Water Potability Device (W.P.D.)

Pegolo, Eros

Drinking water is a basic need for every living being. Unfortunately, water sources are running out because of human pollution and the global demographic increase. For this reason, it is necessary to take action: the first and most important step is prevention. The central idea of my project is the creation of a water potability device (W.P.D.): a mini-incubator, which is able to detect quickly and with precision (1 CFU/100-250mL) the potability of water intended for human consumption, swimming pools, wells, bathing. The W.P.D. can also be employed during emergencies, such as earthquakes, in order to quickly detect bacteriological pollution of groundwater. The prototype employs a rapid enzymatic method, through microbiological analysis, to identify pollution-indicator bacteria such as Coliforms, Escherichia coli, Enterococcus faecalis e faecium, and Pseudomonas aeruginosa; through the colorimetric physico-chemical tests, it also determines the levels of nitrite, active chloride, iron, ammonia, and the water pH. The W.P.D. is addressed to the general public, due to the simplicity of the procedure and the easy interpretation of the results. Another advantage of this device is its eco-compatibility: the culture media and the reactive chemicals can be directly disposed of into the sewage system without polluting the environment. Currently there is no device on sale that can be used to carry out microbiological analysis to detect the potability of water. For this type of tests, it is necessary to address specialized firms, which take longer at higher costs.

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