TO: Office of Pipeline Safety
Pipeline and Hazardous Materials Safety Administration (PHMSA)
U.S. Department of Transportation (DOT)

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SUBJECT: Comments on PHMSA-2016-0049: "Background for Regulating the Transportation of Carbon Dioxide in a Gaseous State"

After reviewing the report, we agree that, in general, applying the existing regulations for supercritical carbon dioxide (CO_2) pipelines in Part 195 to gaseous CO_2 pipelines would ensure safety, particularly if the definition of CO_2 is changed to eliminate reference to the physical state as suggested in section 7.1.1 of the report. We note that pipelines could operate in different fluid states at different times and locations, depending on factors such as the ambient temperature, elevation, distance from a compressor/pumping station, etc.

However, one potential safety concern for future CO_2 pipelines not addressed in this report is the role of impurities in the CO_2 stream in the internal corrosion of liquid, supercritical, and gaseous CO_2 pipelines. The report mentions that pipeline operators currently restrict the chemical composition of CO_2 in existing pipelines (section 6.1). As a result of these voluntary restrictions and the fact that most CO_2 is currently being collected from natural sources, the majority of existing pipelines transport relatively pure, non-corrosive CO_2. However, as stated in the report, 15,000 to 66,000 miles of new pipelines are expected by 2030 to transport CO_2 from anthropogenic sources (section 4.0) and it is expected that most of the demand for gaseous CO_2 pipelines would come from these man-made sources (section 7.1.8). Anthropogenic CO_2 captured from combustion processes is known to contain corrosive impurities, such as O_2, NO_x, and SO_x, in addition to the H_2O and H_2S that can be present in natural CO_2 sources. This is a concern for safe pipeline transport, because even low levels of these corrosive contaminants have been shown to interact with water contamination synergistically, leading to high localized corrosion rates (pitting).

As part of the proposed revision, we believe that PHMSA should consider adding language to Parts 192/195 to develop procedures for determining appropriate limits for key impurities found in CO_2 transported by pipeline.