**Section 335.8090 Full Calibration Measurements for Teletherapy**

a) A licensee authorized to use a teletherapy unit for medical use shall perform full calibration measurements as described in subsection (b) of this Section, on each teletherapy unit:

1) Before the first medical use of the unit; and

2) Before medical use under the following conditions:

A) Whenever spot-check measurements indicate that the output differs by more than five percent from the output obtained at the last full calibration, corrected mathematically for radioactive decay;

B) Following replacement of the source or following reinstallation of the teletherapy unit in a new location;

C) Following any repair of the teletherapy unit that includes removal of the source or major repair of the components associated with the source exposure assembly; and

3) At intervals not exceeding 1 year.

b) To satisfy the requirement of subsection (a) of this Section, full calibration measurements shall include determination of:

1) The output, within three percent, for the range of field sizes and for the distance or range of distances used for medical use;

2) The coincidence of the radiation field and the field indicated by the light beam localizing device;

3) The uniformity of the radiation field and its dependence on the orientation of the useful beam;

4) Timer constancy and linearity over the range of use;

5) On-off error; and

6) The accuracy of all distance measuring and localization devices in medical use.

c) A licensee shall use the dosimetry system described in Section 335.8080 of this Part to measure the output for one set of exposure conditions. The remaining radiation measurements required by subsection (b)(1) of this Section may then be made using a dosimetry system that indicates relative dose rates.

d) A licensee shall make full calibration measurements required by subsection (a) of this Section in accordance with published protocols accepted by nationally recognized bodies.

e) A licensee shall mathematically correct for physical decay the outputs determined in subsection (b)(1) of this Section. These corrections shall be for intervals not exceeding 1 month for cobalt-60 and intervals not exceeding 6 months for cesium-137 or at intervals consistent with 1 percent decay for all other nuclides.

f) Full calibration measurements required by subsection (a) of this Section and physical decay corrections required by subsection (e) of this Section shall be performed by an authorized medical physicist.

g) A licensee shall retain a record of each calibration for the duration of the license. The record shall include the date of the calibration, the manufacturer's name, model and serial numbers for both the teletherapy unit and the source, the model and serial numbers of the instruments used to calibrate the teletherapy unit, tables that describe the output of the unit over the range of field sizes and for the range of distance used in radiation therapy, a determination of the coincidence of the radiation field and the field indicated by the light beam localizing device, an assessment of timer constancy and linearity, the calculated on-off error, the determined accuracy of each distance measuring or localization device and the signature or initials of the authorized medical physicist.

(Source: Amended at 30 Ill. Reg. 9029, effective April 28, 2006)