Western University
Nuclear Radiation Safety Inspection Checklist

Permit Holder: _____Permit No. _____Phone: _____

Building: _____ Department: _____Room(s): _____

Completed by: _____ Signature: _____ Date: _____ Phone: _____

Followed up by (RSC): _____Signature: _____ Date: _____

Compliance Items: √ Compliance × Non-compliance — Not-applicable **Deficiency Noted**

1. Radiation Protection 1.0 *Work Areas:* Areas used for work with radioactive materials are properly contained and prepared, and sequestered where possible. Radioactive materials and waste are adequately shielded or stored in a location that minimizes potential exposures to all personnel. 1.1 *Access Control (Storage):* When in storage, access to nuclear substances or radiation devices is restricted to authorized radiation users listed on the permit. Only authorized radiation users listed on the permit are allowed to be left alone in a radiation room with radioactive material that is not locked and stored away. 1.2 *Dose Control (Storage):* Dose rate at any occupied location outside the storage area or room does not exceed 2.5 microSv/hr (250 uR/hr). 1.3 *No Food/Drink:* No evidence of food/drink consumption or storage of food utensils or containers in designated radiation rooms. 1.4 *Dose Limit*: Effective dose of radiation user is within Western action level (2 mSv/year). 1.5 *Thyroid Screening:* Every person shall undergo thyroid screening at the University Hospital within five days who uses in a 24-hour period a quantity of radioiodine (I-125 or I-131) exceeding 2 MBq in an open room, 200 MBq in a fume hood, 20 000 MBq in a glove box or any other quantity in another containment approved by the Canadian Nuclear Safety Commission (CNSC); are involved in a spill of greater than 2 MBq of radioiodine; or are detected to have external radioiodine contamination. 1.6 *Fume hood:* is available for volatile radionuclide work and it is functioning properly. 1.7 *Contamination Criteria:* 1.7(a) Contamination monitoring is performed and recorded in the contamination monitoring form within seven days after working with unsealed nuclear substances. Print out of wipe test kept in the logbook . For safety work practices, right after working with unsealed nuclear substances, monitor hands and work area for contamination. 1.7(b) Survey locations are identified on the map and logbook including all work benches, equipment and floors. Contamination monitoring also includes a few random non-working areas such as phones, survey meters, door handles, desks, etc. 1.7(c) A copy of the contamination survey results is kept in shared, communal radiation labs whenever unsealed nuclear substances are used in these designated locations. 1.7(d) Contaminated areas are cleaned and re-monitored. Records are kept before and after decontamination. Immediate action is required for any contaminations on floors, non-working areas or alpha radioactivity. 1.7(e) Contamination monitoring technique is appropriate and adequate for unsealed nuclear substances in use. 1.7(f) Any fixed contamination must be reported to the Radiation Safety Coordinator. 1.7(g) Monitoring records are kept and are available for review.		

1.8 *TLD Badge Requirements:* Any person handles gamma emitters or high energy beta emitters (i.e. phosphorus 32, strontium 89, etc.) requires wearing a TLD badge. 1.9 *Extremity Dosimetry:* Any person handling a container more than 50 MBq (1.35 mCi) of phosphorus 32 strontium 89, yttrium 90, samarium 153 or rhenium 86 is required to wear a ring dosimeter. 1.10 *TLD Badge Storage and Reports:* 1.10 (a) TLD badges are stored in locations away radiation working bench, lab coat, radioactive waste, etc. 1.10 (b) TLD badge wearers have reviewed their exposure reports. 1.10 (c) TLD badges are returned to the supplier for analysis in a timely manner. 1.11 *Survey Meter:* is available for types of radiation work and it is functioning properly. 1.12 *Radiation Instrument Calibrated:* 1.12(a) Portable instruments (contamination meter or dose rate meter) must be calibrated within one year and in good working condition. Instruments should be given pre-operational checks (i.e. battery check) before using. 1.12(b) Non-portable instruments used for counting wipes, such as liquid scintillation counters, well-crystal gamma counters etc. should be routinely serviced according to the manufacturer's instruction (i.e. calibration, efficiency, etc.). Instruments used to count wipes should count and record a blank and standard (i.e. H-3, C-14) with each set of wipes. 1.13 *Container/device source labelled and details:* Have radiation warning sign with the radionuclide name, activity, date of activity and waste labelling form (where applicable). 1.14 *Area posting:* 1.14 (a) Radiation warning sign is posted on door. 1.14 (b) Active benches, equipment, containers and storage areas are labelled with radiation tape. 1.15 *Frivolous Posting of Signs:* No visible radiation warning sign shall be posted that indicates presence of radiation, a nuclear substance or radiation device at a place where the radiation, nuclear substance or radiation device indicated on the sign is not present. 1.16 *Necessities:* gloves, absorbent pads, wipe test paper, radiation tape, decontamination solution etc. are available.		
2. Emergencies and Unplanned Events 2.1 *Emergency Procedures:* 2.1(a) Emergency contacts/spill procedures poster is posted. Emergency procedures are followed in case of spill or contamination. 2.1(b) Permit Holders and radiation users listed on the radiation permit are knowledgeable to spill response procedures, containment, decontamination and reporting procedures. 2.2 *Reportable Incidents:* Permit holder and/or radiation authority users report to the Radiation Safety Coordinator in an event of spill, a radiation device is involved in an incident, lost or stolen,		

3. Environmental Protection 3.1 *Disposal:* 3.1(a) Radioactive waste disposed of according to the radiation safety manual (i.e. liquid waste disposed into plastic container, liquid scintillation vials disposed separately, radiation symbols are removed/defaced from shipping packages etc.). 3.1(b) All radioactive materials deposited into waste containers is identified and recorded on the inventory/waste form, waste label and waste labelling form. 3.1(c) Radiation symbols on lead pots or empty radioactive containers are defaced when re-used for non-radioactive work. Containers re-used to store nuclear substance should be re-labelled with a description of the current contents and radiation labels. 3.1(d) Stock vials that are empty or contain residual activity should be disposed according to the radiation safety manual. 3.2 *Decommissioning:* Rooms are no longer used for radioactive work that have been decommissioned.		
4. Training and Qualification 4.1 *Radiation Safety Training*: All personnel listed on the radiation permit have completed the Western radiation safety training within three years (certificate kept on file) and received specif training (record kept on file) from supervisor or permit holder. All personnel listed on the permit demonstrate adequate knowledge of safe work practices, radiation protection, detection & measurement, TDG requirements, policies & procedures, radiation safety manual and applicable CNSC regulatory requirements. 4.2 *Radiation Safety Awareness:* Radiation safety awareness is provided to non-radiation user who is in a radiation room and documented. 4.3 *Safety Data Sheets*: Workers are familiar with Material Safety Data Sheets (MSDS) and Radiation Safety Data Sheets (RSDS).		
5. Operational Procedures 5.1 *Use of Equipment and Procedures:* Lab coats, gloves, safety glasses and appropriate protective equipments are worn by radiation users. 5.2 *Authorized Transfer:* Radiation Safety Coordinator is notified of any planned relocation, transfer, purchase or planned disposal of nuclear substances or radiation devices. 5.3 *Safety Posters:* CNSC safety poster (basic, intermediate or high level) is posted according to the room classification. Guidelines for Handling Packages Containing Nuclear Substances poster is posted in the receiving/storage area. 5.4 *Chairs:* Fabric covered seats are kept away from unsealed nuclear substance rooms. 5.5 *Housekeeping:* Room is neat and tidy. Active areas are free of clutter, extraneous non-dedicated equipment and supplies. 5.6 *Inventory:* 5.6(a) All nuclear substances in use and in storage have corresponding inventory records. 5.6(b) A separate inventory form is prepared and maintained whenever an unsealed nuclear substance is diluted, processed or separated into different products that are subsequently utilized. 5.6(c) Radiation storage room location and a bar code number are recorded in the inventory/waste forms for all nuclear substances.		

5.6(d) Daily usage, remaining quantities and final disposal dates are recorded on the inventory/waste forms for all unsealed nuclear substances. 5.7 *Licence to service radiation device:* A company or person who performs installation, repair or dismantling a device other than routine operating procedures as indicated in the manufacturer's operating manual for the device has a CNSC servicing licence. 5.8 *Post Permit:* Radiation permit is posted in all designated radiation rooms with current information (i.e. workers, lab, etc.). 5.9 *Record Keeping/Retained*: Inventory/disposal records and measurements are retained for the minimum of three years.		
6. Organization and Management 6.1 *Worker's Precautions*: Workers are working safely and ensuring security. 6.2 *Area Classification:* 6.2(a) All locations being used for handling or storing nuclear substance are authorized by the Radiation Safety Coordinator and are listed on the permit 6.2(b) All nuclear substances in storage and in use is within order/possession limits and indicated on the permit. Activity of nuclear substances handled on bench/fume hood are within room classification limits. 6.3 *Supervision:* All radiation users are listed on the permit. Permit holder or designate is available to supervise authorized radiation users and designated radiation rooms. 6.4 *Change Notified:* Permit holder reports any changes on the permit to the Radiation Safety Coordinator. 6.5 *Radiation Safety Manual:* Radiation safety manual is accessible to all workers listed on the radiation permit. 6.6 *Prohibition of Human Use*: No nuclear substances are being used in or on human beings.		
7. Security 7.1 *Security/Sabotage:* Radiation rooms are locked when unattended. Radiation storage areas are secured or locked when unattended. Alarm system is on (where applicable) when unattended.		
8. Packaging and Transportation of Dangerous Goods (TDG) Class 7 8.1 Radioactive package is received in good order and wiped test for contamination. Radioactive waste pail/shipping package wiped test for contamination before disposal or shipping. All print out of wipe tests kept for the minimum of three years. 8.2 All shipping of nuclear substances/radiation devices/radioactive materials are approved by the Radiation Safety Coordinator. 8.3 Radiation safety certificate includes TDG training for receiver is available for review.		

Please retain and provide the completed nuclear radiation safety inspection checklist to the Health and Safety Consultant at the time of the scheduled inspection.

Please complete the necessary information and send to:
Radiation Safety (RadSafety@uwo.ca), Room 4159, OHS, Support Services Building