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THE EFFECT OF LASER ON THE EFFICIENCY OF BIOLOGICAL TREATMENT OF PHARMACEUTICAL WASTEWATER

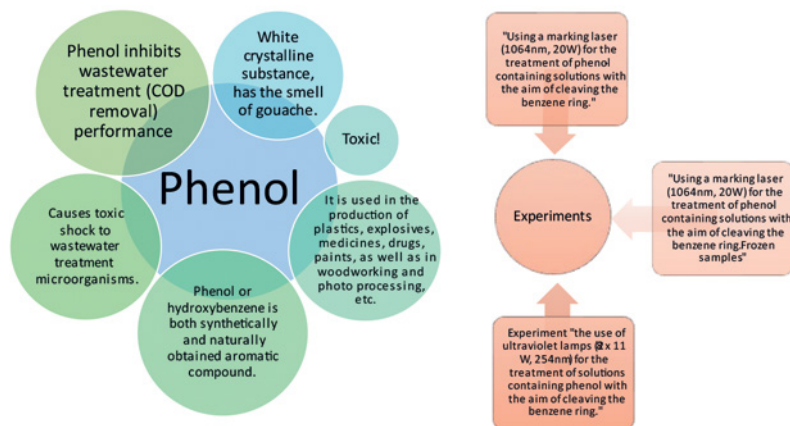
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Abstract – The aim of the work is to explain the danger of phenol and phenolic compounds to human health and the environment. In addition, it explains where and why pollution by phenol and its compounds occurs, especially in industrial wastewater. The authors investigate the possibility of using laser technologies for the decomposition of phenol, as well as for the purification of industrial wastewater from phenolic compounds. Treatment of wastewater from phenol and its compounds using microorganisms for biological treatment is widely used in the world. This method is economical and environmentally friendly. On the other hand, exceeding the permissible concentration of phenol, which is individual for each biological treatment plant, microorganisms in such treatment plants may die because they are poisoned by phenol or its compounds. Thus, the biological treatment of industrial wastewater is temporarily stopped until the concentration of phenol is reduced to an acceptable limit and the microorganisms recover. Such a procedure can take a long time and is unpredictable because microorganisms are sensitive to changing conditions. Based on this, literature sources have been explored. This could help to understand which laser devices can be used to split a phenol compound or a benzene ring into simple chemicals. It also helps to understand how phenol-containing wastewater affects the microorganisms of biological treatment plants and the course of the process, as well as to find a laser device that would not affect the usual conditions of microorganisms of biological treatment plants. Several experiments were carried out, including those with lasers, to exclude possible interfering factors and to prove the already known data for further scientific research.

Keywords – *Biological wastewater treatment; laser technology; phenol*



Phenol characteristics and experiments description.