

in situ leach uranium extraction facilities is to protect present or potential future sources of drinking water outside of the exempted production zone. Generally, if water quality within the production zone is restored to the pre-operational baseline water quality, then protection of water resources outside the exempted zone is assured. Hence, restoration of water quality within the production zone to pre-operational conditions is considered a primary goal whenever degradation of water outside of the exempted zone is a possibility. It is recognized, however, that restoration to pre-operational baseline conditions may not be practicable or feasible, owing to geochemical changes in the production zone during operations. Hence, applicants may propose secondary standards for monitored constituents that are protective of water resources outside of the exempted zone. This has also been clarified in the final standard review plan.

4. Operations

Issue: It is unclear which hazardous chemicals have the potential to impact safety at *in situ* leach uranium extraction facilities.

Comment: Some commenters expressed concern that the standard review plan addressed hazardous chemicals that were not realistic concerns at *in situ* leach uranium extraction facilities.

Response: In 10 CFR part 40, Appendix A, regulations implement EPA Standards at 40 CFR part 192, as required by law. Specifically, 10 CFR part 40, Appendix A, Criterion 13 identifies those hazardous constituents for which standards must be set and complied with if the specific constituent is reasonably expected to be in, or derived from, the byproduct material, and has been detected in ground water. At the same time, the introduction to 10 CFR part 40, Appendix A, allows applicants to submit alternative proposals for meeting the requirements that take into account local or regional conditions. 10 CFR part 40, Appendix A, Criterion 13 also notes that the Commission does not consider the subsequent list of hazardous constituents to be exhaustive. In summary, NUREG-1569 reflects the regulatory requirements but also allows the reviewer to consider any demonstration presented by an applicant that addresses the potential hazardous constituents at a specific site.

Issue: The responsibilities of the Safety and Environmental Review Panel are not well defined.

Comment: Various commenters stated that the responsibilities of the Safety and Environmental Review Panel, and their authority to authorize changes without a license amendment were either not clear or had no regulatory basis.

Resolution: The staff agrees that clarification of Safety and Environmental Review Panel responsibilities and authorities would facilitate use of the standard review plan. These portions of the draft plan were rewritten for clarity. However, consistent with a risk-informed, performance-based licensing approach, use of Safety and Environmental Review Panels has been accepted by NRC staff, and an evaluation of their use was left in NUREG-1569.

Issue: The NRC is placing inappropriate restrictions on use of potentially hazardous process chemicals at *in situ* leach uranium extraction facilities.

Comment: The commenter refers to NUREG/CR-6733 (A Baseline Risk-Informed, Performance-Based Approach for *In Situ* Leach Uranium Extraction Licensees) and states that the analyses in this document were conservative. The commenter concludes that chemical safety must be based on a realistic analysis of the hazards.

Resolution: The NRC staff interpreted the conclusions from the analyses presented in NUREG/CR-6733 differently from the commenter. NUREG/CR-6733 conducted deliberately conservative analyses for the purpose of evaluating whether risks at *in situ* leach uranium extraction facilities were significant. The conclusion presented in NUREG/CR-6733 for chemical hazards was that licensees should follow design and operating practices published in accepted codes and standards that govern hazardous chemical systems. This recommendation leaves licensees flexibility to establish chemical safety measures appropriate for a specific facility and consistent with good engineering and safety practice. NUREG-1569 places no specific strictures on chemical safety practices at *in situ* leach uranium extraction facilities.

5. Health Physics

Issue: The NRC is requesting information on radiation safety programs that is unnecessary, based on the operational record at *in situ* leach uranium extraction facilities, or is outside NRC licensing authority.

Comment: Some commenters expressed a concern that the NRC was requesting information that is not

necessary to fulfill the agency mission of protecting the public health and safety and the environment from the effects of radiation. An example cited was information on radiation safety programs, such as the qualifications of those people proposed for the health physics staff.

Response: While the NRC agreed with many of these commenters that some of the information requested was not needed, information on qualifications is necessary. However, much of this information is identified in Regulatory Guide 8.30, "Health Physics Surveys in Uranium Recovery Facilities" (May 2002), and Regulatory Guide 8.31, "Information Relevant to Ensuring That Occupational Radiation Exposures at Uranium Recovery Facilities will be As Low As is Reasonably Achievable" (May 2002). Chapter 5 of NUREG-1569 was revised to ensure that it is consistent with NRC regulations and regulatory guidance applicable to *in situ* leach uranium extraction facilities by referring to those regulatory guides, rather than repeat the information in the SRP. In addition, the licensees are required by license condition to follow the guidance set forth in Regulatory Guide 8.30, and Regulatory Guide 8.31. This is to ensure protection of the worker, the public health and safety, and the environment.

Issue: NUREG-1569 references regulatory guides that are outdated.

Comment: A number of commenters noted that the standard review plan referenced regulatory guides that have been revised or that are in the process of revision.

Response: The commenters correctly noted that some of the references in the draft standard review plan had been superseded or were in the process of revision. The standard review plan has been edited to reference current guidance. However, NRC has a number of regulatory guides that are being updated, and revised versions may only be referenced when they have been formally approved. This has necessitated retaining reference to some draft regulatory guides.

Issue: NUREG-1569 introduces a new and undefined concept in discussing "control systems relevant to safety."

Comment: Several commenters objected to inconsistent use of terms and a lack of definition for terms related to control systems that may affect safety.

Response: NUREG-1569 was edited to incorporate consistent use of terms, and the term "controls" was defined consistent with other NRC regulatory guidance.