36. A method as recited in claim 33 further comprising a step of generating an alarm when one or more of said ventilatory parameters exceeds a corresponding threshold.

37. A method as recited in claim 33 further comprising steps of placing said first aquatic organism in control water, calculating baseline ventilatory parameters of said first aquatic organism, then placing said first aquatic organism in said water to be evaluated.

38. A method as recited in claim 33 further comprising a step of sampling said water to be evaluated when an alarm is generated.

39. A method as recited in claim 33 wherein said determining a plurality of ventilatory parameters comprises identifying whole body movement.

40. An exposure chamber for housing a plurality of aquatic organisms, said exposure chamber comprising:

a plurality of fish chambers having top and bottom electrodes wherein each fish chamber may house an aquatic organism;

a pre-chamber in contact with said plurality of fish chambers for receiving inlet water and providing said inlet water to said plurality of fish chambers; and

a post-chamber in contact with said plurality of fish chambers for disposing of outlet water from said plurality of fish chambers,

wherein said plurality of fish chambers include opaque walls between adjacent fish chambers for reducing fish stimuli.

41. An exposure chamber as recited in claim 40 further comprising water inlet holes disposed in a wall formed between said pre-chamber and said plurality of fish chambers, and overflow dividers disposed in a wall formed between said post-chamber and said plurality of fish chambers for providing water mixing and flow through said plurality of fish chambers.

42. An exposure chamber as recited in claim 40, including a first electric plug connected to each top electrode and a second electric plug connected to each bottom electrode.

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