

HOT WATER TANK Contamination

Aluminum Toxicity: Issues and Insights

http://www.bayeralbumin.com/web_docs/WP_Aluminum Toxicity.pdf

“People are continuously exposed to Al by ingesting water, food, and dust particles. 2 Estimates suggest that adults consume approximately 3 to 5 mg of Al in their daily diet. Healthy individuals can easily handle normal Al intake, since absorption in the gastrointestinal (GI) tract is low. 4 The GI tract provides efficient protection against Al absorption, and it is estimated that less than 1% of ingested Al is absorbed by the body. 5 In fact, healthy individuals have very low levels of Al because the GI tract, skin, and lungs are effective barriers to Al absorption, and the kidneys efficiently eliminate absorbed Al by excretion.“

People who are at risk from aluminum poisoning:

Dialysis patients and others with impaired renal function
Newborns and premature infants
The elderly
Patients receiving TPN
Burn patients

Effects of aluminum toxicity:

Associated:
Dementia
Encephalopathy
Learning deficits

Possibly associated:

ALS
Parkinson’s disease
Alzheimer’s disease

Coating materials:

“Coating materials are used to prevent corrosion of steel storage tanks and to prevent moisture migration in concrete tanks. Through the 1970's, coatings used in finished water storage facilities were primarily selected because of their corrosion resistance and ease of application. This led to the use of industrial products like coal tars, greases, waxes and lead paints as interior tank coatings. These products offered exceptional corrosion performance but unknowingly contributed significant toxic chemicals to the drinking water. Grease coatings can differ greatly in their composition from vegetable to

petroleum based substances and can provide a good food source for bacteria, resulting in reduced chlorine residuals and objectionable tastes and odors in the finished water (Kirmeyer et al. 1999).

An old grease coating on a storage tank interior in the state of Florida was suspected of causing water quality problems in the distribution system such as taste and odor, high chlorine requirements and a black slime at the customers tap. The Wisconsin Avenue 500,000 gallon elevated tank was originally coated with a petroleum grease coating when it was built in 1925.

In 1988, the storage facility was cleaned and the grease coating was reapplied. In 1993, a tank inspection revealed that the grease had sagged off the tank walls and deposited a thick accumulation of black loose ooze in the bottom bowl of the tank (6-8 inches deep). A thin film of grease continued to coat the upper shell surfaces. Although this material had performed well as a corrosion inhibitor, it was introducing debris into the distribution system as well as creating a possible food source and environment for bacteria. The City decided to completely remove the grease and reapply a polyamide epoxy system. This work was completed in 1996 (Kirmeyer et al. 1999). Since the tank was returned to service, water quality has markedly improved. The required chlorine dosage rate has decreased from 4.0-5.0 mg/L to 3.5 mg/L. The chlorine residual at the tank outlet has improved from <1.0 mg/L to 1.4 mg/L. No more “black slime” complaints have been received. “

Monitoring and Water Quality of Water Tanks: Consumer Confidence Reports

<http://www.rules.utah.gov/publicat/code/r309/r309-225.htm>

- Always use cold water for food and beverage preparation. Hot tap water can leach higher amounts of lead or other metals from plumbing or the hot water tank. If you're concerned about elevated lead levels in your water, run the tap until the water becomes colder before using it. Remember to catch the flushed water for plants or other household use

Water Purification Methods:

* Change Water tank.

* Boiling

Most water can be purified for drinking purposes by boiling it for 10 minutes. This will destroy the bacteria. In order to improve the taste it will be necessary to aerate it after boiling. This is accomplished by pouring it from one container to another several times. This should be done after the water has been allowed to cool.

* Chlorination

For long-term storage, water should be sterilized or disinfected. Water stored in thoroughly cleaned plastic or glass containers can be chemically disinfected for long-term storage by treating each gallon with sixteen drops of liquid chlorine bleach (Clorox or Purex type bleaches, containing 4% to 6% sodium hypochlorite). One teaspoon of bleach disinfects five gallons of water. This level of treatment will prevent growth of microorganisms during storage. After adding the proper dosage and stirring, allow the water to stand for 30 minutes. It should then have a distinct odor of chlorine. If this odor is not present, add another dose of the solution and let stand for another 15 minutes. The taste or smell of chlorine in water as treated in this manner is a sign of safety. It is not harmful. On the contrary, if you cannot detect chlorine in water you are trying to purify by this method, do not drink it.

* Purification Tablets

Tablets that release iodine may be used safely to purify drinking water. These tablets can be found at most drug stores and sporting goods stores. The names vary but it is generically known as halazone tablets. Follow the directions on the package. Usually one tablet is sufficient for one quart of water. The dosage is doubled for cloudy water.

* Iodine

Ordinary Household Iodine may be used to purify small quantities of water. Add 2-3 drops of Tincture Of Iodine to each quart of clear water (8-10 for cloudy water). Mix & allow to stand for 30 minutes.