Smart Electrical Device for Contamination Detection and Drinking Water Quality Monitoring

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Water pollution is a critical issue that threatens maintaining healthy living conditions. Clean drinking water is the base for the improvement of public health. In addition to the conservation of clean water, there is an urgent need for a sudden-accident-management system. The system would predict the pollution caused by mixing sewage with drinking water, fractures or corrosion in water pipes, or any sudden accidents in drinking water supply networks. This study was conducted to design a device that detects water pollution depending on water inorganic parameters, and classifies water according to its quality. It then redistributes water into drinking water filters or for other household purposes. Water inorganic pollutants have a higher electrical conductivity. Hence, an open circuit, which shorted or closed by water flow was designed. A voltage sensor has been used to send a signal to the control unit when the voltage becomes higher than the standard voltage of pure water. The higher the voltage we get, the higher the pollution level we have. The device has proven successful and viable detection. The World Health Organization (WHO) standards for drinking water were applied to obtain the standard voltage, which was also confirmed using different water samples. Continuous electric current source up to 12 volts was implemented. 11.19-11.33 volts become the threshold limit of device with sensitivity less than 0.01 volt, as clean acceptable drinking water response was 11.19-11.33 volts. Water within the range of 11.338–11.64 volts can be treated. Keywords Drinking water; electric system; public health; water pollution; impure water detector.

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