

# REGULATORY ANALYSIS

## MONITORING CRITERIA AND METHODS TO CALCULATE OCCUPATIONAL RADIATION DOSES

(Proposed Revision 1 of Regulatory guide 8.34, dated July 1992)

### 1. Statement of the Problem

The NRC issued Regulatory Guide (RG) 8.34 (Revision 0) in 1992 to provide guidance on acceptable methods of monitoring and calculating occupational radiation doses. On December 4, 2007, the NRC revised the definition of the total effective dose equivalent (TEDE) in 10 CFR Part 20, “Standards for Protection against Radiation,” and 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities,” (*Federal Register* (FR) 72 FR 68043). Previously, the definition of the TEDE was the sum of the deep dose equivalent (DDE) to account for external exposure and the committed effective dose equivalent (CEDE) to account for internal exposure. Under the revised rule, the TEDE was redefined by replacing the DDE with the effective dose equivalent for external exposure, hereafter referred to as the EDEX.

Old definition:  $TEDE = DDE + CEDE$

New definition:  $TEDE = EDEX + CEDE$

As a result of the definition change to the TEDE, there is a contradiction with the current rule. Therefore, the revision of Regulatory Guide 8.34 is necessary to reflect the rule. In addition, the staff included guidance regarding how to calculate occupational radiation doses for wound contamination to the extremities.

### 2. Objective

The objective of this revision is to provide current guidance on monitoring criteria and the methods to calculate occupational radiation doses, for use by all NRC licensees based on the 2007 revision of the TEDE definition in 10 CFR Parts 20 and 50.

### 3. Alternative Approaches

The NRC staff considered the following alternative approaches:

1. Do not revise Regulatory Guide 8.34.
2. Withdraw Regulatory Guide 8.34.
3. Revise Regulatory Guide 8.34.

#### 3.1 Alternative 1: Do Not Revise Regulatory Guide 8.34

Under this alternative, the NRC would not revise the guidance, and the current guidance would be retained. If NRC does not take action, there would not be any changes in costs or benefit to the public, licensees or NRC. However, the “no-action” alternative would not address the new regulatory requirements and how to calculate occupational radiation doses for wound contamination to the

extremities. This alternative provides a baseline condition from which any other alternatives will be assessed.

### **3.2 Alternative 2: Withdraw the Regulatory Guide 8.34**

Under this alternative the NRC would withdraw this regulatory guide. This would eliminate the current conflict that exists between the current regulatory guide and the newer regulations. It would also eliminate the only readily available description of one of the methods that the NRC staff considers acceptable for demonstrating compliance with 10 CFR Part 20. Although this alternative would be less costly than the proposed alternative, it would impede the public's accessibility to the most current guidance information.

### **3.3 Alternative 3: Revise Regulatory Guide 8.34**

Under this alternative, the NRC would revise Regulatory Guide 8.34, taking into consideration the new regulatory requirements and removing information that is no longer applicable. This action would replace old, outdated guidance with updated format and content that considers a regulatory framework that has changed since the staff first wrote Regulatory Guide 8.34. A benefit of this action is that it would enhance licensee understanding of the changes in the regulations and would result in the correct implementation of NRC's requirements.

The impact to the NRC would be the costs associated with preparing and issuing the regulatory guide revision. The impact to the public would be the voluntary costs associated with reviewing and providing comments to NRC during the public comment period. The value to NRC staff and its applicants would be the benefits associated with enhanced efficiency and effectiveness in using a common guidance document as the technical basis for license applications and other interactions between the NRC and its regulated entities.

## **4. Conclusion**

Based on this regulatory analysis, the NRC staff recommends revision of Regulatory Guide 8.34. The staff concludes that the proposed action will reduce the time involved for licensees to calculate occupational radiation doses, prepare occupational radiation dose records for its monitored employees, and submit occupational radiation dose records to the NRC. It should also result in a significant reduction in the number of questions and requests for clarification submitted by licensees to the NRC staff.