

Improving water quality in schools and beyond

While Flint is often the focal point of water quality issues, the problem is far more widespread.



Uponor AquaPEX plumbing systems have been successfully installed in thousands of commercial applications througho including educational facilities, multifamily high rises and other structures where water quality is especially important.

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March 13, 2018

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When news of the [drinking water crisis in Flint](#), Michigan, broke nearly four years ago, the outrage was instant and the blame swift. But the response from the plumbing industry was just as fast.

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[Local plumbers and pipefitters went to work](#) fixing water supply lines that were leaching dangerous amounts of lead into residents' drinking water. Manufacturers and associations stepped up to partner with local authorities, and communities and businesses donated countless bottles of clean drinking water in the meantime.

While the crisis is far from over and the extent of damage to the children exposed to the dangerously high levels of lead in the city's drinking water has yet to be fully realized, the industry is setting its sights on preventing similar crises in the future.

A nationwide problem

While Flint is often the focal point of water quality issues, the problem is far more widespread. Nationwide, between six and 10 million service lines are compromised, Copper Development Association (CDA) Vice President **Andy Kireta Jr.** says.

“CDA is working with individual water utilities and municipalities in lead-dense areas to provide credible technical information on the advantages of using copper tube for water service line replacements,” Kireta says. “We are also providing assistance in making proper design and installation considerations to help ensure a long and successful service life.

“Additionally, CDA has been educating members of Congress on the urgent need to address the country's aging water infrastructure. One important facet of this education is to ensure that infrastructure funding includes water infrastructure, not just roads and bridges, and that water infrastructure legislation and

funding include provisions to require replacement of the full lead service line — not just the utility or building owner’s portion while leaving the remainder of the lead line in the system.”

Proactively diagnosing water quality issues before they have a chance to become critical is crucial. Recently, Pipe Restoration Technologies, parent company of ACE DuraFlo and ePIPE brands, introduced the LeadSmart Lead Protection Plan for on-site lead testing and remediation of potable water.

“When completed, the property owner can receive a LeadSmart Certificate of Compliance once the property’s drinking water is tested in compliance to EPA guidelines for lead,” Pipe Restoration Technologies CEO **Larry Gillanders** says. “Property owners, property managers, school districts and municipalities see the value in the LeadSmart program, because it offers a complete solution: water testing, education, remedy and certificate of EPA compliance.”

Pipe Restoration Technologies also offers ePIPE, an epoxy coating that creates a NSF 61-approved barrier coating on the interior walls of the pipe, serving as a long-term solution to help prevent those problems from occurring.

“More than 40 schools in the U.S. used the LeadSmart program in 2016 — the first year of the program’s availability — along with the ePIPE technology to bring their potable water systems into EPA compliance for lead and copper leaching,” Gillanders says.

Water quality improvement efforts have been ongoing for decades, but more can be done, says **Thomas Palkon**, senior vice president – water systems for the International Association of Plumbing and Mechanical Officials (IAPMO).

“The water treatment industry has experienced recent tragedies such as Flint, which has put a spotlight on the improvements that need to be made to our aging infrastructure and the quality of our drinking water,” Palkon says. “The industry is responding by creating safer products, such as lead-free brass. We are also modifying existing water safety standards to make the stricter and creating standards for new technologies that are being developed.”

Codes and standards

As the industry works to remediate ongoing issues with water quality, codes and standards organizations are working to ensure new products are manufactured to the highest, safest quality to help ensure potable water is as safe as it can be for consumption.

“California Assembly Bill 746, which went into effect Jan. 1, requires community water systems to test lead levels by July 1, 2019, in drinking water at all California public K-12 school sites that were constructed before Jan. 1, 2010,” Gillanders says. “Other states, such as Illinois, Maryland, Minnesota, New Jersey, New York and Virginia, also require mandatory lead testing in public schools.”

Meanwhile, the International Plumbing Code (IPC) establishes minimum standards to provide a reasonable level of safety, health, property protection and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of plumbing equipment and systems.

“The IPC requires a potable water supply system to be designed, installed and maintained in such a manner to prevent contamination from non-potable liquids, solids or gases being introduced into the potable water supply through cross connections or any other piping connections to the system,” says **Lee Clifton**, director of PMG resources, government relations for the International Code Council (ICC). “It also requires new potable water systems to be purged of deleterious matter and disinfected prior to utilization.”

The IPC is updated every three years in order to keep pace with new materials, new technology and emerging issues, Clifton adds. The International Codes (I-Codes) apply to all building occupancy groups and structures.

ICC also developed the International Green Construction Code (IgCC), a model code that provides minimum requirements to safeguard the environment, public health, safety and general welfare through the establishment of requirements that are intended to reduce the negative impacts and increase the positive impacts of the built environment on the natural environment and building occupants, says **Fred Grable**, senior staff engineer, codes and standards development for ICC.

“The IgCC addresses natural resource, material, water and energy conservation, as well as indoor environmental quality and comfort, building commissioning, operations and maintenance for new and existing buildings, building sites and building materials, components, equipment and systems,” Grable says. “As a participant in the Plumbing Industry Leadership Coalition, the Code Council shares ideas to promote public health and safety, water efficiency, quality and sustainability. The Code Council also participates in the Legionella Symposium, which focuses on all aspects of identifying health risks, analytical and monitoring methodologies, and managing practical preventive and mitigation solutions related to Legionellosis, the most significant waterborne disease in the U.S.”

Meanwhile, IAPMO is working with other entities to develop consensus standards to help protect the public.

“The standards we have created or are in the process of creating for the plumbing and drinking water quality industry help ensure the materials are safe to contact drinking water, the products are structurally sound to prevent cracks and leaks, and the product(s) perform as marketed,” Palkon says. “Additionally, professional qualification standards and certifications help to build consumer confidence that these products are being installed, tested and maintained correctly.

“At this time we are in the process of developing a comprehensive standard for commercial water-treatment products. Many schools, hospitals, restaurants and churches use water treatment equipment to improve the quality of their water. However, a single comprehensive standard does not exist to help ensure these products are safe to use and improve water quality as advertised.”

IAPMO publishes the Uniform Plumbing Code (UPC), which has been adopted throughout the U.S.

“This plumbing code is an ordinance providing minimum requirements and standards for the protection of the public health, safety, and welfare,” Palkon says. “The provisions of UPC shall apply to the erection, installation, alteration, repair, relocation, replacement, addition to, use, or maintenance of plumbing systems within this jurisdiction. Therefore, when a school or hospital is being built or remodeled in a jurisdiction that has adopted the UPC, the numerous standards and requirement in the code must be met in order to pass the plumbing inspection.”

Manufacturers are also working to create products that are safe and code-compliant.

“The piping in an Uponor AquaPEX plumbing system is manufactured as a highly durable crosslinked polyethylene product that does not pit, scale or corrode,” says **Jamison Kortas**, senior manager, regulatory, Uponor North America. “All the plumbing components in an Uponor AquaPEX system — including pipe, fittings and valves — are certified to NSF/ANSI Standard 61 Drinking Water System Components – Health Effects and are code-compliant.”

What plumbers can do

Plumbing contractors and techs are on the frontlines of the fight for safe drinking water — they have the power to identify and remedy potentially dangerous issues for their customers. But, they must be prepared.

“Plumbing contractors must be knowledgeable of chemical leaching, chemical permeation, bacterial contamination and chlorine-induced degradation failures due to disinfection,” Grable says. “It is critical for builders, plumbers and specifiers to do what they can to minimize the impact of their decisions on drinking water quality.”

“[We] urge the real estate industry to adopt disclosure rules about lead contributors in water piping systems,” Gillanders says. “Schools and other public institutions should adopt mandatory water testing protocols and remedies in order to educate users and to bring the property into compliance with EPA guidelines for lead and copper in drinking water.”

“Properly trained and certified plumbers follow the plumbing code and use certified products in these buildings,” Palkon says. “The plumber’s role in improving water quality in institutions is to be properly trained or certified and to understand the code so that products and materials he or she is using can be properly installed to comply with safety requirements.”

Ultimately, a plumber’s greatest responsibility is installing a system that is reliable, high-performing and safe, says **Casey Swanson**, senior manager, commercial segment, Uponor North America.

“This includes ensuring the piping and other materials coming into contact with the drinking water meet all necessary codes, standards and listings for the application,” Swanson says. “Working closely with the supplier of the plumbing components can help installers ensure a properly designed and optimized

system. Installers can also help improve system performance by providing important feedback and suggestions regarding the plumbing system design.”

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