What is Claimed is:

1. A system for measuring analyte concentration in a bodily fluid comprising:

a) a durable component comprising a housing having at least one window and containing:

i) at least one spectrophotometer adjacent to and optically communicating with the window,

ii) a computing system having at least one processor and data storage,

iii) means for electronic communication between the computing system and at least one external device;

b) an indicator component comprising an indicator zone comprising at least one colorimetric analyte sensing element;

c) at least one moisture sensor adjacent to the indicator zone;

wherein:

I) the indicator component is arranged and configured for attachment to the durable component while the indicator zone is disposed adjacent to and in optical communication with the at least one window and the at least one spectrophotometer,

II) the computing system is operatively connected to the moisture sensor and the at least one spectrophotometer,

III) the moisture sensor is arranged and configured to communicate the presence of moisture in the colorimetric analyte sensing element to the computing system;

IV) each of the at least one colorimetric analyte sensing element is associated with a spectrophotometer, and

wherein the indicator component further comprises:

a fluid transport layer in fluid communication with the indicator zone, and

a fluid impervious envelope surrounding the indicator zone, the fluid impervious envelope having a discrete pocket arranged on configured to contain each of the at least one colorimetric analyte sensing elements and each pocket has a unique aperture in fluid communication with the fluid transport layer.

2. The system of claim 1 wherein the indicator zone comprises at least two colorimetric analyte sensing elements, each of the at least two colorimetric sensing elements being isolated from other colorimetric sensing elements.

3. The system of claim 2 wherein the at least one moisture sensor comprises a plurality of moisture sensors, each moisture sensor being arranged and configured to communicate the

presence of moisture in each of the at least two colorimetric analyte sensing elements to the computing system.

4. The system of claim 1 wherein the indicator component further comprises:

i) a top plate;

ii) a first flexible web layer adjacent the fluid transport layer;

iii) a second flexible web layer adjacent the fluid impervious envelope;

iv) attachment means disposed on the second flexible web layer; and

v) a holding plate;

wherein:

V) the first flexible web layer, fluid transport layer, fluid impervious envelope, and the second flexible web layer are stacked in order and secured between the top plate and the holding plate;

VI) the indicator zone comprises at least two colorimetric analyte sensing elements;

VII) the fluid impervious envelope has a discrete pocket arranged and configured to contain each of the at least two colorimetric analyte sensing elements;

VIII) the fluid transport layer is arranged and configured to inhibit fluid transport between apertures in the fluid impervious envelope.

5. The system of claim 4 wherein the top plate and holding plate are arranged and configured to provide a predetermined spacing to accommodate indicator component layers with predetermined fluid transport capacity to the indicator zone.

6. The system of claim 1 wherein the indicator component further comprises:

i) a first flexible web layer adjacent the fluid transport layer;

wherein:

V) the first flexible web layer, fluid transport layer, and the fluid impervious envelope are stacked in order and secured together;

VI) the indicator zone comprises at least two colorimetric analyte sensing elements;

VII) the fluid impervious envelope has a discrete pocket arranged and configured to contain each of the at least two colorimetric analyte sensing elements ;

VIII) the fluid transport layer is arranged and configured to inhibit fluid transport between apertures in the fluid impervious envelope.

7. The system of claim 6 further comprising:

ii) a top plate adjacent the first flexible web layer; and

iii) a holding plate,

wherein the first flexible web layer, fluid transport layer and fluid impervious envelope are secured between the top plate and the holding plate.

8. The system of claim 1 wherein the indicator component further comprises a coupler.

9. The system of claim 1 wherein the indicator component is attached to the durable component.

10. The system of claim 1 arranged and configured for exposure to a source of bodily fluid.

11. The system of claim 10 arranged and configured for placement into a diaper.

12. A handheld device comprising the system of claim 10.

13. A kit for measuring analyte concentration in a bodily fluid comprising:

a) a durable component comprising a housing having at least one window and containing:

i) at least one spectrophotometer adjacent to and optically communicating with the window,

ii) a computing system having at least one processor and data storage,

iii) means for electronic communication between the computing system and at least one external device;

b) a plurality of indicator components, each indicator component enclosed in an individual package and comprising:

i) an indicator zone comprising at least one colorimetric analyte sensing element, and

ii) a coupler for the durable component;

c) at least one moisture sensor adjacent to the indicator zone;

wherein:

I) each indicator component is arranged and configured for releasable attachment to the durable component while the indicator zone is disposed adjacent to and in optical communication with the at least one window and the at least one spectrophotometer,

II) the computing system is operatively connected to the moisture sensor and the at least one spectrophotometer,

III) the moisture sensor is arranged and configured to communicate the presence of moisture in the colorimetric analyte sensing element to the computing system;

IV) each of the at least one colorimetric analyte sensing element is associated with a spectrophotometer, and

wherein the indicator component further comprises:

a fluid transport layer in fluid communication with the indicator zone, and

a fluid impervious envelope surrounding the indicator zone, the fluid impervious envelope having a discrete pocket arranged and configured to contain each of the at least one colorimetric analyte sensing elements and each pocket has a unique aperture in fluid communication with the fluid transport layer.

14. The kit of claim 13 wherein the indicator zone comprises at least two colorimetric analyte sensing elements, each of the at least two colorimetric sensing elements being isolated from other colorimetric sensing elements.

15. The kit of claim 14 wherein the at least one moisture sensor comprises a plurality of moisture sensors, each moisture sensor being arranged and configured to communicate the presence of moisture in each of the at least two colorimetric analyte sensing elements to the computing system.

16. The kit of claim 13 wherein each indicator component further comprises:

iii) a top plate;

iv) a first flexible web layer adjacent the fluid transport layer;

v) a second flexible web layer adjacent the fluid impervious envelope;

vi) attachment means disposed on the second flexible web layer; and

vii) a holding plate;

wherein:

V) the first flexible web layer, fluid transport layer, fluid impervious envelope, and the second flexible web layer are stacked in order and secured between the top plate and the holding plate;

VI) the indicator zone comprises at least two colorimetric analyte sensing elements;

VII) the fluid impervious envelope has a discrete pocket arranged and configured to contain each of the at least two colorimetric analyte sensing elements;

VIII) the fluid transport layer is arranged and configured to inhibit fluid transport between apertures in the fluid impervious envelope.

17. The kit of claim 16 wherein the top plate and holding plate are arranged and configured to provide a predetermined spacing to accommodate indicator component layers with predetermined fluid transport capacity to the indicator zone.

18. The kit of claim 13 wherein the indicator component further comprises:

iii) a first flexible web layer adjacent the fluid transport layer;

wherein:

V) the first flexible web layer, fluid transport layer, and the fluid impervious envelope are stacked in order and secured together;

VI) the indicator zone comprises at least two colorimetric analyte sensing elements;

VII) the fluid impervious envelope has a discrete pocket arranged and configured to contain each of the at least two colorimetric analyte sensing elements;

VIII) the fluid transport layer is arranged and configured to inhibit fluid transport between apertures in the fluid impervious envelope.

19. The kit of claim 18 further comprising:

iv) a top plate adjacent the first flexible web layer; and

v) a holding plate,

wherein the first flexible web layer, fluid transport layer and fluid impervious envelope are secured between the top plate and the holding plate.

20. A method of measuring analyte concentration in a bodily fluid comprising:

a) obtaining a durable component comprising a housing having at least one window and containing:

i) at least one spectrophotometer adjacent to and optically communicating with the window,

ii) a computing system having at least one processor and data storage, and

iii) means for electronic communication between the computing system and at least one external device, and

iv) at least one moisture sensor;

b) removing an indicator component from an individual package, the indicator component comprising an indicator zone comprising at least one colorimetric analyte sensing element;

c) coupling the indicator component to the durable component, wherein:

I) the indicator zone is disposed adjacent to and in optical communication with the at least one window and the at least one spectrophotometer,

II) the computing system is operatively connected to the moisture sensor and the at least one spectrophotometer,

III) the moisture sensor is disposed adjacent the indicator zone, and

IV) each of the at least one colorimetric analyte sensing element is associated with a spectrophotometer; and

d) placing the assembled device in contact with a source of the bodily fluid;

e) collecting and transporting the bodily fluid to the at least one colorimetric analyte sensing element;

f) detecting the presence of the bodily fluid in contact with the at least one colorimetric analyte sensing element;

g) collecting optical data relating to the at least one colorimetric analyte sensing element with at least one spectrophotometer after a predetermined time period after detecting the presence of bodily fluid in contact with the colorimetric analyte sensing element;

h) communicating the optical data to a computing system having at least one processor and data storage; and

i) analyzing the optical data to determine at least one analyte concentration in the bodily fluid,

wherein the indicator component further comprises:

a fluid transport layer in fluid communication with the indicator zone, and

a fluid impervious envelope surrounding the indicator zone, the fluid impervious envelope having a discrete pocket arranged on configured to contain each of the at least one colorimetric analyte sensing elements and each pocket has a unique aperture in fluid communication with the fluid transport layer.

21. The method of claim 20 in which step (d) comprises attaching the assembled device to a body-facing surface of a diaper.

22. The method of claim 21 in which step (d) comprises contacting the assembled device with the bodily fluid.