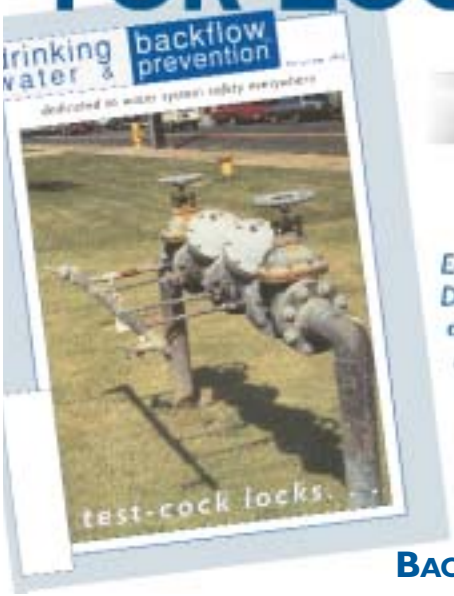
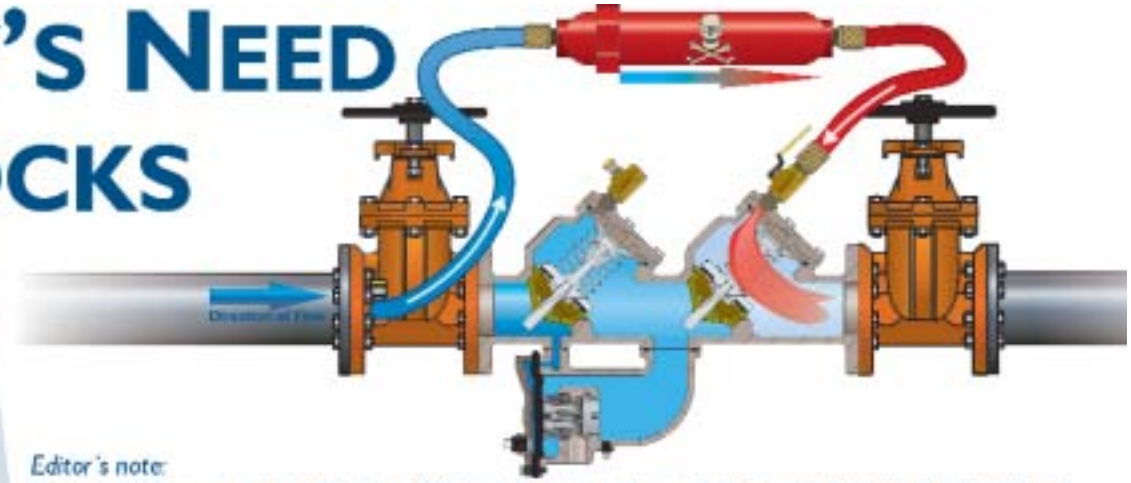
TODAY'S NEED FOR LOCKS





Editor's note:
During the November 1991 Drinking Water & Backflow Prevention Summit & Expo, Robert Weibel of Cocki Test Cock Locks made a presentation of what was presented to DW&BP readers in our November 1991 issue. Presented below by request, Robert Stevens of Santoi International offers his thoughts regarding test cock security for your consideration.

THE HAZARD OF UNSECURED BACKFLOW PREVENTERS

by Robert Stevens
Patent Developer, Santoi International

Many people are unaware of the potential danger posed by backflow prevention assemblies. Larger facilities can have their potable water contaminated or polluted within seconds. These water users include high-rise buildings, hospitals, commercial centers, restaurants, schools, shopping malls, military bases and commercial properties.

Within seconds, a facility could be inadvertently or intentionally selectively contaminated by virtue of unprotected backflow preventer test cocks. This can be done easily without the use of specialized tools or equipment!

Due to the differential pressure across the test cocks (check valves), contaminants can be pulled into the drinking water service line or water service main, as illustrated in above.

Under normal flow conditions, connecting two or more test cocks together results in a flow that by-passes the check valves, which will introduce a contaminant in the by-pass directly into the consumer's water service line. Furthermore, such connections defeat the backflow preventer under back-siphonage conditions contaminating the potable water supply for everyone.

Multiple test-cock connections are frequently created by landscape or maintenance personnel, who are unaware of these hazards or the flow dynamics involved. Because most backflow prevention assemblies are readily accessible but cosmetically hidden from view, the assemblies are easy targets for malicious tampering or terrorist attack.

So, how did this menace ever get started?

Originally, testable backflow prevention assemblies were installed at the point of a cross-connection hazard, known as an *isolation* installation. In such an installation, there was little concern about contaminating the water supply downstream of the backflow prevention assembly, because the water was already deemed non-potable or contaminated.

Today, backflow prevention devices are being used to *contain* entire facilities, as a water purveyor and regulatory convenience not to mention greater profit to the backflow manufacturing industry. Sadly, 'containing' the water of an entire facility does not protect the water supply within the facility and exposes it to the added risk of accidental or intentional contamination.

Recent concerns over water supplies and water contamination to large facilities inculcates guarding against both accidental and intentional water contaminations through backflow preventers. A variety of security devices have been manufactured for this purpose, such as patented *Cocki*™ Anti-Contamination Backflow Preventer Locks, enclosures and vaults.

A photo of patented *Cocki*™ Anti-Contamination Backflow Preventer Locks is shown below.

The Foundation for Cross-Connection Control and Hydraulic Research (FCCCHR) a decade ago felt that test cocks on backflow preventers posed only a minimal nuisance and advised us in pertinent part that:

No reports of contamination through the test cocks of an approved backflow prevention assembly have ever been reported to our office.

The backflow industry appears to be taking a wait-and-see approach to facility water supply contamination. Such complacency may be inappropriate, especially in these times.

We have proposed two test cock locking methods. One is to lock the test cock itself. The other is that the test cocks be removed and refitted for periodic testing; a more time consuming and costly method. With either method, as an added precaution, a means of preventing closure of the up-stream shut-off valve is advisable.

Although we believe an approved backflow prevention assembly should be testable after test cock refitting, the FCCC&HR has previously stated in pertinent part that:

- *The test cocks are considered an integral component of an (FCCCHR) approved backflow prevention assembly.*

and further that:

- *Since test cocks are considered an integral part of the backflow prevention assembly they are required to successfully complete the Foundation's laboratory evaluation and one year field evaluation. The removal of test cocks will void the Foundation's approval of that particular product.*

and still further that:

- *Should the relief valve be caused to stroke open and closed before the actual field test is performed, erroneous relief valve opening point data may be found.*

Other organizations that maintain standards for backflow preventers also address test cocks. The American Water Works Association in its standards C510 and C511 states in section 4.3.1.8 (same reference for each):

Resilient-seated, full-ported test cocks shall be attached to corrosion-resistant nipples or have male threads to be installed in tapped holes.

The American Society of Sanitary Engineering requires test cocks on double check and reduced pressure princple assemblies through its standards 1015 (1.3.3.6) and 1013 (1.3.3.7) respectively. The paragraph states:

Test Cock Location

Test cocks shall be provided in the following locations:

(a) One the supply side of the inlet shut-off valve.

(b) Between the inlet shut-off valve and the first check valve.

(c) Between the check valves.

(d) Between the second check valve and the outlet shut-off valve.

Although the test cock removal method is not being proposed for laboratory or field test evaluations, the FCCC&HR continues to object to this higher security method. However, the basis for their objection does not stand the test of simple logic. If the FCCC&HR arguments were true, can a valid field test ever be taken in that there is no way of knowing when the relief port was last caused to stroke open either due to water main pressure fluctuations or obstruction. Furthermore, repairs, which are common, require depressurization. Also, we've not heard of any objections to the use of new or repaired backflow preventers in which tests may be conducted shortly after depressurization. Therefore, are we to assume that all FCCC&HR approved backflow prevention assemblies are unsatisfactory? Or is there an industry-wide obfuscation of this menace? You decide!

Clearly, the test cocks on backflow prevention assemblies constitute a nuisance if not an outright hazard to a water supply. We believe such a nuisance is defined by various sources such as the *Uniform Plumbing Code* (UPC). Water administrative authorities, which adopt these code standards are generally required to abate the nuisance or hazard in the manner provided by law.

Sadly, facility managers and owners falsely believe their 'containment' installed backflow preventer is actually protecting them rather than placing them in harm's way.

We believe most facility owners would choose to protect their water supplies by locking their backflow preventer, if only they knew the risk. We believe the backflow prevention industry has been aware of this risk for well over a decade, but prefers to look the other way and hope for the best.

Just follow the money. A small backflow preventer installed to actually protect the water supply within a facility costs much less than a big backflow preventer installed on the main service line, which only places the facility at risk. Of course, large complex facilities may need to have a 'containment' installed backflow preventer. However, such facilities should be aware of the hazard the backflow preventer poses, so mitigative measures can be used to reduce risk.

For information on the patented *Cocki*™ Anti-Contamination Backflow Preventer Locks, please visit the Santoi International website at: http://santoi.tripod.com dw&bp