Sustainable Water Initiative for Tomorrow Expert Panel

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Water Environment & Reuse Foundation
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Formed in May 2016 – merger of:

- WateReuse Research Foundation – recycled water
- Water Environment and Research Foundation wastewater, resource recovery, stormwater

**New Focus: Integrated Water Management**
Goal: Water Supply Resiliency and Reliability

- Sustainable water management
- Reliable, drought-proof water supplies
- Use of local water supplies
The Full Spectrum

- Potable Reuse
- Urban Irrigation
- Industrial Reuse
- Food Crop Irrigation
- Wetland/Habitat Restoration
- Fit for Purpose
Water 4.0

Source: David Sedlak, Berkeley
Indirect Potable Reuse

- Water Treatment
- Urban Water Use
- Wastewater Treatment
- Environmental Buffer
- Advanced Water Treatment
“...the use of treated wastewater for beneficial purposes including irrigation, industrial uses, and drinking water augmentation – could significantly increase the nation’s total available water resources.” (2012)
Implementing Potable Reuse

- Limitations with nonpotable water reuse
  - Cost, storage, dual system
- (Large) increases in water supply
  - Uses existing infrastructure
- Improves “reliability”
  - Drought proof and locally controlled
- Sustainable supply
  - Diversified water portfolio
  - Local resource
  - Climate resilient
Current Potable Reuse Projects

- **California**
  - Groundwater Replenishment System
  - Montebello Forebay (Los Angeles)
  - West Basin MWD (Los Angeles)
  - Water Replenishment District
  - Inland Empire Utilities Agency

- **U.S.**
  - Upper Occoquan Project (Virginia)
  - Scottsdale (Arizona)
  - El Paso (Texas)
  - Aurora (Colorado)
  - Gwinnett County (GA)
  - Big Spring (TX) – Direct Potable Reuse!

- **International**
  - Singapore and Australia (Perth)
Potable Water Reuse – Key Questions

- **Treatment requirements**
  - Need for criteria for pathogen and chemical control

- **On-line monitoring**
  - Performance monitoring

- **Treatment technologies**
  - Defining reliability

- **Source control**
  - Managing the collection system

- **Operations and operators**

- **Response time** (respond to off-spec water)

- **Public acceptance**
Research Addresses Knowledge Gaps

- Research Initiative (34 projects as of 2016):
  - Inform regulations and regulators
  - Resources for implementation

**Regulatory Topics**
How do we achieve treatment and process reliability through redundancy, robustness, and resilience?
23 Projects

**Utility Topics**
How do we address the economic and technical feasibility of DPR? How do we train operators to run these advanced systems?
19 Projects

**Community Topics**
How do we increase public awareness of the water cycle and illustrate the safety of DPR to lead to acceptance?
6 Projects
Key components of Potable Reuse

- Technical
- Regulatory
- Outreach
California Expert Panel: Overarching Questions

• Definition of **Potable Reuse** ("continuum"), including absence of environmental buffer

• **Availability** and **reliability** of recycled water treatment technologies

• **Multiple barriers** and **sequential treatment processes** appropriate at wastewater and water treatment facilities

• Available information on **health effects**

• Mechanisms to protect public health from **off-spec water**

• **Monitoring** needed to ensure public health protection

• Other necessary **scientific/technical issues**, such as additional research
Is “public attitude” the biggest challenge to potable reuse?
National Water Research Institute (NWRI)
HRSD SWIFT Expert Panel

Glen Daigger, Ph.D. – Panel Chair
U. of Michigan (Engineer)

Diana Aga, Ph.D. (Chemist)
University at Buffalo

Thomas Grizzard (Water Quality and Engineer)
Virginia Tech

Mark Sobsey, Ph.D. (Microbiologist)
UNC Chapel Hill

Thomas Missimer, Ph.D. (Hydrogeologist)
Florida Gulf Coast University

Shane Trussell, Ph.D (Treatment Engineer)
Trussell Technologies

Mark Widdowson, Ph.D (Groundwater Modeling)
Virginia Tech
Thank You for Listening!

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