National Human Exposure Assessment Survey (NHEXAS)

Maryland Study

Quality Systems and Implementation Plan for Human Exposure Assessment

Emory University
Atlanta, GA 30322

Cooperative Agreement CR 822038

Standard Operating Procedure **NHX/SOP-G04**

Title: Chain-of-Custody and Sample Tracking

Source: Harvard University/Johns Hopkins University

U.S. Environmental Protection Agency
Office of Research and Development
Human Exposure & Atmospheric Sciences Division
Human Exposure Research Branch

Notice: *The U.S. Environmental Protection Agency (EPA), through its Office of Research and Development (ORD), partially funded and collaborated in the research described here. This protocol is part of the Quality Systems Implementation Plan (QSIP) that was reviewed by the EPA and approved for use in this demonstration/scoping study. Mention of trade names or commercial products does not constitute endorsement or recommendation by EPA for use.*

1. Title of Standard Operating Procedure

   Harvard University/Johns Hopkins University Standard Operating Procedures:
   Chain-of-Custody and Sample Tracking, Rev. 1.0.

2. Overview and Purpose

   The purpose of this SOP is to establish the normal procedures for ensuring data chain-of-custody and data tracking. The chain-of-custody form included in this SOP is the standard form to be used for all data collected in the field.

3. Discussion

   In any large-scale field operation, numerous samples of different types are taken. The task of data management is thus of singular importance. It is necessary to establish standard procedures for sample tracking and to establish forms necessary to ensure chain-of-custody for all data streams. These data streams include in-house data streams such as questionnaire data entry, laboratory analysis, and the developed final data sets, as well as outside data tracking for samples analyzed at other laboratories.

4. Personnel Responsibilities

   4.1 Sampler Preparation

   Chain-of-custody and data tracking for some samples begins with preparation of the sampler (e.g., air filters and samplers); for others it begins with collection of the sample (e.g., soil). The establishment of a data record and the institution of the chain-of-custody forms begins here. The time of origination of the chain-of-custody for each type of sample is described in the field SOPs. The Field Coordinator has responsibility for this phase of the operation. The Field Technician, Interviewer, or Phlebotomist will affix ID labels to chain-of-custody forms before going to the residence.

   4.2 Field Collection

   The field collection logsheets and chain-of-custody forms are the responsibility of the staff member taking the data: the Field Interviewer, Field Technician, or the Phlebotomist, depending upon the sample.

   4.3 Storage

   After field collection, storage of all logsheets and chain-of-custody forms is the responsibility of the Field Coordinator.

   4.4 Shipment

   Following of correct chain-of-custody procedures prior to and during shipping is the responsibility of the Field Coordinator.

   4.5 Analysis

The Cooperating Laboratory is responsible for chain-of-custody during the laboratory analytical phase. If analysis takes place at Harvard, the Principal Investigator or his designate is responsible for data tracking and chain-of-custody.

5. Required Equipment and Reagents

Chain-of-Custody Forms
Identification Number labels (bar code and human-readable)

6. Procedure

The primary record for chain-of-custody associated with transfer of data is the chain-of-custody form (attached). This form will be transmitted with all data including samples, questionnaires, laboratory records, and data returned from the laboratory.

6.1 Preparation for Collection

The Chain-of-Custody form will be included in the household paperwork brought to each home prior to sampling. It is the responsibility of the Field Coordinator, or his designate, to ensure that sufficient Chain-of-Custody forms are included in the package.

6.2 Sampling Location

Essentially all data will be taken in the household location. This location will be included in the Identification Number.

6.3 Sample Collection Procedure

The Identification Number label will be affixed to each Chain-of-Custody form at the Field Coordination Center by the field staff person who will collect the sample. This individual will fill out the top part of the form noting any special circumstances under "Comments," including the date and time of the sample collection, and initialing the form to certify acceptance of the data.

For air filters and PUF samplers, chain-of-custody originates with the Field Coordinator or his designate, who will inspect the media, affix ID labels, and transfer custody to the staff member who will prepare the samplers. For all other media, custody originates with the staff member who prepares the sampler and affixes ID labels. Custody of each sampler will be transferred from the staff member who prepares it to the Field Technician who will use it, unless they are the same person.

6.4 Labeling

See section 6.3 and SOP G03 "Identification Numbers for Samples and Forms."

6.5 Preservation and Storage

It is the responsibility of the Field Interviewer, the Field Technician, or the Phlebotomist, depending upon the type of sample being collected, to ensure proper transmittal of the Chain-of-Custody form back to the Field Coordination center.

6.6 Handling and Shipping

Upon return to the Field Coordination Center, custody of all samples, questionnaires, and other paperwork is transferred to the Field Coordinator or his designate. The transfer will occur with proper sign-off on the lower portion of the Chain-of-Custody form. The field person writes the date and time of transfer, and also writes his/her name, initials, and organization (Westat) in the appropriate columns under the heading "From." The Field Coordinator or his designate fills in her/his name, initials, and organization in the appropriate columns under the heading "To." The person receiving the sample also fills in the "Purpose" column. The field person will photocopy the form, file the copy, and send the original with the sample. The top page of the three-part logsheet will go to the data entry location, the second page will accompany the sample, and the third will be filed at the FCC.

All subsequent transfers should be made in the same fashion. Note that all transfers should have the "From" column individual matching the previous "To" column individual indicating a transfer has been made. Each person transferring custody will make a copy of the form to file, and send the original with the sample.

If all the lines of a form are filled, additional forms may be attached. On the filled form, mark the "continued on next form" box. Mark the new form with the appropriate page number and affix the correct ID label. All pages of the form will travel with the sample.

6.7 Laboratory Analysis

The Chain-of-Custody forms must accompany samples to the analytical laboratory. The sample custodian's name and initials should appear on the form as both receiving and releasing samples. Similarly, data entry personnel who take possession of questionnaires should also have their names appear.

6.8 Data Workup

Upon final receipt of data to Harvard University, the Principal Investigator or his designate will inspect the Chain-of-Custody forms for completeness. Any discrepancies will be investigated. All such forms will be stored for the duration of the project plus seven years. At that time, at the discretion of the Principal Investigator and after consultation with EPA, the forms may be destroyed.

6.9 Sample Tracking

Discussed above.

7. Quality Assurance Procedures

The use of Chain-of-Custody forms is, itself, a quality assurance procedure. These forms ensure that the data collected are traceable to the original sampling site. All Chain-of-Custody forms will be checked for completeness; discrepancies will be addressed by the Principal Investigator or his designate.

8. References

Harvard University/Johns Hopkins University Standard Operating Procedure:
G03 Identification Numbers for Samples and Forms

Chain-of-Custody Tracking Form
NHEXAS Study
Harvard School of Public Health
677 Huntington Avenue, Boston, Mass. 02115
(617) 432-1167

Sample ID
Label

Sample Taken by: _____
Initials: _____
Collection Date: _____ Time: _____AM PM
Comments:

page _____ [ ] continued on next page

Sample Type:
[ ] 01 Baseline Questionnaire
[ ] 02 Descriptive Questionnaire
[ ] 03 Technician's Questionnaire
[ ] 04 Followup Questionnaire
[ ] 05 Activity Diary
[ ] 07 Food Checklist
[ ] 11 Outdoor Air - Metals
[ ] 13 Indoor Air - Metals
[ ] 14 Indoor Air - Pesticides & PAHs
[ ] 15 Personal Air
[ ] 21 Dust - field sample
[ ] 22 Dust - for Metals
[ ] 23 Dust - for Pesticides/PAHs
[ ] 24 Dust - storage reserve
[ ] 25 Dust - field spikes
[ ] 31 Soil - field sample
[ ] 32 Soil - for Metals
[ ] 33 Soil - for Pesticides & PAHs
[ ] 34 Soil - storage reserve
[ ] 35 Soil - field spikes
[ ] 36 Soil - dry weight
[ ] 41 Dermal Wipe - Metals
[ ] 42 Dermal Wipe - Pesticides & PAHs
[ ] 45 Tap/Drinking Water - for Metals
[ ] 46 Tap/Drinking Water - Pesticides/PAHs
[ ] 51 Duplicate Diet - solid foods
[ ] 52 Duplicate Diet - beverages
[ ] 55 Mini-Market Basket - solid foods
[ ] 56 Mini-Market Basket - beverages
[ ] 61 Urine - day 2 - field sample
[ ] 62 Urine - day 2 - metals
[ ] 65 Urine - day 2 - creatinine
[ ] 71 Urine - day 8 - field sample
[ ] 73 Urine - day 8 - pesticides
[ ] 74 Urine - day 8 - PAHs
[ ] 75 Urine - day 8 - creatinine
[ ] 81 Blood - for Metals
[ ] 82 Blood - for Pesticides
[ ] 83 Blood - for PAHs
[ ] 84 Blood - for VOCs
[ ] 85 Blood serum - pesticides
[ ] 86 Blood serum - lipids

Sample/Data Transferred

Date	Time	From:			To:			Purpose
		Name	Initials	Organization	Name	Initials	Organization	