

Name:

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Research Group:

Solar treatment of water

Research Centre:

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Funding body:

N/A

Area (field) of study:

Disinfection, decontamination and reuse of fresh-cut industry wastewater

Thesis Title:

Development and application of photochemical and photocatalytic processes for disinfection, decontamination and reuse of wastewater from the food industry.



Abstract:

The optimization of industrial processes with high water consumption is a priority area for the scientific community and institutions in order to reduce the excessive consumption of natural water resources. The fresh-cut produce industry is one of the major water consumers of food industries using around 40 m³ of potable water per tonne of gross product.

In order to prevent and avoid the microbiological risk arising from the washing process of fresh-cut products the chlorine disinfection method is currently the most used technology. The use of chlorine in this industry has been forbidden in some European countries because of the generation of carcinogenic and environmentally hazardous disinfection by products. Due to these problems, it is important to investigate alternative treatment technologies for the fresh-cut industry with the objective of reducing its water footprint and the chemical and microbiological contamination of the environment.

Consequently, the general aim of this thesis is to investigate the use of solar driven technologies (photo-Fenton solar, H₂O₂ / solar) and conventional process (ozone / H₂O₂) for the treatment of wastewater (or washing water) from the fresh-cut industry. The main objective is to improve its chemical and microbiological quality to allow the recycle of the washing water in the same industrial process and the reuse of this final wastewater to crops irrigation.

Collaborations:

N/A

Publications:

N/A

Presentations:

13th Alliance of European Laboratories for Research and Technology on Solar Concentrating Systems (SOLLAB) Doctoral Colloquium. Almería, Spain, 06-08 June 2016.

2nd Workshop of Doctoral program biotechnology and bioprocesses. Almería, Spain, 19 December 2016.