Decoding the UCMR 3

Water Sector Strategies

Lisa Ragain
Aqua Vitae
October 25, 2013

Risk Perception

Perceptions are valid and must be addressed *equally* in relation to scientific data

Risk Attributes

Uncertainty

- Health Effects
  - Ecologic
  - Human
- Risk
- What can be done

Ubiquitous

- Consumer products
- Multiple sources
- All exposures

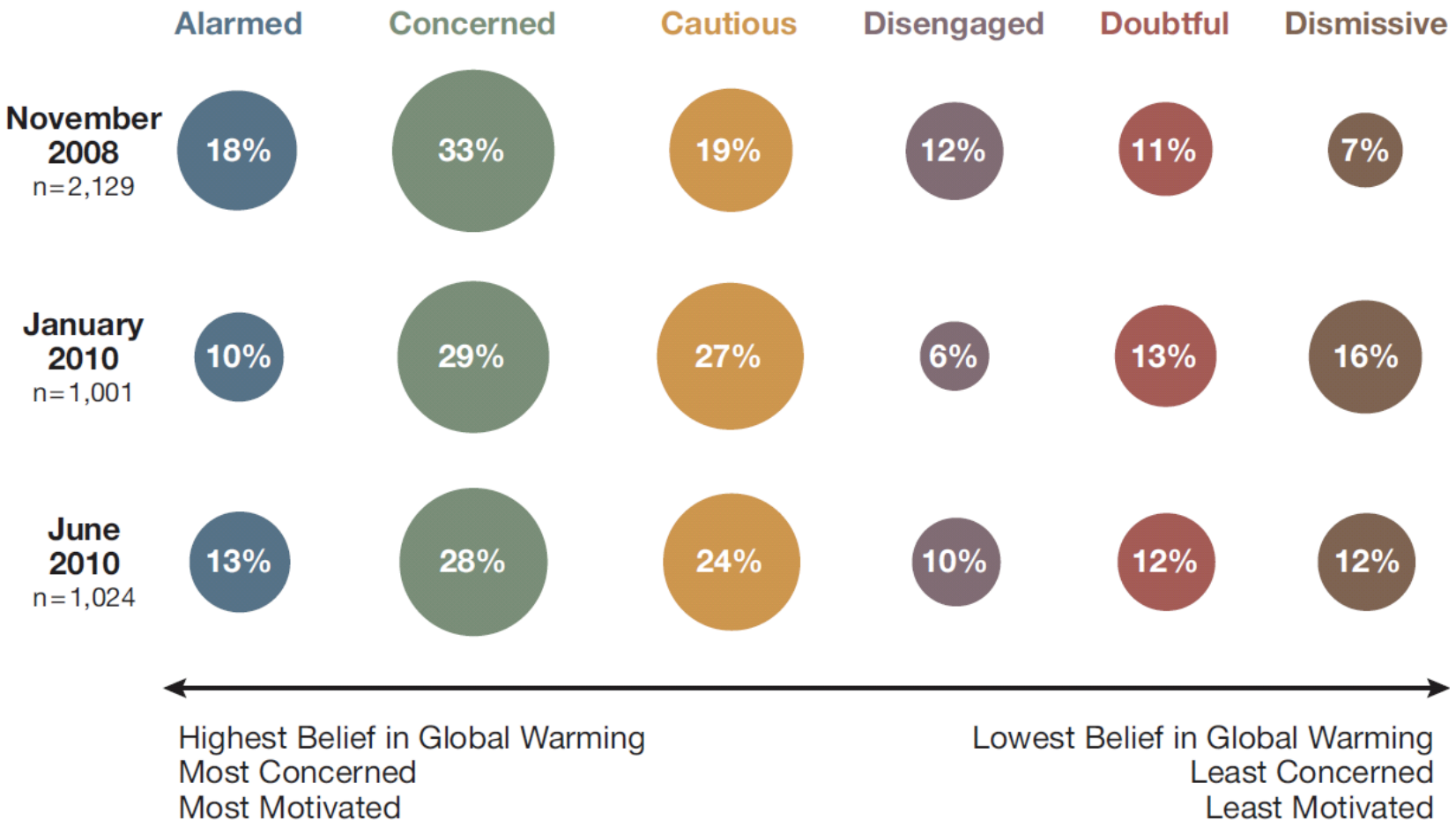
Audiences

Public

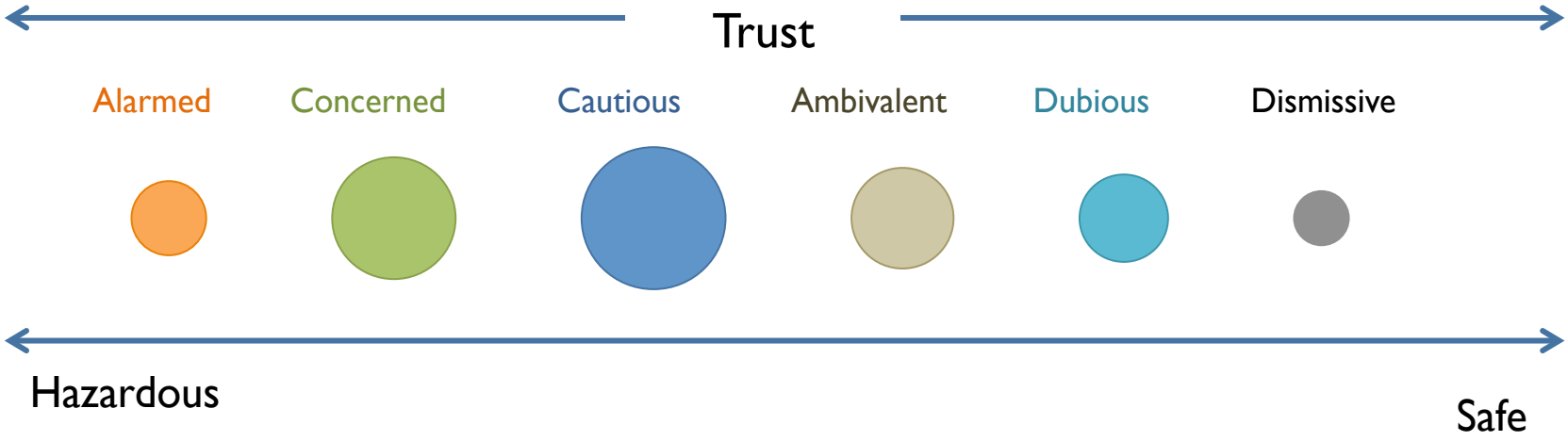
- Customers
  - Residential
  - Institutional/Commercial
- Public officials/health
- Policy makers
- Advocacy organizations
- Media

Water

- Staff
- Board
- Regulators
- Organizations
- Researchers



Leiserowitz et et al. 2012


Trust
Alarmed
Concerned
Cautious
Ambivalent
Dubious
Dismissive
Hazardous
Safe

Frames are most clearly described as a way to present or interpret complex information, they are

"a central organizing idea . . . for making sense of relevant events, suggesting what is an issue."

Gamson & Modigliani, 1989.

Frame	Area	Citation
Pure & Natural	Social & cultural water concepts Consumer expectation of water	Driedger, 2003 Pahl-Wostl et al., 2006
Stewardship & Guardianship	Watershed/water resources Natural resources Financial resources Community and place	Driscoll et al., 2012 Gallagher et al., 2012 Sanford et al., 2011 Tatham et al., 2006
Public Health	Foundation of public health Public health guardians Proactive Research	Knol et al., 2010 Maibach et al., 2008
Responsibility & Community	Value of water Infrastructure investment Community investment	Hering et al., 2011 Wise et al., 2010 Cromwell et al., 2007
Preparedness	Community and resource protection	Nelson et al., 2007 Terpstra, 2011

Framing

Without misrepresenting scientific information on highly contested issues, scientists must learn to actively "frame" information to make it relevant to different audiences.

Nisbet & Mooney 2010

Language

- Vocabulary
- Definitions
- Quantifiers & Qualifiers
- Metaphor
- Analogies
- Frames & Messages

What do customers want to know?

Is the drinking water safe for my family?

What is the utility doing about it?

Can I trust the experts?

Where can I get information

What are my options?

What can I do?

Own Your Data

Own the Discourse

What do customers want to know?

Is the drinking water safe for my family?

What is the utility doing about it?

Can I trust the experts?

Where can I get information

What are my options?

What can I do?

Data

Vocabulary

Unfamiliar

- Strontium
- Vanadium
- Molybdenum

Familiar

- Hexavalent Chromium
- Perchlorate
- Amoeba

Monitoring and Sampling

- Why are you monitoring or sampling?
- What will you do with the results?
- If it isn't dangerous, why are you testing for it?

Plan communications & information exchange

Fairfax Water: Monitoring Data

What is found in your water?

Listed below are some common compounds that may be found in the source and drinking water. While some contaminants were found in the source water, only a few were found in the treated drinking water. In these cases, the levels detected were well below acceptable levels.

How to interpret the symbols for each compound...

- Not Detected in Source or Drinking Water
- Exceeds Acceptable Limit
- Detected in Source Water
- Detected in Drinking Water
- Detected in Source and Drinking Water

Compound *What is it?*	2008 Q2	2008 Q3	2008 Q4	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4	For Drinking Water: Maximum Detected (µg/L)	For Drinking Water: Acceptable Daily Intake Concentration (µg/L)	Some Perspective... The number of 8 ounce glasses of water you would have to drink per day for more than 70 years to exceed the Acceptable Daily Intake.
17b-estradiol *Natural human hormone*	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Not Detected	1.8	-
2,4-D *Herbicide*												◐	◐	◐	◐	0.060	70	Over 9,800 Glasses
Atrazine *Commonly used herbicide for maize crops*	◐	○	○	○	◐	◐	○	○	◐	◐	○	○	◐	○	○	0.3	3	Over 84 Glasses
Bisphenol A *Intermediate in manufacture of plastics and resins*	○	○	○	○	○	○	○	○	◐	○	○	○	○	○	○	0.025	1,800	Over 600,000 Glasses
Butylbenzyl phthalate *Plasticizer*	○	○	○	○	○	○	○	○	○	○	○					Not Detected	3,500	-
Caffeine *Stimulant*	○	○	◐	◐	○	○	○	○	○	○	○	○	○	○	○	Not Detected	87,500	-
Carbamazepine *Anti-epileptic drug*	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	Not Detected	12	-
Ciprofloxacin *Antibiotic*												○	○	○	○	Not Detected	17	-
DEET *Ingredient of insect repellent*												◐	◐	◐	◐	0.039	81	Over 17,000 Glasses
DEHP [di(2-ethylhexyl)phthalate] *Plasticizer*	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Not Detected	6	-

Frequencies & Probabilities

Conditional Probability	Natural Frequency
The probability that a woman has breast cancer is 0.8%.	Eight of every 1000 women have breast cancer

Risk Assessment Frequencies

Risk is calculated at 1/100,000 or $1/10^{-6}$ excess cases of cancer…

One of every 100,000 people who drink tap water…

Of 100,000 people who drank, one person would be at risk for an excess…

Water Professionals & Data Communication

Divided between advocating transparency and adopting a controlled approach

- Caution appeared to be driven by a perception that the water sector might be a less credible source
- There were calls for greater synergy with health organizations

Conflicted between wanting to reassure and a fear that communicating will do more harm than good.

- This was driven by a perception of consumers lacking professional insights

Media Catalysts

Science

- USGS Surveys
- EPA data reports
- Research findings
- Investigations

Public Health & Medicine

- Endocrinology Society Statement
- National Report on Human Exposure to Environmental Chemicals
- Tox 21

WRF Project #4323
Preliminary Report Findings

Consumers' perceptions and attitudes towards EDCs and PPCPs in drinking water

Gabriella Rundblad, Chris Tang

Key Findings: Technical Detail

Consumers do seek reassurance about contaminant risks

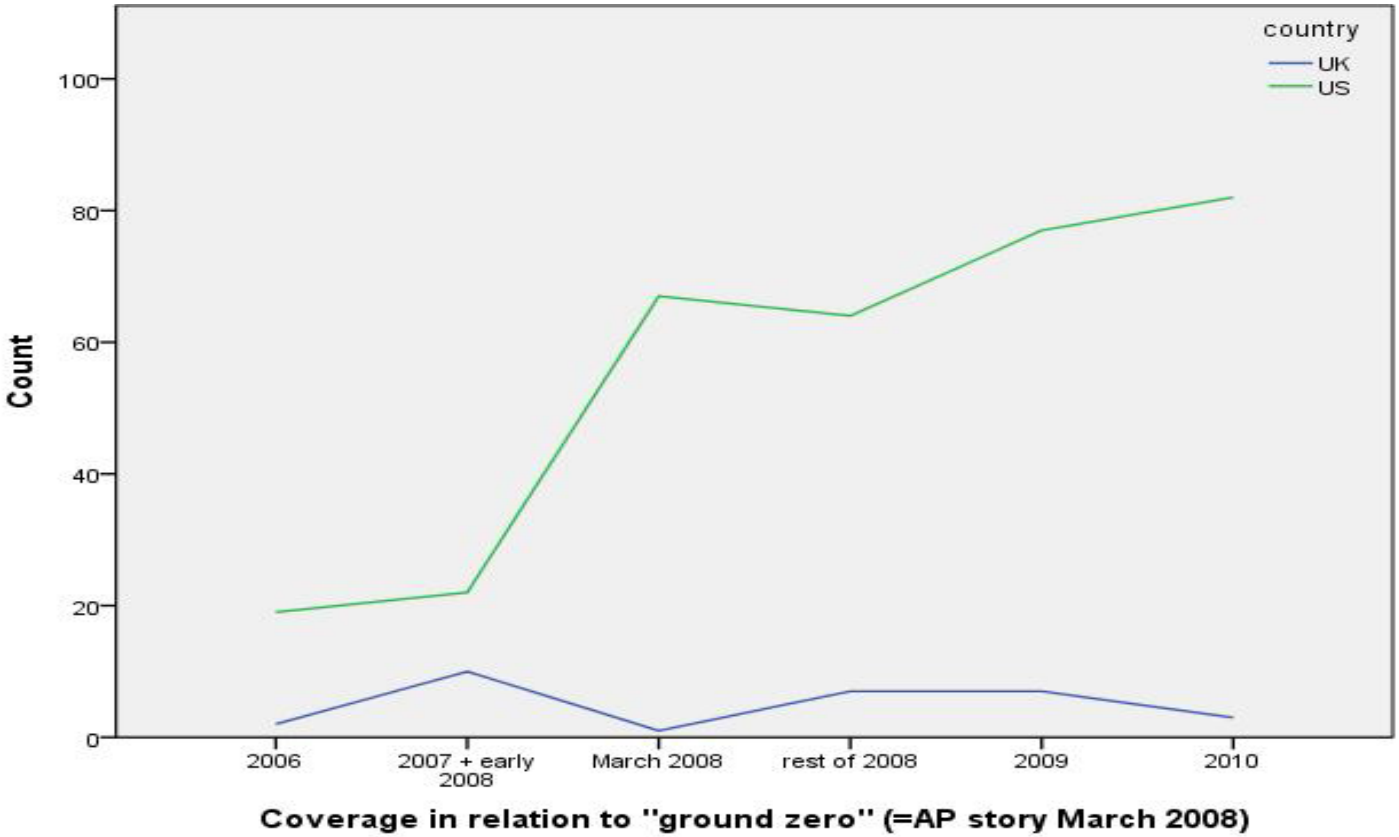
They information is in a context that explains “safe”

Consumers are open to technical details

- Technical detail is not equated with technical language
- Water professionals do equate the two

Rundblad et et., 2013. Water RF Report 4323

US & UK Media Reports



The role of the media

- **Amplify the risk** posed by a particular threat
- **Exploit scientific uncertainty** by making it the focus of controversy and avoid properly representing it
- **Simplify science**: lacking an examination of cause and effect or a lack of specificity in terms of health outcomes and health advice

Rundblad et et., 2013. Water RF Report 4323

Media impact

- Consumer awareness of contaminants was primarily linked to media reports
- Most consumers did not express an immediate concern about reports, but suggested they might affect their choices in the long run:

  ...it wouldn't be a serious factor, but I would keep it in my head.

Rundblad et et., 2013. Water RF Report 4323

Referring to Uncertainty

	Media	Outreach
Human Health	Do not yet know/understand Are worried Have concerns	No evidence Does not demonstrate
Displacing Risk Claims	Concentrations for now are low. Still, tiny doses can add up after years and years of exposure	Several compounds were found in trace amounts… But are not considered to have any short-term health effects.

Rundblad et et., 2013. Water RF Report 4323

Key Agents

Category	Generic	Specific
Researchers	studies scientists researchers	Theo Colburn Researchers from Cardiff University
Water Sector	water utilities wastewater treatment plants	Environmental Protection Agency Arizona American Water
Government	politicians	The White House Congressional committees

The role of water systems in research & detecting contaminants is largely hidden in both media and outreach texts

Rundblad et et., 2013. Water RF Report 4323

Media References

Where are contaminants found?

Drinking Water

- drinking water
- tap water
- our water
- water systems
- city’s water
- nation’s water

Other Water

- environment
- streams
- rivers
- waterways
- Potomac
- groundwater
- lakes
- river
- reservoirs

Rundblad et et., 2013. Water RF Report 4323

Consumers & Tap Water Quality

Do you ever worry about the quality of your tap water?

	%
Never	12.5
Hardly ever	20.1
Rarely	23.9
Sometimes	33.7
Often	9.8

Rundblad et et., 2013. Water RF Report 4323

D Perceptions of contaminants & safe water

In your mind, what are the levels of contaminants in the water supply?

	% (n)=163
Very large	0.6
Quite large	37.4
Quite small	46.0
Very small	14.1
None	1.8

Can tap water that contains contaminants still be safe to drink?

	% (n=163)
Yes	63.2%
Don't know	24.5%
No	12.3%

Rundblad et et., 2013. Water RF Report 4323

Are enough contaminants removed?

Do you think enough contaminants are removed?

	%
Yes	35.0
Don’t know	43.2
No	21.5

Consumers were more likely to state that enough contaminants are currently removed

- Female consumers were less likely to agree

Rundblad et et., 2013. Water RF Report 4323

Key Findings: Knowledge

- Limited consumer knowledge about contaminants
  - Most have not heard of EDCs and PPCPs as the relate to drinking water
- Consumers were divided risk
  - Some were concerned about their potential long-term harm
  - Others thought there was a lack of evidence
  - Generally undecided about whether the occurrence of contaminants at low levels was an attenuating factor

Rundblad et et., 2013. Water RF Report 4323

Key Findings: Negative & Positive Associations

For consumers:

- **Regulations have a strong positive association** with safety and security
- The notion of “unregulated contaminants” is most worrying

Rundblad et et., 2013. Water RF Report 4323

Consumers: What should be done

- Consumers typically felt that something should be done about contaminants
- Preventative measures, such as raising awareness and drug recycling, were the most popular
- Consumers were driven by a sense of social responsibility about the environmental impact of contaminants

Rundblad et et., 2013. Water RF Report 4323

Recommendations: Water Utility Communications

- Communicate about current research initiatives in the water sector
- Highlight the role of water utilities in research, testing & treating water
  - Highlight qualifications of water professionals
- Identify different contaminant sources & exposures
- Feature monitoring and testing for contaminants as a regulatory activity

Rundblad et et., 2013. Water RF Report 4323

Meeting Media & Consumer Needs

- Proactive response - regularly and quickly engage with media reports
- Use use the same words used in the media to ensure an internet search links to a water utility website
- Layer information for different audiences:
  - Minimize technical language
  - More detailed technical information

Rundblad et et., 2013. Water RF Report 4323

Who is responsible for the cost?

Who is **most** responsible for paying?

	Primary (%)	Total (%)
Water utilities	13.0	81.2
Pharmaceutical - Industry	44.8	90.9
Government	11.7	80.5
Farms and agriculture	9.1	77.3
Water consumers	9.7	74.0

Are you **willing** to finance measures?

	%
Yes	32.7
Yes, <u>but only if **research**</u> suggests it is necessary	57.9
No	9.4

Rundblad et et., 2013. Water RF Report 4323

Utility Strategies

Internal

- Planning
- Strategic communication
- Research
- Staff
- Audiences

Customers

- Consistency
- Transparency
- Accessibility
  - Layering
- Evaluation

What Can Be Done?

Societal

- Watershed protection
- Water treatment
- Agricultural policy
- Stormwater management
- Water treatment

Personal

- Pharmaceutical take backs
- Product purchasing choices
  - Household
  - Government & institutions
- Investment in infrastructure

Research

Biomonitoring

Climate Change

Community Based Participatory Research

Cumulative Risk

Linguistics

Medicine

- National Survey
- Framing & Language
- Uncertainty
- Audiences
- Evaluation

Domestic water supplies should protect the health and promote the well-being of individuals and communities.

Advisory Committee, USPHS Drinking Water Standards, 1962.

Own Your Data

Own the Discourse