



“Gheorghe Asachi” Technical University of Iasi, Romania



COMPARISON OF CONVENTIONAL AND *Vibrio fischeri* BIOASSAYS FOR THE ASSESSMENT OF MUNICIPAL WASTEWATER TOXICITY

Nora Kováts^{1*}, Maha Refaey², Bettina Varanka²,
Károly Reich², Árpád Ferincz¹, András Ács¹

¹Institute of Environmental Sciences of the University of Pannonia, 10 Egyetem Street, Veszprém, H-8200, Hungary

²Institute of Environmental Engineering of the University of Pannonia, 10 Egyetem Street, Veszprém, H-8200, Hungary

Abstract

The bioassay based on the bioluminescence inhibition of *Vibrio fischeri* has been successfully applied to test municipal wastewater toxicity, in fact, the ISO 11348-3 standard was especially issued to prescribe the application of this test in wastewater toxicity assessment. However, this protocol cannot take into consideration virtual toxicity caused by turbidity or color of the sample tested. On the contrary, the kinetic version of the *V. fischeri* assay (ISO 21338:2010: Water quality - Kinetic determination of the inhibitory effects of sediment, other solids and colored samples on the light emission of *Vibrio fischeri* /kinetic luminescent bacteria test/) was developed to mitigate the drawbacks of the original protocol. Municipal wastewaters are often turbid/colored. Two versions of the *V. fischeri* bioluminescence inhibition assays were applied for municipal wastewater samples, before and after filtering. In most cases, the traditional version of the bioassay detected higher toxicity than the kinetic version, most possibly implying that reduced light emittance caused by solid particles and/or color also contributed to toxicity readings.

Key words: Flash, kinetic assay, municipal wastewater, ToxAlert, *Vibrio fischeri*

Received: July 2012, *Revised final:* October 2012, *Accepted:* November 2012

* Author to whom all correspondence should be addressed: e-mail: kovats@almos.vein.hu; Phone/Fax: +36 88 624442