

Water Softener Sustainability
Professional/Arizona
(WSSP-A)
Certificate Program

Module 1
Overview and Defining the Issue

Arizona Water Quality Association

Welcome!

You are about to begin an educational journey to help you, your customers and the state of Arizona better understand and handle some of the central environmental issues facing us today.

The primary purpose of the WSSP-A program is to demonstrate to possible customers that you have the knowledge and understanding to help them make good choices.



Program Goals

During the next four sessions, you will receive an overview of the following:

- ✓ **Where our water comes from:**
 - 39% from Colorado River
 - approx. 9% from Salt and Verde Rivers
- ✓ **general problems** of salinity and water use
- ✓ **best practices** and equipment
- ✓ **strategies** to effectively help customers



How Arizona Got Here



- ✓ **desert** climate
- ✓ water banking and surface storage
- ✓ state **regulation**
- ✓ **legislative study** on softener usage and impact
- ✓ stakeholders on Arizona State Joint Legislative Study Committee on Salinity



Certificate Requirements

- ✓ attend **four sessions**
- ✓ take a short **quiz**



Successful completion → WSSP-A Certificate



State of the Environment

Salinity and Water.

Fundamentally, those are the two concerns before us: Salt and water efficiencies.





State of the Environment → Water

The dangers of limited water supplies are known to every resident of Arizona.

- ✓ we **need** water
- ✓ **drought** in the state





State of the Environment → Water

Consider some facts:

- ✓ rainfalls **below normal**
- ✓ Lake Mead **dropping**
- ✓ in-state reservoirs at **low levels**
- ✓ need support for **additional 2.5 million people**





State of the Environment

→ Salinity

Salinity in the ground can be a genuine problem. Salinity enters in the form of TDS (total dissolved salts).

- ✓ **prevents** roots from taking in water
- ✓ plants **expend more energy** to take in water
- ✓ **toxic** to sensitive plants

In sewer systems, salinity can limit the benefits of recycled or reclaimed water.





State of the Environment → Water & Salt

Clearly every reasonable way to conserve water and limit salinity must be pursued.





The Facts: Independent Study Results

Over the years, a number of respected institutions have looked into the causes and effects of these problems.



The Facts: Independent Study Results

The CASS Study: (Central Arizona Salinity Study)

A major study of the importation of TDS's into central Arizona. Two phases over four years beginning in 2001. Cooperative partnership between state government, cities, U.S. Bureau of Reclamation.

- ✓ **negative effects** of high concentrations
- ✓ the agricultural sector experiences **economic losses**



The Facts: Independent Study Results

The CASS Study:

- ✓ high TDS concentration **impacts all sectors**
 - Homeowners: Appliances, avoidance costs
 - Businesses: Higher costs
 - Golf Courses

- ✓ land is rendered **unproductive**
 - additional fertilizer
 - supplemental water



The Facts: Independent Study Results

The CASS Study:

- ✓ **1.3 million tons** from major rivers - this is almost 90% of the total
- ✓ **1.5 million tons** enter the Phoenix metro area annually
- ✓ **other sources:** fertilizers, water softeners, industrial water treatment, etc.
- ✓ **salts remain** even after treatment



The Facts: Independent Study Results

The CASS Study:

- ✓ **managing salinity** is required for the long term sustainability of central Arizona
- ✓ as the population grows, there will be **increasing pressure** to use these impaired waters
- ✓ the **cost to remove** salinity at the municipal level is estimated to be \$6-7 million annually with \$56-80 million in capital costs



The Facts: Independent Study Results

The HDR Study:

Focused primarily on the effectiveness of alternatives to conventional water softeners. Conducted for Phoenix Water Services Department, by HDR Engineering, Inc. and Arizona State University (ASU), 2009.



The Facts: Independent Study Results

The HDR Study:

- ✓ **restrict** the beneficial use of reclaimed water, **increase costs**, and **decrease sustainability**
- ✓ Phoenix: **very hard water** at 80-280 mg/L



The Facts: Independent Study Results

The HDR Study:

- ✓ source waters contribute **42% of total salts**
- ✓ the study estimated that **31% of homes** in Phoenix are using SRWS contributing 10% of the salinity added at the wastewater treatment plant
- ✓ **137,202 to 160,869 pounds** of salt are added to Phoenix sewers per day



The Facts: Independent Study Results

The HDR Study:

Each community is looking at different solutions. Phoenix and Scottsdale have considered various proposals. Both have been supportive of public education and training of professionals.





Review

- ✓ **understand the problems** of salinity and water use
- ✓ policymakers looking at **new ideas**
- ✓ sources becoming **more limited**
- ✓ **studies** looking at the causes and effects
- ✓ in coming sessions, methods will be **closely explored**



Learn More

- ✓ **Arizona Water Quality Association** - <http://azwqa.org>
- ✓ **Water Quality Association** - <http://wqa.org>
- ✓ **CASS study** - <http://www.usbr.gov/lc/phoenix/programs/cass/cass.html>
- ✓ **HDR report** - http://watereuse.org/files/s/docs/Peter_Newell.pdf
- ✓ **Battelle study** -
http://wqa.org/Portals/0/WQRF/ResearchStudy_WaterSoftenersEnvironmentalImpact-ExecSummary.pdf
- ✓ **Madison study** -
<http://www.madsewer.org/Portals/0/ProgramInitiatives/ChlorideReduction/Water%20Softener%20Study%20Final%20Report%20111615.pdf>



Quiz

Take the quiz for Module 1...



Credits

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