

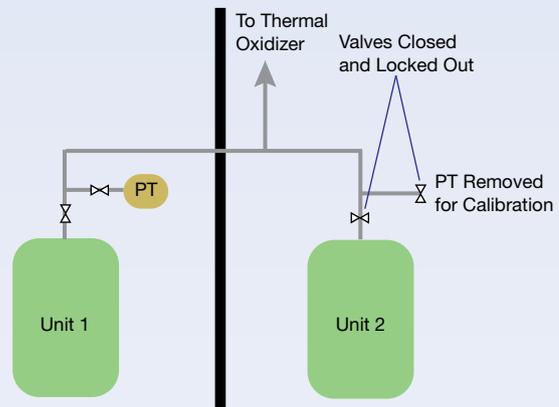
## Undetected Ball Valve Failure

An incident occurred at a plant with two processing units (Unit 1 and Unit 2) that shared a common line to a thermal oxidizer (Figure 1). Several instruments were due for calibration on Unit 2. Specifically, a pressure transmitter (PT) needed to be removed for calibration, so the hand valve upstream of the PT was closed and locked out.

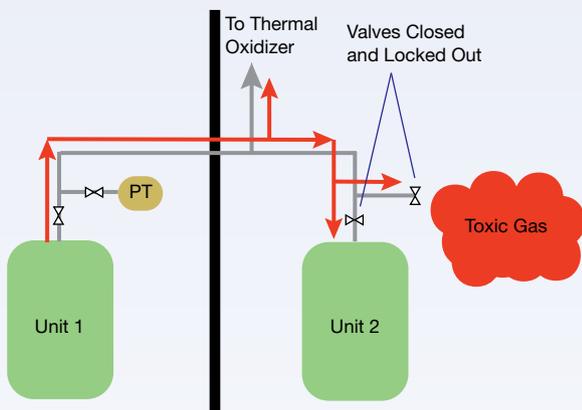
A few days after Unit 2 was locked out, Unit 1 began to vent toxic gas through the shared line to the thermal oxidizer. The vented material from Unit 1 flowed through the line toward the thermal oxidizer. However, rather than exiting the system at the thermal oxidizer, the material made its way to Unit 2 and escaped through the valve where the pressure transmitter had been removed (Figure 2). A cloud of toxic gas gathered in the vicinity of the valve.

When moved, the valve handle “felt” like a properly operating valve. Nevertheless, an investigation discovered that the ball inside the valve was in the open position, even though the valve handle was in the closed position (Figure 3). This malfunction could have injured personnel, but fortunately, no one was harmed.

1



2



3

Valve Handle in Closed Position

Valve Handle Failed and Allowed Handle to Turn without Closing the Valve



No Blind on Open Line

Ball in Open Position

### Did You Know?

- Any valve can fail in many ways, including a failure of the handle, stem, ball, or seat.
- Valve handles may not always indicate the actual position of a valve.
- The effects from one system can be felt in another and must be considered when altering a system, even temporarily.

### What Can You Do?

- Use blinds, plugs, or caps whenever piping is open.
- Use accurate line breaking or opening procedures for operations involving open piping.
- Consider the effects of interconnected systems and always walk the line before transferring material.

**All valves can fail. Consider double isolation.**

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