



# Guidelines for Amending a Radiation Dose Report

## Introduction

This Texas Commission on Environmental Quality guide describes items to be considered by licensees when assessing or amending a radiation dose report for an employee who loses or damages assigned personnel monitoring equipment (individual monitoring devices) or who receives an invalid radiation dose report.

The requirements for licensees to monitor occupational exposure to radiation and to supply and require the use of personnel monitoring equipment are included in 30 Texas Administrative Code (TAC) Section 336.316, which adopts by reference 25 Texas Administrative Code (TAC) Section 289.202(q) of the Texas Department of State Health Services. In addition, 30 TAC Section 336.346, which also adopts by reference 25 TAC Section 289.202(rr), gives the requirements for licensees to maintain records showing the radiation doses of all individuals for whom personnel monitoring is required.

Lost or damaged personnel monitoring equipment or an invalid radiation dose report result in incomplete radiation exposure data. In order to maintain a complete radiation exposure history, the licensee must assess a radiation dose for each employee who loses such data.

## Definitions

- A. *Lost personnel monitoring equipment* means personnel monitoring equipment that is not returned to the supplier for processing within the time period considered necessary by the personnel monitoring supplier to obtain a valid reading.
- B. *Damaged personnel monitoring equipment* means personnel monitoring equipment that is adversely affected by moisture, light, heat, or other factors resulting in lost exposure data.
- C. *Invalid radiation dose report* means a report of a radiation dose reading that the licensee believes to be erroneous.

## Lost or Damaged Personnel Monitoring Equipment

After determining that an employee's personnel monitoring equipment has been lost or damaged, the licensee must conduct an investigation of the occurrence and assess a dose for the period of lost data. The resulting report should address the items listed on the attached Occupational Exposure Record for a Monitoring Period form. Calculation of the radiation dose should be made using a method acceptable to the TCEQ's Executive Director. Acceptable calculation methods are described on page 3 of this guide. The results of the investigation and the assessed dose must be recorded on either the Occupational Exposure Record for a Monitoring Period form or equivalent documentation.

As required by 30 TAC Section 336.346(c) and 25 TAC 289.202(rr)(3), the licensee must maintain an *Occupational Exposure Record for a Monitoring Period* [see Form in 30 TAC 336.368, Appendix K] or the equivalent for the employee. A record of the investigation results and the assessed dose, recorded on the Occupational Exposure Record for a Monitoring Period form or equivalent documentation, should be kept with the employee's exposure record. These records should then be kept for inspection by the TCEQ. For radiation dose assessments made due to lost or damaged personnel monitoring equipment, the licensee does not need to notify the Executive Director unless the assessed dose causes the exposure for the period to exceed levels that require notification as indicated in 30 TAC Section 336.335.

Any assessed dose must be added to the employee's permanent lifetime dose record upon termination of employment or other association in order to provide a complete exposure record. If the licensee uses personnel monitoring records provided by a personnel monitoring supplier as the equivalent of TRC Form 21-3, any assessed dose must be added to the employee's lifetime dose by the personnel monitoring supplier. The personnel monitoring supplier may amend a personnel monitoring record without prior approval by the Executive Director **only** if the amendment is an addition or increase of an assessed dose. Prior written approval of the Executive Director must be obtained before any amendment deleting or reducing a recorded dose is made to a personnel monitoring record.

## Invalid Radiation Dose Reports

The licensee is required to notify the Executive Director of any radiation dose in excess of limits established in 30 TAC Section 336.335 and 30 TAC 289.202(xx), even if the dose is considered invalid. In addition, if the licensee considers any individual's radiation dose report to be invalid

and the reading is below the limits, the licensee must obtain prior written approval of the Executive Director before any amendment deleting or reducing a recorded dose is made to a personnel monitoring record.

The notification to the Executive Director should be made as required by 30 TAC Section 336.335, and should include the items listed on the Occupational Exposure Record for a Monitoring Period and the following applicable information:

- A. The reported radiation dose and the reporting period during which it allegedly occurred;
- B. Results of consultations with the personnel monitoring supplier regarding reevaluation of the personnel monitoring equipment;
- C. Results of any medical tests performed as a result of the reported radiation exposure;
- D. The employee's workload involving radioactive material during the time period when the invalid radiation dose was reported;
- E. Any unusual occurrence involving the employee that may have affected the radiation dose reading; and
- F. Corrective actions taken by the licensee to prevent the recurrence of a similar event.

The notification to the Executive Director may be made using the Occupational Exposure Record for a Monitoring Period form, provided the information listed above is included on the form. After the Executive Director has provided written approval, the licensee may amend the radiation dose report to reflect the assessed radiation dose or request that the personnel monitoring supplier amend the report.

## Acceptable Calculation Methods

The dose calculation methods described in this section are acceptable to the Executive Director. Alternate calculation methods submitted by the licensee will be reviewed by the Executive Director and approved or disapproved on a case-by-case basis. The licensee may calculate a radiation dose by:

- A. Reviewing pocket dosimetry reports of the employee during the reporting period in question, if there is a close correlation between past pocket dosimetry reports and past film badge reports;
- B. Calculating exposure to the employee based on radiation type, radiation energy, and employee workload;

- C. Reviewing radiation dose reports and pocket dosimetry reports of other individuals who worked with the employee during the reporting period in question; or
- D. Obtaining an average dose by using the employee's radiation dose reports for at least the previous six months provided that the employee's duties and workload were not significantly different from those during the six-month period.

## How to Complete the Radiation Dose Assessment Report Form

Listed below by item number are instructions and additional information directly pertinent to completing this form.

Item 1 – Give the employee's full name, with the last name first.

Item 2 – Include the month, day, and year of birth.

Item 3 - Self-explanatory.

Item 4 - Self-explanatory.

Item 5 - Self-explanatory.

Item 6 - For a lost or damaged badge, enter the word "lost" or "damaged," as appropriate. For an invalid dose reading, enter the dose originally recorded and indicate whether it was a dose to the whole body, skin, lens of the eye, or extremities.

Item 7 - Indicate the dates of the monitoring period during which the personnel monitoring equipment was lost or damaged, or during which the invalid dose was recorded.

Item 8 - Indicate the name of the company that supplies your personnel monitoring service.

Item 9 - Indicate the identification number of the personnel monitoring equipment used by the employee.

Item 10 - Indicate the type of personnel monitoring equipment used. If "other" is indicated, specify what type of personnel monitoring is used.

Item 11 - Indicate the type of radiation measured by the personnel monitoring equipment.

Item 12 - The results of the investigation of the lost or damaged badge or the erroneous dose should be recorded in this item. The explanation should be in narrative form. Also, indicate the corrective actions that were taken, if any. Additional sheets may be attached if needed.

Item 13 - Indicate the assessed dose and explain the calculation method used to determine it. Additional sheets may be attached if needed.

## For More Information

This guidance is issued to assist TCEQ licensees and applicants in implementing and complying with specific parts of the radiation rules (30 TAC Chapter 336). Methods other than those presented in this guide may be proposed by the licensee or applicant for approval.

For assistance with any questions, please contact the

UIC, Uranium, and Radioactive Waste Section, MC-131  
Radioactive Materials Division  
Texas Commission on Environmental Quality  
P.O. Box 13087  
Austin, Texas, 78711-3087  
Telephone number 512-239-6466

ATTACHMENT

<b>OCCUPATIONAL EXPOSURE RECORD FOR A MONITORING PERIOD</b>					
1. NAME (LAST, FIRST, MIDDLE INITIAL)		2. IDENTIFICATION NUMBER		3. ID TYPE	4. SEX <input type="checkbox"/> MALE <input type="checkbox"/> FEMALE
5. DATE OF BIRTH		6. MONITORING PERIOD		7. LICENSEE OR REGISTRANT NAME	
8. LICENSE OR REGISTRATION NUMBER(S)		9A. RECORD	9B. ROUTINE	ESTIMATE PSE	
<b>INTAKES</b>				<b>DOSES (in rem)</b>	
10A. RADIONUCLIDE	10B. CLASS	10C. MODE	10D. INTAKE IN $\mu$ Ci	DEEP DOSE EQUIVALENT (DDE) 11.	
				EYE DOSE EQUIVALENT TO THE LENS OF THE EYE (LDE) 12.	
				SHALLOW DOSE EQUIVALENT, WHOLE BODY (SDE,WB) 13.	
				SHALLOW DOSE EQUIVALENT, MAX EXTREMITY (SDE,ME) 14.	
				COMMITTED EFFECTIVE DOSE EQUIVALENT (CEDE) 15.	
				COMMITTED DOSE EQUIVALENT, MAXIMALLY EXPOSED ORGAN(CDE) 16.	
				<b>TOTAL EFFECTIVE DOSE (BLOCKS 11+15) (TEDE) 17.</b>	
				<b>TOTAL ORGAN DOSE MAX ORGAN (BLOCKS) 18.</b>	
				19. COMMENTS	
20. SIGNATURE -- LICENSEE OR REGISTRANT				21. DATE PREPARED	

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<b>INSTRUCTIONS AND ADDITIONAL INFORMATION PERTINENT TO THE COMPLETION OF THE OCCUPATIONAL EXPOSURE RECORD FOR A MONITORING PERIOD</b> <i>(All doses should be stated in rems)</i>																
<p>1. Type or print the full name of the monitored individual in the order of last name (include "Jr," "Sr," "III," etc.), first name, middle initial (if applicable).</p> <p>2. Enter the individual's identification number, including punctuation. This number should be the 9-digit social security number if at all possible. If the individual has no social security number, enter the number from another official identification such as a passport or work permit.</p> <p>3. Enter the code for the type of identification used as shown below:</p> <table border="0"> <tr> <td><u>CODE</u></td> <td><u>ID TYPE</u></td> </tr> <tr> <td>SSN</td> <td>U.S. Social Security Number</td> </tr> <tr> <td>PPN</td> <td>Passport Number</td> </tr> <tr> <td>CSI</td> <td>Canadian Social Insurance Number</td> </tr> <tr> <td>WPN</td> <td>Work Permit Number</td> </tr> <tr> <td>IND</td> <td>INDEX Identification Number</td> </tr> <tr> <td>OTH</td> <td>Other</td> </tr> </table> <p>4. Check the box that denotes the sex of the individual being monitored.</p> <p>5. Enter the date of birth of the individual being monitored in the format MM/DD/YY.</p> <p>6. Enter the monitoring period for which this report is filed. The format should be MM/DD/YY - MM/DD/YY.</p> <p>7. Enter the name of the licensee or registrant.</p> <p>8. Enter the Agency license or registration number or numbers.</p> <p>9A. Place an "X" in Record or Estimate. Choose "Record" if the dose data listed represent a final determination of the dose received to the best of the licensee's or registrant's knowledge. Choose "Estimate" only if the listed dose data are preliminary and will be superseded by a final determination resulting in a subsequent report. An example of such an instance would be dose data based on self-reading dosimeter results and the licensee intends to assign the record dose on the basis of TLD results that are not yet available.</p> <p>9B. Place an "X" in either Routine or PSE. Choose "Routine" if the data represent the results of monitoring for routine exposures. Choose "PSE" if the listed dose data represents the results of monitoring of planned special exposures received during the monitoring</p>	<u>CODE</u>	<u>ID TYPE</u>	SSN	U.S. Social Security Number	PPN	Passport Number	CSI	Canadian Social Insurance Number	WPN	Work Permit Number	IND	INDEX Identification Number	OTH	Other	<p>period. If more than one PSE was received in a single year, the licensee or registrant should sum them and report the total of all PSEs.</p> <p>10A. Enter the symbol for each radionuclide that resulted in an internal exposure recorded for the individual, using the format "Xx-###x," for instance, Cs-137 or Tc-99m.</p> <p>10B. Enter the lung clearance class as listed in subsection (ggg)(2)(F) of this section for all intakes by inhalation.</p> <p>10C. Enter the mode of intake. For inhalation, enter "H." For absorption through the skin, enter "B." For oral ingestion, enter "G." For injection, enter "J."</p> <p>10D. Enter the intake of each radionuclide in <math>\mu</math>Ci.</p> <p>11. Enter the deep dose equivalent (DDE) to the whole body.</p> <p>12. Enter the eye dose equivalent (LDE) recorded for the lens of the eye.</p> <p>13. Enter the shallow dose equivalent recorded for the skin of the whole body (SDE,WB).</p> <p>14. Enter the shallow dose equivalent recorded for the skin of the extremity receiving the maximum dose (SDE,ME).</p> <p>15. Enter the committed effective dose equivalent (CEDE) or "NR" for "Not Required" or "NC" for "Not Calculated".</p> <p>16. Enter the committed dose equivalent (CDE) recorded for the maximally exposed organ or "NR" for "Not Required" or "NC" for "Not Calculated".</p> <p>17. Enter the total effective dose equivalent (TEDE). The TEDE is the sum of items 11 and 15.</p> <p>18. Enter the total organ dose equivalent (TODE) for the maximally exposed organ. The TODE is the sum of items 11 and 16.</p>	<p>19. COMMENTS. In the space provided, enter additional information that might be needed to determine compliance with limits. An example might be to enter the note that the SDE,ME was the result of exposure from a discrete hot particle. Another possibility would be to indicate that an overexposed report has been sent to the Agency in reference to the exposure report.</p> <p>20. Signature of the person designated to represent the licensee or registrant.</p> <p>21. Enter the date this form was prepared.</p>
<u>CODE</u>	<u>ID TYPE</u>															
SSN	U.S. Social Security Number															
PPN	Passport Number															
CSI	Canadian Social Insurance Number															
WPN	Work Permit Number															
IND	INDEX Identification Number															
OTH	Other															