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HR EXCELLENCE IN RESEARCH

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DEVICE FOR DECONTAMINATION LIQUID

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APPLICATION FIELDS: Food – Health- Hygiene - Medicine

AIM: The decontamination and inactivation of pathogens, frequently present in polluted fluids (for example, water, blood, blood plasma, various hygienic and food liquids) following the action of applied ultraviolet radiation, currently enjoys notoriety, which can be applied in various fields such as: medicine, food industry, agriculture and health.

SOLUTION: The particularity of the proposed device is the introduction of a quartz spiral that increases the efficiency of the disinfection rate of the infected liquid.

Currently, the application of Ultraviolet C Radiation is gaining notoriety for the decontamination and annihilation of pathogens frequently present in polluted fluids, which is used in various fields such as food, Health, Hygiene, Medicine, etc. To improve the efficiency of decontamination, we pay attention to equipment prepared from quartz rods/spherical optics related to the rotational movement of the contaminated fluid through the screw channels. The main idea of the proposed device is related to the rotation of contaminated liquids and gases under the action of UV-C through the screw channels, prepared from the quartz rod in the torsion configuration, where the contaminated liquids are rotated along the flow direction. The particularity of the proposed device is the introduction of a quartz spiral inside the decontaminating tube, which increases the efficiency of the disinfection rate of the infected liquid.

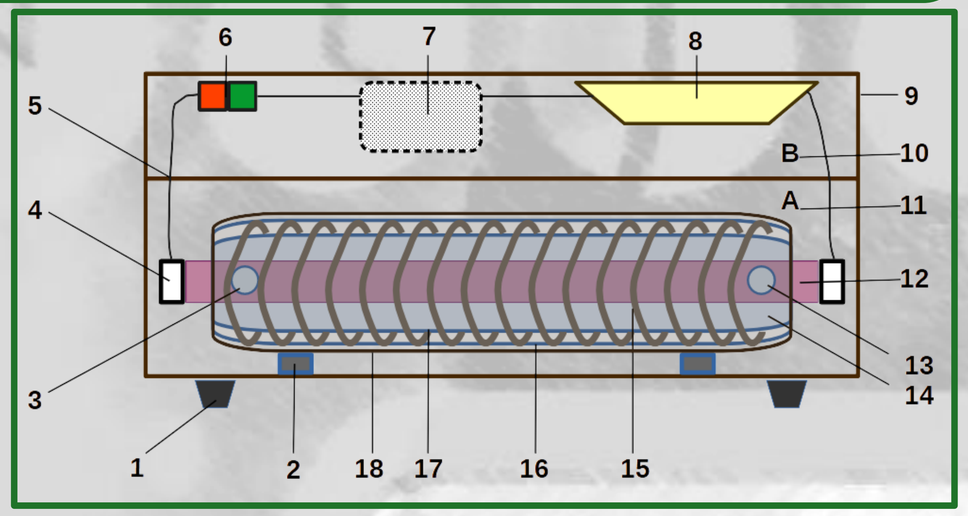

Figure 1. The device for decontamination of liquids includes the housing of the device (9), an inlet port (3) and an outlet port (13) through which the liquid enters and leaves, respectively, the decontaminating tube formed by two quartz cylinders of different diameters (16) and (17) joined at the ends by the welding method, with an external covering of reflective material (18), which contains an ultraviolet radiation source (12) and a quartz spiral (15) between the cylinders (16) and (17) , which is fixed on the support (2) in the decontamination compartment (11); the electrical compartment (10) contains the switch (6), the electrical ballast (8), the electrical wires (5) that ensures the current transport to the connector (4), control device (7) that provides information about the source of ultraviolet radiation.

ADVANTAGES: The advantages of this device is the manipulation of pathogens with the help of the quartz coil inserted in the decontamination tube, therefore, the pathogens are directed to the evanescence zones with increased radiation intensity that appear around the coil, and thus the pathogens are subjected to higher doses of radiation with inactivation them.

IMPLEMENTATION STAGE: : At the laboratory level.

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