Corrosive Safety – Acids and Bases

Safety Talk

The word corrosion comes from a Latin verb which means ‘to gnaw,’ illustrating the ease with which corrosive substances can seemingly gnaw through flesh. Corrosive chemicals are used to break down metal and for other industrial purposes, but they can also destroy body tissue on contact. They are extremely dangerous if handled improperly.

What’s at Stake?

Corrosive substances are extremely hazardous to eyesight. Even a drop of corrosive chemical in the eye can destroy the cornea and cause blindness in only a few seconds.

Skin damage can be temporary or permanent, depending on the chemical and duration of exposure. Short-term injuries include dry, red, or cracked skin. Long-term injuries include skin discoloration, skin corrosion, scarring, cancer, and certain types of acne.

Ultimately, overexposure to dangerous corrosive chemicals can harm the respiratory system, reproductive system and nervous system, and may be fatal in certain cases.

Corrosive chemicals can also give off hydrogen gas when in contact with certain metals, with potentially deadly consequences.

Who is at Risk?

People in a variety of industries are at risk of exposure to a corrosive chemical, including those in agricultural, manufacturing, petrochemical, construction, and maritime industries. Corrosive chemicals are even found in household

products, such as drain cleaners.

What are Acids and Bases?

Acidic substances have low pH values. Basic substances have high pH values. Strong bases are usually more corrosive than acids.

Corrosive substances include:

- Sulfuric acid
- Hydrochloric acid
- Acetic acid
- Sodium Hydroxide (also known as lye or caustic soda)
- Hydrogen Peroxide
- Chlorine

Remember AAA: Always Add Acids to Water. This rule also applies to bases. Always add a solution of an acid or base to water, never the reverse. Add slowly and constantly stir.

What Can Go Wrong?

A fish meal plant worker was tasked with cleaning out a fish meal cooker using caustic soda. Although the job usually required two people, the worker decided to begin the cleaning process by himself to save time. He remembered to add the caustic solution to water, but he added the solution too rapidly. The liquid in the cooker began to boil and violently erupt. The liquid spattered onto the worker’s face and eyes, and he panicked as his skin began to burn. In his panic, he was unable to reach an emergency shower station in time, and he was hospitalized for injuries that resulted in permanent disfigurement and loss of eyesight.

How to Protect Yourself:

- Review the Safety Data Sheet (SDS) or Material Safety Data Sheet (MSDS) before working with any chemical.
- Wear all necessary PPE. Wear chemical safety glasses that meet the ANSI Z.87.1 1989 standard. Ordinary safety goggles will not provide adequate protection. If there is the

possibility of splash hazards, also wear a protective face shield. Also wear chemical safety gloves, boots, and apron designed to protect against corrosive chemicals.

- Never wear open-toed shoes when working with dangerous chemicals.
- Never store corrosive chemicals above eye level.
- Segregate acids and bases in storage.
- Store corrosive substances away from sources of water, fire, or heat.
- Maintain a clean work area to prevent contamination of other objects with which you might come into contact.
- Know the location of emergency eyewash and shower stations. Make sure they are in working order and easy to access.
- Minimize your exposure to dangerous chemicals by finding other ways to complete a job, if possible. For example, instead of applying a solvent with a rag, use a brush.

Final Word

Corrosive chemicals kill. They can also destroy your skin and your eyesight. Handle corrosive chemicals with caution and protect yourself before you work with them.