WRITTEN TESTIMONY OF

MR. MICHAEL WEBER, DEPUTY EXECUTIVE DIRECTOR FOR MATERIALS, WASTE, RESEARCH, STATE, TRIBAL AND COMPLIANCE PROGRAMS

UNITED STATES NUCLEAR REGULATORY COMMISSION

TO THE

SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

SUBCOMMITTEE ON CHILDREN'S HEALTH AND ENVIRONMENTAL RESPONSIBILITY

October 6, 2011

INTRODUCTION

Good morning, Chairman Udall, Ranking Member Alexander, and Members of the Sub-Committee. It is a pleasure to appear before you today to discuss the U.S. Nuclear Regulatory Commission's (NRC) regulation of uranium recovery facilities to protect public health and safety and the environment.

In my testimony, I will focus on several key points. First, most of the environmental contamination associated with uranium production activities in the United States occurred before Congress clarified authority in this area in 1978, and well before the current regulatory framework was put in place. The NRC does not regulate uranium

mining, but does have authority over milling of mined materials or in situ processes used to recover uranium, as well as mill tailings. Second, today's conventional uranium mills and in-situ recovery (ISR) facilities are operating safely and in a manner that is protective of the environment. Third, NRC regulates these facilities in close coordination with other Federal agencies and State and Tribal governments and provides technical support and guidance to those Agreement States that have authority over uranium recovery activities under the Atomic Energy Act (AEA), as amended.

Legacy Contamination

Uranium mining and milling in the U.S. expanded considerably in the 1950s, 60s, and 70s, driven by expanded demand for uranium to support both military uses and commercial nuclear power. Concerns about the potential health and environmental hazards associated with uranium mill tailings led to Congressional hearings in the late 1970s. At that time, the Atomic Energy Commission (and later the NRC) regulated the mills because they possessed source material, but the government's authority to regulate the tailings that resulted remained somewhat uncertain. The uranium mill tailings contain both radioactive and chemical wastes left over from the processing of uranium ore to recover uranium and other valuable elements. Lax controls over the mill tailings allowed their use as backfill in thousands of locations, including building foundations, water and sewer lines, roadbeds, and baseball infields, exposing members of the public to elevated radiation dose rates and radon. These concerns compelled

Congress to enact the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA) as an amendment to the AEA.

With the enactment of UMTRCA, mill tailings and other associated wastes generated after 1978 became subject to NRC regulation. Contamination associated with hard rock and open pit mines that produced uranium ore was not addressed by UMTRCA. The statute established a remedial action program operated by the Department of Energy under Title I of UMTRCA for uranium mills that were not licensed and largely abandoned at the time the law was enacted. For facilities licensed on or after November 8, 1978, the NRC has jurisdiction over mill tailings under Title II of the law. Consistent with UMTRCA, the Environmental Protection Agency (EPA) promulgated standards for both the “inactive” and the “active” tailings sites in 1983, which the NRC has since been implementing and enforcing through our comprehensive regulatory program.

NRC is cooperating with other Federal Agencies in a coordinated effort to address uranium contamination at legacy mine sites in the Navajo Nation under a Five-Year Plan. Similarly, we are working with EPA and the State of New Mexico to address uranium contamination in the Grants Mineral Belt in and around Grants, New Mexico.

Regulation of Operating Facilities

When Congress clarified the NRC’s authority to regulate uranium mill tailings and associated wastes, it focused the agency’s activities on the radioactive and non-

radioactive wastes produced by uranium recovery facilities. UMTRCA also authorized the inclusion of uranium recovery facilities within the framework established in the Atomic Energy Act, allowing NRC to enter into agreements with States to regulate uranium recovery facilities in lieu of NRC regulation. Through these agreements, the NRC works with the Agreement States to protect public health and safety and the environment. The NRC has established agreements with Texas, Colorado, Utah, and Washington to regulate uranium recovery facilities in those states. The State of New Mexico's agreement with the NRC included uranium recovery facilities until this part of the program was withdrawn by the state in 1986. NRC evaluates State regulatory activities through the Integrated Materials Performance Evaluation Program to ensure that State regulatory activities remain adequate to protect public health and safety and are compatible with NRC requirements.

The NRC and Agreement States regulate conventional mills and ISR facilities. A conventional mill processes uranium ore that has been removed from the earth by either surface or underground mining. The ore is then crushed and sent through a mill, where extraction processes concentrate the uranium. Conventional milling produces a substantial amount of mill tailings, which poses a potential hazard to public health and safety due to its radioactive and chemical content. NRC regulates the recovery process to ensure the safety of operations, storage, and disposal of mill tailings.

In the ISR process, wells are drilled into rock formations containing uranium ore. A solution -- groundwater, usually fortified with oxygen and sodium bicarbonate -- is

injected into the wells to dissolve the uranium in the rock. The uranium-bearing solution is then pumped to the surface through recovery wells to a central processing plant, where the uranium is extracted from the solution. Although these ISR facilities are often referred to as “mines,” the entire uranium extraction process, below and above ground, is considered “processing” and is under NRC jurisdiction. Solid waste from this process, such as piping and other equipment, is relatively small in volume and can be disposed of in a tailings impoundment at a conventional mill site or at a licensed disposal facility. Liquid wastes are generally disposed of in deep disposal wells permitted by the State. Unlike conventional mining, the ISR process does not generate tailings.

Under Title II of UMTRCA, NRC and the Agreement States regulate uranium wastes generated during operation to ensure protection of public health and safety and the environment. The NRC’s comprehensive regulatory framework ensures safe operation and decommissioning of the existing facilities, as well as any planned facilities. The Agency’s standards conform to standards promulgated by EPA. The NRC or Agreement State conducts a comprehensive safety and environmental review of any new application for a uranium recovery facility. After a license is issued for a new uranium recovery facility, the NRC or Agreement State provides continued oversight of the operations through periodic licensing reviews, inspections, assessment, enforcement, and investigations.

During operation of conventional mills and ISR facilities, monitoring wells are required to help assure that fluids used to extract uranium do not leave the facility and contaminate

groundwater above acceptable levels. In-situ recovery licensees are required to decommission well fields when those wells are no longer producing uranium. Decommissioning of the well fields includes restoration of the groundwater to meet NRC or Agreement State requirements.

In-situ recovery facilities and conventional mills must be decommissioned at the end of operations. Licensees are required to remove contaminated structures, decontaminate soil, stabilize sites, and safely dispose of radioactive waste. These steps must be completed in accordance with NRC or Agreement State requirements. In all circumstances, NRC terminates a license for uranium recovery only after it has been determined that the site has been remediated and stabilized in accordance with the applicable requirements. After license termination, UMTRCA allows sites that contain tailings and other wastes that have been stabilized to be transferred to the Federal government or a State government. Under agency regulations, the NRC continues to regulate these sites during the long-term care period under a general license.

Cooperation with Agencies and Tribal Governments

The NRC works closely with other Federal agencies, State agencies, and Tribal governments to ensure protection of public health and safety and the environment throughout the licensing, operation, and decommissioning process. The NRC has recently licensed three new uranium recovery facilities in Wyoming. The licensing review process required extensive coordination with the Bureau of Land Management,

EPA, the Wyoming Department of Environmental Quality, and the Wyoming State Historic Preservation Office, as there are some overlapping responsibilities. As part of our review under the National Environmental Policy Act and the National Historic Preservation Act, we also consulted with State agencies and Tribal governments that expressed interest in protecting environmental and cultural sites near these facilities.

We are currently conducting licensing reviews for an additional three new facilities or expansions of existing facilities. Based on letters of intent from uranium recovery companies, more applications for new uranium recovery facilities, or restarts and expansions of existing facilities – possibly as many as 19 applications – could be submitted in the next several years. This projected workload suggests that we will be conducting extensive consultation and coordination with Federal and State agencies, and Tribal governments for the foreseeable future.

Conclusion

Mr. Chairman and Members of the Subcommittee, I appreciate the opportunity to appear before you today to describe NRC's role with regard to uranium recovery regulation. I would be pleased to respond to your questions.

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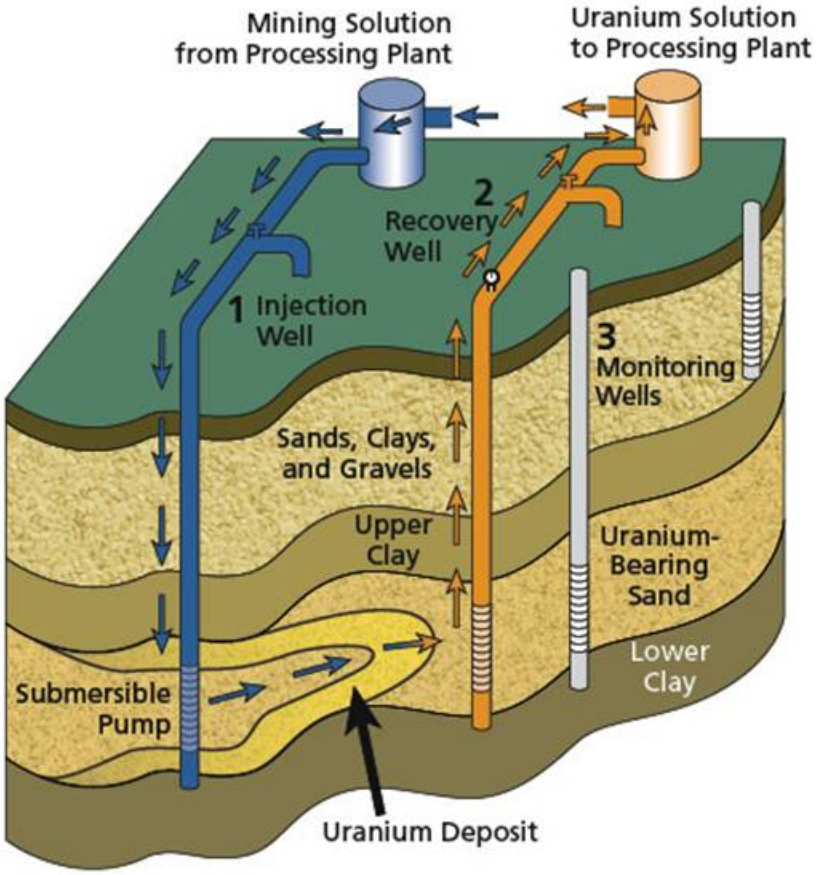
The In Situ Uranium Recovery Process



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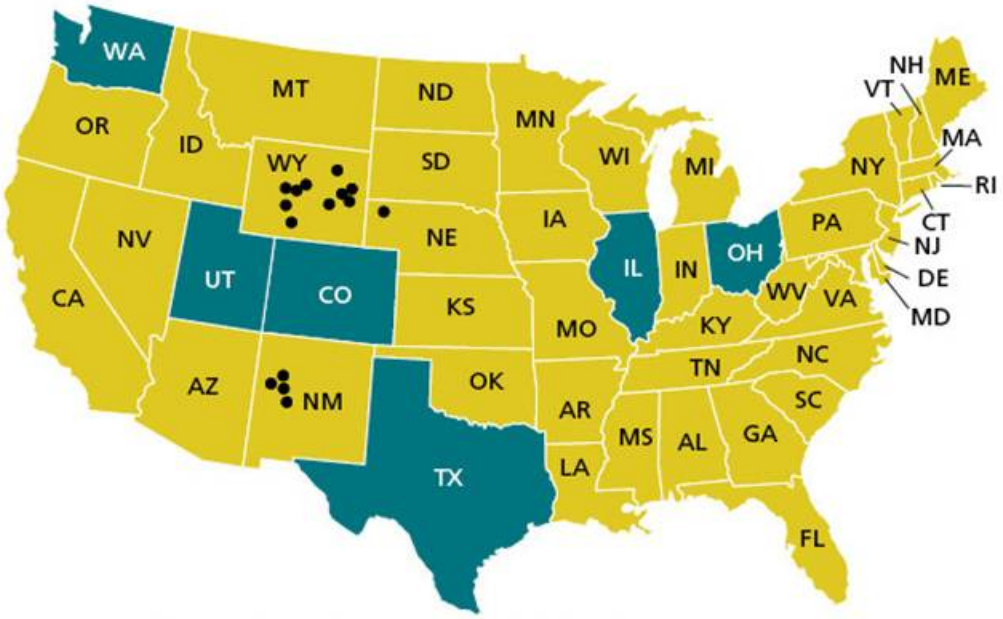
Locations of NRC-Licensed Uranium Recovery Facility Sites



- NRC-licensed uranium recovery facility sites
- States with authority to license uranium recovery facility sites
- States where the NRC has retained authority to license uranium recovery facilities