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Standard Guide for Preparing a Training Program for Environmental Analytical Laboratories¹

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1. Scope

1.1 This guide is intended to assist the laboratories that analyze environmental samples with the development of a documented training program. The training program should develop and increase the competence of analysts and provide a means of recording the results of all proficiency testing.

1.2 Some of the functions within a laboratory that can be addressed using this guide are as follows:

- 1.2.1 Analysts,
- 1.2.2 Technicians,
- 1.2.3 Quality assurance (QA),
- 1.2.4 Sample receiving and control, and
- 1.2.5 Sample procurement (sampling).

2. Referenced Documents

- 2.1 *EPA Standards:*
EPA Method 150.1²
SW 846 USEPA Test Methods for Evaluating Solid Waste—
Physical/Chemical Methods, 9040 and 9045²

3. Summary of Guide

- 3.1 This guide is summarized in the following steps:
 - 3.1.1 Define the training needs;
 - 3.1.2 Prepare training materials;
 - 3.1.2.1 Develop training objectives;
 - 3.1.2.2 Develop performance evaluation materials;
 - 3.1.2.3 Develop a detailed training outline; and
 - 3.1.2.4 Develop a documentation form;
 - 3.1.3 Identify trainers competent in the areas defined in 3.1.1;
 - 3.1.4 Determine need and frequency for retraining;
 - 3.1.5 Assemble and store training materials; and,
 - 3.1.6 Assign responsibility for training program.

4. Significance and Use

- 4.1 Training is a key component in the development of a

competent staff in the environmental laboratory.

4.2 This guide will assist in providing both the organizational structure and the direction for a laboratory training program.

4.3 This guide will result in a documentation effort that will satisfy the requirements of environmental auditing groups.

5. Defining the Need for Training

5.1 Each individual who handles or analyzes environmental samples must be knowledgeable in the proper procedures for performing one's job function. Any deficiencies must be corrected by training. Training also may be extended to include those individuals who accept and record information prior to receipt of a sample or who are responsible for generating a report detailing the results of the analyses. Those involved with quality assurance functions need specialized training as well.

5.2 The first step in developing a training program is to identify the procedures or methods within the laboratory for which an individual is responsible. These may range from basic activities to very complex manipulations or interpretations.

5.2.1 Basic activities might include: pH measurement, pipetting, titrating, unloading sample shippers, or data entry.

5.2.2 Complex activities might include: operating an inductively coupled plasma (ICP), cleaning the source of a mass spectrometer, or data validation.

5.2.3 Within each activity certain tasks will have to be learned. A detailed analysis of these tasks must be performed before specific training courses can be developed.

5.2.4 Before beginning actual training, the level of training should be determined using the task analysis.

5.3 Before starting a training program, an approved Standard Operating Procedure (SOP) must be available for each method or activity.

5.3.1 A detailed manual or training video may serve as an SOP.

5.3.2 Published or externally prepared materials must be followed explicitly or an in-house document should be prepared. It is often difficult to follow commercially prepared materials due to differences in the equipment, work areas, sample type, or even level of training of the analyst. For this reason, it is advisable to prepare SOPs that detail the actual

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