Serious Cross Contamination In Yard Hydrants

by Herb Hoeptner, Hoeptner Perfected Products

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Due to the deaths associated with e-coli outbreaks and other pathogens that have contaminated our water supplies, there has been great concern regarding cross contamination between the potable water supply and the soil, which carries animal by-products, fertilizers and other hazardous materials.

Most of us are familiar with a standard "weep hole" Yard Hydrant as they have been around for years. Hundreds of thousands of them are sold each year. They are used in campgrounds, RV parks, ranches, farms, gardens and anywhere water is needed away from a building. However, most of us are unaware of the serious cross contamination potential associated with the weep hole at the base of the hydrant. The common weep hole yard hydrant consists of a head for attaching a hose, a riser pipe and a shutoff valve deep below the frost level. The term "weep hole" is derived from the fact that when the weep hole hydrant is shut off, a hole in the side of the valve opens to drain all water from the riser into the soil below the frost line, much like a Stop and Waste Valve.

Most state's agencies recognize the cross contamination potential anytime a hose is connected to a hydrant. Hoses have the ability to be placed in high hazard environments, such as stock tanks, pesticide tanks or even lying on the ground in mud puddles. Back Siphonage will cause these hazardous materials to be sucked back into the water supply. Back siphonage can occur whenever a supply line is broken or drained for repair. In addition, yard hydrants create a back siphonage each and every time they are shut off, as the mere act of draining the riser, creates a siphon at the hose bib. Because of this, many states have required vacuum breakers to be attached to all hydrants where a hose could be attached. Naturally this prevents cross contamination during back siphonage should the hose be placed in a contaminated environment.

What many agencies are starting to realize is that there still exists a severe cross contamination potential associated with the weep hole being in contact with the soil. Because these weep hole hydrants function much the same way as a Stop and Waste Valve, they suffer the same cross contamination issues. For example, if the stopper in a standard "weep hole" hydrant ever leaks, it is undetectable at ground level as it is leaking out the weep hole deep into the ground. The hydrant drips continuously throughout the day & night, and from the surface no one is aware the hydrant is leaking. When a back siphonage condition occurs that leak out will become a leak in, sucking contaminated muddy water into the supply line. If the hydrant is located in a horse or cow barn, animal by-products will leach into the potable water supply. In states where the ground water level fluctuates, this problem is exacerbated by the fact that during the summer months, when the water table rises above the weep hole, the riser will be filled with soiled lake water that will be consumed by the public. Each time the hydrant is shut off and the weep hole opens, contaminated lake water will migrate into the hydrant. Each time the hydrant is turned on, that contaminated migrated water enters the potable water supply system. Outside drinking fountains operate the same way. During the summer months each time the fountain is turned on, the first drink of water is nothing but soiled, possibly contaminated, water.

The liability toward each state became such a concern that many states created their own yard hydrant requirements. Initially, states implemented requirements to isolate weep hole hydrants from the potable water supply. These requirements included installing a testable RPP backflow preventer upstream of the

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hydrant and then tagging the hydrant "danger unsafe water". This solved two major concerns. First, it protected the potable water supply from siphoning contaminated water into the public water system, and secondly, it attempted to notify the public not to use the hydrant for any potable source. The downside to this approach was the cost associated with the purchase and installation of a testable RPP backflow preventer, the difficulty in finding a location for the RPP device to keep it from freezing, the added cost in annual inspection and testing of the RPP device, and the fact that the weep hole yard hydrant is not fit for potable water. RV parks & campgrounds were especially hard hit, as they required potable water from their hydrants.

Manufacturers soon developed a new breed of yard hydrants to solve the problems associated with the new requirements imposed on weep hole hydrants. These new hydrants are called Sanitary Yard Hydrants.

A Sanitary Yard Hydrant works much the same way as a Weep Hole Hydrant in that when they are shut off, the water in the riser drains down and out a hole located below the frost line to prevent freezing. However, instead of draining out a hole and into the soil, the Sanitary Hydrant drains into a sealed tank. When the hydrant is turned on again, the water in the tank is expelled leaving the tank empty to repeat the cycle when the hydrant is again shut off. Because the sanitary hydrant drains into a tank there is no cross contamination with the soil. Because the soil is not required for drainage the hydrant can be placed in any soil condition, even clay. With the addition of a vacuum breaker at the hose connection, the Sanitary Yard Hydrant protects the potable water supply & public from cross contamination from the soil & from the hose.

The problem for the state and local code officials was the cost, manpower, and liability in having to develop their own approval process and testing each manufacturer's device for approval. In turn, the varying requirements by each state made it difficult for manufacturers to make one product for all states.

ASSE realized the need to develop a national standard to help states avoid this liability and give manufacturers the ability to meet one set of requirements. After six years of debate and research by code officials, manufacturers, engineers, consultants, and the public, ASSE's Sanitary Yard Hydrant Standard 1057 was completed. This standard requires that the yard hydrant not drain directly into the ground and that it must have a back flow preventer if a hose is capable of attachment. In addition, it stipulates minimum required pressure and flow capabilities and ensures proper freeze protection. It also stipulates, the manufacturers must test their hydrants at an approved and regulated test lab.

This standard reduces the liability, manpower, and costs for the state agencies to ensure proper protection of the water supply and the public. At the same time it helps manufacturers to have a base line from which to develop and improve yard hydrants in general.

With the continued efforts by states for clean, safe, potable water and the high liability associated with cross contamination, greater concern must be given to the proper selection, installation and use of yard hydrants.

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