Connecticut’s Approach to Public Drinking Water and Public Health Protection

Eastern CT State University

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Connecticut’s Approach to Public Drinking Water

- Rooted in our state’s history
- Public health based
- Crafted to be protective of public health
- Conservative, Unique and Preventative
Public Drinking Water & Public Health Presentation

- Public Drinking Water Regulation
- Department of Public Health (DPH) Drinking Water Section Responsibilities
- Why Public Health? historic concern
- Current Public Health Drinking Water Law
Public Drinking Water Regulation
Public Drinking Water Regulation

- History of Public Health & Drinking Water
- US Public Health Service – 1798 & 1912
- Connecticut Health Department - 1880s & 1917
- US Environmental Protection Agency – 1970
- CT DPH received primacy for the SDWA - 1976
Environmental Protection Agency  Public Water Systems

- What is a Public Water System?
- 155,700 Public Water Systems in United States
- 52,000 community systems – serves residential population
- 286 million people served
- 70% by surface water
Connecticut Public Water Systems

- Over 2,500 Public Water Systems
- Largest number of systems of the New England states
- Considered a Medium Size State by the Environmental Protection Agency
Department of Public Health
Drinking Water Section
Responsibilities
Drinking Water Section

• To protect the public health of Connecticut residents and visitors that consume public drinking water in Connecticut

• Responsible for purity and adequacy oversight statewide for all public water systems

• Work to proactively prevent impacts to health
CT DPH Drinking Water Section

- **Primacy of Safe Drinking Water Act - EPA**
  - system engineering reviews
  - treatment/source review & approval
  - Drinking Water State Revolving Loan Fund
  - drinking water quality – oversight of monitoring and reporting for over 100 contaminants
    - Lead & Copper Rule, Radionuclides Rule, Ground Water Rule, Arsenic Rule, Revised Total Coliform Rule, etc

- **State Statutory Oversight**
  - purity and adequacy of public drinking water
  - water company land regulation
  - recreation permitting, sale of excess water, certified operators, enforcement
  - water supply planning and regional planning (WUCC)
CT DPH Drinking Water Section Responsibilities

- Regulate 2,550 Public Water Systems
- 2.8 million CT residents served – 3.5 million total population
- 550 community systems
- 2,000 non-community systems
- 150 reservoir systems, over 4,000 ground water sources
Drinking Water Section Responsibilities-50 Staff

• Administer drinking water protection laws
• SDWA, primacy since 1976
• Water quantity oversight – Margin of Safety
• Water quality review, over 500,000 samples per year
• Review and approve all significant improvements to public water systems
• Review and approve new treatment plants and systems
• Conduct sanitary engineering surveys, every 3 or 5 years
• Review and approve water supply plans and regional plans
• Responsive to all hazards, emergency preparedness
• Review of sale/use of 100,000 acres of water company land
DWS Responsibilities

- Drinking Water State Revolving Loan Fund $150 million since 1999, with another $200 million moving forward, infrastructure projects, repair, replace, upgrade, extend to pollution
- Proactively protect public drinking water sources
- Proactive enforcement of violations, follow-up with system owner, issue NOVs and Orders to assure system compliance
- System takeover if failure, system review, violations, etc.
- Tracking of SDWA compliance and reporting to EPA
- Sources of bottled water in CT and bulk water hauling
- 24/7 coverage and response concerning public water system emergencies
- Track and report program measures
- Administer EPA grants since 1980s
- Assure compliance for all 2500 public water systems
Reservoir system in Connecticut
Small public water system well
Why Public Health?
Water Supply Problems – 19th century

- Industries need water for production, fire safety, consumption
- Population growth in Cities
- Water supply inadequate
- Unfiltered
- Untreated water
- Unprotected, poor distribution systems
- Unsanitary conditions, waste disposal
- 1878 CT State Agency Public Health oversight created
Public Health Concerns  Water Supply 19th Century

- Significant public health issue - consuming drinking water, ground water and surface water
- Waterborne disease
- Gastrointestinal infection
- Typhoid, cholera, dysentery were prevalent
- Microorganisms in 19th century,
- Beginning of 20th century filtration, build technology, disinfection, sanitary protections at source, protection of raw water quality
**Typhoid Fever & Cholera**

- Bacterial disease
- Transmitted in water contaminated with feces of infected person
- Occurrence of the disease fell sharply in the developed world with the rise of 20th century sanitation techniques (chlorination) and antibiotics
- 2013 – 161,000 deaths from Typhoid worldwide
Chance of dying from gastrointestinal infection before the age of 70

- **1900** – an American had a 1 in 20 chance
- **1940** – 1 in 3,333
- **1990** - 1 in 2,000,000
- **100,000 fold public health improvement in less than a century**
Current Public Health Drinking Water Law
Abundant and Safe Water  CT Laws – early 20th Century

- 25-32 purity and adequacy DPH to assure and responsible for oversight, broad authority
- 25-33 source approval
- 25-34 investigate and order to stop pollution or threat of pollution
- 25-43 no pollution, no one is allowed to pollute
- 19a assure sanitary conditions
- Regulation 19-13-B32
Abundant & Safe Public Drinking Water – late 20th Century

- 25-32d water supply plans 1985
- 25-33c to n – Regional Plans and Coordinate water system plans
- 85 Water Supply Plans
- Updated plans periodically
- 25-32 & 25-37 – Water Company Lands
- 25-32b – Emergency Response
- 25-32 – Certified Operators
Importance of an Abundant Supply of Safe and Pure Water for a Community

- Public health protection
- Preservation of public trust
- Allows for community growth
- Allows for a community to plan for future growth
- Assure sanitary conditions for multiple facilities, schools, nursing homes, restaurants, hospitals, town facilities
- Provides sustainability and viability for community
- Public safety, fire protection
- Economic growth
- Priceless
Unique CT State Public Health Drinking Water Laws

- Multi-barrier approach
- Treatment and source water protection emphasized and required
- Use of high quality raw water sources, upland watersheds
- Aggressive and proactive laws to protect public health
- DPH Review of local development
- Prohibit sewage discharge in upland watershed areas
- Prohibit industrial waste discharge in upland areas
Public Drinking Water
Challenges of the Future
2015 Top Causes - Public Drinking Water Outbreaks

- Giardia
- Legionella
- Norovirus
- Shigella
- Campylobacter
- Salmonella
- Hepatitis A
- Cryptosporidium
- E. Coli
Threats Remain

- 1993 Milwaukee Cryptosporidium
  - 400,000 sick and 70 deaths
- 2012 West Virginia – chemical contamination
- 2014 Ohio – Harmful Algal Blooms cyanotoxins
- 2016 – Flint Michigan – Lead and Legionella
- New potential emerging contaminites
- Drought/Climate Change/Extreme Weather
- 2015-Present - Per- and Polyfluoroalkyl Substances (PFAS)
- Legionella
Current EPA Lead & Copper Rule

- Compliance: testing, reporting, exceedance, 15 ppb action level, treatment
- 1,150 Community and NTNC systems required to test under the Lead and Copper Rule
- 170 non-transient non-community systems – schools
- 17 Public Water Systems out of compliance
Flint
Michigan
Flint Timeline

• Change of Source – April 2014 - water chemistry and public health impact
• State Responsible for City of Flint water system due to declared state of financial emergency, not traditional role
• Treatment System – April 2014 – October 2015 - using surface water treatment plant without corrosion inhibitor
• Complaints – start Spring 2014 – resident’s concerned, public health issue
• October 13, 2014 – GM announces it will stop using the water at it Flint plant because it is corroding engine parts
• October 2015 Flint changes source of supply back to the Detroit supply
• January 2016 – EPA Headquarters issues Order to State of Michigan and City of Flint
• Significant public health issues continue
Avoiding Flint MI

- Capable and Consistent State Agency DPH Oversight of the Safe Drinking Water Act
- Use only high quality sources of public drinking water
- Set clear public policy that humans deserve to consume high quality sources with an appropriate level of treatment
- Assure State DPH oversight of adequacy of public drinking water supply through existing planning mechanisms
- Assure strong public health policy in the protection of public health and the consumption of drinking water
- Assure Unique Laws that protect public drinking water in CT remain in effect
- Full fund the DPH concerning Public Drinking Water Oversight through appropriate levels of State and Federal funding
Emerging Contaminants: PFAS

- CT DPH has established a Drinking Water Action Level for the sum of the concentration of Five PFAS.
- DWS has developed a Strategy to address PFAS in public drinking water.
- EPA Published its PFAS Action Plan in February.
DWS PFAS Strategy: Proactive

- Using existing laws that reduce risks to public health
  - CGS 22a-471 protects consumers of public drinking water from PFAS in the municipal waste stream.
  - RCSA 25-33d-3(i) Water supply plan updates: source vulnerability assessments to include potential PFAS generators.
  - RCSA 19-13-B102(b) Annually inspection of public drinking water supply watersheds must include the potential PFAS generators.
- Requiring all applicants for new public drinking water supplies to test the water for PFAS before receiving approval for use under CGS 16-262m and CGS 25-32
- Working internally with other DPH programs and externally with sister State agencies, USEPA and professional working groups
- Providing information through Circular Letters
DWS PFAS Strategy: Capacity to Respond

- The DWS PFAS team maintains subject matter expertise on the latest PFAS developments.
- Staff is trained to collect drinking water samples for PFAS analysis.
- Staff is experienced in responding to identified PFAS contamination.
- Has established priority ranking points for funding of projects to deal with emerging contaminants including PFAS through the Drinking Water State Revolving Fund.
## What Northeastern States are doing about PFAS

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<td>State lab capacity to analyze samples</td>
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<td>Dept. of Defense lead at military installations</td>
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Challenges of the Future

- Maintain high quality sources for human consumption
- Assure public health protection
- Minimize risk as watersheds are developed and climate change affects source water
- Maintain highly skilled technical staff
- Modernize for efficiency, use of technology
- Addressing new SDWA rules
- Keeping historic public health law current
- Informing the public of the proactive public health role in safe and adequate public drinking water
- Continuing infrastructure investment and upgrades
- Continuing to plan to meet future demands
- Addressing water conservation, water reuse, and use of the “purple pipe”
CT Planning Initiatives

• WUCC – State Law 25-33c to 25-33n
  — 2 year process, initiated June 2016
  — Water Supply

• State Water Plan – State Law 22a-358
  — Water Planning Council, DEEP, OPM, DPH and PURA
Moving Forward: The Next 20 years

- Address water quality issues
- Address water quantity needs, plan for the future
- Proactively address and emphasize public health needs
- Stress High Quality drinking water for human consumption
- Emphasize system consolidation in identified areas of need
- Work to address identified system sustainability/resiliency issues
Connecticut’s Approach to Public Drinking Water and Public Health Protection

- Public Health Protection
- Minimize risk to public health
- Proactive & Preventative
- Regulatory
- High Quality Protected Raw Water Sources
- Adequate levels of treatment
- Responsive/adaptable/skilled/knowledgeable technical staff
- 24/7
Thank You

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Department of Public Health

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