

Legionella Epidemiology, Outbreaks and Control

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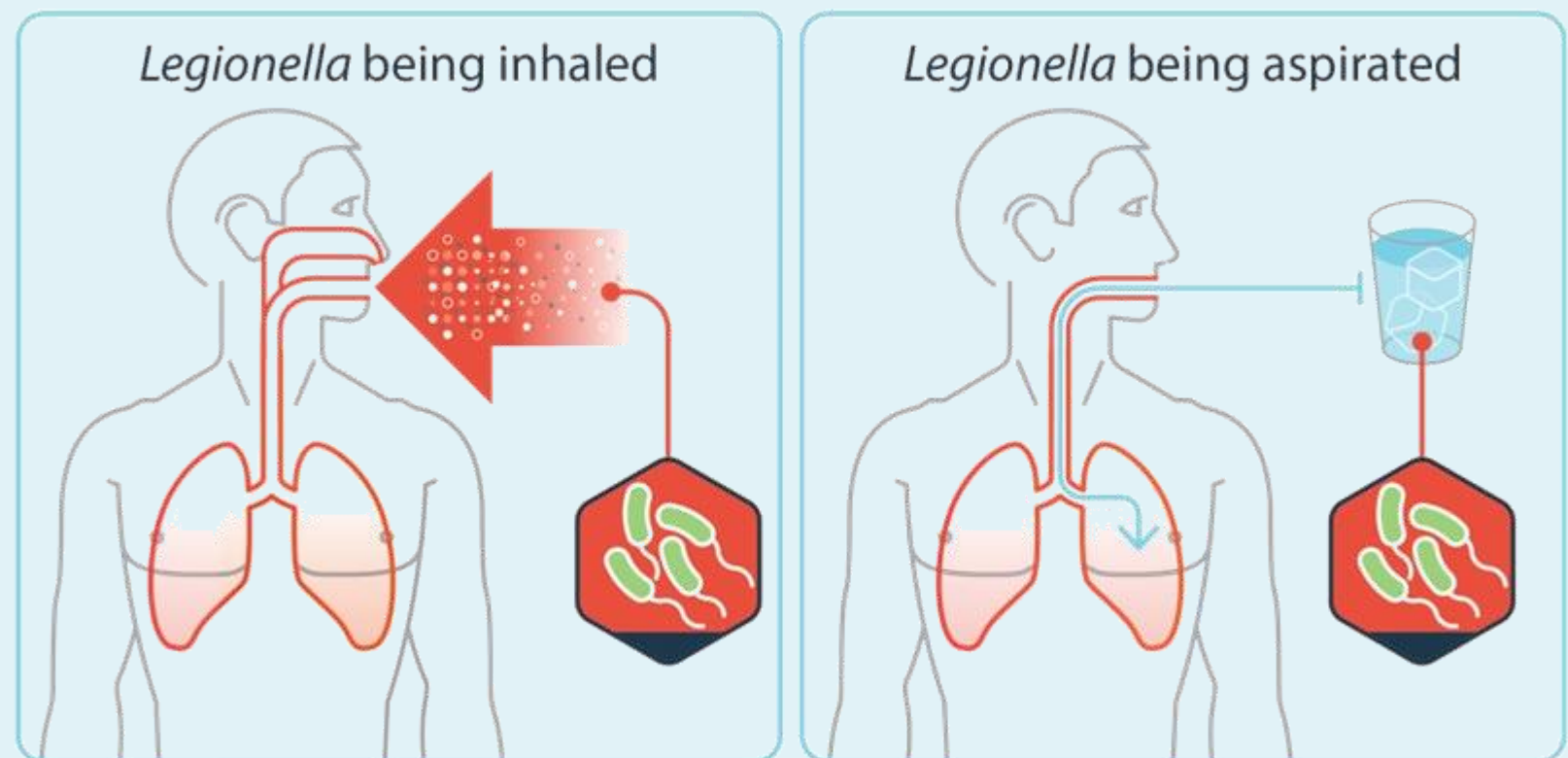
Abbreviations and Terminology



- CDC - Centers for Disease Control and Prevention
- FDA – U.S. Food and Drug Administration
- FWBD – Food and Waterborne Disease
- OEHS – West Virginia Department of Health and Human Resources (DHHR), Office of Environmental Health Services
- OEPS – DHHR’s Office of Epidemiology and Prevention Services
- OLS – DHHR’s Office of Laboratory Services
- WVEDSS – West Virginia Electronic Disease Surveillance System
- LD – Legionnaires’ disease
- PF— Pontiac Fever

Legionellosis- How is it spread?

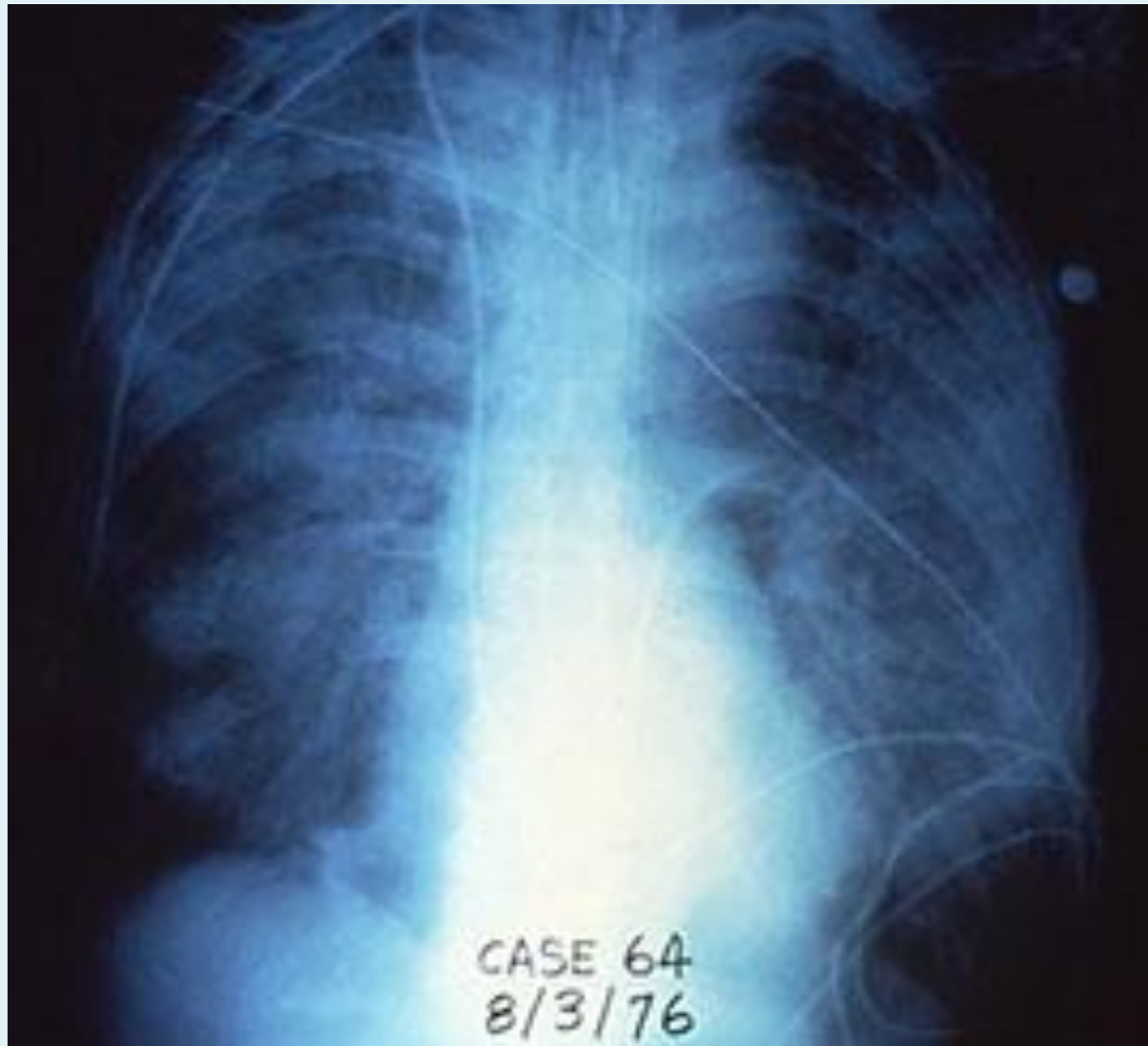
Legionella is present in fresh water environments and man-made systems



Legionellosis- Who is at increased risk?



Legionnaires' Disease and Pontiac Fever



Testing



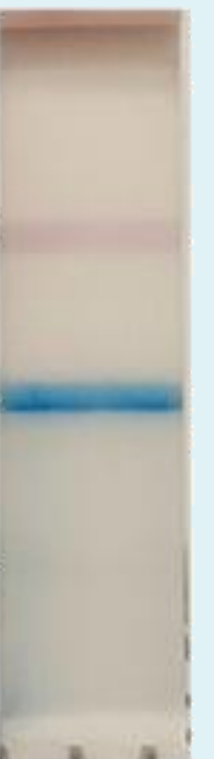
BinaxNOW

Control —
Sample —



ImmuView

Control
(purple/grey) —
Legionella
(blue) —
S. pneumoniae
(red/pink) —

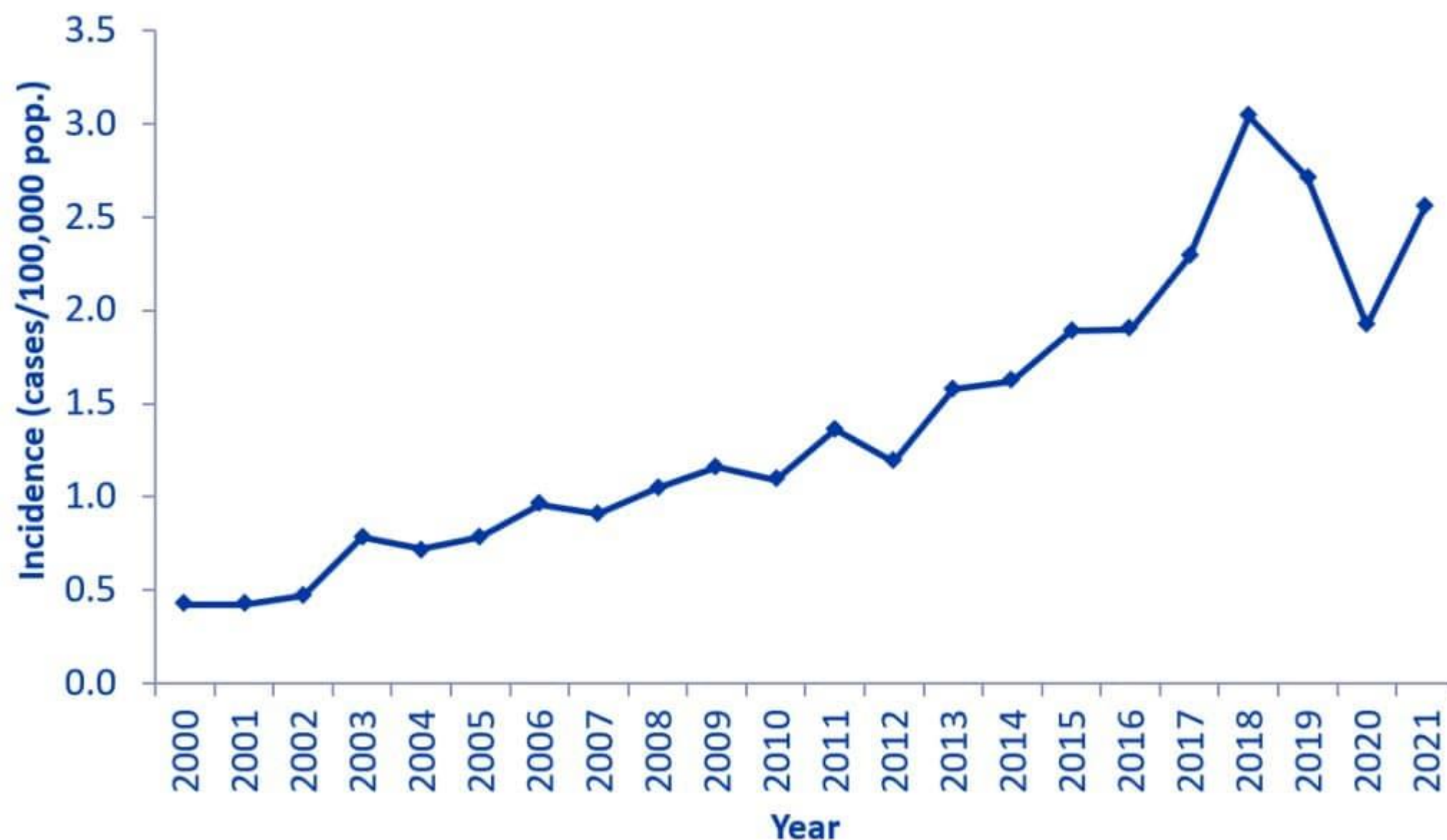


Treatment and Complications



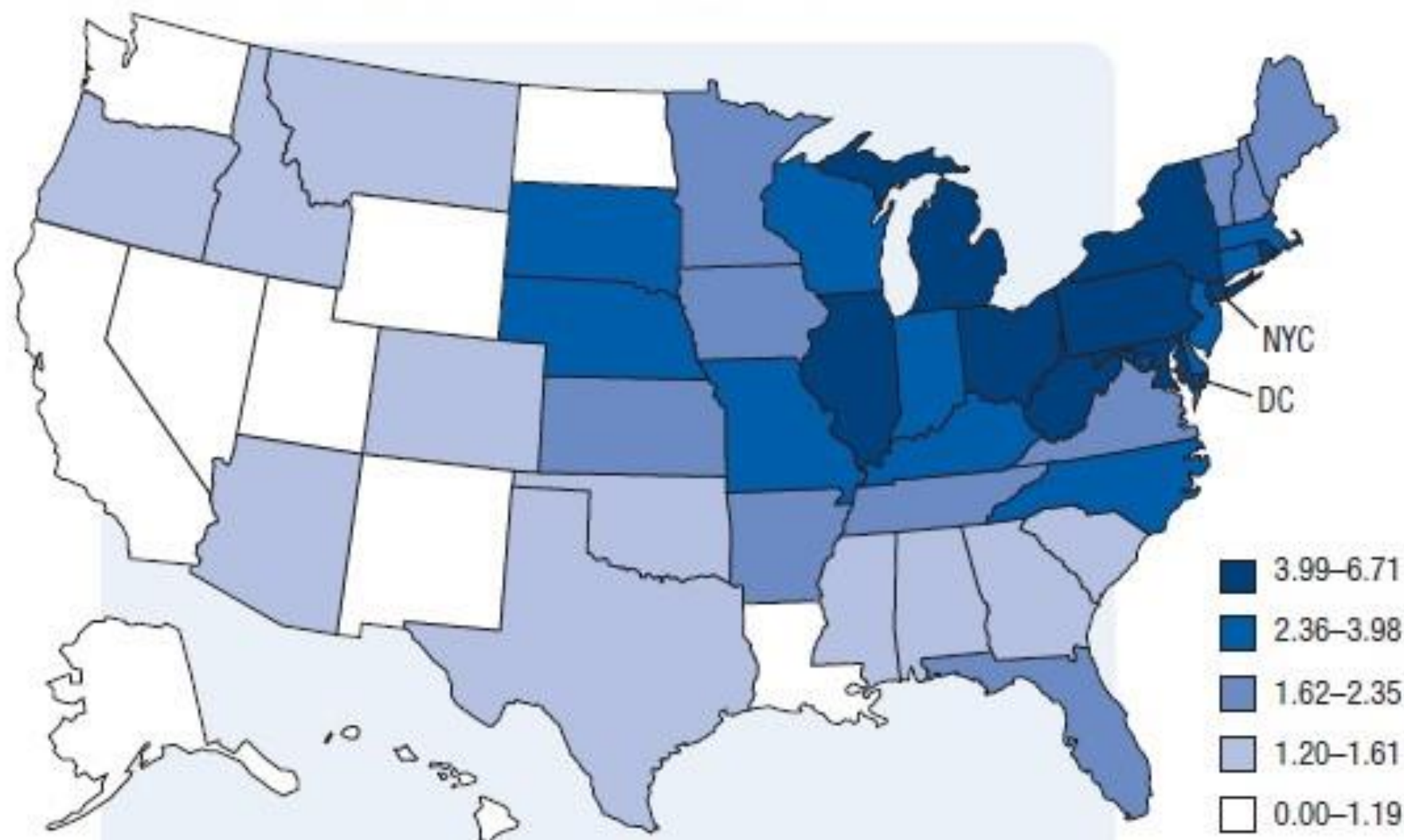
Legionella National Surveillance

Legionnaires' disease in the United States, 2000-2021



Legionella National Surveillance

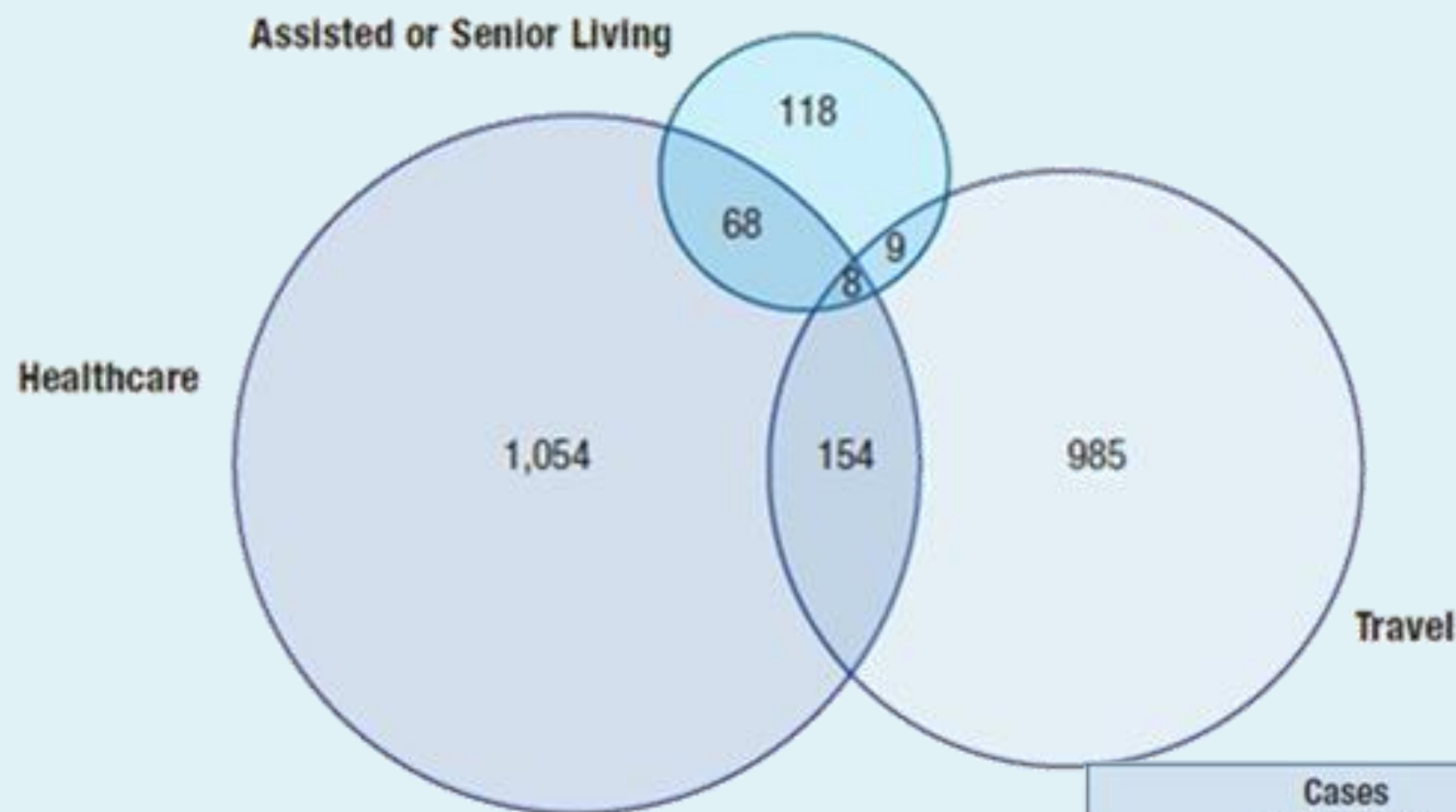
Figure 3b. Crude incidence^a rates of reported confirmed cases of Legionnaires' disease^b by jurisdiction of residence^c—NNDSS,^d United States, 2019.^{e,f}



Alabama	1.47	Louisiana	1.07	North Dakota	1.18	Florida	2.08	Nebraska	2.38	Texas	1.45
Alaska	0.27	Maine	2.23	Ohio	6.71	Georgia	1.61	Nevada	0.81	Utah	1.19
Arizona	1.28	Maryland	4.51	Oklahoma	1.31	Hawaii	0.78	New Hampshire	2.35	Vermont	1.92
Arkansas	2.18	Massachusetts	3.58	Oregon	1.30	Idaho	1.40	New Jersey	3.58	Virginia	2.23
California	1.14	Michigan	5.52	Pennsylvania	4.52	Illinois	4.85	New Mexico	1.00	Washington	1.00
Colorado	1.56	Minnesota	2.09	Rhode Island	4.54	Indiana	3.91	New York	5.45	West Virginia	4.57
Connecticut	3.34	Mississippi	1.58	South Carolina	1.30	Iowa	2.15	New York City	5.35	Wisconsin	3.98
Delaware	3.58	Missouri	2.98	South Dakota	2.59	Kansas	2.27	North Carolina	2.90	Wyoming	0.52
D.C.	5.79	Montana	1.31	Tennessee	2.18	Kentucky	2.71				

Legionella National Surveillance

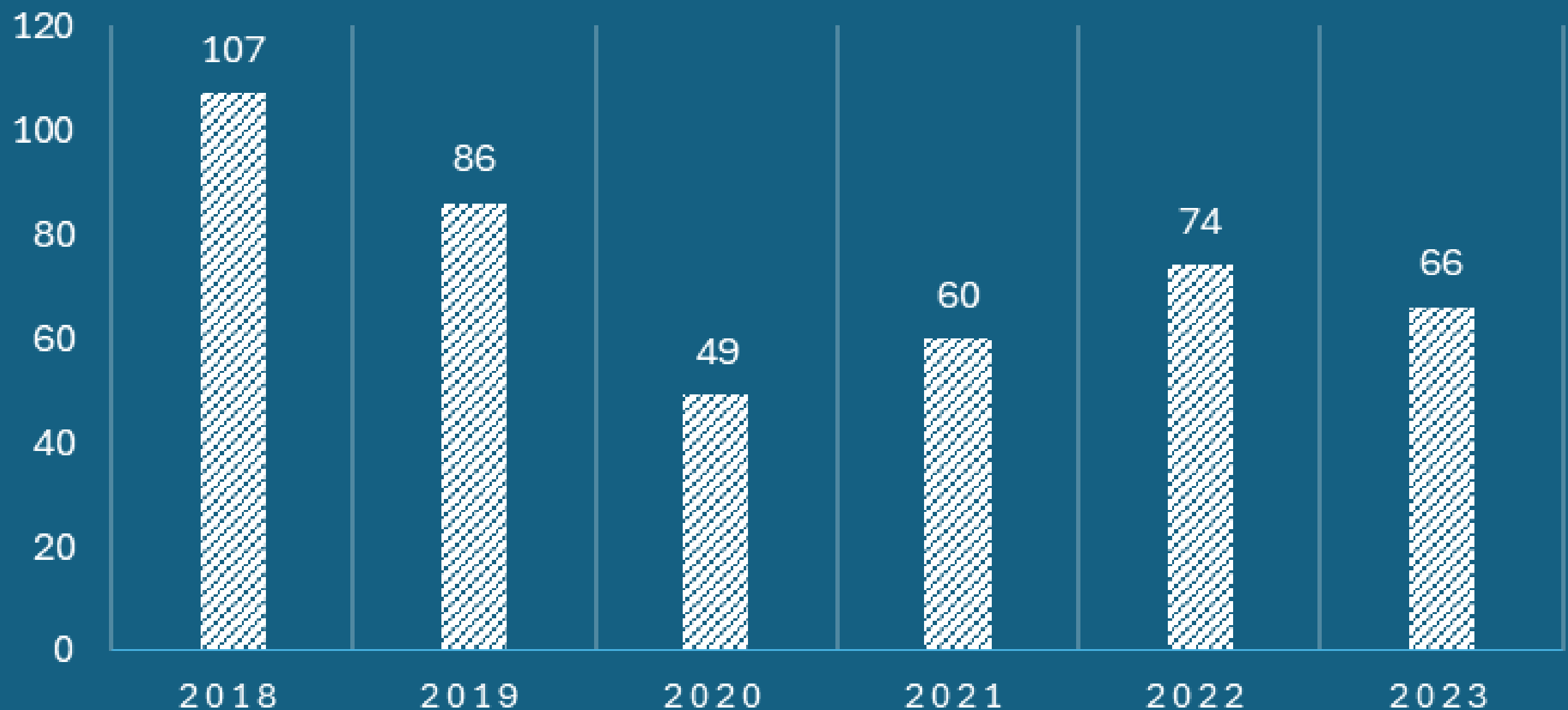
Figure 6b. Number of reported confirmed cases and deaths of Legionnaires' disease by exposure category^a—SLDSS,^b complete reporting jurisdictions,^c 2019.^d



Exposure category	Cases (Total = 6,955)		Deaths (Total = 639)	
	N	%	N	CFR ^e
Any healthcare	1,284	18.5	134	10.4
Definite healthcare	192	2.8	41	21.4
Possible healthcare	1,092	15.7	93	8.5
Any travel	1,156	16.6	35	3.0
Any assisted or senior living	203	2.9	25	12.3
None of these	4,559	65.5	311	6.8

West Virginia Legionella Burden and Trends

LEGIONELLOSIS CASES BY YEAR, WEST VIRGINIA, 2018-2023 (N=442)



West Virginia Legionella Data 2023



CASES WERE HEALTHCARE-
ASSOCIATED



CASES ARE MALE



79% HAD AN
UNDERLYING
MEDICAL
CONDITION



14% LEGIONELLOSIS
CASES DIED

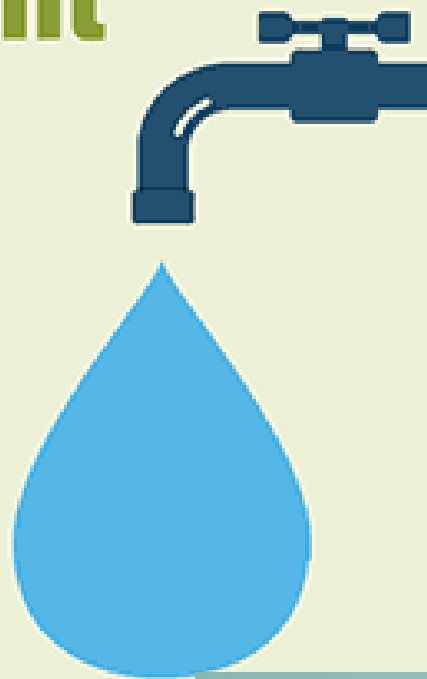


Legionella Prevention

Water management programs

**can prevent
problems**

that lead to
outbreaks



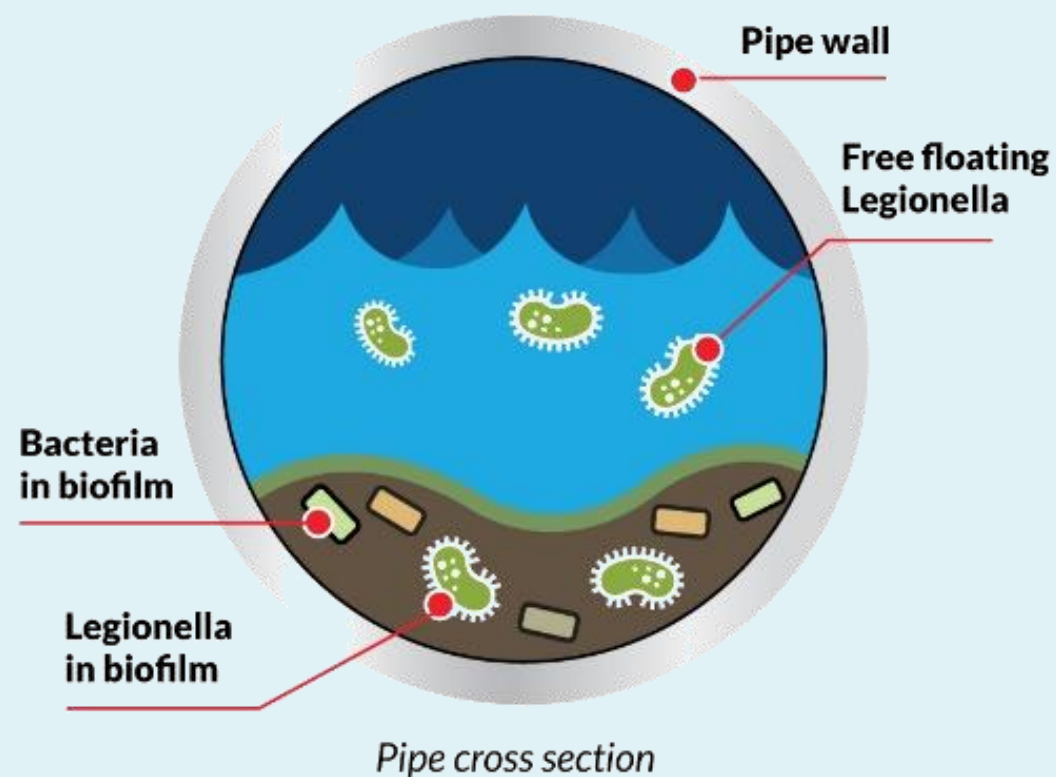
Where does Legionella Grow in Buildings?



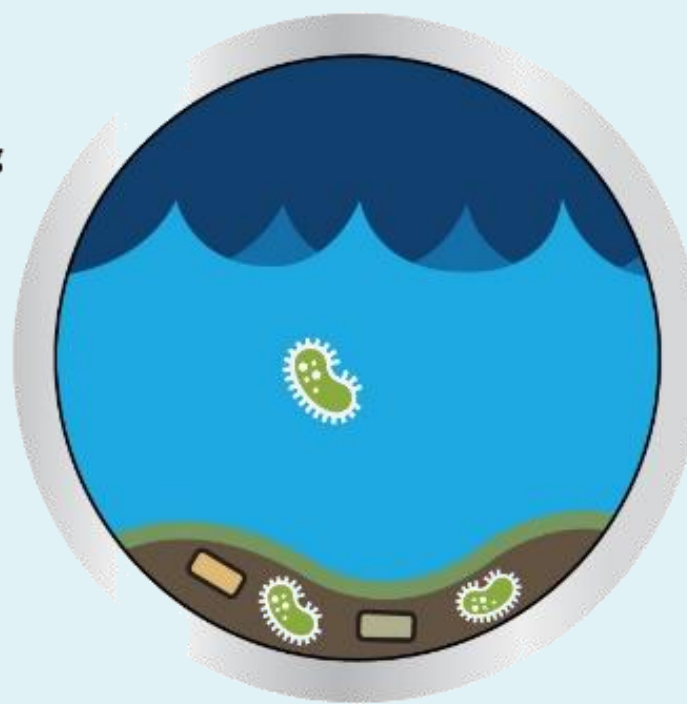
Legionella Growth: Disinfectants

Chloramine Levels

< 1.5 ppm



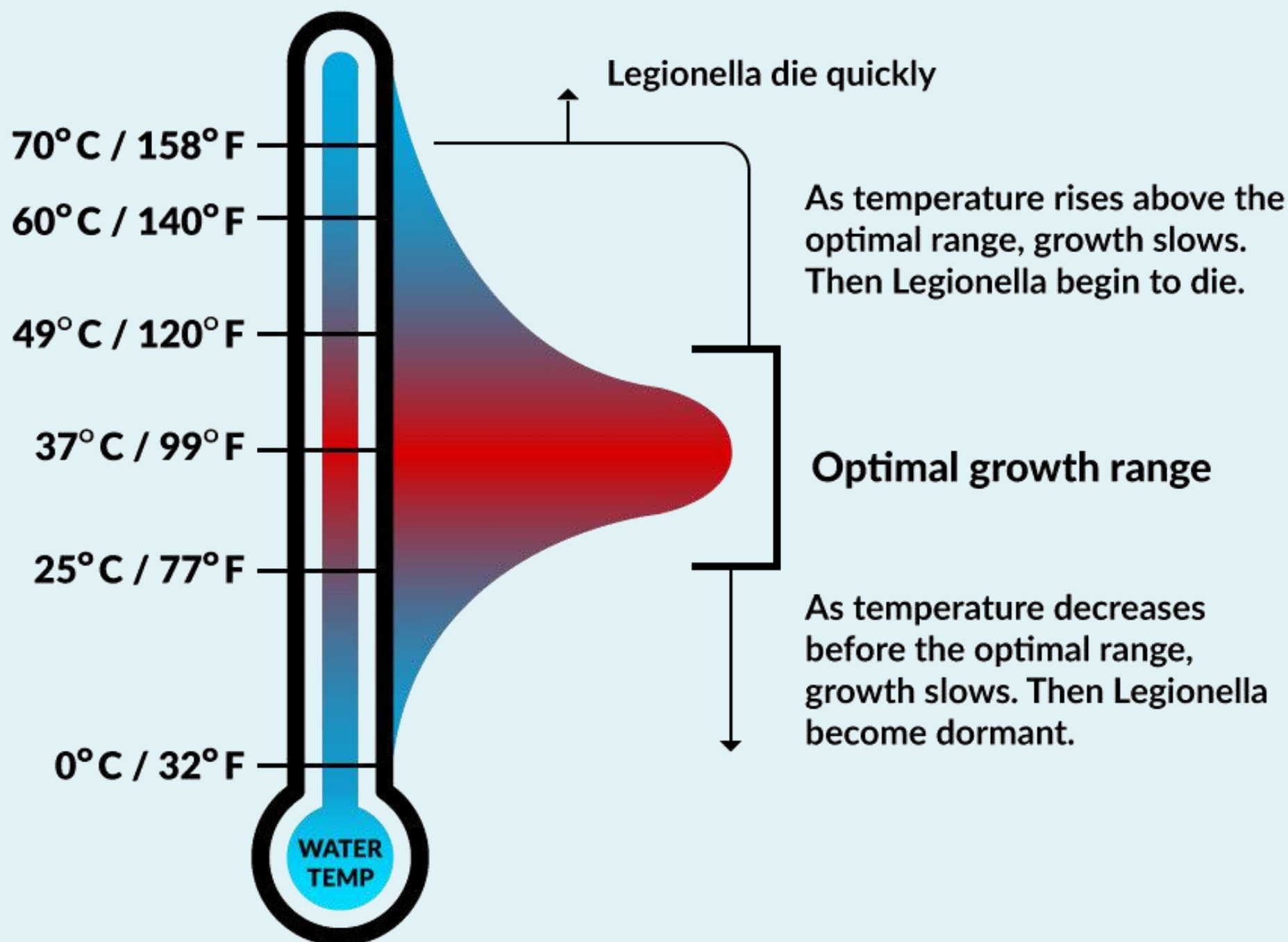
1.5 – 2.25 ppm



> 2.25 ppm

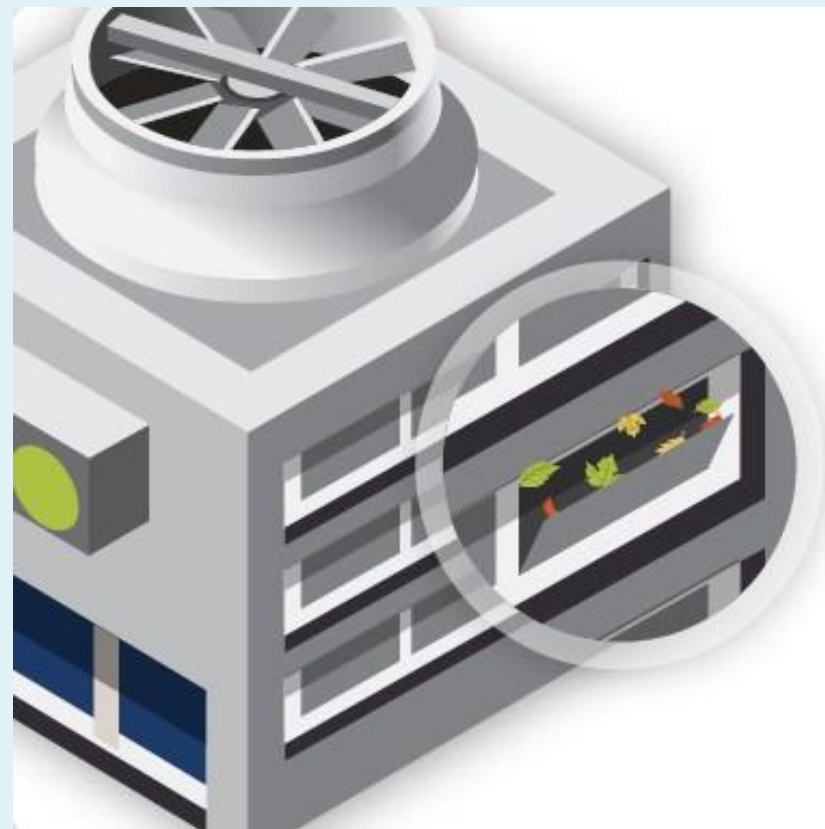


Legionella Growth: Temperature



Source: ASHRAE Guideline 12-2020 Figure 1 Temperature effects on survival and growth of Legionella in laboratory conditions

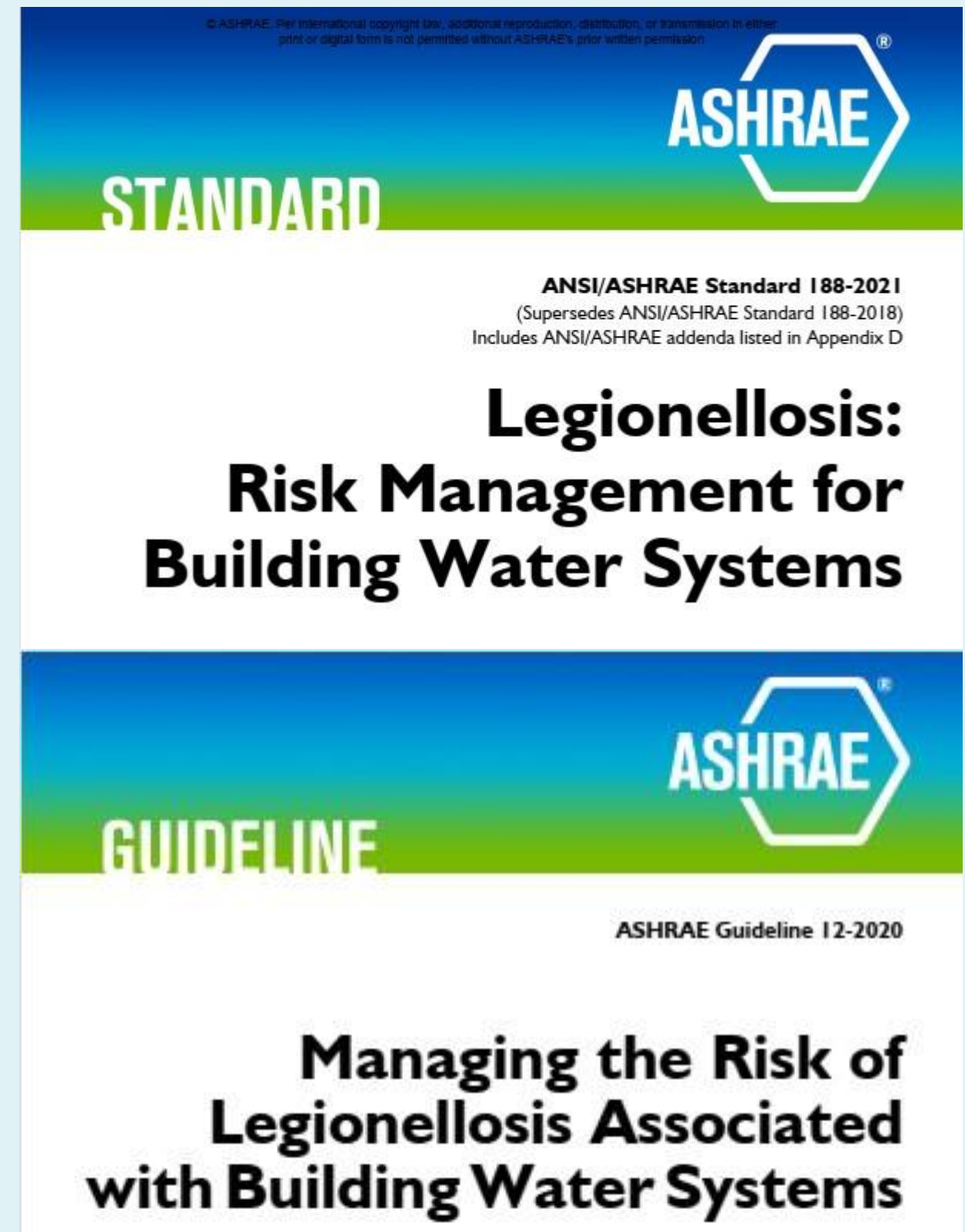
Legionella Growth: Other Factors



Federal Requirement to Reduce Legionella Risk



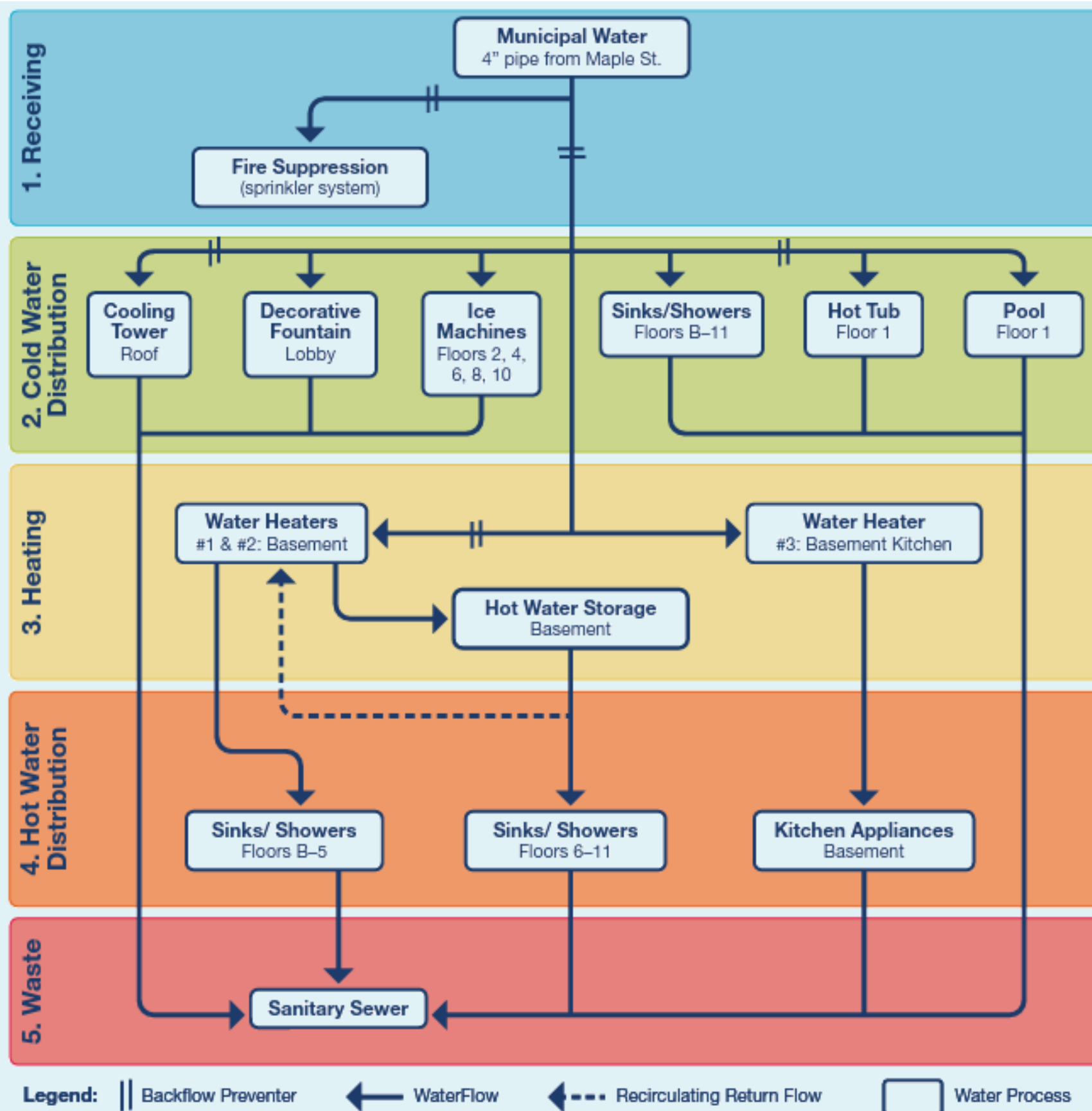
Ref: **QSO-17-30- Hospitals/CAHs/NHs**
REVISED 07.06.2018



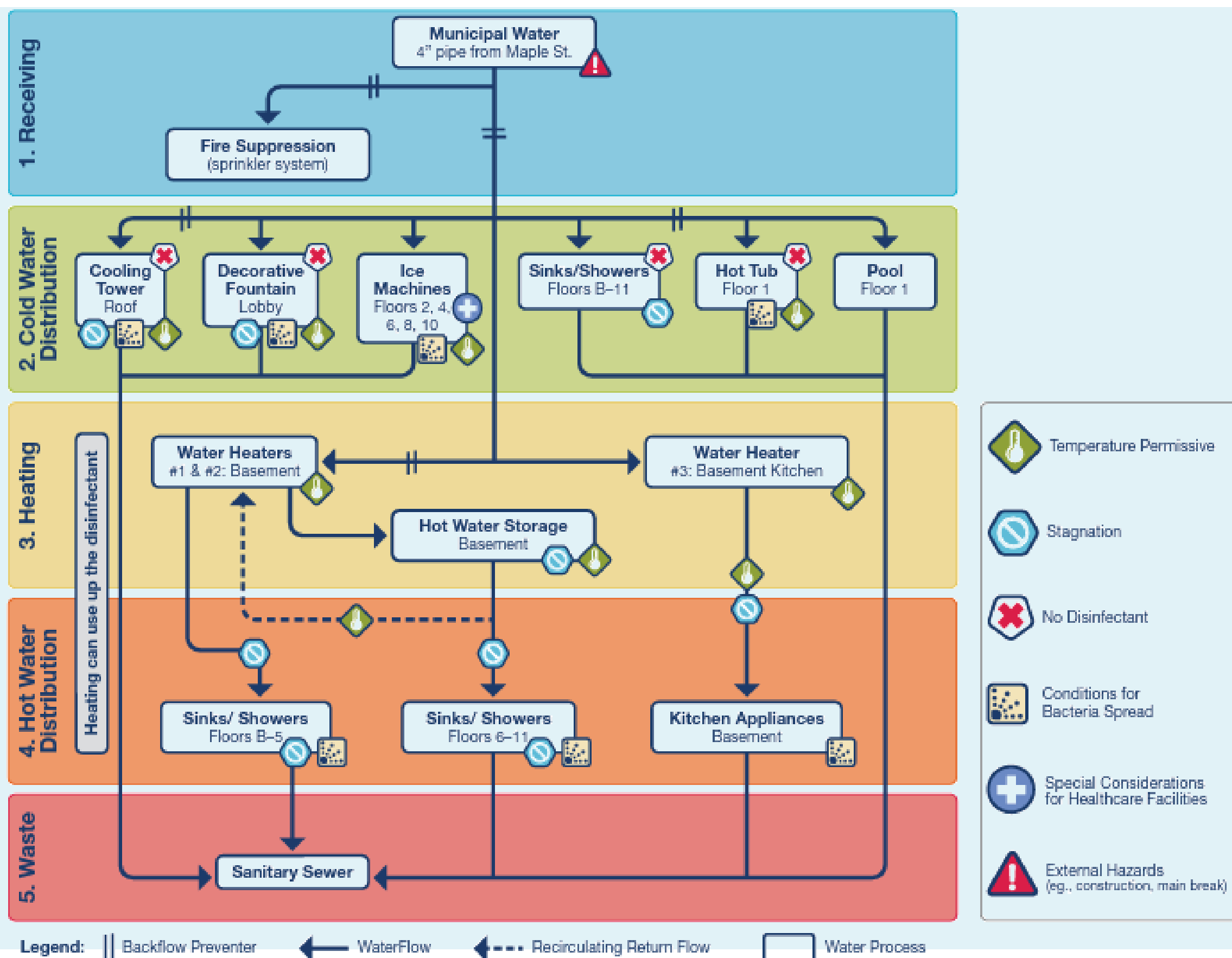
Water Management Program Team



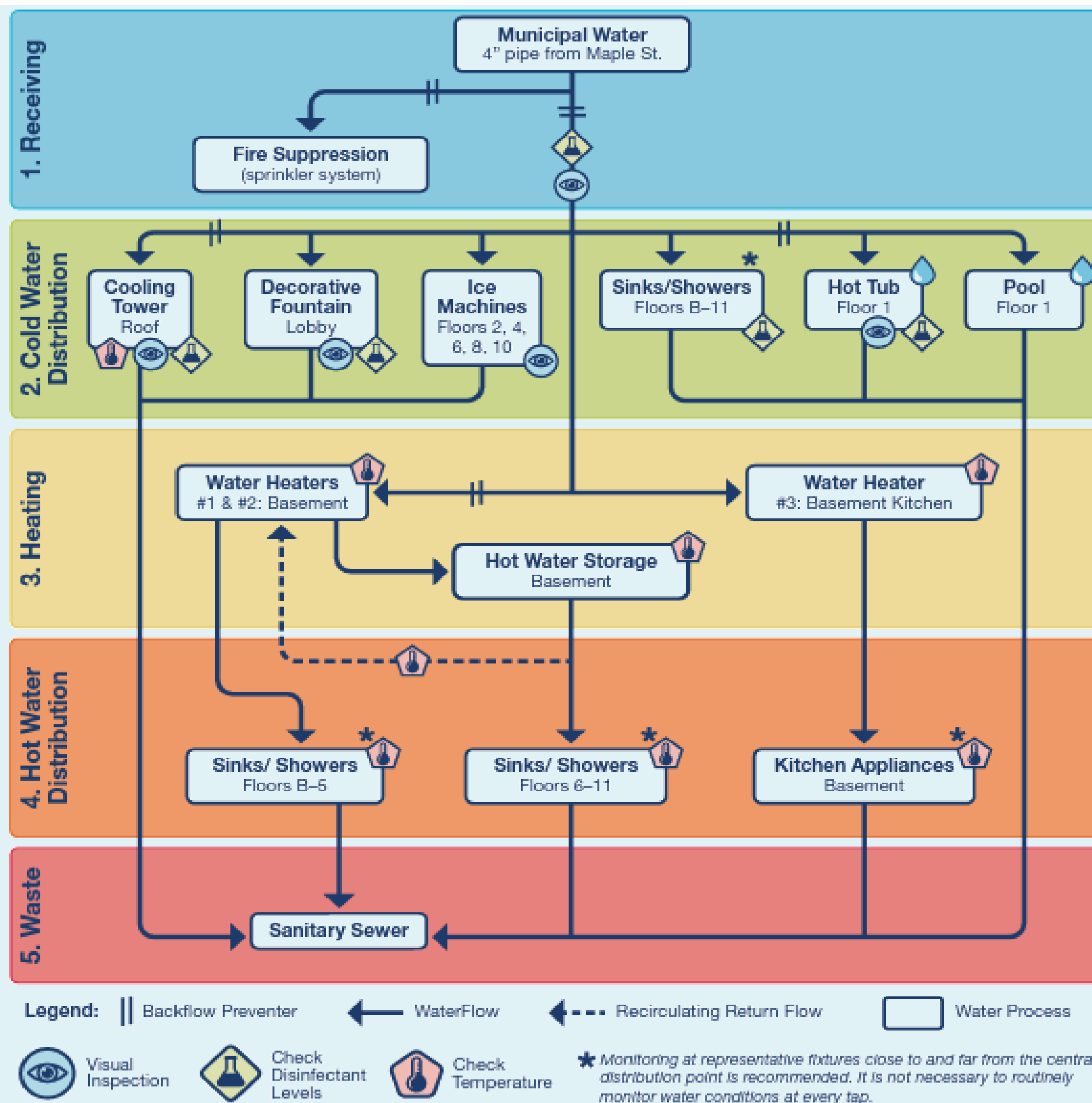
Water Management Program Flow Diagram



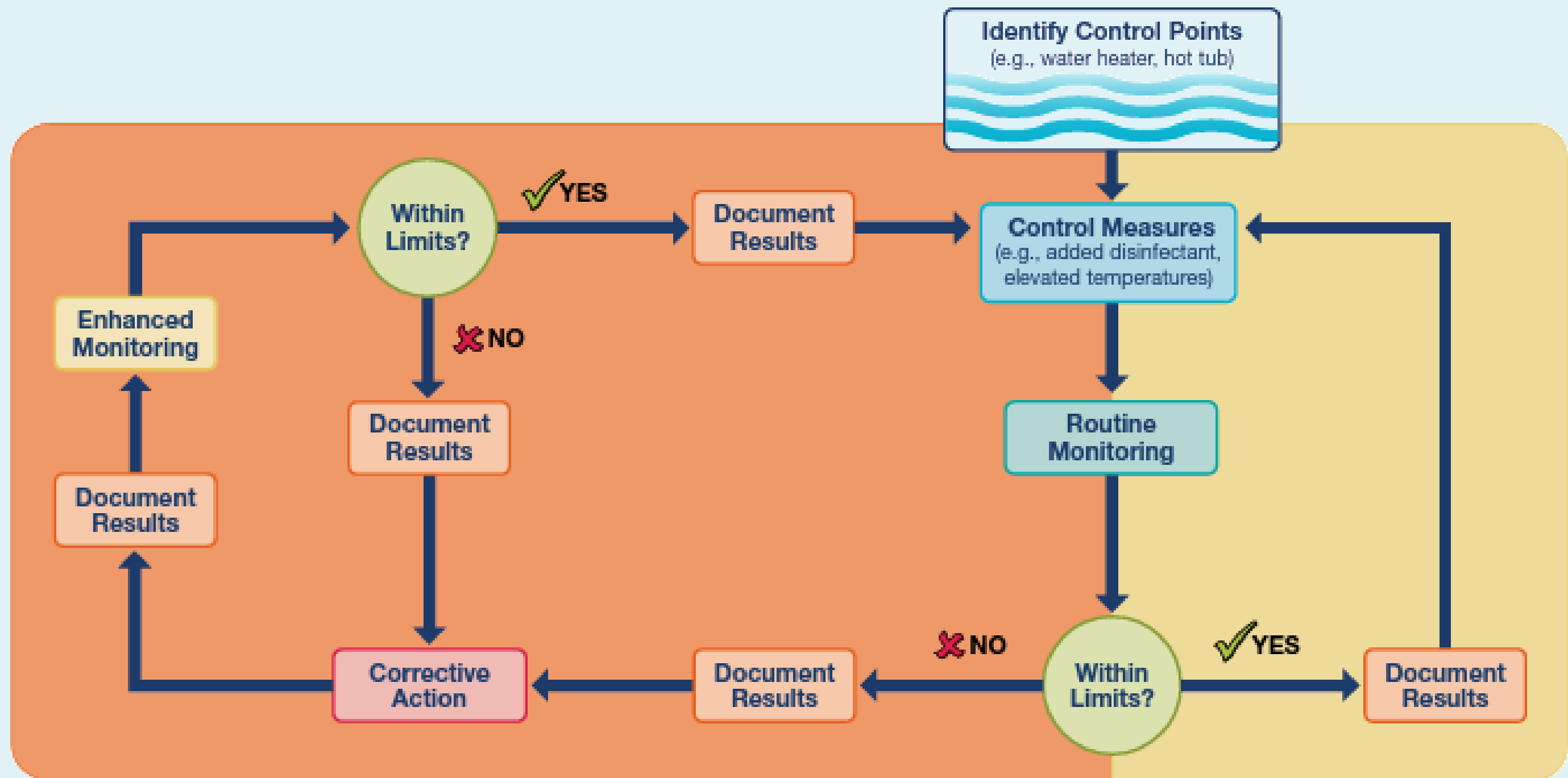
Identify Areas for Growth and Spread



Monitoring Control Measures



Control Measures and Corrective Actions



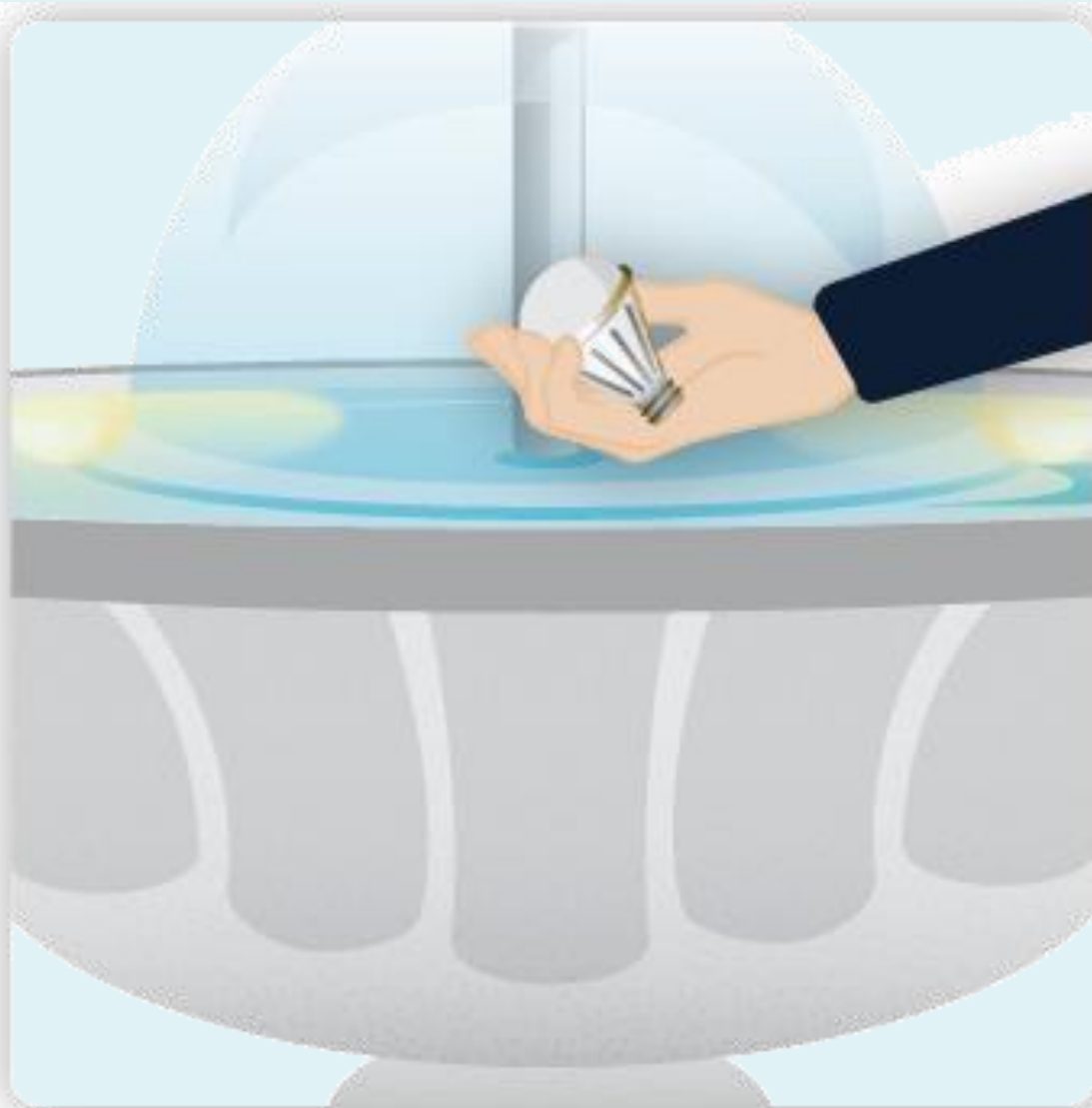
Corrective Actions Example



Corrective Actions Example



Corrective Actions Example



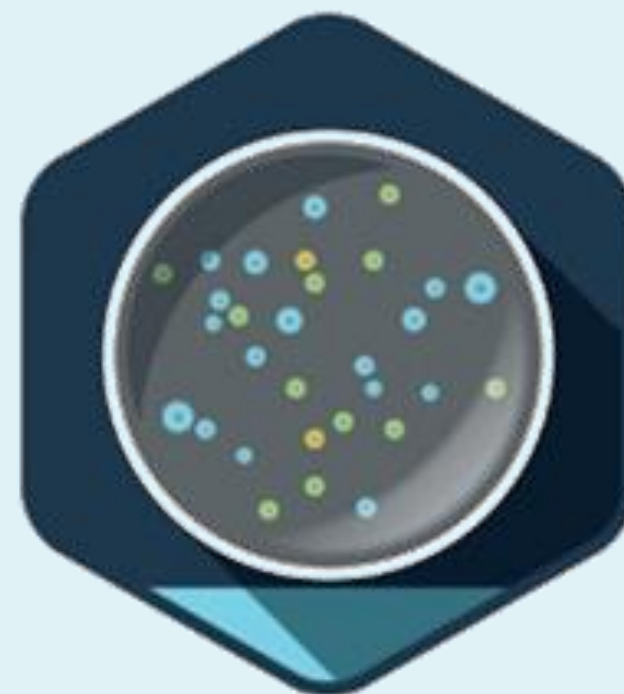
Legionella Healthcare-associated Outbreaks



2 Possible: Patient had exposure to a healthcare facility for a portion of the 14 days prior to onset

1 Presumptive: Patient had 10 or more days of continuous stay at a healthcare facility during the 14 days before onset of symptoms

Investigation Steps



Legionella Outbreak Scenario



Onset 3/24/24



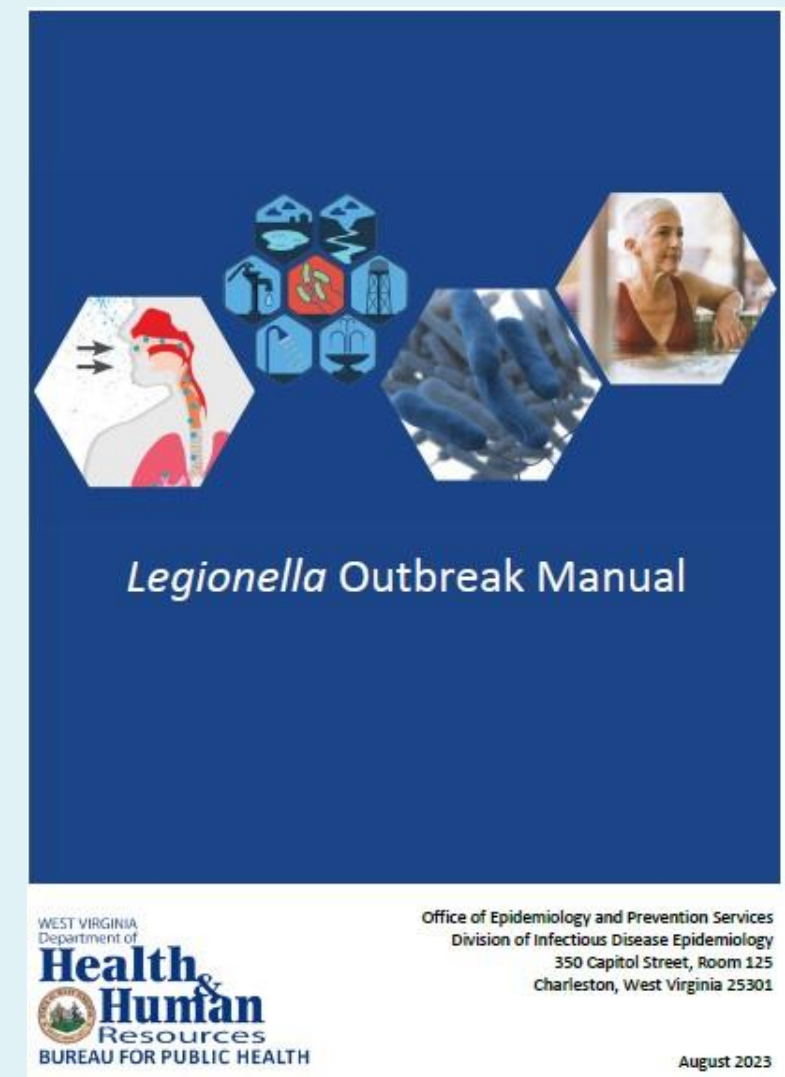
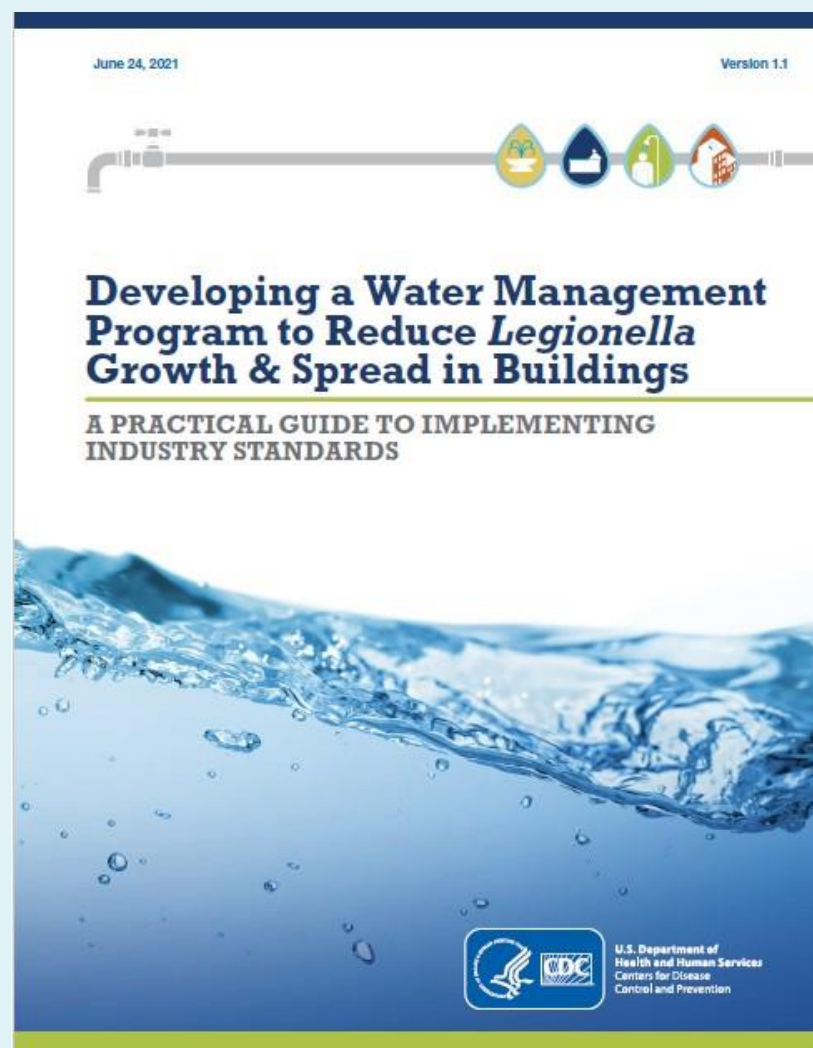
Positive 3/25/24



Hospital A for bowel
obstruction from
3/10-3/23/24

OUTBREAK

Additional Resources



Contact



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