

guidance in NUREG-1727 states the following:<sup>5</sup>

The cost estimate should clearly state that it does not take credit for any salvage value that might be realized from the sale of potential assets (e.g., recovered materials or decontaminated equipment) during or after decommissioning. If estimated credits are taken for salvage value but are not fully realized at the time of decommissioning, the cost estimate (as well as the financial assurance) may be significantly low.

The NRC believes that it would be inappropriate to incorporate salvage value into certification amounts when the actual residual value can vary substantially depending on the number and type of sources at a given facility, as well as on the curies present at the time of decommissioning (which generally is not known when a licensee's certification of financial assurance is put in place). Any residual value also would be subject to variability arising from changing market conditions. Therefore, it would be inappropriate to consider these characteristics when establishing generic certification levels.

Furthermore, NRC is concerned that it may be impossible at the time of decommissioning to realize (i.e., as cash) any inherent value contained in sealed sources, even if the sources have substantial value to the licensees that possess them. Irradiator licensees convert this inherent value into cash through the course of their business operations. However, these business operations cease at the time of decommissioning. Assuming that licensees decommission their facilities at the most economical point in time, then their sources will probably have decayed just to the point where they can no longer be used cost-effectively. In this case at least, the sources are unlikely to have value to anyone unless they can be re-processed.

Another significant concern to NRC is the possibility that some sources may have no residual value at all and may need to be disposed of as low-level waste (LLW). If sources must be disposed as LLW, then decommissioning costs would be considerably higher. For example, NUREG/CR-6280 concludes that decommissioning costs for a clean reference large irradiator facility may range (in 1993 dollars) from \$289,000, if the sources are returned to the supplier, up to \$3.0 million if it is necessary to dispose of the sources as LLW.<sup>6</sup>

If the potential salvage value of a source were to be used to offset the estimated cost of decommissioning, the effect would be to reduce the amount of funds guaranteed by financial instruments that possess a very high level of assurance, such as a prepaid escrow fund or an irrevocable letter of credit. However, the estimated salvage value of a source does not guarantee that funds will be available when needed. Even where a potential buyer provides a contractual promise to buy the source for a specified sum, the contract provides a lower level of assurance than the protection provided by the fiduciary obligations required of financial institutions that act as trustees or guarantors of funds. A contractual arrangement between the licensee and a buyer does not include the NRC as a beneficiary with the right to demand that funds be placed into a standby trust which restricts use of the funds for decommissioning only. In contrast, a letter of credit, for example, does establish the NRC as a beneficiary and gives the NRC that right. Therefore, permitting a licensee to reduce its decommissioning cost estimate by the potential salvage value of a source would decrease the level of financial assurance as compared to the financial instruments required by current regulations.

For all these reasons, NRC concludes that its current approach not to permit credit for residual salvage value in setting certification amounts is reasonable.

## 2. Exemption Threshold Too Low

Comment: One commenter noted that, under the proposed rule, sealed source licensees are exempt from financial assurance requirements if the licensed material is less than or equal to  $10^{10}$  times the applicable quantities of appendix B to part 30, which becomes 10,000 Ci for cobalt ( $10^{10}$  times  $1.0 \mu\text{Ci}$ ). The commenter asserted that this causes problems for owners of cobalt teletherapy units, wherein a new source typically decays to below 10,000 Ci in the first 2 years of use. The complication, according to the commenter, is that financial assurance is initially required but then becomes unnecessary for the remainder of the source's life. The commenter requested that the exempted amount be raised to  $5 \times 10^{10}$  times the applicable Appendix B quantity as no teletherapy source exceeds 15,000 Ci.

Response: The certification levels and calculations described in the regulations

are based on *licensed* possession limits, rather than actual possession. If a licensee for a cobalt teletherapy unit is allowed to possess cobalt in excess of 10,000 Ci under its license, then financial assurance is required even if the activity of the source decays to lower than that level. In fact, financial assurance must be maintained until NRC terminates the license, even if the licensee no longer possesses any radioactive material (unless the license is modified to reflect different possession limits). This approach ensures that licensees maintain adequate financial assurance for activities that are authorized under the license. Also, requiring a constant amount of financial assurance avoids the complication of constantly adjusting financial assurance levels to account for decay, changing inventories, etc.

The commenter may be correct that an increase in the exemption threshold would benefit teletherapy unit licensees. However, it also would eliminate the added protections achieved by the financial assurance requirements (even in cases where decommissioning occurred before any significant decay of the radioactive sources).

## 3. "Arbitrary" Upper Certification Limit

Comment: One commenter stated that decommissioning costs are driven more by the size and complexity of the facility than the size or activity of the source used, e.g., a newer facility with twice as large a source as an older facility may require half the cost to decommission due to new design features. Therefore, the upper limit (of  $10^{12}$  times the applicable quantities of appendix B to part 30) for sealed source certifications is arbitrary and should be removed.

Response: NRC agrees that both the size and complexity of a facility are important decommissioning cost drivers. Although newer facilities may be more likely to incorporate design features that will tend to reduce decommissioning costs, this correlation is untested and may only be true in general terms. There is no assurance that a new facility will cost less to decommission than an older facility or, conversely, that older facilities (which may have been remodeled) cost more to decommission. Moreover, research indicates that the characteristics of the sealed sources constitute an important and potentially critical cost driver. Therefore, the proposed activity-based upper limit is not arbitrary, but rather provides a reasonably effective and simple method for distinguishing those licensees for whom preparation of a

<sup>5</sup> NUREG-1727, "NMSS Decommissioning Standard Review Plan," Appendix F, September 2000, p. F26.

<sup>6</sup> NUREG/CR-6280, "Technology, Safety, and Costs of Decommissioning a Reference Large

Irradiator and Reference Sealed Sources," Pacific Northwest Laboratory, January 1996.