



Doctoral thesis summary

DNI/NIE/passport	AH3703359		
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Title of the thesis	Solar disinfection of secondary effluent and the subsequent bacterial regrowth: considerations, limitations and environmental perspectives		
Structural unit	Institute of Textile Research and Industrial Cooperation of Terrassa (INTEXTER)		
Programme	Environmental Engineering		
UNESCO codes	330506	230900	230220

(Minimum 1 and maximum 4; see the codes at <https://doctorat.upc.edu/academic-management/formsfolder/thesis-registration-and-deposit/unesco-codes>)

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The present Thesis deals with the solar disinfection of synthetic secondary effluent under laboratory controlled conditions, focusing on the post-irradiation bacterial regrowth. The influence of various internal and external factors and their effect on solar disinfection, as well as bacterial regrowth kinetics are the subject under question. With the aid of a common fecal indicator microorganism, the effects of light intensity, temperature, initial bacterial concentration, light energy (wavelength), manner of delivery (continuous-intermittent) were investigated. Also, the post-treatment events, such as dark repair, photoreactivation and the survival in natural water matrices were assessed, along with the use of technical means (flow photoreactors with recirculation) and advanced oxidation processes (photo-Fenton and sonication) for regrowth risk minimization. The findings provided valuable output, conclusions on the suitability of solar irradiation as a secondary wastewater disinfection technique, indicating the limitations of its applicability, the considerations on the treatment specifications and its environmental perspectives.

Place	Thessaloniki	Date	25/06/2014
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