

ENVIRONMENTALLY FRIENDLY INHIBITION OF PATHOGENIC BACTERIA AND ALGAE PROPAGATION DUE PHTALOCYANINE AGENTS

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ABSTRACT

Říhová Ambrožová, J., Bezděková, E., Loučková, P., Nekovářová J.: **Environmentally Friendly Inhibition of Pathogenic Bacteria and Algae Propagation Due Phtalocyanine Agents**

From 2004, in the laboratory of The Institute of Chemical Technology in Prague is being solved the project FT-TA/034 “Environmentally friendly inhibition of pathogenic bacteria and algae propagation in the circulatory cooling systems of nuclear power stations and in other similar technological facilities” to determine effects of phthalocyanine agents. The project bearer is VÚOS, Inc. in Rybitví (Research Institute for Organic Synthesis Inc.), where are the new phthalocyanines synthesized. The aimed goal of the research is environmentally friendly liquidation of bacteria and algae by means of photodynamic generated singlet oxygen through impact of solar radiation in the circulation cooling waters of various technical and technological systems. The principle of the problem outlined is the applying of phthalocyanine agents on samples of pure bacterial, anabaenas and algae cultures to estimate the inhibition effect on the organism exposed. In the course of solution, it is assumed that in such way conducted inhibition of bacteria, anabaenas and algae as well of their proliferation would replace routinely used bactericidal and algicidal preparations, which demand permanent dosing into circulating waters or perhaps from time to time an application of shocking doses. The particular algicidal and bactericidal agents represents in this case in situ emerging singlet oxygen, that is harmless to water biocenosis and whose presence in the water is no reason to ban the outflow of waters treated in such a way into water streams. The goal should be also a direct estimation of the effect those agents on cooling waters samples e. g. from the nuclear power plant systems. The purpose of the tests performance is also elimination of filamentous green algae, emerging in the systems cooling towers. The applied preparations are not toxic and do not burden the living environment, they contain no substances interacting with surface materials of structures in the circulatory cooling circuit systems, etc.

Key words: Phtalocyanines; environmentally friendly inhibition; singlet oxygen; algae; bacteria