

Home

Online Library DWES

- Recent Final Revised Papers
- [Volumes and Issues](#)
- Special Issues
- Library Search
- Title and Author Search

Online Library DWESD

Alerts & RSS Feeds

General Information

Submission

Review

Production

Subscription

Comment on a Paper

[Volumes and Issues](#) [Contents of Issue 1](#)

Drink. Water Eng. Sci., 1, 27-38, 2008

www.drink-water-eng-sci.net/1/27/2008/

doi: 10.5194/dwes-1-27-2008

© Author(s) 2008. This work is distributed under the Creative Commons Attribution 3.0 License.

Importance of demand modelling in network water quality models: a review

E. J. M. Blokker^{1,2}, J. H. G. Vreeburg^{1,2}, S. G. Buchberger³, and J. C. van Dijk³

¹Kiwa Water Research Groningenhaven 7, 3430 BB Nieuwegein, The Netherlands

²Delft University of Technology, Department of Civil Engineering and Geosciences, P.O. Box 5048, 2600 GA Delft, The Netherlands

³University of Cincinnati, Department of Civil and Environmental Engineering, P.O. Box 210071 Cincinnati, OH 45221-0071, USA

Abstract. Today, there is a growing interest in network water quality modelling. The water quality issues of interest relate to both dissolved and particulate substances. For dissolved substances the main interest is in residual chlorine and (microbiological) contaminant propagation; for particulate substances it is in sediment leading to discolouration. There is a strong influence of flows and velocities on transport, mixing, production and decay of these substances in the network. This imposes a different approach to demand modelling which is reviewed in this article.

For the large diameter lines that comprise the transport portion of a typical municipal pipe system, a skeletonised network model with a top-down approach of demand pattern allocation, a hydraulic time step of 1 h, and a pure advection-reaction water quality model will usually suffice. For the smaller diameter lines that comprise the distribution portion of a municipal pipe system, an all-pipes network model with a bottom-up approach of demand pattern allocation, a hydraulic time step of 1 min or less, and a water quality model that considers dispersion and transients may be needed.

Demand models that provide stochastic residential demands per individual home and on a one-second time scale are available. A stochastic demands based network water quality model needs to be developed and validated with field measurements. Such a model will be probabilistic in nature and will offer a new perspective for assessing water quality in the drinking water distribution system.

[Final Revised Paper](#) (PDF, 720 KB) [Discussion Paper](#) (DWESD)

Citation: Blokker, E. J. M., Vreeburg, J. H. G., Buchberger, S. G., and van Dijk, J. C.: Importance of demand modelling in network water quality models: a review, Drink. Water Eng. Sci., 1, 27-38, doi:10.5194/dwes-1-27-2008, 2008. [Bibtex](#) [EndNote](#) [Reference Manager](#) [XML](#)

Search DWES

Full Text Search [»](#)

Title Search [»](#)

Author Search [»](#)

News

- News Archive available
- Please Note: Updated Reference Guidelines
- The editorial board welcomes two new editors: Pierre Le-Clech from Australia and Emile Cornelissen from the Netherlands.
- DWES will publish the best papers of the Filtech 2011 conference.

Recent Papers

01 | DWESD, 18 Oct 2010: Groundwater contamination due to lead (Pb) migrating from Richmond municipal landfill into Matsheumhlope aquifer: evaluation of a model using field observations

02 | DWES, 27 Sep 2010: Monitoring water distribution systems: understanding and managing sensor networks

03 | DWESD, 22 Sep 2010: Water supply project feasibilities in fringe areas of Kolkata, India

ARCHIVED IN



PORTICO

