

# QCP1

## TRAINING AND CERTIFICATION

### 1.0 PURPOSE

To provide employees with the knowledge, technique and environmental awareness required to perform radiochemical operations competently and safely.

### 2.0 RESPONSIBILITIES

The Laboratory Manager or designee must provide training and instruction to employees.

The employee must be familiar with these items and indicate this by signing and dating records as needed.

### 3.0 PROCEDURE

#### 3.1 Initial Orientation Training

The trainer will:

- Explain the significance and utility of all items on the orientation topics list (see page 3). Answer questions or provide demonstrations as needed to provide a basic working knowledge of each item.
- Document successful completion of orientation training.

#### 3.2 Analytical Certifications

3.2.1 Prior to certification the trainee will:

- Read the procedure and the Job Hazard Analysis (JHA);
- Observe and assist the trainer with a given procedure;
- Successfully and independently complete an analysis by performing the procedure using a known standard;
- Achieve a value within the established process control limits for the procedure for the batch blank result and;
- Achieve a result within 50% of the known activity for gross alpha and beta (GAB) and within 20% of the known activity for all other analyses.

- 3.2.2 A Certification Record will be completed by the designated trainer, indicating that the important steps of the procedure have been correctly performed.
- 3.2.3 The trainee must discuss and be evaluated in theory and safety aspects specific to the procedure by the designated certification individual.
- 3.2.4 Recertification of permanent laboratory staff will be done at least annually, within 30 days of the expiration date, by analysis of spiked samples along with routine samples. Revisions to JHAs will be discussed with the laboratory staff when they are issued.
- 3.2.5 Recertification of non-permanent laboratory staff will be performed as necessary based on work load and staff assignments.

## REQUIRED NEW EMPLOYEE ORIENTATION TOPICS FOR RADIOCHEMISTRY OPERATIONS

Orientation requirements and topics for discussion:

### MANUALS

- The new employee reads and reviews the Laboratory and Quality Assurance Manuals, Integrated Safety Management Manual, and Job Hazard Analyses.
- The Laboratory Manager or designee explains the format of chemistry procedures.

### EYE PROTECTION

- visitor vs worker
- prescription safety glasses, safety glasses/no contact lens
- if contacts are worn, full eye goggles must be worn
- fusion shields

### LAB COATS

- when required
- location and washing
- where lab coats are not allowed

### GLOVES

- where and when required
- use and disposal

### EYE WASH AND SHOWER STATIONS

- location and use

### HOODS

- use and cleanliness

### WASHDOWN HOODS

- use and operation
- check sheet for washdown
- cleanliness

## CONTAMINATION CONTROL

- why is there contamination control
- when to scan for contamination
- operation of scanning instrumentation
- selection of proper scanning instrumentation
- documentation of scanning results

## INSTRUMENTS

- Balances
  - demonstrate top loaders and analytical balances
  - explain operational checks
  - emphasize regular cleaning
- Pipettes
  - demonstrate use
  - emphasize care and cleaning
  - explain operational checks
- Pipette Certification/Manual Dexterity Exercise (see page 8)
  - accuracy and precision
  - technique
  - cleanliness

## MECHANICAL EQUIPMENT

- Computers
  - demonstrate use
  - discuss security requirements
- Vacuum
  - demonstrate use/emphasize safety
- Shaker
  - explain use
  - demonstrate use/emphasize safety
- Ovens
  - log book
  - contamination control (load top to bottom and unload bottom to top)
- Furnaces
  - explain use
  - demonstrate operation/emphasize safety
  - USDA Regulations

- Pumps
  - demonstrate operation/explain routine maintenance
- Hot plates
  - cleanliness
  - safety
  - repair
- Centrifuge
  - demonstrate use

## CHEMICALS

- Material Safety Data Sheets (MSDS)
  - explain and demonstrate use
- acids, bases, organics, standards, tracers, and carriers
- Identify hazards
  - corrosive, poison, inhalation, flammable
- HNO<sub>3</sub>, Nitric Acid
- CH<sub>3</sub>COOH, Acetic Acid
- HCl, Hydrochloric Acid
- Na<sub>2</sub>SO<sub>4</sub>, Sodium Sulfate
- H<sub>2</sub>SO<sub>4</sub>, Sulfuric Acid
- BaCl<sub>2</sub>, Barium Chloride
- HF, Hydrofluoric Acid
- NaOH, Sodium Hydroxide
- NH<sub>4</sub>OH, Ammonium Hydroxide
- HClO<sub>4</sub>, Perchloric Acid
- Na<sub>2</sub>CrO<sub>4</sub>, Sodium Chromate
- EDTA, Ethylenediaminetetraacetic Acid
- KHF<sub>2</sub>, Potassium Hydrogen Fluoride

- n-Heptane
- 2-Ethyl Hexanol
- Toluene
- Hydrazine
- Xylene
- $TiCl_3$ , Titanium (III) chloride
- DTPA, Diethylenetriaminepentaacetic Acid
- HDEHP, bis(2-ethylhexyl)hydrogen phosphate
- Oxalic Acid
- $NaNO_2$ , Sodium Nitrite
- $Pb(NO_3)_2$ , Lead Nitrate

#### WASTE HANDLING

- Who to contact with questions
- Waste coordinator
- Environmental Health and Safety

#### HAZARDOUS MATERIALS

- Spills
  - Who to contact [Environmental Health and Safety](routine 576-3333, emergency 310-5555)
  - Spill coordinator [Environmental Health and Safety]
  - Transport of hazardous materials between buildings
  - Transport of hazardous materials between labs

#### SIGNS

- Specific signs used in the laboratory
- Labeling requirements

PRECIOUS METALS

- Platinum
  - use and handling

Analyst's Signature: \_\_\_\_\_ Date \_\_\_\_\_

Certified by: \_\_\_\_\_ Date \_\_\_\_\_

**PIPETTE CERTIFICATION/MANUAL DEXTERITY EXERCISE  
FOR RADIOCHEMISTRY OPERATION**

Equipment: Automatic pipettes, analytical balance, small weighing dish, and reagent water.

1.0 Pipette reagent grade water into a tared weighing dish and record weight in the table provided below. The end result of the pipetting procedure will be evaluated by the Laboratory Manager or designee.

**VOLUMES**

		<b>50 <math>\mu</math>L</b>	<b>100 <math>\mu</math>L</b>	<b>200 <math>\mu</math>L</b>	<b>500 <math>\mu</math>L</b>	<b>1000 <math>\mu</math>L</b>
<b>T R I A L S</b>	1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	$\bar{X}$					
	$\sigma$					

Analyst's Signature: \_\_\_\_\_ Date \_\_\_\_\_

Certified by: \_\_\_\_\_ Date \_\_\_\_\_