

Improving consumer lexicon to describe aesthetic issues in water quality

Katherine Phetxumphou, Daniel L. Gallagher, Aarathi Raghuraman, and Andrea M. Dietrich

Corresponding author: Andrea M. Dietrich, e-mail: andread@vt.edu

Virginia Polytechnic Institute and State University
1145 Perry Street, MC 0246
Blacksburg, VA 24061

Abstract:

Globally, consumers are first responders and experts at detecting changes in aesthetic water quality. However, consumers are often challenged when providing feedback due to unfamiliar lexicons and unexpected odours in their drinking water. In this study, fifty naïve consumers sniffed vials with common odour standards [geosmin, 2-MIB, dimethyltrisulfide, and limonene (orange)] and described the associated odours. After several months, the same group was trained to use the Drinking Water Taste and Odour (T&O) Wheel and asked again to sniff and describe the odours. Results revealed that consumers were equal at describing orange with or without the T&O Wheel. Descriptors for geosmin and 2-MIB initially varied from “official” earthy/musty to medicinal, camphor, chlorine, but were more consistent after applying the T&O Wheel. Likewise, dimethyltrisulfide has “official” septic-swampy descriptors and varied with sewage to propane and chemical, but consumer descriptors were more consistent after using the T&O Wheel. This study demonstrated that if water utilities are proactive in providing and/or training consumers with a lexicon of common descriptors for odours in drinking water, then consumers can provide more accurate and less variable descriptors for T&O problems. Adding the T&O Wheel to websites or publishing in water quality communications to consumers would benefit both water consumers and water providers. Furthermore, in conjunction with providing consumers with T&O lexicon, data visualization techniques, such as spider (or radar) and run-time plots, should be applied to actual consumer feedback to determine patterns and help identify sources of water quality issues.