



Journal of Environmental Science and Health, Part A >  
Toxic/Hazardous Substances and Environmental Engineering  
Volume 48, 2013 - [Issue 12](#)

627 | 29 | 0  
Views | CrossRef citations to date | Altmetric

ARTICLES

# Treatment of winery wastewater by electrochemical methods and advanced oxidation processes

Visnja Orescanin, Robert Kollar, Karlo Nad, Ivanka Lovrencic Mikelic & Stefica Findri Gustek

Pages 1543-1547 | Received 09 Jan 2013, Published online: 26 Jun 2013

Cite this article <https://doi.org/10.1080/10934529.2013.797267>



Full Article Figures & data References Citations Metrics

Reprints & Permissions

Read this article

Share

## Abstract

The aim of this research was development of new system for the treatment of highly polluted wastewater (COD = 10240 mg/L; SS = 2860 mg/L) originating from vine-making industry. The system consisted of the main treatment that included electrochemical methods (electro oxidation, electrocoagulation using stainless steel, iron and aluminum electrode sets) with simultaneous sonication and recirculation in strong electromagnetic field. Ozonation combined with UV irradiation in the presence of added hydrogen peroxide was applied for the post-treatment of the effluent. Following the combined treatment, the final removal efficiencies of the parameters color, turbidity, suspended solids and phosphates were over 99%, Fe, Cu and ammonia

approximately 98%, while the removal of COD and sulfates was 77% and 62%, respectively. A new approach combining electrochemical methods with ultrasound in the strong electromagnetic field resulted in significantly better removal efficiencies for majority of the measured parameters compared to the biological methods, advanced oxidation processes or electrocoagulation. Reduction of the treatment time represents another advantage of this new approach.

Keywords:

Winery wastewater    electrochemical treatment    ultrasound    ozonation    H<sub>2</sub>O<sub>2</sub>    COD    SS electrode  
iron anode    aluminum anode

#### Related Research Data

[Ozonation kinetics of winery wastewater in a pilot-scale bubble column reactor](#)

Source: Water Research

[Treatment of winery wastewater using a photocatalytic/photolytic reactor](#)

Source: Chemical Engineering Journal

[Characterization and treatment of water used for human consumption from six sources located in the Cameron/Tuba City abandoned uranium mining area](#)

Source: Journal of Environmental Science and Health Part A

[Winery wastewater treatment in a hybrid constructed wetland](#)

Source: Ecological Engineering

[Preparation of drinking water used in water supply systems of the towns Zrenjanin and Temerin by electrochemical methods](#)

Source: Journal of Environmental Science and Health Part A

[Combination of long term aerated storage and chemical coagulation/flocculation to winery wastewater treatment](#)

Source: Desalination

Related research 

## Information for

[Authors](#)[R&D professionals](#)[Editors](#)[Librarians](#)[Societies](#)

## Opportunities

[Reprints and e-prints](#)[Advertising solutions](#)[Accelerated publication](#)[Corporate access solutions](#)

## Open access

[Overview](#)[Open journals](#)[Open Select](#)[Dove Medical Press](#)[F1000Research](#)

## Help and information

[Help and contact](#)[Newsroom](#)[All journals](#)[Books](#)

## Keep up to date

Register to receive personalised research and resources  
by email

[Sign me up](#)