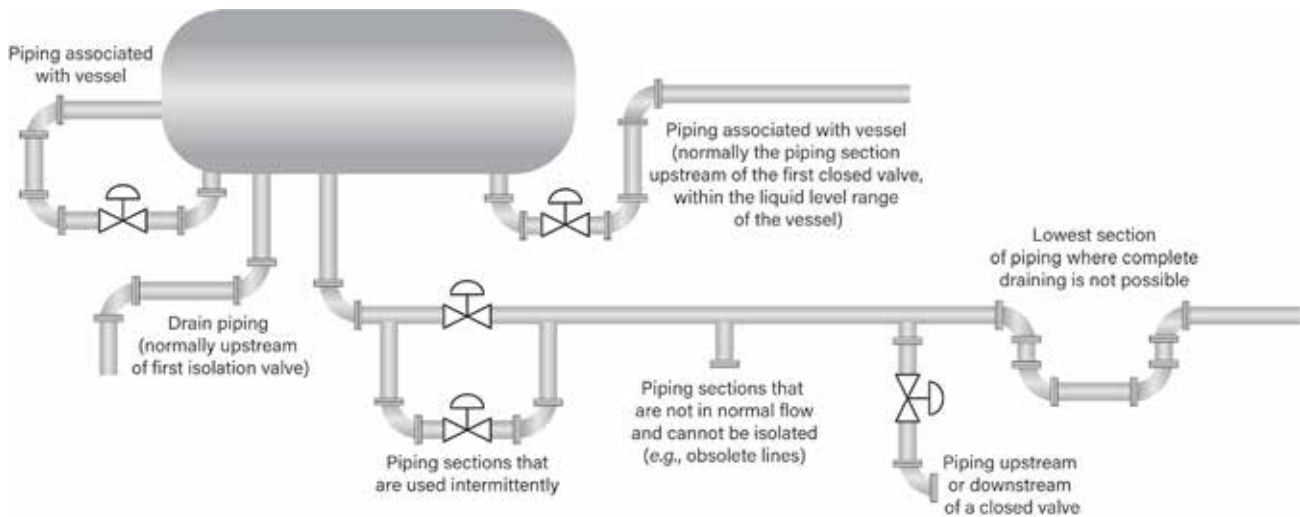


## Piping Dead Legs: Another Hazard in Plain Sight

February 2022



▲ Dead legs are sections of piping that have stagnant areas. These are some piping configurations that can form dead legs. Figure adapted from Ref. 1.

During a dead leg inspection, an X-ray examination was performed on a 2-in. drain line connected to a 12-in. crude line at a refining facility. The X-ray showed deep pits beneath deposits of process material in a horizontal section of the drain line. Further inspection of other locations identified more areas with significant internal corrosion.

Various piping configurations can form dead legs, which are susceptible to corrosion. Fortunately, the dead leg inspection prevented a potential loss-of-containment incident in this case.

*The Beacon Committee would like to thank Reliance Industries Ltd. for providing the material for this Beacon.*

1. Said, M., "Mechanical Integrity & Hazard identification of Dead Leg," [www.linkedin.com/pulse/mechanical-integrity-hazard-identification-dead-leg-mohammed-said](http://www.linkedin.com/pulse/mechanical-integrity-hazard-identification-dead-leg-mohammed-said) (Dec. 15, 2019).

### Did You Know?

- Corrosion in dead legs is a significant threat to the integrity of process and utility piping.
- Dead legs can be left from initial piping installation when they were used for flushing, draining, or pressure testing. However, they should have been removed before commissioning.
- Dead legs that contain potentially corrosive materials such as contaminated water or deposits of solid materials require regular inspection. Even gases like hydrogen sulfide (H<sub>2</sub>S) can be corrosive.
- Piping that was flushed and drained may still contain hazardous materials. Opening these lines requires the same caution as if they were full.

### What Can You Do?

- Dead legs should be identified and reviewed regularly to determine if they are still needed. Remove dead legs that are not needed following management of change (MOC) procedures.
- The facility should have a program for managing dead legs that includes a schedule for periodic flushing of dead legs and an inspection plan based on the anticipated corrosion rates. Dead leg inspection results should be reviewed during process hazard and MOC reviews.

**Dead legs can be very alive — never assume that abandoned piping is not corroding.**