

Process Safety Moments from CCPS

Mechanical Integrity of Tubing



Date: June 2012

Issue Number: 002

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Mechanical Integrity of Tubing

Tubing, including metal tubing, and also tubing made of plastic, rubber, and other materials, is commonly used in process plants, for example:

- For instrument connections
- To flush pump and agitator seals
- For other applications with small flow requirements

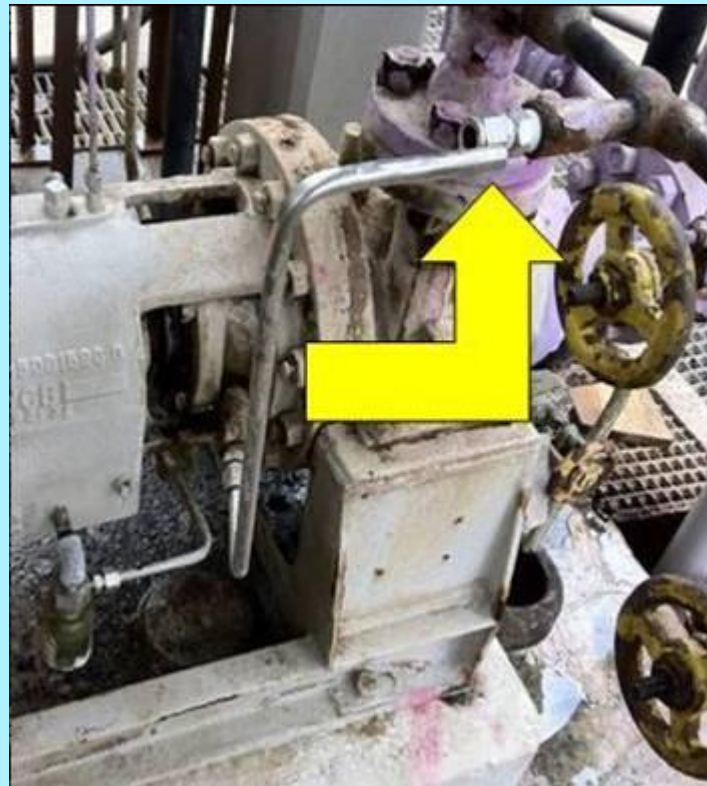
Where do you use tubing in your plant?

Gas leak from ½-in tubing for pump seal
was detected during LNG plant startup

Repairs done by unqualified technician

When the plant re-started, tubing failed
completely causing an LNG leak and fire

Found during a plant inspection

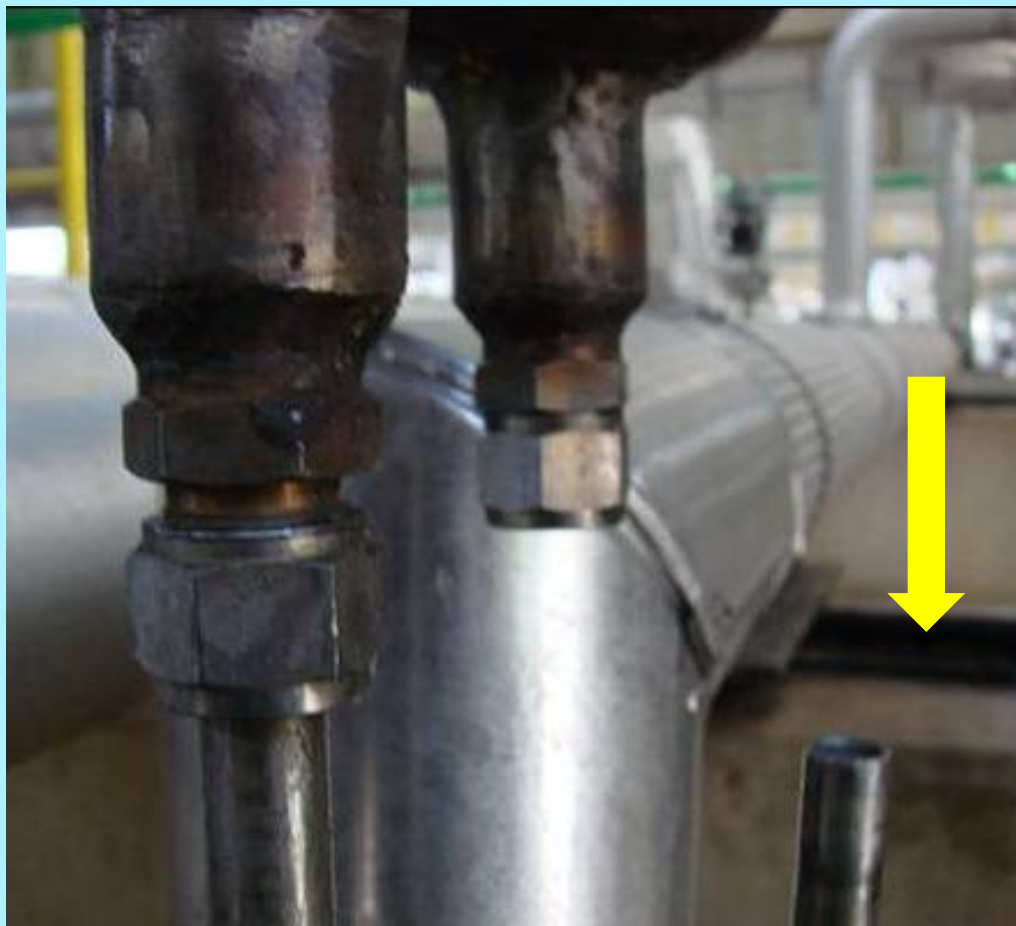


Found during a plant inspection

5



Found during a plant inspection



What can you do?

Review procedures for installation, inspection, and maintenance of tubing.

Remember – tubing may not be as durable as pipe and may be more easily damaged. Avoid impacts to tubing and tubing connections.

Report damaged or leaking tubing observed in the plant and ensure it is repaired.

Use qualified personnel to install and repair tubing.

Use proper tools for installation and maintenance of tubing.

Use correct components – tubing, ferrules, nuts, and fittings - do not mix components from different manufacturers.

Ask your tubing supplier to provide information on proper installation and maintenance of their product.

Safety precautions from a supplier*

- Do not bleed system by loosening a fitting nut or fitting plug.
- Do not assemble and tighten fittings when the system is pressurized. Always depressurize a system before adjusting the tightness of a tube fitting connection, or before disassembling tubing.
- Make sure that the tubing rests firmly on the shoulder of the tube fitting body before tightening the nut.
- Use the correct tool for gap inspection gauge to ensure sufficient pull-up upon initial installation.
- Always use proper thread sealants on tapered pipe threads.
- Do not mix materials or fitting components from different manufacturers – tubing, ferrules, nuts, and fitting bodies.
- Never turn fitting body. Instead, hold fitting body and turn nut.
- Avoid unnecessary disassembly of unused fittings.