

Microbial Regrowth, Infrastructure and Legionella

IAPMO Emerging Water Technology

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Legionellosis

- Type of pneumonia, inhaled aerosols
- Most significant US waterborne disease
- ~60% of waterborne disease outbreaks
- Only current WB disease that kills people
- 5000-30,000 cases /year in the US
- Hospital acquired, 10 to 30% death rate
- Many causes-not just water
- Water at least 5%, but much higher

Flint: Legionellosis not lead was the harm

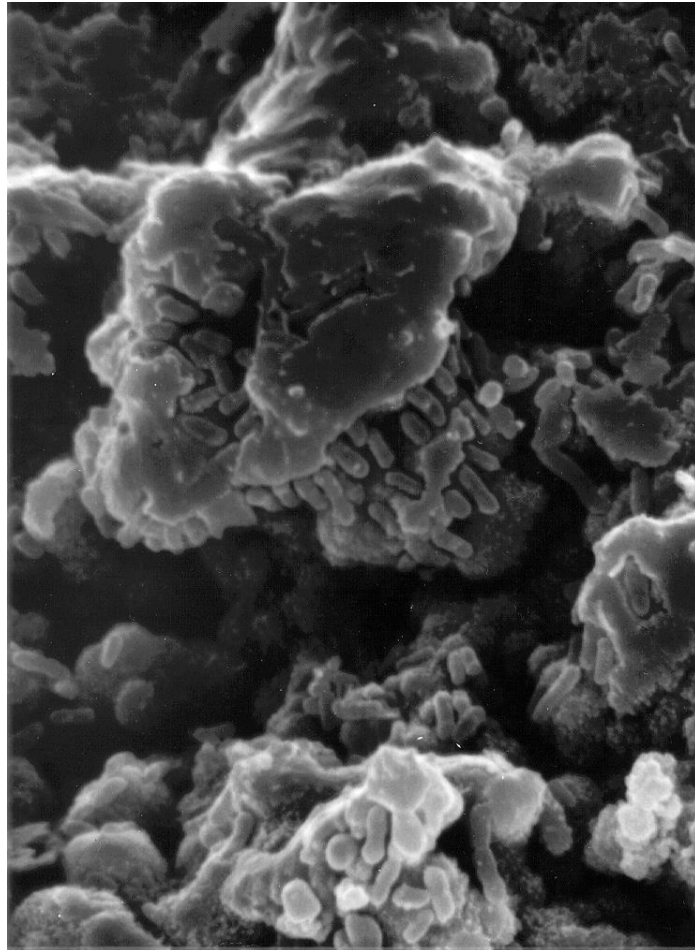
Who is at Risk?

- **Elderly**
- **Smokers**
- **Immune compromised-i.e. cancer patients**
- **Under medical treatment**
- **Intensive Care Units**

Risk Environments

- **Hospitals**
- **Longterm care**
- **Other buildings**
- **Homes**

Transmission Pipe



Problem

- **No consistent guidance**
- **Multiple state policies-from nil to stringent**
- **PWS Regulatory Barriers**
- **Supplemental treatment can trigger PWS**
- **Should facilitate rather than inhibit disinfection**
- **Why not exclude hot water treatment?**
- **Are DW regulations needed?**
- **Who should oversee?**
- **Drinking Water or Health Authorities**

Need for Authoritative Guidance

- **Temperature range**
- **Plumbing System Management**
- **Flushing**
- **Disinfectant residuals**
- **Monitoring**
- **Interpretation**
- **Water Safety Management Plans**
- **Many countries use 1 CFU/mL (1000/L)**

How is the distribution/plumbing system seeded?

- Treated water-probably minimal but not zero
- New Construction Plumbing
- Plumbing repairs
- Atmospheric deposition (vented tanks)
- Distribution system pipeline breaks*
- Spas
- Cascades
- Seeding and Biofilms and amoebas
- Loss of disinfectant residual
- Water Growth Temperature ~25-50 C

INFRASTRUCTURE

- **Repair**
- **Replace sooner**
- **Find water losses -where the leaks are**
- **Unmetered water losses are expensive**
- **It's out of sight until the pipe breaks, then it is an expensive crisis**

>500,000 water main breaks
in USA per year







Factors Related to Pipe Failures

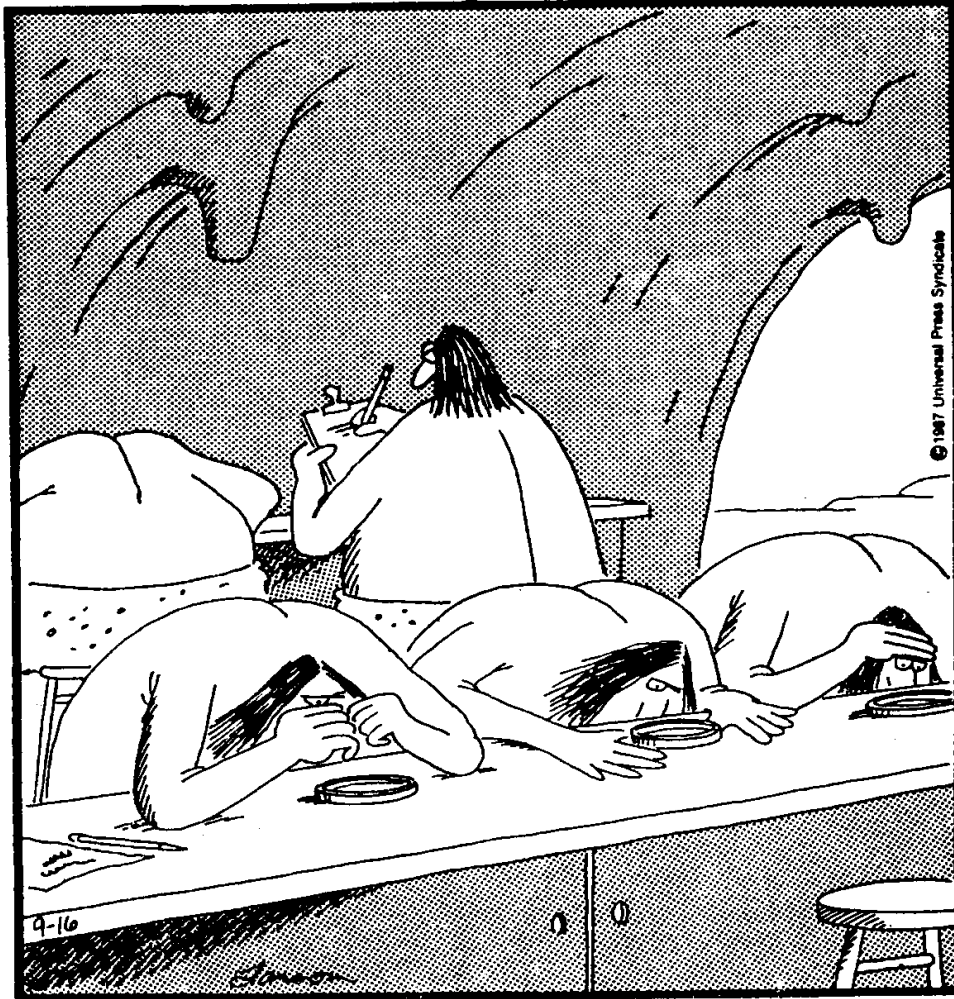
- Age* and pipe material
- Corrosion – pit, wall thinning, stray current
- Ground movement
- Thrust restraint failure
- Hydraulic events – surge or vacuum
- Changes in water temperatures
- Vibration or shaking
- Third party damage-equipment damage

*

Consensus Has been Delayed

- **Minimal EPA Guidance**
- **Multiple State Approaches**
- **ASHRAE 188**
- **CDC Recommendations**
- **Let's get on with it.**
- **What could be a higher DW priority? Not lead.**
- **It is complicated but it can be done**
- **People are sickened and dying in the meantime.**

THE FAR SIDE



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Simon

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