CASE STUDY

PSYCHIATRIC HOSPITAL PRESERVES PATIENT COMFORT AND SAFETY WHILE REPLACING FAILED PLUMBING IN MAIN CARE FACILITY

The Southwestern Virginia Mental Health Institute

Smyth County, VA

Established: 1989

Southwestern Virginia Mental Health Institute Installs FlowGuard Gold® CPVC Pipe and Fittings for Quick, Safe and Economical Repipe of Corroded Copper Plumbing

The Southwestern Virginia Mental Health Institute (the Institute) is a 176-bed, state psychiatric hospital that serves adolescent, adult and geriatric patients with treatment and rehabilitation services. Located in rural Smyth County, Virginia, the hospital's campus includes 17 buildings. Built in 1989, the Institute's Bagley Building serves as the Institute's main patient care facility, housing treatment units for each of its three groups of clients. In the late 1990s, when the building was still less than ten years old, the copper plumbing system began to

experience premature, chronic failures, with pinhole leaks developing throughout the 102,000-square-foot structure.

"Bagley is a relatively new building that had type-K copper piping throughout the facility. At first we had three or four leaks, but every year after we dealt with more and more," said Don Chisler, Director of Physical Plant Services, Safety and Security for the Institute. "By the year 2000, we were chasing 25 to 30 leaks annually."

"We decided to remove a section of the pipe to examine the problem. Once we removed the insulation, we saw that speckled green corrosion had developed all over the pipe. If you scraped it with a pocketknife, the corrosion would pop off to reveal a small pinhole," he said. "The pipe was literally being eaten through from the inside out."

Chisler requested outside counseling from the architecture and engineering firm, Spectrum Design, to evaluate the failures in Bagley. Noted water chemistry experts, Spectrum concluded that aggressive water piped in from nearby Marion, Virginia, contributed to the advanced corrosion.

"As a hospital, we have to constantly re-circulate the lines to provide hot water on demand. I think that may have contributed to the accelerated corrosion," said Chisler. "I believe that the aggressive water from Marion, the on-site softening of the water and continual re-circulation all combined to magnify the problem."

Following Spectrum's recommendation, the Institute elected to repipe the facility with FlowGuard Gold® CPVC pipe and fittings to eliminate the threat of re-occurring corrosion. The FlowGuard Gold® CPVC plumbing system offered the hospital a number of benefits over its previous copper system. Primarily, the system will not pit, scale or corrode, which substantially reduces the risk of future premature failures and costly re-piping. The hospital also found the CPVC plumbing system to be faster and easier to install, keeping the project schedule on time, which was extremely important for minimizing disruption in this highly sensitive environment.

"Because the FlowGuard Gold® plumbing system was able to be installed so quickly, we only had to move patients from their normal ward for two weeks to a vacant ward where the repipe was already completed. Several of those days were merely for safety reasons not related to the work being done," said Chisler.

"Had we installed copper, the project would have taken twice as long," he said.

Another challenge to executing the repipe project was maintaining the highest level of life safety protection. Because of the scope of the project, installing copper would have required extensive use of torches, which generate smoke as a byproduct. As such, Chisler would have had to shut down the facility's fire detection system to eliminate false alarms. But because FlowGuard Gold® plumbing systems use a one-step solvent cement joining system, no torches were needed, making the installation both safer and more economical.

"Previously, when I would repair the pinhole leaks, I would have to take the fire detection system out of service because the smoke detectors would pick up the smoke from my torch and sound the alarm immediately," said Bobby Coe, plumbing supervisor for the Institute. "If we had used copper for this repipe, we would have had to take the fire detection system out of service the

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Type of Construction:
Health Care Facility

Installation Type:
Repipe

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entire time. Considering copper would have taken twice as long to install as the FlowGuard Gold® plumbing system, that would have been at least five months."

"We would have had to hire extra staff to maintain a fire watch, patrolling the hallways and keeping detailed records," said Coe. "That means that with copper we would have had to pay for extra workers just to walk around and watch for five months. That would have been very expensive."

"Anytime we impact life safety in the facility, we have to enact interim life safety measures, which includes notifying the fire department of our situation," said Chisler. "The only time we had to put the system down during the repipe project using FlowGuard Gold® pipe and fittings was actually when the contractor was cutting out the old copper pipe. This was a very short period of time compared to if we were putting all copper back in."

"So one real advantage to installing CPVC in a healthcare environment is not working with torches. Each time we shut the sprinkler system down and bring it back up, we would have to have stabilized it to ensure there was no air in it," said Chisler. "You don't want to have to do that everyday, and you don't want to drain the pipes unless you absolutely have to. It is very labor intensive."

"Smoke from a torch can reach a smoke detector in a hallway or get drawn into a vent, and the HVAC fire detection system will pick it up and set off the alarm. That's very disruptive to the patients and it requires that 20-25 members of our staff respond to the alarm," he said. "And, if we don't call the fire department quickly enough, they'll send engines out. Fire departments don't like responding to repeated false alarms. So the fact that the FlowGuard Gold® system uses a solvent cement joining system was a really positive, hidden benefit."

According to Chisler, another factor the Institute had to take into consideration is the potential for exposure to Legionella. While these bacteria are natural inhabitants of water, exposure to elevated concentrations are more likely to cause a type of lung infection (pneumonia) called Legionnaires' disease.

"Legionella in hospital environments is becoming a serious issue. The bacteria can build up in the pitted areas of metallic pipes," said Chisler. "As far as providing an environment that prevents Legionella from collecting, I think CPVC is one of the best pipe materials because of its smooth inner walls."

A 1999 study commissioned by the Ministry of Public Housing, Urban Planning and Environment (VROM) for The Netherlands and conducted by KIWA, the approvals agency for potable water piping systems, confirms Chisler's viewpoint. The study found that the growth of Legionella bacteria was extremely low in the presence of the CPVC materials in comparison to copper and other plastics.

Coe added that his goal in specifying plumbing components is to always use quality products so that he doesn't have to repeat repairs. "That's why I'm so happy with FlowGuard Gold® plumbing systems," said Coe. "For any future repairs, I would definitely use FlowGuard Gold® pipe and fittings."

"What's more, there's no comparison in terms of price – FlowGuard Gold® pipe and fittings are less expensive to install than copper when you consider the total installed cost," he said. "The bottom line, however, is that there is no way FlowGuard Gold® pipe and fittings are going to corrode. So copper just can't compare."

To receive a copy of the entire KIWA study, contact the FlowGuard Gold® Marketing Department at 1-888/234-2436, Ext. 7393.

Since Noveon's development of CPVC plumbing systems over 40 years ago, more than three (3) billion feet of CPVC pipe has been installed in homes, condominiums, buildings, apartments and hotels, including twelve (12) million homes. For more information on the FlowGuard Gold® plumbing system, including pipes, valves, joining cement, caulks, sealants and tools, call 1-888-234-2436, X7393, or visit www.flowguardgold.com.

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