WORLD WATER DAY

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THE 3RD INTERNATIONAL WORLD WATER DAY ONLINE CONFERENCE

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SRH University of Applied Sciences, Heidelberg

The 3rd International World Water Day Conference

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Table of contents

1. Evaluating the Influence of Agriculture on Groundwater Chemistry in the Plio-Quaternary Aquifer of Nador (Tipaza)....1
2. Water forest Water (An underwater sound installation)....2
3. Improving The Quality of Abattoir Wastewater Using Nature-Based Tertiary Treatment Methods, A Case of a Local Abattoir Goromonzi, Zimbabwe....3
4. Investigating Soil Salinity in the Béni Abbès Oasis, South-West Algeria....4
5. Rainwater Harvesting – Global Scenario, Modern Solutions and its Impact....5
6. Texas Water Trends....6
7. Assessment of Climate Change and Anthropogenic Impacts on Groundwater in the Alluvial Aquifer of Upper Cheliff, Algeria....7
8. Construction sites Particulate Matter (PM10 and PM2.5) effect on Danube aquatic water system in the city of Novi Sad, Serbia....8
9. Ecological and quality changes in the river Ibar in the function of the 2020 data oxygen regime....9
10. New methods and technologies in wastewater treatment....10
11. Discharge Estimation of Non-Prismatic Compound Channels....11
12. Technological approaches & methodology for using grey water....12
13. Identification Of Groundwater and Hotspots Contaminated with Heavy Metals in State Himachal Pradesh, India: Sources, Health Issues, Toxicity Mechanism and Removal Techniques....13
14. Streamflow Modelling of Lower Godavari River Basin....14
15. Flood Modelling of Subernarekha River Using HEC-RAS....15
16. Dissolved and total metal concentrations in water of the karst Krka River: bioavailability and influence of industrial wastewaters....16
17. Impact of municipal and industrial wastewaters on microplastic exposure and toxic effects of karst river water....17
18. Assessment of Agricultural Drought of Rajasthan by Using Remote Sensing Technique....18
19. Trend Analysis of Precipitation and VCI based Drought for Rajasthan....19
20. An overview of drying technologies for the production and preservation of natural coagulants....20
21. Evaluation Of Water Quality and Its Suitability for Rural Communities in Southern Nigeria....21
22. Removal of Heavy Metal Ions from Multi-Component System using Corn Cob Activated Carbon....22
23. Increased flow mixing between floating treatment wetlands to improve nutrient supply....23
24. Water as a reflection of fauna situation in Kungur Ice cave....24
25. Software application for surface runoff prediction based on artificial neural network models and back propagation algorithm....25
26. Comparison between hybrid ANFIS models and ARIMA models in surface runoff estimating....26
27. AI-powered methods for the prediction of future floods and droughts....27

28. **Waste Water Management and Fish Culture in Pakistan 28**
29. **Assessing Groundwater-Surface Water Interaction in Upper Cheliff's Alluvial Plain for Pollution Source (Algeria) 29**
30. **The potential of green roofs with integrated rainwater harvesting and greywater recycling for the development of blue-green infrastructure in cities: The case of Bahnstadt, Heidelberg, Germany ... 30**
31. **Treatment of Wastewater from Coal Stockpile Runoff Banana Steam Juice, Aloe Vera, and Corn Starch with Poly Aluminum Chloride (PAC) mixed Coagulant 31**
32. **The Effect of Phosphate Buffered Saline (PBS) on Anaerobic Digestion-Microbial Electrolysis Cell (AD-MEC) Integrated Systems 32**
33. **Modelling Landslides and Debris Flow in Chimanimani District, Zimbabwe 33**
34. **Assessing the potential of using Pelargonium Zonale to reduce the biotoxicity of endocrine disruptors on Aliivibrio fischeri through phytoremediation 34**
35. **Land use and climate change impacts on river system sediment yield and water quality 35**
36. **Application of hydraulic modeling and GIS for real loss management in non-revenue water for City of Harare 36**
37. **Optimization of double dielectric barrier plasma reactor for the treatment of PFCs-contaminated groundwater 37**

Assessing the potential of using Pelargonium Zonale to reduce the biotoxicity of endocrine disruptors on Aliivibrio fischeri through phytoremediation

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Abstract:

Over a 14-day period, a laboratory experiment was performed in order to evaluate the efficiency of the plant species *Pelargonium Zonale* in the phytoremediation of model solution spiked with endocrine disruptors, bisphenol A and nonylphenols. On the fourth, seventh, and fourteenth days, samples of two liters of the model solution were obtained. To analyze the biotoxicity of the previously indicated model solution samples during the phytoremediation process, a toxicity test using *Aliivibrio fischeri*, a Gram-negative bioluminescent bacterium, was used. Measurements of toxicity were conducted in accordance with the SRPS ISO 11348-3 standard, utilizing freeze-dried *Aliivibrio fischeri* bacteria. The model solution samples were diluted to 50, 25, 12.5, 6.25, and 3.25% of the initial concentrations of 0.091 mg L^{-1} each of nonylphenol and bisphenol A. The achieved results have shown that no inhibition of luminescent bacteria was achieved by the seventh day of the experiment. On the seventh day, the luminescent bacteria were inhibited by 8% at the highest concentration tested. The inhibition rate of the luminous bacteria progressively increased, reaching 48.5% at the highest concentration tested on the fourteenth day of the experiment. According to the results and the increasing inhibition of luminescent bacteria, it can be assumed that the effect of acute toxicity was not reached during the deployment of the phytoremediation experiment.

Keywords: biotoxicity, Aliivibrio fischeri, endocrine disruptors, phytoremediation, Pelargonium Zonale