

CENTRAL BASIN MUNICIPAL WATER DISTRICT

MARCH 3, 2004 - Water Resources
Morse, Cole

MARCH 22, 2003 - Board Meeting

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INFORMATION CALENDAR

HUMAN PSYCHOLOGY OF WATER REUSESUMMARY:

Over the last five years human psychology has played a significant role in creating a negative connotation for a number of Indirect Potable Reuse (IPR) projects. IPR refers to utilizing recycled water as a source of recharge to augment existing groundwater supplies. And many of these projects have failed, at least in part, to the human psychology aspect. One main reason has been the ability of activist groups or individuals to seize on human psychology, and develop such catch phrases as "Toilet to Tap", to conjure up fears and emotions about a particular project. The "Toilet to Tap" metaphor is used by the antagonists because of their issues towards a stronger belief on another issue such as a no growth initiative (driven by their frustration of traffic congestion), environmental justice (lower income areas' belief of lower quality services), or valley secession, just to name a few.

In fact, there have been very recent cases where human psychology has been used to thwart irrigation or non-potable uses of recycled water. The most recent example is in Redwood City in planning to use recycled water to irrigate playground areas in their local school district. An activist group caused significant deliberation amongst the City Council regarding the project. The issue centered on playgrounds being irrigated with recycled water and the children's health risk from a hand to mouth contact of the residual moisture on the grass. The debate lasted for months over several city council meetings. In the end, a number of local physicians and professors spoke out in support of the use of recycled water and its documented safe use. Notwithstanding significant deliberation, the City Council ultimately approved moving forward with the project.

Human Psychology Workshop

The WaterReuse Foundation (Foundation) has made it a priority to gain a better understanding of the soft science areas associated with implementing water reuse projects. Understanding human psychology is one example. Other areas are outreach, marketing, and rapid response techniques. Recently, the Foundation hosted a workshop at the West Basin Water Recycling Plant with a number of university professors, led by Dr. Brent Haddad of University of California, Santa Cruz. The goals of the workshop were:

- To develop an understanding of how social psychology research could inform the challenge of better integrating water reclamation and reuse (WRR) and IPR systems into urban water supply;
- To identify research questions that could clarify and expand on this concept; and

- To list potential academic collaborators on research programs in this area.

Participants

At the workshop sponsored by the WaterReuse Foundation, water agency managers, wastewater agency managers, and design engineers met with two nationally known academic psychologists with backgrounds in the understanding of human reactions to contagion and naturalness.

Key Insights from the Meeting

The “Yuck Factor” and “Toilet to Tap” slogan are consistent with new insights into human reactions to contagion and human approaches to risk assessment. The “Yuck Factor” can be traced to two aspects: (1) the prior use of the same flows of water in an urban system, (2) and the inability to cost-effectively completely purify the wastewater that means that health risks associated with WRR and IPR, while small, are not zero.

Two “laws,” or common patterns of human cognition, apply here. These laws apply across cultures and age groups. They are:

- The “**Law of Contagion**” suggests that when a pure thing comes into physical contact with a contaminated thing, the contamination is passed to the pure thing. Thus, people will respond with revulsion to both things following their contact; and
- The “**Law of Similarity**” suggests that appearance equals reality. Something is perceived to be what it looks like. A container known to contain drinkable liquid marked “poison” will not be consumed. If IPR water is considered similar to wastewater, it won’t be consumed.

Synthesis of Insights

- The WRR industry should stress the “natural” aspects of their treatment processes, such as natural filtration steps;
- The WRR industry must create a “break” in the history of the water, or offer an alternative history. Even the term “indirect potable reuse” underlines the history of the water supply, which is part of its essence in the eyes of the public;
- Public information campaigns that focus on safety serve as reminders of the origins of this water and ultimately are not reassuring to the public;
- Public concerns about the health effects of IPR water may actually be expressions of concerns linked to the “law of contagion” which, due to the seeming irrationality, people are unwilling to express directly. Therefore, medical endorsement of IPR is not that important;
- Alternative, positive IPR stories to “toilet-to-tap” must be developed;

- It is important to develop a “mental model” of individuals who have firmly opposed IPR facilities in the past. This can be done in part by analyzing their public comments;
- Public water agencies should protect their status as non-profit-oriented entities, since this increases the credibility of their statements about water quality and reliability;
- Proposed IPR projects must offer very substantial benefits in order to reduce their perceived risk. “Disposal benefits” are not well received by the public;
- It is possible to overcome a stigmatized product through substantial education, including case study examples of use (as a substitute for actual use);
- It may be possible to segment audiences/parties to IPR policy debates and identify the extent to which they demonstrate affective reasoning and are subject to the two rules of cognition; and
- Risk assessment and management can provide insights to part of the policy process but not all. It is only peripherally related to such issues as environmental justice and local politics, which also come up in IPR debates.

Proposed Research Program

Based on the above discussion and synthesis, the following research projects are recommended:

1. Mental Models of Water Quality

This study would perform baseline analyses of how people think about urban water supply. Then survey questions about the role of time, dilution, passage through rivers, and treatment plants in purification would be developed. The goal is to identify calculative vs. intuitional attitudes toward water quality, and the extent to which individuals switch between these two approaches. It would further shed light on how people resolve seemingly inconsistent attitudes that condone children swimming in an untreated lake but not playing on a lawn irrigated with reclaimed water. The importance of public trust in the water agency would also be examined. This survey would be performed widely in an effort to capture regional differences in attitudes.

2. Effects of Segmentation and Learning on Stakeholder Perception of IPR

This study begins with a randomly drawn sample of individuals. They are tested with respect to their attitudes toward IPR. Based on this initial screening, the sample is divided into sub-samples according to level of affective vs. calculative reasoning, adverse reaction to contagion, and other factors. The subsets are then provided educational material about IPR and attitudes are tested again. One aspect of this study would explore the extent to which perceptions of benefits influence perception of risk. This will be done by establishing a baseline understanding of a subject’s perceived benefits and risks of a

project, educating them about the benefits, and then re-testing their perception of risk. This project will provide insight into what kinds of IPR educational material are effective with what kinds of people.

3. Breaking the "Toilet-To-Tap" Chain

This experiment looks for ways to break, modify, or trivialize the perceived use-chain of IPR water. This study involves a survey that allows individuals to evaluate physical design options for IPR projects in terms of their ability to frame out links with prior urban use. Other approaches, such as explanations of existing process designs, would also be tested. The study would also seek to clarify causes for the stigmatization of IPR water by sorting out the roles played by health concerns and the "yuck factor," and how to deal with them.

4. Attitudes toward IPR as Environmental Stewardship

This study would ask people to compare IPR to other environmental goods and services. It would test the extent to which the public associates IPR with terms such as sustainability and restoration. It would seek to identify where on the value function (Figure 2) individuals believe themselves to be with respect to IPR.

5. Understanding the Core Opposition to IPR

This study develops a mental model of the most active public opponents to Indirect Potable Reuse. Surveys of members of the "Safe Water Committee" in the Dublin-San Ramon, California region, "Revolted Grandmothers" in Coral Gables, Florida, and the "Safe Water Coalition" in Redwood City, California, would be identified and interviewed on a voluntary basis. The purpose is to broadly understand the attitudes and perceptions of active opponents to IPR, as well as how they connect with their less-engaged but sympathetic supporters and the public at large. This understanding is needed to develop alternative project designs or communication approaches that would satisfy their concerns.

FISCAL IMPACTS:

Not applicable.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

COMMITTEE STATUS:

This item was reviewed by the Water Resources Committee on March 3, 2004 and agendaized to the March 22, 2004 Board meeting as information for discussion.

RECOMMENDED MOTION:

This item is for information only.