by Pete Koenig

# Water operators develop new tools to improve their work

The age-old complaint, "If only I had a thing-a-ma-jig to make this easier. What is a "thing-a-ma-jig?" In some instances, it may be a screwdriver or a pry-bar. In other instances, it may be a tool or a procedure that has been thought out, refined, developed and patented. Either way, I've compiled a short list of some practices and tools that help water and wastewater operators in the field. The following are some ideas, tried, proven and unproven.

**Liquid chlorine solution in a garden sprayer.**

Has it ever been too windy to pour granular chlorine into a pipeline needing sanitizing? No matter what type of container an operator may use to store granular chlorine, frequently a situation crops up when the container is too large, or the trench is too narrow to pour solution (or powder) into the pipe. It sometimes is just not possible. I know of one operator who orders granular chlorine in 5-gallon buckets and transfers it to a short piece of 1-inch pipe that is capped on both ends. As seen in the picture to the right, this works well when adding chlorine to a water line that is about to be pigged and charged, if the waterline can be lifted from the trench or at least bent in and upward direction in order to capture the granules. That's the case when it's not too cold for workers to feel their hands well enough to take the cap off one end, or when it isn't too windy so powder isn't blown up in the face.

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By mixing a chlorine solution into a liquid form and storing it in a one or two-gallon garden sprayer, an operator has a storage container and injection tool all in one. The nozzle can be turned to "jet" or taken off easily to squirt chlorine into a pipeline or the nozzle can be turned to "spray" to disinfect the outside of a dirty pipe where a repair coupling is to be fitted. A small sprayer is inexpensive, doesn't take up much room in a work vehicle and is easy to handle, regardless of weather conditions.

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*Nemaha RWD 3 Operator Paul Strathman fills his "portable chlorine container" from the bulk bucket that the system purchases to sanitize newly installed pipes. The short length of pipe is easily capped and fits nicely in a work vehicle.*

**Paint the joints of gasketed water lines.**

When putting lengths of gasketed PVC pipe together, an operator or contractor is supposed to watch for the bell to cover up the black marker line on the tapered end of the pipe. But what if there is no line? Or, what if the line doesn't circle the entire pipe? After the pipe has been lowered into the trench, how does the installer know if the pipe has stayed together? One option is to spray marker paint on each joint. Before covering the pipe, check to make sure that there is no gap in the paint where the two pipes are joined. If there is a gap, get on the end of the pipe with

a sledgehammer and a block of wood and give a couple of persuasive taps to push them together. I was surprised at the number of contractors and operators who don't use this practice of inexpensive insurance to make certain their lengths of pipe aren't coming apart when installing water lines. Many joints can separate when a string of pipe is dropped into a trench.

**Use valve holders to level a valve**

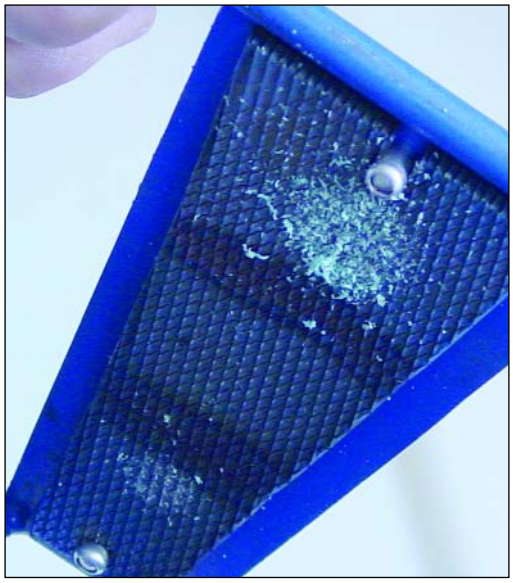
When setting a valve, many times it would be easier to attach the valve to the existing pipe while the valve is suspended above the bottom of the trench. Sometimes, if the bottom of the trench isn't smooth an operator places a concrete block as a support base for the valve. Extra time is spent digging out the right amount of soil to lower the block to the right depth, or to raise one end to level it, or to cut back a trench wall to make the block fit. If the valve could be suspended by use of a backhoe bucket and strap or chain, the operator could attach the valve without the interference of the concrete block while bolting on the flange. Unfortunately, it's difficult to wrap a chain or strap around a valve in such a way to make it hang plumb.

There is a tool that attaches to a chain or strap and grabs the nut on top of the valve, making it hang plumb. It is called a "valve setter." Several versions of this tool have been in existence for quite some time.

**PVC pipe beveler**

Rick Rider, a contractor who works on RWDs in Kansas and Missouri, saw the need for a tool that would bevel the end of PVC pipe in order to install repair

*Nemaha RWD 3 manager Paul Strathman demonstrates how he uses a garden sprayer to chlorinate pipe. The HTP solution in the sprayer can be introduced with minimal spillage and mess.*



***Above:*** *The traditional method of beveling PVC pipe usually involves use of a hand rasp. Since Rick Rider, utility contractor from Bronaugh, Mo. and his crew repair more than 200 water pipelines annually, Rick decided there had to be a better way. He devised a mounting to hold four rasps. He was awarded US. Patent No.7104737 on Sept. 12, 2006 for the EZ Bevel.*

***Above right:*** *A close-up view of the EZ Bevel's serrated beveled rasp blade.*

couplings. Rick's predicament, much like the situation for all operators, is that it usually requires too much time to bevel a pipe as the trench is rapidly filling with water.

Using a rasp or file while bent over in a trench that is filling with ice-cold water from an up-hill quarter mile of 4-inch line doesn't leave much time to install a repair coupler without a snorkel and wet-suit. Using a hot saw with an abrasive blade works well and fast if an operator can maneuver the saw completely around the end of the pipe in a narrow trench. In cold weather, time becomes a real

issue. But do not worry. Rick Rider has designed and developed a PVC pipe beveler that incorporates two great features.

First, the design allows the operator to remove and replace the worn rasps on the tool. Although filing plastic pipe doesn't wear down a steel rasp all that fast, the day-to-day abuse of bumping around with other tools in the back of the truck can take a toll on the condition of the rasps.

Second, and best of all, the design allows for water to flow freely through the tool while it is being used. There are several other pipe bevelers on the market, but most are designed as a cap with a blade inserted in it. The cap design is efficient and some can even be attached to a cordless drill making it faster yet. However, the cap does not allow water to flow through the tool and therefore can't be used during most "real-world" situations. This feature alone puts it a step ahead of many other designs of pipe bevelers on the market.

An additional benefit of the Rider design is that one tool can replace several tools of different sizes. The EZ Bevel is adaptable to pipe sizes ranging from 1.5 to 4-inch. Usually an operator needs to buy several different tool sizes of another beveler design just to fit the different pipe sizes in the system.

The EZ Bevel is a good design and I wish him the best of luck marketing this handy tool.

All of these techniques and tools are products of RWD and city water system personnel and contractors. They are a testimony to the ingenuity and focus of the water system workers. The people involved should be commended for resourcefulness and desire to not "throw in the towel," but to find a better way.

I hope the procedures and tools shared here impart a better way of completing a task associated with one of the most important jobs that a utility worker can perform: the job of providing clean, safe drinking water to their friends and neighbors – the water customers of the system.

If you know of any techniques or tools used to make jobs in your system easier, I'd appreciate hearing about them. Please send any examples to my attention by e-mail, pete@krwa.net, or by regular mail at: at KRWA, PO Box 226, Seneca, KS 66538.

Also, the KRWA Conference has many sessions to make system jobs easier. Hundreds of products and services also are available in EXPO Hall. It's March 27-29 at Century II Convention Center in Wichita, Kansas. I hope to see you there!