عنوان مقاله:

Modelling of Disinfection by-products Formation via UV Irradiation of the Water from Tajan River (Source Water for Sari Drinking Water, Iran)

محل انتشار:

مجله آرشیو علوم بهداشتی, دوره 2, شماره 4 (سال: 1392)

تعداد صفحات اصل مقاله: 8

نویسندگان:

Allahbakhsh Javid - *School of Health, Shahroud University of Medical Sciences, Shahroud, Iran*

Aliakbar Roudbari - *Center for Health-Related Social and Behavioral Sciences Research, Shahroud University of Medical Sciences, Shahroud, Iran*

Ahmad Reza Yari - *Research Center for Environmental Pollutants, Qom University of Medical Sciences, Qom, Iran*

خلاصه مقاله:

Background & Aims of the Study Irradiation with ultraviolet light (UV) is used for thedisinfection of bacterial contaminants in the production of potable water. The mainobjective of the study was to investigate and model Disinfection By-Products (DBPs)formation due to the UV Irradiation of the Tajan River water under different Irradiationconditions.Materials & Methods: Water samples were collected throughout September 2011 toAugust 2013. Transportation of the sample to the laboratory was done on ice in a cooler,and physiochemical analysis was conducted immediately within one day. Dissolved organiccarbon (DOC) was determined by a TOC analyzer. Irradiation experiments were conductedin a series of 25 mL glass serum bottles with Teflon septa. The present study adopts anorthogonal design. The design involved irradiation with UV at a UV/DOC ratio of 0.5–3.0and incubating (headspace-free storage) for 5–25 sec. A 1 mM phosphate buffer maintainedthe pH at 6, 7, or 8 respectively, and an incubator maintained the temperature (Temp) at 15,20, or 25 °C respectively. The development of empirical models for DBPs formation used amultivariate regression procedure (stepwise) which applied the SPSS System for Windows(Version 16.0).Results: The results showed that the total DBPs formation ranged between 12.3 and 67.4mg/l and that control of the levels was primarily due to the reaction time and the dissolvedorganic carbon level (DOC) in the water.Conclusions: Reaction time and level of DOC concentrations in water exerted a dominantinfluence on the formation of DBPs during the UV irradiation of water from the TajanRiver. The relationships between the measured and predicted values were satisfactory withR2 values ranging from 0.89 (for Octanal)–0.92 (for Formaldehydes). The DOC level inwater is the key factor in controlling DBPs formation.

کلمات کلیدی:

DisinfectionUltraviolet radiationModellingDrinking water-analysisIran,Sari

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/792426