

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
GUIDANCE FROM HOTLINE COMPENDIUM

WSG H1

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SUBJECT: Determining MCLs for Man-made Radionuclides

SOURCE: Rick Cothorn  
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Title 40 CFR Section 141.16 specifies the MCL for beta particle and photon radioactivity resulting from man-made radionuclides present in community water systems. Section 141.16(b) indicates the method one should use to determine the millirem (mrem) levels of associated man-made radionuclides. Specifically, it is stated that such calculations shall be based upon two liter/day drinking water intake used in conjunction with the 168 hour exposure data listed in NBS Handbook 69. Barium-133, however, is not listed in NBS Handbook 69. If Barium-133 is the radionuclide of concern, how should the mrem calculation be made? Also, Section 141.16(b) states that the mrem derivation must be based upon 2 liters/day intake; however, the NBS Handbook values are based upon 2.2 liters/day. Please clarify this difference. Lastly, the 168 hour data listed in the Handbook pertains to occupational exposure, not necessarily to exposure relevant to the general public. Please clarify this concern.

**Response:**

NBS Handbook 69 should no longer be used as supporting information for making mrem derivation pursuant to Section 141.16. The appropriate document to be used now for that purpose is entitled "International Commission on Radiation Protection (ICRP) Report No. 30." The ICRP Report 1) contains the necessary information relevant to Barium-133, 2) is based upon exposure relevant to the general public (not occupational exposure). The entire document is extensive (seven volumes) and can be found at most technical libraries. Suitable alternate documents are Biological Effects of Ionizing Radiation (BIER) Reports Nos. 2 and 3.