

N & P From a Drinking Water Utility Director's Perspective

Keith Alexander
City of Decatur, IL

Key Drinking Water Utility Considerations

- The industry is highly regulated by US Congress and US & IL EPAs
- Accountable to elected local officials or corporations
- The hand we are dealt – water supply, water treatment, water distribution, staff, water rates
- Regulated substances in water that used to be measured in PPH are now PPB, PPT even PPQ

N & P Facts

- We are swimming in a ocean of N
 - 7th most abundant element in our galaxy
 - 78% of earth's atmosphere
 - 3% of human body weight (4th most prevalent)
 - average adult human contains 4.6 pounds
- P also surrounds us and is in us
 - 1% of human body weight (6th most prevalent)
 - average adult human contains 1.5 pounds

What Contaminants Do We Monitor and/or Remove? Over 105, including:

- Microorganisms
- Disinfectants
- Disinfection Byproducts
- Inorganic Chemicals including Nitrate and Nitrite
- Organic Chemicals
- Radionuclides
- National Secondary Drinking Water Contaminants (15 including foaming agents)
- Unregulated Contaminant Monitoring
- P not regulated but is a general use WQ standard

Decatur's Nutrient Experience

- Lake Decatur is the water supply for Decatur and Mt. Zion
- Constructed in the early 1920s
- 925 square mile watershed
- 500K acres of corn and soybean fields
- Extremely fertile heavily tilled soils
- During WWII Decatur employed 2 soil conservationists and helped establish SWCDs in the watershed
- P not a major problem in Lake Decatur (yet) but is for many surface water supplies due to eutrophication

Decatur's Unique Situation

- Decatur is home to two of the largest grain processors in the world due to an ample supply of grain and water
- Our grain and water comes from our large agricultural watershed
- Our region's economy is almost entirely dependent on this water, grain production and grain processing cycle
- Grain production and water quality are inseparably linked
- What we do to one almost always affects the other

NO₃ Becomes a Big Challenge for Decatur

- Experienced high NO₃ levels in the 1980s and early 1990s
- The Specter of Blue Baby Syndrome
- 1992 IEPA Letter of Commitment
- Options considered:
 - Watershed management
 - Alternative water sources
 - Water supply blending
 - Water treatment technology
- 1993 Began 15 year watershed nitrogen monitoring study conducted by ISWS

Decatur NO₃ Challenge Continued

- 2000 State of IL Judicial Consent Order
- 2002 Nitrate reduction facility on line
- Cost \$7.6M
 - \$0.5M IL legislative discretionary grant
 - Remainder IEPA water revolving fund loan
- Facility not used 82% of the time

Results of Decatur's NO₃ Challenge

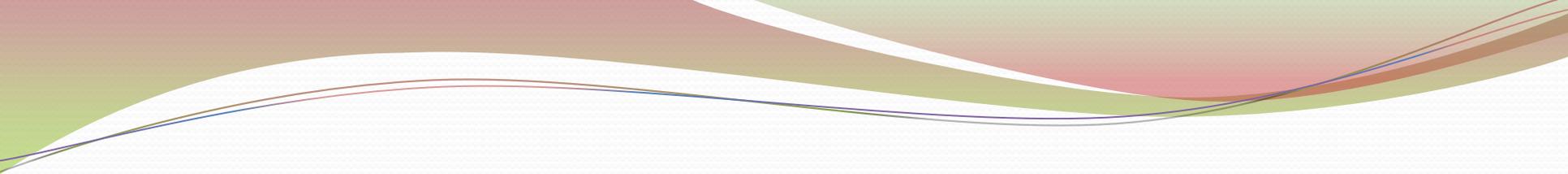
- Reduced NO₃, TOC and DBP levels
- Improved community health - for infants under 6 months of age
- Greatly improved community image and pride
- The importance and continuance of watershed management reaffirmed

Think About It...

- In the last 30 years, how many Americans have gotten sick or died from the effects of excessive amounts of nitrate or phosphorous in their drinking water?
- I consume more nitrate and phosphorous in a fresh spinach salad with bacon dressing than I'll ever consume from drinking water

Philosophical Thoughts

- Can our society continue to afford the relentless and apparently unstoppable pursuit of improving our drinking water quality?
- Is the law of diminishing returns no longer taken into account?
- Are there more important societal issues we should be spending our limited financial resources on?
- Examples: education, sustainable energy, national defense, world peace, job creation, cures for cancer, heart disease, diabetes, etc.



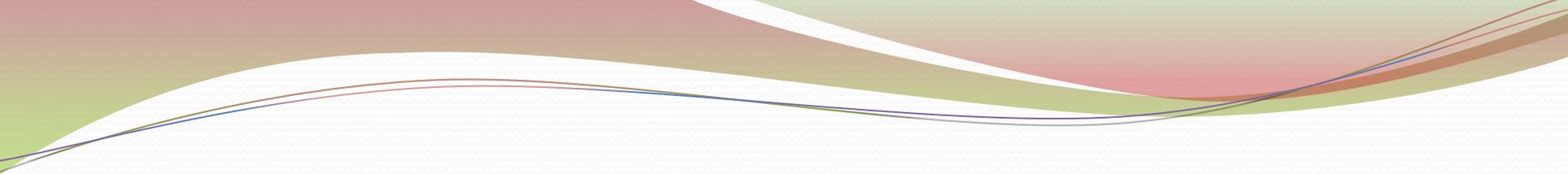
Is our penultimate goal
that drinking water be
distilled water with a twist of fluoride?

What Might the Future Hold?

- Continue voluntary fertilizer management or implement stringent regulations?
- Implement a fertilizer use tax and reward system?
- N and P cap and trade commodity system?
- Dramatically enhance non point source pollution control incentives?
- Examples: CRP, EQUIP, bioenergy crops, bioreactors, enhanced wetlands, tile drainage management, ultra precision fertilizer application, etc.

What Else Might the Future Hold?

- Dramatically enhance point source pollution control incentives?
- What about old and new septic tank systems?
- Use reclaimed water instead of drinking water wherever possible regardless of cost?
- Implement regional nutrient and drinking water standards rather than nationwide standards?



Whatever we decide to do in the future
don't forget to drink plenty of tap water -
it's still good for us!