AWT Is Increasingly a Part of Water Treatment, Particularly Potable Reuse
Expert panel calls out the need for a new operator certification that bridges the boundary between water and wastewater operators.
Current Water and Wastewater Certification Does Not Include “Advanced Treatment”

- More complex treatment train
- Unique O&M
- Potable reuse = Enhanced risk
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
A committee is formed. Though we didn’t start out with this cool logo....
AWT Ops Cert Committee Makeup

- ~30 Committee Members
- ~30 Public Participants
- CA-NV Section AWWA Staff
- CWEA Staff

[Image of group photo]

[Graph showing the makeup of the committee: Utility (largest section), Regulatory, Industry Group, Consultant]
AWT Ops Cert Committee Utility Representation

• 15+ utilities represented
• Majority in operations or operations management
• Participation by State Water Board staff
  • DDW
  • Operator Certification
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?
Step 1 – Confirm Interest

Step 2 – Define Certification Program Target
Industry Was 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 practice, but personal interest
  - MAINTAIN CURRENT PRACTICE, BUT PERSONAL INTEREST (17%)

- Maintain current practice, no personal interest
  - 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 (all that apply)?

- Answered: 282
- Skipped: 188
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
A Supplement to Existing Operator Certification

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

Wastewater Op Cert
- Grade I
- Grade II
- Grade III
- Grade IV
- Grade V

AWT Op Cert
- AWT 3
- AWT 4
- AWT 5
Job Analysis

What do people do all day?
## Job Analysis Content Domains

<table>
<thead>
<tr>
<th>Content Domain</th>
<th>AWTO 3</th>
<th>AWTO 4</th>
<th>AWTO 5</th>
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<tbody>
<tr>
<td>Source Water</td>
<td>3%</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Advanced Water Treatment Processes</td>
<td>40%</td>
<td>40%</td>
<td>24%</td>
</tr>
<tr>
<td>Advanced Water Treatment Support Processes</td>
<td>11%</td>
<td>14%</td>
<td>4%</td>
</tr>
<tr>
<td>Advanced Treated Water Management</td>
<td>3%</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Operations and Maintenance</td>
<td>16%</td>
<td>18%</td>
<td>14%</td>
</tr>
<tr>
<td>Controls and Monitoring</td>
<td>6%</td>
<td>6%</td>
<td>13%</td>
</tr>
<tr>
<td>Laboratory</td>
<td>12%</td>
<td>7%</td>
<td>1%</td>
</tr>
<tr>
<td>Regulations and Reporting</td>
<td>2%</td>
<td>2%</td>
<td>10%</td>
</tr>
<tr>
<td>Safety</td>
<td>6%</td>
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<td>29%</td>
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Task & Knowledge Statements

**Sample Task Statements**

<table>
<thead>
<tr>
<th>Membranes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognize and correct problems in membrane systems</td>
</tr>
<tr>
<td>Calculate membrane surface area</td>
</tr>
<tr>
<td>Calculate daily membrane water production</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Advanced Oxidation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculate oxidant dosing</td>
</tr>
<tr>
<td>Measure oxidant residual</td>
</tr>
<tr>
<td>Track major process control inputs</td>
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### Task Statement Samples

<table>
<thead>
<tr>
<th>AWT Grade 3</th>
<th>Task Statements</th>
<th>Freq.</th>
<th>Applic.</th>
<th>Risk</th>
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<tr>
<td>1 Source Water</td>
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<td></td>
</tr>
<tr>
<td>a Wells and Groundwater (Brackish and Fresh)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Analyze well water and groundwater quality</td>
<td>D</td>
<td>30</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Determine drawdown level</td>
<td>M</td>
<td>30</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Calculate a disinfectant dosage in a well</td>
<td>Y</td>
<td>30</td>
<td>Minor</td>
</tr>
<tr>
<td></td>
<td>Recognize the influence of surface water on a groundwater source</td>
<td>Y</td>
<td>30</td>
<td>Moderate</td>
</tr>
<tr>
<td>b Surface Water (Fresh, Saline, and Seawater)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recognize potential sources of contamination in surface water</td>
<td>D</td>
<td>30</td>
<td>Major</td>
</tr>
<tr>
<td></td>
<td>Discriminate between normal and abnormal conditions in surface water</td>
<td>D</td>
<td>30</td>
<td>Major</td>
</tr>
<tr>
<td></td>
<td>Calculate the volume of surface water contained in a surface water storage facility</td>
<td>M</td>
<td>30</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Collect a water sample from a surface water source</td>
<td>D</td>
<td>30</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Recognize abnormal odors or colors in surface water</td>
<td>D</td>
<td>30</td>
<td>Moderate</td>
</tr>
<tr>
<td>c Wastewater</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recognize water resource recovery facility upsets/operations that will impact AWT processes</td>
<td>D</td>
<td>40</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Collect a water sample from a secondary/tertiary source</td>
<td>D</td>
<td>40</td>
<td>Moderate</td>
</tr>
</tbody>
</table>
Where Are We Now?

In Progress

- ✓ Funding Support Program
- ✓ Marketing and Outreach
- ✓ Revisit Certification Regs
WW and DW Operators at Grade 3 level or higher (T3 or G3) can apply to take AWT Grade 3 exam Starting:

Spring 2019
Education Support for AWTO Certification

Sources

- AWWA Manuals of Practice
- WEF Manuals of Practice
- WRF (WE&RF) project reports and white papers
- Manufacturers’ operations & training manuals
- Agency on the job training materials
- Regulations, reporting and safety directions from federal, state and local jurisdictions
- Academia content and manuals of instruction (CSUS OWP, for example)
- Various expert panel reports
- Extraction documents from interviews with subject matter experts
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
Supporters

_contributors_so_far
There’s More to Do

- Communication with stakeholders (employers, operators, regulators, etc.) [www.awtoperator.org](http://www.awtoperator.org)
- Decide whether to pursue third party accreditation
- Prepare for refinements and refresh of the Grade 3 exam
- Contribute to the development of regulatory changes regarding operator experience credits
- Implement certification processes (applications, exam scheduling, issuing certifications / renewals)
- Celebrate with early certificants, employers and other stakeholders!!!
Produce Pure Water

AWTOperator.org

Sign-up for our e-mail list