

Storage Tank Corrosion

Leaking storage tanks, whether above or below ground, can pollute the environment, threaten public health, and lead to billions of dollars in direct and indirect costs. One main reason for storage tank failure is corrosion. Fortunately, corrosion prevention technology exists which can protect storage tanks and keep them structurally sound for years to come.

Government and the public understand the extent to which leaking tanks can damage the environment and threaten public health. In order to prevent environmental contamination, U.S. federal regulations require those who own or operate underground tanks and the connected piping to have spill, overflow, and corrosion protection mechanisms in place, and many U.S. states have additional tank protection requirements. The owners/operators of tanks who fail to comply with these regulations can be subject to both civil and criminal penalties.

Why Do Storage Tanks Corrode?

Corrosion is the deterioration of a material, usually a metal, that results from a chemical or electrochemical reaction with its environment. Without implementation of appropriate corrosion-control measures, storage tanks will deteriorate. Most tanks are made of steel, a material highly susceptible to corrosion. Corrosion-related damage is accelerated by factors including the tank's interaction with interconnected components, corrosive environmental conditions, and stray electric currents. Over time, uncontrolled corrosion can weaken or destroy components of the tank system, resulting in holes or possible structural failure, and release of stored products into the environment.

How Do We Control Corrosion in Storage Tanks?

Modern corrosion control combines historically proven methods with state-of-the-art technology to prevent tanks from deteriorating. Corrosion-control strategies are used individually or in combination with one another. Common strategies include corrosion-resistant materials, application of coatings and/or linings as a barrier to the environment, various forms of cathodic protection to prevent deterioration of tank components in contact with the soil, and use of inhibiting chemicals in stored substances to control corrosion of the tank interior.

Planning and Training Are the Keys to Success

Corrosion control can protect storage tanks, the environment, and the bottom line of owners and operators. It must be integral parts of a storage tank owner/operator's long term planning. Tank owner support of corrosion control is vital, but comprises only half of the solution. Long-term planning for corrosion control must include ongoing education and training for persons responsible for operating tank systems. Those individuals must be able to recognize the early signs of corrosion and prevent it effectively. Owners and operators must also dedicate the resources required to monitor and maintain these corrosion protection systems to ensure the effective protection of the environment and their economic interests.

Conclusion

Above- and below-ground storage tanks could leak hazardous substances into the environment that contaminate our soil and water. Often, corrosion is to blame. However, corrosion is not a mystery—we know how to prevent it and how to control it. We will cost-effectively protect the environment while saving billions of dollars each year by implementing comprehensive corrosion control for storage tanks.