Effective Engagement in Consent-Based Siting

Shima Kamali

Ali Haider

Dr. Liubov Kreminska

Project Work Description

Community Coordination

Serve as a bridge between the community and the host organization to facilitate communication and collaboration.

Survey Development

Create and conduct a survey to assess community attitudes, concerns, and questions about nuclear energy and waste management.

Stakeholder Database

Develop a database of community stakeholders interested in consent-based siting.

Technical Information

Acquire scientifically-based information on the transport and interim storage of nuclear materials from SCURF and other sources.

Reporting

Analyse survey results and produce reports on community feedback, identifying strengths and weaknesses in consent-based siting.

Workshops and Meetings

Host meetings and workshops to discuss the potential impacts of consent-based siting on community engagement.

issues to discover and address

1. **The Consent-Based Siting Process**
2. **Energy Justice, Tribes and Community Engagement**
3. **Nuclear Energy and Radiation Basics**
4. **Spent Nuclear Fuel and High-Level Waste and Storage**
5. **Scientific Technical Assistance and Positions of the Nuclear Scientific Community**
6. **Asset-Based Collaboration**

Nuclear Waste Management

Nuclear Waste

- By-products of nuclear reactions in power plants, research, and medicine.
- Includes low-level, intermediate-level, and high-level waste (spent nuclear fuel).

Importance of Effective Management

- **Environmental Protection:** Prevents radioactive contamination.
- **Public Health and Safety:** Minimizes radiation exposure risks.
- **Sustainability:** Supports long-term use of low-carbon nuclear energy.
- **Compliance:** Adheres to regulations and standards.

What is Radiation?

- Emission and propagation of energy through space or a medium.
- Includes electromagnetic waves (e.g., gamma rays, X-rays) and particles (e.g., alpha particles, beta particles, neutrons).

Types of Radiation:

- **Non-ionizing Radiation**: Excites atoms but does not ionize them (e.g., radio waves, microwaves).
- **Ionizing Radiation**: Has enough energy to remove electrons from atoms, creating ions (e.g., X-rays, gamma rays).

Key Forms of Radiation:

- **Alpha Radiation**: Emits helium nuclei (2 protons, 2 neutrons), low penetration, stopped by paper or skin.
- **Beta Radiation**: High-energy, high-speed electrons or positrons, moderate penetration, stopped by plastic or glass.
- **Gamma Radiation and X-rays**: High-energy electromagnetic waves, deep penetration,

What is High-Level Waste (HLW)?

Definition: Highly radioactive material from nuclear power generation.

Types: Includes spent fuel and waste from reprocessed fuel.

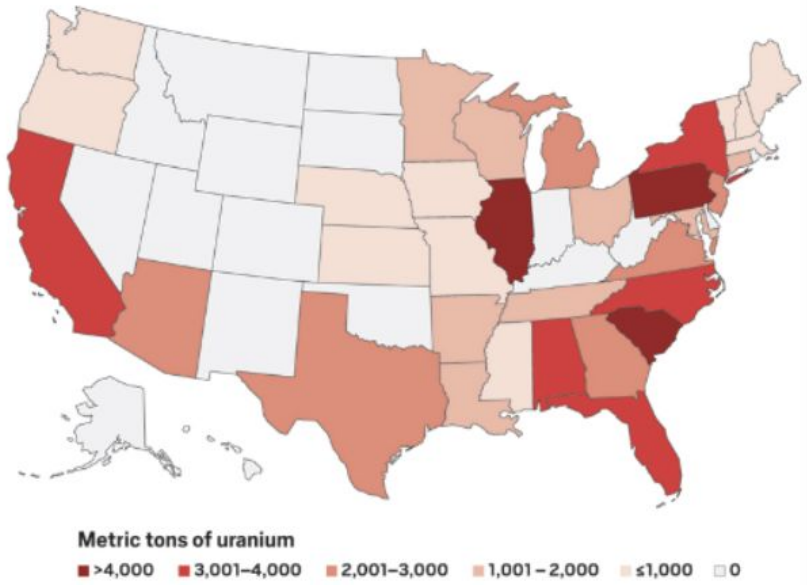
Characteristics:

- Emits heat and radiation for thousands of years.
- Makes up 3% of waste but contributes 95% of total radioactivity.

Importance: Requires special cooling and shielding for safe storage.

HLW in the United States

- **Quantity:** Over 85,000 metric tons stored across various sites.
- **Growth:** Expected annual increase of 2,000 metric tons.
- **Challenges:** Lack of a centralized disposal site impacts future nuclear energy viability.
- **Interesting Fact:** 1 in 3 Americans live within 50 miles of nuclear waste storage sites (Hulac, 2020).



Credit: US Nuclear Regulatory Commission (cask)

Treatment and Conditioning

- **Re-Use:** Chemical separation of plutonium and uranium from spent fuel.
- **Process:** Involves extraction and treatment to reduce radioactivity and volume.
- **Benefits:** Recycles materials, potentially extracts more energy.
- **Interesting Fact:** Currently, the U.S. does not recycle spent fuel.

Current Storage Methods

Wet Storage

- Pools with water and neutron absorbers.
- Requires circulation and water monitoring.
- Transition to dry storage after at least 5 years.

PHOTO: STEVE HARGREAVES

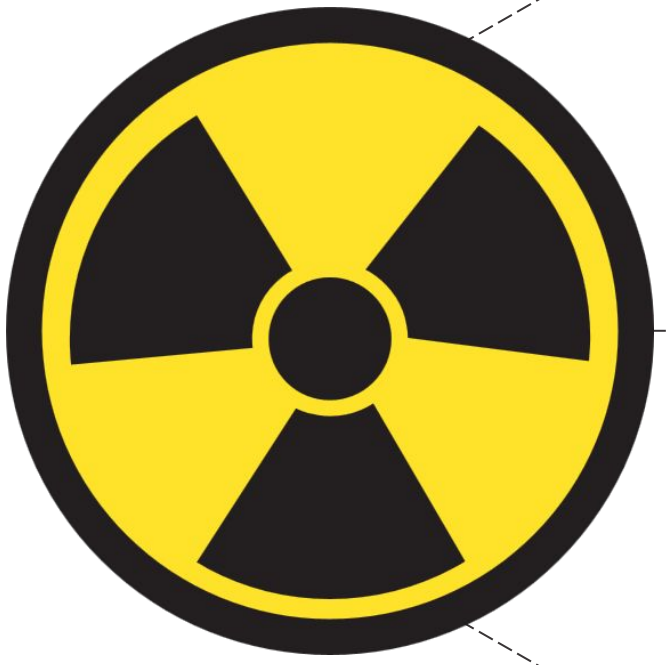
Dry Storage:

- Casks and vaults with concrete and steel shielding.
- Air-cooled to dissipate heat naturally.
- Multi-purpose canisters for safe transportation and storage.

Key Challenges of Nuclear Waste Management

- **Technical Complexity**: Advanced technology required.
- **Long-Term Storage**: Safe storage for thousands of years.
- **Public Perception**: Addressing concerns and misinformation.
- **Economic Costs**: Significant financial investment.

Social Aspects of Nuclear Waste Management



The Consent-Based Siting Process

Finding suitable storage locations for nuclear waste involves a process called consent-based siting. This means that communities near proposed storage sites must agree to the plan. Their consent ensures that the solutions are accepted and sustainable, as they are directly involved in the decision-making process.

Energy Justice, Tribes and Community Engagement

Energy justice is about making sure all communities, especially marginalized ones like Indigenous tribes, have a voice in energy decisions. Their involvement is crucial because it brings in diverse perspectives and ensures that the solutions are fair and considerate of all stakeholders' needs.

Asset-Based Collaboration

Asset-based collaboration focuses on identifying and leveraging the strengths and resources of local communities. By recognizing and utilizing these assets, we can create more sustainable and accepted solutions for nuclear waste management.
This approach not only enhances the effectiveness of the solutions but also fosters community support and involvement.

Thank you