



# Nuclear Facility Risk Assessment

## How Sandia can help

*Sandia tools and capabilities can model consequences of any hypothetical accident to all nuclear reactor, spent fuel pool, and dry storage facilities and determine ramifications to neighboring communities in various topographical locations and weather scenarios.*

## Questions Sandia can answer

- How would we know that an accident is underway?
- What signs would we look for?
- How soon would an accident start to release radiation?
- How much radiation might get released?
- Where would it go?
- Who and what would be at risk?
- How dangerous would it be?
- How long would it last?
- Are there actions that would slow this down or mitigate the consequences?

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## Sandia tools and capabilities for analysis

### MELCOR

State-of-the-art software code used to evaluate the evolution of any possible accident scenario that could arise from plant malfunctions, natural events, or malicious acts. Such evaluations can determine when and how much, if any, radiation is released to the environment. The evaluations can be used to identify ways to prevent or minimize the release of radioactive contamination from a damaged nuclear power plant.

### MACCS

MACCS, another state-of-the-art software code, uses the output of MELCOR and incorporates a site's topographical and historical or current weather data to determine hypothetical land contamination levels, doses to individuals, health effects, and risks to populations resulting from a possible nuclear power plant accident.

## Spent Nuclear Fuel Security Accident Analyses

Post 9/11 analyses built capabilities to evaluate potential radioactivity release from events at spent fuel storage sites. The event analyses include different scenarios, such as aircraft strikes, vehicle-borne explosive devices, small team attacks (contact charges, shaped charges, thermal attacks), and spent fuel pool water loss in different weather and topographical situations.

