Consumer Perceptions and Attitudes Toward EDCs and PPCPs in Drinking Water [Project #4323]

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OBJECTIVES

The objectives of this project were to assess consumer conceptualisations and understandings of water contaminants, especially EDCs and PPCPs, contaminant detection processes, treatment options, and the role of regulation. The project particularly focused on factors that influence consumer beliefs, such as belonging to a vulnerable population, preferences and trust in information sources, the aesthetic features of drinking water, and willingness to pay for additional treatment. It also aimed to assess water and health professionals' beliefs about consumer perceptions of EDCs and PPCPs.

Additionally, this project explored how EDCs and PPCPs are reported in the media and outreach material. The researchers investigated the implicit and explicit messages carried in these information sources, characteristic words and phrases strongly linked to negative and positive beliefs, and the intensity of media coverage. The project aimed to measure the effect of these messages on consumer perceptions and attitudes.

Moreover, a major goal of this project was to make comparisons between the United Kingdom and the United States on all of the issues addressed.

BACKGROUND

Current scientific opinion is that EDCs and PPCPs pose no health risks to humans. Yet other opinions are apparent in publications and media reports, in which the coverage of EDCs and PPCPs is increasing and intensifying. As water companies need to create a dialogue with the public about EDCs and PPCPs, a firm understanding of consumers' conceptualisations of safe drinking water and contaminants is imperative.

Chapter 1 of this report provides a detailed background to EDCs and PPCPs, current policy and regulation, risk perception, risk communication, and language.

APPROACH

This project employed a unique combination of qualitative and quantitative research methods that fed into and informed one another. Media and outreach texts were analysed quantitatively using computer software and qualitatively via a fine-grained manual discourse

analysis. Data on consumer perceptions were collected via focus groups with both consumers and professionals from water and health industries. These data were analysed qualitatively in search of recurring themes. Additionally, a survey of consumer perceptions was administered to a random sample of the general public; the data from this were analysed statistically. Finally, a language survey, which included a free word association test, was carried out to investigate consumer appreciation and associations for key terms. This combination of cognitive linguistic and traditional research methods represents a new direction in water research, enabling a fresh perspective on consumer perceptions and conceptions.

Chapters 2–6 detail the methods, analysis, results, and findings of each of the project components. These methods chapters are aimed at readers with a particular interest in the science behind the results.

CONCLUSIONS

The conclusions and recommendations from the project as a whole are provided in Chapter 7, which is intended as a standalone chapter.

Table ES.1 presents major findings and conclusions. These have been categorised according to themes that inform on risk communication and the science and regulations of contaminants. The table also provides reference to the corresponding methods chapter(s), where more detailed information can be found.

Table ES.1
Conclusions

Theme	Conclusions	Method chapters
Knowledge	• Consumer knowledge about water contaminants is limited, especially about EDCs and PPCPs	3, 5
Worry	• There is a lingering uncertainty over whether tap water containing contaminants is safe	5
	• Although most consumers have not changed their behaviour, those that have did so due to worry - not due to risk perception	5
	• Willingness to pay for additional treatment is contingent on having additional research	3, 5
Vulnerable groups	• There are several <u>heterogenic</u> vulnerable groups of consumers:	5
	o Older consumers and (recently) pregnant consumers were less likely to think tap water containing contaminants was safe	5
	o Consumers with an illness/disability were more likely to be worried about contaminants but not more likely to seek information	5
Females	• Being female was a key driver of worry about contaminants	5
	• Women were also significantly more likely to worry about tap water quality and to change their tap water behaviour	5
	• Despite the strong associations between females and worry, females were not more likely to seek information	5
Information sources	• The internet is a well-used source of information	3, 5
	• Water utilities are a well-used and trusted information source	3, 5
	• Water utilities are less trusted when seen as corporate enterprises	5
Terms	• Different terms are used to refer to contaminants in media and outreach material	2,4

(continued)

Table ES.1 (continued)

Theme	Conclusions	Method chapters
Media	• Media reports typically emphasise the potential risk to humans and were a key driver of worry about contaminants	2, 4, 5
	• However, consumers also demonstrated a healthy scepticism and media also reiterates that contaminated water can be safe to drink	2, 3, 4, 5
	• UK and US consumers were similarly worried despite the different media climates — the impact of media reports is not cumulative	3, 5
	• Media reports are not explicit about contamination channels and who is responsible for pollution	2, 4
Technical details	• Many consumers are primarily interested in reassurance	3, 5
	• Consumers are open to technical details and educated consumers specifically want more detailed information	5
	• Consumers do not equate technical detail with technical language - water professionals do	5
Responsibility	• Consumers did not seem to be aware of the role of water utilities	5
	• The role of water utilities in testing and removing contaminants is typically concealed in outreach and in media	2, 4
	• Utility texts rarely state who is responsible for pollution	2, 4
Negative associations	• Contamination as a concept and language associated with contaminants have very strong negative connotations	3, 6
	• Man-made contaminants have strong negative associations	3, 6
	• Outreach texts use a range of terms that have strong negative associations which may be evoked even if the message is positive	2, 4
	• Language used to refer to quantities in outreach texts has negative connotations or is vague	6
Positive associations	• Tap water is typically perceived as a public good and its safety is, on the one hand, taken for granted but, on the other hand, also strongly linked to (assumed) regulations	3, 6
	• As regulations have strong positive associations with safety and security, the notion "unregulated contaminants" is the most worrying of all	6
Scientific Uncertainty	• Scientific uncertainty causes frustration and ties into fears of the unknown	3, 6

RECOMMENDATIONS

Recommendations for the water industry are presented in Table ES.2. These recommendations have been categorised according to the same themes as the conclusions (Table ES.1). A full discussion of the recommendations is provided in Chapter 7 of this report.

Table ES.2
Recommendations

Theme	Recommendations
Knowledge	• Construct a <u>functional</u> (i.e. not necessarily biological) classification of contaminants, e.g. a family tree (preferably with clickable links to definitions, health risks, etc)
Worry	• Transparent communication about contaminants is needed, with synergy between utilities, regulators, and health organisations; it is also important to communicate about current research initiatives that the water industry is undertaking and what these investigations hope to achieve
Vulnerable groups	• Information about water quality should be tailored to different consumer groups • Vulnerable consumers may not label themselves "vulnerable", so alternative labels are needed • Particular efforts need to be made to engage with consumers with an illness/disability to understand why they worry and how best to reach them, e.g. focus groups
Females	• Particular efforts need to be made to engage with women to understand why they worry and how best to reach them, e.g. focus groups with female participants
Information sources	• Set up a "neutral" website at a national level as a platform for communication about water quality issues to consumers • Regularly and swiftly engage with current reports in e.g. media that might confuse consumers (an example: http://www.nhs.uk/news/) • Provide links from water utility webpages to proposed neutral national website
Terms	• Employ the lay language used in media reports about contaminants so that consumers can find utility information when using lay language in search engines (see Helping the Public Find the Information They Want to Know From Reliable Sources) • Improve internal search engine indexing (see Helping the Public Find the Information They Want to Know From Reliable Sources)

Media	• <u>Since media commonly copies and pastes from official sources, it is vital that utilities:</u>
	  o Provide impartial communication about contaminants in a neutral tone
	  o Raise awareness of differences between source water and tap water, and other technical details

Technical details	• <u>Two stages of communication:</u>
	  1. lay language with minimal technical details
	  2. more detailed technical information

Responsibility	• Highlight the role of water utilities in testing/treating water • Highlight the qualifications of water technicians and any collaborations with independent contractors • Raise awareness about the different contamination channels (e.g. utilise EPA graphic: http://www.epa.gov/ppcp/pdf/drawing.pdf)

(continued)

Theme	Recommendations
Negative associations	• Tailor language used in communication to consumer conceptualisations so that it does not cause undue worry • Avoid terms with negative associations • Avoid use of *low levels* to refer to quantities - *insignificant levels* is potentially a better term but needs to be tested
Positive associations	• The fact that contaminants are unregulated should be downlighted • Highlight that monitoring and testing for contaminants is a regulatory activity, e.g. enforcing a "standard of care" • The water industry needs to investigate what *regulation* means to consumers as they probably do not equate regulation with treatment
Scientific Uncertainty	• Highlight what is known (*there is no evidence*) and downlight what is unknown (*we do not know*) • Long term educational action should address how to improve public understanding of science, risk and regulation

PARTICIPANTS

The following utilities and organisations participated in the project:

- Washington Metropolitan Council of Governments, Washington, DC, US
- DC Water, Washington, DC, US
- Fairfax County Water Authority, Fairfax, VA, US
- Washington Suburban Sanitary Commission, Rockville, MD, US
- Philadelphia Water Department, Philadelphia, PA, US
- Portland Water Bureau, Portland, OR, US
- Drinking Water Inspectorate, London, UK
- Anglian Water, Peterborough, Cambridgeshire, UK

UTILITY OUTPUTS

The following outputs have been generated based on the project findings and are included on the WRF Website.

- Key Findings and Recommendations for Customer Relations/Field Staff and Technical Staff With Regular Customer Contact
- Key Findings and Recommendations for Managers and Research and Planning Staff
- Key Findings and Recommendations for Operators and Technical Staff
- Key Findings and Recommendations for Web Staff
- Key Findings and Recommendations for Public Communication Staff
- Helping the Public Find the Information They Want to Know From Reliable Sources
- PowerPoint Presentation of Findings and Recommendations