

## CO2 pipelining - Canadian experience

1. Existing CO2 pipelines in Alberta
  - About 100 km of small diameter pipelines (3" to 6") in Central Alberta
  - EOR purposes
  - Physical properties may present different risks than hydrocarbon gases but are not viewed as posing any greater hazard than hydrocarbon pipelines
2. Technical considerations for CO2 pipelines
  - Design and material requirements are described in CSA standards
  - Conventional stress design
  - Material, design, construction and pressure testing requirements similar to HVP, while radiographic inspection requirements same as sour gas
  - Dehydrated prior to pipelining so it would be non-corrosive
  - Transported in dense supercritical phase to avoid high pressure losses
3. Normal compositions of CO2 transported for EOR schemes
  - Minimum 98% pure CO2
  - Maximum 2% impurities, e.g. CH4, N2 etc.
  - Dehydrated
4. Safety and risk considerations of CO2 pipelines
  - Non-toxic – no specific requirements for setbacks, ERP or leak detection
  - Heavier than air and tends to accumulate in low areas if ventilation is poor
  - Primary hazard is that of asphyxiation in concentrations greater than 5%
  - Operators are required to be trained in safe working procedures in O2-deficient atmospheres as well in the handling of fluids that undergo phase change under pressure
  - All CO2 pipeline applications are subject to a mandatory review by the ERCB to ensure technical completeness and operational safety