

1 Comment on Schriks, M., Heringa, M.B., van der Kooi, M.M.E., de Voogt, P., van Wezel,
2 A.P., 2010. Toxicological relevance of emerging contaminants for drinking water quality.
3 Water Research 44, 461-476

4

5 Mark D Scrimshaw

6

7 Institute for the Environment, Brunel University, Uxbridge UB8 3PH, UK

8 Tel: +44 (0)1895 267299

9 Fax: +44 (0)1895 269761

10 e-mail mark.scrimshaw@brunel.ac.uk

11

12 I have read with interest the study by Schriks et al. (2010), and subsequent correspondence
13 in relation to the wider aims and derivation of the Benchmark Quotient (BQ) value (Schirmer
14 et al., 2011; Schriks et al., 2011). This comment relates to the derivation of the provisional
15 guidelines for two chemicals, benzotriazole (1H-benzotriazole) and tolyltriazole of 1000 µg/L
16 and 875 µg/L respectively (Schriks et al., 2010). These values appear to have been derived
17 by reference to a report by the Dutch Expert Committee for Occupational Standards
18 (DECOS, 2000). However, this report (DECOS, 2000), on page 14 of the Executive
19 Summary, states that “The committee classifies 1,2,3-benzotriazole as a suspected human
20 carcinogen”, although in their conclusions, they were quite clear in stating that the database
21 was inconclusive regarding the carcinogenicity of benzotriazole.

22 As a consequence of this statement, toxicological data from the same report, DECOS 2000,
23 although cited differently, as HCN (Health Council of the Netherlands) 2000, has been used
24 to derive a guideline value for one of these two compounds, tolyltriazole, for water recycling
25 in Australia (NRMMC-EPHC-NHMRC, 2008, p37). The guideline value derived by the
26 Australians for tolyltriazole (5-methyl-1H-benzotriazole), classified as potentially genotoxic by
27 structural analogy to benzotriazole, was 7 ng/L, which is five orders of magnitude below that
28 derived by Schriks et al., 2010.

29 Therefore there appear to be two very different guidelines for drinking water quality derived
30 from the same, inconclusive, toxicological data. As Schirmer et al. (2011) state, there is a
31 need to “clearly define and rigorously adhere to commonly agreeable toxicological data sets”
32 and they highlight the importance of this as environmental policies and decision making are
33 commonly influenced by derivation of numbers such as the BQ value.

34 By looking at the literature, it is apparent that both benzotriazole and tolyltriazole are
35 compounds that are frequently detected in surface waters in Europe, with average river
36 concentrations of 493 ng/L for benzotriazole and 617 ng/L for tolyltriazole (Loos et al., 2009).
37 Their concentrations were amongst the highest of thirty six polar pollutants detected in a
38 survey of European rivers (Reemtsma et al., 2006). There is, therefore, widespread
39 contamination of waters that may be used for drinking water supply (Reemtsma et al., 2010),
40 and it may be an appropriate time for toxicologists to derive a guideline for these compounds
41 which afforded, with a high degree of confidence, protection of human health.

42

43 REFERENCES

- 44 DECOS (Dutch Expert Committee for Occupational Standards), 2000. 1,2,3-benzotriazole. Health-
45 based recommended occupational exposure limit. No. 2000/14OSH, The Hague, The Netherlands
- 46 Loos, R., Gawlik, B.M., Locoro, G., Rimaviciute, E., Contini, S., Bidoglio, G., 2009. EU-wide survey of
47 polar organic persistent pollutants in European river waters. *Environ. Pollut.*, 157, 561-568.
- 48 NRMHC-EPHC–NHMRC, 2008. *Australian Guidelines for Water Recycling: Augmentation of drinking*
49 *water supplies, May 2008*. Natural Resource Management Ministerial Council, Environment
50 Protection and Heritage Council, and National Health and Medical Research Council, Canberra,
51 159pp. <http://www.ephc.gov.au/taxonomy/term/39> (Accessed 10/12/2010)
- 52 Reemtsma, T., Mieheb, U., Duennbierec, U., Jekelb, M., 2010. Polar pollutants in municipal
53 wastewater and the water cycle: Occurrence and removal of benzotriazoles. *Water Res.*, 44, 596-604.
- 54 Reemtsma, T., Weiss, S., Mueller, J., Petrovic, M., Gonzalez, S., Barcelo, D., Ventura, F., Knepper,
55 T.P., 2006. Polar pollutants entry into the water cycle by municipal wastewater: A European
56 perspective. *Environ. Sci. Technol.*, 40, 5451-5458.
- 57 Schirmer, M., Martienssen, M., Schirmer, K., 2011. Comment on Schriks, M., Heringa, M.B., van der
58 Kooi, M.M.E., de Voogt, P., van Wezel, A.P., 2010. Toxicological relevance of emerging contaminants
59 for drinking water quality. *Water Research* 44, 461-476. *Water Res.*, 45, 1512-1514.
- 60 Schriks, M., Heringa, M.B., van der Kooi, M.M.E., de Voogt, P., van Wezel, A.P., 2011. Response to
61 Mario Schirmer, Marion Martienssen and Kristin Schirmer's comments regarding "Toxicological
62 relevance of emerging contaminants for drinking water quality" by Schriks et al. *Water Res.*, 45, 1515-
63 1517.
- 64 Schriks, M., Heringa, M.B., van der Kooi, M.M.E., de Voogt, P., van Wezel, A.P., 2010. Toxicological
65 relevance of emerging contaminants for drinking water quality. *Water Res.*, 44, 461-476.

66