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Messages for Manufacturing Personnel

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Hose Hazards!

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Hoses can be a significant hazard in a process plant. They must be properly maintained, stored, and inspected. Here are some examples of incidents caused by hose failure:

- An unloading hose on a chlorine railroad tank car failed (top and middle pictures) because of corrosion. It was found that the hose was not made of the correct material. It was stainless steel instead of the specified Hastelloy C, a metal alloy. Nearly 25 tons of chlorine was released, 63 neighbors sought medical attention, hundreds had to shelter in place, and a highway was closed.
- A hose used to unload cylinders of phosgene, a highly toxic gas, failed (bottom picture). A worker was exposed and later died in the hospital. The hose was made of the specified material of construction, although company engineers had recommended changing to a different material. It was found that an adhesive tag on the hose trapped phosgene which slowly diffused from inside the hose through the plastic hose core. This caused faster corrosion under the label, and that is where the failure occurred.
- There are many reports of dirty hoses causing contamination of process equipment, product contamination, and dangerous chemical reactions.
- If a hose is blocked with solid material, it will pressurize up to the line pressure. If the blockage breaks free, a projectile could be released causing significant damage, or, if the hose is worn or weakened, it could burst.

Did you know?

- Hoses are frequently connected and disconnected from piping, making connection failure more likely.
- Hoses are often not properly handled and stored, making damage and failure more likely.
- Frequent flexing of hoses stresses them, increasing the chance for failure.
- Improper hose storage, and using the same hose for different purposes, increases the risk of contamination.
- Plastic hose liners may be resistant to corrosion from chemicals, but are subject to permeation. Over time this damages the liner and the outside metal covering could be corroded and weakened.
- Incidents have occurred because hoses were incorrectly labeled with the wrong material of construction.

What can you do?

- Always inspect hoses before using them.
  - Check the outside for corrosion or signs of leakage. Metal braided hoses which have frayed or corroded braids should be replaced.
  - Be sure that you are able to see the entire outside of the hose when you inspect it. Is part of the hose covered by something which keeps you from seeing damage?
  - Look inside to make sure the hose is clean, and not blocked.
  - Check that seals (gaskets or O-rings) are in good condition.
  - Check that the fittings which connect a hose are not damaged.
- Make sure that hoses are inspected or replaced as required by your plant's maintenance schedule.
- Review your plant's procedures for ensuring that the material of construction of hoses is correct.
- Make sure you use the correct hose – particularly that it is the correct material of construction and pressure rating. Don't improvise!
- Make sure hoses are properly and securely connected to piping, and properly supported. Long, heavy hoses are particularly vulnerable.
- Properly clean and store hoses to prevent contamination or damage.
- Protect hoses from damage where vehicles could run over them.

Use the RIGHT hose, and be sure it is clean and in good condition!

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