Advanced Water Treatment Operator Certification Development

Gordon Williams, East Bay Municipal Utility District

A joint effort - CA/NV Section AWWA and CWEA
Why do we need another operator certification program?
Current Water and Wastewater Certification Does Not Include “Advanced Treatment”

- More complex treatment train
- Unique O&M
- Potable reuse = Enhanced risk
Confluence of Many Groups

- 2013: SB322 requires state to investigate DPR feasibility
- WateReuse CA DPR initiative
- Various industry surveys
- Joint CA-NV Section AWWA/CWEA Committee embarks on program development
CUWA White Paper Workshop
Participation by AWT Committee Member Agencies and Associations

Recommendations

1. Centered on AWT technologies

2. Stand-alone or "add-on" to both water or wastewater operator certification

3. One test per level of certification

4. Broad program to ensure adequate population of operators
Expert panel calls out the need for a new operator certification that bridges the boundary between water and wastewater operators.
The Water Research Foundation Projects

• **WRF 13-03**: Critical Control Point Assessment to Quantify Robustness and Reliability of Multiple Treatment Barriers of DPR Scheme (Hazen and Sawyer/SPI)

• **WRF 13-13**: Development of Operation and Maintenance Plan and Training and Certification Framework for Direct Potable Reuse (DPR) Systems (Hazen and Sawyer/SPI)

• **WRF 15-05**: Developing Curriculum and Content for DPR Operator Training (Hazen and Sawyer/SCVWD/Carollo)
1. **“Bolt-on”:** Certification should be a “bolt-on” to either a wastewater or water treatment operator certification

2. **More than just technologies:** Certification should include regulatory framework, source water understanding, and advanced monitoring, sampling, and analysis

3. **Bridging the divide:** efforts should be made to bridge the water and wastewater components, potentially including both under the same permit
A New AWT Certification Program Is Needed

- AWT is integral to potable reuse
  - Operator training and certification identified as a concern for DPR
- AWT is increasingly a part of WTPs
There Is Also a Regulatory Issue with T operators at RW plants

- Recycled water plants are allowed to use T or W operators
- State-wide 14,000 T operators vs. 6,000 W operators
- T operators can’t use experience at recycled water plant to qualify for higher certification
- Similar issues for RW distribution systems that use D operators
What is Advanced Water Treatment?
What Does “AWT” mean?

- Ozone and biologically active filtration
- Microfiltration/Ultrafiltration
- Reverse Osmosis
- UV/AOP
Microfiltration – Reverse Osmosis – UV or UV/AOP

Source: SCVWD
A committee is formed....
AWT Ops Cert Committee Makeup

- 30 Committee Members
- 31 Public Participants
- CA-NV Section, AWWA Staff
- CWEA Staff
AWT Ops Cert Committee Utility Representation

- 15+ utilities represented, including 5 from San Diego
- Majority in operations or operations management
- Participation by State Water Board staff
Cal/Nevada Section AWWA Ad Hoc Committee formed in 2015 to Investigate Developing a Voluntary AWT Certification Program
Certification Program/Committee Goals

• Craft an AWT operator certification program that works for agencies big and small
  • Provides benefit without being overly restrictive and affecting future qualified operator pool

• Address potable reuse operator training and certification concern – remove potential roadblock for DPR

• Address current regulatory issues with T operators at RW facilities
What Is Required to Develop a Certification Program?
It’s Complicated, Rigorous and Proscribed

- Phase 1: Program Analysis
- Phase 2: Job Analysis
- Phase 3: Program Development
- Phase 4: Examination Development
- Phase 5: Examination Delivery
- Phase 6: Market Certification Program

American Water Works Association California-Nevada Section
Step 1 – Confirm Interest

Step 2 – Define Certification Program

Target
Industry Supportive of Certification Program

88% overall favorable
71% would look to include at their facility

Q14: If an AWT Certification program were offered, would your company / agency likely...

- Require your operators to...
  - REQUIRE YOUR OPERATORS (18%)
- Encourage your operators to...
  - ENCOURAGE YOUR OPERATORS (53%)
- Maintain current...  
  - MAINTAIN CURRENT PRACTICE, BUT PERSONAL INTEREST (17%)
- Maintain current...  
  - MAINTAIN CURRENT PRACTICE, NO PERSONAL INTEREST (12%)

Answered: 306  Skipped: 164
Q12: What treatment technologies would you want included in an Advanced Water Treatment Program (Select all that apply)?

- Answered: 282
- Skipped: 188
Step 3 – Job Analysis
## Job Content Domains

<table>
<thead>
<tr>
<th>Content Domain</th>
<th>AWT 3</th>
<th>AWT 4</th>
<th>AWT 5</th>
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<tr>
<td>Source Water</td>
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<td>Advanced Water Treatment Processes</td>
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<td>40%</td>
<td>24%</td>
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<tr>
<td>Safety</td>
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# Task & Knowledge Statements

## Sample Task Statements

<table>
<thead>
<tr>
<th>Membranes</th>
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<tr>
<td>Recognize and correct problems in membrane systems</td>
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<tr>
<td>Calculate membrane surface area</td>
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<tr>
<td>Calculate daily membrane water production</td>
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<table>
<thead>
<tr>
<th>Advanced Oxidation</th>
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<tr>
<td>Calculate oxidant dosing</td>
<td></td>
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<tr>
<td>Measure oxidant residual</td>
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<tr>
<td>Track major process control inputs</td>
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Minimum Qualifications and Structure
A Supplement to Existing Operator Certification

Drinking Water Op Cert
- T1
- T2
- T3
- T4
- T5

AWT Op Cert
- AWT 3
- AWT 4
- AWT 5

Wastewater Op Cert
- Grade I
- Grade II
- Grade III
- Grade IV
- Grade V
Where Are We Now?

In Progress

- Exam Development
- Funding Support Program
- Marketing and and Outreach
WW and DW Operators at Grade 3 level or higher (T3 or G3) can apply to take AWT Grade 3 exam Starting: Spring 2019
Need to Invest in

- SME workshops
- Question bank for 3 exams
- Psychometricians
- Professional exam writers
- Publishing the exams
- AWT website/marketing/communications

Funding Goal: $200,000
Funding Status: $180,000
AWT Operator Certification

Producing Pure Water

AWTOperator.org

Sign-up for our e-mail list