



“Gheorghe Asachi” Technical University of Iasi, Romania



INVESTIGATION OF DRINKING WATER QUALITY CHANGES IN THE DISTRIBUTION NETWORK OF IASI CITY BY MEANS OF AN ON-LINE MONITORING SYSTEM

Ioana Gabriela Dascalescu¹, Maria Cohl¹, Carmen Teodosiu^{2*}

¹SC APAVITAL SA Iasi, 10 M. Costachescu Street, 700495 Iasi, Romania

²“Gheorghe Asachi” Technical University of Iasi, Faculty of Chemical Engineering and Environmental Protection, Department of Environmental Engineering and Management, 73 Prof.dr.docent D. Mangeron Street, 700050 Iasi, Romania

Abstract

Drinking water produced in water treatment plants almost invariably fulfils the water quality requirements set, for example by the European Union Drinking Water Directive 98/83/EC (EU DWD) and national legislation. However, EU DWD requires that water quality should also meet the requirements at the consumers' tap. The quality of drinking water changes due to the transportation through the distribution networks and the time spent in the reservoirs until the last point of consumption. Water companies face major problems related to the quality of the drinking water at consumers' tap, even if they invest important financial resources for catchments, treatment and disinfection. Aesthetic and organoleptic problems are the main reasons for customers to complain about the water quality supplied. Turbidity is one of the quality indicators causing most of the water quality problems. Nowadays, modern water management must tackle in an integrated way the law requirements and the new technologies and instruments which help water companies identify the cause of any events occurring in the supply networks, in terms of real-time monitoring. These problems are also valid for Iasi County, situated in the North-Eastern part of Romania, where water supply and wastewater treatment are managed by SC Apavital SA, a county-wide public-owned company which has the task of providing high-quality water and related services for customers, while complying with strict regulations.

This study presents the application of an on-line monitoring system for real-time, continuous monitoring of turbidity in the Iasi city distribution network, as well as the efficiency of on-line turbidimeters for water quality monitoring in the effluent of the treatment plant and for water quality changes in the distribution system. By evaluating the data gathered during the on-line monitoring of turbidity for this case study, it is possible to detect abrupt changes in water quality and thus to react to any disturbances in the system by adequate corrections in the treatment stages.

Key words: distribution network, water quality monitoring, water supply

Received: September, 2011; Revised final: November, 2011; Accepted: November, 2011

* Author to whom all correspondence should be addressed: e-mail: cteo@tuiasi.ro; Phone/Fax: +40 232237594