

Attachment B: Department Responses to Comments
Illinois Plumbing Code (77 Ill. Adm. Code 890)
December 28, 2018; 42 Ill. Reg. 24640

Jamie Moehling on behalf of the Central Illinois Chapter of ASHRAE and Sheila J. Hayter, PE, ASHRAE, President of ASHRAE, provided the following comment:

Comment #1

Section 890.130 Incorporated and Referenced Materials references two ASHRAE handbooks that are currently outdated. They suggest updating the year of publications or amending the language to reference “the most recent version of” as these standards are regularly updated.

Response

The Department concurs and has updated its reference to these handbooks in Section 890.130 to address this comment.

Matt Sigler, Technical Director, Plumbing Manufacturers International provided the following two comments:

Comment #2

What group proposed the language in Section 890.610, 890.660, 890.690, and 890.1210?

Response

The Department received input from the Plumbing Code Advisory Council in drafting language in the proposed rulemaking.

Comment #3

Is the intent of the Department to require all plumbing materials to be lead free beyond the requirements of Federal Law (as dictated in the Safe Drinking Water Act)?

Response

The intent of the proposed language is to require plumbing materials to be lead free consistent with the Safe Drinking Water Act. The Department has updated the proposed language in Section 890.210(k).

The following comment comes from Joel Vogt, Plumbing and Fire Protection Department Manager, BRiC Partnership, LLC:

Comment #4

Kitchen sinks require 120 degree Fahrenheit or higher water, currently defined as “hot water” therefore they do not require a thermostatic mixing valve (TMV). Should 160 degree Fahrenheit water be provided to all fixtures requiring “hot water”? And if we are to provide a TMV, all ASSE 1070 rated valves max out at 120 degrees Fahrenheit

Response

The Department has revised the definition of “hot water” in Section 890.120 and the language regarding hot water distribution in Section 890.610. The definition of “hot water” has been revised for second notice

to have a minimum temperature of 124 degrees Fahrenheit to address concerns regarding scalding. This value was selected based on review of the US Department of Veterans Affairs' Veterans Health Administration Directive 1061 which establishes 124 degrees as a minimum hot water distribution temperature to inhibit *Legionella* growth in building hot water systems.

Jody Frymire, Regulatory Affairs Associate, IDEXX Water provided the following five comments:

Comment #5

IDEXX is supportive of proposed amendment and the addition of the “opportunistic pathogen” definition in Section 890.120.

Response

The Department appreciates the comment and support.

Comment #6

Suggests the following revision of the definition of “at-risk” in Section 890.120:

“At-Risk”: Any person who is more susceptible than the general population to developing a ~~drinking-water~~ associated illness because of factors including, but not limited to, age, health, medication, occupation, medical treatment, medical diagnosis, or immunodeficiency.

This was recommended because the term “at-risk” is referred to in Sections 890.3000 and 890.3010 which address rainwater and gray water.

Response

The Department has removed the proposed definition “at-risk” from Section 890.120 due to the removal of the proposed Subpart O.

Comment #7

Recommend including language that supports owners or operators, to develop a schedule for sampling and analysis of reuse water for *Legionella pneumophila* to verify the treatment and disinfection processes per the proposed Section 890.2010, Section 890.3010, Section 890.3020, and Section 890.3050.

Response

The Department has removed the proposed Subpart O including Sections 890.3020 and 890.3050 from this rulemaking. For water technologies discussed in 890.2010, the Department recognizes that these technologies may be installed to address opportunistic pathogens other than *Legionella* and acknowledge that it is the role of the facilities' water management team to establish appropriate testing for validation of control measures.

The following comment was comparable to another made by Sheila Hayter:

Comment #8

Suggests inclusion of a reference to the Center for Disease Control and Prevention's Toolkit: Developing a Water Management Program to Reduce Legionella Growth and Spread in Building Water Systems or

ASHRAE 188 Standard in Section 890.2020. Additionally, suggests amending language in Section 890.2020 to include sampling and analysis for *Legionella pneumophila*.

Response

The Department provides guidance and recommendations for control of *Legionella*, often citing the Center for Disease Control and Prevention’s Toolkit: Developing a Water Management Program to Reduce Legionella Growth and Spread in Building Water Systems and ASHRAE 188. However, at this time the Department has not incorporated any reference to these documents within the Plumbing Code. The Department refers to water management teams implementing water management programs to determine appropriate validation activities including testing for *Legionella pneumophila*.

The following comment was also provided by Mark Cordes, Associate Partner, apaceDesign:

Comment #9

Suggest revision of Section 890.2030(c) to strike out “patients and residents” and include “students and workers” because this section is intended to address non-residential buildings.

Response

The Department has updated the proposed language in Section 890.2030(c) to address “building occupants”.

Mark Cordes additionally provided the following ten comments:

Comment #10

Paragraph 890.680 has not been adjusted to reflect that ASSE 1017-2009 has been eliminated from Appendix A. Table A.

Response

The Department has updated the language in Section 890. Appendix A, Table A to reflect the restoration of the ASSE 1017-2009 standard. However, because ASSE 1017 devices used alone do not provide thermal shock protection or adequate scald protection the reference to ASSE 1017 has been removed from Section 890.690(b) and 890.680(e).

Comment #11

The new definition of “dead end” includes the concepts of “stagnant water” and “unused fixtures”, but there is no definition for these descriptive terms.

Response

The Department has updated the proposed definition of “dead end” in Section 890.120.

Comment #12

Paragraph 890.1150(f)(2) alludes to a time of 48 hours in a service line. Why is the time limit just set for a service line? It seems like there could be many branches of a complex building which could exceed this time limit for normal use.

Response

The Department has updated the language in Section 890.1150(f)(2). The Department has language proposing a 72-hour water age under normal building operations to address this comment. This time was derived from the US Veterans Affairs' Veterans Health Administration Directive 1061 recommending irregular use or low flow fixtures be flushed twice per week to prevent stagnation and maintain sufficient disinfectant to inhibit the growth of *Legionella*.

Comment #13

The time limit of 48 hours noted in the previous comment could easily be exceeded for a normal office building; closed on Friday night and opened again on Monday. If this time limit (or any limit) is going to be required it should be clear.

Response

Refer to response to **Comment #12**. The Department has updated the language in Section 890.1130 to establish a timeframe of 72 hours of stagnation for plumbing identified as “dead ends” that may be installed and maintained to permit future use.

Comment #14

Suggests the Department should require a thermostatic valve on public access sinks when 160 degree Fahrenheit water is being delivered. Many times sinks installed in public access spaces including break rooms, classrooms, work rooms, and kitchens. Is the intent for licensed plumbers and engineers to use their own judgment?

Response

The Department has amended the proposed definition for “hot water” in Section 890.120 and the proposed language to Section 890.610 to address concerns raised through public comment.

Comment #15

As designers are we expected to make sure that dead ends by absolute definition are minimized (i.e. the cold side of a classroom sink or seasonal use wall hydrant)?

Response

The Department expects designers of plumbing systems to design within the requirements of the Code, when absolute code compliance cannot be achieved, the design professional is expected to address noncompliance with an engineered solution or through operational requirements or both.

Comment #16

Will seasonal use wall hydrants be required to have backflow preventers upstream of the major pipe mains which supply them?

Response

Wall hydrants will not be required to have upstream backflow preventers unless required due to high risk connections already addressed in the Code.

Comment #17

Notes that rainwater will likely contain bird droppings in varying amounts. A rain shower after many days of rain will likely not wash down as many bird droppings a rain shower after several weeks of no rain. Will there be standards to follow?

Response

The Department has removed the proposed Subpart O from this rulemaking.

Comment #18

Paragraph 890.1210(b) states water pipe is sized to be a minimum size. In view of potential stagnation issues, should there be a maximum size? There is of course the allowance for a Professional Engineer or Certified Plumbing Designer to submit a design for approval by the Department. Is there the ability for the Department to respond to the many of these submittals which may result from a designer's attempt to limit stagnation?

Response

The Department plans to address pipe sizing in future revisions of the Illinois Plumbing Code. The Department will consider maximum sizing at the time of those revisions. The Department has ability to respond to designs submitted by licensed professionals.

Comment #19

Is there concern that cold water of 80 degrees Fahrenheit temperatures will contain *Legionella* and mix with the 160 degree Fahrenheit water to make 110-115 degree Fahrenheit water for lavatories and showers with some *Legionella* surviving?

Response

In its proposed language, the Department is seeking to eliminate design and installation practices to reduce the growth and spread of *Legionella* in water systems. The eradication of *Legionella* is not the intent of the proposed rulemaking.

Comment #20

Paragraphs under 890.2030 advise owners of their responsibilities. Is there not a similar responsibility to a building owner that has a legitimate part of their fixtures to be unused (e.g. school locker room unused between sport seasons)? Should language be added to require flushing and tests?

Response

Operation of public buildings is the responsibility of the building owner. Building owners should take necessary steps, including addressing water quality issues, to protect the health of occupants. This may include flushing of unused fixtures periodically to improve water quality. This responsibility is reflected in the updated language of Section 890.1130.

Kenneth Thompson, International Compliance Manager, Eemax Inc. provided the following comment:

Comment #21

Can you advise on the Department's stance on electric tankless heaters? Does this rulemaking have (or need) a provision for electric tankless type products? These are in a unique position for non-residential

buildings, as the heater will generally be installed at the point of use and provide appropriately hot water directly to the end fitting. In many situations, the need for distribution or recirculation is removed and reduces opportunity for dead-leg piping. The heater additionally acts a tempering/mixing valve.

Response

Electric, tankless water heaters are permitted under the current Code in Section 890.1220. The Department agrees that the use of electric, tankless water heaters may minimize distribution and recirculation of hot water.

The following five comments were submitted by Brian Yelton, President, Inland Sales Group, Inc.:

Comment #22

The definition of “at-risk” is too narrow and should read “potable water” rather than “drinking water” because many waterborne illnesses are distributed through cooling towers, irrigation systems, and misters.

Response

The Department has removed the proposed definition of “at-risk” in Section 890.120.

Comment #23

The definition of “mixed water” is not limited to 121-159 degrees Fahrenheit. Many plumbing applications require a set mixed temperature for equipment and or process type applications in healthcare and manufacturing. Suggests mixed water should read “any ambient cold water mixed with a hot water source in which are blended”.

Response

The Department has removed the proposed definition of “mixed water” from Section 890.120.

The following seven comments were submitted by James Dee, Certified Plumbing Inspector:

Comment #24

Page 24660 refers to appurtenance. There is no definition to define this term.

Response

The term “appurtenance” refers to a “plumbing appurtenance” which is defined in Section 890.120.

Comment #25

Page 24660 refers to “dead legs”. Believes that this not a term commonly used by the industry and is not worth noting. The term “dead ends” is common in the plumbing field.

Response

The Department has included the term “dead legs” as it is a common term used in industry standards for risk management in plumbing systems.

Comment #26

Page 24339 refers to appliances. Appliance should be defined in the definitions section.

Response

The term appliance refers to a “plumbing appliance” which is defined in Section 890.120. The Department has updated the definition of “plumbing appliance” to address this comment.

Comment #27

The term “air break” should be removed from the code as the current definition is “see air gap”.

Response

The Department concurs and has removed the definition of “air break” from Section 890.120 to address this comment.

Comment #28

The addition of reclaimed water and rainwater to the Code is a plus for the industry.

Response

The Department appreciates the comment and support. However, the proposed Subpart O has been removed from this rulemaking.

Comment #29

Disagrees to have the removal of lead pipe only from the point of repair to the building. The lead pipe should be removed entirely.

Response

The Department has updated the proposed language in Section 890.1150(e). In accordance with the proposed language, if any portion of a service line constructed of lead or galvanized steel is to be modified, repaired or replaced, then the portion constructed of lead or galvanized steel and all downstream portions of the service line must be replaced with approved materials except as otherwise provided by that section.

The following seven comments were provided by George Swietczak, President Emeritus of the Charter Chapter Illinois Plumbing Inspectors Association:

Comment #30

Suggest additional language to clearly define “single family dwelling”. Is this definition to be limited to separate standalone dwellings only or does it include the individual condominium, individual residence in a multi-family or even high risk residential type accommodation? Clarification is needed to avoid confusion in application of minimum temperature requirements.

Response

The Department has removed the proposed definition for “single family dwelling” in Section 890.120.

Comment #31

Section 890.230(a)(1), eliminating sheet lead for all applications including roof flashings at the vent terminations. Is the intent to eliminate all forms and uses of lead?

Response

The Department has determined that the use of lead in plumbing applications presents a health hazard to plumbers, plumbers’ apprentices and their families and finds that there is sufficient risk to eliminate the use

of lead plumbing materials in Illinois. The National Institute for Occupational Safety and Health identifies plumbing as a job known to put workers at risk of lead exposure due to lead in plumbing materials. Additionally, lead can be taken home from the work place on clothes or in cars thus potentially exposing spouses and children.

Comment #32

Suggest adding a new Section 890.320(m) suggest restoring galvanized steel pipe for use with ‘Grooved Type Mechanical Couplings’ especially for use as ‘express risers’ in high rise construction.

Response

The Department has determined that the utility of galvanized pipe is outweighed by its propensity to occlude and corrode, thereby restricting flow, causing leaks, and providing points of harborage for opportunistic pathogens. Galvanized pipes also provide a source of iron which can promote the growth of *Legionella* in biofilms. Additionally, when downstream of lead plumbing materials, lead is deposited on the surface of galvanized pipe which can continue to lead into drinking water even years after lead plumbing materials are removed. The Department has determined that approved, alternative materials in Appendix A are suitable to address the limited remaining use of galvanized pipe in plumbing systems.

Comment #33

Suggest clarifying language in 890.610(d) to refine the use of the term ‘residential’. Is this section meant to not require 160 degree Fahrenheit water distribution in all residential building settings including high-rise and large multi-family construction? Is this section to be applied to only institutional, medical, nursing care, memory care? If so, please specific. If institutional settings will benefit from such elevated water temperature distribution systems, why would large residential settings be left out?

What then becomes the minimum supply water temperature for residential distribution systems in single family dwellings and multi-family dwellings?

Response

The Department has updated the proposed language in Section 890.610(d) to specify distribution temperatures for health care facilities as identified.

Comment #34

Section 890.740(i) consider adding a reference to 890.1330(b) to enable determining the conversion from gallons per minute to drainage fixture units.

Response

The Department agrees and has updated the language in Section 890.740(i).

Comment #35

Recommend all installation processes involved in the design, installation, construction, alteration, operation, maintenance or repair of rainwater and storm water harvesting systems intended to supply applications such as water closets, urinals, and lawn sprinkler systems with sprinkler heads at single-family dwellings, multi-family dwellings and non-residential buildings be completed only by Illinois licensed plumbers. We urge this requirement become part of the Code as only Illinois licensed plumbers are being

trained to seriously consider the required cross-connection prevention protocols continue protecting the public health as required by the Illinois Plumbing License Law.

Response

The Department has removed the proposed Subpart O from this rulemaking.

Comment #36

We have seen considerable application of DWV copper piping in circumstances which fails at a rate equal to galvanized steel pipe in drainage and venting applications above grade and therefore recommend that it should also be removed as a viable material for use in drainage and venting systems.

Response

The Department did not reevaluate copper for DWV in this proposed rule, the commenter is requested to forward any supportive studies for the Department to inform future rulemakings.

The following twenty-seven comments were received from David Dertz representing the Illinois Plumbing Inspectors Association and the South Suburban Building Officials Association:

Comment #37

Water between 40 and 70 degrees Fahrenheit is currently listed as “cold water” and as an industry standard and listed in the ASSE plumbing dictionary.

Response

The Department has updated the proposed definition of “cold water” in Section 890.120. However, the Department does not intend to require water supplied to buildings to pass through a chiller to comply with the definition of cold water. There are numerous public water supplies throughout the state that supply water at temperatures exceeding 70 degrees in the summer months.

Comment #38

In reference to the proposed definition of “dead end”, this is almost impossible to achieve as written for potable water distribution systems, the distance should be listed as short as possible but not to extend more than 12” past branch connections without full port shut off valve. This would allow for future branches or irrigation lines/hose bibs and other branch connections only used seasonally to be isolated from the domestic water supply during peak periods where they are unused.

Response

The Department has updated the proposed definition of “dead end” in Section 890.120.

Comment #39

In reference to the definition of “existing plumbing” or “existing work”, suggest adding done under permit and was inspected and approved by the Department or authority having jurisdiction. Adding the fact that all prior work must have been inspected and approved will help clarify this definition.

Response

The Department has restored and updated the definition of “existing plumbing or work” in Section 890.120 to address this comment.

Comment #40

In reference to the definition of “harvested water”, suggests adding “water that has not come into contact with sewage” after reclaimed water. Black water should be eliminated as a source for harvested water unless the system is approved by the Department.

Response

The Department has removed the proposed definition of “harvested water” from Section 890.120.

Comment #41

In reference to the definition of “hot water”, suggest listing two separate definition of water to comply with 890.610(d) and definition below “individual water system”. Hot water for individual water systems in single family residential homes as 120 degrees Fahrenheit and 160 for all other buildings to align with currently proposed language.

Response

The Department has revised the definition of “hot water” in Section 890.120 and the language regarding hot water distribution in Section 890.610. The definition of “hot water” has been revised for second notice to have a minimum temperature of 124 degrees Fahrenheit to address concerns regarding scalding. This value was selected based on review of the US Department of Veterans Affairs’ Veterans Health Administration Directive 1061 which establishes 124 degrees as a minimum hot water distribution temperature to inhibit *Legionella* growth in building hot water systems.

Comment #42

The definition of “individual water system” is important to keep in the definitions to reference plumbing in single family homes only. This will also help eliminate confusion about what water temperature is used where and in what situation. Since hot water temperature is required to be 160 degrees at the furthest fixture that requires “hot water” then it would also require a return loop on the water system to ensure the hot water has reached the furthest fixture at the required temperature or will there be a set time frame that the water is allowed to reach the farthest fixture?

Response

The Department removed the definition of “individual water system” because it is not referenced in the the Code.

Comment #43

In reference to the proposed temperature in “mixed water”, suggests adding “other than in individual water system” to clearly be identified for use in any structure other than single family residential construction to eliminate any confusion of the application of this definition.

Response

The Department has removed the proposed definition of “mixed water” from Section 890.120.

Comment #44

In reference to the definition “plumbing fixtures”, suggest adding as approved by the Department or listed in the applicable standards listed in the appendix. Plumbing fixtures need to be approved by the Department

or applicable standards listed in the appendix, otherwise people will be able to use any fixture they purchase and the fixture may not be safe for the intended situation or compliant with current standards or laws.

Response

The Department agrees and has updated the definition of “plumbing fixtures” in Section 890.120 to address this comment.

Comment #45

In reference to the definition of “storm sewer”, suggest adding “waste” to “clear water” to clarify definition.

Response

The Department refers to the definition of “clearwater” as currently defined in Section 890.120.

Comment #46

In reference to the definition of “tempered water”, suggest 70 degrees Fahrenheit per ASSE plumbing dictionary.

Response

The Department has updated the definition of “tempered water” in Section 890.120.

Comment #47

Suggest adding definition “tepid water” meaning water ranging in temperature from 60 degrees Fahrenheit to 100 degrees Fahrenheit primarily used for emergency plumbing fixtures such as eye wash stations and emergency body showers per ANSI Z358.1 standard. Adding definition for “tepid water” would bring the Illinois Plumbing Code in compliance with all temperatures listed in any current national standard for use with emergency plumbing fixtures.

Response

The Department agrees and has added the definition of “tepid water” to Section 890.120.

Comment #48

In reference to the definition “waste water”, add “water that contains” before industrial waste and “other than sewage” to the end. Any water that contains sewage needs to remain separate from other water classification in definitions to remain clear in definitions.

Response

The Department has removed the proposed definition “wastewater” from Section 890.120.

Comment #49

In Section 890.130, suggest adding the Illinois Energy Efficient Building Act (20 ILCS 3105) requirements for plumbing systems to help enforcement in the field of other plumbing regulations as required by state law.

Response

The Department did not evaluate inclusion of this Act for the proposed rulemaking. The Department will consider the incorporation of these provisions in future rulemakings.

Comment #50

In Section 890.210, suggest amending the language of the proposed k) to identify plumbing materials for potable water usage shall be lead free and the use of lead materials is only allowed in drain, waste, and venting systems for the purposes of repairing, replacing or alteration on existing plumbing systems only. This addition would still allow the use of lead joints in existing cast iron and lead flashings on roofs in existing plumbing systems.

Response

The intent of the proposed language is remove lead from the wetted surface (where potable water touches the pipe or fixture) of plumbing supplying water for human consumption. The Department has updated the proposed language in Section 890.210(k).

Comment #51

In Section 890.320, suggest adding language to allow the use of caulked joints for repairs, replacement or alterations in existing plumbing systems. This method of joining is still used in renovation, repairs and new construction. Adding this line will still allow the Department to remove lead from new plumbing systems and allow the use in older systems for repairs or alterations but this is a common type of current construction especially for commercial or industrial settings.

Response

The Department has determined that the use of caulked joints present a health hazard to plumbers, plumbers' apprentices and their families and finds that there is sufficient risk to eliminate the use of this plumbing technique in Illinois. The National Institute for Occupational Safety and Health identifies plumbing as a job known to put workers at risk of lead exposure due to lead in plumbing materials. Additionally, lead can be taken home from the work place on clothes or in cars thus potentially exposing spouses and children. IDPH has evaluated safer joining methods including "no hub" and gasketed connections in place of caulked joints and finds no evidence that these alternatives cannot be implemented in place of a caulked joint.

Comment #52

In Section 890.330, suggest adding language to clarify when the plastic pipe to non-plastic pipe joints could be used. Additionally, add statement to caulked lead joints referenced in this section and add language "Only allowed in existing buildings for repairs, replacements and alterations under Section 890.210".

Response

Refer to Department's response to **Comment #51**.

Comment #53

In Section 890.360, suggest adding language "Caulked flanges shall only be used in existing buildings for repairs, replacements or alterations and shall be secured to the floor." Caulked flanges are the only way sometimes to make a repair on an existing drain, waste, and vent (DWV) system and for certain types of fixtures.

Response

Refer to the Department's response to **Comment #51**.

Comment #54

In Section 890.610, suggest strike 12" and add 24" inches. Suggest Mixing and tempering valves shall comply with ASSE standards. Twenty-four inches is a more realistic expectation. The 12" distance and temperature could create a hazardous situation.

Response

The Department has updated the language in Section 890.610(d) to address this comment.

Comment #55

In Section 890.610, suggest adding new subsection "In residential buildings, all hot water generating devices shall have an ASSE 1017 device installed within 24" of the outlet of the appliance and set to a maximum temperature of 120 degrees on the outlet to the hot water distribution system."

Response

At this time, the Department does not intend to incorporate this requirement into the Plumbing Code. While ASSE 1017 devices may be appropriate for some installations, adequate scald protection in most residential applications can be achieved through the use of other temperature control devices (ASSE 1016/ASME A112.1016/CSA B125.16, or ASSE 1070/ASME A112.1070/CSA B125.70). The Department will present this comment to the Plumbing Code Advisory Council for consideration in a future rulemaking.

Comment #56

In Section 890.630, suggest change to 24" of the fixture to have enough room to install the ASSE required device.

Response

The Department believes this comment is in reference to Section 890.610 d) and has revised the language to address this comment.

Comment #57

In Section 890.690(b), suggest adding Jacuzzi tubs, soaker tubs, and free stand tubs. Tub designs need to be added as many soaker tubs have hand showers that may be a scald hazard. It is also possible that a tube is turned on with 160 degree water coming into the fixture without proper safety device installed if not listed in this Section.

Response

The Department has revised the proposed language of Section 890.690 include any fixtures intended for bathing to address this comment.

Comment #58

In Section 890.1150 (e), suggest adding "back to the original connection location" after 'unapproved materials'. The service in question should be taken back to the original connection location and replaced.

This would eliminate additional underground connections that could be possible sources of contamination and possibilities of underground leaks and eliminate confusion of enforcement of this Section.

Response

The Department agrees that complete service line replacements and minimizing underground connections are considered best practice. However, underground connections are often necessary and are permitted, as properly installed underground connections do not pose an imminent public health risk. Please note that the language of Section 890.1150 e) has been revised.

Comment #59

In Section 890.2020(a), suggest adding “in all buildings other than residential single family homes” after ‘this Part’. To clarify understanding of this code section.

Response

The Department has updated the proposed language of Section 890.2020(a) to address this comment.

Comment #60

Will there be a list of items that are required to be in the maintenance and operation reports? The Department should have a basic list of items required to be documented for review.

Response

The Department has updated language in Section 890.2020(d) to identify minimum requirements for operation and maintenance programs.

Comment #61

In Section 890. Table A Approved Building Drainage/Vent Pipe, agency notes 2 add “Galvanized steel pipe are approved for above-ground uses only in existing buildings for repair, replacement or alterations. Galvanized steel piping shall be limited to use in all new construction”. This should be put back for existing buildings otherwise the entire existing system may be required to be changed under this Section.

Response

The Department has determined that the utility of galvanized pipe is outweighed by its propensity to occlude and corrode, thereby restricting flow, causing leaks, and providing points of harborage for opportunistic pathogens. Galvanized pipes also provide a source of iron which can promote the growth of *Legionella* in biofilms. Additionally, when downstream of lead plumbing materials, lead is deposited on the surface of galvanized pipe which can continue to lead into drinking water even years after lead plumbing materials are removed. The Department has determined that approved, alternative materials in Appendix A are suitable to address the limited remaining use of galvanized pipe in plumbing systems.

Comment #62

In Section 890. Table A Approved Materials for Building Water Distribution Pipe, suggest restoring galvanized steel pipe for existing buildings only. Water heaters currently use galvanized nipples as the water distribution connection point on the appliance and this removal would require galvanized nipples to be changed before installation a new water heater which may void warranties. Other plumbing devices may also have galvanized fittings as part of the approved device and changing the fitting could violate devices approval.

Response

Please refer to the Department's response to **Comment #61**.

Comment #63

In Section 890. Table A Approved Standards for Plumbing Appliances/Appurtenances/Devices, suggest restoring ASSE 1017-2009 Standard as it is required by 890.690(b) and should be used for "individual water systems".

Response

ASSE 1017 devices used alone do not provide thermal shock protection or adequate scald protection therefore the reference to ASSE 1017 has been removed from Section 890.690(b) and Section 890.680(e).

Comment #64

In reference to deleted illustrations and references for dead end, caulked joint, flared and compression joints, flared and compression joints are still allowed for copper piping and tubing so they should not be eliminated from the illustrations.

Response

Flared and compression joints for copper tubing are not being eliminated from the illustrations.

The following was provided by Justin Treutelaar, WSA President, President, Great Lakes Plumbing and Heating Co.:

Comment #65

WSA contends that must be a date included in the code where "existing work" is concerned and a definition of "existing work" must remain in the code.

Response

The Department has restored and updated the definition of "existing plumbing" or "existing work" in Section 890.120 to address this comment. The new definition of "existing plumbing" or "existing work" is proposed to refer to all work performed and inspected prior to the new proposed effective date of this rulemaking April 1, 2020.

The following comment was provided by Bob Krupske, Krupske Sprinkler Systems Inc.:

Comment #66

Asks that this section eliminate proposed language related to irrigation systems. Many irrigation systems installed in parks and athletic fields and the water service never enters a building. There would be no way to install a RPZ at the water main connection in 2 pipe sizes. There are many cases including municipal bans on irrigation use and periods of drought or moisture sensing equipment that a system would remain inactive and exceed the 48 hour time limit described.

Response

The Department recognizes that the inherent risk of stagnation associated with an irrigation service line is similar to that of a fire service line. Stagnation should be addressed in the design and operation of the system.

Robert D. Jensen, President & CEO, Association for the Advancement of Medical Instrumentation (AAMI) provided the following comment:

Comment #67

Replace language in Section 890.740 as follows:

- a) Pure Water Process Systems. The water supply to a pure water process system, such as dialysis water systems, semiconductor washing systems, and similar process piping systems, shall be protected from backpressure and backsiphonage by a reduced-pressure principle backflow preventer that complies with ASSE 1013 or CSA B64.4.
- b) Dialysis Water Systems. The individual connections of the dialysis related equipment to the dialysis pure water system shall not require additional backflow protection.

Response

The Department has updated the proposed language in Section 890.740 to address this comment.

The following twenty-five comments were received from Beverly Potts, Executive Director, Illinois Plumbing-Heating-Cooling Contractors (PHCC):

Comment #68

About the definition of proposed definition of “dead end”, the proposed change would eliminate the practice of roughing-in DWV for future use. What is the purpose on the drain, waste, and vent side? Related to water how will “lack of use” or “unused fixtures” be enforced?

Response

The proposed definition of “dead end” related to building drainage systems is the same as existing requirements in the current Illinois Plumbing Code. The Department has updated the proposed definition of “dead end” in Section 890.120 relative to water supply systems.

Comment #69

The elimination of “existing plumbing or work” presents a problem in regard to compliant work that was done prior to the code being changed.

Response

The Department has restored and updated the definition for “existing plumbing” or “existing work” in Section 890.120 to address this comment.

Comment #70

In reference to the definition “harvested water”, what does “not limited to” mean in this definition? Could it include storm water, black water, industrial waste water, cooling tower water, etc? Who decides?

Response

The Department has removed the proposed definition of “harvested water” from Section 890.120.

Comment #71

Why is the definition of “mixed water” needed when there is currently a definition for “tempered water”?

Response

The Department has removed the proposed definition of “mixed water” from Section 890.120.

Comment #72

In reference to the proposed definition of “plumbing fixture”, the changes to this definition leave out the word “approved” and any reference to the plumbing appurtenances and appendages leaving vague areas that could cause misinterpretation.

Response

The Department agrees and has updated the definition of “plumbing fixture” in Section 890.120 to address this comment.

Comment #73

About the proposed definition of “reclaimed water”, suggest that this type of water only come from a regulated wastewater or water utility.

Response

The Department has removed the proposed definition of “reclaimed water” from Section 890.120.

Comment #74

About the proposed definition of “waste water”, this definition includes sewerage. Wastewater does not contain sewage that would be sanitary waste per the Code.

Response

The Department has removed the proposed definition of “waste water” from Section 890.120.

Comment #75

In Section 890.130, why is this reference to Illinois Title 35 Section 602 being included? Should this refer to a specific section of 602 or all of it?

Response

35 Ill. Adm. Code 602 has been referenced to address the increasing number of secondary treatment systems installed on plumbing systems intended to serve the public. These treatment systems are often required to be permitted as a public water supply by IEPA or IDPH, dependent upon the type of facility and the populations served. Therefore, the inclusion of 35 Ill. Adm. Code 602 in its entirety is appropriate.

Comment #76

About proposed language in Section 890.210, suggests amending the language to state if an applicable standard is not available for a particular material then the Department may grant approval after receipt of proper data and the input and consent of the Illinois Plumbing Code Advisory Council.

Response

The Department appreciates the suggested change, the Plumbing Code Advisory Council role is defined by statute, additional authority may not be granted by rule. The Department seeks the advice of the Council at every available opportunity.

Comment #77

About Section 890.210(k), suggest that IDPH add language “as defined in the Definition section of the Illinois Plumbing Code”.

Response

The Department appreciates the comment. As “lead free” is a defined term in Section 890.120, this additional language is unnecessary.

Comment #78

Section 890.320 and Section 890.340 prohibit the use of caulked joints. While not frequently used in new construction, it is needed for repair and renovations. At the least, language should be added to allow for caulked joints in repair and renovations.

Response

The Department has determined that the use of caulked joints present a health hazard to plumbers, plumbers’ apprentices and their families and finds that there is sufficient risk to eliminate the use of this plumbing technique in Illinois. The National Institute for Occupational Safety and Health identifies plumbing as a job known to put workers at risk of lead exposure due to lead in plumbing materials. Additionally, lead can be taken home from the work place on clothes or in cars thus potentially exposing spouses and children. IDPH has evaluated safer joining methods including “no hub” and gasketed connections in place of caulked joints and finds no evidence that these alternatives cannot be implemented in place of a caulked joint.

Comment #79

About the removal of polybutylene pipe in Section 890.320(b)(1)(A), acknowledge failures of this material in water distribution systems, but has been successfully used for years as water service piping. If it meets NSF, why can’t it be used for water services?

Response

While approved by NSF, IDPH finds that other plumbing materials are superior to polybutylene. As polybutylene does not offer distinct advantages over other plastic material, it is being eliminated from the Code.

Comment #80

In Section 890.610(a), suggest the Department do this with the advice and consent of the Illinois Plumbing Code Advisory Council.

Response

The Department appreciates the suggested change, the Plumbing Code Advisory Council role is defined by statute, additional authority may not be granted by Rule. The Department seeks the advice of the Council at every available opportunity.

Comment #81

About proposed amendments to Section 890.630, this section deals with excessively hot water. Suggest leaving the wording as it is currently.

Response

The Department has updated the proposed definition of “hot water” in Section 890.120 and Section 890.610(d).

Comment #82

About the proposed amendment to Section 890.660, oppose the use of waterless urinals for health and safety reasons and problems they create with plumbing drainage systems. Suggest water distribution piping should be required to be installed behind the wall for future use, and to provide that these urinals be properly trapped and vented if down stream of other fixtures. The Illinois Plumbing Code Advisory Council twice in the last 14 months voted not to allow this type of fixture.

Response

The commenter provided no justification or supportive data for the stated health and safety concerns. The inclusion of 890.660(d) is intended to minimize concerns regarding the effect of waterless urinals on plumbing waste systems. Installing supply piping behind the wall for future use would result in a dead end(s) which does not coincide with the Department’s goals of reducing points of stagnation within plumbing systems.

Comment #83

About the proposed amendment to Section 890.740(f), why is stainless steel not allowed? Are there any approved RPZs made that are totally non-metallic?

Response

The Department worked extensively with the Association for the Advancement of Medical Instrumentation (AAMI) Renal Disease and Detoxification Committee and the Centers for Disease Control and Prevention (CDC) to develop the proposed language. It has been represented that AAMI and dialysis providers want only non-metallic back flow preventers installed in the subject facilities.

Comment #84

About the proposed amendment to Section 890.740(e)(1)(a), Section 890.1040 of the Code requires an air gap to be at least 2 times the diameter of the drain, and never less than 1 inch. Should (f) mirror this language or refer to Section 890.740?

Response

The Department worked with the Association for the Advancement of Medical Instrumentation (AAMI) Renal Disease and Detoxification Committee and the Centers for Disease Control and Prevention (CDC) to develop the proposed language. The drain size associated with the wall box is oversized to decrease concerns with foaming. Therefore, an air gap 2 times the diameter of the drain was determined to be unnecessary.

Comment #85

About the proposed amendment to Section 890.1150(e), complete replacement instead of repair is not needed for galvanized of PB lines and often not possible in emergency situations.

Response

The Department has updated the proposed language in Section 890.1150(e).

Comment #86

About proposed language in Section 890.1150(f), ask why Illinois licensed plumbers are not included in who can design the service line to prevent stagnation. Additionally, ask if the 48 hour time period will require additional devices to be installed in buildings typically unoccupied for more than 48 hours on weekends such as schools or office buildings.

Response

The Department has updated the proposed language in Section 890.1150(f).

Comment #87

About proposed language in Section 890.1150(f)(3), state that the proposed language cannot be accomplished on large fire systems.

Response

Refer to the Department's response to **Comment #86**.

Comment #88

About proposed language in Section 890.1210 prohibiting the use of air chambers, concerned that mechanical devices may have the potential for even more growth of opportunistic pathogens than the traditional air chamber. Additional concerns regarding accessibility and expense.

Response

The Department has evaluated water hammer control in plumbing systems and finds that appropriate and judicious placement of mechanical devices or water hammer arrestors will achieve the same functionality and better water quality than the prolific use of air chambers. Over time air becomes dissolved rendering the air chamber ineffective at protecting against water hammer and providing a dead end, promoting the growth of opportunistic pathogens. The Department is not aware of any studies linking water hammer arrestors to *Legionella* or other opportunistic pathogens. However, the Department recognizes that water hammer arrestors must be properly maintained to ensure efficacy for protection against water hammer. Therefore, the language of Section 890.1210 f) has been updated to permit the use of water hammer arrestors but require these devices to be accessible, as defined at Section 890.120, for maintenance.

Comment #89

About proposed language in section 890.2020(d), ask what assurance is that that these people know how and what needs to be done.

Response

Records maintained by owners and operators may be reviewed to determine compliance with Section 890.2020(d). The Department and authorities having jurisdiction may request such records in the event a public health hazard is suspected or identified.

Comment #90

Request that the IAPMO/ANSI WeStand 2017 Standard be added to the Code and used for all harvested water systems or that the unused language referred to as Subpart N previously developed by the Department in 2013 be used.

Response

The Department has removed the proposed Subpart O referencing harvested water systems from this rulemaking.

Comment #91

Regarding proposed Sections 890.3000 and 890.3010, ask what is to be included in reports maintained by owners and operators of rainwater harvesting systems and what direction are the owners given to comply.

Response

The Department has removed the proposed Subpart O containing the referenced Sections from this rulemaking.

Comment #92

Regarding proposed Section 890.3020, this section needs referenced standards and should only come from municipalities/water purveyors and be high regulated. Recommend any Department approval should include input from the Plumbing Code Advisory Council.

Response

The Department has removed the proposed Subpart O containing the referenced Sections from this rulemaking.

Comment #93

Regarding proposed Section 890.3030, feel use of blackwater should be prohibited and if allowed, any Department approval should include input from the Plumbing Code Advisory Council.

Response

The Department has removed the proposed Subpart O containing the referenced Section from this rulemaking.

Comment #94

Regarding proposed Section 890.3050, it is appropriate that these systems will be required to be installed in accordance with the Lawn Irrigation Contractor and Lawn Irrigation Sprinkler System Registration Code.

Response

The Department has removed the proposed Subpart O containing the referenced Section from this rulemaking.

The following comment was received from Kim Robinson, Executive Director, Illinois Society of Professional Engineers:

Comment #95

Request that Section 890.3000 and Section 890.3010 include requirements that such systems be designed by an Illinois licensed professional engineer or an Illinois licensed architect consistent with existing design practice acts.

Response

Plumbing design has been and will continue to be the purview of those persons appropriately licensed and authorized pursuant to 225 ILCS 320/3. However, the Department has removed the referenced Sections to address other comments received.

The following comments were offered by Chris Haldiman, Codes and Standards Manager – Fluid Solutions, Americas, Watts Water Technologies:

Comment #96

In reference to the proposed definition of “dead end”, what is the frequency of persistent or the rate of “low” flow? Additionally, how is an “unused fixture” defined and how much time must lapse between use to define it as unused?

Response

The Department has updated the definition of “dead end” in Section 890.120 to address this comment.

Comment #97

Removal of the 1017 Standard reference from Section 890.690 is appropriate as ASSE 1017 devices are not intended for point of use temperature control. ASSE 1070 mixing devices are designed and intended for temperature limiting and not temperature control and should be removed from Section 890.690.

Response

The Department appreciates the comment and support.

Comment #98

ASSE 1070 mixing devices are designed and intended for temperature limiting and not temperature control and should be removed from Section 890.690.

Response

The Department appreciates the comment and support.

Comment #99

There are three types of ASSE 1016 valves, provide clarification on what “automatic” refers to in Section 890.690. Does this mean automatic pressure or temperature control?

Response

The Department has updated the language in Section 890.690 to address this comment.

Comment #100

About proposed language in Section 890.740, why are ASSE 1013 stainless steel devices no longer approved for this application?

Response

The Department worked with the Association for the Advancement of Medical Instrumentation (AAMI) Renal Disease and Detoxification Committee and the Centers for Disease Control and Prevention (CDC) to develop the proposed language. It has been represented that AAMI and dialysis providers want only non-metallic back flow preventers installed in the subject facilities.

Comment #101

Referring to Section 890. Table A, ASSE 1017 valves are referenced in Section 890.1220. The proposed change conflicts with 890.1220. ASSE 1017 valves should remain in this table so they can be used to provide hot water as proposed when there may also be a need to operate the water heater or boiler at 180 degrees Fahrenheit for commercial equipment.

Response

The Department has restored the ASSE 1017-2009 Standard in Appendix A.

The following eighteen comments were received from Dean M Pozarzycki, Architect:

Comment #102

Suggest amending the proposed definition of “aesthetic water fixture” by adding “not isolated from the ambient air which are primarily” after ‘aerosols’.

Response

The Department has updated the proposed definition of “aesthetic water fixture” in Section 890.120. The language of Section 890.2020 to address this comment.

Comment #103

Suggest deletion of the proposed term “at-risk”.

Response

The Department has removed the proposed definition “at-risk” from Section 890.120.

Comment #104

Regarding the proposed definition of “building” or “facility”, ask what is the difference between a refrigerator not connected to a water line, and a cold water dispensing soda machine, and a mobile ice cream vendor, and a wine beverage warehouse, and a “water bottle” delivery truck, and an office hot and cold water ADA compliant water dispenser?

Response

The definition in question seeks to define where plumbing exists. The definition is not meant to identify the differences in the items identified in the comment.

Comment #105

Regarding the proposed definition of “dead end”, comments that the previous definition was superior to understand. If the proposed language is used, ask the Department to establish the “feet per second per pipe diameter” that constitutes a “persistent low flow rate” to remove subjective language.

Response

The Department has updated the proposed definition of “dead end” in Section 890.120 to address comments received. Using flow velocity per area would not be an appropriate metric to define a dead end as the majority of installations are not based upon a continuous flow rate.

Comment #106

Regarding the proposed definition of “fire sprinkler system”, what is a “fire suppression system”. See how the building code and fire suppression code uses “fire suppression system”.

Response

The term “fire sprinkler system” is consistent with terminology used in the current Code.

Comment #107

The modified definition of “hot water” is understandable given the purpose of the code change request.

Response

The Department appreciates the comment.

Comment #108

The impact of the removal of the term “individual water system” causes no delineation between single family buildings and on-single family residences. It does remove ambiguity between an “individually owned commercial water system” and an “individual private single family system” whether the system is owned by the home owner/land lord or HOA.

Response

The Department has removed the term “individual water system” because it is not used in the Code.

Comment #109

Regarding the proposed definition of “plumbing fixtures”, ask what is the difference between the first sentence of the definition and a free standing plumbing appliance or appurtenance such as an ice or water vending machine as proposed in the definition of “building” or “facility”.

Response

The proposed definition seeks to clarify that plumbing installed coincident with free standing appliances such as ice vending machines are included in the definition of a building or facility for purposes of complying with this rule.

Comment #110

Regarding the proposed definition of “rainwater”, definition needs clarification or let the common use of the word remain undefined.

Response

The Department has removed the proposed definition “rainwater” from Section 890.120.

Comment #111

The proposed definition of “single family dwelling” is problematic. The language is discriminatory under federal definition of what constitutes group homes. A group home is a single family residence where depending on the state contains 5 to 15 non-biologically connected individuals having cohabitation of residency usually due to similarity in physical needs, yet functioning as one unit.

“Residents in Group R-3 and R-4 congregate residences typically operate as a single-family home. The Fair Housing Act includes no discrimination based on familial status (i.e. family cannot be determined by blood or marriage). Many court cases has been filed under the Fair Housing Act requiring that group homes be permitted to operate similar to a single-family home as a point of nondiscrimination.

Recommends fixing or dropping the definition.

Response

The Department has removed the proposed definition of “single family dwelling” from Section 890.120.

Comment #112

Regarding the proposed language in Section 890.1130(h), should the currently proposed definition of “dead end” lacking a minimal dimensioned allowed dead end in potable supply lines, water hammer will occur. These concerns also apply to the deletion of existing language in Section 890.1200(c).

Response

The Department has updated the language in Section 890.1130(h) and the proposed definition of “dead end” in Section 890.120.

Comment #113

Regarding the proposed language in Section 890.1150(e), if a home owner adds an additional to their residence that causes the existing service entrance to be upgraded that act alone will require the home owner to automatically remove all older parts of their domestic system not found documented in current Appendix A of the plumbing code regardless of if the downstream portions are safely working or part of initial project scope. Recommend further evaluation.

Response

Service line is a defined term and does not include the distribution plumbing in a building. The assertion made in the comment is incorrect. The Department has updated the proposed definition of “service line” in Section 890.120 for clarification.

Comment #114

Regarding proposed Section 890.2020(a), suggest “Part” be removed and replaced with “Section”.

Response

The Department has updated the language in Section 890.2020(a) has been amended to address this comment.

Comment #115

Regarding the proposed Section 890.2020(b), there is no hazard to the public if the water feature is properly segregated and not capable of producing aerosols in ambient air where patrons are located.

Response

The Department has updated the proposed language in Section 890.2020(b) to address this comment.

Comment #116

Object to the proposed Section 890.2020(c) citing professional experience in interactions with the Department's Swimming Facility Program including objections related to pre-qualified professionals and permitting process.

Response

This comment opportunity is for proposed changes to the Plumbing Code. The Department will be happy to discuss the commenters concerns with its Swimming Facility program, however, doing so in this forum is inappropriate.

Comment #117

Regarding proposed Section 890.2020(d) and (e) request criteria or parameters required for maintenance programs.

Response

The Department has updated the language in Section 890.2020(d) and (e).

Comment #118

Regarding proposed language in Section 890.2020(f) and (g), the proposed language is easily misinterpreted to prohibit water features totally outside (on a food service property, not inside it). Concerned that the text will be used to prohibit applications cited by photograph in submission.

Response

The Department has removed the proposed Section 890.2020(f). Subsection (g) contains the word "in" meaning inside, the Department disagrees that the proposed language will be easily misinterpreted.

Comment #119

Regarding Section 890.3000, object citing issues with the Swimming Facility Program and concerns regarding record keeping.

Response

The Department has removed the proposed Section 890.3000 from the rulemaking.

Comment #120

The following proposed terms are okay: "blackwater", "certified local health department", "cold water", "food establishment", "gray water harvesting system", "harvested water", "harvested water system", "lawn sprinkler system", "mixed water", "opportunistic pathogens", "rainwater harvesting system", "reclaimed water", "service line", "storm sewer", "storm water", "tempered water", "wastewater", "water softening equipment", and "water treatment equipment" or "water treatment technologies".

Response

The Department appreciates the commenter's concurrence.

The following comment was submitted by David Baxmeyer, President, Baxmeyer Construction, Inc.:

Comment #121

Would the proposed definition of “serve line” prevent us from installing water lines from the water main since we are not a licensed plumbing contractor?

Response

The proposed definition of “service line” is consistent with the definition of “plumbing” in the Illinois Plumbing License Law (225 ILCS 320). Water lines from *the main in the street* are plumbing defined as “water service” or “water service pipe” in the current Illinois Plumbing Code. The installation of plumbing requires licensure.

The following comment was provided by Adam Boris, Board of Trustee and Past Chairman, Norwegian American Hospital:

Comment #122

Why don’t you recommend point of use filters, ultra violet disinfection, or copper silver installation to control *Legionella*, all of which have no scalding risk nor do they result in the production of harmful byproducts, such as chlorine and its dioxide?

Response

The Department has updated the proposed definition of “hot water” in Section 890.120 to address concerns regarding scalding. The intent of the code is not to recommend or restrict methods to control *Legionella*, but to address design, installation, and operations practices recognized to contribute to the growth of opportunistic pathogens in plumbing systems.

The following comments were provided by James E. Dipping, Technical Director, Plumbing Engineering, Environmental Systems Design, Inc.:

Comment #123

Waterless urinals require significant maintenance to avoid foul smells and special waste and vent piping to avoid premature corrosion due to higher acidic level of waste stream. It is understood that the proposed change does require plumbing fixtures upstream of the waterless urinal to dilute the waste stream, however there is not a clear definition of how much water is required to be effective in the dilution process.

Response

The inclusion of 890.660(d) is intended to minimize concerns regarding the effect of waterless urinals on plumbing draining systems. As with any mechanical device, urinals of all types require maintenance in accordance with manufacturer’s recommendations and best practices. Building owners that choose the installation of waterless, hybrid, or conventional urinals should be made aware of maintenance requirements at the time of equipment selection.

Comment #124

The removal of air chambers will result in the use of water hammer arrestors which are more expensive and require access panels which also increase cost. Water hammer arrestors will increase system complexity.

Response

Over time air becomes dissolved rendering air chambers ineffective at protecting against water hammer and providing a dead end, promoting the growth of opportunistic pathogens. The Department recognizes that water hammer arrestors must be properly maintained to ensure efficacy for protection against water hammer. Therefore, the language of Section 890.1210 f) has been updated to permit the use of water hammer arrestors but require these devices to be accessible, as defined at Section 890.120, for maintenance.

Comment #125

No issue to the following proposed changes: elimination of galvanized steel piping from Section 890. Table A, removal of caulked joints, inclusion of standards to indicate minimum design requirements, and removal of decorative water features from food establishments and healthcare facilities.

Response

The Department appreciates the comment.

The following comment was provided by Dave Bender, President & CEO, American Council of Engineering Companies of Illinois:

Comment #126

Regarding proposed language in Subpart O, propose the inclusion of language to set limits on the size of the system that can be designed and installed by a plumber.

Response

Plumbing design has been and will continue to be the purview of those persons appropriately licensed and authorized pursuant to 225 ILCS 320/3. However, the Department has removed the referenced language to address other comments received.

Comment #127

Suggest making the collection method not part of the proposed rulemaking. The plumbers can be responsible from the storage point to the fixtures.

Response

The Department has removed the proposed Subpart O containing the referenced Sections from this rulemaking.

The following two comments were provided by Kathleen Fultz, Water Quality Association, Global Regulatory and Government Affairs Manager:

Comment #128

Request clarification of Section 890.610(a) to allow appliances built with certified components.

Response

The intent of the proposed changes is to require appliances to be tested and certified as an assembly not to allow for approval of assemblies of certified components. The Department does not consider certification of components to be equivalent to the certification of an appliance assembled of certified components, which has been tested and certified to perform a particular use or function.

Comment #129

Appendix A Table A lists standards for certification but does not currently list an agency approved by the Department or any ANSI accredited certification program. Recommend to reference ANSI's accreditation directory for product certification bodies to find ANSI-accredited certification programs to be added to Appendix A.

Response

The Department lists approved certification agencies in Appendix A of the current Illinois Plumbing Code.

The following comment was provided by Bob Taylor, Technical Services Manager, McWane Plumbing Group:

Comment #130

Regarding the proposed removal of lead/oakum as an approved joining method in Section 890.320, the joining method is only used for sanitary and storm water systems which is not consumed so it poses no threat to human consumption as the lead never touches the waste water directly.

Response

The Department has determined that the use of caulked joints present a health hazard to plumbers, plumbers' apprentices and their families and finds that there is sufficient risk to eliminate the use of this plumbing technique in Illinois. The National Institute for Occupational Safety and Health identifies plumbing as a job known to put workers at risk of lead exposure due to lead in plumbing materials. Additionally, lead can be taken home from the work place on clothes or in cars thus potentially exposing spouses and children. IDPH has evaluated safer joining methods including "no hub" and gasketed connections in place of caulked joints and finds no evidence that these alternatives cannot be implemented in place of a caulked joint.

The following comment was provided by David Parney, Executive Vice President, Cast Iron Soil Pipe Institute:

Comment #131

Regarding 890.210(k), suggest revising language to read "all plumbing materials used for potable water shall have lead level that meets the EPA and Illinois Lead Poisoning Prevention Act (410 ILCS 45) requirements" or "All plumbing materials for potable water shall not contain level that exceeds the allowed limits as defined within the Illinois Department of Health bulletin."

Response

The Department has updated the language in Section 890.210(k) to address this comment. Section 890.820 contains the definition of "lead free" consistent with Section 1417(a)(4)(A) and (B) of the Safe Drinking Water Act.

Comment #132

The proposed amendment to eliminate caulked joints goes beyond and eliminates caulked joints for drain waste and vent applications which are not used for potable water but used to convey waste water out of the building. The elimination of caulked joints would also cause issues with retrofit and repair of existing drain waste and vent caulked systems. All national plumbing codes and administrative codes in the United States allow caulked joints. OSHA has studied the use caulked joints and determined there is no safety or health concerns.

Response

The Department has determined that the use of caulked joints present a health hazard to plumbers, plumbers' apprentices and their families and finds that there is sufficient risk to eliminate the use of this plumbing technique in Illinois. The National Institute for Occupational Safety and Health identifies plumbing as a job known to put workers at risk of lead exposure due to lead in plumbing materials. Additionally, lead can be taken home from the work place on clothes or in cars thus potentially exposing spouses and children. IDPH has evaluated safer joining methods including "no hub" and gasketed connections in place of caulked joints and finds no evidence that these alternatives cannot be implemented in place of a caulked joint.

The following Julius Ballanco, President, JB Engineering and Code Consulting, P.C.

Comment#133

Regarding the proposed Section 890.2020 and the definition of "aesthetic water fixtures", decorative fountains and aesthetic water fixtures are not within the definition of plumbing.

Response

Per the Illinois Plumbing License Law (225 ILCS 320/2), "plumbing fixtures" *means installed receptacles, devices or appliances that are supplied with water or that receive or discharge liquids or liquid borne wastes, with or without discharge into the drainage system with which they may be directly or indirectly connected.* The Department is adding the definitions to clarify the implementation of the statute.

Comment #134

Regarding Section 890.740, states that the only part of plumbing that can be regulated is the water supply to and the discharge from hemodialysis equipment. Once the backflow preventer is installed, the downstream piping becomes piping for a medical system (not plumbing).

Response

The Department refers to the definition of "plumbing" and "plumbing fixtures" in Section 2 of the Illinois Plumbing License Law (225 ILCS 320). The Department has maintained regulation of all plumbing, including the entirety of the piping system, with respect to dialysis installations. It is in the best interest of the People of the State the Department continue to ensure the safety of this life-saving process.

Comment #135

Regarding Section 890.740, remarks that all reduced pressure principle backflow preventers are metallic. Furthermore, the treatment of water is downstream of the RPZ. Therefore, there is no concern with corrosion from the deionized water that is further cleaned by reverse osmosis.

Response

The Department worked extensively with the Association for the Advancement of Medical Instrumentation (AAMI) Renal Disease and Detoxification Committee and the Centers for Disease Control and Prevention (CDC) to develop the proposed language. It has been represented that AAMI and dialysis providers want only non-metallic back flow preventers installed in the subject facilities. It has been represented that AAMI and dialysis providers want only non-metallic back flow preventers installed in the subject facilities.

Comment #136

The proposed language of Section 890.2030 is not within the scope of the Plumbing Code.

Response

Section 1 of the Plumbing License Law provides for this Section to be included in the Plumbing Code. The proposed language in Section 890.2030 is intended to protect the safe and sanitary condition of the plumbing system and is appropriately placed.

Comment #137

Regarding the proposed definition of “single family dwelling” suggest correlating it with the definition used in the ICC International Building Code. Aware of litigation that involved attempts to define a single family dwelling as being used by one family.

Response

The Department has removed the proposed definition of “single family dwelling” in Section 890.120.

Comment #138

In reference to the removal of lead and oakum joints, it is the only joining method used in the City of Chicago for cast iron soil pipe. Just because lead is used in the joint does not mean that the public can get lead poisoning. These joints are hidden behind walls, floors, and ceilings. No child can eat the lead from a cast iron joint. The lead does not migrate to the breathing atmosphere.

Response

The Department has determined that the use of caulked joints present a health hazard to plumbers, plumbers’ apprentices and their families and finds that there is sufficient risk to eliminate the use of this plumbing technique in Illinois. The National Institute for Occupational Safety and Health identifies plumbing as a job known to put workers at risk of lead exposure due to lead in plumbing materials. Additionally, lead can be taken home from the work place on clothes or in cars thus potentially exposing spouses and children. IDPH has evaluated safer joining methods including “no hub” and gasketed connections in place of caulked joints and finds no evidence that these alternatives cannot be implemented in place of a caulked joint.

Comment #139

In reference to the proposed definition of “dead end” and language in Section 890.1130(h), these changes must not be accepted. This proposed change reflects the lack of understanding of most plumbing systems installed in used in Illinois. The proposed language would result in the elimination of indoor plumbing. At every time in the life of a plumbing fixture, pipe, tube, or appurtenance this is a low or now flow condition including new buildings, water lines for future use, commercial buildings, schools, and emergency fixtures. Asks how this would be regulated.

Response

The Department has updated the proposed definition of “dead end” in Section 890.120. All plumbing installations are required to be inspected by a licensed plumber in accordance with 890.1910.

The following comment was provided by Brian A. Perkovich, Executive Director, Metropolitan Water Recalation District of Greater Chicago:

Comment #140

The MWRD has no further edits or comments and appreciates the Department incorporating prior comments and edits.

Response

The Department appreciates the comment and support.

Matt Sigler provided the following comments:

Comment #141

Regarding the definition of “at-risk”, is it based on a universal definition or cited form a health authority such as the Centers for Disease Control and Prevention?

Response

The Department has removed the proposed definition “at-risk” from Section 890.120.

Comment #142

Regarding the definition for “building” or “facility” items that are not typically regulated under a building code are being regulated under the Illinois Plumbing Code with no technical jurisdiction. Recommend following terminology consistent with International Building Code.

Response

All of the items listed under the proposed definition of “building” or “facility” are regulated under the current Illinois Plumbing Code.

Comment #143

Regarding “cold water” recommends that an exact temperature be included in the definition.

Response

The Department had updated the proposed definition of “cold water” in Section 890.120. However, the Department does not intend to require water supplied to buildings to pass through a chiller to comply with the definition of cold water. There are numerous public water supplies throughout the state that supply water at temperatures exceeding 70 degrees in the summer months.

Comment #144

The industry standard “NSF 372 Drinking Water System Components – Lead Content” should be referenced in Section 890. Table A.

Response

The Department concurs and has updated the language in Section 890. Table A to address this comment.

Comment #145

In reference to the proposed definition of “dead end”, what does “persistent low” mean? Would a public lavatory that flows at 0.5 gallons per minute be considered to have a “persistent low” flow? Would an emergency shower or eye wash station be considered a “dead end” considering they are only used in emergencies?

Response

The Department has updated the proposed definition of “dead end” in Section 890.120 and removed the referenced term.

Comment #146

With the proposed definition for “existing plumbing” or “existing work” in Section 890.120, would building owners be required to update their plumbing systems in accordance with new code requirements being proposed?

Response

The Department has restored and updated the language of “existing plumbing or work” in Section 890.120 to address this comment.

The following comments were received from Dave Viola, Chief Operating Officer, IAPMO Group:

Comment #147

Regarding “at-risk” suggest revising language by striking “drinking” and revising to “building water system” and add definition “building water system” from ANSI/ASHRAE 188 Standard.

Response

The Department has removed the proposed definition of “at-risk” from Section 890.120.

Comment #148

Recommend adding “urinals” to the language in “blackwater”

Response

The Department has removed the proposed definition of “blackwater” from Section 890.120.

Comment #149

Recommends the definition for “building” be “Any structure utilized or intended for supporting or sheltering any occupancy”.

Response

The Department appreciates the comment, but feels the proposed definition provides the appropriate level of inclusion.

Comment #150

Recommends the definition for “facility” be “All or any portion of buildings, structures, site improvements, elements and pedestrian or vehicular routes located on site”.

Response

The Department appreciates the comment, but feels the proposed definition provides the appropriate level of inclusion.

Comment #151

Recommends the definition of “cold water” be “Water that has not passed through a water heater, has not been exposed to an external heat source, and has not been blended with tempered or hot water”.

Response

The Department has updated the proposed definition of “cold water” in Section 890.120.

Comment #152

Recommends the following definition for “dead end” (also known as “dead legs”): For the purposes of a building water system, means any pipe tube, fixture or plumbing appurtenance that is subject to stagnation or low flow conditions due to lack of use, construction or design, such as capped pipes, stagnant fire service lines , stagnant lawn irrigation service lines or unused or seldomly used fixtures. For the purpose of a building drain system, a pipe that is terminated at a developed distance of 2 feet or more by means of a plug or other closed fitting, except piping serving as a cleanout extension to an accessible area. (See Appendix J Illustration)

Response

The Department has updated the definition of “dead end” in Section 890.120.

Comment #153

Encourage the Department to address concerns pertaining to opportunistic pathogens in premise plumbing by adopting and enforcing the ASHRAE 188 Standard and guidance tools such as the CDC toolkit.

Response

The Department provides guidance and recommendations for control of *Legionella*, often citing the Center for Disease Control and Prevention’s Toolkit: Developing a Water Management Program to Reduce Legionella Growth and Spread in Building Water Systems and ASHRAE 188. However, at this time the Department has not incorporated any reference to these documents within the Plumbing Code. The Department refers to water management teams implementing water management programs to determine appropriate validation activities including testing for *Legionella pneumophila*.

Comment #154

ASSE 1017 devices should not be installed at the point of use. ASSE 1017 valves are permitted to be used for applications throughout the Illinois Plumbing Code (Section 890.1220). Therefore, the standard should not be deleted from Section 890. Table A.

Response

ASSE 1017 devices used alone do not provide thermal shock protection or adequate scald protection therefore the reference to ASSE 1017 has been removed from Section 890.690(b). However, based upon comments received the Department has restored the ASSE 1017-2009 standard in Appendix A.

Comment #155

Oppose the proposed change to remove master automatic safety water mixing devices for multi-unit and multi-person showers. The ASSE 1069 and ASSE 1017 devices have been proven effective for protecting individuals from scalding and cold shock when installed in accordance with intended uses.

Response

ASSE 1017 devices used alone do not provide thermal shock protection or adequate scald protection therefore the reference to ASSE 1017 has been removed from Section 890.690(b). However, based upon comments received the Department has restored the ASSE 1017-2009 standard in Appendix A. Additionally, it should be noted that the Department received comment from ASSE agreeing that the elimination of the ASSE 1017 device from the language of Section 890.690 is appropriate.

Comment #156

Section 890.1130 as written would not allow for the installation of emergency showers or eyewashes stations or other rarely used devices or fixtures, such as remote bathrooms in a warehouse, for example. Please take these installations into account.

Response

The Department has updated the language of Section 890.1130.

Comment #157

Urge the Department to review and adopt IAPMO's We-Stand 2017 Standard for adoption in relation to Section 890.3000 and 890.3010.

Response

The Department has removed the proposed Subpart O containing the referenced Sections from this rulemaking.

The following comments were provided by Conrad L. Jahrling, Staff Engineering Supervisor/Product Listing Coordinator, ASSE International:

Comment #158

ASSE agrees with the proposed change to remove ASSE 1017 from Section 890.690.

Response

The Department appreciates the comment.

Comment # 159

ASSE proposed the following language for Section 890.690,

The mixed water temperature shall be individually regulated by automatic safety mixing valves for each shower unit, or be controlled by an Automatic Temperature Control Mixing Valve. A water heater thermostat shall not be an acceptable alternative water control device.

Response The Department has updated the language contained within Section 890.690.

Comment #160

ASSE suggests it is the Department's best interests to reference the latest standards and provided recommendations.

Response

The Department has updated the referenced ASSE standards in Appendix A.

Comment #161

Oppose the new requirement in Section 890.740(f). It is overly restrictive to only require non-metallic RPZ's conforming to ASSE 1013. This eliminates most RPZ's that are currently available in the marketplace, even though it is common practice to coat the inside of the RPZ with epoxy for certain applications. This language would also eliminate RPZ's made with stainless steel components and bodies. Also, it is rare to find non-metallic springs used in check valve sub-assemblies.

Response

The Department worked extensively with the Association for the Advancement of Medical Instrumentation (AAMI) Renal Disease and Detoxification Committee and the Centers for Disease Control and Prevention (CDC) to develop the proposed language. It has been represented that AAMI and dialysis providers want only non-metallic back flow preventers installed in the subject facilities.

Comment #162

ASSE suggests Section 890.1210 read as follows:

- f) Water Hammer Prevention. Building water distribution piping shall be installed in a manner that reduced the occurrence of water hammer. Water distribution systems with fast acting or solenoid-operated valves shall be equipped with approved mechanical devices or water hammer arresters, installed in accordance with the manufacturer's instructions. Air chambers and fixtures that create a dead leg or allow water to stagnate are prohibited. When water hammer occurs in a water distribution system, the building owner shall cause the installation of approved mechanical devices or water hammer arresters necessary to eliminate water hammer.

Response

The Department has evaluated water hammer control in plumbing systems and finds that appropriate and judicious placement of mechanical devices or water hammer arrestors will achieve the same functionality and better water quality than the prolific use of air chambers. Over time air becomes dissolved rendering the air chamber ineffective at protecting against water hammer and providing a dead end, promoting the growth of opportunistic pathogens. The Department is not aware of any studies linking water hammer arrestors to *Legionella* or other opportunistic pathogens. However, the Department recognizes that water hammer arrestors must be properly maintained to ensure efficacy for protection against water hammer. Therefore, the language of Section 890.1210 f) has been updated to permit the use of water hammer arrestors but require these devices to be accessible, as defined at Section 890.120, for maintenance.

The following comment was provided by Christopher Tjon:

Comment #163

Regarding Section 890.610 suggests removing "for efficacy in achieving its listed use and purpose".

Response

Plumbing fixtures, appliances and appurtenances are expected to provide safe and hygienic service for their intended purpose(s). If a fixture, appliance or appurtenance is not effective in achieving its listed use and purpose, its installation should not be allowed.

The following comment was provided by Jeffrey Minalga, Director, Global Alliance for Patient & Public Safety:

Comment #164

Requests withdrawal of the proposed rulemaking from first notice stating that the Department did not provide notice of the scope and impact of the proposed rulemaking at the outset of the proceeding as required by the Illinois Administrative Procedures Act (5 ILCS 100/5).

Response

The Department complied fully with the requirements of the Administrative Procedures Act.

The following comments were provided by Judith Frydland, Department of Buildings, City of Chicago:

Comment #165

Regarding the prohibition of lead in plumbing applications, states that currently model plumbing codes do not prohibit lead as it is still recognized as appropriate for some applications. Prohibition may have unintended consequence of making water and waste systems less safe (or more difficult and costlier to maintain).

Response

The Department, USEPA, CDC and other nationally recognized experts in the areas of water supply and lead poisoning have concluded that lead significantly impacts children by causing irreversible damage to developing brains and bodies. The use of lead in potable water systems has been effectively prohibited by USEPA, wherein the presence of lead in the wetted surface of any new plumbing system is limited to 0.025% lead by weight. There are sufficient plumbing materials that are lead free to accommodate any installations of required potable water plumbing in Illinois. The Department's elimination of lead from waste systems is contemplated to eliminate the exposure of plumbers and their families to the dangerous health effects of lead. The Department has determined that the use of caulked joints present a health hazard to plumbers, plumbers' apprentices and their families and finds that there is sufficient risk to eliminate the use of this plumbing technique in Illinois. The National Institute for Occupational Safety and Health identifies plumbing as a job known to put workers at risk of lead exposure due to lead in plumbing materials. Additionally, lead can be taken home from the work place on clothes or in cars thus potentially exposing spouses and children. IDPH has evaluated safer joining methods including "no hub" and gasketed connections in place of caulked joints and finds no evidence that these alternatives cannot be implemented in place of a caulked joint. The Department and the State of Illinois looks to lead the nation with its prevention policies aimed at eliminating childhood lead poisoning in Chicago and the rest of the state.

Comment #166

Dead ends are used to provide for future plumbing fixtures at time of construction. Earlier prohibitions on dead ends were removed from the model plumbing codes because of their recognized widespread use and economic benefit in construction.

Response

The Department recognizes that the installation of dead ends for future use is a common industry practice and in some cases may be necessary. However, dead ends, regardless of purpose, result in the presence of

stagnant water which can contribute to the growth of opportunistic pathogens. Therefore, the Department has updated the language contained in Section 890.1130 h) to address both of these concerns.

Comment #167

Appendix A does not contain a list of approved testing agencies.

Response

The Department provides approved testing agencies in Appendix A of the current Illinois Plumbing Code.

Comment #168

The proposed rules on rainwater, stormwater, graywater, blackwater and other harvested water proposed in Subpart O are based on standards that do not appear to have been adopted yet by any jurisdiction. There are reportedly 2 competing national standard-setting proposes on this subject that need to be further explored.

Response

The Department has removed the proposed Subpart O containing the referenced Sections from this rulemaking.

Comment #169

The proposed definition of “service line” is unclear. Does it end at “any building” or at “any building...plumbing fixtures”?

Response

The Department has updated the proposed definition of “service line” in Section 890.120.

Comment #170

Proposed recognition of “individuals certified in plumbing design” but not licensed by IDFPR as professional engineers in 890.1150(f)(2) potentially violates the Professional Engineering Act of 1989 (225 ILCS 325) and threatens public safety.

Response

Section 3 of the Plumbing Licensing Law provides for those persons authorized to design plumbing in Illinois. The Plumbing License Law is not preempted by the Professional Engineering Act.

Comment #171

Proposed Section 890.2020(f) would ban decorative fountains and aesthetic water features in food establishments. There does not appear to be any other U.S. jurisdiction that has such a prohibition and technical basis is unclear.

Response

The basis for this prohibition is rooted in the inherent dangers associated with decorative fountains and aesthetic water fixtures. Decorative fountains have repeatedly been implicated in disease outbreaks by the CDC and Departments of Public Health. Such installations are not necessary and provide no functional benefit to the safe and hygienic operation of a food establishment.

Comment #172

Encourage the Department to withdraw the current proposal and fully engage with stakeholders before proceeding with any amendment.

Response

The Department has followed the requirements of the APA and provided more than 45 days for the public to comment and has provided responses to all comments received, there is no impetus for the Department to withdraw its proposed rule.

The following comments were provided by Chris Ebener, Director of Engineering, Liquitech:

Comment #173

Regarding Section 890.610, concerned that the use of efficacy produces a non-viable regulatory burden. In the case of Legionella and other opportunistic pathogens, the only agency that registers products to make efficacy claims against these organisms is the US EPA Office of Pesticides under FIFRA. Suggest including the US EPA FIFRA registration database as an approved registration for efficacy claims or remove the word “efficacy” from the proposed language.

Response

Plumbing fixtures, appliances and appurtenances are expected to provide safe and hygienic service for their intended purpose(s). If a fixture, appliance or appurtenance is not effective in achieving its listed use and purpose, its installation should not be allowed.

Comment #174

In Section 890.1150, by requiring all “downstream” components to conform with Appendix A there is a concern that create opportunities for cost prohibitive scope increase for businesses seeking to make critical repairs or execute emergency interventions.

Response

The Department considered studies which indicate that the partial replacement of lead service lines increase the lead levels in drinking water (Del Toral, Porter, Schock, 2013). There is no known safe level of lead exposure and the Department is mandated to protect children, pregnant persons, and the public from exposure to lead. It would be inconsistent with the Department’s core mission, which is to protect public health, to require otherwise. The Department has modified the language contained within Section 890.1150 e) to limit the prohibition of partial service line replacement to service lines constructed of lead or galvanized steel. The Department recognizes various factors may interfere with the ability to complete a full service line replacement at the time of repair, and that point of use filters certified to comply with NSF/ANSI 53 and 42 may reduce potential lead exposures when installed and maintained in accordance with manufacturer’s specifications. Therefore, the Department has revised the language contained within Section 890.1150 e) to provide conditional exceptions for emergency repairs and in certain cases an allowance for submission of a waiver. Additionally, a definition of emergency repair has been added to Section 890.120.

The requirement to replace galvanized steel pipe with approved materials in lieu of a repair, is the Department’s recognition that galvanized steel pipe has been shown to leach lead into water even years after all upstream sources of lead plumbing materials have been removed. Studies (N. Clark, Brandi & Masters, Sheldon & A. Edwards, Marc, 2015) have attributed this to both the zinc coating used for galvanizing and lead deposited on the pipe surface from upstream plumbing materials containing lead.

Furthermore, the concentration of lead in water attributed to galvanized steel pipe has been shown to be exacerbated by partial service line replacement. Most municipalities have not maintained historical records noting service line materials, making it difficult to confirm whether lead plumbing materials were historically located upstream of the galvanized piping. Therefore, the Department believes it is appropriate and necessary to prohibit partial service line replacements when a service line contains lead or galvanized steel plumbing materials.

The following comment was provided by Dirk Huebner, President, Huebner Landscaping, Inc.:

Comment #175

The changes proposed in the rulemaking would have a negative impact on his business. Water is the enemy of hardscaping and requires collecting and moving water. I don't understand why a plumber would have to handle it if the water was reused. It's no different from work done for 20 years. Why shouldn't we be able to do it?

Response

The Department has removed the proposed Subpart O from this rulemaking.

The following comment was received from Bryan C. Ahee, Operations Leader, Intellihot, Inc.,

Comment#176

A subset of the water heater market has been able to control their output temperature precisely enough such that there is no need for redundant downstream mixing valves. These products are capable of controlling water temperature within the tolerances of ASSE 1017 and 1070 standards. Recommends referencing ASSE 1082, ASSE 1084, and ASSE 1085 to optimize plumbing designs.

Response ASSE Standards 1082, 1084 and 1085 were released in February 2019. At this time the Department does not intend to incorporate these standards into the Plumbing Code. However, the Department will request a representative of ASSE to present these standards to the Plumbing Code Advisory Council for their consideration.

The following comments were submitted by John Donahue, Water Utility Council, Vice Chair and Kevin R. Burns, Mayor, City of Geneva:

Comment #177

Is the term "dead end" solely related to building water distribution systems or is it intended to include water distribution systems under the direct purview of the public water supply? Request clarification to whether references to "water distribution system" is to building water distribution systems or public water supply distribution systems.

Response

The term "dead end" refers to plumbing as defined by the Illinois Plumbing License Law and Illinois Plumbing Code. Water distribution system is also defined by the current Plumbing Code in Section 890.120 and its use in the proposed rule is ascribed to that definition only.

Comment #178

ISAWAA is supportive of the IDPH position that partial lead service line replacements should be avoided, but strongly oppose the general requirement in the language of Section 890.1150. The general requirement

does not address the many issues associated with complete water service line replacement no matter the pipe material including public/private ownership, emergency repairs, and cost.

Response

The Department considered studies which indicate that the partial replacement of lead service lines increase the lead levels in drinking water (Del Toral, Porter, Schock, 2013). There is no known safe level of lead exposure and the Department is mandated to protect children, pregnant persons, and the public from exposure to lead. It would be inconsistent with the Department's core mission, which is to protect public health, to require otherwise. The Department has modified the language contained within Section 890.1150 e) to limit the prohibition of partial service line replacement to service lines constructed of lead or galvanized steel. The Department recognizes various factors may interfere with the ability to complete a full service line replacement at the time of repair, and that point of use filters certified to comply with NSF/ANSI 53 and 42 may reduce potential lead exposures when installed and maintained in accordance with manufacturer's specifications. Therefore, the Department has revised the language contained within Section 890.1150 e) to provide conditional exceptions for emergency repairs and in certain cases an allowance for submission of a waiver. Additionally, a definition of emergency repair has been added to Section 890.120.

The requirement to replace galvanized steel pipe with approved materials in lieu of a repair, is the Department's recognition that galvanized steel pipe has been shown to leach lead into water even years after all upstream sources of lead plumbing materials have been removed. Studies (N. Clark, Brandi & Masters, Sheldon & A. Edwards, Marc, 2015) have attributed this to both the zinc coating used for galvanizing and lead deposited on the pipe surface from upstream plumbing materials containing lead. Furthermore, the concentration of lead in water attributed to galvanized steel pipe has been shown to be exacerbated by partial service line replacement. Most municipalities have not maintained historical records noting service line materials, making it difficult to confirm whether lead plumbing materials were historically located upstream of the galvanized piping. Therefore, the Department believes it is appropriate and necessary to prohibit partial service line replacements when a service line contains lead or galvanized steel plumbing materials.

Comment #179

In reference to Section 890.2010, ISAWWA would like clarification if these facilities are required to have a professional water operator certified by IEPA. ISAWWA believes any institution that modifies the chemistry of the drinking water delivered to them from a public/private water system supervised by a certified professional water operator should be required to conform to the same operator certification requirements.

Response

The intent of the proposed language is to require that building owners comply with the requirements of the Drinking Water Systems Code and Environmental Protection Act as applicable. Compliance with those regulations include requirements that systems be operated by IDPH or IEPA certified professional water operators.

Comment #180

Recommend Section 890.2030(2)(b) to read: "Contact the water supplier to obtain data on the potable water supply quality including disinfectant level in the general location of the facility."

Response

The Department agrees and has updated the language in Section 890.2030(2)(B).

The following comments were provided by Haemi Pollett, Codes Manager, Uponor North America:

Comment #181

Please include the following “C) Cross Linked Polyethylene pipe (PEX) and fittings shall be installed in accordance with the manufacturer’s installation instructions (see Appendix A. Table A, “Approved Materials for Water Distribution Piping”

Response

The Department concurs and has amended Section 890.230 of the proposed rule to include the suggested language.

Comment #182

There is a code change proposal to IPC to include reference to ASHRAE 188-2015. Consider including reference to ASHRAE 188 as guidance for water management practices to control Legionella. Do not include (d) in Section 890.610 unless maximum temperature is changed from 160 degrees to 140 degrees.

Response

The Department provides guidance and recommendations for control of *Legionella*, often citing the Center for Disease Control and Prevention’s Toolkit: Developing a Water Management Program to Reduce Legionella Growth and Spread in Building Water Systems and ASHRAE 188. However, at this time the Department has not incorporated any reference to these documents within the Plumbing Code. The Department has revised the definition of “hot water” in Section 890.120 and the language regarding hot water distribution in Section 890.610. The definition of “hot water” has been revised for second notice to have a minimum temperature of 124 degrees Fahrenheit to address concerns regarding scalding. This value was selected based on review of the US Department of Veterans Affairs’ Veterans Health Administration Directive 1061 which establishes 124 degrees as a minimum hot water distribution temperature to inhibit *Legionella* growth in building hot water systems.

Comment #183

Propose Section 890.1210(b) “Exception: As an alternative to using Table M, N, O, P and Q to design and size the piping in the water distribution system, the system may be designed and sized employing current engineering practices based on the published instructions from manufacturers. Absence of manufacturer’s instructions, provided the design/plans are approved in writing by an Illinois licensed professional engineer, an Illinois licensed architect or an individual Certified in Plumbing Design (CPD) by the American Society of Plumbing Engineers and approved in writing by the Department.

Response

The Department agrees and has updated language in Section 890.1210(b) to reference manufacturer’s instructions and specifications.

Comment #184

Flexible plastic piping system may not need to have the same restrictions on installation of water hammer as rigid plastic and/or metallic pipes. Propose: “f) When the design and or use of alternative materials per

the manufacturer's instructions reduce the possibility of water hammer the hammer arrestor may be excluded from all fixtures with exception to the following fixture terminations which may incorporate automatic quick closing valves: 1) clothing washing machines 2) dish washing machines 3) refrigerators 4) any fixture or termination utilizing a quick closing automatic solenoid valve 4) any occurrence of water hammer where peak surge pressures exceed 250 psi."

Response

The Department concurs and has amended Section 890.1210 (f) of the proposed rule.

Comment #185

Include Cross Linked Polyethylene Pipe and Joints consistent with "Approved Materials for Water Distribution Pipe". Propose: "5) Cross Linked Polyethylene ASTM F876-2017, AWWA C904-2018 Distribution Systems ASTM F877-2017 Joints ASTM F1960-2019."

Response

The Department concurs and has amended the standards contained within Appendix A Table A.

The following comments were provided by Joseph Mondia:

Comment #186

Object to the repeal of 890. Illustration A.

Response

The removal of the illustration aligns with the Department's goal to remove lead caulked joints from the plumbing code. The Department has determined that the use of caulked joints present a health hazard to plumbers, plumbers' apprentices and their families and finds that there is sufficient risk to eliminate the use of this plumbing technique in Illinois. The National Institute for Occupational Safety and Health identifies plumbing as a job known to put workers at risk of lead exposure due to lead in plumbing materials. Additionally, lead can be taken home from the work place on clothes or in cars thus potentially exposing spouses and children. IDPH has evaluated safer joining methods including "no hub" and gasketed connections in place of caulked joints and finds no evidence that these alternatives cannot be implemented in place of a caulked joint.

Comment #187

Object to striking the temperature description of "cold water".

Response

The Department has updated the proposed definition of "cold water" in Section 890.120. However, the Department does not intend to require all water supplied to buildings to pass through a chiller to comply with the definition of cold water. Therefore, the proposed language more adequately addresses the Department's intent.

Comment #188

Caulked joints must remain in the plumbing code.

Response

The Department has determined that the use of caulked joints present a health hazard to plumbers, plumbers' apprentices and their families and finds that there is sufficient risk to eliminate the use of this plumbing technique in Illinois. The National Institute for Occupational Safety and Health identifies plumbing as a job known to put workers at risk of lead exposure due to lead in plumbing materials. Additionally, lead can be taken home from the work place on clothes or in cars thus potentially exposing spouses and children. IDPH has evaluated safer joining methods including "no hub" and gasketed connections in place of caulked joints and finds no evidence that these alternatives cannot be implemented in place of a caulked joint.

Comment #189

Galvanized steel pipe must not be removed from the plumbing code. Grooved type mechanical couplings-galvanized steel pipe must remain as an approved material for cut and rolled groove applications.

Response

The Department has determined that the utility of galvanized pipe is outweighed by its propensity to occlude and corrode, thereby restricting flow, causing leaks, and providing points of harborage for opportunistic pathogens. Galvanized pipes also provide a source of iron which allow the growth of *Legionella* in biofilms. Additionally, when downstream of lead plumbing materials, lead is deposited on the surface of galvanized pipe which can continue to leach into drinking water even years after lead plumbing materials are removed. The Department has determined that approved, alternative materials in Appendix A are suitable to address the limited remaining use of galvanized pipe in plumbing systems.

Comment #190

Object to nonwater urinals being added to Section 890.660.

Response

The Department was directed by statute to evaluate methods to conserve water and increase water efficiency. The use of waterless urinals accomplish that end and the Department is not aware of any public health concerns resulting from the installation or use of waterless urinals. The proposed language included in Section 890.660 is intended to minimize concerns regarding the effect of waterless urinals on plumbing waste systems.

Comment #191

Object to air chambers being removed from the plumbing code.

Response

The Department has evaluated water hammer control in plumbing systems and finds that appropriate and judicious placement of mechanical devices or water hammer arrestors will achieve the same functionality and better water quality than the prolific use of air chambers. Over time air becomes dissolved rendering the air chamber ineffective at protecting against water hammer and providing a dead end, promoting the growth of opportunistic pathogens. The Department is not aware of any studies linking water hammer arrestors to *Legionella* or other opportunistic pathogens. However, the Department recognizes that water hammer arrestors must be properly maintained to ensure efficacy for protection against water hammer. Therefore, the language of Section 890.1210 (f) has been updated to permit the use of water hammer arrestors but require these devices to be accessible, as defined at Section 890.120, for maintenance.

Comment #192

Section 890.3000 needs additional description “installed and maintained by a licensed plumber”.

Response

The Department has removed the proposed Section 890.3000 from the rulemaking.

The following comment was provided by Kevin Semlow, Director State Legislation, Illinois Farm Bureau:

Comment #193

It appears there may be an inadvertent impact on agriculture including livestock watering and manure management, agriculture drainage systems, and irrigation of farm land. Subpart O includes language that applies to single family dwellings, multifamily dwellings and non-residential buildings. A specific exemption for livestock facilities in this areas would add clarity.

Response

The Department has removed the proposed Section 890.3000 from the rulemaking.

The following comments were provided by P. Sean Michels, Metro West Board President:

Comment #194

Suggest distinction in the definition of “dead end” regarding the term “water distribution system”. Suggest striking “water distribution system” in the proposed definition and amending it to “water service”. Additionally suggest adding a definition for “water main”. Propose the following “A water supply pipe for public or community use, permitted by the Illinois Environmental Protection Agency”.

Response

The terminology used within the Code applies to “plumbing” as defined by the Illinois Plumbing License Law (225 ILCS 320). The Department has updated the definition of “dead end” in Section 890.120 to address this comment.

Comment #195

Feel that measured operational flexibility and additional implementation tools will be needed to effectively implement the requirement of Section 890.1150(e) due to challenges such as service line ownership and logistics in emergency repair.

Additionally, by requiring removal of any material not currently approved for service would require replacement of galvanized pipe service line.

Response

The Department considered studies which indicate that the partial replacement of lead service lines increase the lead levels in drinking water (Del Toral, Porter, Schock, 2013). There is no known safe level of lead exposure and the Department is mandated to protect children, pregnant persons, and the public from exposure to lead. It would be inconsistent with the Department’s core mission, which is to protect public health, to require otherwise. The Department has modified the language contained within Section 890.1150 e) to limit the prohibition of partial service line replacement to service lines constructed of lead or

galvanized steel. The Department recognizes various factors may interfere with the ability to complete a full service line replacement at the time of repair, and that point of use filters certified to comply with NSF/ANSI 53 and 42 may reduce potential lead exposures when installed and maintained in accordance with manufacturer's specifications. Therefore, the Department has revised the language contained within Section 890.1150 e) to provide conditional exceptions for emergency repairs and in certain cases an allowance for submission of a waiver. Additionally, a definition of emergency repair has been added to Section 890.120.

The requirement to replace galvanized steel pipe with approved materials in lieu of a repair, is the Department's recognition that galvanized steel pipe has been shown to leach lead into water even years after all upstream sources of lead plumbing materials have been removed. Studies (N. Clark, Brandi & Masters, Sheldon & A. Edwards, Marc, 2015) have attributed this to both the zinc coating used for galvanizing and lead deposited on the pipe surface from upstream plumbing materials containing lead. Furthermore, the concentration of lead in water attributed to galvanized steel pipe has been shown to be exacerbated by partial service line replacement. Most municipalities have not maintained historical records noting service line materials, making it difficult to confirm whether lead plumbing materials were historically located upstream of the galvanized piping. Therefore, the Department believes it is appropriate and necessary to prohibit partial service line replacements when a service line contains lead or galvanized steel plumbing materials.

Comment #196

Please clarify that Section 890.2020 will not apply to exterior decorative fountains and aesthetic water fixtures.

Response

Exterior decorative fountains and aesthetic water fixtures also possess a similar risk to transmit *Legionella* to passerby. Therefore, 890.2020 is intended to apply to both interior and exterior decorative fountains and aesthetic water fixtures

The following comment was provided by Tory Schira, COO, LiquiTech:

Comment #197

As proposed, the language of Section 890.610 gives the Department a blank slate to make standardless determinations and provides no guidance to affected persons as to the criteria under which their plumbing appliance, appurtenance, or fixture may not be used in Illinois. Standardless administrative decision making is not allowed under the Illinois Procedures Act (ILCS 100/5/5-20).

Response

The installation of plumbing that does not conform to a recognized standard or demonstrate efficacy in its intended use may result in negative health consequences for the using public. Section 890.610(a) does not allow for "standardless administrative decision making" as it specifically states, "...Any appliance that amends or alters potable water in a plumbing system shall be certified by one or more agencies listed in Appendix A for efficacy in achieving its listed use and purpose...." Therefore, an individual or corporation that has manufactured a plumbing appliance, may get their product certified to an approved standard by the agencies listed in Appendix A, and the Department will recognize such a device as approved in accordance with the Plumbing Code. The remaining language of this Section allows for a regulatory pathway for Department approval of devices when there is no suitable standard for certification of a product.

The following comment was provided by the Dispensing Equipment Alliance:

Comment #198

Requests a review of Section 890.1140(h)(1)(b) to see if it is a cost-effective measure to protect the water source and the health and safety of the citizens of Illinois. Recommends language from Section 609.14.8 of the 2018 International Plumbing Code be used.

Response

The Department is not proposing amendments related to chemical dispensing units at this time, but will consider this comment in future rulemakings.

The following comments were provided by Margaret Vaughn, Government Affairs, Illinois Council of Code Administrators:

Comment #199

If fire hydrants cannot be more than 2' from the water main it will require a water loop for numerous fire hydrants which will be cost prohibitive.

Response

The proposed rule does not require fire hydrants to be located within 2' of a water main as several options are prescribed within Section 890.1150.

Comment #200

For a combined water service, for a large office warehouse, it could require an 8" water main of approximately 100', a domestic service of only 1" due to 4 office employees and only 4 warehouse employees. Due to low domestic water consumption there will be stagnant water to the lavatory and any break room sink faucet in use, which could lead to contamination.

Response

The Department has updated the proposed language in Section 890.1150(e) to address this comment.

Comment #201

If broken lead services cannot be repaired and need to be replaced with approved materials, what should be done when there is not an existing 10' separation between the water service and sanitary service?

Response

The rule provides for alternative installation methods in Section 890.1150 when required separation distances cannot be achieved.

Comment #202

We feel that IDPH also violated 20 ILCS 3105/19(b) by not notifying the Capital Development Board with a summary of proposed changes 30 days prior filing the Secretary of State's Office. The fact that this law was disregarded, coupled with the fact that the Rules were filed during the Christmas holiday week, could give the perception that IDPH did not want the public readily aware of proposed changes.

Response

The Department did provide proper notice to the Capital Development Board of the proposed changes on January 7, 2019. The comment period was extended to accommodate any parties relying on the Board's website for information concerning this proposed rulemaking. The Secretary of State, not the Department, determines the publication date of proposed rulemakings.

The following comments were provided by Edward LaBelle, Crawford, Murphy, & Tilly:

Comment #203

Regarding Section 890.1150, if it is the intent to apply the new regulation to fire hydrants on a water distribution system, why create this regulation and apply it to fire hydrants on the distribution system? Is the Department of Public Health aware of any public health case which has been scientifically or logically related to the length of a fire hydrant pipe? If not, this regulation would impose a huge additional cost to the construction of water distribution systems without a corresponding benefit.

Response

It is well documented that points of stagnation can contribute to the growth of opportunistic pathogens. Therefore, the infrequent and intermittent use of emergency fixtures such as fire hydrants result in the presence of stagnant water on plumbing serving these fixtures. However, the Department recognizes that site conditions may dictate lead length. It is the Department's goal to minimize the presence of stagnant water on distribution systems, but specifically to reduce the amount of stagnant water commingling with potable distribution systems. The Department finds it necessary to allow for flexibility based on the presence of physical barriers at these sites and has updated the language contained in Section 890.1150(f) accordingly. Additionally, the Department has updated the definition of "dead end" contained at Section 890.120.

Comment #204

Regarding Section 890.1150, under the definition of "water service pipe" in Section 890.120 a pipe for a fire hydrant does not continue to a building and Section 890.1150(f) cannot be applied.

Response

The Department has updated the definition of "water service pipe" in Section 890.120.

Comment #205

The requirement to install a backflow preventer on a hydrant within two diameters of the water main is not feasible in most circumstances. In new construction, a new water main could be located further from the roadway into an area where a backflow preventer could be installed safely, but this will greatly limit the areas for water mains within right of way.

IDPH should consider alternatives to an approved backflow device.

Response

The Department has updated the proposed language in Section 890.1150(f) to address this comment. In addition, this Section provides multiple options for compliance.

The following comment was provided by Josh Ellis, Metropolitan Planning Council:

Comment #206

The Metropolitan Planning Council is pleased to see so much positive action being taken in regard to full lead service line removal, as well as to the proposed modernizations of the code to more fully enable safe reuse of nonpotable water.

Response

The Department appreciates the comment and support.

The following comments were provided by Mike Waldinger, Hon. American Institute of Architects (AIA), Executive Vice President:

Comment #207

Suggest after adoption of new regulations, a reasonable time period of at least 180 days should be allowed for design professionals to use the most recent code or the newly adopted code.

Response

The Department intends to delay the effective date to April 1, 2020.

Comment #208

Favor the adoption of the rainwater and graywater harvesting standards being adopted, but are uncertain in how effectively they will be incorporated into the plumbing code without accompanying language from companion codes. Seek affirmation that the people who have designed plans and specifications under other aspects of the plumbing code will be the same persons qualified under the new harvested water systems. Specifically refer to Section 890.3000(b) and 890.3010(b) and the ability of licensed architects and engineers to do this work.

Response

Section 3 of the Plumbing License Law (225 ILCS 320) provides for those persons who may design plumbing in Illinois including licensed architects and engineers. The Department has removed the referenced proposed Sections from the proposed rulemaking.

Comment #209

The “at-risk” definition appears extremely broad. As the Department to consider applying the higher water temperature requirement and “at-risk” person to those in facilities subject to the Ambulatory Surgical Treatment Center Act, Hospital Licensing Act, Nursing Home Care Act, Assisted Living and Shared Housing Act, and Community Mental Health Act. Additionally ask for consideration of making alternative methods available to designers such as increasing flow rate, insulation of plumbing, controlled treatment, reduced plumbing runs, shorter recirculation loops, water heaters placed closer to the source, and the like.

Response

The Department has removed all Sections referencing “at-risk” including the proposed definition of “at-risk” from Section 890.120. The Department has revised the definition of “hot water” in Section 890.120 and the language regarding hot water distribution in Section 890.610. The definition of “hot water” has been revised for second notice to have a minimum temperature of 124 degrees Fahrenheit to address concerns regarding scalding. This value was selected based on review of the US Department of Veterans Affairs’ Veterans Health Administration Directive 1061 which establishes 124 degrees as a minimum hot water distribution temperature to inhibit *Legionella* growth in building hot water systems.

The following comment was provided by Kenneth De Muth, AIA, Partner, Pappageorge Haymes Partners:

Comment #210

With respect to “dead ends”, language could propose elimination of dead ends to the greatest extent possible allowing the following exceptions: required water hammer shock arrestors at faucets, piping serving required fire protection piping systems when fitted with compliant back flow prevention devices installed in accordance with applicable requirements, piping to boiler refeed systems when fitted with compliant back flow prevention devices installed in accordance with applicable requirements, service branches to hose bibs and irrigation systems when fitted with compliant back flow prevention devices, and appliances with approved built-in back flow prevention devices.

Response

The Department recognizes there are numerous fixtures and installations which may necessarily result in functional dead ends. However, dead ends, regardless of purpose, result in the presence of stagnant water which can contribute to the growth of opportunistic pathogens. Therefore, the Department has updated the language contained in Section 890.1130 h) to address these concerns. The definition of “dead end” has also been updated accordingly.

The following comment was provided by Lindsay McCormick, Tom Neltner, and Anne McKibbin, Environmental Defense Fund and Elevate Energy:

Comment #211

The provision in Section 890.1150 effectively requires full replacement of lead service lines where partials are currently conducted. As a result, the public will not be exposed to increased levels of lead in drinking water associated with this type of disturbance. We applaud Illinois for proposing this important change. Further, we support Illinois’ proposed amendment to remove galvanized steel as an approved material for water service pipes as galvanized steel can trap lead in its zinc coating from other sources and release lead into the drinking water over time.

Response

The Department appreciates the comment and support. The Department would like to point out, that based upon other comments received, the Department has revised the language contained within Section 890.1150 e) to provide conditional exceptions for emergency repairs and in certain cases an allowance for submission of a waiver. Additionally, a definition of emergency repair has been added to Section 890.120.

The following comment was provided by Gary Howard, Illinois Plumbing Inspectors Association:

Comment #212

Recommend adoption of the 2015 IAPMO Green Plumbing and Mechanical Code Supplement and IAPMO/ANSI We Stand 2017. These codes and standards are written to be more in-line with United States Codes and Training.

Response

The Department has removed the proposed Subpart O from this rulemaking. Therefore, the Department does not intend to incorporate the noted references at this time.

The following comment was provided by Ron Tabaczynski, Director of Government Affairs, Building Owners and Managers Association of Chicago:

Comment #213

BOMA/Chicago believes that provisions of the rule that seek to address public health concerns associated with lead and waterborne pathogens, have not had proper consideration with regards to cost, practicality or impact.

Response

Foremost the Department is mandated to protect public health, in specific children from lead poisoning and veterans and elderly from pathogens like *Legionella*. The value of the lives of those citizens affected by the mentioned health threats and more are incomparably high versus the incremental costs of compliance with the proposed rule. The replacement of aging water infrastructure in buildings will improve the value of the building and the health of its occupants.

The following comments were provided by Scott Grams, Executive Director, Illinois Landscape Contractors Association:

Comment #214

“End user” is not dealt with specifically and should be defined.

Response

The Department has removed the proposed Subpart O from this rulemaking, therefore “end user” will not be defined.

Comment #215

Further language is needed as it is very broad in its interpretation of supply and distribution to and from rain harvested systems. To create a divide between collection and storage and distribution/delivery suggest the following language: “A rainwater harvesting collection and storage system is a system for the capture, diversion, and storage of rainwater and consists of a cistern(s), pipe, fittings, and appurtenances required for or used to harvest rainwater for non-potable purposes. This system consists of pumps, pipe, fittings or other plumbing appurtenances and must be constructed in accordance with the Illinois Plumbing Code. Plumbing does not include the installation, repair, maintenance, alteration, or extension of rainwater harvesting collection and storage systems.”

Response

The Department has removed all proposed Sections regarding harvested water.

Comment #216

ILCA wants to make sure that landscape contractors can continue to install cisterns and tanks need for rainwater harvesting and storage systems. Typically, land scape and irrigation contractors install the collection and storage systems and plumbers and irrigation contractors hook them up to distribution systems.

Response

The Department has removed all proposed Sections regarding harvested water. The Illinois Plumbing License Law (225 ILCS 320/), defines “plumbing” and describes which individuals can perform such work.

Comment #217

Impress that “storage” be added to the definition of “collection”. Water is collected and can be stored for a period of time before use. Only use the term “collection” implies that water is immediately transported through the distribution system.

Response

The Department has removed all proposed Sections regarding harvested water.

The following comments were provided by Mike McGaughan, Plumbing Inspector:

Comment #218

Would like to see the following in the new code book: standards for grease interceptors, temperature limit on bidets and personal hygiene devices, specific backflow requirements on personal hygiene devices, and a page number on the bottom right of each page of code book.

Response

The Department did not evaluate these topics for the proposed rulemaking. However, the Department will discuss these recommendations with the Plumbing Code Advisory Council for their consideration for a future rulemaking.

Comment #219

In reference to gray and rain water harvesting, would like to see 2015 IAPMO Green Supplemental Code to replace CSA B805-17/ICC.

Response

The Department has removed all proposed Sections regarding harvested water.

Comment #220

Suggest requiring an extremely hot warning on the instant hot water dispensers and does not oppose caulked lead joints on cast iron pipe.

Response

The Department has revised the hot water requirements in the proposed rulemaking. The Department has determined that the use of caulked joints present a health hazard to plumbers, plumbers’ apprentices and their families and finds that there is sufficient risk to eliminate the use of this plumbing technique in Illinois. The National Institute for Occupational Safety and Health identifies plumbing as a job known to put workers at risk of lead exposure due to lead in plumbing materials. Additionally, lead can be taken home from the work place on clothes or in cars thus potentially exposing spouses and children. IDPH has evaluated safer joining methods including “no hub” and gasketed connections in place of caulked joints and finds no evidence that these alternatives cannot be implemented in place of a caulked joint.

The following comments were provided by Mark Phipps, Drainage and Underground Coordinator, City of Aurora:

Comment #221

In reference to Section 890.1150(e), as written the amendment prevents partial replacement of galvanized steel services and services made of any other material that may be removed from the list in Appendix A. The proposed amendment is too broad and should be re-written to specifically address the issue of partial lead service line replacement.

Response

The Department considered studies which indicate that the partial replacement of lead service lines increase the lead levels in drinking water (Del Toral, Porter, Schock, 2013). There is no known safe level of lead exposure and the Department is mandated to protect children, pregnant persons, and the public from exposure to lead. It would be inconsistent with the Department's core mission, which is to protect public health, to require otherwise. The Department has modified the language contained within Section 890.1150 e) to limit the prohibition of partial service line replacement to service lines constructed of lead or galvanized steel.

The requirement to replace galvanized steel pipe with approved materials in lieu of a repair, is the Department's recognition that galvanized steel pipe has been shown to leach lead into water even years after all upstream sources of lead plumbing materials have been removed. Studies (N. Clark, Brandi & Masters, Sheldon & A. Edwards, Marc, 2015) have attributed this to both the zinc coating used for galvanizing and lead deposited on the pipe surface from upstream plumbing materials containing lead. Furthermore, the concentration of lead in water attributed to galvanized steel pipe has been shown to be exacerbated by partial service line replacement. Most municipalities have not maintained historical records noting service line materials, making it difficult to confirm whether lead plumbing materials were historically located upstream of the galvanized piping. Therefore, the Department believes it is appropriate and necessary to prohibit partial service line replacements when a service line contains lead or galvanized steel plumbing materials.

Comment #222

The amendment to Section 890.1150 does not address the problem presented by the fact that a portion of every water service is located on private property, beyond control of the City. This amendment is not workable unless private property owners have the opportunity to decline replacement of the portion of the lead service line on their private property.

Response

The Department recognizes various factors may interfere with the ability to complete a full service line replacement at the time of repair, and that point of use filters certified to comply with NSF/ANSI 53 and 42 may reduce potential lead exposures when installed and maintained in accordance with manufacturer's specifications. Therefore, the Department has revised the language contained within Section 890.1150 e) to provide conditional exceptions for emergency repairs and in certain cases an allowance for submission of a waiver. Additionally, a definition of emergency repair has been added to Section 890.120.

Comment #223

In reference to 890.1150(f), this subsection indicates IDPH intends to regulate the length of fire hydrant leads. Are there studies that link hydrant leads to a certain length to *Legionella*? This regulation will

drastically increase the cost of construction and maintain a water distribution system and may increase the amount of stagnant water in the system.

Response

It is well documented that points of stagnation can contribute to the growth of opportunistic pathogens. Therefore, the infrequent and intermittent use of emergency fixtures such as fire hydrants result in the presence of stagnant water on plumbing serving these fixtures. However, the Department recognizes that site conditions may dictate lead length. It is the Department's goal to minimize the presence of stagnant water on distribution systems, but specifically to reduce the amount of stagnant water commingling with potable distribution systems. The Department finds it necessary to allow for flexibility based on the presence of physical barriers at these sites and has updated the language contained in Section 890.1150(f) accordingly. Additionally, the Department has updated the definition of "dead end" contained at Section 890.120.

The following comments were provided by Randolph J. Pankiewicz, Director, Water Quality & Environmental Compliance, Illinois American Water:

Comment #224

In reference to the proposed definition of "dead end", these regulations should not be applicable to the public water supply system. As public water supplies have always been regulated by Illinois Environmental Protection Agency through Title 35 of the Illinois Administrative Code.

Response

The proposed definition of "dead end" applies to "plumbing" as defined by Section 2 of the Illinois Plumbing License Law (225 ILCS 320/2).

Comment #225

Recommend clarifying the definition of "water supply system" to include statement "does not apply to public water supply water main".

Response

The definition of "water supply system" applies to "plumbing" as defined by Section 2 of the Illinois Plumbing License Law (225 ILCS 320/2).

Comment #226

In subsection 890.1130(d)(1), add under (c) "shall not contain any chemical additives or antifreeze".

Response

The use of chemical additives or antifreeze is already addressed under 890.1130(d)(3)(A).

Comment #227

In subsection 890.1130(5), the use of a DCV in a vault should be allowed by these amendments.

Response

The Department did not evaluate this topic for the proposed rulemaking. However, the Plumbing Code Advisory Council Backflow Subcommittee is currently engaged in evaluating this topic and others in regards to future revisions to Section 890.1130.

Comment #228

In reference to proposed language in Section 890.1150(e), private water suppliers may not have ownership of the customer service line and the complete service line replacement may depend upon customer participation or cooperation.

Response

The Department considered studies which indicate that the partial replacement of lead service lines increase the lead levels in drinking water (Del Toral, Porter, Schock, 2013). There is no known safe level of lead exposure and the Department is mandated to protect children, pregnant persons, and the public from exposure to lead. It would be inconsistent with the Department's core mission, which is to protect public health, to require otherwise. The Department has modified the language contained within Section 890.1150 e) to limit the prohibition of partial service line replacement to service lines constructed of lead or galvanized steel. The Department recognizes various factors may interfere with the ability to complete a full service line replacement at the time of repair, and that point of use filters certified to comply with NSF/ANSI 53 and 42 may reduce potential lead exposures when installed and maintained in accordance with manufacturer's specifications. Therefore, the Department has revised the language contained within Section 890.1150 e) to provide conditional exceptions for emergency repairs and in certain cases an allowance for submission of a waiver. Additionally, a definition of emergency repair has been added to Section 890.120.

Comment #229

In reference to proposed language in Section 890.1150(f)(1), installation of a combined service line may increase water age to greater than 48 hours, increasing disinfection by-product formation and potentially decreasing disinfectant residual.

Response

The proposed language in Section 890.1150(f) has been updated to address this comment. In rare circumstance, disparities between domestic and fire service requirements may present challenges to designing a single combined service. The language of Section 890.1150 f) does not require a single combined service to be installed and provides plumbing system designers the ability to implement other available options to address these disparities in designing the water service to the building.

Comment #230

In reference to proposed language in Section 890.1150(f)(2), the water supplier does not review and approve the service line size. Will IDPH provide the water supplier with the approved service line size?

Response

The Department requires training and licensure of plumbers, which includes their compliance with the Illinois Plumbing Code when installing plumbing. It is the responsibility of the licensed plumber installing a service line to ensure that the line is properly sized for the intended use in accordance with the Plumbing

Code. There is no need for the water supplier or the Department to evaluate the service line size. Plumbing, including service lines, is required to be inspected for compliance by a licensed plumber not performing the work.

Comment #231

In reference to proposed language in Section 890.1150(f)(3), define approved backflow device. Is that an RPZ, above ground, in a temperature controlled environment? Can it be a double check in a vault?

Response

The approved devices are noted within Section 890.1150 f) and should be installed in accordance with the Section 890.1150 g). The Department did not evaluate the use vaults or hot boxes for the proposed rulemaking. However, the Plumbing Code Advisory Council Backflow Subcommittee is currently engaged in evaluating this topic and others in regards to future revisions to Section 890.1130.

Comment #232

In reference to proposed language in Section 890.2030(a)(1), new plumbing code requirements should be consistent with Community water Supply regulations in current 35 Ill. Adm. Code 607.103 (proposed 604.135).

Response

The general requirements found in Title 35 are not sufficient to inform the facilities identified in the proposed rule at 890.2030(a)(1) of proper procedures to protect their potable water systems in the event of a water outage as described. The Rend Lake water service outage of 2018 empirically informed the proposed rule.

Comment #233

In reference to proposed language in Section 890.2030(a)(1)(A), isolation of water service from the water distribution system would not provide for water necessary for sanitation purposes.

Response

If the conditions specified in 890.2030(a)(1) are present, water pressure less than 20 psi is not sufficient to operate commercial plumbing fixtures and appliances. The affected facilities are required to have and implement emergency water procedures in the event of a water outage.

Comment #234

In reference to proposed language in Section 890.2030(a)(1)(B), this may not be possible if certain hospital equipment needs to have a flow of water for operation. In addition, the reason for the boil order is to allow for use of the water if boil order instructions are followed.

Response

The facilities affected by the proposed section do not have the ability to boil water or use boiled water in healthcare settings. Healthcare facilities are required to have emergency water plans which address water outages, these facilities do not rely on boiled water to support continuing operations.

Comment #235

In reference to proposed language in Section 890.2030(a)(2)(A), postings or warning signs should indicate that a boil order is in effect and that water must meet the boil order requirements before consuming.

Response

The facilities affected by the proposed section do not have the ability to boil water or use boiled water in healthcare settings. Healthcare facilities are required to have emergency water plans which address water outages, these facilities do not rely on boiled water to support continuing operations.

Comment #236

In reference to proposed language in Section 890.2030(a)(2)(B), the water supplier notifies the affected customers when boil order is lifted based on IEPA requirements for lifting a boil order. It would be impractical to require the water supplier to go to each facility to determine disinfectant levels at the service entrance.

Response

There are a finite number of facilities affected by the requirements of this subsection. The number affected by boil order at any given time is significantly small. These facilities represent the most fragile populations served by a public water supply, it is irresponsible for the operator of a public water supply to fail to ensure that water being delivered to hospitals and other healthcare facilities meets the minimum requirements set forth in the Safe Drinking Water regulations immediately after a boil order.

Comment #237

In reference to proposed language regarding flushing in Sections 890.2030(a), Section 890.2030(b), and Section 890.2030(c), the facility would not have the authority to flush the distribution main of the water supplier. Additionally, if they were to flush their internal system to the street in freezing water conditions they could be creating a public safety hazard with icing conditions.

Response

The Department intends for facilities affected by this requirement to flush water from their plumbing fixtures to the associated receptors and has updated the language in the Sections to address this comment.

Comment #238

In reference to proposed language in Section 890.2030(a)(2)(D), sampling by untrained personnel could lead to false positive results. The water supplier performs testing in order to lift the boil order.

Response

Testing required under this subsection does not relate or affect testing performed by a water supplier pursuant to requirements found in Title 35. A water supplier may wish to offer its services or to offer training to facilities affected by this Section.

Comment #239

In reference to proposed language in Section 890.2030(a)(2)(E), the term “water quality management plan” is not defined. The definition of “enhanced water quality surveillance” is not provided.

Response

The Department has updated the proposed language in Section 890.2030 to address this comment.

Comment #240

In reference to proposed language in Section 890.2030(c)(1), the postings or warning signs should indicate that a boil order is in effect and that water must meet boil order requirements before consuming.

Response

This requirement applies to non-residential buildings where the building occupants generally do not have the ability to boil water before consumption.

Comment #241

In reference to proposed language in Section 890.2030(c)(2), the water supplier notifies the affected customers when boil order is lifted based on IEPA requirements for lifting a boil order. It would be impractical to require the water supplier to go to each facility to determine disinfectant levels at the service entrance.

Response

The Department has updated the language of Section 890.2030(c) to align with comments proposed by ISAWWA.

Comment#242

In reference to proposed language in Section 890.2010, the reference to “Drinking Water Systems Code” and “Environmental Protection Code” are vague and should include a more specific reference to the Part of the Administrative Code intended.

Response

The referenced statutes are incorporated in Section 890.130 and referenced appropriately.

The following comment was provided by Randy Hassler, McClure Engineering:

Comment #243

Offer the following concepts as an alternate to the proposed language of the rulemaking: facilities treating or housing “at-risk” person shall maintain waters above 160 degrees with the exceptions: 1) have “approved” water treatment system for “opportunistic pathogens” on systems that maintain temperatures between 120 degrees and 159 degrees Fahrenheit or 2) have procedures to raise the hot water temperature to 160 degree Fahrenheit daily up to the mixing valve for 1 hour without risking scald to occupants. Maximum length from mixing valve to fixture outlet 50 feet.

Response

The Department has revised the definition of “hot water” in Section 890.120 and the language regarding hot water distribution in Section 890.610. The definition of “hot water” has been revised for second notice to have a minimum temperature of 124 degrees Fahrenheit to address concerns regarding scalding. This value was selected based on review of the US Department of Veterans Affairs’ Veterans Health Administration Directive 1061 which establishes 124 degrees as a minimum hot water distribution temperature to inhibit *Legionella* growth in building hot water systems.

The following comments were provided by Frank Sanchez, Senior Project Engineer, Grumman/Butkus Associates:

Comment #244

Plumbing water system have turbulent flow (Reynolds Number), short dead ends are not really an issue. This is the same reason why air chambers do not work for there is constant water/air displacement through those short pieces. The 2 feet dead end allowance is not as bad as presented under turbulent flow conditions.

This should allow domestic water valves for future. Allowing future stubs will minimize the need to perform water system shutdowns. Shutdowns negatively affect domestic waters systems as loose debris will clog strainers and cartridges. Also, the turbulent flow will release the biofilm which may contain waterborne pathogens.

Response

The Department recognizes that the installation of dead ends for future use is a common industry practice and in some cases may be necessary. Additionally, the Department recognizes there are numerous fixtures and installations which may necessarily result in functional dead ends. However, dead ends, regardless of purpose, result in the presence of stagnant water which can contribute to the growth of opportunistic pathogens. Therefore, the Department has updated the language contained in Section 890.1130 h) to address these concerns. The definition of “dead end” has also been updated accordingly.

Comment #245

Thank you for eliminating the lead and oakum joint system. Please consider enforcing this in Chicago in order to protect our plumbing contractors’ health.

Response

The Department appreciates the comment and support.

Comment #246

Please clarify that water hammer arresters do not need access panels. I had many discussions regarding the inefficacy of air chambers with water hammer manufacturers. It’s great that air chambers are finally being removed.

Response

The Department recognizes that water hammer arrestors must be properly maintained to ensure efficacy for protection against water hammer. Therefore, the language of Section 890.1210 f) has been updated to permit the use of water hammer arrestors but require these devices to be accessible for maintenance. The existing definition of “accessible” contained in Section 890.120 already clarifies that accessibility does not necessitate an access panel.

The following comments were provided by Tim Schmitz, Government Relations Manager, International Code Council:

Comment #247

The given definition of rainwater differs from the definition provided in the CSA ICC 805 Standard.

Response

The Department has removed the definition of “rainwater” and all proposed Sections regarding harvested water.

Comment #248

Section 890.3010 only references the NSF/ANSI 350 and 350-1 Standard. This standard provides guidance for the actual treatment system for gray water system however does not address the collection system of such graywater systems and the ultimate distribution system used to supply this treated water product to end use.

Response

The Department has removed all proposed Sections regarding harvested water.

Comment #249

Section 890.3020 covers reclaimed water applications the text provided does not include any guideline on the specific requirements of the distribution piping from the reclaimed water source to the end point of use. Guidance for the distribution piping system and at minimum backflow and cross connection requirements should be provided.

Response

The Department has removed all proposed Sections regarding harvested water.

Comment #250

Section 890.3030 the term “process water” is used in the Section heading and in the body of the amendment, however the term is not part of the backwater definition and as such is not clear what process water is.

Response

The Department has removed all proposed Sections regarding harvested water including Section 890.3030.

Comment #251

Section 890.3050 appears to limit the scope of the section to “subsurface irrigation” the body of the amendments include “non-aerosolized surface application”. It is unclear based upon this proposed language if the intent is to allow surface irrigation systems. No clear requirements are given for the collection and distribution systems. Section 890.3010(c) also references “non-aerosolized” surface applications and references Section 890.3050.

Response

The Department has removed all proposed Sections regarding harvested water including Section 890.3050.

The following comments were provided by Brian Connor, Director, Training and Product Support, Charlotte Pipe and Foundry Company:

Comment #252

Lead joints are not associated with potable drinking water and the lead used is in no way going to contaminate a water system as it’s used only on the drain side. Cast iron joints are the most proven and longest lasting method for joining cast iron soil pipe. This type of joint integrity is particularly important in high-rise construction and critical facilities such as healthcare, prisons, and schools.

Urge the State to reconsider the proposal to remove lead caulk joints and leave sections as written.

Response

The Department has determined that the use of caulked joints present a health hazard to plumbers, plumbers' apprentices and their families and finds that there is sufficient risk to eliminate the use of this plumbing technique in Illinois. The National Institute for Occupational Safety and Health identifies plumbing as a job known to put workers at risk of lead exposure due to lead in plumbing materials. Additionally, lead can be taken home from the work place on clothes or in cars thus potentially exposing spouses and children. IDPH has evaluated safer joining methods including "no hub" and gasketed connections in place of caulked joints and finds no evidence that these alternatives cannot be implemented in place of a caulked joint.

Comment #253

In reference to Section 890.210, there are many plumbing materials and fixtures that contain allowable lead levels as determined by EPA and Illinois Lead Poisoning Prevention Act. The proposed change would required them to be lead free and the elimination of these products is of great concern.

Suggest revising language to read "All potable water plumbing materials shall not contain lead that exceeds the federal EPA and Illinois Lead Prevention Act (410 ILCS 45) allowable levels."

Response

The intent of the proposed language is remove lead from the wetted surface (where potable water touches the pipe or fixture) of plumbing supplying water for human consumption. The Department has updated the language in Section 890.210(k).

The following comment was received from Jim Kendzel, Vice President, Advocacy, American Supply Association:

Comment # 254

ASA opposes the proposed change to Section 890.740 to only require non-metallic RPZ's conforming to ASSE 1013. This eliminates most RPZ's currently available in the marketplace, even though it is common practice to coat the inside of the RPZ with epoxy for certain applications. This language would also eliminate RPZ's made with stainless steel components and bodies.

Response

The Department worked with the Association for the Advancement of Medical Instrumentation (AAMI) Renal Disease and Detoxification Committee and the Centers for Disease Control and Prevention (CDC) to develop the proposed language. It has been represented that AAMI and dialysis providers want only non-metallic back flow preventers installed in the subject facilities.

The following comments were provided by Matt Overeem, Water and Sewer Superintendent, Village of Wilmette:

Comment #255

In the proposed definition of blackwater consider adding language "water containing oils and or lubricants from manufacturing or machining processes" and "water containing antimicrobial or other disinfectants and/or lubricants as found in wet fire sprinkler piping."

Response

The Department has removed all proposed Sections regarding harvested water, including the definition of “blackwater”.

Comment #256

In the proposed definition “dead end” consider adding the additional example, “hydrant leads greater than x feet in length”.

Response

It is well documented that points of stagnation can contribute to the growth of opportunistic pathogens. Therefore, the infrequent and intermittent use of emergency fixtures such as fire hydrants result in the presence of stagnant water on plumbing serving these fixtures. However, the Department recognizes that site conditions may dictate lead length. It is the Department’s goal to minimize the presence of stagnant water on distribution systems, but specifically to reduce the amount of stagnant water commingling with potable distribution systems. The Department finds it necessary to allow for flexibility based on the presence of physical barriers at these sites and has updated the language contained in Section 890.1130 h) accordingly. Additionally, the Department has updated the definition of “dead end” contained at Section 890.120.

Comment #257

In proposed definition for “service line”, consider removing “installed on any conduit”. What does this mean to have piping installed on any conduit? Or the definition needs better clarification.

Response

The Department appreciates your comment and has revised the definition of “service line” for clarity.

Comment #258

With a fire hydrant lead; the hydrant lead is often combined with the domestic service, but the hydrant lead can be a few feet to hundreds of feet in length away from the circulating domestic serve line, thus creating a dead-end. Consider putting a limit to length of a hydrant lead this is combined with the domestic service. Also, I have not found any applicable cross connection control device that would meet the requirements of (f)(3) for an exterior hydrant lead.

Response

It is well documented that points of stagnation can contribute to the growth of opportunistic pathogens. Therefore, the infrequent and intermittent use of emergency fixtures such as fire hydrants result in the presence of stagnant water on plumbing serving these fixtures. However, the Department recognizes that site conditions may dictate lead length. It is the Department’s goal to minimize the presence of stagnant water on distribution systems, but specifically to reduce the amount of stagnant water commingling with potable distribution systems. The Department finds it necessary to allow for flexibility based on the presence of physical barriers at these sites and has updated the language contained in Section 890.1130 h) accordingly. Additionally, the Department has updated the definition of “dead end” contained at Section 890.120.

Comment #259

In reference to Section 890.2020, would this new section be applicable to existing fixtures as defined.

Response

In accordance with Section 890.110 d) Regardless of the age of the building, where a health or safety hazard exists because of an existing plumbing installation or lack thereof, the owner or his or her agent shall install additional plumbing or make corrections as may be necessary to abate the hazard or violation of this Part. Fountains and other aesthetic water features that are not properly maintained are commonly identified as a potential source for the spread of *Legionella*. The proposed requirements within Section 890.2020 are intended to reduce the potential public health risks associated with these fixtures. As such, these proposed requirements of this Section are intended to apply to both new and existing construction.

Comment #260

In reference to Section 890.2030, as a supervisor of a municipal water supply, I don't have access to the service entrance of most facilities. So I would not know the disinfectant level at the service entrance and so if an inquiry is made, I would not have this information. Is this new section mandating that a PWS should go test to provide the disinfectant level to the property?

Response

The Department has updated the language of Section 890.2030 to address this concern.

The Department received comparable comments on the proposed definition of "hot water" and proposed language of Section 890.610(d) regarding the distribution of hot water at 160 degrees Fahrenheit to within 12" of the plumbing fixture from the following parties:

**Kevin Freidt, Director Product Management and Technical Support, Caleffi North America, Inc.
Brian Yelton, President, Inland Sales Group, INC.**

James Dee

J. Craig Meyer, Industrial Mechanical Contractors

Matt Lunn, National Sales Manager of Lawler Manufacturing Co.

Dave W. Bodenschatz, Director of Mechanical Engineering, IMEG Corp.

Stephen Ferrucci, General Counsel, Lawler Manufacturing Co.

David Bohm

Scott Jagodzinski, Plumbing Engineer, Cannon Design

Justin Treutelaar, West Suburban Association of Plumbing Contractors

Jim Cathey, President, Midwest Engineering Professionals Inc.

Beverly Potts, Illinois PHCC

Richard Cota Jr., Vice President-Director Technical Services, Leonard Valve Company

Gary W. Reinheimer, Senior Mechanical Engineer, Shive-Hattery

Chris Haldiman

Bob Van Lanen, Associate, Plumbing Designer-R.D.

Adam Boris, Board of Trustee and Past Chairman, Norweigan American Hospital

James E. Dipping, Technical Director, Plumbing Engineering, Environmental Systems Design, Inc

Mark Kaulas, Sales Engineer, Bornquist Inc. Plumbing Division

Julius Ballanco, President, JB Engineering and Code Consulting, P.C.

Matt Sigler

Conrad Jahrling

Tim Keane, Consultant, Legionella Risk Management, Inc.

Christopher Tjon

Misty Guard, Manager, Product Compliance & Government/Regulatory Affairs

Jim Kendzel, Vice President, Advocacy

Chris Ebener, Director of Engineering, LiquiTech

Bryan C. Ahee, Operations Leader, Intellihot Inc.

Tory Schira, COO, LiquiTech

William Grindall, Armstrong Hot Water Group, Director of Sales

Ron Tabaczynski, Director of Government Affairs, Building Owners and Managers Association of Chicago

Thomas H. Powers, Former Water Commissioner, Chicago Department of Water Management

Frank Sanchez, Senior Project Engineer, Grumman/Butkus Associates

The Department has summarized the concerns related to the proposed language in the following comment:

Comment #261

Oppose the increase of the upper limit of hot water due to the following:

- Concern regarding increased scalding of users particularly at points where hot water is typically supplied without scaled protection such as in kitchens and utility sinks.
- Concern regarding failure of point of use thermostatic mixing valves.
- Increased energy consumption due to higher temperature.
- Potential consequences related to plumbing materials in water distribution and drainage systems.
- Increased cost in construction including insulation and building maintenance to ensure these devices are working correctly to avoid potential scalding related to the installation of mixing valves at point of use.
- Certain types of water heaters including point of use electric water heaters and tankless gas fired water heaters cannot produce 160 degree Fahrenheit.
- Potential to increase corrosion in piping systems and reduce the effects of treatment in water system.
- Plumbing materials are typically not tested to 160 degrees and the temperature may result in failure or leaks.
- Burden on building owner to require many point of use thermostatic mixing valves.

Response

The Department appreciates the comments received on this topic. In response to the concerns voiced in public comments, the Department has revised the definition of “hot water” in Section 890.120 and the language regarding hot water distribution in Section 890.610. The definition of “hot water” has been revised for second notice to have a minimum temperature of 124 degrees Fahrenheit to address concerns regarding scalding. This value was selected based on review of the US Department of Veterans Affairs’ Veterans Health Administration Directive 1061 which establishes 124 degrees as a minimum hot water distribution temperature to inhibit *Legionella* growth in building hot water systems.

The Department received comparable comments on the proposed removal of galvanized steel from Section 890. Table A from the following parties:

Justin Treutelaar
Beverly Potts
David Dertz
George Swietczak
Mark Kaulas, Sales Engineer, Bornquist, Inc., Plumbing Division
Julius Ballanco, President, JB Engineering and Code Consulting, P.C.
Matt Sigler
Misty Guard
Jim Kendzel, Vice President, Advocacy, American Supply Association

The Department has summarized the concerns related to the proposed language in the following comment:

Comment #262

Oppose the removal of galvanized steel pipe from the approved materials listed in Appendix A.

- Concern regarding the removal because galvanized steel is typically used high-rise construction for ‘express risers’ utilizing high pressures.
- Commonly used with emergency showers and eye wash stations as it is both cost effective and can withstand various types of environments where such equipment may be located.
- Galvanized steel meets NSF 61.

Response

The Department has determined that the utility of galvanized pipe is outweighed by its propensity to occlude and corrode, thereby restricting flow, causing leaks, and providing points of harborage for opportunistic pathogens. Galvanized pipes also provide a source of iron which allow the growth of *Legionella* in biofilms. Additionally, galvanized steel pipe has been shown to leach lead into water even years after all upstream sources of lead plumbing materials have been removed. Studies (N. Clark, Brandi & Masters, Sheldon & A. Edwards, Marc, 2015) have attributed this to both the zinc coating used for galvanizing and lead deposited on the pipe surface from upstream plumbing materials containing lead. Furthermore, the concentration of lead in water attributed to galvanized steel pipe has been shown to be exacerbated by partial service line replacement. The Department has determined that approved, alternative materials in Appendix A are suitable to address the limited remaining use of galvanized pipe in plumbing systems.

The Department received comparable comments on the proposed removal of ASSE 1017-2009 master thermostatic mixing devices from the following parties:

Brian Yelton
Keven Freidt
Jim Cathey
Richard Cota
Beverly Potts
James E. Dipping, Technical Director, Plumbing Engineering, Environmental Systems Design, Inc
Jim Kendzel, Vice President, Advocacy
Julius Ballanco, President, JB Engineering and Code Consulting, P.C.

Matt Sigler
Conrad Jahrling
Misty Guard
Jim Kendzel, Vice President, Advocacy, American Supply Association
Frank Sanchez

The Department has summarized the concerns related to the proposed language in the following comment:

Comment #263

Oppose the removal of ASSE 1017-2009 from Appendix A.

- Conflict with language requiring the heat source not being allowed to control system temperature.
- The use of master mixing valves may be appropriate in accordance with current Illinois Plumbing Code Sections including 890.690, 890.680, and 890.1220.
- Major plumbing codes throughout the United States allow for temperature control.
- Use of ASSE 1017 valves may be beneficial to control output temperature at the source.
- ASSE 1017 devices shall be capable of supplying the domestic hot water distribution system with a minimum adjustable range of 105-120 degrees Fahrenheit provided the hot water supply temperature is at least 20 degrees Fahrenheit greater than the outlet water temperature setting.

Response

The Department has updated the language in Section 890. Appendix A, Table A to reflect the restoration of the ASSE 1017-2009 standard. However, because ASSE 1017 devices used alone do not provide thermal shock protection or adequate scald protection the reference to ASSE 1017 has been removed from Section 890.690(b) and 890.680(e).

The Department received the following comment from Kim Robinson, Executive Director, Illinois Construction Industry Committee and Tim Marabella, Executive Vice President, Great Lakes Construction Association:

Comment #264

Express opposition of the proposed amendments due to concerns that the rule appears to have been drafted without consultation with the appropriate contractors and design professionals, the proposed amendments are expansive and costly, and that the proposed rule is intended to resolve jurisdictional matters.

Response

The proposed rule was discussed at numerous Plumbing Code Advisory Council meetings which are open to the public and subject to the requirements of the Open Meeting Act. The Plumbing Code Advisory Council consists of members representing various components of the plumbing industry, including both plumbing contractors and designers. Furthermore, the first notice for this rule began on December 28, 2018, so the Department has allowed more than 10 months for the public to submit comment on the proposed rule. Therefore, the Department has provided adequate opportunity for comments on the proposed revisions.

The Department received comparable comments regarding the proposed addition of Subpart O: Water Harvested Water System from the following parties:

P.T. Ferro Construction Company

Dave Bender, President & CEO, American Council of Engineering Companies of Illinois

Ron Litherland, Administrator, Illinois Laborers' and Contractors Joint Apprenticeship & Training Program

Andrew Weeks, General Manager, N.E. Finch Co.

William D. Vignocchi, John K. Vignocchi, John Keno and Company, Inc.

Darren Smith, Chairman, Illinois State Branch of the International Union of Operating Engineers

John Goetz, R.D. Lawrence Construction Co., Ltd

Michael Wiedmaier

Bresha Brewer, Director of Government Affairs, Illinois Road and Transportation Builders Association

Michael Jacobson, President and CEO, Illinois Hotel and Lodging Association

Jim Wagner, Wagner Excavating LLC

Matt Reyhan, Vice President, Sangamo Construction

Laborers' International Union of North America and International Union of Operating Engineers Local 150 and Local 399

John J LeConche, Executive Director, LIUNA Training and Education Fund

David Baxmeyer, President, Baxmeyer Construction, Inc

The Department has summarized the concerns related to the proposed language in the following comment:

Comment #265

The organizations and individuals testified in opposition against proposed language related to the inclusion of Subpart O: Harvested Water Systems. The provided testimonies stated that the implementation of these regulations would prevent their members from engaging in work related to harvested water systems including roof and site rainwater or gray water management. Additional testimonies on this subject stated that there would be a cost to the State of Illinois by supporting a jurisdictional shift that would put the licensing burden on small or large business owners and managers that may force them to alter business practices.

Response

The Department has removed all sections regarding water harvesting from the proposed Code. Section 3 of the Plumbing License Law (225 ILCS 320) provides for those persons who may design and install plumbing in Illinois and Section 2 of the Plumbing License Law defines, "plumbing". The proposed language was not intended to trigger a jurisdictional shift but simply enforce the requirements of the Plumbing License Law as the Department is directed to do.

The following comments were received at the public hearing held on February 4, 2019. A full transcript from that hearing is attached:

The Department received multiple, comparable comments objecting the proposed Subpart O Harvested Water Systems from the parties listed below, their comments have been summarized in the following comment:

Patrick Hosty, Executive Director, Chicago Area Laborers-Employers Cooperation and Education Trust

Randy Harris, Illinois Laborers'-Employers' Cooperation & Education Trust

Sean Stott, Laborers' International Union of North America – Midwest Region

Kara Principe, International Union of Operating Engineers, Local 150

John Hanley, Political Legislative Director, International Union of Operating Engineers, Local 399

Comment #1

The organizations and individuals testified in opposition against proposed language related to the inclusion of Subpart O: Harvested Water Systems. The provided testimonies stated that the implementation of these regulations would prevent their members from engaging in work related to harvested water systems including roof and site rainwater or gray water management. Additional testimonies on this subject stated that there would be a costly to the State of Illinois by supporting a jurisdictional shift that would put the licensing burden on small or large business owners and managers that may force them to alter business practices.

Response

The Department has removed all sections regarding water harvesting from the proposed Code. Section 3 of the Plumbing License Law (225 ILCS 320) provides for those persons who may design and install plumbing in Illinois and Section 2 of the Plumbing License Law defines, “plumbing”. The proposed language was not intended to trigger a jurisdictional shift but simply enforce the requirements of the Plumbing License Law as the Department is directed to do.

The following comments were provided as oral testimony by Brian Burgess, Director of Education and Compliance at Global Water Technology:

Comment #2

The proposed rulemaking specifies all water softeners and water treatment technology must be NSF approved which is costly. The word technology is too vague and may end up affecting Global Water Technologies' ability to innovate on a client specific basis.

Response

Plumbing fixtures, appliances and appurtenances are expected to provide safe and hygienic service for their intended purpose(s). If a fixture, appliance or appurtenance is not effective in achieving its listed use and purpose, its installation should not be allowed.

Comment #3

Currently, licensed plumbers have no water treatment training nor programs for water treatment and should not be taking on roles overseeing water treatment.

Response

The intent of the proposed language is to ensure that plumbing appliances, such as water treatment technologies, are installed by Illinois licensed plumbers in accordance with the Illinois Plumbing License Law (225 ILCS 320). The proposed language does not provide licensed plumbers oversight in water treatment. License plumbers would be responsible for the installation of these devices but not necessarily

for the operation of the water treatment system which should be done in accordance with the Drinking Water Systems Code and Environmental Protection Act as applicable

Comment #4

Concerns regarding the proposed language requiring non-residential buildings to raise their water storage tanks and heaters to 160 degrees.

Response

The Department has revised the definition of “hot water” in Section 890.120 and the language regarding hot water distribution in Section 890.610. The definition of “hot water” has been revised for second notice to have a minimum temperature of 124 degrees Fahrenheit to address concerns regarding scalding. This value was selected based on review of the US Department of Veterans Affairs’ Veterans Health Administration Directive 1061 which establishes 124 degrees as a minimum hot water distribution temperature to inhibit *Legionella* growth in building hot water systems.

Response

The following comment was provided as oral testimony by Tim Schmitz, Lead Senior Regional Manager, International Code Council (ICC). Written comments regarding the proposed amendments were provided during the public hearing and are provided above.

Comment #5

ICC is pleased to see the Department create a new section titled “Harvested Water Systems” based on the CSA/ICC B805 Standard, but feel there are sections that create confusion and propose modifications for the purpose of clarification.

Response

The Department appreciates the comment and support. However, based upon other comments received the Department has removed all Sections regarding water harvesting.

The following comment was provided as oral testimony by Matthew Marciniak, International Association of Plumbing and Mechanical Officials (IAPMO):

Comment #6

IAPMO requests that the IAPMO/ANSI WeStand 2017 Standard be included as recommended by members of the Plumbing Code Advisory Council as the referenced standard of the proposed amendments to the Illinois Plumbing Code.

Response

The Department has removed all Sections regarding water harvesting.

The following comment was provided as oral testimony by Chris Hadiman, Watts Water Technologies:

Comment #7

Seeking justification on substantiation for the proposed rulemaking.

Response

The Department provided supporting materials regarding this rulemaking to Mr. Hadiman.

The following comments were provided as oral testimony by Brian Yelton, President, Inland Sales Group Inc.:

Comment #8

Oppose the removal of the ASSE 1017 master mixing valve as they do not promote the growth of *Legionella*.

Response

The Department has updated the language in Section 890. Appendix A, Table A to reflect the restoration of the ASSE 1017-2009 standard. However, because ASSE 1017 devices used alone do not provide thermal shock protection or adequate scald protection the reference to ASSE 1017 has been removed from Section 890.690(b) and 890.680(e).

Comment #9

Concern regarding control of opportunistic pathogens in cold water in Illinois which can be above 65 degrees in the summer.

Response

The Department has updated the proposed definition of “cold water” in Section 890.120. However, the Department does not intend to require water supplied to buildings to pass through a chiller to comply with the definition of cold water. There are numerous public water supplies throughout the state that supply water at temperatures exceeding 70 degrees in the summer months.

Comment #10

Oppose the proposed language requiring 160 degree water coming to point of use within 12 inches due to scald potential.

Response

The Department has revised the definition of “hot water” in Section 890.120 and the language regarding hot water distribution in Section 890.610. The definition of “hot water” has been revised for second notice to have a minimum temperature of 124 degrees Fahrenheit to address concerns regarding scalding. This value was selected based on review of the US Department of Veterans Affairs’ Veterans Health Administration Directive 1061 which establishes 124 degrees as a minimum hot water distribution temperature to inhibit *Legionella* growth in building hot water systems.

Comment #11

Suggest emphasis on water management in facilities rather than creating code.

Response

Water management is necessary to control water quality within plumbing systems. However, effective water management is enabled and enhanced through intelligent plumbing system design and installation. Therefore, many of the proposed Code revisions are intended to reduce design elements known to cause or contribute to the growth of opportunistic pathogens and facilitate options for effective water management practices.

The following comment was provided as oral testimony by Dave Scifres, Apostolic Christian Rest Well Nursing Home:

Comment #12

Requiring the installation of a valve for the mixing valve at each faucet and showerhead would be extremely costly and require maintenance.

Response

The Department has updated the language in Section 890. Appendix A, Table A to reflect the restoration of the ASSE 1017-2009 standard. However, because ASSE 1017 devices used alone do not provide thermal shock protection or adequate scald protection the reference to ASSE 1017 has been removed from Section 890.690(b) and 890.680(e).

The following comment was provided as oral testimony by Andy Bowman:

Comment #13

Concerns regarding the installation of mixing valves within 12 inches of the point of use will cause additional risk for patients in mental health care settings for identifying problems or issues. Trying to figure out how to understand the need to have mixing valves at every fixture versus just a master valve at the beginning of the system.

Response

In environmental investigations of Legionnaires' disease, the Department has identified that healthcare facilities utilizing master mixing valves distribute water throughout the facility within the ideal growth range of *Legionella*. Having the mixing valve located at the point-of-use allows water to be distributed to the fixture in temperatures exceeding the primary growth range for *Legionella* while still providing adequate scald protection.

The following was provided as oral testimony by Harry Ohde, International Brotherhood of Electrical Workers:

Comment #14

Provided support for Senate Bill 1226 detailing green construction, governance of green construction projects, and adoption of the International Energy Conservation Code.

Response

This public hearing was hosted by the Department to discuss the proposed revisions of the Illinois Plumbing Code.

The following comment was provided by Hannah Smith on behalf of the Building Owners and Managers Association of Chicago (BOMA/Chicago):

Comment #15

Opposes the proposed rulemaking sharing the concerns of other organizations that appeared in the public hearing. BOMA/Chicago intends to submit written comments to the Department.

Response

The Department responded to written comments submitted by BOMA/Chicago.

The following fourteen comments were provided as oral testimony by Steve Stimson, Illinois Plumbing, Heating, Cooling Contractors Association:

Comment #16

Proposed definition of “dead end” would eliminate the common practice of roughing-in DWV for future use.

Response

The Department recognizes that the installation of dead ends for future use is a common industry practice and in some cases may be necessary. However, dead ends, regardless of purpose, result in the presence of stagnant water which can contribute to the growth of opportunistic pathogens. Therefore, the Department has updated the language contained in Section 890.1130 h) to address both of these concerns.

Comment #17

Oppose changing the upper limit of hot water from 120 degrees to 160 degrees due to scalding and potential damage to plumbing components.

Response

The Department has revised the definition of “hot water” in Section 890.120 and the language regarding hot water distribution in Section 890.610. The definition of “hot water” has been revised for second notice to have a minimum temperature of 124 degrees Fahrenheit to address concerns regarding scalding. This value was selected based on review of the US Department of Veterans Affairs’ Veterans Health Administration Directive 1061 which establishes 124 degrees as a minimum hot water distribution temperature to inhibit *Legionella* growth in building hot water systems.

Comment #18

Suggest “as defined in the definition section of the Illinois Plumbing Code” be added to Section 890.210(k).

Response

The Department has updated language Section 890.210(k). The Department’s intent in the proposed rulemaking is to remove lead from wetted surfaces of plumbing materials.

Comment #19

Suggest that the use of caulked soil pipe joints are needed for repairs and renovations.

Response

The Department has determined that the use of caulked joints present a health hazard to plumbers, plumbers’ apprentices and their families and finds that there is sufficient risk to eliminate the use of this plumbing technique in Illinois. The National Institute for Occupational Safety and Health identifies plumbing as a job known to put workers at risk of lead exposure due to lead in plumbing materials. Additionally, lead can be taken home from the work place on clothes or in cars thus potentially exposing spouses and children. IDPH has evaluated safer joining methods including “no hub” and gasketed connections in place of caulked joints and finds no evidence that these alternatives cannot be implemented in place of a caulked joint.

Comment #20

Galvanized is still used in water distribution systems, especially high rise buildings and for DWV. Recommend leaving the material in the code.

Response

The existing use of a material does not justify the continued use of a material. The Department has determined that the utility of galvanized pipe is outweighed by its propensity to occlude and corrode, thereby restricting flow, causing leaks, and providing points of harborage for opportunistic pathogens. Galvanized pipes also provide a source of iron which allow the growth of *Legionella* in biofilms. Additionally, galvanized steel pipe has been shown to leach lead into water even years after all upstream sources of lead plumbing materials have been removed. Studies (N. Clark, Brandi & Masters, Sheldon & A. Edwards, Marc, 2015) have attributed this to both the zinc coating used for galvanizing and lead deposited on the pipe surface from upstream plumbing materials containing lead. Furthermore, the concentration of lead in water attributed to galvanized steel pipe has been shown to be exacerbated by partial service line replacement. The Department has determined that approved, alternative materials in Appendix A are suitable to address the limited remaining use of galvanized pipe in plumbing systems.

Comment #21

Regarding Section 890.740 suggest including stainless steel for the RPZ.

Response

The Department worked with the Association for the Advancement of Medical Instrumentation (AAMI) Renal Disease and Detoxification Committee and the Centers for Disease Control and Prevention (CDC) to develop the proposed language.

Comment #22

Regarding Section 890.1150, do not see a reason to be unable to repair or a galvanized or PB line. Complete replacement instead of repair is not needed and often times not possible, especially in emergency situations.

Response

The Department considered studies which indicate that the partial replacement of lead service lines increase the lead levels in drinking water (Del Toral, Porter, Schock, 2013). There is no known safe level of lead exposure and the Department is mandated to protect children, pregnant persons, and the public from exposure to lead. It would be inconsistent with the Department's core mission, which is to protect public health, to require otherwise. The Department has modified the language contained within Section 890.1150 e) to limit the prohibition of partial service line replacement to service lines constructed of lead or galvanized steel.

The requirement to replace galvanized steel pipe with approved materials in lieu of a repair, is the Department's recognition that galvanized steel pipe has been shown to leach lead into water even years after all upstream sources of lead plumbing materials have been removed. Studies (N. Clark, Brandi & Masters, Sheldon & A. Edwards, Marc, 2015) have attributed this to both the zinc coating used for galvanizing and lead deposited on the pipe surface from upstream plumbing materials containing lead. Furthermore, the concentration of lead in water attributed to galvanized steel pipe has been shown to be exacerbated by partial service line replacement. Most municipalities have not maintained historical records noting service line materials, making it difficult to confirm whether lead plumbing materials were

historically located upstream of the galvanized piping. Therefore, the Department believes it is appropriate and necessary to prohibit partial service line replacements when a service line contains lead or galvanized steel plumbing materials.

Comment #23

Regarding Section 890.1150, request Illinois licensed plumbers be added to who can design the service line to accomplish the requirements of (f).

Response

Licensed plumbers can be and are Certified Plumbing Designers, plumbers are not excluded from designing water services pursuant to 890.1150(f). Additional devices may be utilized by design professional to achieve the required water age maximum. The Department is not prescribing methods of compliance.

Comment #24

Regarding Section 890.1150, requires that water age does not exceed 48 hours. Will this require additional devices to be installed in schools which are typically unoccupied for more than 48 hours?

Response

The Department has updated the language in Section 890.1150. However, the Department does not intend to prescribe methods of compliance so as not to restrict the plumbing system designers available options for compliance.

Comment #25

Regarding Section 890.1150, proposed language requires a backflow device to be installed within no greater than two times the nominal pipe diameter of the service line from the main. It would be difficult, if not impossible, to comply with this requirement.

Response

It is well documented that points of stagnation can contribute to the growth of opportunistic pathogens. Therefore, the infrequent and intermittent use of emergency fixtures such as fire hydrants result in the presence of stagnant water on plumbing serving these fixtures. However, the Department recognizes that site conditions may dictate lead length. It is the Department's goal to minimize the presence of stagnant water on distribution systems, but specifically to reduce the amount of stagnant water commingling with potable distribution systems. The Department finds it necessary to allow for flexibility based on the presence of physical barriers at these sites and has updated the language contained in Section 890.1130 h) accordingly. Additionally, the Department has updated the definition of "dead end" contained at Section 890.120.

Comment #26

Concern is that mechanical devices may have the same or greater potential for growth as air chambers.

Response

The Department has evaluated water hammer control in plumbing systems and finds that appropriate and judicious placement of mechanical devices or water hammer arrestors will achieve the same functionality and better water quality than the prolific use of air chambers. Over time air becomes dissolved rendering the air chamber ineffective at protecting against water hammer and providing a dead end, promoting the

growth of opportunistic pathogens. The Department is not aware of any studies linking water hammer arrestors to *Legionella* or other opportunistic pathogens. However, the Department recognizes that water hammer arrestors must be properly maintained to ensure efficacy for protection against water hammer. Therefore, the language of Section 890.1210 f) has been updated to permit the use of water hammer arrestors but require these devices to be accessible, as defined at Section 890.120, for maintenance.

Comment #27

Request that the IAPMO/ANSI WeStand 2017 be used for all harvested water systems or the previously proposed Subpart N.

Response

The Department has removed all Sections regarding harvested water.

Comment #28

Galvanized steel pipe should not be removed as an approved material for building drainage and vent pipe, water service pipe and water distribution pipe.

Response

The Department has determined that the utility of galvanized pipe is outweighed by its propensity to occlude and corrode, thereby restricting flow, causing leaks, and providing points of harborage for opportunistic pathogens. Galvanized pipes also provide a source of iron which allow the growth of *Legionella* in biofilms. Additionally, galvanized steel pipe has been shown to leach lead into water even years after all upstream sources of lead plumbing materials have been removed. Studies (N. Clark, Brandi & Masters, Sheldon & A. Edwards, Marc, 2015) have attributed this to both the zinc coating used for galvanizing and lead deposited on the pipe surface from upstream plumbing materials containing lead. Furthermore, the concentration of lead in water attributed to galvanized steel pipe has been shown to be exacerbated by partial service line replacement. The Department has determined that approved, alternative materials in Appendix A are suitable to address the limited remaining use of galvanized pipe in plumbing systems.

Comment #29

Temperature actuated mixing valves for hot water distribution ASSE 1017-2009 should not be deleted from Appendix A.

Response

The Department has updated the language in Section 890. Appendix A, Table A to reflect the restoration of the ASSE 1017-2009 standard. However, because ASSE 1017 devices used alone do not provide thermal shock protection or adequate scald protection the reference to ASSE 1017 has been removed from Section 890.690(b) and 890.680(e).

The following four comments were provided as oral testimony by Conrad Jahrling, Staff Engineering Supervisor at ASSE International:

Comment #30

It is inappropriate to remove the reference to ASSE 1017 from Section 890. Table A. ASSE 1017 is referenced in Section 890.680 and Section 890.1220.

Response

The Department has updated the language in Section 890. Appendix A, Table A to reflect the restoration of the ASSE 1017-2009 standard. However, because ASSE 1017 devices used alone do not provide thermal shock protection or adequate scald protection the reference to ASSE 1017 has been removed from Section 890.690(b) and 890.680(e).

Comment #31

The removal of ASSE 1017 from 890.690(b) is appropriate as ASSE does not consider it a safety device for bathers. Recommend amending Section 890.690 to reference ASSE 1069 devices. ASSE proposes the text read as: The mixed water temperature shall be individually regulated by automatic safety mixing valves for each shower unit or be controlled by an automatic temperature control mixing valve. A water heater thermostat shall not be an acceptable alternative water temperature control device.

Response

The Department appreciates the comment and has amended the language in Section 890.690.

Comment #32

Regarding RPZ's for kidney dialysis machines in Section 890.740(f), it is overly restrictive to only require non-metallic RPZ's. However, it is common practice to coat the inside of the RPZ with epoxy for certain applications. ASSE recommends against this change.

Response

The Department worked with the Association for the Advancement of Medical Instrumentation (AAMI) Renal Disease and Detoxification Committee and the Centers for Disease Control and Prevention (CDC) to develop the proposed language. It has been represented that AAMI and dialysis providers want only non-metallic back flow preventers installed in the subject facilities.

Comment #33

(Regarding Section 890.210(f)) While air chambers can be considered dead legs, water hammer arrestors are not. ASSE proposes Section 890.210(f) read as: Water hammer prevention. Building water distribution piping shall be installed in a manner that reduces the occurrence of water hammer. Water distribution systems with fast acting or solenoid-operated valves shall be equipped with approved mechanical devices or water hammer arresters, installed in accordance with manufacturer's instructions. Air chambers and fixtures that create a dead leg or allow water to stagnate are prohibited. When water hammer occurs in a water distribution system, the building owner shall cause the installation of approved mechanical devices or water hammer arresters necessary to eliminate water hammer.

Response

The Department has evaluated water hammer control in plumbing systems and finds that appropriate and judicious placement of mechanical devices or water hammer arrestors will achieve the same functionality and better water quality than the prolific use of air chambers. Over time air becomes dissolved rendering the air chamber ineffective at protecting against water hammer and providing a dead end, promoting the growth of opportunistic pathogens. The Department is not aware of any studies linking water hammer arrestors to *Legionella* or other opportunistic pathogens. However, the Department recognizes that water hammer arrestors must be properly maintained to ensure efficacy for protection against water hammer. Therefore, the language of Section 890.1210 f) has been updated to permit the use of water hammer arrestors but require these devices to be accessible, as defined at Section 890.120, for maintenance.

Comment #34

There are several standard revision updates that have occurred to ASSE standards in the code since last promulgation. These are included as supporting material in ASSE's written submission.

Response

The Department has reviewed ASSE's written submission and amended Part 890, Appendix A, Table A.

The following comments were provided as oral testimony by S.J. Peters, Executive Director, Plumbing Contractors Association Midwest:

Comment #35

Oppose raising the upper limit of hot water from 120 degrees to 160 degrees.

Response

The Department has amended the definition of "hot water" in Section 890.120.

Comment #36

Recommend that the current definition of lead free in the Illinois Plumbing code be used to reflect the federal requirements.

Response

The Department has updated language Section 890.210(k). The Department's intent in the proposed rulemaking is to remove lead from wetted surfaces of plumbing materials.

Comment #37

Oppose the prohibition of caulked soil pipe joints. Agree to elimination for new construction, but service contractors need for repairs and renovation.

Response

The Department has determined that the use of caulked joints present a health hazard to plumbers, plumbers' apprentices and their families and finds that there is sufficient risk to eliminate the use of this plumbing technique in Illinois. The National Institute for Occupational Safety and Health identifies plumbing as a job known to put workers at risk of lead exposure due to lead in plumbing materials. Additionally, lead can be taken home from the work place on clothes or in cars thus potentially exposing spouses and children. IDPH has evaluated safer joining methods including "no hub" and gasketed connections in place of caulked joints and finds no evidence that these alternatives cannot be implemented in place of a caulked joint.

Comment #38

Galvanized is still frequently used in the Chicago area for water distribution systems. Oppose to the Sections that prohibit its use.

Response

The existing use of a material does not justify the continued use of a material. The Department has determined that the utility of galvanized pipe is outweighed by its propensity to occlude and corrode,

thereby restricting flow, causing leaks, and providing points of harborage for opportunistic pathogens. Galvanized pipes also provide a source of iron which allow the growth of *Legionella* in biofilms. Additionally, galvanized steel pipe has been shown to leach lead into water even years after all upstream sources of lead plumbing materials have been removed. Studies (N. Clark, Brandi & Masters, Sheldon & A. Edwards, Marc, 2015) have attributed this to both the zinc coating used for galvanizing and lead deposited on the pipe surface from upstream plumbing materials containing lead. Furthermore, the concentration of lead in water attributed to galvanized steel pipe has been shown to be exacerbated by partial service line replacement. The Department has determined that approved, alternative materials in Appendix A are suitable to address the limited remaining use of galvanized pipe in plumbing systems.

Comment #39

Concerns regarding proposed language requiring all plumbing material associated with dialysis equipment to be non-metallic.

Response

The Department worked with the Association for the Advancement of Medical Instrumentation (AAMI) Renal Disease and Detoxification Committee and the Centers for Disease Control and Prevention (CDC) to develop the proposed language. Dialysis facilities typically utilize reverse osmosis which can be corrosive to metal, allowing dissolved metals to interfere with the dialysate.

Comment #40

Regarding Section 890.1210 concerned about issues that may be caused as mechanical devices must be readily accessible.

Response

The Department has evaluated water hammer control in plumbing systems and finds that appropriate and judicious placement of mechanical devices or water hammer arrestors will achieve the same functionality and better water quality than the prolific use of air chambers. Over time air becomes dissolved rendering the air chamber ineffective at protecting against water hammer and providing a dead end, promoting the growth of opportunistic pathogens. The Department is not aware of any studies linking water hammer arrestors to *Legionella* or other opportunistic pathogens. However, the Department recognizes that water hammer arrestors must be properly maintained to ensure efficacy for protection against water hammer. Therefore, the language of Section 890.1210 f) has been updated to permit the use of water hammer arrestors but require these devices to be accessible, as defined at Section 890.120, for maintenance.

Comment #41

Request that the IAPMO/ANSI WeStand 2017 be used for all harvested water systems.

Response

The Department has removed all Sections regarding harvested water.

Comment #42

Request galvanized steel pipe remain as an approved material for building drainage and vent pipe, water service pipe, and water distribution pipe.

Response

The Department has determined that the utility of galvanized pipe is outweighed by its propensity to occlude and corrode, thereby restricting flow, causing leaks, and providing points of harborage for opportunistic pathogens. Galvanized pipes also provide a source of iron which allow the growth of *Legionella* in biofilms. Additionally, galvanized steel pipe has been shown to leach lead into water even years after all upstream sources of lead plumbing materials have been removed. Studies (N. Clark, Brandi & Masters, Sheldon & A. Edwards, Marc, 2015) have attributed this to both the zinc coating used for galvanizing and lead deposited on the pipe surface from upstream plumbing materials containing lead. Furthermore, the concentration of lead in water attributed to galvanized steel pipe has been shown to be exacerbated by partial service line replacement. The Department has determined that approved, alternative materials in Appendix A are suitable to address the limited remaining use of galvanized pipe in plumbing systems.

Comment #43

Request that temperature actuated mixing valves for hot water distribution ASSE 1017 2009 remain in Appendix A.

Response

The Department has updated the language in Section 890. Appendix A, Table A to reflect the restoration of the ASSE 1017-2009 standard. However, because ASSE 1017 devices used alone do not provide thermal shock protection or adequate scald protection the reference to ASSE 1017 has been removed from Section 890.690(b) and 890.680(e).