MEDICAL SURVEILLANCE – RADIOIODINE

INTRODUCTION

Use of radioiodine such as I-125 or Iodine-131 may occur within research, and clinical activities at the University of Guelph as permitted by our Consolidated and Nuclear Medicine licenses issues by the Canadian Nuclear Safety Commission (CNSC). This module will outline the medical surveillance requirements for personnel involved in the use of radioiodine at the University of Guelph

SCOPE

This module applies to personnel using Iodine -125 or Iodine-131 as part of University of Guelph research, teaching, clinical or operational activities including but not limited to employees and graduate students.

LEGISLATIVE AUTHORITY

Nuclear Substance and Radiation Device License No. 06288-1-18

Nuclear Substance and Radiation Device Licence No. 06288-11-17

CNSC - Regulatory Document RD-58 Thyroid Screening for Radioiodine

CRITERIA

As a condition of the licenses listed above, thyroid monitoring (bioassay) is required based on the following criteria

Monitoring is required for every person who in any 24 hour period:

- uses a total quantity of Iodine-125 or Iodine-131 exceeding:
  - 2MBq in an open room
  - 200 MBq in a fume hood
  - 20000 MBq in a glove box, or

  - Any approved quantity in any room, area or enclosure authorized by the CNSC after the last use resulted in any of the aforementioned limits being exceeded
- Is involved in a spill of greater than 2 Mbq of Iodine-125 or Iodine-131
- Is found to be externally contaminated with Iodine-125 or Iodine-131

Monitoring must occur between 24 hours and 5 days following the (potential) exposure.

RESPONSIBILITIES

OCCUPATIONAL HEALTH AND WELLNESS (OHW)

- Maintain list of University personnel requiring thyroid monitoring
- Coordinate with personnel and schedule thyroid monitoring as required
- Conduct thyroid monitoring regimen as required and in accordance with CNSC Regulatory Document RD-58
- Review measurement results with personnel and maintain records according to standard medical practice
- Immediately report results greater than or equal to 1 kBq to the Radiation Safety Officer (RSO) and initiate the University's incident reporting process
- Generate and review quarterly summary reports of anonymized thyroid monitoring results and identify trends to the RSO
- Follow up with individuals with measurement results greater than or equal to 1 kBq
- Participate in Health Canada's Thyroid Counting Inter-Comparison Program. This is a program for method verification only and hence no personal medical information is disclosed.

RADIATION SAFETY OFFICER

- Identify to Supervisors any requirement for thyroid monitoring of any personnel under their supervision
- Investigate any measurement result greater than or equal to 1 kBq or upward trends identified by OHW

- Report measurement results greater than or equal to 10kBq to the CNSC as required
- Provide back up support to OHW in the conduct of thyroid bioassay

SUPERVISORS

- Identify to OHW and the RSO, personnel requiring thyroid monitoring
- Ensure all personnel whom they supervise and who meet the aforementioned criteria participate in thyroid monitoring
- Accommodate modified duties as required
- Cover the costs associated with any examinations, etc. that must be outsourced from the University

UNIVERSITY PERSONNEL WORKING WITH RADIOIODINE

- Adhere to all safe operating procedures including personal protective equipment (PPE) requirements when using radioiodine
- Participate in thyroid monitoring as indicated by the aforementioned criteria
- Participate in modified work duties as required
- Follow the University incident reporting procedures for any related incidents

METHODS/PROCEDURES

THYROID SCREENING

Thyroid monitoring is conducted by OHW as per methods approved by the CNSC and in accordance with the principles of Regulatory Document RD-58 using the Captus 700t Tabletop Thyroid uptake system located in OHW.

Thyroid monitoring is to be done prior to an individual initially beginning work with volatile radioiodine meeting the aforementioned criteria and then between 24 hours to 5 days following each use or potential exposure of amounts identified in the aforementioned criteria.

If screening detects more than or equal to 1 kBq of Iodine-125 or Iodine -131 in the thyroid, OHW will immediately notify the RSO who will investigate. OHW will review the measurement results with the individual and initiate the incident reporting process. OHW will work with the

individual and supervisor to accommodate in modified work. The individual will be required to have his/her thyroid re-screened within 24 hours. If the measurement results are greater than or equal to 1 kBq, the individual will be required to have his/her thyroid re-screened monthly until the level is below 1 kBq.

If screening indicates greater than or equal to 10 kBq, OHW will immediately notify the RSO who will investigate and provide a preliminary report to the CNSC. OHW will review the measurement results with the individual and initiate the incident reporting process. OHW will work with the individual and supervisor to accommodate modified work. The individual will be required to have his/her thyroid screened within 24 hours. If the results are greater than or equal to 1 kBq, the individual will be required to have his/her thyroid screened monthly until the level is below 1 kBq.

The Occupational Health Physician will follow up with individuals as necessary.

Table 1. Summary of Actions Taken Based on Thyroid Monitoring Results

Result	Actions taken by OHW	Actions taken by RSO
<1kBq	Review bioassay results with individual. Print bioassay results and file with individual's medical file.	None
Equal to or > 1kBq and less than 10 kBq	Notify RSO. Review with individual. Initiate incident reporting process and work restrictions. Re-assay within 24 hours. Repeat assay each month until < 1kBq.	Investigate work practices and provide input regarding work restrictions to be established.
Equal to or >10kBq	Notify RSO. Review with individual. Initiate incident reporting process and work restrictions. Re-assay within 24 hours. Repeat assay each month until < 1kBq.	Report exposure to CNSC. Investigate work practices and provide input regarding work restrictions to be established.

FREQUENCY

Thyroid monitoring must occur between 24 hours and 5 days following use and/or potential exposure to radioiodine.

INCIDENT MANAGEMENT

All incidents are to be reported using the University's incident reporting process.

OHW and the Occupational Health Physician are available for consultation with personnel that have had a suspected radioiodine exposure and/or incident.

RECORDS MAINTENANCE

All personal medical records are maintained confidentially according to accepted medical practice by Occupational Health and Wellness. Individual results greater than 1 kBq are shared with the RSO for incident investigation purposes and possible reporting requirements to the CNSC.

General information regarding radio-iodine-related incidents will be shared with the Radiation Safety Committee as the oversight body of the Radiation Safety program.