

Abstract:

EPRI Fukushima Technical Evaluation Project – Fukushima Radiological Assessment Tool Development

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The international nuclear power community has converged to learn from the Fukushima Dai-Ichi accident and enhance the safety of nuclear power plant operations. There are two facets of this learning: 1) understanding the accident progression from within the reactor and plant (e.g. Severe Accident Management Guides, analysis of plant systems and components, etc.) and 2) understanding the impact of the accident on the public (e.g. emergency planning and response, long term effects.) INPO, EPRI, and NEI have formed the Way Forward Initiative in order to implement lessons learned and experiences from the Fukushima Dai-Ichi accident. Strategic Goal #8 of the Way Forward addresses the long term control, monitoring, and assessing radiation ingestion pathways during and following an accident.

To understand the impact of the Fukushima Dai-Ichi accident on the public and environment and to apply that understanding to emergency planning and response and long term radiological controls and remediation planning, the release and deposition of radionuclides from the plant must be fully understood and analyzed. In order to accomplish this, credible radiological data from the environment around Fukushima Dai-Ichi should be collected in a reliable and readily accessible database tool. It is important to capture all available data while it is available and optimize data collection efforts. This tool should have features that will allow for multiple organizations to access and analyze the data for technical research. The establishment of such a database tool is Objective #1 for meeting Strategic Goal #8 of the Way Forward.

In 2011-2012 EPRI has embarked on various research projects to support industry learning from the Fukushima Dai-Ichi Accident. Of these, the Fukushima Technical Evaluation Project is specifically aimed at analyzing and understanding the causes, progression, and outcomes of the Fukushima Dai-Ichi Accident in order to inform future research. As part of this Technical Evaluation Project and the Way Forward Initiative, EPRI has initiated the establishment of the Fukushima Radiological Assessment Tool to support the benchmarking radiological dispersion and dose modeling tools used by the industry for emergency planning and response (e.g. RASCAL, RADDPOSE, MIDAS, etc.)

In 2012, EPRI will develop the Fukushima Radiological Assessment Tool to hold data related to radiological dispersion and deposition data from the environment around the Fukushima site and data important for dispersion and deposition modeling (such as geographical and meteorological data). This database will house information about concentrations of radionuclides in the areas around Fukushima (up to 30 km away from the plant), the geography of the area around the Fukushima plant, and the meteorology (e.g. wind directions and precipitation) during the time of the accident and releases from the plant. Data will be collected from February 2011 to April 2011 to provide pre-accident background radioactivity levels and cover the plume phase from the accident releases. The source term data from the Fukushima Dai-Ichi plant and dispersion and deposition data from the environment around the Fukushima site will be used to benchmark tools currently used in the industry for radiological dispersion and dose modeling (e.g. RASCAL, RADDPOSE, MIDAS, etc.) The part of the project will evaluate the capabilities and functionalities of these dispersion and dose modeling tools to model the dispersion and deposition resulting from releases during a severe accident. The coupled accident investigation and the radionuclide dispersion modeling will allow a full analysis of the causes and effects of the Fukushima accident.

This presentation will discuss the development of the Fukushima Radiological Assessment Tool and the Benchmarking of the Radiological Dispersion and Dose Modeling Tools. EPRI will collaborate with NEI, industry, and other national and international organizations to accomplish these tasks.