It’s Gonna Take More Than a Little Lipstick

...to complete this makeover

Rebooting the Industry v. 2.0

Rick Mealy
WI DNR, Lab Certification
In our last episode...
Googling: Wastewater

...lots of concrete, infrastructure, grays and browns (not the floating kind...) and little greenage

= Not Appealing
...as if that’s not enough, when we can get people to the plant we give the SHOCK & AWE tour....
Do we want to be the caterpillar...or the butterfly?

“The caterpillar does all the work but the butterfly gets all the publicity.”

--George Carlin
Flush & REFLECT!

Focus on the finished product...

Focus on the good that we do.
Don’t dwell on the yuck factor.
Baby Boomer retirements loom about 40% of our workforce is retiring in the next 10 years
How do we get “Gen Y” interested in wastewater?

How do we refrain from throttling them long enough to keep them?
“Connect” to schools via Gen Y

Move beyond occasional tours....
form partnerships with local school districts
I CAN’T GET NO RESPECT
Water will appear as shades of blue, varying from nearly black to very pale blue. Clear, clean water will appear nearly black. As the amount of sediment increases, the color becomes increasingly lighter blue.

- USGS FAQ (satellite imagery)
What has happened over the past 2 years?
The Water Environment Federation now refers to all wastewater treatment plants as water resource recovery facilities [WRRFs]. Suggestions have been made that the DNR also change the title ‘wastewater treatment plant operator’ to ‘water resource recovery specialist.’ Do you have any thoughts or opinion about this repackaging?”

-- Jack Saltes, P.E., Wisconsin DNR

“..will changing the names of plants and the titles of professionals by itself change public perceptions of the industry? Not likely — but the names and titles we use now force the industry to swim upstream.”
Attempts to change titles

[Wastewater Treatment Plant Operator] with recent NR 114 changes

SUMMARY OF PUBLIC COMMENTS

Comment: Three comments were made recommending changing the name of Wastewater Treatment Plant Operators to Water Resource Recovery Specialists, Water Resources Operators or Wastewater Operations Specialists.

Response: The Department does not feel a name change should be made at this time. There is a long history of this position title. It is clear and descriptive of the position. All operator certification programs in other states, the national Association Board of Certification (ABC), the state and federal wastewater operator apprenticeship program and educational institutions still refer to operators of treatment plants as Wastewater Treatment Plant operators. A position name change may also lead to confusion and impact Wisconsin operator reciprocity or job applications in other states.
TPO would call these “euphemisms”

- Subway has “Sandwich Artisans”
- Garbage workers have become Sanitation Workers
- Secretaries are now Administrative Professionals
- Teachers are now Professional Educators
- Customer Service Reps are now “Relationship Managers”
- Apple Store associates are now “Genius”
- Google’s Space Projects Coordinator is Intergalactic Federation King Almighty and Commander of the Universe

But OUR industry can’t get a break
Industry Issues: Aging workforce

Source: 2013 American Water Works Association

Aging workforce issue hasn't just gone away
Aging workforce rated as 4.04 on a scale of 1 to 5

Source: Black & Veatch
Participants were asked to rate the importance of each issue using a scale of 1 to 5, where 1 indicates "Very Unimportant" and 5 indicates "Very Important."
Only 10% believe…

…that the industry is “very prepared” to deal with the aging workforce

*2013 AWWA State of the WATER INDUSTRY Report*

Many utility participants in the 2013 SOTWI survey reported they face difficulty in recruiting, training, and retaining skilled employees.

Survey of utility staff on preparedness for retirements in next 5 years
So... we...

★ need to replace our workforce,
★ can’t make the title more appealing
★ must facilitate a collision of these two worlds

BOOMERS ARE FROM MARS, Gen Y ARE from Venus
Scene at a career fair?

“You’d really like wastewater…but you young punks don’t appreciate things.”

“Why would I want to work with inflexible fogies who won’t respect me?

“...got any candy?”
One effort: The Fire Chief Project
The Fire Chief Project

They have cool equipment

They have attractive buildings

They do heroic things
How To Get Fire Chief Credibility?

Invite the public in
Go out and meet the public
Look great
Say goodbye to the low profile
Wear your pride on your shirtsleeve
The good doctor’s take

…the notion of treated sewage “hooks into the intuitive concept of contagion” and contamination.

Translation:

poop = bad PR

Dealing with negative perception
People associate [operators] with unpleasant things

Perception ≠ Reality

What Operators REALLY Do

The Fire Chief Project
Other industries pull it off

9/22/14
10,000,000
iPhone6, 6+ sales in 3 days
Rebranding attempts
...to something more accurate
...and one of our own shall lead

“This new brand complements a new attitude of viewing materials received as

...a resource to be recovered, rather than a waste with which to dispose.”
The Atlantic asked a dozen scientists, historians, and technologists to rank the top innovations since the wheel. Here are the results.

50 Greatest Breakthroughs Since the Wheel

November 2013

11. Nitrogen fixation, 1918

The German chemist Fritz Haber, also the father of chemical weapons, won a Nobel Prize for his development of the ammonia synthesis process, which was used to create a new class of fertilizers central to the green revolution (No. 22).

A major reason we live 40 years longer than we did in 1880 (see "Die Another Day")

"Discovering how to make cold would change the way we eat—and live—almost as profoundly as discovering how to cook."

— George Dyson

12. Sanitation systems, mid-19th century

13. Refrigeration, 1850s

Unlocking our hidden value
You are more than poop & pipe wrenches
• The lines between wastewater treatment and science are no longer black and white.

• Actually, they never were. But we can make a better case today.
We need to use some different blocks...

...to (re-)build ourselves
science

engineering

technology

mathematics
Caffeine – Coffee!

Paraxanthine – Breakdown product of caffeine

Sulfamethoxazole – Antibiotic, part of Bactrim

Ofloxacin – Antibiotic: ears, eyes, UTI infections

Fluoxetine – (Prozac), antidepressant

Triclocarban – Antibacterial soaps

Codeine – Narcotic; cough suppressant

Triclosan – Antibacterial, soaps and toothpastes

Trimethoprim – Antibiotic used for pneumonia and UTIs

Diphenhydramine – (Benadryl), Antihistamine

Carbamazepine – (Tegretol), Anticonvulsant, mood stabilizer

Acetaminophen – (Tylenol)

Diltiazem – (Cardizem), Treat chest pain, angina

Sulfanilamide – Antibacterial, treat yeast infections

Pharmaceuticals

Environmental Health News  September 5, 2013

14 compounds detected at risk levels in Lake Michigan.
Concentration of PPCPs at the final effluent and at seven locations in Lake Michigan.

<table>
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<th>Use</th>
<th>Pharmaceutical</th>
<th>MDL</th>
<th>mean</th>
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<tr>
<td>Anti-diabetes drug</td>
<td>Metformin</td>
<td>0.5</td>
<td>1200</td>
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<td>Anabolic steroid</td>
<td>4-Androstene-3,17-dione</td>
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<td>Anti-Bacterial soaps</td>
<td>Triclosan</td>
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<td>Controls lipids/triglycerides</td>
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<td>9.1</td>
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<tr>
<td>Antibiotic</td>
<td>Sulfamethoxazole</td>
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<tr>
<td>Caffeine breakdown product</td>
<td>Paraxanthine</td>
<td>6.1</td>
<td>6.3</td>
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<tr>
<td>NSAID</td>
<td>Naproxen</td>
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<tr>
<td>Tylenol</td>
<td>Acetaminophen</td>
<td>2.5</td>
<td>4.2</td>
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PPCPs: Pharmaceuticals and Personal Care Products
Endocrine disruptors
Microbeads

- Can slip through most water treatment systems when they wash down the drain.
- About the same size as fish eggs, which means, essentially, they look like food.
- If fish eat microbeads, which can soak up toxins like a sponge, scientists suggest that those chemicals could be passed on to humans and wildlife.
Microbeads, the tiny plastic balls added to body scrubs and toothpastes by such manufacturers as L’Oreal SA and Procter & Gamble Co., were marketed as the greatest beauty aid since cold cream. **Now fish have a gut full**, and some U.S. and state lawmakers want the ingredient banned. Washed down bathroom drains, the abrasives **evade treatment-plant filters and accumulate** in waterways. Researchers who found microbeads of 1 millimeter -- the width of a pencil tip -- and smaller in the Great Lakes, the largest surface freshwater system in the world, fear they may introduce toxic chemicals to the food chain. “The products look really attractive sitting on the store shelves,” said Sherri Mason, a chemistry professor at the State University of New York at Fredonia, who led the Great Lakes study. “**Like many people, I assumed it was something that was biodegradable, something that would break apart.**"
Microbeads

* Actual amount of plastic microbeads that are in one 5 oz tube of facewash

Washing your face shouldn't be an act of pollution
Other concerns

• One day I noticed a strange dark spot on my gums above both of my two front teeth. This was fairly sudden, and it was noticeable.

• When gently picking underneath my gums with a toothpick, I found SEVERAL of these little blue crystals lodged far up into my gums.

• Not only was this rather disturbing (and gross), but I’m sure that over time this would absolutely become harmful to my teeth or gums.
STEM: “flushables”
WIPES, DIAPERS CAUSE HEADACHES FOR WASTEWATER PLANTS

A dingy lump of discolored wipes sits at the bottom of a large metal trash container at the NEW Water wastewater treatment plant in Green Bay. The cluster of wipes, and other items, were pulled off a screen designed to snag debris not intended to be in the waste stream. Wipes, underwear, paper towels, diapers, rope, dentures, and even money, get caught in filtration screens leading into the treatment facility. All are items that don't breakdown in the system, and cause problems — like blocked pumps — for operators. "You get the rope, the diapers, wipes. They have a tendency to plug things up, and that becomes a real problem," said Aaron Eichhorst, a wastewater treatment operator at NEW Water. "A wastewater treatment plant is designed to treat biological waste, not garbage."
The Straight Poop:
Flushing Doesn't Make it Disappear.

When you flush diapers, cloth, wipes, feminine hygiene products, bandages, tubing and prescription drugs down the toilet, they aren't really gone. They're stuck in the pipes and in the treatment facilities. They don't fully break down. They just make a-chopped-up mess, costing hundreds of dollars and harming pipes and the environment. The plumbing and the earth where it belongs...
STEM: Adaptive Management
Studies have shown that Gen Y...

- ...is dedicated, loyal and hardworking
- ...wants to feel that what they do has value
- ...need positive reinforcement
- ...need to feel included, part of the team

That’s our bait.
Time to go fishing
Fishing for New operators
Fishing for recruits

• Too big a hook and you lose any chance to hook anything other than a monster.
  – Is a tour for elementary school kids simply too much for them to absorb and appreciate?

• Too small a hook and the big fish either don’t see it or spit it out.
  – Are we failing to connect with high school kids’ interests?

• A good fisherman also makes sure s/he doesn’t set the hook to early.
Self-Evaluation: Engaging kids

• What are we doing now?
   – Career Fairs
   – Class field trips

• What else could we be doing?

• We have to come to the conclusion that we cannot do it alone

If the fish ain’t biting, switch baits
Field Trips Are Not Enough
...neither are career fairs (at least in their current form)
Insanity is doing the same thing over and over again and expecting different results.

- Albert Einstein
Know Your Audience and Speak Their Language

"Blah blah blah blah blah blah... oh, and did I say blah?"
It takes a village…

Changing channels
This is OUR village

- School Board
- Other programs
- School District
- Local WWTP
- WWOA
- Kids
- Muni Board
- DNR
- Other programs
- School District
- WWOA
- DNR
Adjusting how we market ourselves

• Any good school district is always looking for ways to improve its curriculum.

• Their mission is to prepare kids for the next phase of their lives and to prepare them for the multitude of options available.

• **STEM is today’s buzzword** in education. Science- Technology- Engineering- Math

• Wastewater treatment is a STEM cornucopia
Curriculum materials & resources already exist
Welcome to The Water Sourcebooks

The Water Sourcebooks contain 324 activities for grades K–12 divided into four sections: K–2, 3–5, 5–8, and 9–12. Each section is divided into five chapters: Introduction to Water, Drinking Water and Wastewater Treatment, Surface Water Resources, Ground Water Resources, and Wetlands and Coastal Waters.

This environmental education program explains the water management cycle using a balanced approach showing how it affects all aspects of the environment. All activities contain hands-on investigations, fact sheets, reference materials, and a glossary of terms. Activities are organized by objectives, materials needed, background information, advance preparation, procedures, and resources.

All parts of the program may be printed and copied. For more information, see the links below under "About Water Sourcebooks".

About Water Sourcebooks

http://water.epa.gov/learn/kids/drinkingwater/wsb_index.cfm
Our Mission:
To increase awareness that all water quality is directly linked to the use of appropriate wastewater systems and their management.
©2014 | ABOUT US | SUPPORT OUR PROGRAMS HERE

Independent. Impartial. We provide access to information to empower sustainable, local, wastewater decision making.

http://www.wastewatereducation.org/teacher_resources.html
• Curriculum resources are out there...we just need to make use of them; point them out to school districts.

• WE are additional resources. We can offer to assist school districts be it as guest speakers or to provide materials.

• Some programs have been in place for 10 years or more...

• Do we want to lag behind Northern Kentucky?
What others are doing

- **October 2012**: (EPA’s NYC Blog) **Youth-in-the-Environment program** High School and College Students Introduced to Waste Water Treatment in New York City. **Over 10 summers nearly 200 students.** gained lab skills in process, metals, biological, chemistry labs and research labs that reinforce STEM skills.

- **November 2013** (TPO Magazine): Allegheny County Sanitary Authority (ALCOSAN) annual Summer Science Camp. **10 years running.** 4-session **summer program gives more than 100 students** in grades 4-8 a chance to learn about the sciences of wastewater treatment and engineering. Two sessions for grade 4-5 and two for grade 6-8.

- **SD.com Northern Kentucky’s Wastewater and Storm Water program.** Offers elementary, middle, and high school curriculum resources.
What others are doing

- EPA’s “The Water Project” Course materials for grades 9-12. Groundwater and Drinking Water

- LA’s Industrial Waste Management Program. Sewer Science Program: 2003 through 2009, the program has been held in 54 schools, 423 classrooms, and taught to 14,951 students. Advances environmental education by taking a mobile lab unit into high school and college classrooms to simulate the primary, secondary, and advanced wastewater treatment processes.

- Milwaukee Public Schools The Headwaters High School Curriculum is appropriate for students in 9th through 12th grade. Each unit is designed to get students thinking about how engineers use science, technology, engineering and mathematics (STEM) to treat wastewater and the relationship that wastewater has on public and environmental health. MPS, MMSD, MATC, Milwaukee School of Engineering
• Even small schools have a district administrator and high school principal

• Moderate sized schools will have a Director of Curriculum or Student Services.

• Really big districts are even more specialized...

• Sun Prairie has:
  – District Administrator
  – Asst. Superintendent - Teaching, Learning & Equity
  – Asst. Superintendent - Operations & Continuous Improvement
  – Director of Assessment & Continuous Improvement
  – Director of Secondary Teaching, Learning & Equity
  – Director of Elementary Teaching, Learning & Equity
Efforts in one district

- Met with key district personnel
- Fit well into a prospective new course offering for Spring 2014
- Parallel track with school board members
- Effectively solicited WWOA member support for resources
- Ultimately derailed due to lack of student support (only 5-6 kids signed up)
- Coming up to bat again...

...which only underscores the problem!
Ed Norton, "sub-supervisor in the subdivision of the department of subterranean sanitation," was the model for Barney Rubble. That is NOT who we are! Time to shake the genealogy tree!
To Be Continued?

*Sewer Workers Are King*

--Ed Norton
Comments/Questions?