

International Module

M501 - Measurement of Hazardous Substances (including Risk Assessment)

Formative Practical Assessment – Guidance for Tutors

1. Introduction

In order to ensure that candidates, on completion of this module, have the capability to carry out basic practical assignments, all candidates must undertake three practical exercises and write them up to an appropriate standard for marking by the course tutor during the course. The tutor is responsible for the detail design and marking of these studies.

These practical exercises are an essential part of the candidate assessment process and will be subject to random audit for quality assurance purposes.

2. The Practical Requirements

The practical exercise(s) should be designed by the course tutor(s) to test the basic skill of the candidate in personal sampling of exposure. The exercise must, therefore, involve;

- a) The setting up and calibration of sampling pumps for vapour sampling with charcoal tubes.
- b) The set up and use of a sampling pump and cyclone sampler for measurement of respirable dust.
- c) The set up and use of a sampling pump and open face (IOM or similar) filter head for sampling of inhalable dust.
- d) The correct positioning of sampling equipment on the wearer.
- e) The use of data sets which are relevant to each of the above sampling exercises, to allow candidates to demonstrate their ability to calculate and interpret results. These will include:
 - weights of filters before and after dust sampling, together with flow rates and sampling periods;
 - for respirable dust sampling, typical laboratory results for crystalline silica analysis of collected dust;
 - typical laboratory results giving the amount of contaminant on both sections of a charcoal tube together with flow rates and sampling periods.
 - workplace scenarios that will allow candidates to calculate 8-hour time-weighted average exposures and compare these with allowable exposure limits.

Notes: Since the use of high accuracy balances is likely to be impractical at the course location, the actual weighing of filters before and after use will not be possible. However, tutors should observe candidates to ensure that they have the relevant manipulative skills needed for this procedure.

The flow calibration should be carried out using typical field calibrators. Where possible, alternative types of flow meter (soap bubble, rotameter, electronic) should be available.

Access to reference material and written procedures is allowed during these exercises.

3. Reporting and Marking

The set up and measurement exercises should be written up to the standards expected for a laboratory notebook or field notes and handed in for assessment at the end of the practical exercise. The candidates must include all readings and calculations so that they can be checked.

Notes for each practical exercise should contain the following elements:

- a) Name of candidate
- b) Hazardous substance being measured
- c) Equipment used [list of components with diagram if appropriate]
- d) Monitoring information (flowrate, time etc.)
- e) Calculation of results
- f) Interpretation and recommendation (if appropriate)

The course provider/tutor will assess each practical report and compile a report per candidate as per the attached form. The tutor must return the practical evaluation report for each candidate to BOHS within 5 days of the course completion.

4. Benchmark Marking Schedule

As the tutor is responsible for designing suitable studies it is not practicable to provide a fully detailed predefined marking schedule. However, the following are examples of what the tutor needs to look for in each case and are provided for guidance.

- a) Set up and calibration of sampling system for charcoal tubes

Visual Check

- Charcoal tube correctly mounted in holder
- Pump connected up correctly
- Appropriate flow measurement meter used correctly to adjust flow
- Assembly worn for personal sampling correctly

Marking of Write Up

- Calculation of total volume correct
- Calculation of concentration correct
- Interpretation of sampling results correct

- b) Set up and calibration of sampling system for respirable dust and/or inhalable dust

Visual Check

- Cyclone/open face filter head with filter correctly mounted in holder
- Hands-free manipulation of filter
- Pump connected up correctly
- Soap bubble meter or flow meter used correctly to adjust flow
- Assembly worn for personal sampling correctly

Marking of Write Up

- Calculation of total volume correct
- Calculation of concentration correct
- Interpretation of sampling results correct

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Formative Practical Evaluation Report

Name of Candidate			
Date of Birth		Date of Evaluation	
Evaluation Location			
Course Provider			
	Pass/Fail	Comments	
Charcoal tube set up and result calculation			
Respirable dust set up and result calculation			
Inhalable dust set up and result calculation			
Overall Decision			
<i>Name of tutor covering practical evaluation</i>			
<i>Signature of tutor covering practical evaluation</i>			

Please Note: Information entered into the comments column can be given to the candidate for re-sit purposes.

International Module

M501 - Measurement of Hazardous Substances (including Risk Assessment)

Formative Practical Assessment – Guidance for Candidates

1. Introduction

Candidates taking the M501 international examination in “Measurement of Hazardous Substances” need to demonstrate that they have requisite practical skills in field sampling for personal exposure assessment. Therefore, all candidates must undertake three practical exercises and write these up to the standards expected for laboratory notebooks or field notes for marking by the course tutor during the course. This will be regarded as an essential part of the examination process.

2. The Practical Requirements and Reporting

The practical exercises are designed to test the basic skill of the candidate in personal sampling of exposure. Therefore, the exercise involves the setting up and calibration of sampling pumps for both vapour sampling with charcoal tubes and for dust using both a cyclone sampler for respirable dust and an open-faced sampler for total inhalable dust.

This latter exercise will not normally include the weighing of filters before and after a sampling sequence but tutors will observe candidates to ensure that they have the requisite manipulative skills needed in this procedure.

Sets of data that corresponds to those which should be obtained for each of the above cases, [e.g. weight of filters before and after sampling, and amount of contaminant on both sections of charcoal tube along with flow rates and the time of sampling] will be provided to allow candidates to demonstrate their ability to calculate and interpret the results.

For each exercise the candidate should:

- a) Select the appropriate sampling equipment for the material to be measured
- b) Correctly assemble the sampling train
- c) Measure and set (as appropriate) the flow rate using appropriate equipment
- d) Correctly fit and remove the equipment from the exposed subject
- e) Calculate and interpret exposure data on basis of supplied data
- f) Submit a written practical report for the exercise

The set up and measurement study should be written up to the standards expected for a laboratory notebook or field notes and handed in for assessment at the end of the practical exercise. The candidates must include all readings and calculations so that they can be checked.

Each practical notebook report should contain the following elements:

- a) Name of person carrying out the measurements
- b) Hazardous substance being measured
- c) Equipment used [list of components with diagram if appropriate]
- d) Monitoring information (flow rate, time etc.)
- e) Calculation of results
- f) Interpretation of results

Access to reference material and written procedures is allowed during these exercises.

Assessment of Practical Notebook Reports

The notebook or field notes reports must be handed in at the completion of the practical session as retrospective reporting will not be allowed. The course provider/tutor will assess each practical notebook report and return the practical evaluation report for each candidate to BOHS.