

WM2015 Conference Panel Report

PANEL SESSION 076: Challenges to Technical-Based Clean-Up Approaches that Balance Regulatory & Fiscal Complexities

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Panelists:

- **Skip Chamberlain**, *US DOE, Co-Chair*
- **Hope (Michelle Lee)**, *Pacific Northwest National Laboratory, Co-Chair*
- **Paul Black**, *CEO, Neptune and Company, Inc.*
- **Rob Seifert**, *Director, Office of Environmental Compliance, DOE EM*
- **Alaa Aly**, *Vice President/Principal Engineer, Intera Geosciences & Engineering Solutions*

The panel was brought together to discuss the broad challenges associated with defining remediation endpoints at complex sites. Panel members were composed of representatives from the Department of Energy (DOE) and industry leaders in the challenges of site clean-up and closure goals. The panel presented in a conversational format site-specific approaches and strategies currently being implemented and/or are being considered throughout the complex sites. They discussed the scientific and technical challenges, of defining and predicting actual versus perceived risk, balancing the need for improved clean up approaches against increasing fiscal constraints and long-term management strategies. The following is a summary of these interactive discussions.

Summary of Presentations:

The Goal was to provide for discussion purposes the challenges for consensus-based decisions that are protective of human health in the environment.

Paul Black began the conversational interactions by providing a brief background of the National Academy of Sciences (NAS) Study that looked in the technical versus regulations of risk informed end states and understanding what are the real risk and determine possible paths/agreements that could be brought forward. He mentioned that in recent past, there was an NAS workshop to start the dialogue on Risk -Informed Decision Making. There were three pillars of sustainability that needed to be addressed in determining Risk. They were 1) the Environment, 2) Economic, and 3) Social.

A question that was asked “How can we frame the problems to be more of a sustainability assessment since the industry is starting to move beyond risk?” The Department of Defence (DoD) has advanced toward the pillars. They have engaged in more of a structured decision making process that is more transparent, traceable with defensibility and stepping into the compliance period. This type of work is now moving into the DOE.

Hope Lee stated that a committee, comprised of representatives from industry, DOD, DOE, and stakeholders, set goals of writing technical guidance for complex sites to help address the end states of the sites. They have case studies that present areas where Alternative End States have been implemented and are concerned that the compliance period can extend longer than 200 years.

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An example is in Paducah, where they are operating pump and treats and have monitored natural attenuation (MNA). How long can they monitor? The Hanford Site, another complex DOE site, will be facing similar challenges.

Rob Seifert stated that any cleanup is constrained by budgets which will make approval of decisions difficult due to independent different end states. The best process is to engage regulators, stakeholders, and DOE early in decision making. The question that should be addressed is where do “we” ultimately want to be?

Alaa Aly said that modelling can predict the short, medium, and long term risks with caveats identifying the uncertainties associated with the modelling. Guidance says little on how to deal with the uncertainties from the practitioner side. The model information is included in decision documents, performance assessments with specific metrics, are usually very conservative to counter the uncertainties. There has been a lot of work done on the regulator front to address probabilistic uncertainty. DOE needs to become more involved in addressing the modelling uncertainties.

There has been tremendous amount of work/studies done within the industry on managing the uncertainties associated with cleanup. It is now up to DOE to enlist the public/regulators that “we” have gained knowledge and experience over the past years that “we” do know what we are doing. The difficulty is the conservatism that is instituted to address the uncertainty has lead the model predictions to use the extreme worst case means and that in turn leads to evaluating dose to individuals under circumstances that do not exist (hypothetical).

Paul Black mentioned that this drives conservatism on top of conservatism, which ultimately becomes costly. The nuclear cleanup does not play on a level playing field. When comparing radioactive waste disposal decision process to nuclear medicine and fossil energy, fossil energy have an easier path for decisions.

Rob Seifert said that everyone would love to go back to pristine conditions believing there are unlimited funds and resources. However there needs to be understandable and reasonable expectations for guidance on land to be cleaned up. Clean up levels need to be established that are appropriate for the land use for the area. Question is how to address the public on key obstacles on the complicated cleanup process. Keeping in mind that the information is to be understandable to the end user and customer, satisfying them is paramount.

DOE Order 435.1 is in the process of going through revisions. It is now time to get up to date on the revisions and engage the public and hear what the public has to say about the changes. Some sites have been able to engage the public, although there is no established process to engage the stakeholders and have them understand the cleanup end state. It is recognized that there are some stakeholders and general public that will not agree with the end state.

The challenge is to facilitate an informed decision. Part of that is having technical due diligence. Education is key, being transparent and fostering trust and keeping the decision makers informed as you go through the decision process. Responsible parties and regulators need to be in it together and understand each other’s roles. There has been old guidance that set rigid standards that compliance can be difficult. Developing models to show how we comply should not be the emphasis. What is needed is basic optimal decision making. There has been technology advances in decision making and they should be used.

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Lessons Learned are out there to learn from. Yucca Mountain spent billions of dollars on technical decisions, yet the stakeholder drove the decision. At WIPP, understanding what values mattered to the stakeholders helped build the decision process.

Questions were asked on how we discuss risk in a meaningful way for stakeholders to understand. There are thresholds that were developed, for example 10^{-6} risk, MCLs. Understanding where they came from is misunderstood and the use of the thresholds are misinterpreted. There needs to be an understanding of what is the real risk. MCLs are set and there is no process to move off them if they are unachievable. That is also associated with where is the point of compliance.

There needs to be social scientists to assist in communication of the clean up levels and affects of those decisions. A key element is that all stakeholders share in the financial costs and weighing the degree of cleanup with the cost to achieve that cleanup level. In the world of cleanup budget concerns it is imperative cost savings are valued to ensure more cleanup can be achieved. An example of full stakeholder involvement on cost was at an Army Corp pump and treat facility. The community wanted to have the pump and treat built at a bigger capacity than needed to reduce the operation time. The community had to pay a cleanup tax to pay for the increase.

A member of the audience commented that currently at the Hanford site, there are high standards for cleanup which is costly. Consensus among the stakeholders will be difficult; as there is the belief with some stakeholders that no contamination should be left in place. The discussions at this session are relevant on to how to address the budget reality with informed decision making. How can the onus of the financial burden be part of the stakeholders' involvement to keep reality in clean up costs?

Conclusion

Now is the time to be creative to possible solutions that consider financial burdens. More needs to be done to define the end state visions considering the financial burdens. There needs to be dedicated outreach to the stakeholders and regulators. There needs to be traceability on decision analysis, a formalized common sense approach on decision analysis.

Technical communications need to socialize that conservative models are almost impossible to explain; how can one explain models that are not real because of the extreme conservatism applied to the model. Socialization should be that modelling systems should be as realistic as possible.

Informed decision making is being collaborative and explaining the process of all technical aspects with all involved from day one, by building the learning curve and trust on that first day.