**Section 335.8160 Full Calibration Measurements on Remote Afterloader Units**

a) A licensee authorized to use a remote afterloader unit for medical use shall perform full calibration measurements on each unit:

1) Before the first medical use of the unit;

2) Before medical use under the following conditions:

A) Following replacement of the source or following reinstallation of the unit in a new location outside the facility;

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

3) At intervals not exceeding 1 quarter for high dose-rate, medium dose-rate and pulsed dose-rate remote afterloader units with sources whose half-life exceeds 75 days; and

4) At intervals not exceeding 1 year for low dose-rate remote afterloader units.

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

1) The output within ± 5 percent;

2) Source positioning accuracy to within ± 1 millimeter;

3) Source retraction with backup battery upon power failure;

4) Length of the source transfer tubes;

5) Timer accuracy and linearity over the typical range of use;

6) Length of the applicators; and

7) Function of the source transfer tubes, applicators and transfer tube-applicator interfaces.

c) A licensee shall use the dosimetry system described in subsection 335.8080(a) to measure the output.

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) In addition to the requirements for full calibrations for low dose-rate remote afterloader units in subsection (b) of this Section, a licensee shall perform an autoradiograph of the sources to verify inventory and sources arrangement at intervals not exceeding 1 quarter.

f) For low dose-rate remote afterloader units, a licensee may use measurements provided by the source manufacturer that are made in accordance with subsections (a) through (e) of this Section.

g) A licensee shall mathematically correct the outputs determined in subsection (b)(1) of this Section for physical decay at intervals consistent with 1 percent physical decay.

h) Full calibration measurements required by subsection (a) of this Section and physical decay corrections required by subsection (g) of this Section shall be performed by the authorized medical physicist.

i) A licensee shall maintain a record of the remote afterloader unit full calibrations required by this Section for 5 years.

j) The records shall include for each full calibration required by subsection (a) of this Section:

1) The date of the calibration;

2) The manufacturer's name, model and serial number of the remote afterloader unit, together with the sources and the instruments used to calibrate it;

3) The results and an assessment of the full calibrations;

4) The results of the autoradiograph required for low dose-rate remote afterloader units; and

5) The signature of the authorized medical physicist who performed the full calibration.

(Source: Amended at 35 Ill. Reg. 884, effective December 30, 2010)