

National Human Exposure Assessment Survey (NHEXAS)

Region 5 Study

Quality Systems and Implementation Plan for Human Exposure Assessment

Research Triangle Institute
Research Triangle Park, NC 27079

Cooperative Agreement CR 821902

Field Operations Protocol

RTI/ACS-AP-209-030

Title: Procedure for Collection, Storage, and Shipment of Duplicate
Diet Food and Beverage Samples

Source: Research Triangle Institute

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.

FIELD OPERATIONS PROTOCOL	RESEARCH TRIANGLE INSTITUTE POST OFFICE BOX 12194 RESEARCH TRIANGLE PARK, NC 27709-2194	RTI/ACS-AP-209-030 Page 1 of 37
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TITLE: PROCEDURE FOR COLLECTION, STORAGE, AND SHIPMENT OF
DUPLICATE DIET FOOD AND BEVERAGE SAMPLES

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PROCEDURE FOR COLLECTION, STORAGE, AND SHIPMENT OF
DUPLICATE DIET FOOD AND BEVERAGE SAMPLES

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1.0* SCOPE AND APPLICATION

The purpose of this protocol is to measure dietary intake of the primary elemental analytes lead and arsenic, as well as several secondary analytes (Table 1), as part of the exposure measurements performed in NHEXAS. The procedures described in this protocol are designed to guide the collection, storage, and shipping of duplicate diet foods and duplicate diet beverage samples. These samples will be sent to FDA laboratories for homogenization and analysis to measure the total dietary intake of the selected contaminants over a four-day period. Also included in this protocol are instructions for training participants and administering a Food Diary and Food Diary Followup Questionnaire.

Participants will collect duplicate portions of all foods and beverages they eat each day for four consecutive days (participants that refuse collecting dietary samples will be offered the option of collecting samples over 3 days). Participants will keep a simple list of each food and beverage they consume on each of the four days. Foods and beverages will be collected from all meals and snacks over the four-day period, whether consumed at home or away from home. Nonprescription vitamins will be included, but medicines, prescription vitamins, and other non-food items (gum, chewing tobacco, etc.) will not be included. Participants will not be responsible for estimating portion sizes or providing detailed dietary information. Duplicate portions will be prepared by visual estimation. The research staff will estimate or measure collected food portions, review the daily food diary, ask follow-up questions about the collected foods and beverages, and review a short diary follow-up questionnaire for each food collection day.

2.0 SUMMARY OF THE METHOD

2.1* The study participant will be instructed how to collect duplicate portions of all foods and beverages. The study participant will be instructed how to use the Food Diary and Food Diary Followup Questionnaire.

2.2 The participant will collect duplicate portions of all foods and beverages for four consecutive 24-hour periods, and will record all foods and beverages on a diary record.

- 2.3 At scheduled intervals, the staff will meet with the participant to:
 - 2.3.1 Review the diary record(s) for the previous day(s) and ask the participant probing questions about food identity, cooking, and non-retail source.
 - 2.3.2* Review a short diary followup questionnaire for each day of dietary sample collection.
 - 2.3.3 Collect all food and beverage samples and complete sample collection/custody records.
- 2.4 The staff will weigh each separate solid food.
- 2.5* The staff will store the samples under refrigerator or freezer conditions until shipment.
- 2.6 The staff will ship the samples and custody records to the laboratory within the appropriate holding time.
- 2.7 Dietary Sample Collection Schedule
 - 2.7.1 In the NHEXAS study, participants will perform various study activities over the course of seven days (for a total time of approximately 144 hours). A subset of participants will collect dietary samples on four of the study days.
 - 2.7.2* An example dietary collection schedule is provided below
 - Day 1 -- a) Train participants, provide sample collection containers.
 - Day 2 -- a) No dietary collection activities.
 - Day 3 -- a) Participant collects dietary samples from midnight to midnight.
 - Day 4 -- a) Participant collects dietary samples from midnight to midnight.
 - b) Research staff visits, collects Day 3 food, checks diary, checks diary followup for Day 3.
 - c) Research staff makes sure participants are following instructions, provide additional training as needed.
 - Day 5 -- a) Participant collects dietary samples from midnight to midnight.
 - Day 6 -- a) Participant collects dietary samples from midnight to midnight.

- Day 7 -- a) Research staff visits, collects Day 4, Day 5, and Day 6 food, checks diaries for Day 4, Day 5 and Day 6, checks diary followup questionnaire for Day 4, Day 5 and Day 6.

3.0 SAMPLE COLLECTION MATERIALS

3.1 Solid Food Containers

- 3.1.1 Plastic zipper-lock bags (Glad-Lock quart and gallon sizes) will be provided to the participants for storing their collected solid foods at home separately. Approximately 50 of the small size and 20 of the large size will be provided for each participant in their unopened boxes.
- 3.1.2 4-L precleaned wide-mouth polyethylene bottles (Scientific Specialties Service, Inc., #263128, or equivalent) will be used to store solid foods when they are combined after collection. Four will be needed for each participant.

3.2 Beverage Containers

- 3.2.1 4-L cleaned wide-mouth polyethylene bottles (Scientific Specialties Service, Inc., #263128, or equivalent) will be used by the participants to collect and store all beverages. Four will be needed for each participant.
- 3.2.2 1-L cleaned wide-mouth polyethylene bottles (Scientific Specialties Service, Inc., #253032, or equivalent) will also be supplied to those participants that must collect beverages away from home and to store beverages on days when more than 4 liters is consumed. The number needed will depend on each participant's schedule.

3.3 Container Cleaning

- 3.3.1 Cleaning of the bottles will be by the supplier under EPA protocol C or equivalent: detergent wash, rinse with tap water, rinse or soak with 1:1 nitric acid, rinse with Type 1 water, air dry.
- 3.3.2 Alternatively, the bottles will be cleaned according to ACS/SOP-150-001, "Standard Cleaning Procedure for Glassware/Plasticware", except that tap water rinses will not be used. All rinses will be with reagent grade water only.

3.3.3 The zipper-lock bags will not be cleaned prior to use.

3.4 Coolers

3.4.1 Three alternative methods of keeping the collected foods and beverages chilled at the participant home are available.

3.4.1.1 Thermoelectric coolers are the preferred method for keeping collected foods cool. This will require electrical power. Use a fuse or GFCI protected cord or outlet strip for plugging in the AC/DC adapters. Two coolers should be provided for each participant.

3.4.1.2 A regular cooler (Igloo Picnic Basket or equivalent cooler that can be carried by a single handle and hold two 4-L bottles) with ice packs. (Extra packs may be kept in participant's freezer with replacement instructions).

3.4.1.3 Collected foods may be kept in the participant's refrigerator.

3.4.2 An insulated, flexible carrying bag for participants that will collect foods and beverages away from the home.

3.5 Mettler BD-6000 portable balance (or equivalent battery-powered portable balance with a capacity of 6000 g, tested for $\pm 2\%$ accuracy with ASTM Class 1 100 g and 1000 g weights).

3.6 Food Diary (4 needed)

3.7 Food Diary Follow-up Questionnaire (1 needed)

3.8 Standard Cup to Aid Participant Beverage Consumption Volume Estimation

3.9 Plastic Spoon and Knife, Long Handle, to Aid Transfer of Solid Foods

3.9.1 The spoon and knife are cleaned between uses by washing with common dishwashing soap and water, followed by two rinses with Type 1 water.

4.0 PARTICIPANT TRAINING (FIRST VISIT WITH PARTICIPANT)

Participants (or their parents) will be trained by the research staff to collect duplicate diet food and beverage samples. The staff performing this training must themselves have been trained on the proper procedures. It is important for the staff to be friendly, helpful, and to try to develop a good rapport with the participant during this training. The staff

must also use judgment in assessing the participant's understanding of the instructions and the need for elaboration and/or repetition to improve their understanding.

4.1 Identification of Participant Care Provider(s)

- 4.1.1 Participants of all ages will be included in the study. In the case of children, the staff must determine whether the child can/will collect the dietary samples and complete the diary, or whether one or more care givers will perform these tasks.
- 4.1.2 Identify whether a person other than the participant is responsible for preparation of most meals. This person should, if at all possible, receive sample collection instruction along with the participant.
- 4.1.3 Identify the participant and determine the age. If the participant is 18 or older, skip to section 4.2.
- 4.1.4 If the participant is between 13 and 17 years old, discuss with the participant and a care-giver whether the participant will be able to perform the study activities by him or herself. Adults will need to be responsible for food collection for all children 12 years old or younger.
- 4.1.5 Determine which adult(s) will be responsible for most of the participant's food preparation. Also, ask what other adults in the home, schools, or other care providers (i.e., day care, after school care, etc.) will be responsible for the child during the dietary collection period.
- 4.1.6 Explain that we would like the adult(s) in the home primarily responsible for food preparation (and the participant if age 7 or older) to receive training for collecting foods and beverages.
- 4.1.7 Explain that it is important to collect food and beverage samples at all locations, including school and day care. This includes all foods and beverages at meals or snacks, and nonprescription vitamins. Items like prescription vitamins, medicine, chewing gum, toothpaste, or tobacco, are not to be included. Ask the adult(s) whether there will be any problem for the child to collect samples at these locations, or whether they can arrange for and institutional staff member to collect dietary samples at these locations. Discuss options but encourage compliance. Except in unusual situations, the NHEXAS

staff will not be able to assist collection or train staff at institutions outside the home.

- 4.1.8 When adult caregivers are performing the activities for a child, the instructions below should be given to the adult, along with the child if aged 7 or older.

4.2 Instructions for Collecting Foods and Beverages

- 4.2.1 During the first visit to the participant's home the participant [adult] will be instructed how to collect the food and beverage samples according to the instructions in Figure 1.
- 4.2.2 The staff will verbally read through the instructions with the participant [adult]. Visual aids, including photographs, models, or real foods should be used to briefly demonstrate the method.
- 4.2.3 The staff will answer any participant [adult] questions.
- 4.2.4 The staff will demonstrate the collection containers and coolers.
- 4.2.5 The staff will ask whether the participant [adult] understands the instructions. Instructions may be repeated or elaborated if the technician believes this will improve understanding.
- 4.2.6 The staff will emphasize that the participant [adult] will have to plan ahead to prepare enough food for duplicate portions.
- 4.2.7 The staff will emphasize that we want the participant to eat the foods they would have eaten if we were not there.
- 4.2.8 The staff will emphasize that we want the participant [adult] to collect duplicate portions of all foods and beverages they eat at all meals and snacks.
- 4.2.9* The staff will provide a total of \$15 per day in cash to compensate food costs and will explain that to the participant [adult] that the money is compensation for the extra food they will provide us. A total of \$30 will be provided at the first visit, with the remainder provided at the second visit.
- 4.2.10 Leave the zipper-lock bags and bottles near the food preparation or consumption location. Make sure the participant has extra 1-L bottles in case their daily beverage consumption exceeds 4-L.
- 4.2.11 Determine, with the participant [adult], the best location to set up two thermoelectric coolers. Plug the fuse or GFCI protected outlet into the home

outlet and make sure that the coolers are functioning properly. Locate all electrical components and cords where they can not trip people or where they are not likely to be damaged. Tell the participant [adult] that the coolers are cooling down to be ready for the first day of sample collection.

- 4.1.12 If the participant will collect foods or beverages away from home, demonstrate the use of the flexible carrying bag. The participant should carry collection bags, one or two 1-L bottles, and zipper-lock bags.
- 4.2.13 All foods and beverages collected on a given day should be stored together in one cooler. Write down the name of the specified day on a piece of paper or tape on the top of each cooler.
- 4.2.14 The staff will write down on the instruction sheet the names of the four days on which the participant [adult] should collect food and beverage samples.
- 4.2.15 The staff will place the instructions in a notebook and leave the notebook with the participant.
- 4.2.16 The staff will provide positive encouragement, suggesting to the participant [adult] that they will be able to do a good job, and to ask any questions they may have.
- 4.2.17 If necessary, the staff will provide additional instruction to improve participant [adult] understanding of the procedures.

4.3 Instructions for Completing the Food Diary

- 4.3.1* The staff will train the participant how to use the food diary and food diary followup questionnaire (Appendices A and B).
- 4.3.2 The staff will verbally read through the instructions and an example food diary with the participant [adult] (Figure 2).
- 4.3.3 The staff will answer any participant [adult] questions.
- 4.3.4 The staff will ask probing questions to gauge whether the participant [adult] understands the instructions.
- 4.3.5 If necessary, the staff will provide additional instruction to improve participant [adult] understanding of the procedures.

- 4.3.6 The staff will provide positive encouragement, suggesting to the participant [adult] that they will be able to do a good job, and to ask any questions they may have.
- 4.3.7 The staff will write down, or affix a label listing the participant ID code to each of the four food diaries and to the food diary followup questionnaire. Write down the name of the collection day on the front of each food diary.
- 4.3.8 Ask the participant [adult] whether they understand how to fill out the diary and the days on which we want them to collect samples.
- 4.3.9 The staff will leave the food diaries, food collection instructions, and a pencil with the participant [adult] in a notebook or on a clipboard.

5.0 FOOD DIARY AND FOLLOWUP QUESTIONNAIRE REVIEW

- 5.1* During each visit with the participant [adult] that includes retrieval of the dietary samples, the 24-Hour Food Diary will be reviewed, and the Food Diary Followup Questionnaire (Appendix B) will be reviewed.

5.2 24-Hour Food Diary Review

- 5.2.1 The staff will review the food diary and complete the Followup Questionnaire with the participant [adult] before collecting the foods from the participant [adult].
- 5.2.2 During or after the review the staff will examine each solid food, while still in the collection bag, to make sure it matches what is written on the food diary and the necessary level of detail has been recorded.
- 5.2.3 The level of detail required for food and beverage descriptions must be suitable for assigning the item to FDA's Total Diet Study listing. (The field technician will read and be familiar with this list before performing diary reviews).

5.2.4 For beverages, make sure an approximate amount consumed has been listed by the participant. Ask the participant to estimate the volume of each beverage consumed by comparison to the standard cup. Record the participant selection in the portion size column in grams. Also, make sure that the necessary level of detail has been recorded (see 5.2.3).

5.2.5 After all of the foods on the list have been examined, ask the participant whether, to the best of their knowledge, any of the foods were prepared by cooking or pre-soaking with tap water from their home. Give the following examples and record the code on the diary food line under the cooking heading.

01 = food boiled in tap water from home

02 = food pre-soaked with tap water from home

03 = beverage or drinking water prepared with tap water from home

5.2.6 After all of the foods on the list have been examined, ask the participant whether, to the best of their knowledge, any of the foods came from sources other than food stores, restaurants or cafeterias. Give the following examples (and record the code next to the indicated foods on the diary):

21 = participant's home garden or farm

22 = friend's, neighbors's, or relative's home garden or farm

23 = roadside stand or market

24 = food caught or hunted by participant, participant's family, friend, neighbor, or relative.

5.3 Food Diary Followup Questionnaire

5.3.1* The Food Diary Followup Questionnaire is self-administered by the participant. If the participant has difficulty reading, or has questions, use 5.3.2 to 5.3.4 as guidance.

5.3.2 For questions 1 through 10, the participant may use other names for the meals and may eat meals at non-standard times. Fill in the information for each meal as reported by the participant under the most appropriate meal listing. The main point is that there be a correspondence between the meal listed in the Food Diary Followup Questionnaire.

- 5.3.3 For questions 3, 6, and 9, if the participant asks for guidance about the word "like", use the example "the same main dish or food and one or more similar side dishes."
- 5.3.4 For question 10, do not ask with an accusatory or negative connotation; participant honesty is required for reliable information.

6.0 STAFF PICK-UP OF FOODS AND BEVERAGES

6.1 Food and beverage samples collected by the participants will be picked up by the research staff according to the schedule in Section 2.7.

6.2 Weighing and Compositing Solid Foods

- 6.2.1 After completing the 24-Hour Food Diary review and the Food Diary Followup Questionnaire, the solid foods should be individually weighed and composited together in a 4-L bottle. This operation may be performed at the home, but will usually be performed at the field laboratory.
- 6.2.2 Place the Mettler BD-6000 balance on a stable surface and turn on.
- 6.2.3 Zero the balance.
- 6.2.4 Identify the individual solid foods from one participant collection day and assemble them near the balance.
- 6.2.5 Place the 4-L bottle on the balance pan. Tare the balance with the electronic tare feature.
- 6.2.6 Transfer the food from one bag to the 4-L bottle. A plastic spoon may be used to assist the transfer. It may be necessary to remove inedible portions before weighing.
- 6.2.7 Read the weight to the nearest gram.
- 6.2.8 Record the weight of the food, in grams, in the portion size column on the 24-Hour Food Diary.
- 6.2.9 Repeat steps 6.2.5 to 6.2.8 for each solid food from one participant collection day.
- 6.2.10 Cap the 4-L bottle tightly. Make sure the bottle has a sample code (with bar code) affixed to the side.

- 6.2.11 Zero the Mettler BD-6000 balance.
- 6.2.12 Place the 4-L food bottle on the balance and read the weight to the nearest gram.
- 6.2.13 Subtract the average weight of a 4-L bottle.
- 6.2.14 Record the total weight of the solid food composite in the sample collection record for the day that the foods were collected by the participant.
- 6.2.15 Enter the sample code into the sample collection record for the day that the foods were collected by the participant.

6.3 Weighing Beverage Composite Samples

- 6.3.1 After completing the individual and composite solid food weighing, the beverage composite sample should be weighed. (This operation may be performed at the home, but will usually be performed at the field laboratory.)
- 6.3.2 The participant should have added all beverages directly to a 4-L bottle during collection. If there are any separate beverages, add them to the bottle now.
- 6.3.3 Zero the Mettler BD-6000 balance.
- 6.3.4 Place the 4-L beverage bottle on the balance and read the weight to the nearest gram.
- 6.3.5 Subtract the average weight of a 4-L bottle.
- 6.3.6 Record the total weight of the beverage in the sample collection record for the day that the beverages were collected by the participant.
- 6.3.7 Make sure that the beverage bottle has a sample code (bar code) affixed to the side of the bottle.
- 6.3.8 Enter the sample code into the sample collection record for the day that the beverages were collected by the participant.

7.0 SAMPLE STORAGE AND SHIPMENT

7.1 Sample Field Storage

- 7.1.1* Food and beverage samples may be stored either in a freezer, refrigerator, or a cooler at the field laboratory, trailer, or hotel room.

7.1.2 If samples are stored in a refrigerator, the temperature should be from 1EC to 6EC.

7.1.3 If samples are stored in coolers, they should be stored on water ice (not dry ice).

7.2 Shipping Food and Beverage Samples

7.2.1 It is desirable to ship the samples within three days of collection. Samples must be shipped within six days of collection.

7.2.2 Put electrical tape around the food composite and beverage composite bottle lids to keep the caps from loosening during shipment.

7.2.3 Enter the shippers ID number and shipment date in the sample shipping record.

7.2.4 Print a paper copy of the sample custody record.

7.2.5 Put the bottles in one or more insulated shipping coolers with sufficient ice packs to keep the samples cool for 24 hours. (Note: the samples must already be at 6EC or less before packing).

7.2.6 Put the sample custody record for each sample in the correct shipping container.

7.2.7 Ship the food and beverage samples by overnight air express to the FDA Kansas City Total Diet Study Laboratory.

7.2.8 Fax or mail a copy of the shipping summary sheet to EPA-Cincinnati.

8.0 QC PROCEDURES

8.1 Sample Code

8.1.1 A unique sample code must be assigned to each 4-L sample bottle.

8.1.2 The sample container must have a label with a sample code identical to the code on the sample collection record.

8.2 Sample Custody

8.2.1 Complete the sample collection information in the electronic sample collection record when the sample is collected. The information needed in the sample collection record is presented in Figure 2.

- 8.2.2 Enter the collector ID and date collected in the appropriate fields in the collection record.
- 8.2.3 Enter the shipper ID and the date shipped in the appropriate fields in the shipper record.
- 8.2.4 Print a copy of the sample custody record prior to shipping the sample and enclose the original sample custody record with the sample as it is shipped.

8.3 Quality Control Samples

8.3.1 Field Blanks

- 8.3.1.1 Field blanks are prepared to assess sample contamination associated with sample shipping, storage and handling.
- 8.3.1.2 Field blanks are prepared for a small percentage of the study homes to be defined in the QSIP.
- 8.3.1.3 Field blanks are prepared in the laboratory by adding contaminant-free water to a set of sample collection containers.
- 8.3.1.4 Field blanks are shipped to the field site then taken to a participants home and treated as a sample through storage and shipment to the analysis laboratory.

8.3.2 Collocated Sample Collection

- 8.3.2.1 Collocated samples will not be collected.

8.3.3 Field Controls

- 8.3.3.1 Field controls will not be prepared.

8.4 Balance Calibration Check

- 8.4.1 A balance calibration check will be performed in the field laboratory or staging area on each day of balance use.
- 8.4.2 The balance will be turned on and electronically tared.
- 8.4.3 An ASTM Class 1 100 g weight will be weighed. The allowable tolerance is 100 ± 2 g.
- 8.4.4 An ASTM Class 1 100 g weight will be weighed. The allowable tolerance is 1000 ± 20 g.

- 8.4.5 Record the calibration weighing results in the field notebook.
- 8.4.6 If either of the weighings is outside of the tolerance range repeat both weighings. If the balance is still outside of either range perform the following:
 - a. note the out-of-tolerance result in the notebook
 - b. proceed with all dietary collection activities
 - c. contact the field supervisor to determine the correct course of action.

HOW TO COLLECT FOODS AND BEVERAGES

WHAT WE WANT YOU TO COLLECT

- 1) Please prepare and collect a second portion (as close as possible to the exact amount) of every food or beverage you eat at every meal, snack, or any other time on the collection days.
- 2) This does include drinking water and nonprescription vitamins.
- 3) This does not include prescription vitamins, medicines, chewing gum, toothpaste, or any other non-edible item.
- 4) Please eat the same foods you would have eaten if we were not here.

WHEN WE WANT YOU TO COLLECT THE FOOD

- 1) Please collect the foods and beverages eaten from midnight to midnight on each of the following four days:

- 2) Foods and beverages collected on one day should be kept separate from those collected on the other days.

HOW TO COLLECT THE FOOD

- 1) At every meal or snack, prepare a second plate with the same type and amounts of food you have added to your plate. Include all spices, sauces, butter, salt, ketchup, etc. Prepare a second cup, glass, or other container with the same amount of beverage that you will drink. If you can, please use the same kind of plates, cups, and glasses for the food collection as used for the meal.
- 2) If you get more servings of food or beverage during your meal, add the same amount to the second plate, cup, or glass. Use more plates, cups, or glasses if necessary.
- 3) At the end of your meal, remove from the second plate, cup or glass the same amount of leftovers on the plate, cup, or glass you used for your meal or snack.
- 4) If you are able, remove any inedible portions, like bones or pits, from foods on the second plate. (DON'T do this if you might get cut with a knife).
- 5) Add each kind of solid food to a separate zipper-lock bag. Seal each bag. Place all of the bags in the cooler.
- 6) Add all beverages to the plastic bottle in the cooler. Frozen items that could melt, like ice cream or popsicles, should also be put into the plastic bottle.
- 7) Close the jar lid and put the jar back in the cooler.

Figure 1. Participant dietary sample collection instructions.

SAMPLE TYPE:	Food or Beverage
SAMPLE CODE:	Same as label on container
PARTICIPANT ID:	Three digit participant i.d. number
COLLECTION DAY:	Sequential collection day (1,2,3,4)
COLLECTION DATE:	Date sample collected
COLLECTION TIME:	Default=00:01/24:00
PICKUP DATE:	Date sample picked up
COLLECTOR ID:	ID number of person that picked sample up
COMMENT CODE:	Default=N, change to Y if comment below
SHIPPING DATE:	Date sample shipped to analysis lab
SHIPPING TO LOCATION:	Analysis lab, default = FDA/KC
SHIPPER ID:	ID number for person responsible for shipment
COMMENT:	Add text for any comments associated with this particular sample
TOTAL WEIGHT:	Total weight of food or beverage daily
NUMBER CONTAINERS:	Number of containers holding each daily sample
HOMOGENIZATION:	Daily or 4-day; directs processing for analytical lab

Figure 2. Information to be included on the sample collection/custody record.

TABLE 1. TARGET ANALYTES FOR NHEXAS PHASE I DIETARY SAMPLES

Primary	Secondary	Others of Interest
Lead	Cadmium	Aluminum
Arsenic	Chromium	Barium
		Manganese
		Selenium
		Nickel

APPENDIX A

OMB Clearance #: 2080-0053
Expires: 7/31/98

NATIONAL HUMAN EXPOSURE ASSESSMENT SURVEY

24-HOUR FOOD DIARY

Participant Identification Number

(Record ID Here)

Public reporting burden for this collection of information is estimated to average 1 hour, and to require 0 hours recordkeeping. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Chief, Information Policy Branch, 2136, U.S. Environmental Protection Agency, 401 M St., S.W., Washington, D.C. 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

HOW TO USE THE 24-HOUR FOOD DIARY

FOR PARTICIPANTS LESS THAN 10 YEARS OLD, A PARENT OR GUARDIAN SHOULD PROVIDE ASSISTANCE, AS NEEDED, IN COMPLETING THE FOOD DIARY.

INSTRUCTIONS

- (1) We want you to list all of the foods, beverages, drinking water, and non-prescription medicines or vitamins you or this child eat(s) or drink(s) from midnight to midnight.
- (2) Every time you or this child eat(s), write down the name of the meal (breakfast, lunch, dinner, snack).
- (3) Then write down on a separate line the (brand/generic) name of every food, beverage, or non-prescription medicine or vitamin that you or this child eat(s) or drink(s).
- (4) For food mixtures such as stews or potpies, please write down the major kinds of foods in the mixture. Use the lines immediately below the one on which the name of the mixture is entered. In food mixtures, the component ingredients can be identified, for example—the type of meat in a stew—beef, lamb, venison, etc.
- (5) For beverages (including water), write down how many cups or glasses that you or this child drink(s)). Estimate equivalent measures of water or other beverages taken from a fountain or large container. Don't forget your second and third cups of coffee or tea, or refills at a restaurant.

[illegible]

CONTINUE ON BACK IF YOU HAVE MORE FOODS TO LIST.

NHexas Food Diary Follow-up - Day 1

[illegible]

[illegible]

CONTINUE ON BACK IF YOU HAVE MORE FOODS TO LIST.

NHexas Food Diary Follow-Up - Day 2

[illegible]

[illegible]

CONTINUE ON BACK IF YOU HAVE MORE FOODS TO LIST.

FOR
INTERVIEWER
USE ONLY

[illegible]

NHexas Food Diary Follow-up - Day 4

[illegible]

CONTINUE ON BACK IF YOU HAVE MORE FOODS TO LIST.

NHexas Food Diary Follow-up - Day 4

[illegible]

APPENDIX B

NATIONAL HUMAN EXPOSURE ASSESSMENT SURVEY

FOOD DIARY FOLLOWUP

Participant Identification Number

(Record ID Here)

Public reporting burden for this collection of information is estimated to average 1 hour, and to require 0 hours recordkeeping. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Chief, Information Policy Branch, 2136, U.S. Environmental Protection Agency, 401 M St., S.W., Washington, D.C. 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

August 26, 1996

COMPLETE ON SAME DAY SAMPLES ARE COLLECTED		DAY: DATE:	1 / /	2 / /	3 / /	4 / /
FD1.	Was breakfast eaten? (OBSERVE FROM DIARY AND CIRCLE "Y" OR "N". IF "N," GO TO FD4.)		Y N	Y N	Y N	Y N
FD2.	Where was (your/his/her) breakfast prepared? (READ CHOICES.) a. Home b. Restaurant c. Work site or work cafeteria d. School or day care center e. Other		a b c d e	a b c d e	a b c d e	a b c d e
FD3.	How often (do you/does he/does she) eat a breakfast like the one you described in the diary? (READ CHOICES AND ENTER ONE RESPONSE LETTER FOR EACH DAY OF FOOD COLLECTION.) a. 4 to 7 times per week b. 1 to 3 times per week c. 1 to 3 times per month d. Less than once a month		-----	-----	-----	-----
FD4.	Was lunch eaten? (OBSERVE FROM DIARY AND CIRCLE "Y" OR "N". IF "N," GO TO FD7.)		Y N	Y N	Y N	Y N
FD5.	Where was (your/his/her) lunch prepared? (READ CHOICES.) a. Home b. Restaurant c. Work site or work cafeteria d. School or day care e. Other		a b c d e	a b c d e	a b c d e	a b c d e
FD6.	How often (do you/does he/does she) eat a lunch like the one you described in the diary? (READ CHOICES AND ENTER ONE RESPONSE LETTER FOR EACH DAY OF FOOD COLLECTION.) a. 4 to 7 times per week b. 1 to 3 times per week c. 1 to 3 times per month d. Less than once a month		-----	-----	-----	-----
FD7.	Was dinner eaten? (OBSERVE FROM DIARY AND CIRCLE "Y" OR "N". IF "N," GO TO FD10.)		Y N	Y N	Y N	Y N
FD8.	Where was (your/his/her) dinner prepared? (READ CHOICES.) a. Home b. Restaurant c. Work site or work cafeteria d. School or day care f. Other		a b c d e	a b c d e	a b c d e	a b c d e

COMPLETE ON SAME DAY SAMPLES ARE COLLECTED	DAY: DATE:	1 / /	2 / /	3 / /	4 / /
FD9. How often (do you/does he/does she) eat a dinner like the one you described in the diary? (READ CHOICES AND ENTER ONE RESPONSE LETTER FOR EACH DAY OF FOOD COLLECTION.) a. 4 to 7 times per week b. 1 to 3 times per week c. 1 to 3 times per month d. Less than once a month					
FD10. Please think back. Were there any foods or beverages that you could not or did not collect for use? (LIST IDENTITY, SOURCE, AND AMOUNT OF EACH MISSING FOOD AND THE DAY IT WAS NOT COLLECTED.) a. At Breakfast _____ _____ _____ _____ b. At Lunch _____ _____ _____ _____ c. At Dinner _____ _____ _____ _____ d. For Snacks - include beverages such as coffee or tea _____ _____ _____					

COMPLETE ON SAME DAY SAMPLES ARE COLLECTED	DAY: DATE:	1 / /	2 / /	3 / /	4 / /
FD11. Did (you/he/she), for any reason, eat more or less food than usual? (READ CHOICES AND ENTER a b, OR c .) a. More food than usual 6 CONTINUE b. Less food than usual 6 CONTINUE c. Same as usual 6 GO TO FD13		-----	-----	-----	-----
FD12. Because of: (READ CHOICES AND CIRCLE ALL THAT APPLY.) a. Travel or vacation b. Weight control diet c. Illness or medical condition d. Work or school schedule e. Entertainment or social occasion f. Because of the food collection study g. Ease/quickness of preparation h. Other Day 1: Day 2: Day 3: Day 4:		a b c d e f g h	a b c d e f g h	a b c d e f g h	a b c d e f g h
FD13. Did (you/he/she), for any reason, eat different foods than (your/his/her) usual diet? (CIRCLE "Y" OR "N")		Y N	Y N	Y N	Y N
FD14. If yes, was that because of: (READ CHOICES AND CIRCLE ALL THAT APPLY.) a. Travel or vacation b. Weight control diet c. Illness or medical condition d. Work or school schedule e. Entertainment or social occasion f. Because of the food collection study g. Ease/quickness of preparation h. Other: Day 1: Day 2: Day 3: Day 4:		a b c d e f g h	a b c d e f g h	a b c d e f g h	a b c d e f g h

EXPLANATION OF REVISIONS

Revisions Made 4/96; Denoted by *

Sample Storage

It was determined that food samples may be stored in a freezer, allowing use of more of our total storage capacity in the mobile staging areas. Sections 2.5 and 7.1.1 were revised to incorporate this change.

Food Diary Followup Questionnaire

It was decided to have the participant self-administer the Food Diary Followup Questionnaire. The staff may administer the questionnaire if the participant has difficulty reading. Sections 1.0, 2.1, 2.3.2, 2.7.2, 4.3.1, 5.1, and 5.3 were revised to incorporate this change.

Collection Period

The OMB requested that RTI offer participants that refused to collect four days of dietary samples the opportunity to collect just three days instead. This option was included in Section 1.0.

Section 4.2.9

Some participants could take the \$60 food compensation payment and then not provide duplicate samples. Payments will now be split between the first and second visits to avoid this potential problem.

Survey Instruments

Current versions of the 24-Hour Food Diary and Food Diary Followup Questionnaire were used to replace the draft versions.