



## Marseille CIGB 2022

### Course "Risk analysis of dams: French practices through Safety Review Risk Assessment" (6,5 hours)

Coordination: Laurent Peyras (INRAE) and Guirec Prévot (French Minister of Environment)

Speakers: Thomas Adeline (TA conseils), Guillaume Groell (ISL), Frédéric Laugier (EDF), Jean-Charles Palacios (SUEZ-SAFEGE), Eric Vuillermet (BRLi)

French regulations in 2007 made it mandatory to carry out risk analyses for large dams (classes A and B – around 600 dams) through the dam Safety Review Risk Assessment (SaRRA). At the heart of the risk prevention system, the SaRRA is an essential working basis for the development of dam risk management strategies. Carried out under the responsibility of the owner of the structure, it is aimed at identifying risks, quantifying their occurrence and consequences and demonstrating how the risks of major accidents associated with the dam and related structures are managed. SaRRAs are carried out by consulting agencies agreed by the State for their proven expertise. Finally, State's supervisory authority investigates them. SaRRAs required by French regulations explicitly refer to risk analysis and associated operational safety methods.

This course aims to develop the French approach to dam risk analysis. It is illustrated throughout the lectures by several examples from dam SaRRA and includes the development of different risk analysis methodologies.

- **Part 1 - Introduction to Risk Analysis for Dams:** French practices through Safety Review Risk Assessment (SaRRA) – *Laurent Peyras (INRAE) and Guirec Prévot (French Minister of Environment) - 09:00 to 09:30*
  - **Part 2 - Functional Analysis applied to Dams – Risk Analysis Input Data and Data Collection –** *Eric Vuillermet (BRLi) and Jérôme Sausse (EDF) - 09:30 to 11:00*
  - **Part 3 - Methods For Dam Failure Modes:** Preliminary Risk Analysis (PRA), Failure Modes and Effects Analysis (FMEA), Failure Modes, Effects and Criticality Analysis (FMECA), *Jean Charles Palacios (SUEZ - SAFEGE) - 11:00 to 12:00*
- Break 12:00 to 13:30*
- **Part 4 - Tree based Methods to model scenarios of dam failure:** Event Tree Analysis, Fault Tree Analysis, Bow Tie method - *Laurent Peyras (INRAE) and Guillaume Groell (ISL) - 13:30 to 14:30*
  - **Part 5 - Assessment of the Probabilities of Failures and Dam Reliability:** quantitative probabilistic methods, semi-quantitative probabilistic methods – *Frédéric Laugier (EDF) and Laurent Peyras (INRAE) - 14:30 to 15:30*
  - **Part 6 - Assessment of Consequences and Criticality:** flood wave, issue assessment, assessment of exposed populations, criticality analysis – *Guirec Prévot (French Minister of Environment) and Thomas Adeline (TA conseils) - 15:30 to 16:30*
  - **Part 7 - Conclusions:** Positive Impacts of Safety Review Risk Assessment in Dam Safety Management - *Guirec Prévot (French Minister of Environment) and Laurent Peyras (INRAE) - 16:30 to 17:00*

*End 17:00 pm*