RESET of U.S. Nuclear Waste Managements Strategy and Policy

Meeting #5: *Regulations, Risk and Safety*

October 26-27, 2016, Stanford University

One of the unique challenges of the safe storage and disposal of nuclear waste is the very long time frame over which the safety of different strategies is evaluated. These evaluations typically involve models that capture atomic-scale processes, such as diffusion and corrosion, to global-scale processes, such as climate change and tectonic events. At each scale, the models are often highly coupled, the outcome of one modeled process becoming the input for the next. The safety analysis becomes the basis for determining risk to the public and environment and is used to determine whether a specific, nuclear waste repository or storage facility will meet regulatory requirements. Thus, there is an inter-play among the determination of risk, regulatory compliance and safety. Finally, these analysis become part of the discussion of safety and acceptability by political institutions and the public.

In this fifth meeting of the series of RESET meetings, the speakers will explore a number of these issues from a technical, as well as social science, perspective.

Topics and questions that we expect to discuss during the meeting include:

- Comparison of different international approaches to the analysis of risk.
- Comparison of the regulatory structures of different countries.
- What is a "safety case" and how is this approach related to a quantitative probabilistic risk analysis?
- What is the relation between regulatory compliance and safety?
- What time periods can be evaluated? Why one million years? Is this necessary or credible?
- How does one maintain the credibility of the regulations and the regulator?
- Once a facility or repository is determined to be in regulatory compliance, how can subsequent, new knowledge be applied to the safety analysis?
- What is the role of public engagement? What role should communities near nuclear facilities play in the regulatory process?