

Training - CO₂ geological storage: risks and THMC processes



THMC-EN-P



Face-to-face only



5 days

This training provides participants with a comprehensive and practice-oriented understanding of CO₂ geological storage, with a strong focus on risk assessment and on the role of coupled Thermo–Hydro–Chemical–Mechanical (THMC) processes. The course addresses the full technical workflow of a CO₂ storage project, from fluid properties and injection behavior to long-term containment, seal and fault integrity, pressure management and uncertainty-driven risk evaluation

Level

Skilled

Public

Geoscientists, geologists and reservoir engineers

Objectives

Attendees will be able to implement the following skills:

- Understand CO₂ fluid properties, phase behaviour and PVT concepts under subsurface conditions
- Analyse CO₂ plume migration, trapping mechanisms and long-term stabilisation
- Understand geochemical reactions and near-well effects impacting injectivity and integrity
- Assess caprock, fault and well integrity risks using THMC concepts
- Apply risk assessment frameworks to CO₂ storage projects

Pedagogical & technical resources

Interactive presentations, practical exercises and hands-on activities using Eclipse300 software

Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prerequisites

Basic knowledge of subsurface engineering, reservoir geology, or oil & gas / geothermal systems is recommended

Responsible

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Program

INTRODUCTION AND CO₂ FLUID BEHAVIOR

1 day

CO₂ storage in saline aquifers and depleted reservoirs.
CO₂ phase behavior and PVT properties.
Equations of State and simulation approaches.

CO₂ PLUME MIGRATION AND TRAPPING

2 days

Injection concepts and plume development.
Buoyancy-driven flow and gravity segregation.
Structural, residual and solubility trapping mechanisms.
Long-term plume evolution after injection shut-in.
Applied workshop.

PRESSURE MANAGEMENT, GEOMECHANICS AND GEOCHEMISTRY

1 day

Effective stress evolution and fault stability.
CO₂ dissolution in brine and mineral reactions.

INTEGRITY, RISK ASSESSMENT

1 day

Caprock sealing and leakage mechanisms.
Risk assessment frameworks and uncertainty management.

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.
Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com