POLICY ISSUE
(Notation Vote)

May 11, 2026 SECY-26-0062

FOR: The Commissioners

FROM: Michael F. King
Executive Director for Operations

SUBJECT: RECOMMENDATION REGARDING THE FUTURE OF THE REPLENISHMENT OF POTASSIUM IODIDE

PURPOSE:

This paper seeks Commission approval of the U.S. Nuclear Regulatory Commission (NRC) staff's recommendation regarding the future funding of potassium iodide (KI) tablet distribution for state and local populations surrounding nuclear power plants (NPPs) starting in fiscal year (FY) 2028 in response to Commission direction in SRM-COMSECY-25-0028, "Revised Fiscal Year 2027 Budget to the Commission."[1] In addition, the staff provides its recommendations regarding future Commission policy for the distribution of KI tablets.

SUMMARY

After evaluating the historical context, scientific evidence, and recurring procurement issues, the staff recommends that the Commission (1) establish a policy not to fund initial and replenishment stockpiles of KI beginning in FY 2028, and (2) address Federal support for KI requests through the NRC's delegated responsibility under section 127 of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (the Bioterrorism Act).[2] The NRC's delegated responsibility under the Bioterrorism Act is to make KI available through the Strategic National Stockpile (SNS) to state and local governments within 10 miles of an NPP.

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[1] Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML25209A452, ML25224A187 (nonpublic)
[2] PL 107-188 (June 12, 2002)

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Alternative pathways for KI distribution could include state self-procurement, over-the-counter purchases, and emergency stockpiles within the SNS. Continuing NRC funding would require approximately $2.14 million by November 2027, an additional $1.1 million in FY 2029, and variable recurring costs thereafter. No KI funding is included in the FY 2027 budget request.

BACKGROUND:

In 2001, the NRC revised its emergency preparedness regulations in Title 10 of the *Code of Federal Regulations* (10 CFR), paragraph 50.47(b)(10), to require emergency plans to include certain protective actions, including the consideration of the prophylactic use of KI as a supplement to evacuation and sheltering within the 10-mile plume exposure pathway emergency planning zone (EPZ).[3] As a part of that final rule, the Commission offered to fund states' initial purchases of KI. The Commission also stated that this decision was an exception to the long-standing Commission policy that funding for state and local emergency planning is the responsibility of those governments.[4]

In 2002, the Federal Emergency Management Agency (FEMA) published a revised "Federal Policy on Use of Potassium Iodide (KI)"[5] (Federal KI policy), stating that KI should be stockpiled and distributed to emergency workers and institutionalized persons for radiological emergencies at an NPP, and its use should be considered for the general public within the 10-mile EPZ of an NPP. Federal KI policy leaves the decision on whether to use KI for the general public to the discretion of states and, in some cases, local governments.

Under section 127(a) of the Bioterrorism Act, Congress directed the President to "make available to State and local governments potassium iodide tablets for stockpiling and distribution . . . within 20 miles of a nuclear power plant" under certain conditions outlined in section 127(b). Notably, the KI discussed in this section 127(a) was to be provided by the SNS, which the Bioterrorism Act placed under the maintenance of the Secretary of the Department of Health and Human Services (HHS) in section 121. While initially placed under the maintenance of both HHS and the Department of Veterans Affairs, the Project Bioshield Act of 2004[6] placed the SNS under the full maintenance of HHS. In addition, section 127(d) of the Bioterrorism Act required the President to inform state and local governments of such a program. Finally, section 127(f) provided the President with a waiver of sections 127(a) and (d) if the President determines there is an alternative and more effective prophylaxis or protective measures for "adverse thyroid conditions that may result from the release of radionuclides from nuclear power plants."

In the early 2000s, KI tablets had a typical manufacturer shelf life of approximately 5 years. Consequently, in SRM-SECY-06-0142, the Commission authorized a one-time replenishment of KI tablets that were nearing expiration from the original 2001 NRC procurement. The Commission also directed the staff to collaborate with relevant stakeholders and provide options to the Commission for the long-term supply and replenishment of KI within the 10-mile EPZ surrounding commercial NPPs. In May 2007, the staff sent an options paper to the Commission.

[3] 66 FR 5427, January 19, 2001
[4] 66 FR 5437, January 19, 2001
[5] 67 FR 1355, January 10, 2002
[6] PL 108-276 (May 19, 2004)

However, in a July 3, 2007, memorandum,[7] President Bush assigned to the Chairman of the NRC the responsibility for implementing sections 127(a) through (e) of the Bioterrorism Act and assigned the responsibility for issuance of any waivers pursuant to section 127(f) to the Director of the Office of Science and Technology Policy (OSTP). The general uncertainty surrounding the Bioterrorism Act's effect on the NRC's KI distribution policy led the staff to withdraw the options paper it had submitted in May 2007.

On January 22, 2008, the Director of OSTP, Dr. John Marburger, issued a decision under his delegated authority under section 127(f) of the Bioterrorism Act that more effective measures did in fact exist for populations beyond the 10-mile EPZ of an NPP.[8] Dr. Marburger concluded that evacuation and interdiction of contaminated food is a more effective preventative measure for adverse thyroid conditions beyond the 10-mile EPZ surrounding NPPs, stating that the scientific evidence did not support expansion of distributing KI to residents beyond the 10-mile EPZs. In framing his decision, Dr. Marburger acknowledged that Federal resources were already committed to procure KI for distribution within the 10-mile EPZs through the NRC's program. Therefore, from and after the issuance of the January 22, 2008, decision of Director Marburger, the NRC's responsibility has been limited to making KI available to state and local governments within the 10-mile area surrounding an NPP. The Bioterrorism Act designates the SNS, under the responsibility of HHS, as the funding mechanism for this supply.

Under section 127(c) of the Bioterrorism Act, guidelines for the stockpiling of KI tablets, and for the distribution and utilization of KI tablets in the event of a nuclear incident, must be established before KI can be made available under section 127(a). HHS issued guidelines in 2005, however, these guidelines were developed prior to NRC's delegation to implement the Bioterrorism Act and the decision by OSTP to waive the requirements for KI in the 10-20 mile area.[9] As such, the guidelines for the stockpiling of KI tablets, and for the distribution and utilization of KI tablets issued by HHS in 2005 would need to be updated to enable use of the stockpile. Further, in order to request KI from the stockpile, governments are required to submit: (1) a plan describing their intended strategy for distribution and use of KI in the event of a nuclear incident and (2) certifications that the government has not already received sufficient quantities of KI tablets from the Federal Government.

In SRM-SECY-09-0041[10], "Recommendation for Future Replenishment of Potassium Iodide," dated April 7, 2009, the Commission decided to resupply state KI stockpiles in accordance with shelf-life expiration of the tablets. KI tablet manufacturers now produce products with a 10-year shelf life. Since 2009, the NRC has continued to fund purchases of KI to replenish state and local stockpiles upon request. Given the decision by Dr. Marburger and the Commission decision to fund KI requests within the 10-mile EPZ on an ongoing basis, state and local governments have not requested KI directly from the SNS (as contemplated under the Bioterrorism Act).

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[7] 72 FR 37627, dated July 10, 2007
[8] 73 FR 5840, dated January 31,2008
[9] 70 FR 51065, dated August 29, 2005
[10] SRM-SECY-09-0041, ADAMS Accession No. ML090970150

In August 2025, in SRM-COMSECY-25-0028, the Commission directed the staff to submit a paper to the Commission, no later than May 2026, that provides recommendations on updates to the KI tablet distribution policy to support budget planning.

DISCUSSION:

The replenishment of KI involves interrelated but separate policy issues. Budgeting decisions to meet state requests for KI are resultant of the Commission policy to fund state requests for KI as previously discussed. The cost to replenish KI is directly related to the quantity of KI requested by the states. In response to SRM-COMSECY-25-0028, the staff reviewed current KI policies, practices, and evidence for effective KI use in an emergency, taking budget implications into consideration. The staff identified several policy and process issues that could enhance KI distribution strategies while ensuring fiscal responsibility and accountability. Appendix A provides additional details on the staff considerations summarized below.

1. Procurement Process Efficiency

The NRC does not directly acquire KI on behalf of the states. The NRC transfers fee-based funds to HHS, which maintains purchase contracts with KI vendors and places orders to ship KI to requesting states. This multi-step process introduces delays due to fund transfers, contracting time, and vendor lead times, and has often resulted in challenges to replenish expired KI on schedule. Some states have, at times, been required to extend the shelf life of existing stockpiles to compensate for process delays. These process inefficiencies create additional burden on states when stockpiles are not replenished on time. In some instances, states needed to expend resources to extend the shelf life of existing KI stockpiles while waiting for product replacement.

Moreover, KI programs are under the direct control of state and local governments. While states do request KI from the NRC, there is currently no standardized or structured process for states to request KI through the NRC. In its review, the staff found that the NRC does not require states to justify the quantities of KI they request, and the methods states use to estimate their KI needs are not transparent to the NRC. Because the scope of KI distribution within the EPZ directly affects cost, the NRC staff cannot reliably forecast changes in KI demand to support budget planning. Additionally, the current KI distribution policy is likely to lead to more unsolicited and unexpected requests, particularly as more nuclear facilities are built or restarted.

The NRC staff is not aware of any robust method or standard for independently estimating demand for KI tablets. By contrast, the provisions of section 127 of the Bioterrorism Act would require state and local governments to develop and submit a plan for the stockpiling of KI tablets and for the distribution and utilization of KI tablets before receiving supplies of KI from the Federal government. As a result, discontinuing NRC funding of KI distribution could reduce the agency's involvement in the procurement process, promote the development of more resilient stockpiling plans and efficient procurement pathways, and support and promote the Administration's and the NRC's policies of avoiding, detecting, and preventing fraud, waste, and abuse of taxpayer funds (and NRC fees).

Several other options exist by which state and local governments may obtain and maintain KI stockpiles for use in a radiological emergency, including:

1) *Section 127 of the Bioterrorism Act.* Funding for KI under the Bioterrorism Act would come through appropriations for the SNS by Congress. The NRC currently has the delegated responsibility to administer this program under section 127 of the Bioterrorism Act. In addition, HHS maintains a stockpile of KI in the SNS that can be requested in an emergency and delivered in a timely manner. The tablet quantities in the SNS are established by HHS to meet the needs of an at-risk population in a typical 10-mile EPZ.
2) *State procurement.* State and local governments are not prohibited from purchasing KI for stockpile and distribution according to their needs.
3) *Individual procurement.* KI is a Food and Drug Administration (FDA) approved drug available for over-the-counter sale.
4) *Shelf life extension.* In lieu of replenishment, states may also apply guidance issued by the FDA to extend the shelf life of KI tablets beyond manufacturer expiration dates.[11]

NRC staff has reached out to HHS staff to discuss the possible alternative approaches that might be taken by the agencies that would improve the overall KI distribution and accountability processes. In those preliminary discussions, HHS staff informed NRC staff that alternative procurement approaches may exist that would remove the NRC from its current intermediary role. These alternatives include HHS assuming full responsibility for managing state KI requests, procurement, and distribution. However, the staff has not yet fully engaged with HHS regarding potential funding mechanisms should NRC funding no longer be provided. If the NRC discontinues KI funding and relies instead on KI distribution being funded through the SNS, then, under section 127(c) of the Bioterrorism Act, the NRC, in consultation with other Federal agencies (e.g. the Federal Radiological Preparedness Coordinating Committee (FRPCC)) and state and local agencies, would need to establish guidelines to address how a state's request—and its supporting justifications—should be processed.

2. Optimization of KI Distribution Strategies

In an emergency involving a significant release of radioiodine, timely administration of KI can be beneficial if administered either before exposure or within 3 hours after exposure. However, research and experience continue to show that evacuation and sheltering remain the most effective protective actions against radiological exposure. Twenty-six states and the District of Columbia choose not to distribute KI, either because NPPs are considered too far away to pose a significant risk to surrounding populations, or because those entities do not view KI as an effective complement to evacuation or sheltering measures.[12] Of the 24 states with a KI

[11] "Guidance for Federal Agencies and State Local Governments Potassium Iodide tablets Shelf Life Extension," ADAMS Accession No. ML13329A510
[12] "Literature Review: Evaluation of Implementation Strategies for Potassium Iodide," ADAMS Accession No. ML25160A272

program, a mix of pre- and post-distribution strategies[13] are in place, with many states relying only on a post-distribution strategy.
Both the National Academy of Sciences (NAS)[14] and the World Health Organization (WHO)[15] have concluded that the current evidence does not provide strong support for KI's effectiveness as a protective action. This scientific conclusion reflects two underlying limitations relevant to the staff's assessment. First, as discussed above, the radiological protective benefit of KI is highly time critical, requiring administration within a narrow time interval relative to radioiodine exposure. Second, the empirical research supporting robust and effective KI stockpiling, distribution, and deployment strategies remains limited. As a result, both the NAS and WHO have recommended additional research to understand the effectiveness of KI stockpiling and distribution strategies.

In recognition of this need for such additional research, in 2023, the NRC staff-initiated efforts through the FRPCC to reestablish the KI subcommittee, coordinate analytical work to inform effective KI distribution, and update Federal guidance. The FRPCC has a formal plan of work, updated annually, to set objectives and track progress of these efforts. The staff anticipates that updated Federal guidance, based on the best available science, would reduce the quantity of KI needed to support state and local plans. In addition, updating this Federal guidance would help to effectuate Executive direction to ensure that Federally funded research is transparent, rigorous, and impactful, and that Federal decisions are informed by the most credible, reliable, and impartial scientific evidence available.[16]

In March 2026, NRC staff and Sandia National Laboratories published a report providing a quantitative evaluation of KI implementation strategies using the MELCOR Accident Consequence Code System.[17] The analysis shows to a reasonable degree of scientific certainty that distribution methods can change projected thyroid doses by at least an order of magnitude and that timely KI administration was critical. Evacuation remains the most effective protective action regardless of KI strategy. For rapid releases of radiation, retrieving KI from stockpiles can have negative effects due to potential additional exposure, while pre-distributed KI is potentially the most effective as a supplement to evacuation and sheltering. However, the results were based on idealized conditions, and real-world KI benefits are likely lower. The report underscored the need to reconsider the cost and rigor of distribution programs and supported reevaluating Federal and Commission KI policy and funding decisions.

3. Policy Considerations and Future Work

The NRC currently funds KI stockpile replenishment based on requested quantities identified by states that maintain a KI program for the population within an EPZ.

[13] Distribution strategies in the context of KI include pre-distribution to prepare for emergencies and post-distribution in response to an emergency.
[14] NAS, 'Distribution and Administration of Potassium Iodide in the Event of a Nuclear Incident'
[15] WHO, "Iodine Thyroid Blocking: Guidelines For Use In Planning for and Responding to Radiological and Nuclear emergencies"
[16] EO 14303, dated May 23, 2025
[17] ADAMS Accession No. ML26097A248

Federal policy on the use of KI has not changed since 2002 and reflects assumptions based on large light water reactor (LLWR) source terms, 10-mile EPZs, and lessons from the Chernobyl accident.[18] This policy is no longer fully representative of U.S. reactor designs and does not reflect extensive insights from public health surveys following the Fukushima-Daiichi accident[19] that provide practicable insights on KI use and effectiveness during and after an emergency.

Furthermore, many emerging nuclear technologies and commercial reactor operations are expected to have design features and accident source term characteristics that would not justify stockpiling or distributing KI. In addition, EPZs are scalable in size to accommodate planning needs. Consequently, if the NRC continues to fund KI, the staff would need to reassess its approach on addressing state requests for existing communities with LLWRs and potential future communities with advanced reactors and scalable EPZs.

NRC funding decisions do not absolve the NRC of its delegated responsibility to carry out portions of the Bioterrorism Act. Decision-making on whether to stop funding KI needs to include consideration of how to meet these NRC delegated duties, absent a Presidential memorandum modifying the 2007 delegation to, for example, place the delegated provisions of section 127 with HHS to better align with section 121's funding provision.

The staff will engage with OSTP and HHS to determine whether and how to utilize the provisions of section 127 of the Bioterrorism Act for providing KI and associated funding through the SNS, as is contemplated by section 127(a) of the Bioterrorism Act. This approach has not been pursued because of the NRC's policies in the 2000s to fund the initial and replenishment of state and local government KI stockpiles. Under section 127(b)(1)(B) of the Bioterrorism Act, state and local governments that have already received sufficient quantities of KI from the Federal government may not request KI tablets through the provisions of the Act. Currently, state governments are receiving sufficient quantities of KI tablets from the NRC. If this were to no longer be the case, then state and local governments may request KI through the Bioterrorism Act. Similarly, the guidelines for the stockpiling of KI tablets, and for the distribution and utilization of KI tablets issued by HHS in 2005 would need to be updated. [20]

The staff has identified the following options that the NRC could implement regarding the NRC's delegated responsibility:

1. Make KI available to state and local governments under the Bioterrorism Act. The NRC's delegated responsibility under section 127(a) is to make KI available to state and local governments through the SNS in quantities sufficient to provide adequate protection for the population within 20 miles (waived to 0-10 miles) of a nuclear power plant. Section 127(c) requires the development of guidelines for the stockpiling, distribution, and utilization of KI tablets. KI tablets may not be made available under section 127(a) until such guidelines have been established. Under this option, the NRC, in consultation with other Federal agencies (e.g. the FRPCC) and state and local agencies, would establish

[18] 67 FR 1355, January 10, 2002
[19] The Lancet, Vol. 75, 102722, Detection of thyroid cancer among children and adolescents in Fukushima, Japan: A population-based cohort study of the Fukushima Health Management Survey
[20] 70 FR 51065, dated August 29, 2005

the guidelines, and HHS would fund KI through the SNS. The NRC would establish an agreement with HHS to facilitate distribution through the SNS. The staff estimates it would take approximately 1 year to establish an agreement and appropriate guidelines. If implemented, this option would require continuous NRC staff support.

2. Establish an agreement with HHS or another Federal agency to provide state and local governments with sufficient quantities of KI tablets on an ongoing basis. State and local governments may request KI under the Bioterrorism Act only if they meet certain conditions, including certifications by such government that they have not already received sufficient quantities of KI from the Federal government. If HHS or another Federal agency with authority and funding to provide sufficient quantities of KI to state and local governments has done so, then requests for KI under the provisions of the Bioterrorism Act would not be necessary. This approach could be more timely and efficient than entering an agreement with HHS to facilitate NRC's distribution of KI under the Bioterrorism Act and could take less than 1 year to implement if such sustainable procurement options already exist within the Federal government. If implemented, this option would not involve NRC funding or require continuous NRC staff support because the NRC's delegated responsibility under the Bioterrorism Act to make KI available would not need to be fulfilled. Under this option, however, if HHS or other Federal agency fails to provide KI to state and local governments as contemplated by the agreement, NRC's obligation to make KI available would resume.

3. Provide a technical basis and recommendation to the Director of OSTP to waive the requirements of sections 127(a) and 127(d) for the 0-10 mile area surrounding an NPP under the provisions of section 127(f). The basis for the waiver would need to justify that there are alternatives and more effective prophylaxis or preventive measures for adverse thyroid conditions. In the 10-20 miles area, evacuation and interdiction of contaminated food was found to be more effective than the administration of KI. A similar basis could be developed to waive the requirements in the 0-10 mile area. The prior waiver decision was supported by a technical evaluation developed by the KI subcommittee under the FRPCC at the request of the Director of OSTP. The staff estimates it would take approximately 1 year to formalize a technical basis and recommendation for a waiver determination. If implemented, this option would not require continuous NRC staff support.

Joint coordination to pursue these options with both HHS and OSTP will facilitate strategic Federal alignment, a reasonable transition to another responsible entity such as HHS, and communication with states as procurement alternatives are established.

Going forward, the staff will continue its collaboration within the FRPCC KI subcommittee to develop updated evidence-based guidance for Federal KI policy implementation for current and advanced nuclear technologies. The staff will engage with the appropriate Federal agencies, as necessary, to communicate updates to the states. Additionally, the staff will consider whether additional KI policy changes are needed as part of the rulemaking process for "Public Protective Actions During a General Emergency" (Docket ID NRC-2025-0412).

RECOMMENDATION:

The staff recommends that the Commission approve the following actions:

1. Establish, as a matter of Commission policy, that the agency will not fund initial and replenishment stockpiles of KI beginning in FY 2028.

2. The NRC staff pursues options to meet the NRC's delegated responsibility under section 127 of the Bioterrorism Act, including, in order of priority:
   a. Make KI available through the SNS under the provisions of section 127(a) and 127(c) of the Bioterrorism Act.
   b. Establish an agreement with HHS or another Federal agency to provide state and local governments with sufficient quantities of KI tablets such that KI need not be requested through the provisions of the Bioterrorism Act.
   c. Provide a technical basis and recommendation to the Director of OSTP to waive the requirements of sections 127(a) and 127(d) under the provisions of section 127(f) for the 0-10 mile area surrounding a nuclear power plant. This option would only be pursued if requested by the Director of OSTP.

The staff will inform the Commission of the progress of the coordination efforts with HHS and OSTP through bi-annual CA Notes.

RESOURCES:

No additional resources are being requested to implement the staff recommendations. If the recommendations above are approved, staff will reprogram existing resources to pursue cited options to meet the NRC's delegated responsibility under section 127 of the Bioterrorism Act.

Funding is not budgeted in FY 2027 to replenish KI stockpiles. If resources are needed to fund the program, those needs will be assessed through the planning, budgeting, and performance management process. Approximately $2.14 million in contract support will be needed by November 2027 (FY 2028) to replenish stockpiles for 10 states with inventories scheduled to expire in May 2028.

COORDINATION:

The staff fully considered all views expressed during development of this paper. These views were either incorporated into the analysis and recommendations within or were carefully evaluated and not adopted based on their merits.

The Office of the General Counsel has reviewed this package and has no legal objection.

The Office of the Chief Financial Officer reviewed this package and determined that it has no financial impact.

/RA/ for

Michael F. King
Executive Director
for Operations

Appendix A, Considerations for
Continued Funding of Potassium Iodide
Appendix B, Abbreviated Timeline
of Potassium Iodide Policy
Appendix C, Anticipated State
Replenishment Needs and
NRC Budget

Appendix A: Considerations for Continued Funding of Potassium Iodide

I. KI Policy

Federal KI policy has not changed significantly since 2002. Federal KI policy is centered around commercial LLWR technology and presumes the existence of a 10-mile EPZ and formal offsite radiological emergency preparedness (REP) programs with oversight by FEMA. In the past, Federal KI policy was updated primarily in response to the Chernobyl incident of 1986, which is not reflective of U.S. nuclear technologies and standards of design, construction, and operation. Recognizing the need to reconsider Federal KI policy, in 2023, NRC staff approached the FRPCC to restart the KI subcommittee and examine Federal KI policy in consideration of insights from modern risk analyses, real events, and advances in nuclear technology. In reevaluating Federal KI policy in its entirety, the NRC staff recognizes the potential impact it may have on future Commission policy and budget decisions with respect to the identification of efficiencies and promoting fiscal responsibility. Insights from the KI Policy subcommittee have included:

1. Lessons from Fukushima (2011): The Fukushima accident raised new questions about how to use KI, especially among children and pregnant women, given that the release of radioactive materials occurred over several days rather than as a discrete, one-time event. Current Federal KI policy is not specific to these at-risk populations and does not address multi-day scenarios.

2. Scalable EPZ: Federal KI policy presumes the existence of a 10-mile EPZ surrounding every NPP. However, NRC regulations in 10 CFR 50.33(g) provide for a case-by-case EPZ determination for many types of facilities. Furthermore, for facilities with a site boundary or no EPZ, the NRC does not require findings and determinations on the state of offsite planning; therefore, FEMA would not provide oversight and support for formal offsite REP program. The Commission's policy on KI replenishment does not clearly address the applicability to state and local governments within scalable EPZs or for facilities with no formal REP program.

3. Modern Risk Analyses: Federal KI policy does not reflect insights from the State-of-the-Art Reactor Consequence Analyses (SOARCA)[21] or the Level 3 Probabilistic Risk Assessment Project.[22] Insights from the SOARCA project revealed that existing resources and procedures can stop an accident, slow it down, or reduce its impact before it can affect public health and safety. Even if accidents proceed uncontrolled, they take much longer to happen and release much less radioactive material than earlier analyses suggested. This suggests that pre-distribution and prompt administration of KI may not be necessary if evacuation can be completed before a significant release occurs or if KI can be obtained in a timely manner post-incident.

4. Modern Reactor Designs: There are significant design enhancements of small modular reactors, advanced reactors, and other new nuclear technologies to mitigate or prevent a radiological release. Many designs contain features that would preclude a significant release of radioiodine; these features include smaller overall inventory of radionuclides, use of functional containment, and continuous chemical processing to remove volatile

[21] ADAMS Accession No. ML12332A058
[22] ADAMS Accession No. ML23010A124

radioiodine in some designs. Federal recommendations for KI use during radiation emergencies consider specific factors associated with the release; for example, KI is not recommended in response to a radiological dispersal device or improved nuclear device. Likewise, Federal KI policy should reflect release characteristics of modern reactor designs.

These few considerations alone suggest that Federal KI policy and the Commission's policy for KI replenishment should be reevaluated and updated to reflect state-of-the-art risk analyses, technological advancements, and modern EP frameworks.

Executive Order 14239, "Achieving Efficiency Through State and Local Preparedness," dated March 18, 2025, established a policy to increase the role of state and local governments and individuals in the collective national resilience and preparedness.[23] Referencing Executive Order (EO) 14239, "Achieving Efficiency Through State and Local Preparedness," as an authority, HHS updated its SNS Guidance on Federal and Jurisdictional Stockpiling Roles in December 2025, advising that states consider maintaining supplemental local inventories of KI for immediate use, establish agreements with suppliers to support surge procurement, and use mutual-aid planning to strengthen regional resilience.[24] Doing so would subsequently reduce the need for Federal support.

II. Effectiveness of KI Distribution Strategies

Federal KI policy is clear that while the Federal government believes that the use of KI is a reasonable and prudent measure as a supplemental protective action, logistical difficulties of KI distribution should not impede or delay orderly evacuation.[25] Most states employ a mix of pre- and post-distribution of KI; however, there is limited information to inform effective distribution strategies and resource allocation. In addition, there are insights from Fukushima and other radiological incidents that provide practicable considerations for KI administration.

Related Research on KI Distribution:

In 2004, the NAS National Research Council published "Distribution and Administration of Potassium Iodide in the Event of a Nuclear Incident."[26] The report was developed in response to section 127 of the Bioterrorism Act and was prepared by a committee of experts representing various disciplines to address issues related to distribution of KI. On the benefits of KI, the report acknowledges that, "to be most effective, KI must be taken within a few hours before or after exposure to inhaled or ingested radioiodine." On issues related to KI distribution and stockpile programs, the committee recommended research to better understand the strengths and weaknesses and resource requirements of different KI distribution plans. The report concludes, "For some states, decisions on whether to use KI and how to use it also appear to depend on federal funding."

Underscoring the need for evidence-based policy, in a 2017 report, "Iodine thyroid blocking: Guidelines for use in planning for and responding to radiological and nuclear emergencies," the

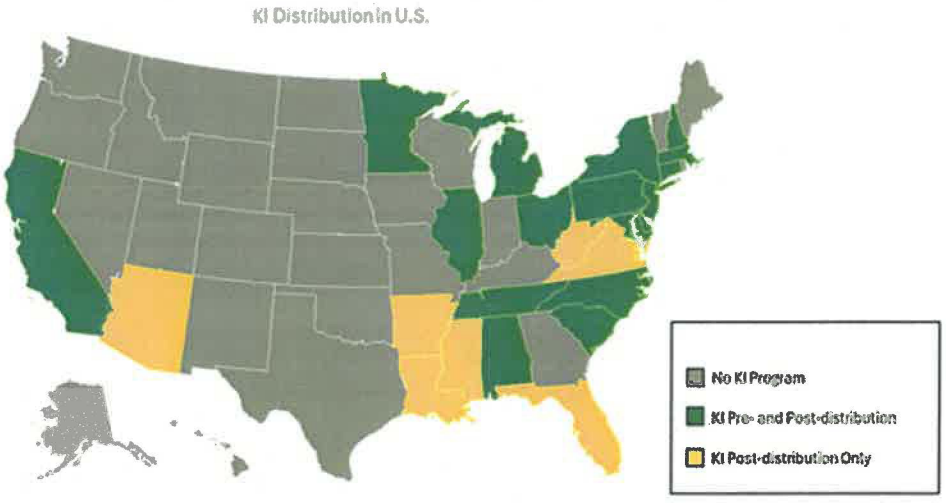
[23] EO 14239, 2025-04973 (90 FR 13267)
[24] HHS/ ASPR Jurisdictional Stockpile Program, https://aspr.hhs.gov/SNS/Pages/jurisdictional-stockpiling.aspx
[25] 67 FR 1355, Federal Policy on Use of Potassium Iodide (KI), 2002
[26] NAS, Distribution and Administration of KI in the Event of a Nuclear Incident, https://www.nationalacademies.org/publications/10868

WHO stated that while provision of iodine thyroid blocking to people at risk of being exposed to radioiodine should be implemented, the quality of the evidence is very low and the strength of the recommendation is conditional.[27] The WHO recommends use of iodine thyroid blocking only as a supplement to shelter and evacuation and for maximum benefit to be administered prior to exposure or up to 2 hours post exposure.

The NAS and WHO both emphasize that research is needed on the most effective way to distribute and administer KI. A KI program that is based predominately on funding availability rather than evidence-based consideration for public health is not a robust strategy. The NRC staff is leading efforts to develop new research to support effective KI distribution strategies. In 2025, the staff published a literature review and assessment of state and local KI distribution strategies.[28] The report offers insights on current KI implementation strategies and planning across the 50 U.S. states and the District of Columbia as well as perspectives on relevant public health protection strategies for radiological emergencies. Of the 24 states with a KI program, a mix of pre- and post-distribution strategies are implemented, with many states relying only on a post-distribution strategy. Specifically:

1. Twenty-six states and the District of Columbia do not distribute KI.
2. Seven states have adopted a strategy of stockpiling potassium iodide for distribution after an incident occurs.
3. Seventeen states have plans for distributing KI pre- and post-incident.

States with KI Distribution Plans Across the U.S. (Map)[29]



The literature review revealed that while the efficacy of KI tablets is well understood, there has been little attention given to evaluating or improving KI distribution strategies. That is, having a plan for KI distribution does not automatically make it effective. A key finding in the 2004 NAS

[27] WHO, Iodine thyroid blocking: Guidelines for use in planning for and responding to radiological and nuclear emergencies' https://www.who.int/publications/i/item/9789241550185
[28] ADAMS Accession No. ML25160A272

report is that while states have implemented pre-distribution programs, they are often limited in scope with less than 10 percent of the affected population receiving the tablets. Voluntary pickup programs, where individuals are responsible for obtaining the tablets, can reach more than 50 percent of the population, but success depends heavily on active community involvement. The NRC literature review identifies many factors that would impact decisions on the choice of distribution strategy.

To address the gaps identified by the NAS and WHO and the NRC literature review, the NRC staff completed a quantitative evaluation of KI implementation strategies using the MELCOR Accident Consequence Code System.[29] The results indicate that the timing of KI administration is critical, as expected. Evacuation is the most effective protection strategy regardless of KI distribution method. For scenarios involving rapid releases, it was found that retrieving KI from stockpiles can have a detrimental effect. Pre-distributed KI is potentially the most effective approach when used as a supplement to evacuation and sheltering. However, these model results are based on idealized conditions for KI distribution and administration; the actual benefits of KI prophylaxis are likely to be less than estimated in this report due to many variables.

Studies on severe accident source terms demonstrate the complex nature of radioiodine chemistry. An important insight for emergency preparedness is that radioactive iodine exists in many chemical forms including aerosols and elemental and organic gas-phase species. Across many representative accident scenarios, cesium iodide (CsI) aerosols dominate the mixture of radioiodine species in the early phases of release. CsI is a particulate, typically ranging in size from 1 to 10 micron, or larger. This suggests that wearing a mask would be an effective countermeasure against inhalation of radioiodine. The NRC staff is exploring the effective use of masks and released a report providing quantitative estimates of radiation dose savings from wearing a mask during a radiological emergency.[30] Masking provides a safe, readily available, and trusted alternative to KI tablet administration.

Lessons from Actual Releases

The staff examined historical data on health effects from actual radiological releases. This included a review of the Nevada atmospheric nuclear bomb tests, Windscale, Three Mile Island Unit 2, Chernobyl, and Fukushima accidents. The data from these incidents suggests an extremely low risk of thyroid cancer from releases of radioiodine for events that are properly managed, even in the absence of administering KI. The following provides key insights from each event:

1. Nevada atmospheric testing: The population exposed to radioactive iodine from atmospheric nuclear tests conducted in Nevada in the 1950s has been studied over many years for health impacts, including thyroid cancer. The National Cancer Institute, in its "Thyroid Cancer Rates and 131I Doses from Nevada Atmospheric Nuclear Bomb Tests: An update" study, adds support for an increased risk of thyroid cancer due to fall out but states that the data are inadequate to quantify it.[31]

[29] ADAMS Accession No. ML26097A248
[30] ADAMS Accession No. ML25204A202
[31] National Cancer Institute, "Thyroid Cancer Rates and 131I Doses from Nevada Atmospheric Nuclear Bomb Tests: An Update"

2. Windscale (1957): The accident at the Windscale facility in England released large amounts of radioactive material to the environment. Radioiodine releases were estimated to be 740 TBq (20,000 curies). The population was not evacuated, but there was prompt action to interdict food and milk supplies. There were no reported increases in thyroid cancer in the pediatric or adult populations.

3. Three Mile Island (TMI) (1979): No significant quantities of radioiodine were found in the environment during the accident at TMI primarily because the containment building functioned as designed. The estimated environmental release was roughly 0.55 TBq (15 curies). There were no increases in thyroid cancer in the pediatric or adult populations.

4. Chernobyl (1986): The Chernobyl accident released around 1,760-5,200 PBq (50-140 million curies) of radioactive iodine-131. Within about 5 years after the Chernobyl accident, medical professionals and scientists who were following the exposed populations became aware of an apparent increase in thyroid cancer amongst the pediatric population. The early studies suggested that children's thyroids were far more susceptible to thyroid cancer than what the models at the time proposed. Researchers identified factors that were important contributors to the increased rates of pediatric thyroid cancer, including deficiencies of stable iodine in the thyroid and a failure to prevent ingestion of contaminated foodstuffs (in particular, contaminated milk). Combined, these factors resulted in a high uptake of radioactive iodine by the thyroid gland and subsequent high doses to the thyroid as interdiction of foodstuffs was not implemented for many days. Only those populations closest to the plant were relocated from the area and those populations did not see increases in pediatric thyroid cancer.

5. Fukushima (2011): The Fukushima accident released around 120-520 PBq (3.2-14.0 million curies) of radioactive iodine-131 (1/10th of the Chernobyl release). The Japanese promptly implemented protective measures such as sheltering, evacuation, and interdiction of potentially contaminated food and milk products. There were no plans in place for administration of KI and its use by authorities is anecdotal. There were a number of reports that thyroid cancer amongst children in the Fukushima area had increased after the accident. It was later revealed that the child thyroid anomalies detected had been occurring quite normally across the entire country but had gone largely unnoticed before the national health screenings. As recently as 2021, the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) 2020/ 2021 Fukushima Report reaffirmed that radioiodine was not responsible for the increase in diagnosed thyroid cancers in the Fukushima region.[32] Rather, they are the result of ultrasensitive screening procedures that have revealed the prevalence of thyroid abnormalities in the population not previously detected. To date, there have been no reported cases of thyroid cancer in the pediatric or adult populations attributable to radiation exposure from the accident.

The NRC staff will continue to support the work of the KI subcommittee under the FRPCC to develop updated Federal guidance for effective KI distribution strategies based on evidence from available research and lessons from actual events. This guidance is also expected to address resource constraints for KI programs to enable state and local governments to develop fiscally responsible, evidence-based KI programs.

[32] United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) 2020/ 2021 Fukushima Report

Appendix B: Abbreviated Timeline of Potassium Iodide Policy

1979: The President's Commission on the Accident at TMI made the recommendation to have KI available regionally as a stockpile for distribution to the general population and to workers affected by the emergency.

1980: NRC/FEMA guidance (NUREG-0654/FEMA-REP-1, Revision 1) states that KI should be available for emergency workers and institutionalized persons.

1999: HHS SNS program starts.

2000: SNS acquires KI tablets.

2001: NRC amends emergency preparedness regulations to require emergency plans to include certain protective actions, including the consideration of the prophylactic use of KI as a supplement to evacuation and sheltering within the 10-mile plume exposure pathway EPZ.

2002: The Bioterrorism Act requires the President to make KI available out to 20 miles from an NPP.

2005: HHS acquires KI for the SNS to address distribution per the Bioterrorism Act.

2006: The Commission authorized a one-time replenishment of expired KI stockpiles.

2007: The staff sent an options paper on KI distribution to the Commission in response to Commission direction but later withdrew the paper because there was uncertainty as to whether distribution of KI might be required out to 20 miles from every NPP as a result of section 127 of the Bioterrorism Act.

2007: In July 2007, President Bush assigned to the Chairman of the NRC the responsibility for implementing section 127 of the Bioterrorism Act, except the subsection for determining whether to invoke a waiver if there are more effective measures for protecting the thyroid, which was delegated to the director of OSTP.

2008: The OSTP director invoked the section 127(f) waiver to no longer require KI distribution in the 10–20-mile region from an NPP.

2009: The Commission decided to fund replenishment of state KI stockpiles on an ongoing basis in accordance with shelf-life expiration of the tablets.

2018: SNS management transferred from HHS/Center for Disease Control to HHS/ Administration for Strategic Preparedness and Response.

2018-Present: NRC coordinates with HHS to procure KI upon state requests.

Appendix C: Anticipated State Replenishment Needs and NRC Budget

Based on current costs for KI tablets and the number of tablets historically requested by states for stockpile replenishment, costs over the course of a 10-year replenishment cycle are expected to be approximately $6.4M, or $640K per year. The FY 2026 Congressional Budget Justification specifies $1,178,000 to support state KI requests. In FY 2027, funding for the KI program (approximately $1.2M) was shifted to higher priority actions that reflect ADVANCE Act and Executive Order 14300 implementation. These estimates do not include staff full time equivalent for procurement activities.

In the FY 2027 budget request, no funding was provided for KI. If the Commission decides to continue the current KI distribution policy, an approximate total of $2.14M would be needed by November 2027 (Q1 FY 2028) to meet procurement deadlines with HHS. Of the 10 states scheduled for replenishment in 2028, 7 are relying on NRC funding for replenishment. Combined, the states are requesting approximately 3.2 million KI tablets to meet near-term needs. Order fulfilment would be needed in FY 2028 and FY 2029 to address outstanding or intended stockpile replenishment requests.

The staff anticipates a funding need of approximately $1.1M in FY 2029 for requestor replenishments having imminent expiry dates. There are currently no immediately forecasted state requestor needs between FY 2030 and FY 2032. If KI program funding continues, the next KI replenishment cycle would not start until FY 2033 to ensure delivery to state requestors by calendar year 2034.

SUBJECT: RECOMMENDATION FOR FUTURE REPLENISMENT OF POTASSIUM IODIDE
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