WATERBORNE PATHOGENS

"IMPACT ON PATIENTS, VISITORS, AND STAFF WHO ENTER OUR FACILITIES"

PREPARED BY : GARY GIOVINAZZO CHFM, CHEP, CHSP, SASHE



- TYPES OF WATERBORNE PATHOGENS
- WHY ALL THE RECENT CONCERN?
- WHO IS RESPONSIBLE?
- WATER SAFETY PLANS
- AT RISK SYSTEMS
- LEGIONELLA TESTING
- EQUIPMENT HOUSEKEEPING BEFORE AND AFTER EXAMPLES
- DOMESTIC POTABLE WATER TREATMENT

WHAT ARE WATERBORNE PATHOGENS ?

There are many types; which are but not limited to: Legionella, Mycobacteria, and Pseudomonas

The most common everyone is familiar with is the "L" word Legionella

WATERBORNE PATHOGENS

• OVERVIEW: THERE HAVE BEEN SEVERAL OUTBREAKS ALL OVER THE COUNTRY, WHERE WATERBORNE PATHOGENS HAVE INFECTED PEOPLE. MOST OUTBREAKS ARE ASSOCIATED WITH THE BACTERIUM LEGIONELLA WHICH CAN CAUSE LEGIONNAIRES DISEASE (LD). THE INTENT IS TO HELP REDUCE AND MINIMIZE THE GROWTH AND PROLIFERATION OF WATERBORNE PATHOGENS INCLUDING LEGIONELLA IN YOUR FACILITIES. THE PROTECTION OF THE PATIENTS, VISITORS, AND STAFF IS PRIORITY ONE. LEGIONELLA MUST BE MANAGED. THIS IS ACHIEVED BY USING THE PROPER SYSTEMS, AND MAINTENANCE PROCEDURES TO MINIMIZE THE RISK. THE LEGIONELLA RISK CANNOT BE ELIMINATED, BUT CAN BE MANAGED. EACH FACILITY MAY HAVE A DIFFERENT RISK LEVEL THAN OTHER FACILITIES BASED ON THEIR PATIENT POPULATION BEING SERVED, CLINICAL SERVICES PROVIDED, AND THEIR TYPES OF SYSTEMS.

LEGIONELLA OUTBREAKS:

ON THE RISE:

REPORTING, OUTBREAKS & PUBLIC AWARENESS





RESULTS: INCREASING ATTENTION & REGULATIONS

from Government and Professional Organizations

- ASHRAE Standard 188
- Guidance from the Centers for Disease Control
- VHA Directive 1061
- NYC (under Local Law 7)
- New York (under Emergency Regulations)
- New Jersey Proposed Regulations

CDC: Cases of Legionnaires Disease on the Rise in U.S.

July 29, 2016

Cases of Legionnaires disease, a serious, often fatal form of pneumonia, **nearly quadrupled from 2000 to 2014**, according to a recent report from the U.S. Centers for Disease Control and Prevention (CDC.)

Legionnaires disease is caused by species of Legionella bacteria, which are found naturally throughout the environment. These bacteria thrive in warm, stagnant water and can grow in the plumbing systems of large buildings such as hotels and hospitals as well as cruise ships. The bacteria can contaminate water sources such as hot tubs, drinking and bathing water, hot water tanks, air conditioning cooling towers, ice machines, humidifiers, and public fountains. People can contract Legionella by breathing in droplets of water that contain the bacteria.

Legionella was first discovered after an outbreak in 1976 among people who attended an American Legion convention in Philadelphia. Of about 2,000 people who attended the convention, 221 contracted the disease and 34 died. Now, about 5,000 people contract Legionnaires disease each year, and one in ten dies, according to the CDC.

Improved water disinfecting, better equipment, and better training of employees responsible for the disinfecting could have potentially prevented most of the Legionnaires disease outbreaks since 2000, according to the CDC report. "Better water system management is the best way to reduce illness and save lives..." said CDC Director Tom Friedan, M.D. M.P.H. Along with the report, CDC released a new toolkit to help building owners and managers prevent outbreaks of Legionnaires disease.

According to the report, the most common source of recent Legionnaires disease outbreaks associated with buildings was potable (drinkable) water used for common purposes, such as showering. This was followed by cooling towers, hot tubs, and decorative fountains.

While most healthy people don't develop Legionnaires disease after being exposed to Legionella, people who are more likely to develop the disease include those age 50 and older, current or former smokers, people with pre-existing lung disease, such as emphysema, and people with weakened immune systems. People at increased risk may choose to avoid potentially unsafe environments, such as hot tubs. They should seek medical care quickly if they develop symptoms of pneumonia and may be tested for Legionella.

Besides those at risk, other individuals may be tested for Legionella if, for example, they have severe pneumonia and are in intensive care, have been treated with antibiotics and are still ill, or have pneumonia during a Legionella outbreak. Legionellabacteria are not susceptible to the commonly prescribed antibiotics used to treat respiratory infections. Therefore, it is important to perform additional laboratory testing to detect Legionella if the patient is not improving on the initially prescribed antibiotics.

Common tests to check for Legionella include a urine test that detects a protein produced by Legionella bacteria and testing performed on sputum samples (deep respiratory secretions), which require the person being tested to cough up secretions (phlegm) from the lungs.

ASSEMBLY, No. 1657

STATE OF NEW JERSEY

218th LEGISLATURE

PRE-FILED FOR INTRODUCTION IN THE 2018 SESSION

Sponsored by: Assemblywoman ELIANA PINTOR MARIN District 29 (Essex) Assemblywoman ANNETTE QUIJANO District 20 (Union)

SYNOPSIS

Requires registration, inspection, testing, cleaning, and disinfection of cooling towers to control outbreaks of Legionnaire's Disease.

CURRENT VERSION OF TEXT

Introduced Pending Technical Review by Legislative Counsel.

WHO IS RESPONSIBLE TO PROTECT THE PATIENTS, VISITORS, AND STAFF FROM WATERBORNE PATHOGENS?

- THIS IS A TEAM APPROACH THAT MAY INCLUDE THE FOLLOWING STAFF AND OR
 DEPARTMENTS:
- FACILITIES MANAGEMENT, INFECTION CONTROL TEAM, CLINICIANS, SAFETY, HOSPITAL SENIOR ADMINISTRATION, AND THE FACILITIES WATER MANAGEMENT VENDOR. THIS WOULD MAKE UP THE "WATER MANAGEMENT SAFETY TEAM" (WMST)

WHAT IS THE WATER MANAGEMENT SAFETY TEAM'S RESPONSIBILITY ?

• THE TEAM IS RESPONSIBLE FOR MINIMIZING AND REDUCING THE RISK FOR WATERBORNE PATHOGEN EXPOSURE TO PATIENTS, VISITORS AND STAFF WHO ENTER THE FACILITY.

HOW DOES THE TEAM HELP REDUCE THE RISK OF WATERBORNE PATHOGEN EXPOSURE ?

- THE TEAM SHOULD MEET WITH THE FACILITIES WATER TREATMENT CONTRACTOR TO DEVELOP
 A WATER SAFETY PLAN (WSP)
- THIS PLAN SHOULD INCLUDE:
 - 1) ENVIRONMENTAL ASSESSMENT OF THE BUILDING WATER SYSTEMS
 - 2) MONITORING & CONTROL PLAN
 - 3) PLAN GUIDELINE
 - 4) PLAN CONFIRMATION

WATER SAFETY PLAN ASSESSMENT

 ENVIRONMENTAL ASSESSMENT OF THE BUILDING WATER SYSTEMS : THIS SHOULD EVALUATE CURRENT PRACTICES AGAINST RECOMMENDED INDUSTRY BEST PRACTICE.
 HOW IS THIS ACHIEVED ?
 START WITH A COMPLETE INVENTORY OF ALL OF THE BUILDING WATER SYSTEMS THESE INCLUDE BUT MAY NOT BE LIMITED TO: DOMESTIC WATER SYSTEMS (HOT & COLD), COOLING SYSTEMS, AND OTHER SYSTEMS THAT MAY BE A RISK

WATER SAFETY PLAN MONITORING AND CONTROL PLAN

ONCE THE TEAM HAS AGREED ON THE SYSTEMS, THE TEAM WILL WORK WITH THE WATER TREATMENT VENDOR TO ESTABLISH LOCATIONS, CONTROL MEASURES, MONITORING FREQUENCIES, CONTROL LIMITS, AND CONTINGENCY RESPONSES.



 THE GUIDELINES WILL PROVIDE SPECIFIC INSTRUCTIONS FOR THE TEAM TO IMPLEMENT THE PROGRAM, ESTABLISH BEST PRACTICES FOR CONTROLLING THE RISK, AND RESPONSE PLANS WHEN LIMITS ARE NOT MET.

WATER SAFETY PLAN CONFIRMATION

 THIS CONFIRMATION IS ACHIEVED BY UTILIZING ESTABLISHED CHECKLISTS TO BE USED BY THE TEAM WHEN VALIDATING CERTAIN SPECIFIC CONTROL POINTS. ALL DOCUMENTATION SHOULD BE KEPT ON FILE THAT CAN BE ACCESSED WHEN REQUESTED.

WATER SAFETY PLAN WHAT ARE THE STANDARDS WE NEED TO FOLLOW ?

- START WITH ASHRAE 188 ADOPTED JUNE 26, 2015. THIS HAS SPECIFIC GUIDELINES FOR ALL BUILDINGS AND
 ADDITIONAL SECTIONS FOR HEALTHCARE
- CMS S&C LETTER 17-30 DATED JUNE 2, 2017 "REQUIREMENT TO REDUCE LEGIONELLA RISK IN HEALTHCARE
 FACILITIES WATER SYSTEMS TO PREVENT CASES AND OUTBREAKS OF LEGIONNAIRES DISEASE"
- CENTERS OF DISEASE CONTROL AND PREVENTION ON JUNE 5, 2017. (CDC TOOL KIT): "DEVELOPING A WATER MANAGEMENT PROGRAM TO REDUCE LEGIONELLA GROWTH & SPREAD IN BUILDINGS"
- FOLLOW YOUR STATE DEPARTMENT OF HEALTH REGULATIONS AND GUIDELINES
- INDUSTRY BEST PRACTICES



ANSI/ASHRAE Standard 188-2015

Legionellosis: Risk Management for Building Water Systems

Approved by the ASHRAE Standards Committee on May 27, 2015; by the ASHRAE Board of Directors on June 4, 2015; and by the American National Standards Institute on June 26, 2015.

This Standard is under continuous maintenance by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the Standard. The change submittal form, instructions, and deadlines may be obtained in electronic form from the ASHRAE website (www.ashrae.org) or in paper form from the Senior Manager of Standards. The latest edition of an ASHRAE Standard may be purchased from the ASHRAE website (www.ashrae.org) or from ASHRAE Customer Service, 1791 Tuilie Circle, NE, Atlanta, GA 30329-2305. E-mail: orders@ashrae.org, Fax: 678-539-2129. Telephone: 404-636-6400 (worldwide), or toll free 1-800-527-4723 (for orders in US and Canada). For reprint permission, go to www.ashrae.org/permissions.

© 2015 ASHRAE ISSN 1041-2336



WATER SAFETY PLAN ASHRAE 188

- THIS IS THE STANDARD THAT MANY STATE DEPARTMENT OF HEALTH'S FOLLOW, WHEN SETTING UP STATE REGULATIONS AND ALSO SOME LOCAL CITIES AND TOWNS FOLLOW. THE STANDARDS ARE FOR ALL BUILDINGS, THE SECTIONS THAT ARE HEALTH CARE SPECIFIC ARE SECTIONS 4.3, 6, 7, AND NORMATIVE ANNEX "A" HEALTH CARE FACILITIES.
- ALSO RESEARCH WITH YOUR LOCAL AHJ FOR ADDITIONAL REQUIREMENTS.

DEPARTMENT OF HEALTH & HUMAN SERVICES Centers for Medicare & Medicaid Services 7500 Security Boulevard, Mail Stop C2-21-16 Baltimore, Maryland 21244-1850



Center for Clinical Standards and Quality/Survey & Certification Group

Ref: S&C 17-30-ALL

- DATE: June 02, 2017
- TO: State Survey Agency Directors
- FROM: Director Survey and Certification Group
- SUBJECT: Requirement to Reduce Legionella Risk in Healthcare Facility Water Systems to Prevent Cases and Outbreaks of Legionnaires' Disease (LD)

Memorandum Summary

- Legionella Infections: The bacterium Legionella can cause a serious type of pneumonia called LD in persons at risk. Those at risk include persons who are at least 50 years old, smokers, or those with underlying medical conditions such as chronic lung disease or immunosuppression. Outbreaks have been linked to poorly maintained water systems in buildings with large or complex water systems including hospitals and long-term care facilities. Transmission can occur via aerosols from devices such as showerheads, cooling towers, hot tubs, and decorative fountains.
- Facility Requirements to Prevent Legionella Infections: Facilities must develop and
 adhere to policies and procedures that inhibit microbial growth in building water
 systems that reduce the risk of growth and spread of *legionella* and other opportunistic
 pathogens in water.

Background

LD, a severe sometimes fatal pneumonia, can occur in persons who inhale acrosolized droplets of water contaminated with the bacterium *Legionella*. In a recent review of LD outbreaks in the United States occurring in 2000–2014, 19% of outbreaks were associated with long-term care facilities and 15% with hospitals. The rate of reported cases of legionellosis, which comprises both LD and Pontiac fever (a milder, self-limited, influenza-like illness) has increased 286% in the US during 2000–2014, with approximately 5,000 cases reported to the Centers for Disease Control and Prevention (CDC) in 2014. Approximately 9% of reported legionellosis cases are fatal. The Centers for Medicare & Medicaid Service (CMS) is aware of multiple recent LD outbreaks in hospitals and long-term care facilities as reported by the CDC, state and local health departments, or investigated by State Survey Agencies (SA).

Outbreaks generally are linked to environmental reservoirs in large or complex water systems, including those found in healthcare facilities such as hospitals and long-term care facilities. Transmission from these water systems to humans requires aerosol generation, as can occur from





WATER SAFETY PLAN WHAT SHOULD I BE CONCERNED ABOUT

- DOMESTIC WATER SYSTEMS
- COOLING SYSTEMS
- OTHER "AT RISK" SYSTEMS



WATER SAFETY PLAN DOMESTIC WATER SYSTEMS

- DOMESTIC COLD WATER SUPPLY SURGE TANK
- DOMESTIC COLD WATER SUPPLY TANK (HOUSE TANK)
- DOMESTIC HOT WATER STORAGE TANK
- DOMESTIC WATER SINKS, SHOWERS, AND RELATED EQUIPMENT

WATER SAFETY PLAN COOLING SYSTEMS

- COOLING TOWERS
- AIR HANDLING UNITS
- HUMIDIFIERS

WATER SAFETY PLAN OTHER "AT RISK" SYSTEMS

- EYEWASH STATIONS / EMERGENCY SHOWERS
- FIRE SPRINKLER SYSTEMS
- ICE MACHINES
- DRINKING WATER FOUNTAINS
- CIRCULATING BATH TUBS
- DECORATIVE WATER FOUNTAINS / WATER CURTAIN WALLS

WATER SAFETY PLAN OTHER "AT RISK" SYSTEMS

- IRRIGATION EQUIPMENT
- POOLS AND SPAS
- RESPIRATORY CARE EQUIPMENT

COOLING TOWER BACTERIA MONITORING

Allows for convenient measurement & consistent monitoring of general microbial activity.

Total viable counts – colony forming units/ml Determines if within microbiological control or if an increased risk and required action.

Cooling tower waters must be tested weekly for microbial activity using dip slides.

If control strategy is effective, dip slide counts should reflect this, indicating consistently low (<10,000 CFU/ml). Consistent high microbial counts; cross check by a competent lab, look to root cause, biocide working, contamination etc?

Take corrective action Weekly Dip Slides



LEGIONELLA TESTING - Culture Method

Culture enumeration is the gold standard only if done by an accredited lab

Independent certification / accreditation Legionella ISO 11731 and 11731-2 ISO/IEC 17025:2005 Competence of Testing and Calibration Laboratories

Be Aware That:

- Sample to lab receipt times affects enumeration, aim for max 24 hours
- Labs can report legionella in cfu/litre or cfu/ml check the units
- Labs can have widely different limits of detection (LOD) eg 999 cfu/ Litre (0.999 cfu/ml) would be stated as not detected if lab has LOD of 1000 cfu/ Litre (1.0 cfu/ml)



- Action values start from 100 cfu/Litre (0.1 cfu/ml) so a LOD of 100 cfu/Litre (0.1 cfu/ml) is required
- Overgrowth of general bacteria (high TVCs) on a culture plate can hide the presence of legionella, can lead to a 'not detected' statement



WATER SAFETY PLAN DOMESTIC WATER SYSTEMS MAINTENANCE

- ANNUAL CLEANING OF DOMESTIC WATER TANKS (HOT AND COLD) AND TESTING FOR BACTERIA CULTURES.
- ROUTINE FLUSHING OF STAGNATE SYSTEMS
- PROPER WATER TEMPERATURE CONTROL OF DOMESTIC HOT WATER SYSTEMS MAINTAIN AS HIGH A TEMPERATURE AS POSSIBLE

WATER SAFETY PLAN COOLING SYSTEMS MAINTENANCE

COOLING TOWERS :

- PRE SEASON CLEANING AND DISINFECTION
- MID SEASON ON-LINE DISINFECTION
- POST SEASON CLEANING AND DISINFECTION
- PROPER BIOCIDE APPLICATION
- ADDITIONAL CHECKS AS OUTLINED IN YOUR PLAN (DAILY, MONTHLY, SEMI-ANNUAL, AND ANNUAL)

Cooling Tower Preventive Maintenance Schdedule

Maintenance Service	Daily	Monthly	Quarterly	Semi-annually	Season Startup or Annually
Inspect General Condition and Operation	х	x			х
Observe Operation of:					
Mechanical–motor, fan and drive mechanism	х				х
Makeup valve (if equipped)	х				х
Inspect for unusual noise or vibration or oil leaks	х				х
Inspect and Clean:					
Air inlet		x			х
Drift eliminators		x			х
Distribution basin and collection basin		x			х
Nozzles-missing, broken, or plugged		x			х
Fan motor exterior		x			х
Check:		-	·		
Biocide Feed Pump Operation	х				
Collection water basin level	х				
Blowdown-adjust as required	х				
Geareducer Driver (if equipped):			·		
Check for loose fasteners including oil drain plug					х
Check for / repair oil leaks		x			х
Check oil level		x			х
Change oil					R
Make sure vent is open		x			х
Check driveshaft or coupling alignment					x R
Check for loose driveshaft or coupling fasteners					х
Check driveshaft or coupling bushings or flex element for unusual wear				x	х
Lube Lines (If equipped):					
Check for oil leaks in hoses or fittings		x			х
Belt drive (if equipped):					
Fan shaft bearing lubrication (every 3 mo.)			x		
Check and tighten support fasteners				x	х
Check shaft, sheave and belt alignment				x	х
Check belt tension and condition				x	х
Check sheave bushing fastener torque				x	x R

Daily Cooling Tower Inspection Checklist

Date inspected:	Haspital Name:		
Inspected by:	Location:		
Manufacturer:	Hospital's Tower Designation:		
Model No.:	Serial No.:	Process Served By Tower:	
Operation: Continuous 🗆 Intermitie	antil Secsonal II	No. of Fan Calls:	
Inspect General Condition and Operation of the Following Features:			

Inspection/Operation Of:

		CONDITION/COMME	INTS
Mechanical-motor, fan and drive mechanism			
inspect for unusual noise or vibration or all leaks			
Makeup valve (if equipped)			
Collection water basin level			
Blow down / adjust as required			
Blocide feed guing operation			
Condenser water pump (On/Off)(-*)	ON:	OFF:	
If CWP "Off" indicated above, run for a minimum of 30 minutes (with blocide)	Stort Time:	End Time:	Total Time Run:

Condition of the Feature: Using the key below, apply the Number that best describes the condition of each item.

Key	Comments
1-Good	
2 – Keep on eye on It	
3 – Needs Immediate attention	
N/A - Not Applicable	

Cooling Tower Inspection Checklist

Frequency (Circle	e One): Mor	nthly Quart	erly	Semi-Annual	Annual
Date Inspected:	Hospital Name:				
Inspected by:	Location:				
Monufacturer:	Hospital's Tower	Hospital's Tower Designation:			
Inspected by:	Location:				
Manufacturer:	Hospital's Tower	Hospital's Tower Designation:			
Model No.:	Serial No.: Process Served By Tower:				
Operation: Continuous 🗆 Intermitte	ni Seasonal 🗆 No. of Fan Cells:				
Gear Drive Units- Manufacturer Model No Serial No					
Oil Level: DFull DLow	DAdd Immediately Oil Type Used:				
Oil Condition: 🛛 Good 🔹 🗠 Co	ntains Water 🛛 🗆 Contains Metal 🔹 🗆 Contains Sludge				
Any Unusual Noises? 🗆 Yes 🗆 No Action Required:					
Drive Shafts: Coupling aligned DYes DNo Coupling fasteners fight DYes DNo Unusual Wear DYes DNo					
Belt Drive Units- Fan Shaft Bearing Lubricated DYes DNo Support Fasteners Tight DYes DNo Belt Tension Checked DYes DNo Shaft Sheave and belt aligned DYes DNo Sheave, bushing, fastener torqued DYes DNo Any Unusual Noises? D Yes D No					
Fans- 🗆 Fixed Pitch 🗆 Adjustable Pitch Diameter Number of Blades					
Motor		Last Lu	brication	Date:	Grease Type
Name Plate Data: HP RPM_	Phase	Hz		Volts	F.L. Amps
Frame S.F Special Info					
Any Unusual Noise: 🛛 Yes	D No Action Required:				
Any Unusual Vibration: 🛛 Yes	□ No	Action	Action Required:		
ny Unusual Heat Build-up: D Yes D No Action Required:					



EXTREMELY FOULED COOLING TOWER

























WATER SAFETY PLAN OTHER "AT RISK" SYSTEMS MAINTENANCE

- EYEWASH STATIONS AND EMERGENCY SHOWERS: WEEKLY TESTING AND FLUSHING
- FIRE SPRINKLER SYSTEMS: REQUIRED TESTING AS PER NFPA 25 WHICH INCLUDES 5 YEAR SPRINKLER OBSTRUCTION INVESTIGATION
- ICE MACHINES: FOLLOW MANUFACTURERS RECOMMENDATION ON CLEANING AND DISINFECTION (MOSTLY QUARTERLY CLEANING AND DISINFECTION)
- DRINKING WATER FOUNTAINS: TEMPERATURE CHECKS, AND FLOWING OF WATER



ICE MACHINE EXAMPLES

40





































WATER SAFETY PLAN OTHER "AT RISK" SYSTEMS MAINTENANCE

- CIRCULATING BATHTUBS, HYDRO THERAPY TUBS: CLEAN AND DISINFECT AS PER FACILITY INFECTION CONTROL POLICY
- DECORATIVE FOUNTAINS / WATER CURTAINS: TRY TO ELIMINATE. IF NOT WORK WITH THE
 WATER TREATMENT VENDOR TO MAINTAIN THE SYSTEMS.
- IRRIGATION SYSTEMS: FOLLOW THE WATER MANAGEMENT PLAN
- POOLS AND SPAS: FOLLOW THE WATER MANAGEMENT PLAN
- RESPIRATORY CARE EQUIPMENT: FOLLOW THE INFECTION CONTROL PRACTICES AND POLICIES FOR EACH FACILITY

WATER SAFETY PLAN ANNUAL REVIEW

- THE PLAN MUST BE REVIEWED ANNUALLY TO INSURE ANY UPDATES BE INCLUDED INTO THE
 PLAN
- THE PLAN MUST BE REVIEWED TO INCLUDE ANY CHANGES IN EQUIPMENT, REMOVED EQUIPMENT, ADDITIONAL NEW EQUIPMENT, AND ANY BUILDING INFRASTRUCTURE RENOVATIONS / NEW CONSTRUCTION TO BE INCLUDED INTO THE PLAN
- INCLUDE ANY NEW REGULATORY CHANGES THAT MAY IMPACT IMPLEMENTING THE PLAN.



WATER SAFETY PLAN

- WHAT HAPPENS IF WE HAVE PROBLEMS WITH THE WATER SYSTEMS WITHIN THE FACILITIES IE; (WATERBORNE PATHOGENS) ?
- WHAT MEASURES CAN BE TAKEN TO REDUCE OR ELIMINATE THE RISK ?
- ARE THERE ANY MECHANICAL DEVICES THAT CAN HELP ?

WATER SAFETY PLAN WHAT TO DO WHEN RISKS ARE IDENTIFIED IN THE WATER SYSTEMS

- AFTER MEETING WITH THE WMST AND SELECTING A PLAN OF ACTION. BE SURE TO DOCUMENT ALL OF THE PROCEDURES AND ACTION ITEMS.
- EACH OPTION HAS IT'S PROS AND CONS.

WATER SAFETY PLAN WHAT TO DO WHEN RISKS ARE IDENTIFIED IN THE WATER SYSTEMS

- FOLLOW YOUR PLAN ! FOLLOW THE PLAN ! FOLLOW THE PLAN !
- MEET WITH THE WATER MANAGEMENT SAFETY TEAM AND THE REVIEW THE OPTIONS.
- MANY OPTIONS CAN BE IMPLEMENTED, BUT WITH THE TEAM SEE HOW THIS WILL IMPACT THE PATIENTS, VISITORS AND STAFF OF YOUR FACILITY.
- SOME OPTIONS ARE BUT NOT LIMITED TO; FLUSHING THE SYSTEM, SUPERHEATING THE SYSTEM, HYPER CHLORINATION, AND POSSIBLY INSTALLING A SECONDARY DISINFECTION SYSTEM.

WATER SAFETY PLAN WHAT TO DO WHEN RISKS ARE IDENTIFIED IN THE WATER SYSTEMS WHAT ARE THE OPTIONS AND HOW WILL THEY IMPACT FACILITY OPERATIONS

- SUPER HEATING: THIS REQUIRES THE WATER TEMPERATURE TO BE SUPERHEATED TO 160
 DEGREES AND DISTRIBUTED TO ALL OF THE DISTILLATE POINTS TO KILL THE WATERBORNE
 PATHOGENS (AS OUTLINED IN YOUR PLAN). THIS PROCESS MUST BE WELL PLANNED OUT SO
 THE PATIENTS, VISITORS AND STAFF ARE SAFE FROM BEING SCALDED.
- HYPER-CHLORINATION: THIS PROCESS INTRODUCES HIGHER THAN NORMAL LEVELS OF CHLORINE INTO TO THE SYSTEM. THE LEVEL OF CHLORINE MUST BE MEASURED AND FLOWED AT EACH DISTILLATE POINT FOR A PERIOD OF TIME (AS OUTLINED IN YOUR PLAN) THEN FLUSH WITH NORMAL DOMESTIC WATER UNTIL THE CHLORINE LEVELS REACH DESIRED RANGE.

WATER SAFETY PLAN WHAT TO DO WHEN RISKS ARE IDENTIFIED IN THE WATER SYSTEMS WHAT ARE THE OPTIONS AND HOW WILL THEY IMPACT FACILITY OPERATIONS

- FLUSHING THE SYSTEM: SOMETIMES THIS IS THE FIRST APPROACH TO GET THE FLOW OF THE RESIDUAL CHLORINE THAT IS IN THE DOMESTIC WATER TO THE POINTS WHERE LOW FLOW IS OCCURRING. THE CHLORINE IN THE WATER SHOULD KILL THE WATERBORNE PATHOGENS. (IF AT DESIRED LEVELS)
- SECONDARY DISINFECTION SYSTEMS: THE PREVIOUS THREE OPTIONS (SUPERHEATING, HYPER-CHLORINATION, AND SYSTEM FLUSHING) ARE SHORT TERM SOLUTIONS. A SECONDARY DISINFECTION SYSTEM CAN BE A MORE LONG TERM STRATEGY TO MINIMIZING THE GROWTH OF WATERBORNE PATHOGENS. NOTHING IS 100%, THE SYSTEMS MUST BE MONITORED AND MAINTAINED TO REDUCE THE POTENTIAL GROWTH OF THE WATERBORNE PATHOGENS.

WATER SAFETY PLAN WHAT TO DO WHEN RISKS ARE IDENTIFIED IN THE WATER SYSTEMS WHAT ARE THE OPTIONS FOR SECONDARY DISINFECTION SYSTEMS

THE BELOW MOST COMMONLY USED SYSTEMS ARE NOT IN ANY SPECIFIC ORDER OF EFFECTIVENESS

- CHLORINE BLEACH INJECTION
- CHLORINE DIOXIDE
- MONOCHLORAMINE
- COPPER SILVER IONIZATION
- E-CHLOR CHLORINE
- WITH ANY OF THE ABOVE OPTIONS PROPER DOSAGE CONTROL IS PARAMOUNT

WATER SAFETY PLAN WHAT TO DO WHEN RISKS ARE IDENTIFIED IN THE WATER SYSTEMS WHAT IS THE BEST CHOICE FOR SECONDARY DISINFECTION SYSTEMS

 THE ANSWER IS, THERE IS NO BEST CHOICE. EVERY SYSTEM HAS IT'S PROS AND CONS. EACH FACILITY HAS UNIQUE INFRASTRUCTURE DESIGNS THAT MAY ELIMINATE CERTAIN OPTIONS. THE DOMESTIC WATER BEING SUPPLIED TO THE FACILITY BY LOCAL AGENCIES MAY DIFFER AND HAS MORE OR LESS PRIMARY DISINFECTION CHEMICALS ADDED PRIOR TO GETTING TO THE FACILITY. THAT IS WHY THIS IS A TEAM DECISION AND MUST INCLUDE YOUR WATER MANAGEMENT SAFETY TEAM (WMST) AS WELL AS YOUR WATER TREATMENT VENDOR.

HEALTHCARE- ASSOCIATED LEGIONELLA CASES ACCOUNTED FOR 85% OF THE OUTBREAK-ASSOCIATED DEATHS IN A SERIES OF 27 CDC INVESTIGATIONS, 2000-2014

THE FINDINGS FROM THE 27 CDC OUTBREAK INVESTIGATIONS FROM 2000-2014 : 1/3 WERE HEALTHCARE-ASSOCIATED OUTBREAKS 56% INVOLVED CONTAMINATION OF THE POTABLE WATER, 22% INVOLVED THE COOLING TOWERS

85% OF THE OUTBREAK WERE GAPS IN BASIC WATER MANAGEMENT: 70% WITH INADEQUATE DISINFECTION AND 52% WITH INAPPROPRIATE TEMPERATURES

LEGIONELLA RISK IN LONG-TERM CARE FACILITIES

RESIDENTS IN LTCFS HAVE RISK FACTORS FOR LEGIONNAIRE'S DISEASE : AGE > 50 CHRONIC LUNG CONDITIONS (EMPHYSEMA) CONDITIONS IMPACTING IMMUNE RESPONSE (FRAILTY, DIABETES) TAKING IMMUNOSUPPRESSING MEDICATION



QUESTIONS ?