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INACTIVATION OF PATHOGENIC BACTERIA USING PULSED UV-LIGHT AND ITS APPLICATION IN WATER DISINFECTION AND QUALITY CONTROL

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Abstract:

The lethality of pulsed ultra-violet (UV) rich light for the inactivation of pathogenic bacteria has been investigated. A low pressure xenon filled flash lamps that produced UV intensities have been used. The pulsed operation of the system enable the release of electrical energy stored in the capacitor into the flash lamp within a short time and produces the high current and high peak power required for emitting the intense UV flash. The flash frequency was adjusted to one pulse per second. Several types of bacteria were investigated for their susceptibility to pulsed UV illumination. The treated bacterial populations were reduced and determined by direct viable counts. Among the tested bacteria *Pseudomonas aeruginosa* was the most susceptible to the pulsed UV- light with a 8 log₁₀ cfu/ml reduction after 11 pulses, while the spores of *Bacillus megaterium* was the most resistant and only 4 log₁₀ cfu/ml reduction achieved after 50 pulses of illumination. The results of this study demonstrated that pulsed UV- light technology could be used as an effective method for the inactivation, of pathogenic bacteria in different environments such as drinking water.

Keywords:

UV inactivation . flashlamp

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