

Dose Calibrator - Employee Training



Daily:

Test – runs through zeroing / background / voltage test

Constancy Testing -- includes measuring Cs-137 on Cs-137, Tc-99m and any other commonly used isotopes.

Quarterly:

Linearity – Calicheck or decay method

Annually:

Accuracy – done as recommended by the manufacturer.

Upon Set-up or After Repair (prior to patient use)

Accuracy – as above

Linearity – as above

Geometry

CALIBRATION OF DOSE CALIBRATOR (will be done in accordance with manufacturer's specifications). Records will be maintained for three (3) years and contain:

- a. Model number
- b. Serial number
- c. Date of calibration
- d. Results of the calibration
- e. Name of the individual performing the calibration

<u>Test</u>	<u>Frequency</u>	<u>Tolerance</u>
Constancy	Daily prior to patient dose assays	+/- 10%
Linearity	Installation, after repair, and quarterly	+/- 10%
Accuracy	Installation, after repair, and annually	+/- 10%
Geometry	Installation and after repair	+/- 10%

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CONSTANCY testing will be performed using a long-lived reference source (e.g., Cesium-137) with activity greater than 50 microcuries. Zero or record the background reading on the appropriate setting. Assay the source for both the reference source setting and the most commonly used radiopharmaceutical settings. Record the readings and compare to the calculated values. The Radiation Safety Officer will be notified and the unit will be repaired or replaced if the constancy error exceeds 10 percent.

LINEARITY testing will be performed using a Technetium-99m source having activity at least as great as the maximum activity administered to patients. Testing will be conducted with the decay or the leaded-sleeve method over the entire range of administered activity.

Decay Method: Assay the source at approximately 0, 6, 24, 30, 48, etc. hours over the entire range of use (between the highest activity administered to patients and the lowest). Record the net activities, time and date. Using a measured activity for reference which is closest to that which is commonly administered to patients, calculate the expected readings and compare to the measured readings. The Radiation Safety Officer must review and sign the test document. The Radiation Safety Officer will be notified and the unit will be repaired or replaced or patient dosage readings will be mathematically corrected if the linearity error exceeds 10 percent over the range of use.

Sleeve Method: The sleeves will be calibrated at the time of an initial reading of a decay-method linearity test. Either the "Calicheck" or "Lineator" product will be used. The testing procedure will be performed according to the manufacturer's instructions. The Radiation Safety Officer must review and sign the test document. The Radiation Safety Officer will be notified and the unit will be repaired or replaced or patient dosage readings will be mathematically corrected if the linearity error exceeds 10 percent over the range of use.

ACCURACY testing will be performed using Cesium-137 and Cobalt-57 or Barium-133 reference sources having NIST-traceable activities greater than 50 microcuries. The net measured activities will be compared to the calculated activities based on radioactive decay. The Radiation Safety Officer must review and sign the test document. The Radiation Safety Officer will be notified and the unit will be repaired or replaced if the accuracy error exceeds 10 percent.

GEOMETRY DEPENDENCE testing will be performed using a solution of Technetium-99m having an activity concentration of 1-10 mCi/ml. If generators and/or radiopharmaceutical kits are normally used, both of the following tests will be performed: Syringe and Vial

Radiation Safety Officer

Date: _____

Administrator

Date: _____