STAFF EVALUATION OF ALTERNATIVES TO ADDRESS REMEDIATION DURING OPERATIONS

Staff experience in the decommissioning of nearly 100 sites demonstrates that unremediated contamination, especially in the subsurface, can, over time, migrate and contaminate parts of the surrounding area and resources. This has potential to increase costs and increase the potential for legacy sites. In addition, bankruptcy, corporate restructuring, or other unforeseen changes in the company's financial status may create complex decommissioning challenges that could further delay remediation or lead to legacy sites. For example, relocation of personnel may contribute to loss of institutional memory, particularly of spill and on-site disposal locations, which can increase costs to identify them and delay cleanup. As a result, the U.S. Nuclear Regulatory Commission (NRC) staff has explored policy options to require licensees to promptly remediate contamination when certain criteria are triggered.

Staff evaluated existing regulatory requirements to determine if sufficient requirements existed to prevent occurrence of more legacy sites in the future. In summary, the Commission has statutory and regulatory authority to require licensee action when it is necessary to protect health and safety. Regulations at 10 CFR Part 20 define dose limits to members of the public and workers from nuclear facilities. While these regulations set limits on exposure, they do not explicitly require remediation of radiological contamination. Licensees could limit exposure to the public and workers by imposing time or distance limits to the contaminated areas. By adding to the principle of maintaining doses as low as reasonably achievable (ALARA), licensees endeavor to keep doses below regulatory limits. However, there is no current regulatory requirement to remediate during operations significant levels of residual radioactivity that could require remediation at the time of decommissioning. Only when a licensee seeks to terminate the NRC license does the License Termination Rule specify that residual radioactive contamination must be reduced – remediated – to limit calculated doses. Having large volumes of residual radioactivity at the time of license termination could lead to a legacy site. The following table summarizes arguments for and against the need for a new prompt remediation rule.

SUPPORTS A NEW RULE	DOES NOT SUPPORT A NEW RULE
➢ Remediation during operations is not currently required. This can result in large volumes of contamination requiring remediation at the time of license termination that may exceed decommissioning funds.	➢ Existing exposure limits provide adequate protection for public health and safety during operations. The Decommissioning Planning Rule (DPR) requires early identification of existing "significant residual radioactivity" and timely adjustment to decommissioning funding to remediate it at license termination.
➢ Some sites have large volumes of contamination from long-term leaks/spills and contaminant migration with insufficient resources to remediate to release criteria at license termination. Remediation during the operational phase could moderate this situation.	➢ Current regulations are sufficient to ensure adequate site characterization and resources, including funding, to complete decommissioning at the time of license termination.
➢ A rule could explicitly require remediation to implement ALARA during operations. This could reduce the cost of remediation at license termination, and thereby the likelihood of occurrence of legacy sites in the future.	➢ Current financial assurance regulations are sufficient to ensure adequate resources to complete decommissioning. The DPR now requires licensees, except power reactors, to provide a new Decommissioning Funding Plan (DFP) within 1 year. No new legacy sites have been identified since the 1987 Financial Assurance regulations. No power reactors have been legacy sites.
➢ Prompt remediation could minimize the amount of contamination, and cost, to remediate.	➢ Mandated remediation during operations could adversely impact operational safety and flexibility.
➢ Maintaining residual radioactivity at low levels during operations could reduce the likelihood of a legacy site in the event of early shutdown, especially where decommissioning funding plans are not fully funded.	➢ Prompt remediation during operations may result in licensees remediating the same area multiple times during plant life, thereby increasing operational costs.

While no legacy sites have occurred since institution of financial assurance rules in 1988, some sites have experienced decommissioning costs significantly greater than the value of the decommissioning fund; this condition has the potential to create new legacy sites. Licensees are currently required to measure concentrations in soil and ground water by the Decommissioning Planning Rule, expressed in 10 CFR 20.1501, and to calculate doses to potentially exposed individuals to demonstrate compliance with the limits of §§20.1201 and 20.1301.