



**US Environmental Protection Agency  
Office of Pesticide Programs**

**Office of Pesticide Programs  
Microbiology Laboratory  
Environmental Science Center, Ft. Meade, MD**

**Standard Operating Procedure for  
OPP Microbiology Laboratory Training**

**SOP Number: ADM-04-02**

**Date Revised: 12-16-08**

EPA/OPP MICROBIOLOGY LABORATORY  
ESC, Ft. Meade, MD

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for  
OPP Microbiology Laboratory Training

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Effective Date: \_\_\_/\_\_\_/\_\_\_

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1.0 SCOPE AND APPLICATION:

1.1 This protocol describes the Microbiology Laboratory Branch (MLB) requirements for education, experience, and training of each employee in order to ensure that testing and other laboratory procedures are performed by qualified individuals.

2.0 DEFINITIONS:

2.1 GLP = Good Laboratory Practice Standards

2.2 SOP = Standard Operating Procedure

2.3 OPP = Office of Pesticide Programs

2.4 EPA = Environmental Protection Agency

2.5 SHEM = Safety, Health and Environmental Management

2.6 CDC = Centers for Disease Control and Prevention

2.7 NIH = National Institutes of Health

2.8 Analyst = For the purposes of this SOP, persons working in the laboratory will be referred to as analysts without regard to job series or title.

3.0 HEALTH AND SAFETY:

3.1 Analysts must complete an initial 24 hour safety training seminar and an 8 hour refresher course every year thereafter. The SHEM Manager is responsible for providing this training.

3.2 Analysts must undergo a physical exam every year. In addition, Laboratory Scientists and Technicians must undergo a PPD test for Tuberculosis in order to work in the laboratory.

3.3 If specific personal protective equipment, such as respirators, is required, the analyst must be certified.

3.4 In accordance with the CDC/NIH guidelines, the Branch Chief may restrict access to the laboratory as specified under "special practices" (see ref 15.3).

3.5 Analysts receive biosafety refreshers as necessary (due to audit findings, recommendations from the SHEM manager, etc.).

4.0 CAUTIONS: None

5.0 INTERFERENCES:

5.1 The trainer must ensure that the most current versions of SOP along with the appropriate forms are used for the purpose of training.

6.0 PERSONNEL QUALIFICATIONS:

6.1 Good Laboratory Practices (GLP) state that employees shall have education, training, and experience, or any combination thereof, that will enable them to perform the functions assigned to them (see ref 15.1).

6.2 Laboratory Scientists must meet the minimum qualifications set forth in the Operating Manual for Qualification Standards for General Schedule Positions: Individual Occupational Requirements for their particular job series. For example, for GS-403: Microbiology Series a minimum of 20 semester hours in microbiology or related studies and 20 semester hours in the physical and mathematical sciences combining course work in organic chemistry or biochemistry, physics and college algebra, or their equivalent (see ref. 15.4).

6.3 Laboratory Analysts must meet the minimum qualifications set forth in the Operating Manual for Qualification Standards for General Schedule Positions: Individual Occupational Requirements for their particular job series. For example, GS-404: Biological Science Technician Series a minimum of 24 semester hours in scientific or technical courses such as biology, chemistry, statistics, entomology, animal husbandry, botany, physics, agriculture or mathematics with at least 6 semester hours in microbiology or related studies (see ref. 15.4).

7.0 SPECIAL APPARATUS AND MATERIALS: None

8.0 INSTRUMENT OR METHOD CALIBRATION: Not applicable

9.0 SAMPLE HANDLING AND STORAGE: Not applicable

10.0 PROCEDURE AND ANALYSIS:

10.1 Qualifications. Analysts may perform, without supervision, only those

procedures for which they are qualified, as determined by the Branch Chief or his/her designee. Qualifications to perform assays and other procedures will be documented in each employee's training record.

- 10.2 Training Responsibilities. The Branch Chief has overall responsibility to ensure that the personnel in the Laboratory are adequately trained for their assigned tasks. The Branch Chief or his/her designee will train employees to perform assays and other procedures using the laboratory SOPs and other appropriate training materials (see ref 15.2). Upon hire, and as needed, the Branch Chief or his/her designee will identify and document the training needs of each employee (see 16.1 for New Employee Training Checklist).
- 10.2.1 The Branch Chief and/or the team leader is responsible for checking to determine that each new employee received appropriate training (including safety training) before beginning any assigned task.
- 10.2.2 Trainers must verify the competency of individuals they train and document this competency by initialing the trainee's training record. In addition, proficiency testing may be required to perform certain tasks. The successful completion of competency/proficiency testing will be filed in the training log book.
- 10.2.3 Trainees must make sure that they understand the information being communicated to them. They are encouraged to ask questions about anything they do not understand which might compromise the performance of a task. The "Training Complete" box on the Personnel Training Record (see 16.2) means the employee fully understands the procedure and can perform it properly without supervision.
- 10.3 New Employee Training. New employees will receive a comprehensive introduction to the EPA and the Microbiology Laboratory Branch during the first several weeks of their employment. Initial training includes (see 16.1):
- 10.3.1 Completion of a 24 hour laboratory safety training as specified under the Agency guidelines. A refresher class of 8 hour is required on an annual basis.
- 10.3.2 Documentation of education and previous work experience. All new employees will document their relevant experience in their curriculum vitae or resume. This information is filed with the

Branch Chief.

- 10.3.3 Familiarization with administrative and personnel policies and procedures by Human Resources or their designate, including the current version of the EPA Employee Handbook of Benefits and Policies. This training is provided by the EPA Office of Human Resources Management (OHRM) as part of new employee orientation.
  - 10.3.4 An introduction to the EPA and its clients by the Branch Chief or designee, including the mission statement, program goals and organizational charts.
  - 10.3.5 An overview of the laboratory, including job description and staff responsibilities, training procedures, documentation, and filing systems and their locations.
  - 10.3.6 An introduction to testing and laboratory equipment, including the importance of equipment maintenance and calibration.
  - 10.3.7 A tour of the Environmental Science Center Facility, which will cover security procedures and the locations of certain areas and equipment. These include: the lunchroom, library, copy machine room, fire extinguishers, bathrooms, fire alarm pulls, eye wash stations and emergency exits.
  - 10.3.8 A health and safety examination and overview, including an introduction to SOP MB-01, Biosafety in the Laboratory.
  - 10.3.9 An overview by the Quality Assurance Unit (QAU) emphasizing compliance with Good Laboratory Practices (GLP) and Agency Quality Assurance requirements and guidelines (see ref 15.1).
  - 10.3.10 Completion of training will be documented on the New Employee Training Checklist (see 16.1) and the Personnel Training Record (see 16.2) as it is performed. For each new employee, the Quality Assurance Unit or their designate will periodically audit the Personnel Training Records.
- 10.4 Training on Standard Operating Procedures: Each new employee will be familiarized with their job description by the Branch Chief or his/her designee. Laboratory based training is required for all testing procedures,

equipment operation, calibration, and maintenance; quality control activities; sample-log-in and report preparation. Technical training will encompass the following steps:

- 10.4.1 The trainee reads the SOP in which they are being trained.
- 10.4.2 The trainer demonstrates the procedure, explaining the reason for each step of the procedure and the details on how to perform it.
- 10.4.3 The trainee performs the procedure under the supervision of the trainer.
- 10.4.4 When both the trainer and trainee are satisfied that the trainee has achieved proficiency, the trainer initials the “Training Complete” box on the Personnel Training Record (see 16.2).
- 10.4.5 If necessary, the trainee will be required to perform a proficiency test as determined by management and/or the team leader which will be audited by the QAO or the trainer.

10.5 Ongoing Training:

- 10.5.1 SOP Review. Analysts will review appropriate SOPs when revised. In addition, SOP revisions will be discussed in a formal setting to ensure that analysts are aware of new practices and procedures.
- 10.5.2 GLP Training. GLP training will be conducted periodically by the Office of Compliance his/her designee.
- 10.5.3 Health and Safety Training. Requirements for ongoing health and safety training are specified in the Chemical Hygiene Plan (CHP) and the Safety, Health and Environmental Management Plan (SHEMP).
- 10.5.4 Other Internal Training. The Branch Chief, Quality Assurance Unit, or senior management may require additional training for employees on specific types of equipment, methods or techniques.
- 10.5.5 On a periodic basis, either through a formal employee review or informally in a meeting, the Branch Chief or his/her designee will evaluate and document the ongoing training needs for each employee.

- 10.5.6 Continuing Education. The Office of Pesticide Programs encourages appropriate continuing education for all staff to meet program objectives. Continuing education is available through participation in professional associations, trade organizations, and federal and academic institutions. Workshops and focused training are available as mission related initiatives change.
- 10.5.7 Professional Memberships. Laboratory personnel are encouraged to pursue appropriate professional memberships, such as ASM (American Society for Microbiology) and AOAC INTERNATIONAL.
- 10.5.8 Ongoing training will be documented on the Personnel Training Record (see 16.2). If a certificate is issued for a training session or course, a copy will be provided to the Branch Chief by the analyst for inclusion in the personnel training log book.

10.6 Verification of Competency:

- 10.6.1 The trainer who signs the Personnel Training Record (see 16.1) of a trainee for a particular SOP is responsible for verifying the competency of that person to perform that procedure. Trainees should not request a sign off on an SOP until they are fully confident of their ability to perform the procedure without supervision. Where appropriate trainers may use other means of verifying training efficacy such as workshops and proficiency exercises.

10.7 Qualification of Trainers:

- 10.7.1 To train another employee on a procedure, a trainer must have a complete and thorough understanding of the SOP and hands-on, working knowledge of the procedure, as evidenced by:
- a) A current sign-off for the procedure in their Personnel Training Record (see 16.2).
  - b) A current sign-off on the procedure and any supporting SOPs on the SOP Familiarization Record (see 16.3).
  - c) For efficacy test method related procedures, recent experience conducting the procedure.

10.7.2 Management may evaluate and approve individuals for test procedures based on relevant prior experience and education.

10.8 Updating Training Records:

10.8.1 When new or newly revised SOPs are issued, copies are issued to the appropriate employee(s). Each employee is required to read the SOP and update the SOP Familiarization Record (see 16.2).

11.0 DATA ANALYSIS/CALCULATIONS: None

12.0 DATA MANAGEMENT/RECORDS MANAGEMENT:

12.1 Training records for all current personnel will be stored in labeled binders in secure file cabinets in file room D217. Training records for employees no longer with MLB will be retired to an archived training binder in secure file cabinets in file room D217.

13.0 QUALITY CONTROL:

13.1 For quality control purposes, the required information is documented on the appropriate form(s) (see 16.0).

14.0 NONCONFORMANCE AND CORRECTIVE ACTION:

14.1 Any deviations from this standard protocol must be documented on a nonconformance memo and corrective action applied if warranted.

15.0 REFERENCES:

15.1 US EPA Good Laboratory Practice Standards, Title 40 Code of Federal Regulations (CFR) Part 160.

15.2 Lawrence, Susan. 2007. Quality Assurance Management Plan for the Office of Pesticide Programs. Microbiology Laboratory Branch, US Environmental Protection Agency, Environmental Science Center,. Fort Meade, MD.

15.3 Centers for Disease Control and Prevention and National Institutes of Health, 2007. Biosafety in Microbiological and Biomedical Laboratories, 5<sup>th</sup> Edition. U.S. Department of Health and Human Services. U.S. Government Printing Office, Washington, D.C.

15.4 U.S. Office of Personnel Management. Operating Manual for Qualification Standards for General Schedule Positions. OPM Publications No. HX118 ([www.opm.gov/qualifications/index.htm](http://www.opm.gov/qualifications/index.htm)).

16.0 FORMS AND DATA SHEETS:

16.1 New Employee Training Checklist

16.2 Personnel Training Record

16.3 Standard Operating Procedures Familiarization Record

16.1  
 New Employee Training Checklist  
 OPP Microbiology Laboratory

<b>NAME:</b>		<b>DATE OF EMPLOYMENT:</b>	
<b>Activity</b>	<b>Trainer or Responsible Official Name</b>	<b>Employee Initials</b>	<b>Date Completed</b>
Completion of a 24 hour laboratory safety training as specified under the Agency guidelines. A refresher class of 8 hour is required on an annual basis.			
Documentation of education and previous work experience. Resume filed with Branch Chief.			
Familiarization with administrative procedures by Human Resources or designee including EPA Employee Handbook of Benefits and Policies. This training is provided by OHRM as part of new employee orientation.			
Introduction to EPA and its clients including the mission statement, program goals and organizational charts.			
Overview of the Microbiology Laboratory including job description, training procedures, documentation, filing systems and locations.			
Introduction to testing and laboratory equipment, including the importance of equipment maintenance and calibration.			
A tour of the Environmental Science Center facility, which will cover security procedures and locations of certain areas and equipment.			
A health and safety examination and overview, including an introduction to MB-01, Biosafety in the Laboratory.			
An overview of the Quality Assurance Unit, emphasizing importance of Good Laboratory Practices and the Agency's Quality Assurance requirements and guidelines.			



