Enabling Innovation on the Nutrient Management Journey

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BUILDING A WORLD OF DIFFERENCE®
CREATIVE SOLUTIONS to bridge the WATER SUPPLY GAP

IT IS TOUGH getting people to invest in WATER

200 YEARS AGO, water pipes were WOODEN

BUILD relationships with people

GET THEM TO UNDERSTAND the VALUE of the SERVICE

FUTURE smart pipes can detect & FIX leaks

USING BIG data to manage water resources

ORGANIC WASTE can generate RENEWABLE ENERGY

PHOSPHOROUS & MINERALS

DR HELGE DAEBEL
FRANCOIS FEVRIER
GEORGE S. HAWKINS, ESQ.
DR PIERS CLARK

GRAPHIC RECORDING BY SKETCHPOST.COM
VANESSA SKETCHPOST
Yesterday's Today's “Linear” Treatment Model

WASTEWATER → LIQUID STREAM → SOLIDS HANDLING → ENERGY RECOVERY

FOG → SOLIDS HANDLING

NON-POTABLE RECYCLED WATER
EFFLUENT
ELECTRICITY
HEAT
BIOSOLIDS (BENEFICIAL REUSE)
Prioritizing Nutrient Removal
Why are we concerned about nutrients?
Drivers and Motivators to Spark Change

Global Mega Trends
- Global Warming
- Resource Constraints
- Urbanization
- Aging Populations

Water Challenges
- Droughts and Floods
- Water Scarcity
- Energy Costs
- Water Pollution
- Aging Infrastructure

As identified by GWI
Future Demands Require Different Roadmap

**HOLISTIC**
“Big picture” viewpoint; best value beyond removal

**COLLABORATIVE**
Break down silos and accelerate new ideas and their delivery

**TRANSFORMATIONAL**
Identifying the right targets; changing the paradigm for operations
From Nutrient *Removal* to Nutrient *Management*
Nutrient Management Strategies

Urine/Stream Separation

Decentralization

Nutrient Recovery
Nutrient Management can also extend to watershed solutions

Source: http://newwater.us/media/208549/2019_SilverCreek_FactSheet_FINAL.PDF
Nitrogen Recovery... Other than Through Struvite

- Not common – economics are not yet favorable
- Emphasis has been on improvements in nitrogen management (e.g., using deammonification)
Identify and Foster Open Innovation Systems
Several institutes in the Upper Midwest are fostering innovative systems

- NSF Research Center in Milwaukee
- Fostering collaboration between academia, manufacturing, and utilities
- Technology startup coaching
- Global Water Center in Milwaukee

- Delivering advanced research and market-driven innovations to bridge gaps in water technology commercialization
Embracing and Leading Transformation
Changing the Paradigm

Carbon Target vs. Regulatory Requirement

Workplace Evolution
The Challenge for the Research Community

Phosphorus Recovery

- Improve economics
- Reduce footprint
- Educate public

Nitrogen Recovery

- Viable, scalable solutions
- Multiple systems
Challenge the Status Quo...
Questions?

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