

Model Procedure for Conducting a Public Dose Compliance Study

Appendix D.

**PROCEDURE FOR CALCULATING
COMMITTED EFFECTIVE DOSE EQUIVALENT (CEDE)
AT MEDICAL FACILITIES**

[Instructions provided on Pages 2 & 3]

Description of Radioactive Materials Use -- Types & Quantities											
<input type="checkbox"/>	_ 1 _ mrem	<p>Tc-99m use < 400 Ci/year from generators & unit doses AND Tc-99m use in preparation of Tc-99m products involving heating < 40 Ci/year (e.g., sulfur colloids, cardiolite, etc.)</p>									
<input type="checkbox"/>	_ 1 _ mrem	<p>Use of the following RAM in any amount:</p> <table style="margin-left: auto; margin-right: auto; border: none;"> <tr> <td style="padding: 0 10px;">Co-57</td> <td style="padding: 0 10px;">I-123</td> <td style="padding: 0 10px;">P-32</td> </tr> <tr> <td style="padding: 0 10px;">F-18</td> <td style="padding: 0 10px;">I-125</td> <td style="padding: 0 10px;">Sm-153</td> </tr> <tr> <td style="padding: 0 10px;">Ga-67</td> <td style="padding: 0 10px;">In-111</td> <td style="padding: 0 10px;">Tl-201</td> </tr> </table> <p>AND</p> <p>Use of any RAM, in any amount, in a nonvolatile liquid or capsule form with an ALI value ≥ 100 μCi as listed in <i>State of Florida Bureau of Radiation Control ALIs, DAC, and Effluent Concentrations</i>, July 1993, Table I, Column 2</p> <p><u>Note:</u> Does not include I-131 or Sr-89</p>	Co-57	I-123	P-32	F-18	I-125	Sm-153	Ga-67	In-111	Tl-201
Co-57	I-123	P-32									
F-18	I-125	Sm-153									
Ga-67	In-111	Tl-201									
<input type="checkbox"/>	_ 1 _ mrem	<p>I-131 use as liquid sodium iodide (NaI) < 10 mCi/year AND I-131 use in any other chemical, liquid, or capsule form < 1,000 mCi/year (e.g., hippuran, diagnostic or therapeutic capsules, etc.)</p> <p style="text-align: center;">- - - OR - - -</p>									
<input type="checkbox"/>	__ mrem	<p>I-131 Dose = $\frac{\text{Total activity (mCi) of I-131 (liquid NaI) used annually}}{10}$</p> <p>AND</p>									
<input type="checkbox"/>	__ mrem	<p>I-131 Dose = $\frac{\text{Total activity (mCi) of I-131 (other than liquid NaI) used annually}}{1,000}$</p> <p><u>Note:</u> Round off values to the nearest mrem</p>									
<input type="checkbox"/>	_ 1 _ mrem	<p>Sr-89 use is less than 2,000 mCi/year</p> <p style="text-align: center;">- - - OR - - -</p>									
<input type="checkbox"/>	__ mrem	<p>Sr-89 Dose = $\frac{\text{Total Sr-89 activity (mCi) used annually (any form)}}{2,000}$</p> <p><u>Note:</u> Round off values to the nearest mrem</p>									
SUM <input checked="" type="checkbox"/>	CEDE (mrem)	<p>Sum the applicable doses and enter the calculated total CEDE value in the space provided to the left; use this value in Attachment A (TEDE Checklist)</p>									

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PROCEDURE FOR CALCULATING CEDE AT MEDICAL FACILITIES

INSTRUCTIONS

If licensed for, or seeking licensure for use of unsealed radioactive material (RAM) or both sealed and unsealed RAM, the internal as well as external radiation hazard must be evaluated to demonstrate compliance with the public dose limits described section 64E-5.312, Florida Administrative Code (F.A.C.)

Committed Effective Dose Equivalent (CEDE) refers to the dose resulting from internal radiation exposures. The CEDE is combined with the **Deep Dose Equivalent (DDE)**, the dose from external whole body exposures, to produce the **Total Effective Dose Equivalent (TEDE)**, the dose resulting from internal and external radiation exposures. Refer to section 64E-5.101, F.A.C. (or Page 2 of Appendix A) for complete definitions of these terms.

This procedure provides a method of calculating the CEDE value required by Appendix A, "Procedure for Calculating Total Effective Dose Equivalent."

- ◆ **New licensee applicants:** Mark each box that corresponds with requested RAM authorizations
- ◆ **Current licensees:** Mark each box that corresponds with licensed RAM authorizations

<p><u>Note:</u> The following may be excluded from CEDE calculations:</p> <ul style="list-style-type: none"> ◆ Sealed sources ◆ Exposure from oral pathways or wounds ◆ Molybdenum 99 from Mo-99/Tc-99m generators based on the Mo-99 breakthrough limit of < 0.15 μCi of Mo-99 per mCi of Tc-99m

- A. To determine the annual CEDE MOP dose for iodine 131 use as liquid NaI in quantities > 10 mCi, or I-131 use in any other chemical, liquid, or capsule form (e.g., hippuran, diagnostic or therapeutic capsules, etc.) in quantities greater than 1,000 mCi, follow the steps listed below.
1. Determine the total annual activity (in mCi) of liquid I-131 used in therapeutic and diagnostic procedures, excluding I-131 in capsule form or sealed sources.
 2. Divide the number by 10 and round to the nearest whole number.
 3. Enter the value on the checklist; it is the calculated CEDE MOP dose (in mrem) resulting from this licensed activity.
- B. To determine the annual CEDE MOP dose resulting from use of any other chemical, liquid, or capsule form of I-131 (e.g., hippuran, diagnostic or therapeutic capsules, etc.) for therapeutic and diagnostic procedures, follow the steps listed below.
1. Determine the annual use any other chemical, liquid, or capsule form of I-131 from therapeutic and diagnostic procedures (in mCi).
 2. Divide this number by 1,000 and round to the nearest whole number.
 3. Enter the calculated value on the checklist; it is the CEDE dose resulting from this licensed activity.

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INSTRUCTIONS

(continued)

- C. To determine the CEDE resulting from annual Sr-89 use > 2,000 mCi, follow the steps listed below.
 - 1. Determine the annual use of Sr-89 (in mCi).
 - 2. Divide this number by 2,000 and round to the nearest whole number.
 - 3. Enter the calculated value on the checklist; this is the CEDE dose (in mrem) received for the use of these materials.

- D. If any current or requested RAM use does not correspond to the listed options, perform separate calculations of their CEDE dose contributions; attach a description of each RAM type and quantity, and the CEDE calculations performed to determine their dose contribution.

- E. Sum the applicable mrem values from the marked boxes and enter the sum in the last box; use this value in Appendix A.