CLAIMS

1. An ionizer comprising:

an ionization chamber;

an air inlet coupled to the ionization chamber;

an ionization electrode having a tip portion positioned within the ionization chamber;

a high voltage generator in electrical connection with the ionization electrode, the high voltage generator being operative to apply an ionization voltage to the tip portion to generate ions;

an output nozzle coupled to the ionization chamber; and

an ion detector that is operative to detect the ions generated in the ionization chamber;

wherein the ion detector comprises a flexible printed circuit arranged to surround at least a portion of the ionization chamber.

2. The ionizer according to claim 1, further comprising:

a hollow tubular isolation ring locatable in the ionization chamber;

wherein the printed circuit is arranged around the tubular isolation ring.

3. The ionizer according to claim 1, further comprising:

a driver and detection circuit in electrical connection with the ion detector; and

one or more indicators in electrical connection with the driver and detection circuit;

wherein the driver and detection circuit is electrically connected to the one or more indicators to provide a warning when a ratio of positive ions to negative ions is outside a predetermined range.

4. The ionizer according to claim 1,

wherein the printed circuit comprises:

a substrate; and

a first electrode, and a second electrode separate from the first electrode, that are formed on the substrate.

5. The ionizer according to claim 4,

wherein the first electrode and the second electrode together form an interdigitated electrode structure.

6. The ionizer according to claim 4,

wherein a surface area of the printed first electrode exposed to the ions is substantially equal to a surface area of the printed second electrode exposed to the ions.

7. The ionizer according to claim 4,

wherein the first electrode is configured to attract positive ions towards the first electrode and the second electrode is operative to attract negative ions towards the second electrode.

8. The ionizer according to claim 1,

wherein the high voltage generator and the ionization electrode are comprised in an inserter assembly which is detachably insertable with respect to the ionization chamber, the inserter assembly further comprising:

an electrically-conducting tube connecting the high voltage generator and the ionization electrode; and

a transformer holder printed circuit board on which the high voltage generator is soldered.

9. The ionizer according to claim 8,

wherein the air inlet, output nozzle and ion detector are comprised in a main body; and

the inserter assembly is detachably insertable into the main body.