Water quality perspectives and impacts for salt

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WORLD SALT SYMPOSIUM

June 19-21, 2018 Park City UT, USA

Water quality is a very important topic…

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How does it look from the salt perspective?

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As professionals in the salt industry, you ask…

What is the importance of SALT to water treatment?

What is the importance of SALT to water quality?

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As professionals in the salt industry, you wonder…

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Is there underutilization of SALT -based ways to treat water?

What is the importance of SALT to water treatment?

SAVINGS

- Energy
- Detergent – Laundry & Dishwashing
- Protect appliances/industrial equipment
- Extend appliance/equipment life
- Longer lasting linens
- Warranty compliance
- Life-cycle cost

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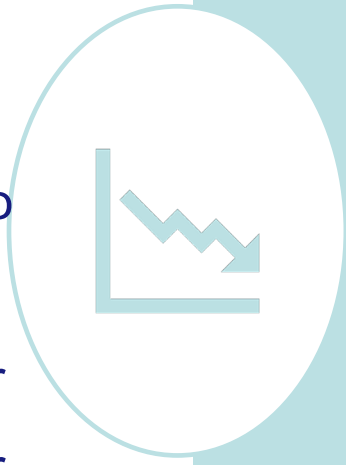
Softened Water Benefits Study

WQRF & Energy Savings

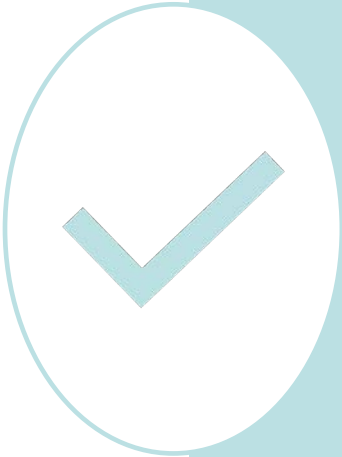
- Up to 24% loss of efficiency with gas water heaters
- Showerheads lost 75% of the flow rate in less than 18 mo
- Faucets almost completely plugged after 19 days (equiv)
- Life-cycle cost savings of 40% compared to 20 gpg water
- Life-cycle cost savings of 57% compared to 30 gpg water
- For gas water heaters, reduce carbon footprint up to 14.8% over service life
- For instantaneous water heaters, reduce carbon footprint up to 4.4% over service life



High Efficiency Water Appliances

The development of high efficiency water appliances has been a driving factor for the water treatment industry

- Your warranty may be voided if you operate a high efficiency appliance with hard water
- You run a high risk of damaging the appliance or degrading performance



What is the importance of SALT to water quality?

HEALTH

- Reduce carbon footprint
- Reduce health contaminants

EXPERIENCE

- Glassware, sinks, showers
- Maintain flow for high efficiency fixtures

Final Barrier
Health Protection!

Some salt-based water treatment products capture metals and radiologicals

Strong-acid Cation	
Ra^{+2}	13.0
Ba^{+2}	5.8
Pb^{+2}	5.0
Sr^{+2}	4.8
Cu^{+2}	2.6
Ca^{+2}	1.9
Zn^{+2}	1.8
Fe^{+2}	1.7
Mg^{+2}	1.67
K^{+}	1.67
Mn^{+2}	1.6
NH_4^{+}	1.3
Na^{+}	1.0
H^{+}	0.67

Softened Water Benefits Study

WQRF & Laundry experience enhancement

1

Improved stain removal

Hardness is most significant factor

2

Save detergent

Up to 50% less detergent

3

Save energy

Lower temp from 100ºF to 60ºF

4

True across ALL

detergents tested & stains tested

Softened Water Benefits Study

WQRF & Dishwashing experience enhancement

1

Improve stain, spot & film removal

Hardness is most significant factor

2

Save detergent

Up to 70% less detergent

3

Save energy

Effects are maintained with air drying

4

True across ALL

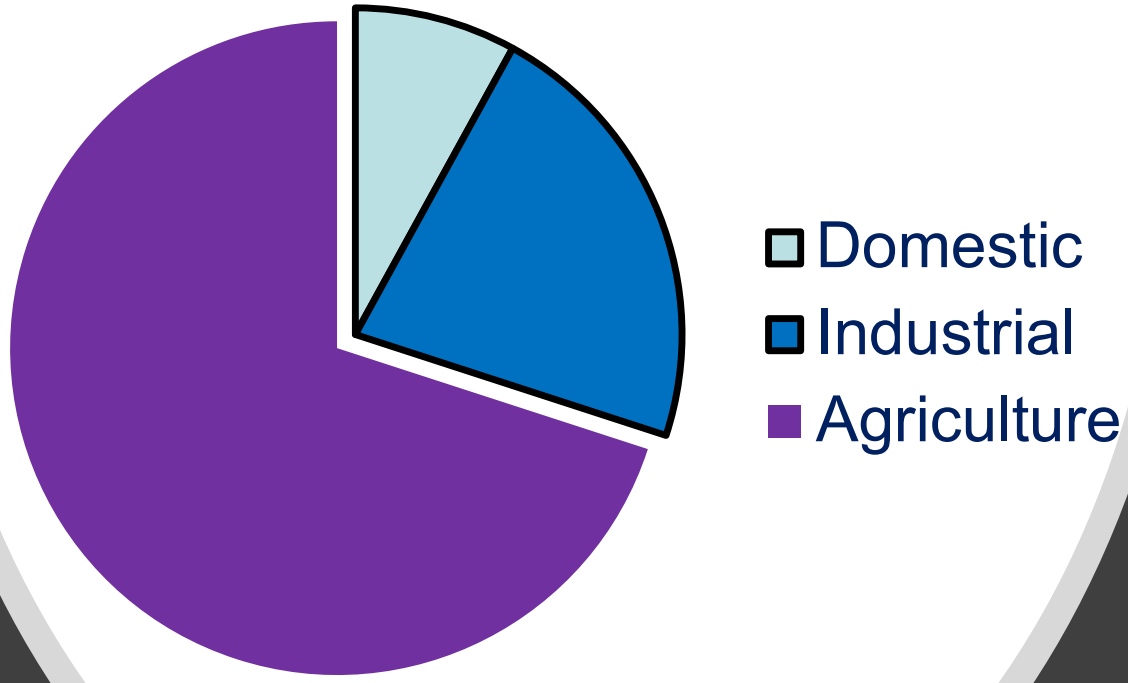
detergents tested & stains tested

OPPORTUNITY?

Is there underutilization of SALT-based ways to treat water?

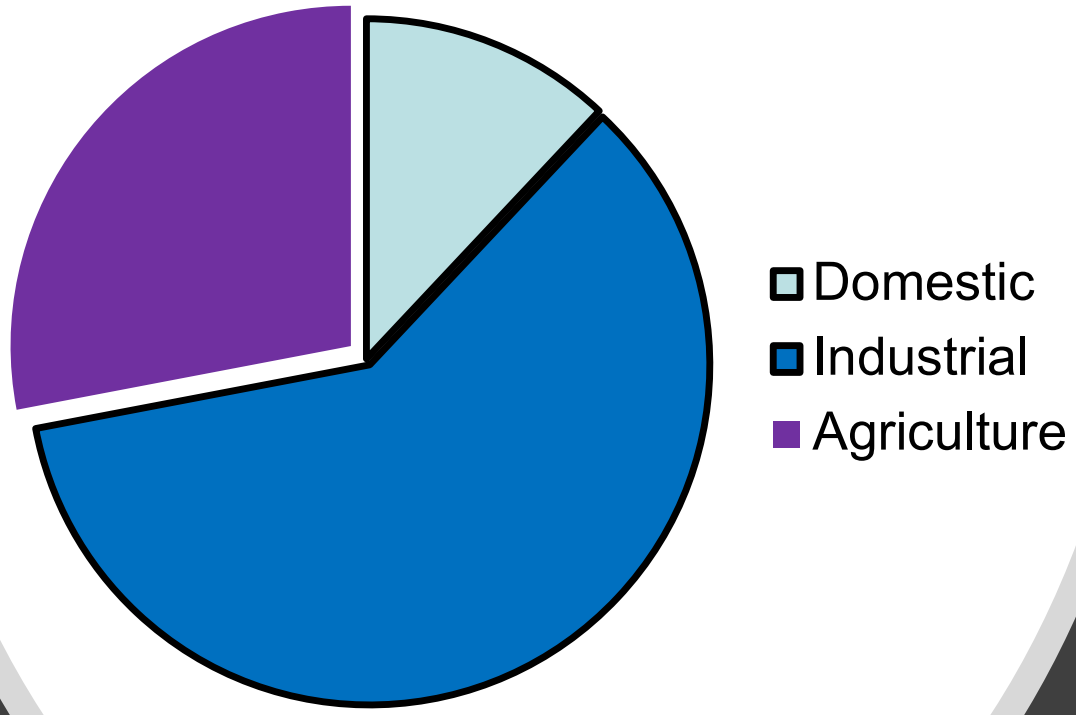
OPPORTUNITY

30% of World Water Use



OPPORTUNITY

70% of US Water Use



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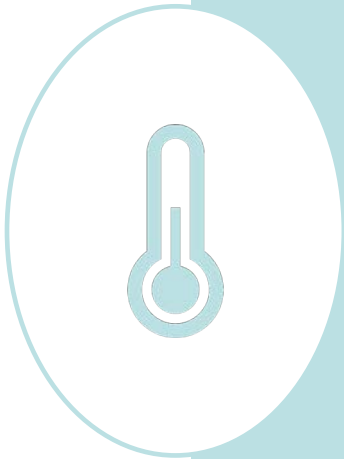
Commercial / Industrial opportunites for salt-based water treatment

- Potable water
- Contact process water
- Boiler & reactor feed and make-up water
- Cooling tower make-up water
- High purity water
- Large laundry and restaurant facilities
- Protection of heat transfer elements
- Pre-treatment for reverse osmosis or deionizer systems
- Wastewater re-use
- Groundwater remediation

Cooling towers

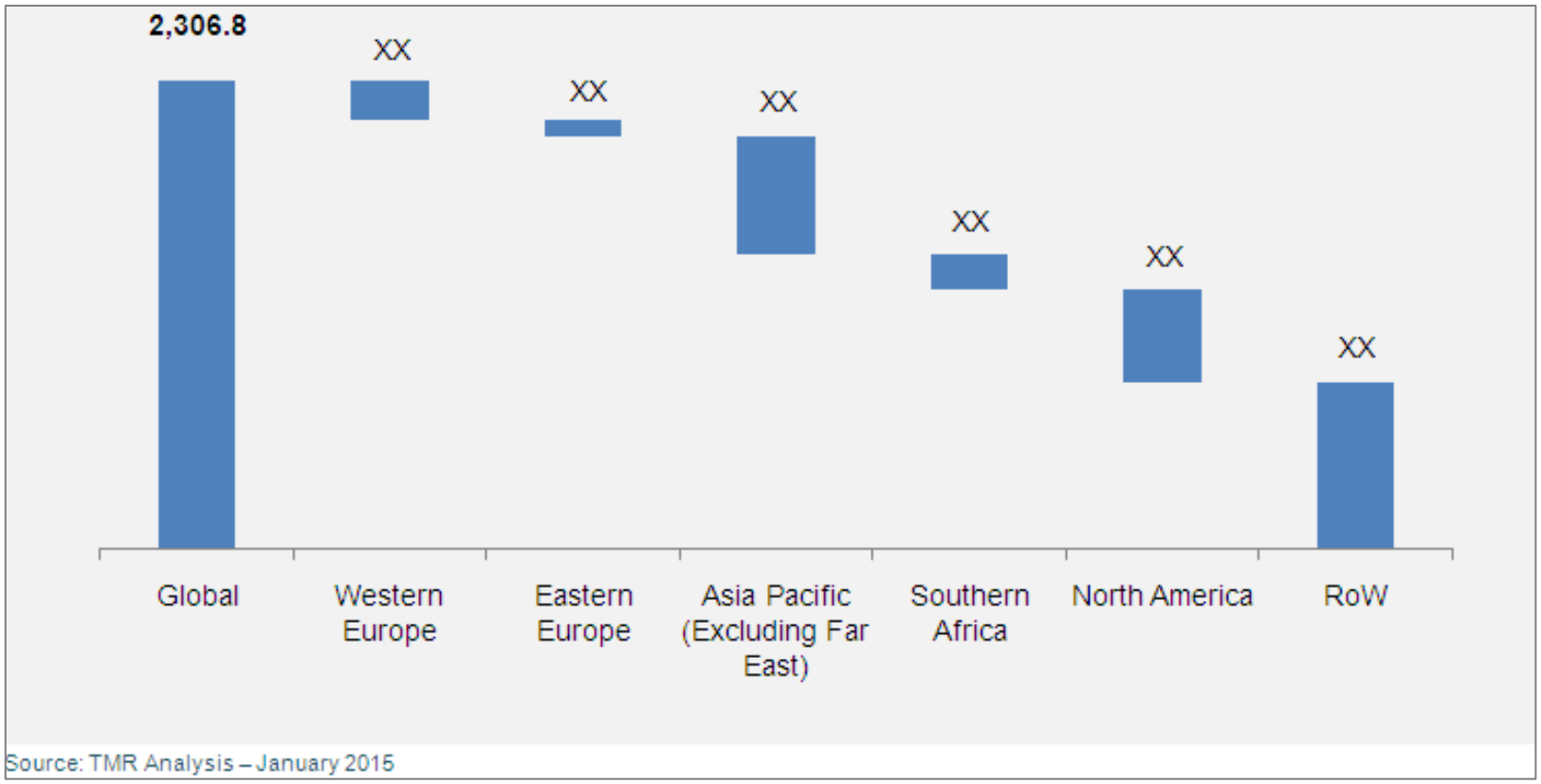
- Works on principle of heat rejection
- Utilized in manufacturing plants and during power generation for cooling
- Broadly utilized in a number of industrial applications for maintaining temperatures in chillers
- Heat can also be removed via cooling towers in air conditioning systems



Cooling tower opportunities

- Increasing demand for electricity and growing industrialization has raised the count of power projects.

- Predicted to raise the demand for cooling towers in the coming years.



Global cooling towers market will expand at 4.70% (CAGR) from 2014 to 2020.

Key factors driving global water heater market growth 4 – 6%

Rising	• Rising disposable income
Recuperating	• Recuperating residential housing industry
Growing	• Growing adoption in the industrial and commercial sector

Escalating	Growing	Surging
Escalating hot water demand from hotels and hospitals	Growing usage in manufacturing industries i.e. chemicals, thermal power plants and food & beverage processing	Surging demand across domestic applications such as bathing, cooking, heating and cleaning

Key factors driving the global water heater market growth

4 – 6%

Commercial / Industrial uses for salt-based water treatment

- Potable water
- Contact process water
- Boiler & reactor feed and make-up water
- Cooling tower make-up water
- High purity water
- Large laundry and restaurant facilities
- Protection of heat transfer elements and spray nozzles
- Pre-treatment for reverse osmosis or deionizer systems
- Wastewater re-use
- Groundwater remediation

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Take home messages:

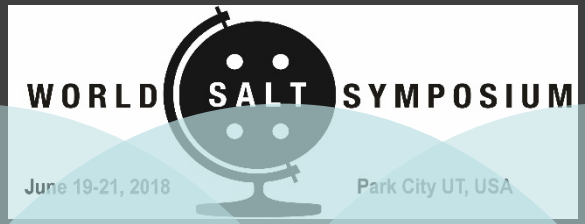
SALT

is important for

1 – water treatment

2 – water quality

3 – opportunities for comm / indus uses



THANK YOU!

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QUESTIONS?

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