

Incident of Container Reuse Causes Big Problem for Longford, Kansas

The city of Longford is a quiet bedroom community tucked away in the scenic rolling hills of southern Clay County in north-central Kansas. Longford is home to some of the highest quality groundwater anywhere in the state. In fact it is so good some of the local people got together and started a bottling company, Longford Water Company, LLC, using city water. The plant produces bottled water for convenience stores and for special events under more than 500 personalized labels including the Kansas Rural Water Association.

However in 2017, bottled water from Longford was almost not available at the Kansas Rural Water Association conference the last week of March. Because of a very unfortunate incident, the Longford Bottling Company struggled to be put back into business. Longford, being located in somewhat of an isolated area and losing their local place to purchase fuel led the city's former maintenance person to recycle 15-gallon plastic polyphosphate containers for gasoline storage. The city uses polyphosphates to treat the water since it is so soft at 44 mg/l Total Hardness; it is corrosive.



Longford, Kansas is home to Longford Water Company, LLC. The company bottles water for more than 500 private label uses, including Kansas Rural Water Association's conferences and training sessions.

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When a new maintenance person came to work for the city he connected the container of what was thought to be poly phosphates with the original label still in tack to the water supply. Instead the content of the container was gasoline. It may sound far-fetched but once you understand the circumstances, it's easier to appreciate how it happened. Not having any idea of what polyphosphates looked like and since there was no labeling or marking on the container to suggest otherwise, the new operator thought it to be polyphosphate and connected it to the system as he was supposed to. This should be a classic case why it is unlawful to put gasoline in any container unless it is clearly marked.

The result was that gasoline was being fed into the water system at the same rate as set up for the polyphosphates at 1 mg/l. According to mayor Kim Kramer, the city received several phone calls that the water had a funny taste and odor that smelled like a petroleum product of some sort. This led him and the system operator to begin flushing lines and a sample was quickly collected and delivered to a lab in Salina for an analysis. In addition the bottling plant had to be shut down and

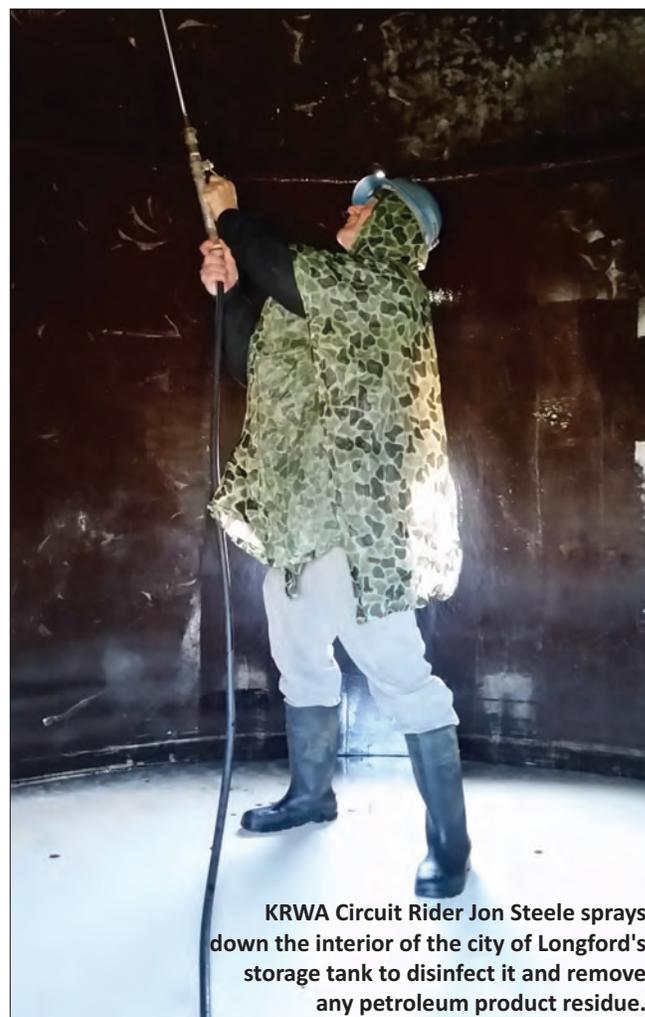


The city of Longford has some of the best quality groundwater in Kansas and it is protected further as the city adopted and implemented a wellhead protection area.

possible recalls done pending the results of the investigation. However there was never any detect of petroleum in the water from the bottling facility as it has its own treatment system which would remove any contaminants.

The lab analysis showed Benzene at 67 ug/l, Ethyl benzene at 59 ug/l, Toluene at 589 ug/l, and Xylene at 99 ug/l. The city now had a definite answer but where was it coming from? KDHE was called and more sampling was conducted. The city was put on a "Do Not Use" water order. At first it was thought that it was due to some sort of cross connection or worse yet someone had intentionally pumped it directly into the system as a criminal act.

After several days of sampling and flushing a breakthrough came as the result of an accident. The operator was doing daily checks at the well house and got his feet tangled up in a hose at the well house that was used as part of the sampling tap. As luck would have it the plastic tap broke discharging water into the building that absolutely reeked of petroleum according to the operator. The liquid chlorine and the polyphosphate were suspected but it was the phosphate drum that was determined to be the problem. The supplier was called in to determine whether the drum actually contained the phosphates or something else. No one was aware of the former operator's actions at



KRWA Circuit Rider Jon Steele sprays down the interior of the city of Longford's storage tank to disinfect it and remove any petroleum product residue.

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this time so for all the city knew they received a drum that was filled with some type of petroleum product at the manufacturer or possibly sabotaged by a disgruntled employee at the manufacturer. No one had any idea the former city employee had used it for gasoline storage and unintentionally causing the terrible incident.

Everyone involved including the former employee was distraught about the situation and all agreed it was unintentional as the result of bad judgment storing gasoline in the polyphosphate container and not marking it. The new operator reported having trouble sleeping at night as the result of anxiety about the accident for several months after it occurred. The City spent more than \$6,000 in sampling and are now on a monthly VOC sampling with KDHE.

Even when the problem was thought to be corrected another rash of complaints came in prompting a call to KRWA. The distribution system was again flushed and the storage tank was drained, cleaned and allowed to aerate for seven days to eliminate any remaining VOC taste and odor problem that may have been associated with the contaminated water in the tank. After seven days of aeration, KRWA helped to disinfect the city's storage tank, filled it and sampled it for bacteriological quality. Once the samples cleared the bacteriological testing it was put back into service.

Things went along fine. There were no more complaints for a week and then suddenly two more complaints were called in to the mayor on a Sunday. So the following week we again repeated the process all over, aerating the tank and flushing the distribution system.

I had concerns that the PVC piping material used in the city mains had been affected by the petroleum by products clinging to the interior of the pipe. The thought was that it might be a situation similar to the action that Acetone (PVC pipe cleaner) has on the pipe, softening it and when the glue is added forms what is known as the solvent weld at the

The main lesson here is to never reuse food grade containers for anything other than the original product that came in them. Or if containers are reused, remove the original labeling and remark them.

joints or connections. If that were the case, it would be very difficult if not impossible to flush the contaminant out of the system.

What we learned was that the PVC material commonly used in public water supply distribution main lines is actually impervious to gasoline at lower concentrations. However the HDPE pipe that is commonly used for service lines from the main line to the meter is very susceptible. Case studies about the effects of petroleum on plastic pipe materials refer mostly to pipe laid across petroleum-contaminated soil not from petroleum directly in the water inside the pipe.

By accident the problem was created and by a simple accident the cause of the problem was discovered. The main lesson here is to never reuse food grade containers for anything other than the original product that came in them. Or if containers are reused, remove the original labeling and remark them.

Longford water is now back to its normal high quality with no foul taste or odor of petroleum. Some general inorganic properties of the water are TDS 95 mg/l, Total Hardness 44 mg/l, Sodium 10 mg/l, Iron < .010 mg/l, Manganese .002 mg/l, Chloride 3.7 mg/l, Sulfate 20 mg/l and Nitrate 0.68 mg/l. And that's as it comes from the city's groundwater wells.

Although it's certainly no laughing matter at the time, some townspeople have taken it all in stride by razing the operator about the incident. Comments have been, "If you're going to add flavoring to the water couldn't you find something besides gasoline? Well at least it was unleaded!"

Jon Steele has been employed by KRWA as a Circuit Rider since 1995. Jon is certified as a water and wastewater operator. He has more than twenty-five years experience in public works, construction and industrial arts.





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Motors and Drives Training Held at Iola, Kan.

Kansas Rural Water Association is pleased to provide a variety of training sessions for water and wastewater system personnel, including operators and managers, board / council members, managers and administrators.

Recently a two-day session "Understanding and Troubleshooting Electrical Motors and Variable Speed Drives" was held in Iola, Kan. at the Riverside Park Community Building. A total of 21 people representing 18 different water and wastewater systems attended. The training was provided without cost by KRWA.

The instructor, Robert Blume, has been working with KRWA training programs since 1986. More than 5,000 people have attended training that has been presented by Blume at KRWA-sponsored sessions. The presentations are generic. The training at Iola demonstrated how to troubleshoot and program a wide range of motor drives. The motor section covered troubleshooting and diagnostics of motors including maintenance, lubrication and service



Trainer Robert Blume makes the training session interesting and exciting and filled with information, all presented in a manner that local water and wastewater operators understand and appreciate.



schedules. The training will also instruct how to choose the right motor for the drive. Those attending were asked to bring their own multi-meter to troubleshoot electrical components.

Robert Blume, left, has provided training on electrical safety and troubleshooting topics since 1986 for KRWA. More than 5,000 water and wastewater operators have attended those training workshops which involved "hands-on" equipment.

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