CHAPTER 14
MISCELLANEOUS SAMPLING METHODS

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Chapter 14
MISCELLANEOUS SAMPLING METHODS

I. Introduction

This chapter addresses sampling methods that are occasionally used to sample uncommon situations which require special expertise. The following sampling methods are included in this chapter: wipe sampling, bag sampling, and bulk sampling for "unknowns."

II. Wipe Sampling

A method of sampling used to determine the presence of solid or liquid contaminants on surfaces. Wipe sampling kits are available through the district office health specialist or industrial hygienist. Some situations where wipe sampling can be used are: after a chemical spill or to determine if toxic materials are present in working or eating areas. Wipe Sampling should be coordinated with the district office in consultation with the MSHA laboratory before collecting samples. Coordination is necessary because:

- Specific wipes (filter papers wetted with solvents) are needed for different contaminants; and

- Depending on the contaminant, the sample-collecting material may cause an interference during analysis if the proper type of wipe is not used.

A. Supplies Required

A wipe sampling kit (see Figure 14-1) includes the following items:

1. Whatman No. 41 or No. 42 filter paper
2. Disposable gloves
3. Distilled water bottle (primarily used for contaminants in Chapter 3)
4. Isopropanol (isopropyl alcohol) bottle
5. Ethylene glycol (antifreeze) bottle
6. Litmus paper
7. Masking tape
8. Plastic sampling template (10 cm x 10 cm grid)

Figure 14-1. Wipe Sampling Kit

B. Sampling Procedure

See Figure 14-2, Taking a Wipe Sample.

1. Wear clean, impervious, disposable gloves when taking each wipe sample. This will prevent sample contamination.

2. Moisten the wipe filters with distilled water or the appropriate solution prior to use.

3. Gently wipe a surface area covering at least 16 in^2 (4 in. x 4 in.) or 100 cm^2 (10 cm x 10 cm), if possible.

4. Fold the wipe sample with the exposed side in.

5. Transfer wipe samples for substances other than mercury or mercury compounds into a plastic bag, vial, or jar. Seal the vial or jar with a nonmetallic (e.g., teflon) cap or lid. In addition, seal the cap or lid with vinyl or electrical tape. Wipe samples for mercury and mercury compounds should be placed into a 20 ml borosilicate glass scintillation vial, with a Teflon- or polypropylene-lined cap. Plastic bags should not be used as the primary container for mercury wipes.

6. Mark the container with a sample number and place a sample seal on it so that the sample cannot be tampered with.

7. Record the pertinent information in the Health Field Notes.

8. Fill out a Request For Laboratory Analysis Form, and write "WS" in Item No. 15, Sample Type.

For more information regarding the appropriate use of wipe sampling, contact your District Office**.**

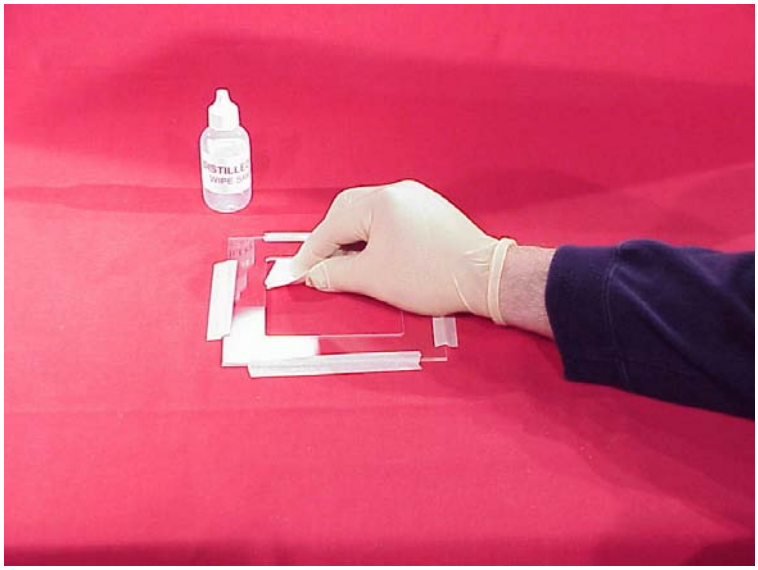

Figure 14-2. Taking a Wipe Sample

Precautions

Several contaminants may be collected and analyzed on the same wipe; however, interference or overload may affect the analyses. Alert the MSHA laboratory about the potential for interferences by submitting a note with the wipe sample container. This note should inform the laboratory of any contaminants suspected of being present in the sample(s) that are in addition to the specific contaminants requested for analysis. For example, when a sample is analyzed for metals, in particular arsenic, aluminum can cause interference if present in the sample. Before collecting a combination of metals on the same wipe, consult the laboratory to determine how many wipe samples are needed.

C. Prepare Blank

At least one blank (or unused) wipe must be submitted to the MSHA laboratory with each set of wipe samples. Blank wipes must be submitted in the same shipment, but placed in a separate vial. The blank wipe should be handled with clean disposable gloves.

III. Bag Sampling

Sampling bags are collection devices which use a sampling pump to draw contaminated air into the air sample bag. The entire sampling bag is sent to the MSHA laboratory for analysis. The most common contaminants sampled by this method are typical mine gases. Coordinate with your district office and the laboratory when considering bag sampling.

IV. Bulk Sampling for "Unknowns"

Bulk sampling is a screening method used to identify "unknown" contaminants which may be present at the mine site. The samples may be collected from accumulations of material (located anywhere at the mine site) when a hazard is suspected. Any information that the inspector can supply with the bulk sample relevant to the composition will help the MSHA Laboratory select an appropriate analysis. This should include location where sample was collected, processes involved, and, whenever possible, Material Safety Data Sheets (MSDS) and/or independent laboratory analysis reports. Coordinate with your district office and the MSHA laboratory for proper collection containers and shipping instructions (see Figure 14-3). Note: Do not submit bulk samples in the same container as exposure samples.

Figure 14-3. Bulk Sample Containers