

THE DEMONSTRATION AND EVALUATION OF THE CONSIDERATION OF HUMAN-FACTOR-RELATED HAZARDS IN HAZARDOUS SYSTEMS

FRANÇOIS JEFFROY

Institut de protection et de sûreté nucléaire
Service d'évaluation de la sûreté des laboratoires et usines
B.P. 6
92265 Fonteney-aux-Roses Cedex
France

In some so-called "hazardous" industrial sectors (nuclear, aeronautic, chemical, etc.), there are organizations of experts responsible for evaluating the steps taken by the operators to ensure that their facilities and equipment are safe. Ergonomists are being increasingly asked by operators to participate in the development of safety demonstrations, and by the organizations of experts to assess this safety. The objective of this session is to present the concepts and processes developed by the ergonomists to take into account the specific requirements related to this intervention context.

In brief, the safety analysis (demonstration / evaluation) occurs at three levels.

First, the operators are asked to develop a "safety demonstration", generally in the form of a file that is studied by the organization of experts. This "safety demonstration" includes an analysis of the risks generated by the operation of the facility and a presentation of the design and operational steps taken to control these risks, i.e., to ensure their prevention and detection, and to limit their impacts. During the session, we will examine the proposals made to answer the question: What should be presented in a safety analysis regarding human and organizational factors?

Second, the organizations of experts participate in activities to verify compliance by the operator with the design and operational steps taken to ensure that the facility is safe. These verifications are in the form of audits, inspections, monitoring visits, etc. Considering the irreducible difference between the and the activity, which is one of the foundations of ergonomics, we will examine the proposals for going beyond an audit based solely on prescriptions and for taking take into account the operational dynamics of technical and organizational systems.

Third, the safety analysis is done by continuously examining the efficiency of the steps taken, often called a "experience review" (REX). Currently, this experience review is essentially based on an analysis of the events that occur in the facilities. This session is an opportunity to ask ourselves about the characteristics that the REX data collection and analysis tools must have to evaluate the efficiency of the steps taken to ensure the safety of the installations from the human factor standpoint.

The session will include rapid exposés (8-10 minutes) by different participants in the first part, followed by a debate in the second part.

"Identification de la contribution des actions humaines dans les études probabilistes de sûreté des centrales nucléaires" (Identification of the contribution of human actions in probabilistic studies on the safety of nuclear power plants) - Philippe HESSEL (Canadian Nuclear Safety Commission – Direction de l'analyse et de l'évaluation)

"MERMOS : vers une nouvelle démarche d'évaluation de la fiabilité humaine" (MERMOS: towards a new human-reliability evaluation process) - Valérie LAGRANGE (Électricité de France - Direction Stratégie et Développement, Division R&D, Département études de sûreté et de fiabilité)

"Apport de l'analyse ergonomique de l'activité à l'analyse de sûreté" (Contribution of the ergonomic analysis of the activity to safety analysis) - François JEFFROY (Institut de Protection et de Sûreté Nucléaire – Département d'Évaluation de Sûreté)

"Examen de la performance humaine dans l'évaluation de l'aptitude opérationnelle et l'analyse événementielle" (Examination of human performance in the evaluation of operational aptitude and in event analysis) - Georges LOISELLE (Centrale de Gentilly 2 - Sûreté et Permis)

"Présentation et illustration d'une démonstration de sûreté "facteurs humains"" Jean-François VAUTIER (Commissariat à l'Énergie Atomique - Direction de la Sûreté Nucléaire et de la Qualité)