

CORROSION MANAGEMENT ON OFFSHORE PIPELINES

Corrosion on offshore pipelines is caused by circumstances that do not exist on Spectra Energy's onshore pipelines.

These circumstances include:

- Natural gas producers in the Gulf of Mexico transport small quantities of hydrocarbon liquids and water to shore by injecting them into offshore natural gas pipelines, including Spectra Energy's pipelines. This condition does not exist with Spectra Energy's onshore pipelines.
- Due to declining natural gas production in the Gulf of Mexico, natural gas flow rates are very low on some of these pipelines.
 - These low flow rates mean we are not able to run pipeline cleaning tools to remove the injected water.
 - Low gas flow rates also reduce our ability to distribute corrosion inhibitors throughout the pipeline to prevent internal corrosion.
- Spectra Energy's offshore lines that have experienced internal corrosion issues were not designed to be inspected with in-line inspection tools.

From 2009 to 2013, these factors led to 13 reportable incidents related to internal corrosion on Spectra Energy's *offshore* pipelines. In fact, all reportable corrosion incidents on Spectra Energy's pipelines during this timeframe were offshore, not onshore, caused by small holes that developed on natural gas pipelines located in the Gulf of Mexico, approximately 80 to 130 miles from land. The holes were caused by internal corrosion and resulted in bubbles of gas (not environmentally threatening) reaching the surface that were identified by nearby platform operators or by helicopters performing leak surveys or other activities in the area. Due to the high cost of conducting repairs offshore, even the smallest leak becomes a reportable incident (greater than \$50,000 is classified as a reportable incident).

Why do we operate pipelines, even if there is very little natural gas flowing through them?

By 2018, Spectra Energy plans to discontinue operation of multiple offshore pipelines in a process called "abandonment," which requires approval from the Federal Energy Regulatory Commission (FERC). In the mean-time, we are under obligation by FERC to continue to operate these pipelines, even at very low flow rates. In 2014, we will abandon the line that accounted for 7 out of 13 of our reportable corrosion incidents since 2009.