



Moving from Knowledge to Action :
Making Sense and Use of Information

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Water for All: Conserve, Value, Enjoy



Opinion | Letters

Water Fluoridation is Medical Malpractice

February 14, 2015

- Rutland Herald, 16 Feb 2015

Call for water fluoridation across England to cut childhood tooth decay

Dental surgeons cite report finding 45% fewer young children were admitted to hospital for decay in water fluoridation areas

- The Guardian, 12 Jan 2015

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Absorbing chlorinated water 'a cancer risk'

Swimming too much - or even taking too many baths or showers - could increase the risk of developing bladder cancer, warn environmental health experts.

- The Telegraph, 15 Mar 2011

INTRODUCTION

- Easy access to abundant information in today's world can create **mistrust** among the public and **unrealistic demands** on utilities
- For scientific knowledge to be translated to policy, information needs to be:

Accurate, Adequate & Applicable

ACCURACY OF INFORMATION - WATER REUSE

- Ten years ago, utilities were trying to grow acceptance for indirect potable use (IPU) of recycled water amidst much (mis)information
- IPU made possible by pragmatic utilities and researchers working together to create the right understanding to negate the misinformation
- The media also plays an important role in disseminating accurate information and generating awareness
- Today, US and Australia are talking about direct potable use of recycled water



Booklet warning about use of recycled drinking water distributed by non-supporters in Toowomba

ADEQUACY OF INFORMATION

– URBAN RUNOFF AS WATER RESOURCE

- Data needs to be adequate or accumulated to build up confidence
- In Singapore, we collected > 30 years of data and showed that with the right land use, legislation, pollution control measures and infrastructure, runoff from urbanised catchments can be captured as a drinking water source
- Australia and parts of California are now studying this option



APPLICABILITY OF INFORMATION

– ENDOCRINE DISRUPTING COMPOUNDS IN COASTAL WATERS



Occurrence and distribution of pharmaceutically active and endocrine disrupting compounds in Singapore's marine environment: Influence of hydrodynamics and physical–chemical properties



ARTICLE INFO

Article history:
Received 19 March 2013
Received in revised form
16 June 2013
Accepted 17 June 2013

Keywords:
Pharmaceuticals
Endocrine disrupting compounds
Solid-phase extraction
Hydrodynamic models
Tropical marine ecosystems

ABSTRACT

The fate and exposure risks of pharmaceutically active compounds (PhACs) and endocrine disrupting chemicals (EDCs) in marine environments are not well-understood. In this study we developed a multi-residue analytical method for quantifying concentrations of forty target compounds in seawater from Singapore. Analyses of samples ($n = 24$) from eight sites showed the occurrence of several compounds, including gemfibrozil (<0.09 – 19.8 ng/L), triclosan (<0.55 – 10.5 ng/L), carbamazepine (<0.28 – 10.9 ng/L) and ibuprofen (<2.2 – 9.1 ng/L). A 3D hydrodynamic model for Singapore was used to predict residence time (t_R). Principal Components Analysis revealed a strong relationship between t_R and contaminant concentrations. While source emissions are undoubtedly important, proximate distance to a wastewater treatment plant had little influence on concentrations. The site with the greatest t_R , which exhibited the highest concentrations, is adjacent to Singapore's largest protected wetland reserve. The results highlight an important linkage between hydrodynamic behavior and contaminant exposure risks in complex coastal marine ecosystems.

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- Local researchers reported the presence of EDCs in Singapore's coastal waters
- BUT: how concerned should we be?
 - Do not drink seawater directly
 - Adequate technologies to convert it to safe drinking water
- Utilities need to consider if the information is applicable to their operations
 - Researchers may lack understanding of treatment process
 - Motivation to seek more funds

CONCLUSION

- Researchers need to understand the relevance of their work and how it can be used to benefit society ; utilities (end users) need to clearly define and articulate their needs and knowledge gaps
- We need the collective effort of researchers and utilities to translate knowledge to policies that ensure safe and secure water supplies
- Good communication of information to the public, educating and working with the media, are critical in generating understanding and appreciation of the issues, and more importantly, **trust**

Thank you