APPENDIX C

PROCEDURES FOR COLLECTING WIPE SAMPLES

1. General Procedures for Collecting Wipe Samples

Preloading a group of vials with sampling filters (consult the CSI files to determine the appropriate sampling media to use) is a convenient method to carry the sample media to the worksite. Note: Smear tabs should be inserted with the tab end out. Clean disposable gloves should be worn when handling the filters and smear tabs. The gloves should not be powdered.

The following are general recommendations for taking wipe samples. Consult the CSI files for more specific instructions.

- Record each location where a wipe sample was taken. Photographs, sketches, diagrams and other means of noting sampling locations are helpful.

- A new set of clean, disposable, powder-free gloves should be used for each sample to avoid contamination of the filter by previous samples (and the possibility of false positives) and to prevent contact with the substance.

- Withdraw the filter from the vial with your fingers or clean tweezers. If a damp wipe sample is desired, moisten the filter with distilled water or other solvent as recommended. Note: For skin sampling use only distilled water. Other solvents may be appropriate for wiping surfaces depending upon the type of chemical being sampled.

- Depending on the purpose of the sample, it may be useful to determine the concentration of contamination (e.g., in micrograms of agent per area). For these samples, it is necessary to record the area of the surface wiped (e.g., 100 cm^2).

- Firm pressure should be applied when wiping.

- Using the filter, wipe an area about 100 cm^2, rubbing the entire area side to side, then up and down. In many cases (such as knobs and levers) it may not be possible to wipe 100 cm^2. Where a precise determination of the contaminant loading (concentration) is desired, prepare single-use 10-cm x 10-cm templates from cardstock or file folders.

- Place the filter in a sample vial, cap and number it, and note the number at the sample location. Include notes which will provide any additional relevant details regarding the nature of the sample (e.g., "Fred Worker's respirator, inside"; "Lunch table").

- At least one blank filter treated in the same fashion, but without wiping, should be submitted for each sampled area.

- Some substances (e.g., benzidine, hexavalent chromium, and 4,4'-methylenedianiline) are unstable and may require a solution to be added to the vial as soon as the wipe sample is placed in the vial or may require other special sample handling. If such instability is suspected, check the CSI file for sample handling instructions or contact the SLTC for guidance.

- Submit the samples, each sealed with a Form OSHA-21, and in accord with any special procedures located in OTM Section II Chapter 4 (Sample Shipping and Handling), to the SLTC. Properly document the samples by completing the OIS sampling worksheet.

Successful wipe sampling requires preparation and careful technique. It is best to practice these techniques in the office or other clean area before collecting samples in the field. Practice will enable the CSHO to get a sense of how much to wet the wipe, how delicate the wipes are, how to apply uniform pressure when wiping the surface, how to wipe evenly across the area to be sampled, how to fold the wipe to expose a clean surface for conducting a second pass, how to handle the wipes with tweezers or forceps, and how to avoid contaminating one's gloves while sampling.

2. Wipe Sampling Procedures for Hexavalent Chromium

Special wipe sampling techniques are necessary to prevent decomposition of hexavalent chromium (Cr(VI)) to trivalent chromium (Cr(III)) on the sampling media.

- For wipe sampling on smooth surfaces, use 37-mm diameter PVC filters with 5-µm pore size (MSA part # 625413).

- For wipe sampling on rough surfaces where PVC would be likely to tear, use 37-mm diameter binderless quartz fiber filters 0.45-mm thick (SKC part # 225-1809).

- For chrome plating operations, to prevent decomposition of Cr(VI) to Cr(III) use:

    - Binderless quartz fiber filters <u>coated</u> with 1percent sodium hydroxide (NaOH). These filters do not require extraction in the field and are preferred for sample stability. Caution: Do not use coated quartz fiber filters for any operation other than chromium plating.

    - PVC or uncoated binderless quartz fiber filters. <u>Immediately after sampling</u>, place the filter into a vial containing 5 mL of an aqueous stabilizing solution containing 10 percent sodium carbonate (Na_2CO_3) with 2 percent sodium bicarbonate ($NaHCO_3$) to eliminate the interference from the acid used in the chrome plating process.

- Always wear gloves when handling NaOH-treated filters due to their caustic nature. PVC or nitrile gloves are suggested based on review of chemical resistance data.

- Use clean polytetrafluoroethylene (PTFE)-coated (e.g., Teflon-coated) or plastic tweezers. Do not use metal tweezers to handle the filters as they will deposit Cr(VI) onto filters.

- Before sampling, label 20-mL glass scintillation vials with PTFE lined caps, one for each sample, and each with a unique sample number. These vials should be empty and dry. Exception: If using PVC or uncoated binderless quartz fiber filters for chrome plating operations, prefill the vials with 5 mL of stabilizing solution (10 percent Na_2CO_3 with 2 percent $NaHCO_3$).

- Prepare a diagram of the area or rooms to be wipe-sampled along with the locations of key surfaces.

- Use un-wetted filters to avoid interferences due to possible metals contamination in tap water.

- Wipe an area of known dimension such as a 10-cm x 10-cm square area.

- Record the surface area sampled on the OIS sampling worksheet when concentration determination is desired.

- Apply firm pressure when wiping. Start at the outside edge and progress toward the center making concentric squares of decreasing size. Fold the filter with the contaminant side inward and repeat.

- Without allowing the filter to come into contact with any other surface, fold the filter with the exposed side inward. Place the filter in a sample vial and cap.

- Place a corresponding number at the sample location on the diagram. Include notes with the sketch giving any further description that may prove useful when evaluating the sample results (e.g., a description of the surface sampled such as pencil, doorknob, safety glasses, lunch table, inside respirator, worker names, etc.).

- Submit at least one blank wipe filter, treated in the same fashion as the other samples, but without wiping.

- Record sample location, workers' names, surface area, work description, type of operation, PPE, and any other necessary information, along with any potential interferences on the OIS sampling worksheet.

- Submit the samples to the SLTC together with the OIS sampling worksheets as soon as possible after sampling. Ship any bulk samples separate from the surface samples. Note: Wipe samples taken in chromium plating and welding operations should be shipped to the SLTC within 24 hours after sampling by overnight delivery.