

Emergency Procedures

This is a stand-alone version from “The Manual”

All licensees must develop an emergency procedures document. This document covers response procedures for incidents of a missing, stolen or damaged gauge and provides contact and telephone information. Copies of the plan should be kept in permanent file, the storage area, the gauge case transportation document packet and given to every gauge worker.

An emergency procedures plan should begin at the gauge storage facility area. Many regulatory agencies require the licensee to provide a sketch/schematic of the building and storage area, including number of gauges in storage, to the local fire department. This document would obviously be of vital importance in the event of a fire at the facility. An example of a sketch can be found in the appendices. Keep a copy in the permanent file drawer.

A non-reportable storage area emergency response would occur with the discovery of a gauge with a dislodged or damaged sliding block. The gauge may only need a minor adjustment but it should only be handled and serviced by an authorized gauge handler.

Set the gauge on a table with a positioned mirror. Tilt the gauge away from you, and while viewing the base of the gauge through the mirror image, open the source rod access panel to make an adjustment to the spring loaded sliding block.

Note: Whenever gauges are removed from storage they should be checked with a radiation survey meter.

Tip the gauge on its side and take a survey meter measurement. A reading of $<20\text{mrem}$ per hour at the surface of the base of the gauge or $<0.8\text{mrem}$ at one meter away would be indicative of a gauge with the sliding block fully closed. A reading significantly higher is an indication that the shielding may be ajar. Contact the RSO and use the above mirror procedure to determine the cause and if it can be locally corrected.

The emergency response document should have adequate company, regulatory and law enforcement contact individual and telephone number information. At a minimum it should include:

Company RSO _____

RSO work # _____

RSO mobile # _____

RSO home # _____

Regulatory Agency Emergency # (Day) _____

(Night) _____

Police/Fire # _____

Gauge Manufacturer Emergency Response # _____

NRC 24hr Emergency Response # 301-816-5100

USDOT 24hr Emergency Response # 800-424-8802

The USDOT # should only be used in the event of a transport accident where the gauge is involved in a fire, breakage or suspected contamination. Don't call if the accident only resulted in damage to the gauge case.

In the event of a missing gauge immediately contact the RSO, who will in turn immediately contact the regulatory agency.

In the event of a stolen gauge, and if the theft just occurred, call the police immediately with the details. Then call the RSO, who will in turn call the regulatory agency. If you can't immediately reach the RSO, call the regulatory agency.

In the event of physical damage to the gauge at the worksite:

- a) First, if there are any serious injuries, immediately contact fire and rescue. Then attend to those injured in the accident.
- b) If the gauge is involved in a fire immediately contact the fire department and keep all individuals away from the gauge and up-wind of the smoke stream.
- c) Secure and control the area by keeping individuals at least 15 feet away from the gauge. Stop all unauthorized entries to the area.
- d) Although contamination from a damaged gauge is not likely, do not allow any individuals suspected of contamination or radiation exposure to leave the area. Direct emergency response individuals to these individuals.
- e) If any vehicle or construction equipment was involved keep it at the site until it can be determined if it was contaminated.
- f) Gather facts.
- g) Do not touch or move the gauge. Is the source rod extended? Visually inspect the gauge to determine if the end of the source rod is still attached. If it is still retracted inside the gauge inspect the housing of the gauge. Is the base of the gauge cracked or damaged?
- h) Call the RSO, and if necessary, the regulatory agency. Have the following information ready:
 - 1) Give your name, company and mobile telephone number.
 - 2) Location and description of the incident.
 - 3) What type of gauge was involved and what type and quantities of sources were involved. Quantities are typically:
 - a) Cesium 137, 8-10 millicuries, sealed source
 - b) Americium 241, 40-50 millicuries, sealed source
 - 4) How the gauge was damaged, e.g. vehicle.

- i) If a radiation survey meter is on hand and you are authorized and competent to do so, take a reading of the gauge at one meter (one yard) away. The reading should be < .08millirem. A reading at the base of the gauge where the source rod is extended should be <20millirem. A significantly higher reading is an indication that the sliding block is ajar. A reading of <.01 might be an indication that the source rod has broken off. Give the details to the RSO and await instructions.
- j) Workers using the gauge below 3 feet of the surface must have specific emergency procedures training.
- k) Many licensees prepare an emergency response kit. This kit would typically include:
 - a. A leak test kit
 - b. Latex gloves
 - c. 100 feet of rope to cordon off a 15 feet radius area
 - d. A radiation survey meter (keep it calibrated on an annual basis)
 - e. Packaging tape
- l) Licensee RSO or Management must make necessary notifications to the regulatory agency.

Damage during transport that involves fire, breakage or suspected contamination should take the above steps but also contact the U.S. D.O.T. at 800-424-8802.

When to Notify the Agency

The Radiation Safety Officer (RSO) has primary responsibility for completing all required notifications and reports. If there is any doubt about whether a situation requires notification, DON'T HESITATE – MAKE THE CALL.

LICENSE-RELATED NOTIFICATIONS

A. Change of RSO

Notify the agency in writing within 30 days of a change of RSO. Include documentation of the new RSO's qualifications for the position. At a minimum, the RSO must have sufficient training to qualify as an authorized user; additional training and experience in the administration of a radiation protection program is recommended.

B. Vacating Premises

Notify the bureau in writing no less than 30 days before vacating or relinquishing possession or control of the permanent location of use and storage of radioactive materials. Have the notification dated and signed by a certifying official, and describe the relocation of all radioactive material previously located at the facility. Documentation of transferred material may be required, and radiation surveys of storage facilities may also be required.

C. Change of Ownership

A license is only valid for the legal entity to whom it was issued; it may not be transferred, directly or indirectly. Should a change of ownership or a change in majority of controlling interests occur, immediately notify the bureau in writing, and submit an application for a new license within 30 – 45 days. A certifying official representing the original licensee must submit a separate request to terminate the old license upon issuance of the new license replacing it.

D. Bankruptcy

Immediately notify the bureau in writing following the filing of a voluntary or involuntary petition for bankruptcy under any chapter of Title 11 of the U.S. Code by or against the licensee, a controlling entity, or an affiliate of the licensee. Identify the bankruptcy court and the date of the petition's filing in the notification.

E. License Termination

Immediately notify the agency in writing of a decision to terminate licensed activities. A "Disposition of Radioactive Materials" form should be used when submitting a termination request. The notification must be dated and signed by a certifying official, and must describe the disposition of all radioactive material possessed under the license. Documentation of radioactive material transfers may be required, and radiation surveys of storage facilities may also be required.

REPORTS OF STOLEN, LOST OR MISSING SOURCES OF RADIATION

A. Telephone Reports

Immediately after its occurrence becomes known, report to the agency by phone, a stolen, lost or missing radiation source, if it appears that an exposure could result to individuals in unrestricted areas.

B. Written Reports

Follow telephone reports of stolen, lost or missing radiation sources with a written report to the agency within 30 days after making the report. Include the information specified below.

- A description of the radiation source; for radioactive material, the kind, quantity, and chemical and physical form.
- A description of the circumstances under which the loss or theft occurred.
- A statement of disposition or probable disposition of the radiation source involved.
- Exposures of individuals to radiation, circumstances under which the exposures occurred, and the possible doses received by persons in unrestricted areas.
- Actions that have been or will be taken to recover the source.
- Procedures or measures that have been or will be implemented to prevent recurrence.

INCIDENT NOTIFICATIONS

Incidents involving radiation sources require different types of notifications. Reports may be made by phone or fax; names of individuals who have received radiation exposures must be stated in a separate and detachable portion of the report.

A. Immediate Notifications

Immediately notify the bureau of any event involving a source of radiation that might have caused or threatens to cause any of the following: an individual to receive a total dose of 25 rem or more, a lens dose of 75 rem or more, or a skin, extremity or total organ dose of 250 rad.

Notify the agency as soon as possible, but not later than 4 hours after the discovery of an event, such as a fire or explosion.

B. 24-Hour Notifications

Notify the agency within 24 hours of discovery of an event involving loss of control of a radiation source that might have caused or threatens to cause any of the following: an individual to receive in a period of 24 hours a dose greater than 5 rem, a lens dose greater than 15 rem, or a skin, extremity or total organ dose greater than 50 rem.

Notify the bureau within 24 hours of discovery of:

- An unplanned contamination event that requires access to the contaminated area to be restricted for more than 24 hours;
- An event in which equipment is disabled or fails to function as designed when the equipment is required to prevent exposures exceeding regulatory limits or to mitigate the consequences of an accident, the equipment is required to be available and operable when it is disabled or fails to function, and no redundant equipment is available and operable to perform the required safety function;
- An event that requires unplanned medical treatment at a medical facility of an individual with radioactive contamination on the individual's clothing or body; or
- An unplanned fire or explosion damaging radioactive material or the device, container or equipment containing radioactive material when the damage affects the integrity of the radioactive material or its container.

C. Information Required for Immediate/24-Hour Notifications

Make reports to the agency of events requiring immediate or 24-hour notification as described above by phone, and if available at the time of notification, include the following information:

- The caller's name and call back phone number;
- A description of the event, including date and time;
- The exact location of the event;
- The isotopes, quantities and chemical/physical forms of the radioactive material involved; and
- Any personnel radiation exposure data available.

REPORTABLE EVENTS

A. All events requiring immediate or 24-hour notification are classified as reportable events, and require a written report to be submitted to the bureau within 30 days after learning of the event's occurrence. The following occurrences are also classified as reportable events and require written reports to the bureau within 30 days:

- Dose exceeding the occupational dose limits for adults (total dose > 5 rem, organ dose > 50 rem, lens dose > 15 rem, or shallow dose > 50 rem);
- Dose exceeding the occupational dose limits for minors (total dose > 500 mrem, organ dose > 5 rem, lens dose > 1.5 rem, or shallow dose > 5 rem);
- Dose exceeding limit for an embryo or fetus of a declared pregnant woman (500 mrem);
- Dose exceeding limits for members of the public (2 mrem in any one hour or 100 mrem in one year); or
- Radiation levels greater than 20 mrem/hr in unrestricted areas.

B. Reports must describe the extent of exposure of individuals, including:

- Estimates of each individual's dose;
- The levels of radiation and activities of radioactive material involved;
- The causes of the elevated exposures or dose rates; and
- The corrective steps taken or planned to prevent recurrence, including a schedule for achieving conformance with applicable limits, ALARA constraints, and license conditions.

Include for each occupational overexposed individual, the person's name, social security number and date of birth. For events involving an embryo/fetus, this information applies to the declared pregnant woman. Prepare reports so that the information on exposed individuals is stated in a separate and detachable portion of the report. When submitting a report to the agency, also provide a copy to the exposed individual(s), no later than when submitting it to the agency, in accordance with the provisions of the license and regulations.

REPORTS OF LEAKING/CONTAMINATED SOURCES

Immediately notify the agency upon learning of any leaking or contaminated sealed source. Submit a follow up written report to the bureau within 5 days, and identify the equipment involved, the test results and the corrective action taken.

REPORTS OF HIGH RADIATION LEVELS ON PACKAGES

Immediately notify the agency and the final delivery carrier by phone or fax upon learning of external radiation levels exceeding 200 mrem/hr at any exterior surface, or 10 mrem/hr at one meter from any exterior surface of an incoming package containing radioactive material.

Emergency Response Wallet Cards (Cut, Fold Back-to-Back & Laminate)

<p>A Damaged Gauge - What to do</p> <ol style="list-style-type: none"> 1. Notify RSO and proper authorities. 2. If needed, first give emergency first-aid. 3. Do NOT attempt to move or clean up the gauge 4. Assume that the immediate area is contaminated. 5. Keep all personnel UPWIND and at least 15 feet away. 6. Obtain information of personnel and vehicles involved. 7. Direct emergency response to injured or exposed individuals 8. Locate the source/gauge. Gather facts. 9. Maintain control until arrival of RSO or Response Team. 	<p>Emergency Telephone #'s</p> <p>RSO work # _____ RSO Cell # _____ .RSO Home # _____ Reg Agency Emergency # _____ Police/Fire _____ Manufacturer Emergency # _____ NRC 24hr Emergency # 301-816-5100 U.S. D.O.T. Emergency # 800-424-8802</p>
<p>A Damaged Gauge - What to do</p> <ol style="list-style-type: none"> 1. Notify RSO and proper authorities. 2. If needed, first give emergency first-aid. 3. Do NOT attempt to move or clean up the gauge 4. Assume that the immediate area is contaminated. 5. Keep all personnel UPWIND and at least 15 feet away. 6. Obtain information of personnel and vehicles involved. 7. Direct emergency response to injured or exposed individuals 8. Locate the source/gauge. Gather facts. 9. Maintain control until arrival of RSO or Response Team. 	<p>Emergency Telephone #'s</p> <p>RSO work # _____ RSO Cell # _____ .RSO Home # _____ Reg Agency Emergency # _____ Police/Fire _____ Manufacturer Emergency # _____ NRC 24hr Emergency # 301-816-5100 U.S. D.O.T. Emergency # 800-424-8802</p>
<p>A Damaged Gauge - What to do</p> <ol style="list-style-type: none"> 1. Notify RSO and proper authorities. 2. If needed, first give emergency first-aid. 3. Do NOT attempt to move or clean up the gauge 4. Assume that the immediate area is contaminated. 5. Keep all personnel UPWIND and at least 15 feet away. 6. Obtain information of personnel and vehicles involved. 7. Direct emergency response to injured or exposed individuals 8. Locate the source/gauge. Gather facts. 9. Maintain control until arrival of RSO or Response Team. 	<p>Emergency Telephone #'s</p> <p>RSO work # _____ RSO Cell # _____ .RSO Home # _____ Reg Agency Emergency # _____ Police/Fire _____ Manufacturer Emergency # _____ NRC 24hr Emergency # 301-816-5100 U.S. D.O.T. Emergency # 800-424-8802</p>
<p>A Damaged Gauge - What to do</p> <ol style="list-style-type: none"> 1. Notify RSO and proper authorities. 2. If needed, first give emergency first-aid. 3. Do NOT attempt to move or clean up the gauge 4. Assume that the immediate area is contaminated. 5. Keep all personnel UPWIND and at least 15 feet away. 6. Obtain information of personnel and vehicles involved. 7. Direct emergency response to injured or exposed individuals 8. Locate the source/gauge. Gather facts. 9. Maintain control until arrival of RSO or Response Team. 	<p>Emergency Telephone #'s</p> <p>RSO work # _____ RSO Cell # _____ .RSO Home # _____ Reg Agency Emergency # _____ Police/Fire _____ Manufacturer Emergency # _____ NRC 24hr Emergency # 301-816-5100 U.S. D.O.T. Emergency # 800-424-8802</p>
<p>A Damaged Gauge - What to do</p> <ol style="list-style-type: none"> 1. Notify RSO and proper authorities. 2. If needed, first give emergency first-aid. 3. Do NOT attempt to move or clean up the gauge 4. Assume that the immediate area is contaminated. 5. Keep all personnel UPWIND and at least 15 feet away. 6. Obtain information of personnel and vehicles involved. 7. Direct emergency response to injured or exposed individuals 8. Locate the source/gauge. Gather facts. 9. Maintain control until arrival of RSO or Response Team. 	<p>Emergency Telephone #'s</p> <p>RSO work # _____ RSO Cell # _____ .RSO Home # _____ Reg Agency Emergency # _____ Police/Fire _____ Manufacturer Emergency # _____ NRC 24hr Emergency # 301-816-5100 U.S. D.O.T. Emergency # 800-424-8802</p>
<p>A Damaged Gauge - What to do</p> <ol style="list-style-type: none"> 1. Notify RSO and proper authorities. 2. If needed, first give emergency first-aid. 3. Do NOT attempt to move or clean up the gauge 4. Assume that the immediate area is contaminated. 5. Keep all personnel UPWIND and at least 15 feet away. 6. Obtain information of personnel and vehicles involved. 7. Direct emergency response to injured or exposed individuals 8. Locate the source/gauge. Gather facts. 9. Maintain control until arrival of RSO or Response Team. 	<p>Emergency Telephone #'s</p> <p>RSO work # _____ RSO Cell # _____ .RSO Home # _____ Reg Agency Emergency # _____ Police/Fire _____ Manufacturer Emergency # _____ NRC 24hr Emergency # 301-816-5100 U.S. D.O.T. Emergency # 800-424-8802</p>