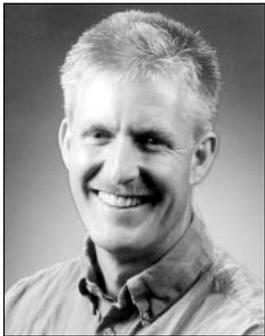


Lax tank maintenance increases ownership costs

After a mild winter and then a hot-cold dry spring, it's time to ask if your water system is prepared for the hot summer months and potential increased demand for water. Pumping rates can easily double or triple during the summer months. Is your water supply adequate? Are system pumps limping along? Are storage tanks clean? Kansas enjoyed a very mild winter. The mild winter enabled some systems to complete tank maintenance. In this article I would like to focus on storage tank maintenance.

Water storage tanks can cost hundreds of thousands of dollars to construct. Although initially expensive, water storage tanks provide a cost-effective means of

keeping drinking water clean, safe and in adequate supply. The trouble is many cities and RWDs are sometimes lax in maintaining the tanks, thereby shortening the life of the tank and increasing ownership costs.



Jon Steele, Tech Assistant

To paint or not to paint

Any major recoating inside tanks should not be done until the temperatures are warm enough to allow proper curing of the new coating. I have seen many cases where the weather was not right, painting of the interior proceeded and the tank was put back into service too soon. Those conditions usually generate customer complaints of paint solvent or

petroleum-like odors in the water. Also compliance issues with drinking water regulations are likely because of increased levels of Volatile Organic Compounds (VOCs). Tanks that are put back in service without adequate curing and drying of interior coatings

companies may want to apply coatings while it is convenient for them but make sure the specifications of the coating manufacturers are followed. If applied properly a coating can last up to 15 years or more. An improper application may mean a system will be lucky

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need to be drained and then ventilated. Sometimes heaters are installed to help dry the paint. Epoxy coatings contain strong solvents that need to "gas off" before the tank is refilled. Putting water into an uncured tank does

to get 15 months out of it. In rare cases, a tank may need to be re-blasted and repainted because of the VOC issues.

Another tank coating problem noticed when assisting small systems clean tanks is solvent



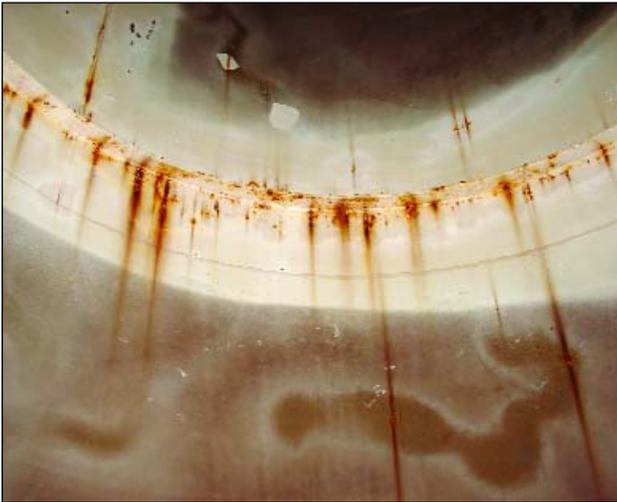
Rick Harnden and Ron Kasal, members of the board of directors at Harper RWD 2, use a special tool that KRWA Tech Jon Steele, standing behind, provided to remove the drain plug on this standpipe.

not stop the gassing off process; it only slows it down and the water picks up taste and odor of the paint. If at all possible, apply interior coatings during periods of warmer temperatures. Tank

entrapment. The condition exists when a coating is not applied properly and a top coat was applied too soon. This early application seals off the uncured coating. I have worked in tanks

where the coating came off in sheets! Behind the cured surface it still smells like fresh, uncured paint.

Coating failure where the paint just falls off can be caused by



The Harper RWD 2 standpipe shows rust in areas of previous tank maintenance which are the lighter colored areas.

improper surface preparation. Yet another cause is when too much time lapses between coats, leaving spots of undercoating exposed.

Whether due to a surface not properly sandblasted or paint applied under the wrong conditions or improperly mixed paint, the result is the same – a failed coating.

Inspect that tank!

Tanks should be inspected and coatings maintained on the inside to prevent premature failures due to corrosion. I recall one small town that had not inspected their tank for many years. The initial phone call indicated that the tank had developed a pinhole and was

leaking. Repairs were made on the pinhole but eventually the tank had to be replaced. A tank can be smooth and look good on the outside but can be badly pitted on

the inside. Good looks on the outside are what everyone sees and it may be important to sport the local high school mascot but it is what's on the inside that really counts. If the interior coating is properly maintained, the tank should last for many years even without exterior paint. Some are a little mystified by storage tanks but they are nothing more than assemblages of iron standing in the air. The outside could last a lifetime without any coating, assuming you can live with a rusty tank – but the inside cannot.

As all coatings eventually fail and need reapplication, make sure a contractor properly prepares any surface to be recoated. If rusty and pitted a sandblasting to bare bright metal is necessary. Such a procedure is referred to as a #10 blast or a SP10 or SSPC-SP10. Another term you may have heard about but are unfamiliar with is ASTM. This and SSPC aren't fraternity clubs on a college campus or secret societies. These

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are organizations with engineers and scientists who conduct tests and set standards for products and proper procedures for applying coatings and test materials. The Society of Protective Coatings and the American Society for Testing Materials are similar to the American Water Works Association (AWWA) in that they each set standards.

Proper procedures to be followed included several key items. Be sure temperature and humidity are within suggested ranges. Make sure the paint manufacturer's specifications are followed. The surface should always be dry and at least five degrees above the dew point. Mill thickness is another term often heard in surface refinishing. Mill thickness refers to the thickness of the coating in thousandths of an inch. Thus three mills would mean .003 of an inch.

Most tank service companies are very reputable. Still, make sure the work contract includes defined

specifications as what is to be done and what the cost will be. What is needed can be determined after an initial inspection is made. Engineers and paint manufacturers can assist in preparing specs for a refinishing job. I recently worked with a small community to help prepare specs for a job. A paint company representative was consulted for recommendations as well as recommendations from an engineer. The city then added modifications and suggested needed repairs based on field inspections done when the tank was cleaned.

Cathodic protection

Cathodic protection in public water supply storage tanks has been debated by many communities. Some systems have this and many do not. Cathodic protection involves the use of sacrificial anodes to dissolve away in place of the tank metal. Some installations are quite simple while others are elaborate and may involve electrical current. Such



Another view inside the tank at Harper RWD 2. The lighter colored areas were recoated in a prior maintenance.

systems are complicated and need to be constantly monitored to ensure they are functioning properly. In my opinion it is just an added expense and headache to maintain. I recall one expensive and complicated cathodic system on a RWD that had a network of wiring all over the tank and up the riser pipe. This all had to be removed before sandblasting could be accomplished. It ended piled in the corner of a shed, never to be reinstalled. If the interior coating is properly maintained, cathodic protection is not likely necessary.

Lead-based paint

Lead-based paint can be a problem. Almost all of the older coatings contained lead. Tank refinishers many times entirely drape a tank being sandblasted. This is to contain waste from sandblasting and in some situations to help with over-spray. The lead waste should be contained, collected and properly disposed of.

After a tank has been opened up for inspection, cleaning and or paint work, it should be thoroughly disinfected before going back into service. Chlorine

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is inexpensive. I like to use plenty of it to get to a 200- to 400-mg/l solution. Bleach is readily available making it a good choice. I have used fire trucks to mix a solution and wash down the interior of the tank or have added bleach and then filled the tank. If the entire tank is filled with the strong solution it will take more chlorine and it will have to be drained and refilled with normal system water after adequate contact time with the concentrated chlorine. After the tank has been refilled it should be sampled to ensure good biological quality of the water. I like to sample after the regular system water has been in the tank for at least 24 hours or more. This gives any bacteria present a chance to grow and show up in a sample. Then I like to follow up a week or so later at the first available tap downstream of the tank. If those are clear, there probably will not be any microbiological problems due to the tank maintenance.

I recommend opening and inspecting a tank one year or so after a refinish job to check for defects or problems with the coating that weren't evident at the time the work was done.

Congratulations, Emporia

The 2006 Conference & Exhibition at Wichita was another big hit for systems and exhibitors. I was amazed to see that the City of Emporia won the *Great*

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Premature coating failures should show up at this time. Be sure any contract includes this and at least a one-year warranty. The contractor should repair any defects.

If any have additional questions on the subject of tank maintenance, call KRWA at 785/336-3760. Someone can attend a board or council meeting to discuss a system project.

American Water Taste Test again this year. Each year, a different team of judges is involved. The entries are only labeled by number. Even after choosing a winner the judges do not know who the entrant is until the winners are announced at the awards presentation that evening.

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