**Appendix B: Emergency Procedures**

***Incidents Involving Radioactive Dusts, Mists, Fumes, Organic Vapors, and Gases***

* Instructions to Workers
  + Notify all personnel to vacate the room immediately.
  + Shut down ventilation system, if possible, unless it is determined that the room ventilation system needs to be used to clear the air for access purposes.
  + Vacate the room. Seal the area, if possible.
  + Notify the RSO immediately.
  + Ensure that all access doors to the area are closed and posted with appropriate warning signs, or post guards (trained) at all access doors to prevent accidental opening of the doors or entry to the area.
  + Survey all persons who could possibly have been contaminated. Decontaminate as directed by the RSO.
  + Promptly report suspected inhalations and ingestions of licensed material to the RSO.
  + Decontaminate the area only when advised and/or supervised by the RSO.
  + Allow no one to return to work in the area unless approved by the RSO.
  + Cooperate with the RSO and/or the RSO’s staff (e.g., investigation of root cause, provision of requested bioassay samples).
  + Follow the instructions of the RSO and the RSO’s staff (e.g., decontamination techniques, surveys, provision and collection of bioassay samples, requested documentation).
* Reminders to RSO
  + Supervise decontamination activities.
  + Perform air sample surveys in the area before permitting resumption of work with licensed materials.
  + Provide written directions to potentially contaminated individuals about providing and collecting urine, breath, blood, or fecal samples, etc.
  + Consider need for medical exam and/or whole body count before permitting involved individuals to return to work with licensed material.
  + Determine cause and corrective actions needed; consider need for bioassays if licensed material is suspected to have been ingested, inhaled, or absorbed through or injected under the skin. Document incident.
  + If necessary, notify the NRC.

***Minor Fires***

* Instructions to Workers
  + Immediately attempt to put out the fire by approved methods (e.g., fire extinguisher) if other fire hazards or radiation hazards are not present.
  + Notify all persons present to vacate the area and have one individual immediately call the RSO and fire department (as instructed by RSO).
  + Once the fire is out, isolate the area to prevent the spread of possible contamination.
  + Survey all persons involved in combating the fire for possible contamination.
  + Decontaminate personnel by removing contaminated clothing and flushing contaminated skin with lukewarm water, then washing with a mild soap.
  + In consultation with the RSO, determine a plan of decontamination and the types of protective devices and survey equipment necessary to decontaminate the area.
  + Allow no one to return to work in the area unless approved by the RSO.
  + Cooperate with the RSO and/or the RSO’s staff (e.g., investigation of root cause, provision of requested bioassay samples).
  + Follow the instructions of the RSO and/or the RSO’s staff (e.g., decontamination techniques, surveys, provision of bioassay samples, requested documentation).
* Reminders to RSO
  + Supervise decontamination activities.
  + If decontamination of personnel was not fully successful, consider inducing perspiration by covering the area with plastic. Then wash affected area again to remove any contamination that was released by the perspiration.
  + Consult with fire safety officials to ensure that there are no other possibilities of another fire starting.
  + Determine cause and needed corrective actions; consider need for bioassays if licensed material is suspected to have been ingested, inhaled, or absorbed through or injected under the skin. Document incident.
  + If necessary, notify the NRC.

***Fires, Explosions, or Major Emergencies***

* Instructions to Workers
  + Notify all persons in the area to leave immediately.
  + Notify the fire department.
  + Notify the RSO and other facility safety personnel.
  + Upon arrival of firefighters, inform them where radioactive materials are stored or where radionuclides were being used; inform them of the present location of the licensed material and the best possible entrance route to the radiation area, as well as any precautions to avoid exposure or risk of creating radioactive contamination by use of high pressure water, etc.
  + Cooperate with the RSO and/or the RSO’s staff (e.g., investigation of root cause, provision of requested bioassay samples).
  + Allow no one to return to work in the area unless approved by the RSO.
  + Follow the instructions of the RSO and/or the RSO’s staff (e.g., decontamination techniques, surveys, provision of bioassay samples, requested documentation).
* Reminders to RSO
  + Coordinate activities with facility’s industrial hygienist or environmental health and safety office and with local fire department.
  + Consult with the firefighting personnel and set up a controlled area where the firefighters can be surveyed for contamination of their protective clothing and equipment after the fire is extinguished.
  + Once the fire is extinguished, advise firefighters not to enter potentially contaminated areas where radioactive sources may be present or radiation areas until a thorough evaluation and survey are performed to determine the extent of the damage to the licensed material use and storage areas.
  + Perform thorough contamination surveys of the firefighters and their equipment before they leave the controlled area and decontaminate, if necessary.
  + Supervise decontamination activities.
  + Consider bioassays if licensed material is suspected to have been ingested, inhaled, or absorbed through or injected under the skin. Document incident.
  + If necessary, notify the NRC.

***Incidents Involving Sealed Sources***

* For an emergency situation that may occur concerning a sealed source that has been exposed unintentionally, is unshielded or compromised, the following safety instructions should be considered:
* Immediately secure and post the restricted area; maintain continuous surveillance and restrict access to the restricted area.
* Notify the RSO, RSO designee, and management personnel immediately.
* Retrieval operations should be supervised by the RSO.
* No source or suspected source should be handled directly with bare hands.
* Determine if additional dosimetry will be required during source retrieval.
* Appropriate survey instruments should be used for the response activity.
* Expedient methods of reducing unintended exposure to staff and the public, such as lead shot bags, sandbags, steel plates, and remote handling devices.
* The RSO should make required notifications to the NRC.