In conjunction with the desire to provide improved hermetic reservoir devices, it would also be advantageous to improve the manner in which such actively-controlled reservoir devices can be operably deployed into a patient in need thereof. For example, it would be desirable to reduce the size of incisions and/or increase the possible range of tissue sites into which the device can be suitably deployed without undue pain or discomfort to the patient. It would be desirable to provide device configurations conducive to such uses in patients.

Summary

Some or all of the above needs and/or problems may be addressed by one or more embodiments described herein. In one embodiment, a containment device is provided that includes an elongated microchip element having one or more containment reservoirs that are configured to be electrically activated to open. The containment device also includes an elongated electronic printed circuit board (PCB) comprising a biocompatible substrate. The elongated PCB also comprises a first side on which one or more electronic components are fixed and an opposed second side on which the elongated microchip element is fixed in electrical connection to the one or more electronic components. Further, the containment device includes an elongated housing fixed to the elongated PCB. The elongated housing is configured to hermetically seal the one or more electronic components of the elongated PCB within the elongated housing.

According to a first aspect of the present invention, there is provided a containment device, comprising: an elongated microchip element comprising one or more containment reservoirs that are configured to be electrically activated to open; an elongated electronic printed circuit board (PCB), wherein the elongated PCB comprises a first side on which one or more electronic components are fixed and an opposed second side on which the elongated microchip element is fixed in electrical connection to the one or more electronic components; and an elongated housing fixed to the elongated PCB, wherein the elongated housing is configured to surround the first side of the elongated PCB such that the elongated housing and the elongated PCB collectively form a hermetic enclosure around the one or more electronic components to hermetically seal the one or more electronic components of the elongated PCB within the elongated housing.

According to a second aspect of the present invention, there is provided a containment device, comprising: a microchip element comprising one or more containment reservoirs that are configured to be electrically activated to open; an electronic printed

circuit board (PCB) comprising a biocompatible substrate, wherein the PCB comprises a first side on which one or more electronic components are fixed and an opposed second side on which the microchip element is fixed in electrical connection to the one or more electronic components; and a housing fixed to the PCB, wherein the housing is configured to surround the first side of the PCB such that the housing and the PCB collectively form a hermetic enclosure around the one or more electronic components to hermetically seal the one or more electronic components of the PCB within the housing, wherein the containment device comprises an elongated tubular structure configured to be injected in a human or animal subject via a medical instrument.

According to a third aspect of the present invention, there is provided a method of assembling a containment device, comprising: providing an elongated microchip element comprising one or more containment reservoirs that are configured to be electrically activated to open; fixing the elongated microchip element to a first side of an elongated electronic printed circuit board (PCB) which comprises a biocompatible substrate; electrically connecting the elongated microchip element to one or more electronic components which are fixed on a second side of the elongated PCB; and hermetically sealing the one or more electronic components of the elongated PCB within an elongated housing that is fixed to the elongated PCB by surrounding the first side of the elongated PCB such that the elongated housing and the elongated PCB collectively form a hermetic enclosure around the one or more electronic components.

Other embodiments, aspects, and features of the containment device will become apparent to those skilled in the art from the following detailed description, the accompanying drawings, and the appended claims.

Brief Description of the Drawings

Reference will now be made to the accompanying drawings, which are not necessarily drawn to scale.

FIG. 1 schematically depicts an exploded perspective view of a prior art containment device including a microchip assembly.

FIG. 2A schematically depicts a cross-sectional view of an assembled containment device including a microchip assembly according to an embodiment.