Researchers from Indiana University examined the impact of natural gas compressor station emissions on human health by testing for associations, over one year, between volatile organic compound (VOC) emissions from major (Title V) compressor stations and mortality rates adjusted for age in the U.S. population. Compressor stations emit particulate and gaseous pollutants, including VOCs, which are classified as hazardous air pollutants and known to have direct adverse human health impacts.

The researchers looked at age-adjusted mortality rates at the county level obtained from 2017 Centers for Disease Control and Prevention data. Adjusting for age makes death rates more comparable. For example, a county having a higher percentage of elderly people may have a higher rate of death than a county with a younger population. Researchers also controlled for population characteristics such as race/ethnicity, education, urban county, poverty, smoking, and obesity rates.

Next, researchers looked at VOC emissions data from major compressor stations, obtained from the 2017 National Emissions Inventory, including total VOC emissions as well as emissions of specific VOCs.

The findings showed that greater amounts of non-methane VOC emissions from compressor stations were associated with significantly higher age-adjusted mortality rates. Additionally, 12 VOCs of potential exposure concern were significantly associated with mortality as well, some of which have not been studied for human toxicity. Overall, counties with VOC emissions from compressor stations were associated with a higher age-adjusted mortality rate than counties without such emissions. The researchers concluded that these results provide preliminary evidence that compressor stations, along natural gas pipelines, are sources of pollutant exposures that may contribute to adverse human health outcomes and suggested that additional research examining individual-level exposures in relationship to health is needed.