

U.S. Nuclear Regulatory Commission
38th Annual Regulatory Information Conference

RIC2026

Regulation, Innovation and
Collaboration for a Safer Tomorrow

March 10-12, 2026

Bethesda North Marriott Hotel
and Conference Center
Rockville, MD

#NRCRIC2026

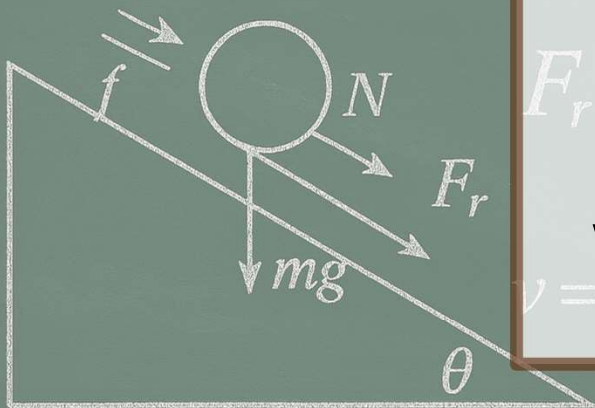
NRC.gov



$$F = ma$$

$$v = u + at$$

$$v = \sqrt{2as}$$



COROLLARY ON NEWTON'S LAW OF MOTION

A regulator at rest
will tend to stay at rest.

A regulator in motion
will tend to stay in motion.

$$s = ut + \frac{1}{2} at^2$$

$$a = \frac{g \sin \theta}{1 + kmR_2}$$

$$v = \sqrt{2as}$$

$$\omega = \frac{v}{R}$$

$$a = v \frac{v}{R}$$

Emergency preparedness (EP) and incident response are in motion

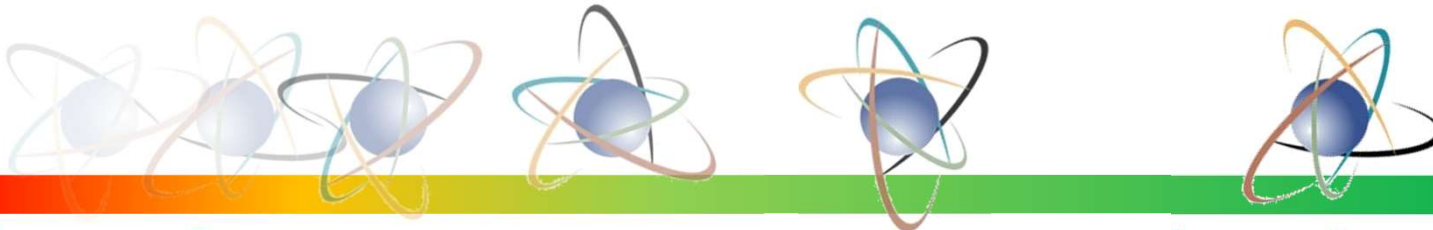
Prescriptive EP Framework

Risk-Informed, Performance-Based EP

*Reactor Oversight
10 CFR Part 57 Rulemaking*

*Public Protective Actions During
a General Emergency Rulemaking*

Executive Order 14300



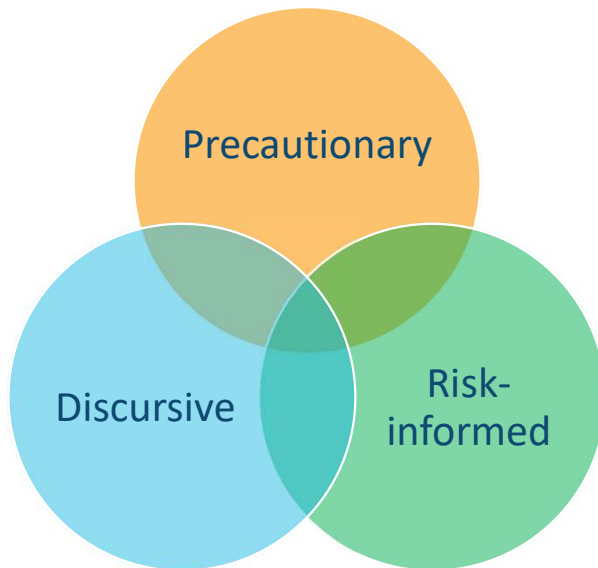
Responsive

Provides adequate protection of public health and safety
Prescriptive requirements often set in response to actual events
Focus on compliance

Risk-informed

Provides adequate protection of public health and safety
Requirements are set commensurate to the risks and hazards of the facility
Focus on capabilities and performance

Innovative risk management moves beyond reactive measures



Major strategies for managing risk

“Risk management is not about avoiding risks, but about navigating through them with wisdom and preparedness.”

<https://www.linkedin.com/pulse/navigating-risk-management-wisdom-preparedness-zane-edwards>

The emergency planning zone is a risk-informed planning tool

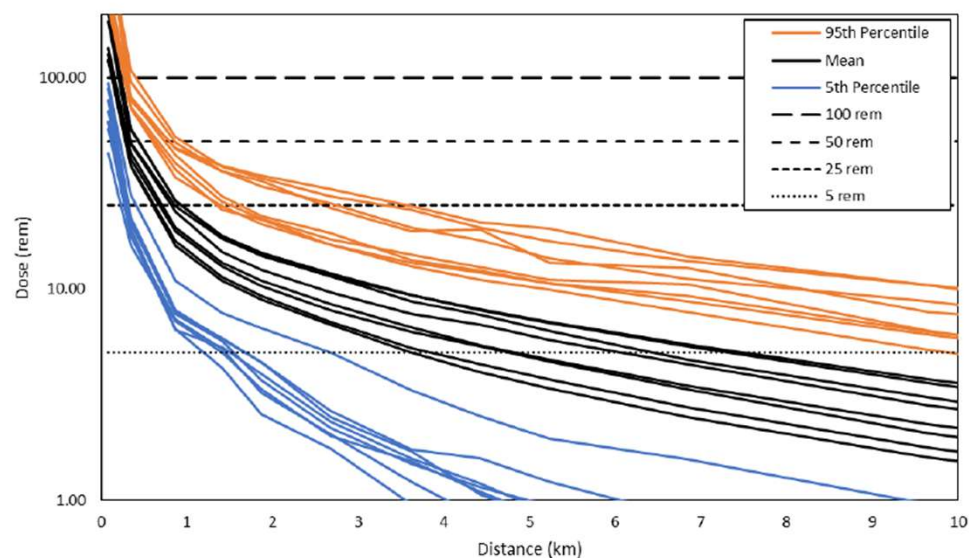
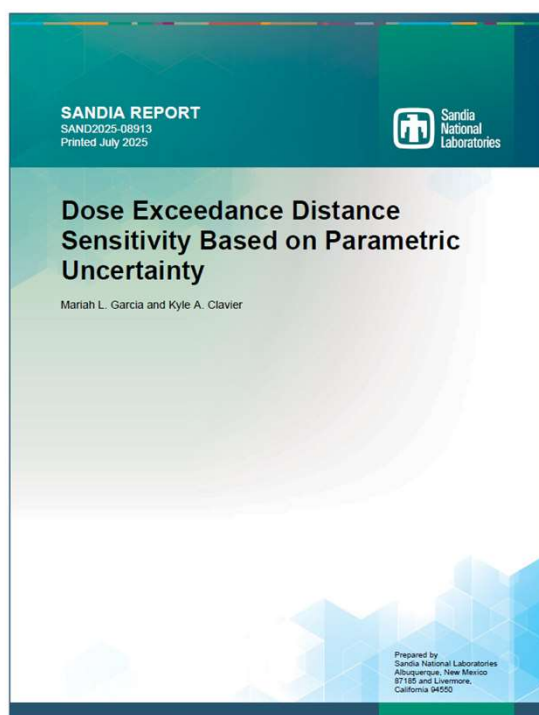
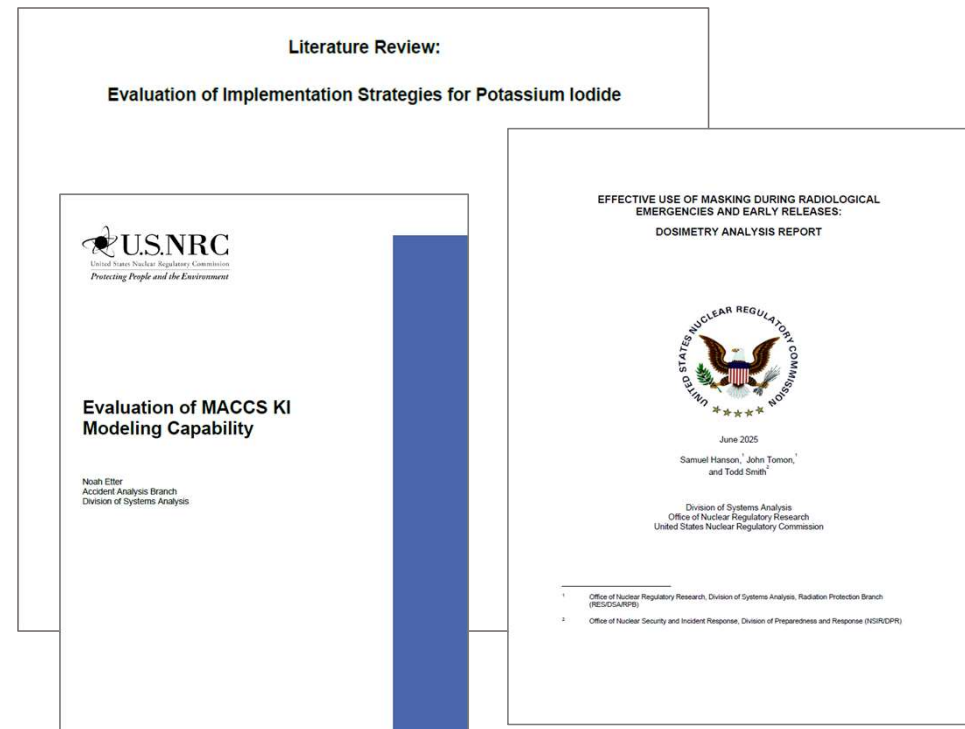
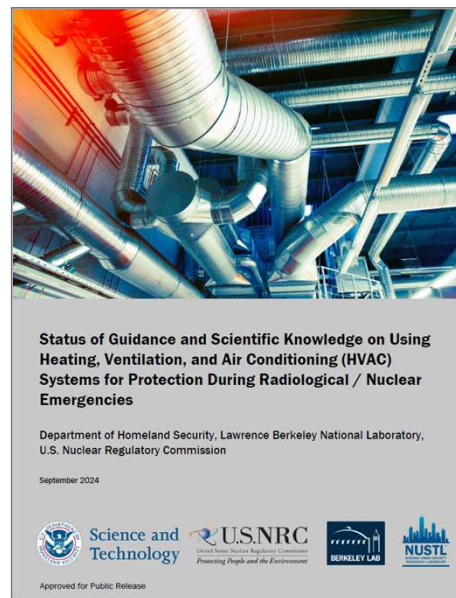
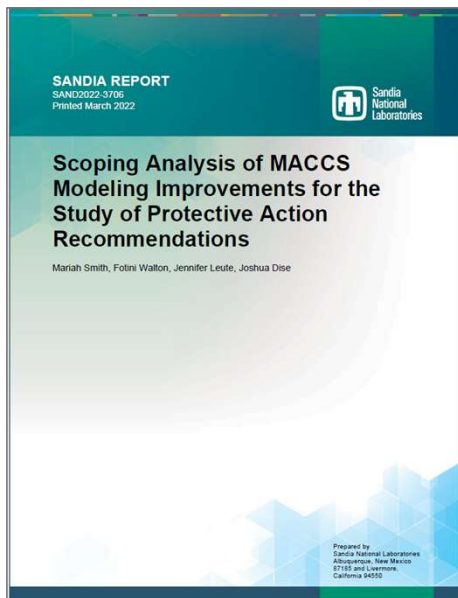


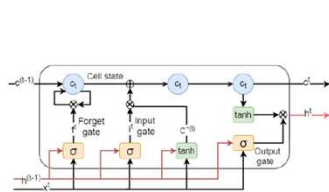
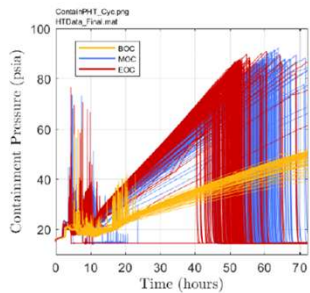
Figure 3-7 Meteorological Data Impact on Effective Dose (ISLOCA) [0-10km]

Note: Each of the eight curves for the different quantiles represents one of the different meteorological datasets shown in Table 2-1.

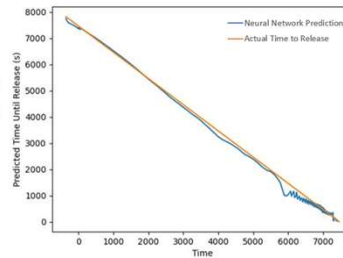
The NRC is leading research to inform protective action strategies



AI will accelerate our ability to prepare, predict, and respond



Long short-term memory (LSTM) network



AI prediction of release time into containment

I. Machine learning can make actionable predictions

Message	Default	Model 1	Model 3	Model 6
<i>You cannot sense radiation</i>	negative	neutral	fear	1 star
<i>Radiation can only be detected using specialized instruments</i>	negative	neutral	anticipation	3 stars
<i>With the correct instruments, radiation is easily detected</i>	positive	neutral	optimism	4 stars
<i>We cannot eliminate radiation in our environment</i>	positive	negative	fear	1 star
<i>There is no known safe amount of radiation</i>	negative	negative	fear	2 stars
<i>There may be some risk from low levels of radiation</i>	negative	neutral	fear	3 stars
<i>It is reasonable to assume that less radiation exposure is better</i>	negative	neutral	optimism	3 stars
<i>Contamination occurs when radioactive material settles on a surface</i>	negative	neutral	fear	2 stars
<i>Go inside, get inside, stay tuned</i>	positive	neutral	anticipation	5 stars
<i>Radioactive fallout particles might be raining down in your area</i>	negative	neutral	fear	2 stars

II. Fuzzy logic can inform our decisions

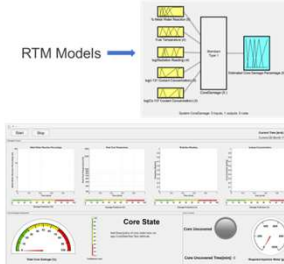
Response Technical Manual (RTM)



Response Technical Tool (RTT)



Response Digital Twin using Fuzzy Logic (RDT)



III. Large language models can refine risk communication

Collaboration keeps us moving forward, together



Trilateral Cooperation on
Emergency Preparedness



U.S.-Japan Emergency
Management Working Group

For more information

- [Federal Register Notice for Rulemaking on Public Protective Actions During a General Emergency](#)
- [Evaluation of MACCS \[MELCOR Accident Consequence Code System\] KI \[Potassium Iodide\] Modeling Capability](#)
- [Literature Review: Evaluation of Implementation Strategies for Potassium Iodide](#)
- [Effective Use of Masking During Radiological Emergencies and Early Releases](#)
- [Dose Exceedance Distance Sensitivity Based on Parametric Uncertainty](#)
- [Status of Guidance and Scientific Knowledge on Using Heating, Ventilation, and Air Conditioning \(HVAC\) Systems for Protection During Radiological/Nuclear Emergencies](#)
- [Scoping Analysis of MACCS Modeling Improvements for the Study of Protective Action Recommendations](#)
- [NRC Presentations for International Atomic Energy Agency EPR2025 Conference Agencywide Documents Access and Management System \(ADAMS\) Package](#)

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*The NRC is rolling into the future of
emergency preparedness*

#NRCForward

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