High Consequence Areas

DePaula Sara¹, Kadnar Joy¹, Breen Anthony¹, Hutwagner Lori¹, Lee Robert¹, Butler Karen¹
lori.hutwagner@dot.gov, joy.kadnar@dot.gov
¹Program Evaluation Group, Pipeline Hazardous Material Safety Administration, Department of Transportation

Abstract

Background: High Consequence Areas (HCAs) are places where if there was a pipeline accident/incident large numbers of people or large areas of environment or areas of drinking water would be affected. Since areas of high population are considered HCAs, as number of high population areas grow in the United States so do the number of HCAs. Pipeline that was originally not near HCAs in the 1920s or 1950s might very well be in an HCA in the 2000s. Also, along with high population areas, construction increases possibility of third party damage to pipelines.

Methods: The total numbers of miles that go through an HCA are reported by pipeline operators on their annual reports. On accident/incident reports the operators are required to report if the accident/incident occurred in a section of the pipe that was going through an HCA or would affect a HCA. We examined the information from these for reports to identify new and emerging trends.

Results: The main reason why spills occur in HCA’s is due to corrosion and equipment malfunctions. Age of pipe plays a role that resembles a bathtub curve, where majority of incidents/accidents occur before the first year or after thirty years. Diameter of pipe was also consider an important factor when examining incident/accidents in an HCA.

Discussion: Due to the importance of HCAs, identifying risk factors that play a role in the accidents/incidents in these is could help to reduce the overall impact. The goal here would be to help guide inspector and pipeline operators in appropriate measures to minimize the concern of the pipeline in these areas.