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ASSE/IAPMO/ANSI Series 12000-2021



Professional Qualifications Standard for
**Water Management and
Infection Control Risk Assessment
for Building Systems**

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TABLE OF CONTENTS

Professional Qualifications Standard for Water Management and Infection Control Risk Assessment for Building Systems

Copyright Information	iv	Standard #12010	5
Foreword	v	<i>Environment of Care, Infection Control and Construction Risk Assessment Professional Qualification Standard</i>	
Professional Qualifications Standards Committee	vi	10-1.1 Scope	5
Series 12001 - 12063 Working Group	vii	10-1.2 Purpose	5
Series 12080 - 12081 Working Group	viii	10-1.3 Limitations	5
Standard #12001	1	10-1.4 References, Industry Standards and Codes	5
<i>References</i>		10-2.1 General Knowledge	5
01-1.1 References, Industry Standards and Codes	1	10-2.2 Vaccination Knowledge	6
01-1.2 Abbreviations and Standards Development Organizations	2	10-2.3 Exposure Control Plan	6
01-1.1 Third-Party Certification	2	10-2.4 Precautionary Measures	6
Standard #12005	3	10-2.5 Documenting and Recording	6
<i>Professional Qualifications Standard for the Health and Safety of Construction and Maintenance Generalist</i>		10-2.6 Environment of Care	6
5-1.1 Scope	3	10-2.7 Construction Risk Assessments	6
5-1.2 Purpose	3	10-2.8 Infection Control Risk Assessments	6
5-1.3 Limitations	3	10-2.9 Life and Fire Safety	6
5-1.4 References, Industry Standards and Codes	3	10-2.10 Other Environmental Risks	7
5-2.1 General Knowledge	3	10-2.11 System Shutdowns	7
5-2.2 Pathogens, Biohazards and Other Potentially Infectious Materials	4	10-3.1 Terminology	7
5-2.3 Pathogens, Biohazards and Other Potentially Infectious Disease Regulations	4	10-4.1 Certification	7
5-3.1 Terminology	4	10-4.2 Recertification	7
5-4.1 Certificate	4	Standard #12020	8
		<i>Environment of Care, Infection Control and Construction Risk Assessment Professional Qualification Standard for Construction and Maintenance Employers</i>	
		20-1.1 Scope	8
		20-1.2 Purpose	8
		20-1.3 Limitations	8
		20-1.4 References, Industry Standards and Codes	8
		20-2.1 General Knowledge	8
		20-2.2 Exposure Control Plan	9
		20-2.3 Engineering and Work Practice Controls	9
		20-2.4 Precautionary Measures	9
		20-2.5 Documenting and Recording	9

20-2.6 Environment of Care	9	62-1.4 References, Industry Standards and Codes	17
20-2.7 Construction Risk Assessments	9	62-2.1 General Knowledge	17
20-2.8 Infection Control Risk Assessments	9	62-2.2 Water Systems	18
20-2.9 Life and Fire Safety	10	62-2.3 Water Quality Program	18
20-2.10 Other Environmental Risks	10	62-2.4 Precautionary Measures.....	18
20-2.11 System Shutdowns	10	62-2.5 Documenting and Recording	18
20-3.1 Terminology	10	62-3.1 Terminology	18
20-4.1 Certification	10	62-4.1 Certification	18
20-4.2 Recertification	10	62-4.2 Recertification.....	19
Standard #12060	11	Standard #12063	20
<i>Water Quality Program Professional Qualifications</i>		<i>Water Quality Program Professional Qualifications</i>	
<i>Standard for Employers and Designated Representatives</i>		<i>Standard for Sprinkler Fitters</i>	
60-1.1 Scope	11	63-1.1 Scope	20
60-1.2 Purpose	11	63-1.2 Purpose	20
60-1.3 Limitations.....	11	63-1.3 Limitations	20
60-1.4 References, Industry Standards and Codes....	11	63-1.4 References, Industry Standards and Codes	20
60-2.1 General Knowledge.....	11	63-2.1 General Knowledge	20
60-2.2 Water Systems.....	12	63-2.2 Water Systems	20
60-2.3 Water Quality Program	12	63-2.3 Water Quality Program	21
60-2.4 Precautionary Measures.....	12	63-2.4 Precautionary Measures.....	21
60-2.5 Documenting and Recording	12	63-2.5 Documenting and Recording	21
60-3.1 Terminology.....	12	63-3.1 Terminology	21
60-4.1 Certification.....	12	63-4.1 Certification	21
60-4.2 Recertification.....	13	63-4.2 Recertification	21
Standard #12061	14	Standard #12080	22
<i>Water Quality Program Professional Qualifications</i>		<i>Professional Qualifications Standard for Legionella Water</i>	
<i>Standard for Plumbers</i>		<i>Safety and Management Specialist</i>	
61-1.1 Scope	14	80-1.1 Scope	22
61-1.2 Purpose	14	80-1.2 Purpose	22
61-1.3 Limitations.....	14	80-1.3 Limitations	22
61-1.4 References, Industry Standards and Codes....	14	80-1.4 References, Industry Standards and Codes	22
61-2.1 General Knowledge.....	14	80-2.1 General Knowledge	22
61-2.2 Potable Water Systems.....	14	80-2.2 <i>Legionella</i> and Legionnaires' Disease	22
61-2.3 Water Quality Program	15	80-2.3 Other Waterborne Pathogens	23
61-2.4 Precautionary Measures	15	80-2.4 Water Safety and Management Program	23
61-2.5 Documenting and Recording	15	80-2.5 Building Water System	23
61-3.1 Terminology.....	15	80-2.6 Risk Assessment	24
61-4.1 Certification.....	15	80-2.7 Mitigation and Remediation Methods	24
61-4.2 Recertification.....	16	80-2.8 Environmental Testing	24
Standard #12062	17	80-2.9 Construction and Renovation	25
<i>Water Quality Program Professional Qualifications</i>		80-2.10 Case Investigation	25
<i>Standard for Pipefitters and HVAC Technicians</i>		80-3.1 Terminology	25
62-1.1 Scope	17	80-4.1 Certification	25
62-1.2 Purpose	17	80-4.2 Recertification	26
62-1.3 Limitations	17		

Appendix A..... 27
Vocabulary and Definitions

Appendix B..... 33
Supplemental Information

Appendix C..... 36
Personal Protective Equipment

Appendix D 37
Infection Control Risk Assessment (ICRA) Forms

Appendix E 42
Water Infection Control Risk Assessment (WICRA) Forms

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FOREWORD

This foreword shall not be considered a part of the standard. However, it is offered to provide background information.

ASSE International is a membership organization dedicated to the preservation of public health and safety through the use of proper plumbing, piping and mechanical practices. This is accomplished in the spirit of its century-old motto, “Prevention Rather than Cure.”

To address potentially hazardous situations, ASSE International has developed the ASSE/IAPMO/ANSI Series 12000, *Professional Qualifications Standard for Water Management and Infection Control for Building Systems*. This unique standard series sets minimum criteria for the training and certification of pipe trades craftspeople, and other construction and maintenance personnel, on how to safely work in an environment with the potentially deadly diseases that may be present within their worksites. These standards address the need for all construction and maintenance personnel and employers, especially within the pipe trades, to become proficient in identifying and managing potential situations where they, or other occupants of a building, may be exposed to bloodborne, waterborne and airborne pathogens.

Legionella is a waterborne pathogen prevalent in building water systems and is the cause of a potentially deadly pneumonia known as Legionnaires’ disease. *Legionella* is commonly found in the environment with studies finding approximately half of surveyed buildings with *Legionella* in their water systems. Conducting an effective *Legionella* risk assessment and implementing a water safety and management program is an important step toward managing *Legionella* in building water systems. When these activities are completed properly and implemented proactively, they can manage the risk of Legionnaires’ disease associated with building water systems.

ASHRAE Standard 188-2018 states that “The Program Team shall have knowledge of the building water system design and water management as related to legionellosis.” To address this requirement, ASSE International developed the ASSE/IAPMO/ANSI Series 12000, and specifically the 12080 *Standard Professional Qualifications Standard for Legionella Water Safety and Management Personnel*. This unique standard sets minimum criteria for the training and certification of persons involved in the development, administration, and execution of risk assessment and water safety and management programs for *Legionella* in building water systems.

ASSE 12060-12063 certifications qualify contractors and tradespersons to participate on building water management teams. These certifications afford a verification and validation path to compliance with standards and guidelines related to cooling towers, water features, potable water systems, fire protection, ice machines, humidifiers, and all piped systems which currently reside in all occupied buildings.

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References

01-1.1 References, Industry Standards and Codes

The following list of references and industry standards are part of the requirements of all Standards within the Series 12000 unless designated as applying to only a specific standard.

- 01-1.1.2 ASHRAE 188, *Legionellosis: Risk Management for Building Water Systems*, 2018
- 01-1.1.3 ASHRAE Guideline 12, *Minimizing the Risk of Legionellosis Associated with Building Water Systems*, 2020
- 01-1.1.4 AWWA C651-14, *Disinfecting Water Mains*, 2014. (required for Standard 12080 only)
- 01-1.1.5 AWWA C652-19, *Disinfection of Water Storage Facilities*, 2011 (required for Standard 12080 only)
- 01-1.1.6 CDC, *Guidelines for Immunizations*, <http://www.cdc.gov/vaccines/schedules> (required for Standards 12010 & 12020 only)
- 01-1.1.7 CDC, *Developing a Water Management Program to reduce Legionella Growth & Spread in Buildings*, www.cdc.gov/legionella/downloads/toolkit.pdf
- 01-1.1.8 CTI, *Legionellosis, Guideline: Best Practices for Control of Legionella*, 2008 (required for standard 12062 only)
- 01-1.1.9 CDC, *Legionella Environmental Assessment Form*, 2019, <https://www.cdc.gov/Legionella/downloads/legionella-environmental-assessment.pdf> (required for Standard 12080 only)
- 01-1.1.10 EPA, *Safe Drinking Water Act*, <https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations#disinfectants>
- 01-1.1.11 FGI, *Guidelines for Design and Construction of Hospitals, Guidelines for Design and Construction of Outpatient Facilities and Guidelines for Design and Construction of Residential Health, Care and Support Facilities*, 2018 (required for standards 12010 and 12020 only)
- 01-1.1.12 New York Codes, Rules and Regulations: *Protection Against Legionella*. Volume A (Title 10), Part 4., <http://regs.health.ny.gov/content/part-4-protection-against-legionella> (required for Standard 12080 only)
- 01-1.1.13 NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, 2020 (required for standard 12063 only)
- 01-1.1.14 NFPA 214, *Standard on Water-Cooling Towers*, 2016 (required for standards 12062/12063 only)
- 01-1.1.15 NIOSH N-95, *Particulate Filtering Facepiece Respirators*
- 01-1.1.16 OSHA 29 CFR 1910, 1030, *Bloodborne Pathogens* (required for standards 12010 and 12020 only)

NOTE: All questions related to applicability shall be directed to the Authority Having Jurisdiction (AHJ).

01-1.2 Abbreviations and Standards Development Organizations

- ANSI American National Standards Institute, Inc., 25 W. 42nd Street, 4th Floor, New York, NY 10036
- ASHRAE American Society of Heating, Refrigeration and Air-Conditioning Engineers, 1791 Tullie Circle, N.E. Atlanta, GA 30329
- ASSE ASSE International, 18927 Hickory Creek Dr, Suite 220, Mokena, IL 60448
- AWWA American Water Works Association, 6666 West Quincy Ave, Denver, CO 80235
- CDC Centers for Disease Control and Prevention, 1600 Clifton Rd, Atlanta, GA 30333
- CTI Cooling Tower Institute, 3845 FM 1960, Houston, TX 77068
- EPA Environmental Protection Agency, 1200 Pennsylvania Ave, Washington, DC 20460
- FGI Facility Guidelines Institute, Dallas, TX; www.fguidelines.org
- NFPA National Fire Protection Association, P.O. Box 9101, 1 Batterymarch Park, Quincy, MA 02269

- NIOSH National Institute for Occupational Safety and Health, see CDC
- NYS New York State Department of Health; [http://regs.health.ny.gov/content/part-4-protection-against-*Legionella*](http://regs.health.ny.gov/content/part-4-protection-against-<i>Legionella</i)
- OSHA National Institute for Occupational Safety and Health, 1600 Clifton Rd, Atlanta, GA 30333

01-2.1 Third Party Certification

A recognized third-party certification body shall, at a minimum, be able to demonstrate to the authority having jurisdiction (AHJ), compliance with ISO/IEC 17024, *Conformity assessment – General requirements for bodies operating certification of persons*. For the avoidance of doubt, demonstration of compliance does not require accreditation to the ISO/IEC 17024 Standard however, third-party accreditation to 17024 is evidence of satisfaction of this Section.

The authority having jurisdiction (AHJ) is an organization, office or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, installations or procedures.

Professional Qualifications Standard for the Health and Safety of the Construction and Maintenance Generalist

5-1.1 Scope

This standard provides general knowledge of pathogens, biohazards and infectious diseases for plumbing, piping, and mechanical systems workers, or any individual who has the potential for exposure to pathogens, biohazards or Other Potentially Infectious Material (OPIM), with the objective of providing continuing education. Eligible individuals include any person with an interest in pathogens, biohazards and infectious diseases.

5-1.2 Purpose

The purpose of this standard is to provide minimum criteria, identified by an industry consensus, for construction and maintenance personnel to ensure compliance with the referenced standards in Section 5-1.4.

5-1.3 Limitations

Compliance with this standard in itself shall not constitute compliance with the requirements for the construction and maintenance personnel as defined by ASSE 12010, 12020, 12060, 12061, 12062, 12063, or 12080.

5-1.4 References, Industry Standards and Codes

The references, industry standards and codes listed in ASSE Standard 12001 are a part of this standard.

5-2.1 General Knowledge

5-2.1.1 The individual who has completed training to the ASSE 12005 shall be able to identify and show knowledge of the applicable laws, codes, rules, listing agencies and regulations from the federal, state and local levels pertaining to pathogens, biohazards and infectious disease.

5-2.1.2 The individual who has completed training to the ASSE 12005 shall be able to identify and describe the basic concepts pertaining to:

- a) Appropriate method for recognizing tasks and activities which may involve exposure
- b) Criteria for the selection, use, cleaning, maintenance, storage, disposal and limitations of personal protective equipment (PPE)
- c) Emergency procedures involving pathogens or OPIM
- d) Employer responsibilities
- e) Epidemiology of pathogens, biohazards and infectious disease
- f) Explanation of an exposure control plan
- g) Exposure protocols
- h) Modes of transmission of pathogens, biohazards and infectious diseases
- i) Post exposure protocols
- j) Sign and labeling regulations
- k) Use and limitation of proper work practice protocols
- l) Waterborne microorganisms of particular concern
 - I. *Cryptosporidium*
 - II. Fecal coliform and *Escherichia coli* (*E. coli*)
 - III. Fecal indicators (Enterococci or coliphage)
 - IV. *Giardia*
 - V. Hepatitis B virus (HBV) and vaccine protocols
 - VI. Hepatitis C virus (HCV)
 - VII. *Legionella* (Legionnaires' Disease)