Appendix A - American Healthy Homes Survey II (AHHS II)
Field Sampling Protocols, Resident Questionnaire and Informed Consent

The AHHS II is a follow-up to the American Healthy Homes Survey (AHHS) conducted 2005-2006, and the National Survey of Lead and Allergens in Housing (NSLAH) conducted 1998-1999. Sponsored by the US Department of Housing and Urban Development (HUD) and the Environmental Protection Agency (EPA), it is aimed at monitoring changes in the level of health hazards in homes over time and in refining understanding of certain patterns identified in the AHHS and NSLAH. The design of the AHHS II is intended to maximize comparability of these surveys where appropriate (e.g., environmental sampling methodologies), while reflecting significant scientific and technological advances and evolution of the specific housing conditions of greatest interest to HUD.

The objectives, design, field operations and reporting requirements of the AHHS II are very similar to those to AHHS. Key differences are:

- Allergen sampling will not be conducted.
- Household dust and soil sampling for arsenic is not part of the design.
- Evaluation of the potential for unintentional injuries, such as from falls, fires, burns, electrical faults, carbon monoxide, etc., has been added.
- Air sampling for formaldehyde will be conducted.
- Sampling for lead in household water and lead service lines will be included.

Survey objectives will be addressed by collecting a wide range of data including demographic data and various environmental data, from a nationally representative sample of approximately 600 housing units (dwelling units) across the United States (data on 1,131 units were collected in AHHS).

The dwelling units (DUs) have been randomly selected from 58 Primary Sampling Units (PSUs). For AHHS II, PSUs are counties or groups of contiguous counties with a minimum population of 15,000 in the 2000 Census and an end-to-end distance generally not exceeding 100 miles. Within each PSU between 4 and 12 smaller geographical areas called segments have been selected. Most PSUs consist of 5 segments.

At the start of the study, a total of 16-20 DUs in each PSU will be released for recruitment. Interviewers will attempt to recruit all released DUs. Each DU recruited will be scheduled by the Interviewer to be tested. A two-person team will do testing of each recruited DU: the Interviewer who recruited the DU and a licensed lead risk assessor referred to in this study as a Technician. Testing will include a resident questionnaire and collection of a wide variety of measurements. A summary of the environmental sampling is provided in Table INTRO-1. A summary of the analytical methods used to analyze the collected samples is presented in Table INTRO-2.

Table INTRO-1. Summary of Environmental Sampling						
ID[a]	**Information Captured or Target Analyte**	**Data Collection Method or Sampling Media**	**Tests or Samples per DU**	**Special Handling Requirements**	**Maximum Media Count**	**Notes**
Collected by Interviewer						
I2/I3	Lead in water (incremental)	Bulk 1-liter	1	acidified at lab and wait >24 hrs before analysis	600	wide mouth LDPE bottle
I6	Mold by PCR	Vacuum dust (resident vacuum bag)	0-1	none	600	
I8	Mold (by PCR)	Vacuum dust	1	none	600	
I9	Mold (by PCR)	Dust wipe (Swiffer™)	1	frozen after collection	116	2 per PSU (58 PSUs)
Collected by Technician						
T1	Formaldehyde in air	Absorption tube	1 plus 1 blank/PSU	frozen after collection	716	Count includes 1 spiked QC/PSU
T2	Lead based paint	XRF	>40 readings plus QC	not applicable	not applicable	Testing of water supply line for Pb included here, if it can be accessed.
T3	Lead in dust	Dust wipe	9 plus 1 blank	none	6600	Count includes 10% QC
T4	Pesticides	Dust wipe	2 plus 1 blank/PSU	frozen after collection	1258	
T5	Lead in soil	Soil	0 to 6	dried at room temperature and sieved to <2 mm, sub-sampled, then sent to EPA	2640	Count assumes mean of 4 samples/DU and, for lead in soil, includes 10% QC.
	Bioavailable lead			sieved to <250 µm	2400	
[a]Identifies the protocol containing detailed instructions for the tests or sample collection.						

Table INTRO-2. Summary of Analytical Methods

ID[a]	Information Captured or Target Analyte	Sample Preparation	Analytical Method	Detection Limits
Collected by Interviewer				
I2/I3	*Lead in water (incremental)*	Acidified at lab to pH<2 with 1:1 nitric acid and wait >24 hrs before analysis	*SM[b] 3113B (GFAA) or ICP/MS*	*Pb: 3 µg/L*
I6	Mold by PCR	Sieved to 300 µm and extracted in neutral buffer and shaken in the bead beater to release the DNA. The mold DNA is purified using the DNA-EZ extraction kit.	MSQPCR developed by EPA (US Patent No.6,387,652).	not defined
I8	Mold (by PCR)			
I9	Mold (by PCR)			
Collected by Technician				
T1	Formaldehyde in air	none	modified NIOSH 2016 (HPLC- UV detection)	0.12 ppb for 3-hour sample at 1.5LPM
T2	Lead based paint by XRF	none	Direct field measurement using field portable XRF	Meets HUD EPA PCS requirements
T3	Lead in dust	EPA 3050B-M	EPA 6010C (ICP)	Pb: 20 mg/kg (RL)
T4	Pesticides	Extracted in dichloromethane and concentrated using solid-phase extraction cartridge[b]	GCMS[b]	variable depending on pesticide
T5	Lead in soil	EPA 3050B-M	EPA 6010C (ICP)	Pb: 20 mg/kg (RL)
	Bioavailable lead	EPA Method 9200.2-86: Buffered leach (pH 1.5) mimicking stomach acid conditions	EPA Method 3051A	not defined

[a]Identifies the protocol containing detailed instructions for the tests or sample collection.
[b]Stout, D.M., et.al.; American Healthy Homes Survey A National Study of Residential Pesticides Measured from Floor Wipes; Environ. Sci. Technol., **2009**, 43, 4293-4300

AHHS II
FIELD SAMPLING PROTOCOLS

LIST OF GENERAL (OFFICE) STUDY PROTOCOLS

LIST OF INTERVIEWER PROTOCOLS

LIST OF INTERVIEWER PROTOCOLS - continued

AHHS II
FIELD SAMPLING PROTOCOLS

LIST OF FIELD TECHNICIAN PROTOCOLS

G2- DU RELEASE TO INTERVIEWERS

Staff Involved: Assigned QT Office Staff

Overview: The average number of DUs to be recruited and completed is 10.3 per PSU. Initially, for each PSU, a base draw of 4 dwelling units (DUs) in each segment (typically 16-20 DUs/PSU) will be released to the Interviewer for recruitment. These DUs are given a SAMP TYPE designation of M1, M2, M3, and M4. An additional draw of 2 DUs in each segment will be held in reserve. These DUs are given a SAMP TYPE designation of R1 and R2. The Interviewer will follow the full recruiting protocol for each DU released to him/her. At least four attempts will be made to contact a resident at each DU. Attempts will be made at different times of the day and on different days of the week. For example, if the first contact during the day on a weekday is unsuccessful, the second attempt might be made on a weekday evening, followed by a third attempt on the weekend, etc. The recruiting effort for a DU will be considered complete only if contact is made and a data collection visit is agreed to or refused, or if four unsuccessful attempts are made to contact a resident.

Data Recording on: AHHS II Recruitment Tracking Spreadsheet

G2.1 INTRODUCTIONQuanTech headquarters staff will aid the recruiting in several ways:

1. **AHHS II Recruitment Tracking Spreadsheet**. An Excel workbook will be created and used at QuanTech headquarters (QT) to track all the recruiting and DU completion efforts as well as the general support efforts provided by staff at QT.
2. **Advance Letters.** QuanTech headquarters (QT) will *mail* an *Advance Letter* to each selected address about one week before the Interviewer arrives in the PSU. The *Advance Letter* explains the survey and the incentives for participation, and alerts the recipient to the pending visit from the Interviewer. Included with this letter is a token cash incentive of $1. These letters will be sent in Official HUD envelopes. The Interviewer will also hand a copy of the *Advance Letter* (as an example) to the resident when contact is made. If nobody is home when the Interviewer first visits a DU, and the home is not obviously vacant, an *Advance Letter- Hand Delivered* will be hung in a clear plastic *doorknob hanger* bag on the main entry door of the DU. This copy will explain that the Interviewer stopped by and will return soon.
3. **No Contact Letter**. If four attempts to contact a resident at a selected DU are unsuccessful, and for DUs where access is impossible, e.g., some gated communities or apartment buildings with a doorman[1], a *No Contact Letter* will be sent by Priority Mail. These letters will also be sent in Official HUD envelopes. The *No Contact Letter* elaborates on the importance of the survey and the incentives for participation and provides a toll-free number to call to schedule a visit.
4. **Refusal Letter**. Finally, in the event of a refusal, a *Refusal Letter* will be sent by sent by Priority Mail to the potential respondent. The *Refusal Letter* will reiterate the reasons for participating and the incentives for doing so, and will provide a toll-free number for the potential respondent to call.

There are two versions of each letter: one for longitudinal addresses and one for new addresses. The wording differences are minor.

[1] It should be noted, however, that experienced Interviewers are often successful in gaining entry into such restricted access communities.

G2.2 DU ID NUMBER ASSIGNMENTS

The DU ID to be used by the Interviewer and Technician combines 3 data fields shown on the *AHHS main and reserve sample DU addresses* list, and has the following format:

XXX-YYY-ZZ

Where XXX is the PSU ID identifier from the *AHHS Main and reserve sample DU addresses* list identifier; a number from 101 to 999
YYY is the AHHS SEGID identifier; a number from 001 to 999
ZZ is the SAMP TYPE identifier from the *AHHS Main and reserve sample DU addresses* list identifier, M1, M2, M3, or M4 for main sample draw and R1 or R2 for reserve sample draw.

G2.3 SAMPLE COLLECTION SUMMARY

Sample collection for the targeted analyses (see Table G3-3 in protocol G3) will be performed in All DUs. In AHHS II, a pesticide sample is to be collected in every DU, with an additional pesticide QC sample (field blank) collected in the first DU visited in each PSU (In AHHS I, pesticide samples were not collected in every DU). A Swiffer™ dust wipe sample for mold is to be collected in the first **two** DUs visited in each PSU, with an additional Swiffer™ QC dust wipe sample (field blank) collected in the first DU visited in each PSU.

G2.4 PSU SUMMARY SHEET

The *AHHS main and reserve sample DU addresses* listing provided to the Interviewer in the Recruitment Kit (A) contains both the main draw DUs and the reserve draw DUs. A PSU Summary Sheet (see form at the end of this protocol) is added to this information to specify the DUs that are to be recruited.

G2.5 ADJUSTMENTS TO RELEASED DUs FOR REALIZED RECRUITMENT RATE

QuanTech will attempt to complete data collection in all recruited DUs. However, it is expected that a small number of recruited DUs will not be completed (such as in the case of refusal to sign the informed consent, or a "mid-interview" refusal where the respondent decides to terminate the visit before data collection is complete). After approximately 20 PSUs have been completed, an evaluation of the response rate will be made. If the response rate for the first 20 PSUs is running low, QuanTech will release additional DUs from the reserve draws in the second 20 PSUs. The number of reserves released will be the number needed, based on the response rate for the first 20 PSUs, to bring the number of completed DUs in the first 40 PSUs up to the desired total of approximately 400 with high probability. Conversely, if the response rate is running high, a downward adjustment in the number of DUs released will be made. An additional response rate evaluation will be conducted after 40 PSUs are completed and adjustments made as needed.

G2.6 RELEASE PROCEDURE

1. **Verify DUs to be released**. Discuss with the Project Director which DUs are to be released to the Interviewers. These entries are also to be made in a master spreadsheet containing all the DU listings.
2. **Complete the PSU Summary Sheet.** Complete the PSU Summary Sheet and put it in the Recruiting Supplies Kit (A) ***ENVELOPE A - DU Listings*** containing the *AHHS main and reserve sample DU addresses* listings..
3. **Mail out Advance Letter**. One week before the start of recruiting at a given PSU, mail the *Advance Letter* containing the token $1 incentive to all released DUs. There are two categories of advance letters to be mailed: one for longitudinal addresses (those that were

included in the AHHS I) and one for new addresses (those not included in AHHS I). The master spreadsheet is configured to indicate which addresses belong to each category.

4. **Update Tracking Records**. Indicate, in the master spreadsheet containing the DU listings, the date the initial contact letters were sent and store this copy in the project records by PSU. Update the electronic version of the spreadsheet as time permits.

OMB No. xxxx-xxxx
expires: mm/dd/2018

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, DC 20410-3000

OFFICE OF LEAD HAZARD CONTROL
AND HEALTHY HOMES

Control No. xxxxxxxxx

<date>

Dear Sir or Madam:

Ten years ago, this home was in the first *American Healthy Homes Survey*. You may not have lived here then. We selected it again as one of only 600 homes for the second *American Healthy Homes Survey*. Each home stands for thousands more. **As an incentive to participate, you will receive a check for $130 upon completion of the survey in your home, a report on certain chemical and mold exposures, and safety hazards, in your home and, if you accept it, a report on lead paint hazards in your home.** Reports like these can cost hundreds of dollars.

We will test for:

- Lead in paint, dust and soil, that can harm young children.
- Lead in your water. We will ask you to collect a water sample for this test.
- Pesticide residues on floors.
- Formaldehyde, found in carpets, furniture or particle board.
- Mold in your home, whether you can see it or not.
- Safety hazards such as carbon monoxide; smoke detectors that don't work; electrical hazards; water that is too hot for children or the elderly; and, things that can cause trips and falls.

The survey will give you valuable information to protect your health and safety. It will also help the Government to understand how common these health and safety exposures are in the country. **Even if your home does not have any of these hazards, you are still giving valuable information to the study.**

The Department of Housing and Urban Development (HUD) and the Environmental Protection Agency (EPA) are funding this survey. **It is being conducted by QuanTech, a contractor.** In a few days, an interviewer from QuanTech will contact you. She or he will show you official ID and ask you some short, easy questions about you and your home. These questions will help see if your home can participate in the survey. For example, vacation homes are excluded from the study. If your home is eligible, we hope you will participate so that our results will be complete. Answering the questions is completely voluntary, and you may choose not to answer any question. Your answers, and other data collected in your home, will be kept private to the extent permitted by law under the Privacy Act of 1974. HUD and EPA will use the data only for statistical research and reports. We have enclosed a small token of appreciation as a way of saying thanks for your help.

If you have any questions or if you want to speak to a study representative at any time, please call Dr. David Cox, QuanTech, at 1-800-229-5220. We thank you in advance for your cooperation.

Sincerely,

Warren Friedman

Warren Friedman
Senior Advisor to the Director

This survey is a Federal program authorized under the Residential Lead-Based Paint Hazard Reduction Act and the National Environmental Policy Act.

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expires: mm/dd/2018

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Dear Sir or Madam:

Recently, an Interviewer stopped by your home concerning the second *American Healthy Homes Survey*. Because you were not available, I want to tell you a little more about the survey, why we need your participation, and how it will benefit you.

The purpose of the survey is to learn more about exposures in the home environment that may affect the health of families like yours. There is growing evidence that household exposure to substances such as lead (in paint, dust, soil and water), mold, pesticides and formaldehyde can make children and adults ill. The Department of Housing and Urban Development and the Environmental Protection Agency are jointly conducting a nationwide survey to improve our understanding of exposures to these substances in our home environments.

To better understand these exposures, we need to look at all types of homes. Everyone who participates helps to increase our knowledge. Your home was in the first *American Healthy Homes Survey* (although you may not have lived there then), and we would like to visit it again to see how things have changed in the last 10 years.

As an incentive to participate, you will receive a check for $130 upon completion of the survey in your home, a report on certain chemical and mold exposures, and safety hazards, in your home and, if you choose, a report on lead paint hazards in your home (reports like these can cost hundreds of dollars).

We understand that your life is quite busy but we hope you will find the time to participate in this important study. We want to ask you a few questions about your household, collect some samples of air, water, dust and soil, and measure painted surfaces in your home. We will schedule your participation at your convenience.

Your answers, and other data collected in your home, will be kept private to the extent permitted by law under the Privacy Act of 1974. HUD and EPA will use the data only for statistical research and reports.

If you have any questions about the study, or would like to arrange a specific time for an Interviewer to visit with you, please call Daemian Schreiber, on our survey contract team, at 1-800-229-5220. We thank you in advance for your cooperation with this important health study.

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Dear Sir or Madam:

Recently, an Interviewer stopped by your home concerning the second *American Healthy Homes Survey*. I would like to tell you a little more about the survey, and urge you to participate. This is how it will benefit you.

- **You will receive a report on certain chemical and mold exposures, and safety hazards, in your home and, if you choose, a report on lead paint hazards in your home (reports like these can cost hundreds of dollars).**
- **As an incentive to participate, you will receive a check for $130 upon completion of the survey in your home.**

We need to look at all types of homes. We need your home. Whether you have young children living with you or not, everyone who participates helps to increase what we know about exposures to lead, certain chemicals and mold in our home environments. Your home participated in the first *American Healthy Homes Survey*, although you may not have lived there then. We would like to visit again to see how things have changed in the last 10 years.

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<date>

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- **You will receive a report on certain chemical and mold exposures, and safety hazards, in your home and, if you choose, a report on lead paint hazards in your home (reports like these can cost hundreds of dollars).**

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PSU SUMMARY SHEET

PSU ID

Dwelling units to recruit:

[X] If this box is checked Recruit all DUs with SAMP TYPE = M1, M2, M3, and M4

[ ] If this box is checked, also recruit all DUs with SAMP TYPE = R1

[ ] If this box is checked, also recruit all DUs with SAMP TYPE = R2

Advance Letters to Deliver by Hand

The following list of DU IDs have unacceptable mailing addresses.
Deliver a hand-delivered Advance letter to these DUs if they can be located.

New Advance Letters*	**Longitudinal Advance Letters***

Other Instructions

*Envelopes with: a green dot hold **NEW** letters; a red dot hold **longitudinal** letters

G6-SUMMARY OF TESTING IN EACH DU

Staff Involved: Assigned Interviewer & Field Technician

A summary of the measurements to be conducted in each DU is provided in the Table below

Table G6-1. Estimated Division of Labor for Testing in Each DU

Onsite Time (Minutes)	Interviewer	Technician	Samples Collected
1-10	I3- Conduct Introduction and obtain Informed Consent	Participate in Introduction T2- LBP testing - Initiate minimum of 5 minute warm up of XRF.	Interviewer: 1 drinking water sample (after informed consent)
11-15	I4- Conduct Room Inventory - Select rooms for testing - Pass copy to Technician. - Do quick walk-through with Technician to communicate agreement on the rooms to be tested. -Retrieve First Draw water sample from resident	T1- Set up and initiate collection of formaldehyde in air sample. T2 - LBP testing - test incoming drinking water service line.	Technician: 1 formaldehyde sample - collection continues until end of interior onsite activities by the Interviewer
16-190	I5- Administer Resident Questionnaire I6- Conduct Interior Walkthrough observations, collect vacuum bag sample I7-Conduct Room Observation and Building Moisture measurements I8- Collect vacuum dust samples for fungi I9- Collect dust wipe Swiffer™ sample for fungi. I10- Collect flushed water sample	T2- Conduct LBP testing of interior rooms T3- Collect dust wipe samples for Pb T4- Collect wipe samples for pesticides T1 - Complete collection of formaldehyde in air samples when Interviewer has completed all their indoor activities.	Interviewer: 0-1 vacuum bag 1 vacuum dust 0-2 dust wipe Swiffer™ Technician: 10 lead dust wipe 2-3 pesticide wipe 0-6 lead soil 1 formaldehyde air
191-210	I11- Conduct Exterior Walkthrough observations – general building condition observations and exterior temperature/humidity measurements. Perform collected sample and data review - store and package samples –conduct closeout with resident	T5- Collect Soil Samples for Pb T2- Conduct LBP testing of exterior Perform collected sample and data review - store and package samples –conduct closeout with resident	Technician: 0-6 lead soil
	(offsite) Perform daily off site activities (sample and data handling)		
	(offsite) Perform end-of-PSU activities (equipment, leftover supplies, data and sample shipments)		

I# and T# numbers above refer to specific written protocols for conduct of the tasks.

G7 - TELEPHONE VERIFICATION OF DATA COLLECTION

Staff Involved: Assigned QT Office Staff

Overview: A random sub-sample (10%) of the completed households will be contacted by telephone to verify the team's activities and conduct, and to validate selected information from the data forms. Timely verification is needed to ensure that resident responses are not hampered by memory loss. Therefore, these calls will be made on a PSU basis within 2 weeks after completing testing in a PSU.
Data Recording on: Telephone Verification Log

Procedure

1. For each PSU that is completed, place the list of the completed DUs ID numbers into an Excel spreadsheet (one per row).
2. Add a random number in an adjacent column next to each DU entry, sort the entire list by the random number, print the list, and label it Telephone Verification QC checklist.
3. Calculate the number of DUs to be checked (10%), round up to the nearest whole number, and highlight the number of DUs to be checked starting from the top of the printed list.
4. For each DU to be checked pull the file containing all the field records for that DU. If the DU selected does not have a resident telephone number, indicate this on the printed list and highlight the next available DU entry in the list as a replacement.
5. For each DU to be checked call the resident and verify the information shown on the Telephone Verification Log:
6. For each discrepancy found, involve the QA officer and conduct an investigation to determine the appropriate actions to be taken.

Telephone Verification Log

OMB# xxxx-xxxx
Expires: mm/dd/2018

DU #		Date Recruited:		Date Sampled:	
Resident name			Telephone No.		
Caller Name			Time called:		
Caller Name			Time called:		
Caller Name			Time called:		
Caller Name			Time called:		

INTRODUCTION: Hello, my name is (INTERVIEWER NAME). I am with QuanTech, a company that is doing the American Healthy Homes Survey for the United States Department of Housing and Urban Development (HUD) and the United States Environmental Protection Agency (EPA). We are doing a follow up on a recent visit to your house by our field staff and would like to speak to (RESIDENT NAME) to ask a few questions about the survey.

IF THE RESIDENT is not available, try to find out a convenient time to return a call and record below:
_____

Q1. Do you remember to visit by our Interviewer and Technician?

YES 1
NO ..... 2 ➔ (SKIP TO E1)
DON'T KNOW..... 8 ➔ (See Note below)

IF THE RESIDENT does not know, try prompting with the dates. IF the answer is still no, skip to E1

Q2. The house our staff visited was your primary residence. Is this correct?

YES 1
NO 2

Q3. Can you verify for us what year was your home/apartment visited by our staff was built?

YEAR OF CONSTRUCTION.....|___|___|___|___|
DON'T KNOW..... 8

Q4. Did you find the survey experience helpful or informative?

YES 1
NO 2
Summarize answers here: _____
_____
_____
_____

Q5. Do you have any questions regarding the study?

YES 1
NO 2
Summarize questions & answers here: _____
_____
_____
_____

E1. Thank you very much for your time and participation.

G8 - ISSUANCE OF PARTICIPANT REPORTS

Staff Involved: Assigned QT Office Staff

Overview: Following the completion of data analysis, a participant report is created and mailed to the participant. There are two general types of reports: a Hazards-Found Report and a Hazards-Not-Found Report (see attached examples). Each of these general reports can contain either a Lead Hazards Report section or a Safety Hazards Report section or both (the examples contain both). Participants indicate on the Informed Consent form which of these (lead hazards and/or safety hazards) reports they which to receive and whether or not they opt out of receiving a lead hazards report. If lead hazards are found, the participant will automatically be sent at least the lead hazards portion of the Hazards-Found Report unless they specifically decline to receive the lead hazards report (see the Informed consent form).

Assigned statistical staff will create a listing of relevant reporting data (by DU) with a summary of the Informed Consent responses specifying the reports to be sent. Using these listings, reports will be generated and mailed to the participants.

Data Recording on: **Informed consent tabulations from completed DUs**

Examples of reports are provided on the following pages.

<DATE>

<RESPONDENT NAME>
<RESPONDENT ADDRESS>

RE: American Healthy Homes Survey - Results of Lead Testing and Observation of Selected Safety Features

Dear <RESPONDENT NAME>,
Thank you for participating in the American Health Homes Survey, sponsored by the U.S. Department of Housing and Urban Development (HUD) and the U.S. Environmental Protection Agency (EPA). We conducted environmental sampling and a review of safety hazards in your home on <DATE>. You indicated at that time that you would like the results on lead**.**

Lead Testing Results

We tested several locations in your home for the presence of lead in paint, dust, and soil. We took measurements from these locations in randomly selected areas inside and outside of the home. Some of these tested locations had levels of lead at or above the EPA's standards for lead hazards in homes and childcare facilities. Table 1 gives the lead levels for the sampled surfaces that were found to have lead paint, dust or soil hazards. Please note that during this survey, not all rooms or all surfaces were tested.

Studies have shown that lead levels in paint chips (indicating deteriorated paint in poor condition), house dust or soil at or above the EPA's standards are hazardous because they present an increased risk that children under six years of age could develop elevated blood lead levels (10 or more micrograms of lead per deciliter of blood). Children in this age range are more susceptible to lead poisoning than are older children or adults. This is because their bones and nervous systems are developing, and, for example, they may crawl and play on the floor or on bare soil where they may be exposed to lead dust, paint chips, or contaminated soil through normal behavior, such as putting their hands and other objects in their mouths. Also, pregnant women can transmit lead to the fetus. If this report shows the presence of *deteriorated* lead paint, or elevated lead levels in dust or soil, children under the age of 6 and pregnant women should see their health care provider. However, if the only lead found is in *intact* paint or at lower levels in dust or soil, this is not considered a hazard.

The tests we performed in your home were conducted for purposes of obtaining statistics for the nation, and do not constitute the kind of thorough assessment that you can obtain from an inspection for lead-based paint or from a lead risk assessment by a certified lead-based paint inspector or risk assessor. If you would like additional information about lead in your home, we recommend that you consider having a lead hazard inspection and/or a lead risk assessment performed. You can get a list of certified lead inspectors and risk assessors by contacting your state government

AMERICAN HEALTHY HOMES SURVEY – LEAD HAZARD RESULTS (EXAMPLE)

<Name>

<Address>

MEASUREMENTS AT OR ABOVE EPA STANDARDS

Lead at or above EPA Standard in Intact Paint *(This is not considered a hazard under the EPA standard.)*

Room Location	**Surface Tested**	**Lead Level Found** *(milligrams of lead per square centimeter of surface)*	**EPA Standard for Lead-Based Paint** *(milligrams of lead per square centimeter of surface)*
Bedroom	Wall	1.3	1.0
Kitchen	Window	2.4	1.0
Exterior North Wall	Siding	1.0	1.0

Lead at or above EPA Standard in Deteriorated Paint *(This is considered a hazard under the EPA standard.)*

Room Location	**Surface Tested**	**Lead Level Found** *(milligrams per square centimeter of surface)*	**EPA Standard for Lead-Based Paint** *(milligrams per square centimeter of surface)*
Bedroom	Wall	1.4	1.0
Kitchen	Trim	3.0	1.0
Exterior North Wall	Door	1.1	1.0
Common Living Area	Trim	2.6	1.0

Lead at or above EPA Standard in Interior Surface Dust *(This is considered a hazard under the EPA standard.)*

Room Location	**Surface Tested**	**Lead Level Found** *(micrograms of lead per square foot of surface)*	**EPA Hazard Standard for Lead in Interior Surface Dust** *(micrograms of lead per square foot of surface)*
Bedroom	Floor	63	40
Kitchen	Floor	127	40
Other Room	Window sill	255	250

Lead at or above EPA Standard in Bare Soil *(This is considered a hazard under the EPA standard.)*

Type of area	**Location Info**	**Lead Level Found** *(parts per million by weight)*	**EPA Hazard Standard for Lead in Bare Soil in a Play Area** *(parts per million by weight)*
Foundation/dripline	West side of Dwelling Unit	644	400

HOME SAFETY AUDIT

Fire Extinguisher: *A fire extinguisher was not located in the house.*

The major causes of most fires are: cooking, heating equipment, and smoking. Fire extinguishers can guard against small fires or keep a small fire from developing into a big one. Because almost all fires are small at first, they might be contained if a fire extinguisher is handy, fully charged, and used properly. The Federal Citizens Information Center (FCIC) has stated that fire extinguishers should be installed on every level of the home, including the kitchen, basement, and garage.

Smoke Alarms: *No smoke alarms were found in your home. [OR IF SMOKE ALARMS WERE PRESENT BUT NOT OPERATING PROPERLY: Several smoke alarms were found in your home, however, when tested for operability were found to be not working.]*

Residential smoke alarms, when functional, can prevent 50% to 80% of deaths by providing early warning of fires, which often occur at night when people are sleeping. You should follow the manufacturer's instructions for testing operability and battery replacement if applicable.

Fire Escapes: *No observable second fire escape route (either via an additional door or an openable window) was observed from at least one room evaluated.*

The U.S. Consumer Product Safety Commission (CPSC) suggests that a family fire escape plan should be practiced every six months. The plan should include at least two different escape routes from each room for each family member. Designate a safe place in front of the house or apartment building for family members to meet after escaping a fire.

Slips, Trips and Falls: Environmental risk factors may contribute to about half of all home falls. Common environmental fall hazards include tripping hazards, lack of stair railings or grab bars, slippery surfaces, unstable furniture, and poor lighting. Most fall injuries in older adults are caused by falls on the same level and from a standing height. Therefore, it makes sense to reduce home hazards and make living areas safer.

- *No window guards or stops were present on the windows of at least one second story or higher room.*

  The CPSC has stated that window guards can prevent children from falling out of windows. Guards should be installed in children's bedrooms, parents' bedroom, and other rooms where young children spend time. Guards must meet requirements for spacing and strength and those that allow for escape in case of emergencies must be difficult for very young children to open. Consumers can also purchase window stops, which can be added to the window frame to prevent the window from opening more than 4 inches. Some new windows come with window stops already installed.

- *Area rugs with skid resistant or anti-slip features were not noted in the rooms we examined during our visit.*

  Tripping hazards can be reduced by using non-slip rug and/or mats, including the bathtub and shower floor.

- *The stairways were not observed to have at least one hand rail.*

- *Grab bars were not present in the bathroom tub of at least one bathroom.*

  Grab bars should be placed next to the toilet and in the tub or shower.

Emergency Numbers: *No phone had poisoning or emergency numbers posted.*

Posting an emergency number such as 911 and a poison control center number such as 1-800-222-1222 near all phones or in a location known to everyone who resides or spends a considerable amount of time in the house provides important information needed during an emergency.

Please call the survey team toll-free at 1-800-229-5220 if you have any questions regarding the findings above. If you are a hearing- or speech-impaired person, you may reach this phone number through TTY by calling the toll-free Federal Information Relay Service at (800) 877-8339.

Sincerely,

Dr. David C. Cox
Project Director

<DATE>

<RESPONDENT NAME>
<RESPONDENT ADDRESS>

RE: American Healthy Homes Survey - Results of Lead Testing and Observation of Selected Safety Features

Dear <RESPONDENT NAME>,
Thank you for participating in the American Health Homes Survey, sponsored by the U.S. Department of Housing and Urban Development (HUD) and the U.S. Environmental Protection Agency (EPA). We conducted environmental sampling and an observation of safety features related to falls, burns and fire hazards in your home on <DATE>. You indicated at that time that you would like the results of lead sampling and observation of selected safety features. These are presented below as they were identified during our visit.

We tested several locations in your home for the presence of lead in paint, dust, and soil. We took measurements from these locations in randomly selected areas inside and outside of the home. The levels of lead in paint, dust, and soil tested were below levels considered to pose a hazard by the EPA standards for lead hazards in homes and childcare facilities. Please note that during this survey not all rooms or building materials were tested. The tests we performed in your home were conducted for purposes of obtaining statistics for the nation, and do not constitute the kind of thorough assessment that you can obtain from an inspection for lead-based paint or from a lead risk assessment by a certified lead-based paint inspector or risk assessor. If you would like additional information about lead in your home, we recommend that you consider having a lead hazard inspection and/or a lead risk assessment performed. You can get a list of certified lead inspectors and risk assessors by contacting your state government.

We made a number of observations regarding safety-related hazards and found no obvious safety hazards.

Please call the survey team toll-free at 1-800-229-5220 if you have any questions regarding the findings above. If you are a hearing- or speech-impaired person, you may reach these phone numbers through TTY by calling the toll-free Federal Information Relay Service at (800) 877-8339.

Sincerely,

Dr. David C. Cox
Project Director

I0/T0- GENERAL PROCEDURES FOR MINIMIZING CONTAMINATION

Staff Involved: Assigned Interviewer and Field Technician

Overview: This protocol provides a general discussion on minimizing inadvertent contamination of the samples collected in the survey.

General Procedures

1. **Keep equipment clean**. Some of the environmental levels of interest in this survey are extremely low. Because of this, it is very easy to accidentally move measurable amounts of target analytes from one sample to the next and one location to the next. Keeping all tools and sampling supplies as clean as possible will go a long way in combating this problem. Cleaning cloths (wipes) and paper towels are provided as part of the equipment kits for use in helping you keep your equipment and re-useable items clean. Always be sure to clean **sampling equipment** (templates, etc.) before placing them in a carrying device like a bag, box or bucket prior to each use and keep your carrying device clean by thoroughly cleaning it daily.

2. **Organize your equipment and sampling supplies**. For each DU, be sure to organize your equipment and supplies so that they can be retrieved with a minimum of handling and without touching other surfaces.

3. **Nitrile Glove use**. Gloves are used throughout the field collection efforts to accomplish two equally important major objectives. One is to protect collected samples from inadvertent contamination. The other is to protect the user from being contaminated by the materials used to collect sample as well as the sample material itself.

   For each field sampling protocol, be sure to think through the various steps to be done before pulling on gloves and only do so when it is prudent. The are some activities, like handling sample labels, that are difficult to do while wearing gloves and you should take care of these, if possible, before donning gloves. In addition, there will likely be other activities other than collecting samples, where you should be wearing gloves so that you avoid cross-contamination issues such as when cleaning sampling templates. Also, it is extremely difficult to pull on nitrile gloves with wet hands so be sure your hands are completely dry before doing so.

   For most sample collections, but not all, there are two options with regard to glove use. One is to pull on new gloves to collect the sample. The other is to use existing gloves already being worn and clean them using a cleaning wipe between collections of like-type samples (for example, the same gloves can be used to collect all 6 targeted soil samples as long as you clean them between samples). Whenever gloves are cleaned rather than replaced, **be sure to wipe off gloves twice using two cleaning wipes between each pair of samples collected, tossing the used cleaning wipes into the trash**. Whenever a protocol is changed to collect a new type of sample, always pull on a new pair of gloves and toss any used gloves currently being worn into the trash. Please note that when collecting pesticide samples (T4), always don a new pair of gloves between the samples collected in a single DU (do not clean them between samples for this target analyte).

4. **Clean reusable templates and measuring tools between uses**. Always do this cleaning immediately after collecting a sample so that the tools will be dry when needed for the next sample. A paper towel can be used to help dry tools if required for any sample other than formaldehyde. Since paper towels are known to potentially contain a small amount of formaldehyde, they should not be used for cleaning any tools or materials used for this sample collection (T1).
5. **Discard cleaning cloths after a single use**. Never reuse a cleaning cloth.
6. **Clean tools and sampling supplies whenever contamination is suspected**.
7. **Discard, without use, any cleaning cloth that has been uncovered for more than a few minutes**, or that is otherwise suspected of being contaminated.

I2- RECRUITMENT SCREENING

Staff Involved: *Assigned Interviewer*

Overview: For each PSU, the Interviewer is sent a Recruiting Supplies - Kit (A) containing an *AHHS II Main and reserve sample DU addresses* listing. This listing contains information on what dwelling units have been drawn as a sample for potential recruitment in the study. However, not all the DUs in this list are targeted for recruitment. Information on which DUs are to be recruited is summarized in the PSU Summary Sheet. The Interviewer is instructed to contact, screen, and recruit ***all*** **DU**s that are released as directed by the PSU Summary Sheet.

Four types of *Advance Letters* have been created to aid in recruiting: an *Advance Letter*, an *Advance Letter- Hand-Delivered*, a No-Contact *Letter*, and a Refusal *Letter*. Examples of each are provided in protocol G2. A $1 token cash incentive is included in the official HUD envelope with the *Advance Letter*.. There are two categories of advance letters: one for longitudinal addresses (those that were included in the AHHS I) and one for new addresses (those not included in AHHS I). QuanTech headquarters (QT) will mail the *Advance Letter* to each targeted dwelling unit address that has a valid mailing address about one week before the Interviewer arrives in the PSU. An *Advance Letter - Hand-Delivered* will be dropped off when the Interviewer attempts to recruit the housing unit. DUs including those where there is no proper mailing address as indicated on the PSU Summary Sheet. The *Advance Letter - Hand Delivered* is used to indicate that an unsuccessful contact visit has been made to a unit. It is left on the doorknob in a clear hanger bag during the first and second attempts. *The Interviewer also has one copy of the Advance Letter - Hand Delivered (for longitudinal addresses) and one copy of Advance Letter - Hand Delivered (for new addresses)* flat and sealed in plastic as a reference to the other letters to show to the resident when contact is made.

<u>At least four attempts</u> will be made to contact each of the DUs released to the Interviewer, until contact is established. Attempts will made at varying times of the day and on different days of the week. For example, if the first attempt during normal working hours is unsuccessful, the second attempt will be made in the evening. If weekday attempts fail, additional attempts will be made on the weekend. Generally, the first attempted contact will be made during the day, with subsequent contacts made in the evenings and weekends. If four attempts to contact a resident at a selected DU are unsuccessful, the Interviewer should make other attempts when in the area such as when testing other nearby DUs. If this fails to make a contact, the Interviewer will notify QT for further instructions. For DUs that are impossible to reach, e.g., some gated communities and apartment buildings with doormen, the Interviewer will contact QT and QT will send a *No Contact Letter* by Priority Mail (see letter at end of protocol G2). The *No Contact Letter* elaborates on the importance of the survey and the incentives for participation and provides a toll-free number to call to schedule a visit. In cases of "hard" refusal, QT will send a *Refusal Letter*, again by Priority Mail. The *Refusal Letter* also elaborates on the importance of the survey and the incentives for participation and provides a toll-free number to call to schedule a visit.

Depending on the elapsed time between recruitment and testing, the Interviewer will provide the resident a drinking water bottle and go over the instructions with them. Nominally, this bottle should be given to the resident two days before the testing day. If the scheduled testing day is 5 days or more from the day recruiting was completed, the Interviewer is directed to hold off providing the bottle to the resident until the elapsed time between bottle drop-off and testing is between 2-5 days prior to testing.

Data Recording on: *Interviewer Form Set pulled from Kit (A)*

Equipment Needed from Kit (A): Take entire kit with you

- *1 checkbook for writing the $130 checks to residents (sent to first PSU for a given Interviewer)*
- *18 Recruiting Questionnaire Form Sets:*
  - *1 Cover Sheet (bound)*
  - *1 Appointment Control Log (bound)*
  - *1 Recruitment questionnaire (bound)*
- *1 clipboard*
- *1-3 blue ink pens*
- *1 roll Clear Packing Tape*
- *1 copy of FAQs (bound)*
- *36plastic door knob hangers*
- ***Envelope B - Contact Letters:***
  - *(up to 15) Advance Letter - Longitudinal - Hand Delivered inside official envelope*
  - *(up to 15) Advance Letter - New -- Hand Delivered inside official envelope*
- ***1 Envelope A - DU Listings:***
  - *1 completed PSU Summary Sheet*
  -
  - *1 large PSU level Map*
  - *1 set segment level maps*
  - *1 copy - Advance Letter - Longitudinal - Hand Delivered sealed in plastic *
  - *1 copy - Advance Letter - New - Hand Delivered sealed in plastic*
  - *1 AHHS Main and Reserve Sample DU addresses list (for the PSU)*
  - *18 Appointment Reminder Cards (loose)*
  - *4 Scheduling Calendar Forms (loose)*

Personally owned items needed and items to be purchased locally as needed:

- *1 cell phone and power cable.*
- *1 local area map book (Interviewers are to purchase one locally as needed to find DUs)*

Items Needed from Drinking Water Shipper - Kit (E)

- *One 1-liter bottles (one for each DU) with a label having instructions on water sample collection (see Figure I2-1)*

Glove Use Directives: ***none (see protocol I0)***

PROCEDURE

1. **Complete any needed travel planning using the Recruiting Supplies.**
2. **Pack Auto with Needed Supplies**. Gather the items needed for recruiting, as shown at the beginning of this protocol, and securely store them in your automobile. It is generally recommended that you place the entire Recruiting Supplies - Kit (A) into your automobile for use in recruiting.
3. **Conduct Recruiting and Safely Store Recruiting Questionnaire Form Set**. At each DU, conduct the recruitment screening using the Recruiting Questionnaire Form Sets in Kit (A). Forms are shown at end of this protocol. Use the Scheduling Calendar (loose form) to keep track of the appointment dates for testing. Attempt to make contact and recruit the DU, keeping track of the effort using the Appointment Control Log and In-Person Contact Record that is bound within each Recruiting Questionnaire Form Set (see Note below). At least four attempts must be made to contact each of the DUs released to the Interviewer. Attempts will be made at varying times of the day and on different days of the week. Once contact is made, attempt to recruit the DU using the assigned Recruiting Questionnaire Form Set. For DUs successfully recruited, record the contact information and telephone numbers on the cover page of the Recruiting Questionnaire Form Set. Include the actions listed under step 4 when recruiting:

   NOTE: The Interviewer assigns one Recruiting Questionnaire Form Set to each DU when they start to recruit each DU and the Appointment Control Log is bound inside

this set. Scheduling Calendars are not bound in the form sets as they are used for tracking all of the DUs being recruited.

4. **Using the Recruiting Questionnaire Form Set**.
   - 4.1 **Use a different form set for each DU released for recruiting**. Place the needed form set in the clipboard on top of the Scheduling Calendar for use at a given DU.
   - 4.2 **Complete the Cover Sheet.** The DU ID, provided to the Interviewer in the PSU Summary Sheet, combines 3 data fields shown on the *AHHS II main and reserve sample DU addresses* list, and has the following format:

     XXX-YYY-ZZ

     Where XXX is the PSU ID identifier from the *AHHS Main and reserve sample DU addresses* list identifier; a number from 101 to 999

     YYY is the AHHS SEGID identifier; a number from 001 to 999

     ZZ is the SAMP TYPE identifier from the *AHHS Main and reserve sample DU addresses* list identifier, M1, M2, M3, or M4 for main sample draw and R1 or R2 for reserve sample draw.

     - 4.2.1 **Use the Appointment Control Log** to keep track of the required 4 recruiting attempts at a DU.
     - 4.2.2 **Schedule testing after successful recruiting**. Record on the Appointment Reminder Card the scheduled testing day recorded in the Recruiting Questionnaire Form Set (line S8). Hand it to the resident as a reminder of the testing appointment.
   - 4.3 **Use a Scheduling Calendar Form to track the DU testing schedule.** These forms are provided loose as a tool to keep track of testing schedules for recruited DUs. It is recommended that the Scheduling Calendar Form be kept in Recruiting Supplies Kit (A) on the clipboard so it will always be available at each location as this kit is to travel with the Interviewer at all times while recruiting and testing. Remember that no DUs can be tested until the Technician arrives at the PSU. If you do not know when the technician is to arrive at the PSU, contact QT for that information so you can do your recruiting and scheduling.
   - 4.4 **For each DU that is recruited, safely store the completed Recruiting Questionnaire Form Set in the Recruiting Supplies - Kit (A)**. This form set will be sent back to QT with samples and other data collected during the testing phase of the work. It is recommended that the Recruiting Supplies - Kit (A) be kept with you at all times during both recruiting and testing. When testing for the DU is conducted, the completed Recruiting Questionnaire Form Set is moved from the Recruiting Supplies - Kit (A) to the Sampling Supplies - Kit (B) box used for testing in that DU.
   - 4.5 **For each DU that refuses**, **complete the applicable entries in the refusal/breakoff section** of the Recruiting Questionnaire, safely store the completed Recruiting Questionnaire Form Set and other collected data back in the Recruiting Supplies Kit (A), and contact QT with the results no later than the end of the day as described in step (5) below.
   - 4.6 **At the door activities**:
     - 4.6.1 **For 1st visits to the DU**
       - 4.6.1.1 **If the resident is there**, introduce yourself, show them you ID badge and hand them the plastic sealed *Advance Letter - Hand Delivered* (either longitudinal or new as indicated on the completed PSU Summary Sheet) provided in the Recruiting Supplies Kit (A) and explain to them that a letter like this was sent to them, If they do not

remember such, ask them to read it. Then continue on with recruiting as directed in the recruiting questionnaire making sure to retrieve the plastic encased letter as it will be needed at other DUs. If needed, hand them an *Advance Letter - Hand Delivered inside an official HUD envelope for them to keep*.

4.6.1.2 **If the resident is not there**, place the *Advance Letter - Hand Delivered* (either longitudinal or new as indicated on the completed PSU Summary Sheet) on the doorknob of the primary entryway of the DU using a clear plastic *doorknob hanger* bag.

4.6.2 **For 2nd visits to the DU**

4.6.2.1 **If the resident is there**, follow the instructions in step 4.6.1.1 above.

4.6.2.2 **If the resident is not there**, **but the *Advance Letter - Hand Delivered* has been picked up**, place another the *Advance Letter - Hand Delivered* (either longitudinal or new as indicated on the completed PSU Summary Sheet) on the doorknob of the primary entryway of the DU using a clear plastic *doorknob hanger* bag.

4.6.3 **For 3rd and later visits to the DU**

4.5.3.1 **If the resident is there**, follow instructions in step 4.6.1.1.

4.5.3.2 **If the resident is not there**, come back at another time. Do NOT leave another *Advance Letter - Hand Delivered* on 3rd and later visits.

4.6.4 **For the LAST visit to the DU**

4.6.4.1 **If the resident is there**, follow instructions in step 4.6.1.1.

4.6.4.2 **If the resident is not there**, try to get a proper mailing address for the unit (if not known already) and contact QT. QT will send out a *No Contact Letter* to the address.

4.76 **Hard refusals.** If the resident refuses to complete the recruitment screening, or refuses the sampling visit after the DU is determined eligible, and conversion efforts fail, contact QT. A *Refusal Letter* will be sent by Federal Express.

5. **Communicate Project Status to QT**. Periodically (every other day or so), QT will call the Interviewer to obtain status information. If the Interviewer has not heard from QT in more than 3 days, the Interviewer is asked to call QT and provide a brief verbal report on the recruiting efforts from the previous day, and any other study needs. Note that this call will need to be placed while viewing the information stored in the Recruiting Supplies Kit (A). Items to be communicated include the following:

5.1 **DU Recruiting and Testing Info**

5.1.1 Which released DUs have been recruited?

5.1.2 Which released DUs were: recruited? Found ineligible? Could not be contacted?, Refused-Why?, Completed-When?

5.1.3 What are the scheduled testing dates for the recruited DUs?

5.1.4 Who will the incentive check be made out to?

5.2 DU **Data/Samples Shipped from Field**

5.2.1 What FedEx shipments were sent yesterday (record tracking number)?

5.3 DU **Data has been transmitted by email from Field**

5.3.1 What files were sent since the last verbal report?

5.4 **Travel Arrangements**

5.4.1 What travel arrangements (airfare, lodging, auto) are needed for Interviewer?

5.4.2 What travel arrangements (airfare, lodging, auto) are needed for Technician?

5.5 **Supplies and Other Needs**

5.5.1 What additional supplies are needed and by when?
5.5.2 What are the other needs?

Cover Sheet for Recruiting Questionnaire Form Set

Dwelling Unit ID: _____

PSUID - AHHS SEGID - SAMP TYPE

DU Address And Contact Telephone Numbers (if available)

_____

_____

_____

_____

_____

_____

_____

_____

_____

Assigned Interviewer _____

☐ **Check here if a neighbor was used to the obtain any contact information recorded in this form set and place the name and contact phone number for that neighbor below:**

_____

_____

_____

_____

_____

**Note all fields to be completed by Interviewer

Interviewer Name _____ PSU ID_____

MINIMUM 4 IN-PERSON ATTEMPTS ON DIFFERENT DAYS AT DIFFERENT TIMES

RECORD ALL ATTEMPTS/VISITS INCLUDING THE DATA COLLECTION APPOINTMENT VISIT

RECORD OF CONTACTS

	Date	Day of the Week	Time	Result Code	Comments (Appointment)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					

In-Person Result Codes
P1 = No one home
P2 = Vacant
P3 = Would not answer door
P4 = No adult home
P5 = Language problem
P6 = Refusal
P7 = Breakoff/Friendly/Revisit
P8 = Breakoff
P9 = Completed resident questionnaire & sample collection
P10 = Not eligible
P11 = Other (specify) _____
P12 = Completed Recruitment

Telephone Result Codes
T1 = Ring, no answer
T2 = Wrong number
T3 = Language problem
T4 = Callback needed
T5 = Appointment scheduled
T6 = Appointment rescheduled
T7 = Appointment confirmed/ call completed successfully
T8 = Refusal to allow inspection
T9 = Other (specify)
_____

DU ID:_____ Interviewer Name: _____ Date: ____ / ____ / _____

Time Begun: _____ (AM / PM) Final Result Code:
_____

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
AMERICAN HEALTHY HOMES SURVEY II
RECRUITING QUESTIONNAIRE

BOX A

INTERVIEWER: BEFORE ATTEMPTING TO CONTACT RESIDENT

1. VERIFY THAT THE DU ADDRESS IS THE SAME AS THAT SHOWN ON THE COVER SHEET FOR RECRUITING QUESTIONNAIRE SET

   YES, ADDRESS SAME.....1
   NO, ADDRESS NOT SAME.....2 ➔ (CALL QUANTECH OFFICE)

   UNKNOWN, CAN'T TELL FROM OUTSIDE.....8

2. VERIFY HOUSING UNIT STATUS:

   BUSINESS .....1 ➔ CODE RESULT P10 & SKIP TO R1
   VACANT.....2 ➔ CODE RESULT P10 & SKIP TO R1
   ELDERLY HOUSING (NO CHILDREN ALLOWED TO LIVE THERE).....3 ➔ CODE RESULT P10 & SKIP TO R1
   INSTITUTIONAL GROUP HOUSING (PRISON, HOSPITAL, ETC.).....4 ➔ CODE RESULT P10 & SKIP TO R1
   OTHER GROUP HOUSING (DORMITORY, CONVENT, ETC.).....5 ➔ CODE RESULT P10 & SKIP TO R1

   NONE OF THE ABOVE.....6 ➔ CONTINUE

3. RECORD TYPE OF DWELLING:

   DETACHED SINGLE FAMILY HOUSE 1
   DUPLEX/TRIPLEX.....2
   ROW HOUSE/TOWN HOUSE.....3
   LOW RISE APARTMENT (1-3 FLOORS).....4
   HIGH RISE APARTMENT (>3 FLOORS).....5
   MOBILE/MANUFACTURED HOME.....6
   OTHER.....7
   (SPECIFY: _____)

ATTEMPT TO CONTACT A RESIDENT WHO IS 18 YEARS OR OLDER. PROCEED WITH BOX B.
IF YOU WERE NEVER ABLE TO CONTACT ANY RESIDENT, GO TO BOX E.

IF THE RESIDENT HAS ANY COMMUNICATION PROBLEM (E.G., AUDITORY OR VISUAL DISABILITY, OR SPEAKS A LANGUAGE OTHER THAN ENGLISH), ASK TO SPEAK WITH ANOTHER ADULT IN THE HOUSEHOLD. IF NOT, ASK PERMISSION TO GET A NEIGHBOR OR NEARBY FRIEND OR RELATIVE TO ASSIST WITH THE QUESTIONNAIRE.

IF RESIDENT REQUESTS THAT YOU CALL THE OWNER OF THE DU, RECORD NAME, ADDRESS AND PHONE NUMBER OF OWNER, ON CONTACT RECORD AND CALL YOUR SUPERVISOR. DO NOT PROCEED WITH SCREENING AT THIS TIME.

INTRODUCTION: Hello, my name is (INTERVIEWER NAME). I am with QuanTech, a company that is doing housing research for the United States Department of Housing and Urban Development (HUD) and the United States Environmental Protection Agency (EPA). You may have received an official letter like this from HUD a week or so ago.
[SHOW ID CARD AND HAND COPY OF THE APPROPRIATE ADVANCE LETTER TO RESPONDENT]

As this letter says, we are conducting a national study of exposures to lead, certain chemicals and mold in homes. Your home was randomly selected to represent thousands of homes like yours across the country. If your home is eligible, as an incentive to participate you will receive a check for **$130** when we complete work in your home. We want to ask you some questions, test paint and water for lead, and do other environmental testing. We will not damage anything in your home.

Your answers, and other data collected in your home, will be kept private to the extent permitted by law under the Privacy Act of 1974. HUD and EPA will use the data only for statistical research and reports

We would very much appreciate your help with this important study. My purpose today is to see if your home is eligible and to schedule an appointment.
(ANSWER ANY QUESTIONS THE RESPONDENT MAY HAVE CONCERNING THE STUDY.)

First, I would like to ask you a few personal questions to see if your home is eligible for the study. You don't have to answer any question you don't want to answer. Your information will only be used for the purposes of this study. Do I have your permission to ask some questions?

YES 1
NO .....2 ➔ (CODE P6, SKIP TO R1, END)

S1. Is this your primary residence?

YES.....1 ➔ (SKIP TO S3)
NO.....2

S2. On average, how many weeks or months per year do you spend in this home?

TWO WEEKS OR LESS.....1 ➔ (CODE P10, SKIP to R1, END)
MORE THAN 2 WEEKS TO ONE MONTH.....2 ➔ (CODE P10, SKIP to R1, END)
MORE THAN 1 MONTH TO 3 MONTHS.....3 ➔ (CODE P10, SKIP to R1, END)
MORE THAN THREE MONTHS.....4

S3. Are children allowed to live here?

YES .....1 ➔ (SKIP TO S5)
NO 2

DON'T KNOW.....8 ➔ (SKIP TO S5)

S4. Could you please describe to me why children are not permitted to live here? [PROBE: Are there any rules/regulations prohibiting children to live here?]

DORMITORY.....1
RETIREMENT COMMUNITY.....2
OTHER.....3
(SPECIFY: _____)

IF RULES OR REGULATIONS PROHIBIT CHILDREN FROM LIVING HERE, CODE RESULT AS P10, SKIP TO R1 AND END. IF IT IS ONLY THE INFORMAL WISH OF THE OCCUPANT THAT CHILDREN SHOULD NOT BE PERMITTED TO LIVE HERE, CONTINUE WITH S5.

S5. Do 9 or more people live here who are not related to the householder?

YES.....1 ➔ (SKIP TO R1, END)
NO.....2

REFUSE.....7 ➔ (SKIP TO R1, END)

S6. Do you share kitchen facilities with people who do not live with you?

YES.....1 ➔ (SKIP TO R1, END)
NO.....2

S7. Your home is eligible for the study! I would like to make an appointment for an associate and myself to visit you next week to do some environmental testing. We would need about 3 and one-half hours to do the testing. We will of course schedule our visit at a time that is convenient for you next week. As an incentive to participate, you will receive a check for $130 when our work is complete.

AGREES.....1
REFUSES.....2 ➔ (CODE P6, SKIP TO R1, END)

S8. What would be a good day and time for you next week?

_____ _____ / _____ / _____ at _____ (AM/PM)
DAY OF WEEK DATE TIME

(USE YOUR APPOINTMENT CALENDAR. TRY TO SCHEDULE FOR NEXT WEEK. TELL THE RESPONDENT THAT YOU WORK WEEKENDS. IF THE PERSON WOULD LIKE YOU TO TAKE SAMPLES RIGHT AWAY, EXPLAIN THAT THE TECHNICIAN WILL ARRIVE NEXT WEEK AND YOU CANNOT PROCEED WITHOUT HIM/HER.)

S9. When we come back, should we ask for you or for someone else?

SELF.....1
OTHER HOUSEHOLD MEMBER.....2
OTHER.....3
(SPECIFY _____)

S10. Could I please have your/that person's name and telephone number, so that we can confirm our appointment?

NAME OF CONTACT PERSON: _____
FIRST LAST

TELEPHONE NUMBER: ( ) _____ - _____ (H)

( ) _____ - _____ (W)

( ) _____ - _____ (Cell)

CHECK IF NO TELEPHONE: _____

S11. We will bring the **$130** check with us. Who should we make it out to?

NAME OF PERSON: _____
FIRST LAST

To help us plan our visit next week, we need to ask you one quick question about your home.

S12. When was this house built? Was it built . . .

1990 TO PRESENT.....1
BETWEEN 1978 AND 1989.....2
BETWEEN 1960 AND 1977.....3
BETWEEN 1946 AND 1959.....4
BETWEEN 1940 AND 1945.....5
1939 OR BEFORE.....6

DON'T KNOW.....8

INTERVIEWER SHOULD PROBE FOR DATE RANGE IF RESPONDENT IS UNCERTAIN

S13. Thank you very much for your time and participation. We are looking forward to collecting data in your home on (SEE S8)

There are two small things we would like you to do to help us when we come back. Between now and then, please do not clean the floors in your home, and please do not change your vacuum cleaner bag. Also, we will need you to collect a sample of your drinking water a day or two before [DAY OF APPOINTMENT]. This is very simple - just fill a special bottle from the cold water tap in your kitchen as you use water for drinking or cooking. Instructions are on the bottle. We will drop off the bottle with instructions a couple of days before our visit [OR we can leave it with you now]. If you don't mind, I'll call you two days ahead of our visit to remind you about collecting the water sample.

[Must obtain Verbal Consent for water collection, as this is a study-related procedure being conducted prior to obtaining written consent]: Do you agree to collect a sample of your drinking water prior to our visit on [DAY OF APPOINTMENT]?

YES 1
NO 2

IF AND WHEN YOU GIVE A BOTTLE TO THE RESIDENT,
GO OVER THE INSTRUCTIONS WITH THEM

BOX D

COMPLETE THE APPOINTMENT REMINDER CARD (DATE, TIME, YOUR NAME AND TELEPHONE NUMBER.) ANSWER QUESTIONS ABOUT CLEANING FLOORS OR CHANGING THE VACUUM CLEANER BAG. GIVE CARD TO THE RESPONDENT. COMPLETE THE CONTACT RECORD - INCLUDE THE APPOINTMENT INFORMATION, THE NAME OF THE CURRENT RESPONDENT, AND THE NAME (IF DIFFERENT) OF THE PERSON WHO WILL ASSIST YOU DURING THE DATA COLLECTION VISIT.

COMPLETE BOX E ON LAST PAGE OF QUESTIONNAIRE.

R1. I am sorry, but your home is not eligible for this study. Thank you very much.

END INTERVIEW

BOX E

INTERVIEWER: COMPLETE THIS BOX FOR ALL HOUSING UNITS RELEASED FOR RECRUITMENT (INCLUDING THOSE THAT YOU RECRUITED FOR THE STUDY.)

E1. DID YOU EVER SEE ANY ONE IN THE SAMPLED HOUSING UNIT?

YES.....1
NO.....2 ➔ **(CIRCLE 8 IN E2, E3, E4)**

E2. (OBSERVATION ONLY) MY IMPRESSION OF THE RESPONDENT'S FAMILY INCOME IS…?

APPARENTLY NOT IN POVERTY 1
APPARENTLY IN POVERTY.....2

UNABLE TO DETERMINE 8

E3. (OBSERVATION ONLY) MY IMPRESSION OF THE RESPONDENT'S RACE IS:

WHITE.....1
BLACK OR AFRICAN AMERICAN.....2
ASIAN.....3
NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER.....4
AMERICAN INDIAN OR ALASKAN NATIVE.....5

UNABLE TO DETERMINE 8

E4. (OBSERVATION ONLY) MY IMPRESSION OF THE RESPONDENT'S ETHNICITY IS:

HISPANIC OR LATINO 1
NOT-HISPANIC OR LATINO.....2

UNABLE TO DETERMINE 8

E5. (OBSERVATION ONLY) MY IMPRESSION OF THE PROPERTY IS (circle all that apply):

NEWLY BUILT.....1
IN EXCELLENT CONDITION.....2
NEEDS SOME REPAIR 3
IN POOR CONDITION.....4

E6. (OBSERVATION ONLY) MY IMPRESSION OF THE NEIGHBORHOOD IS (circle all that apply):

ISOLATED (no neighborhood).....1
NEW (likely post 1990).....2
MODERATELY OLDER (1978 - 1989).....3
OLDER (1950 TO 1977).....4
VERY OLD (PRE 1950).....5
WELL KEPT AND CLEAN.....6
A LITTLE RUN DOWN.....7
VERY RUN DOWN.....8
UNSAFE.....9

TIME ENDED: _____ (AM/PM)

APPOINTMENT REMINDER CARD
American Healthy Homes Survey II

The QuanTech Team (Interviewer and Technician) will visit your home and collect environmental samples on

_____ _____ _____ (AM/PM).
DAY OF WEEK DATE TIME

In addition, on the day before this date, the Interviewer will drop off a plastic bottle for you to collect a cold-water sample on the date shown above before anyone in your home uses any water. ***Instructions are on the bottle.***

We would like you or another adult member of your household to be available to answer our questions and assist us. If you have any questions about the study please call:

1-800-229-5220

or

Interviewer Name: _____

Telephone Number: (_____) _____

or

If you are a hearing- or speech-impaired person, you may reach these phone numbers through TTY by calling the toll-free Federal Information Relay Service at (800) 877-8339.

Before the visit to your home by our research team, we ask that you **do not vacuum, clean, or wipe the floors** for at least two days prior to our appointment.

As an incentive to participate, we will give you a check for $130 when we have completed the data collection for your home.

We appreciate your cooperation.

AHHS II - Protocol I2: Scheduling Calendar

loose - not bound in form set

OMB No. xxxx-xxxx
expires: mm/dd/yyyy

Scheduling Calendar (for field use) for Month of _____

PSU ID: _____ Interviewer Name: _____

	Day	Abrev	Recruiting Notes	
WEEK 1				
	Day	Abrev	DU ID scheduled in AM	DU ID scheduled in PM
WEEK 2				
WEEK 3				

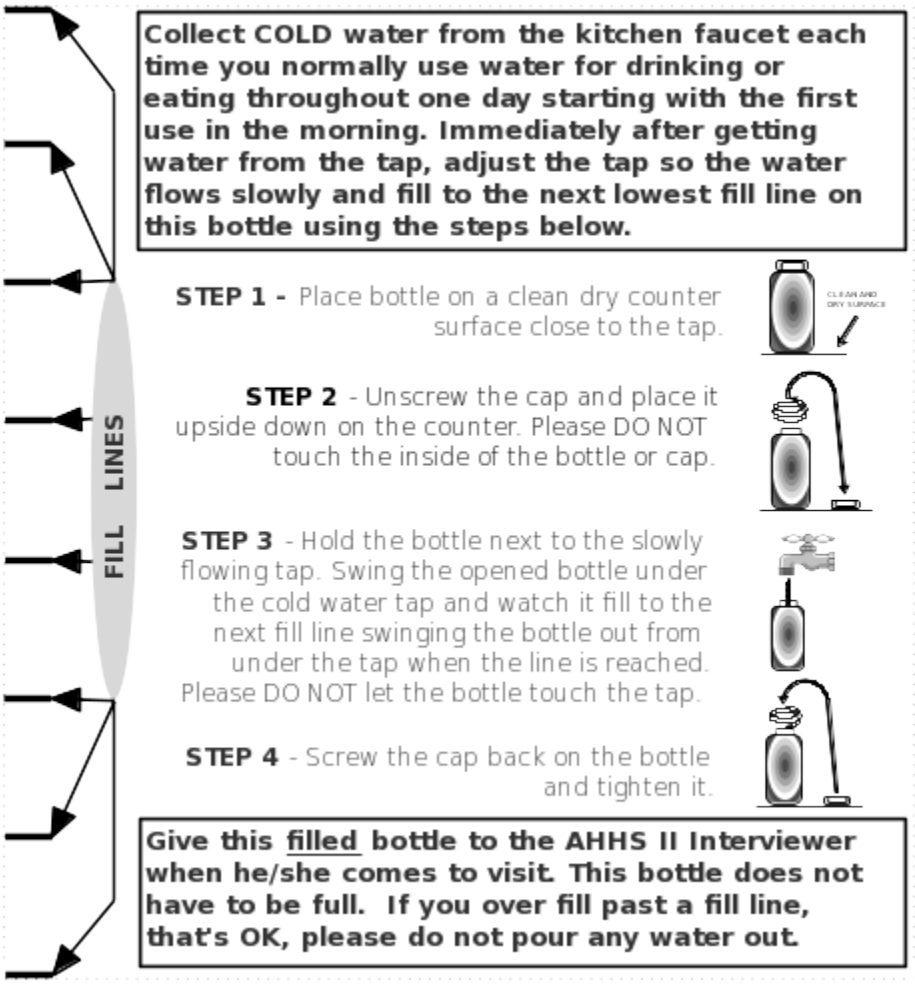


Figure I2-1 - **Bottle label for the drinking water sample (shown as actual size)**. This instruction set for collection by resident is formatted to fit on an Avery 60522 waterproof label (excess length to be cut off before the label is placed on the bottle; 1 liter bottles are roughly 7.5" tall and 3.5" in diameter). A positioning tool will be used to place the bottom of the sticker slightly less than 1 inches up from the bottom of the bottle. This will ensure that each filling to each successive lowest fill line will result in collection of about 113 ml. Filling to the top most fill line will result in collection of about 900 ml.

AMERICAN HEALTHY HOMES SURVEY II - FAQs

NOTE: These FAQs are intended for the guidance of the Interviewers in fielding questions and they are not given to the respondents.

1.0 SURVEY BACKGROUND

1.1 What is the survey about?

The purpose of the survey is to find out how much lead and other substances that can affect people's health are in American homes. Exposure to certain levels of lead can be hazardous, specifically to our children. This nationwide survey is sponsored by the U.S. Department of Housing and Urban Development (HUD) and the U.S. Environmental Protection Agency. It is authorized by Public Laws 102-550 and 99-158.

1.2 What is the authority/sponsor for this study?

The U.S. Department of Housing and Urban Development has contracted QuanTech, Inc. to conduct this national study.
(If a respondent would like to speak with someone at HUD, he/she can call Dr. Warren Friedman at HUD at (202)402-7574, during business hours, Eastern Time, Monday through Friday. In addition, the respondent may call QuanTech toll free at 1-800-229-5220. Make an appointment or call to visit the respondent in two (2) days. Record the situation on the control log. Make certain that the respondent has your name, QuanTech's name, and the name of the study.)

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is ****. The time required to complete this visit is estimated to be about three and a half hours, including the time for answering your questions, asking you questions and collecting the environmental samples.

1.3 How will HUD use the information from this survey?

It will be used to assess levels of lead, mold, and other potential hazards found in the Nation's housing and to identify the associated potential risks. It will also be used to develop guidelines for providing a hazard-free environment for our children and improving the Nation's health.

1.4 Do I have to do this?
Do I have to answer your questions?

Your participation is entirely voluntary, but very important to the success of this survey. In order for the results to be valid, it is important that everyone who is selected agrees to participate.

1.5 What is QuanTech?
Who do you work for?

QuanTech is a research company in Maryland that has conducted statistical studies for the U.S. Government since 1989. HUD chose QuanTech to help them conduct this survey. All the Survey Interviewers and Technicians are hired and professionally trained by QuanTech.

1.6 How will I recognize the Interviewer and Technician?

The Interviewer and Technician will be wearing a QuanTech identification badge that looks like this: (*DISPLAY SAMPLE BADGE)*

1.7 What if I have other questions?

If you have questions about the survey you may call the Project Director, Dr. David Cox, at QuanTech's toll-free number (800)229-5220 between 9 am and 5 pm EST. After business hours and on weekends, please leave a message and Dr. Cox will return your call.

1.8 Are you selling a lead abatement service? What are you selling? Will you fix any problems you find?

QuanTech is only conducting a SURVEY of lead and other things that can affect people's health and safety. We are not selling anything. We do not offer a lead abatement service or any other service to correct hazards we find. We also do not offer a referral service nor do we recommend any contractors to correct hazards we find. We do provide you with a copy of some current government information regarding the substances we are studying.

2.0 LEAD

2.1 Is this like the lead inspection I got when I bought my home?

Most likely this is not like the one you got when you bought this house. We will not only be looking for exposed lead paint, but we will be looking at lead in the dust in your house and in the soil outside. Moreover, the findings of this study will be used to determine the number of homes in America with lead based paint hazards.

2.2 What are the sources of lead in house dust?

Any painted or varnished surfaces including:

- Walls
- Windows
- Ceilings
- Doors
- Floors

and

- Soil
- Some occupations and hobbies.

2.3 What happens if you find lead in my home?

If lead paint or hazardous levels of lead are found in your home, you will be notified so you can decide whether to take action. We can also advise you of options to further evaluate the possible health risk. However, most houses do not contain hazardous levels of lead.

2.4 Don't we know all about lead and its effects on children?

Not really. Ten years ago, HUD did a comprehensive study of lead in American homes. That study told them how big the problem was. Since then HUD has operated many programs to raise awareness of the problem and to start to fix it. Therefore, one goal of this study is to see if the lead problem in homes has changed in the last 10 years.

Also, this survey looks at more than just lead. We don't know how common many of the things we are testing for actually are in homes around the country. The information we gather will be used to develop guidelines for reducing hazards in our homes.

2.5 Are you going to test my water for lead?

Yes. We will ask you to collect a drinking water sample from your kitchen faucet the day before we come to collect other samples. We will pick up the sample from you when we arrive.. *IF needed, use this as an opportunity to give them the sample bottle.*

3.0 OTHER SUBSTANCES & TESTING

3.1 Why are you testing for pesticides?

There are limited national estimates on how much common pesticides are used in homes. If your home is selected for testing of pesticides, we will take wipe samples in the kitchen.

3.2 Why are you testing for formaldehyde?

Formaldehyde can irritate eyes, nose and throat and can cause an allergic response. Some studies have shown a possible link between formaldehyde and some cancers, such as leukemia. Formaldehyde is used in building materials, furniture and many household products, such as air fresheners. We will take a sample of the air in your home using a pump, and we will measure the amount of formaldehyde in it.

3.3 What safety hazards will you look for in my home?

We will check your home for:

Fire extinguishers
Smoke alarms and whether they work
Carbon monoxide detectors and whether they work
Fire escapes
Potential for slips, trips and falls
Damaged electrical wiring
High hot water temperature that may be dangerous to children and the elderly
Posting of emergency phone numbers

4.0 SAMPLING

4.1 How was my household selected?

We would like to interview and collect environmental samples from every home in America, but it would be far too expensive. Instead, we randomly select household addresses to represent the total population. During the next few months, we will visit 58 communities to gather information from about 600 homes. Because your household represents many others throughout the country, your participation is very important. While your participation is voluntary, because we scientifically selected your household, we cannot substitute another household for yours if you do not participate.

4.2 Why don't you go to another house?

All the houses we go to are scientifically selected to represent a certain type of housing in the United States. Because your home represents many others throughout the Nation, your participation is very important. We very much hope that you will participate. While your participation is voluntary, we will not be able to substitute another household for yours if you do not participate.

4.3 Are you going to my neighbor's house too?

Answer YES or NO, depending on how the draw came out.

5.0 PRIVACY

5.1 Who will have access to my answers?

Your answers, and other data collected in your home, will be kept private to the extent permitted by law under the Privacy Act of 1974. QuanTech is the only organization that will have access to information that ties your name and residence to data collected at your home as part of this study. Neither HUD nor EPA will receive ANY information that can tie your data to your name or residence. The survey results will be published in reports and scientific journals. All publications will use summary data, in other words averages and group totals.

6.0 PROTOCOL

6.1 How much time will it take?
Why is it going to take 3 and a half hours?

The initial visit will take about 5 minutes. If your house is eligible for the study, we will schedule a 3 and 1/2 hour visit at your convenience. During that time we will perform the following activities:

Answer all your questions,
Ask you some questions about your household,
Collect dust samples from selected rooms,
Collect a water sample and pick up one you collect for us,
Take a sample of the air in your home using a pump,
Look for common household safety devices in use (such as smoke detectors)
Check for safety hazards such as frayed electrical wiring and the danger of falls,
Measure things like temperature and humidity,
Measure painted surfaces without damaging the paint, and
Collect samples of soil.

6.2 Are you going to test every room in my house?

No. We will definitely test your kitchen, any play room (common living area) where children spend a lot of time, one bedroom, and a basement if you have one. We will also randomly select one other room, depending on the size of your home.

6.3 What will you be testing for and how will you test for them?

Our primary focus will be on lead in paint, dust and water in your house. We will also be testing for mold, formaldehyde and (in some homes) pesticides. We have a special monitor that can measure the amount of lead without damaging your walls. Finally, we will do a quick look around outside and collect some soil samples.

6.4 What kinds of questions will you be asking?

The questionnaire asks questions about the house or apartment, such as age, number of stories, type of heating and air conditioning, etc. There are also questions about the number of people in the household, and any hobbies or occupations that are related to lead or substances that cause allergies.

6.5 What does the environmental sampling involve?
What will you do in/to my home?

We will collect samples of house dust from small areas of your floors and windows. We will also collect small soil samples from outside if you have a yard. We will collect a sample of air using a pump. We will ask you to collect a water sample first thing in the morning and we will collect an

additional sample during our visit. The Technician will measure lead in painted surfaces without damaging the paint.

6.6 Why can't I clean my floors before your visit?

We will be collecting samples of dust from your floors. These samples will be sent to laboratories to be analyzed for lead, mold or pesticides. If you clean just before our visit there might not be enough dust for the laboratories.

6.7 Why do you want a used vacuum cleaner bag?

Some of the tests we are performing need large amounts of dust. These tests are looking at the presence of specific chemicals and molds throughout the home and so location is not important. However, other tests we are performing are meant to identify specific chemicals and mold in places where they are most likely to be located and so we are using dust wipes and vacuum sample collection for these tests.

6.8 Why are you wearing gloves to collect certain samples?

We are wearing gloves so as not to get oil or dirt from our hands on the sample itself. The samples we are taking are not harmful to us, but we could contaminate the sample.

6.9 Do I have to be here with you the entire time? Why?

We'd be happy to schedule the appointment at a convenient time for you, but WE CAN'T BE IN YOUR HOME WITHOUT YOU. Our liability insurance doesn't allow us to do that.

6.10 Will you damage any part of my home?

No part of your home will be damaged. We will collect dust samples using a wipe or vacuum technique that will not hurt surfaces. We will test paint using a detector that measures lead without damaging the painted surface. We will collect a few small samples of soil in your yard. We will take these samples in an area where the soil is bare, if possible. If not, we will remove the soil covering in about a two-inch diameter (circle) (*e.g.* grass or mulch).

6.11 What does the 3-and-a-half-hour time estimate include?

Explaining the survey, answering any questions you may have, interviewing you, taking samples and doing the safety check, collecting all our equipment, and checking we have everything before we leave.

6.12 If I have suggestions on how to improve this study, whom should I contact?

Director, Office of Lead Hazard Control and Healthy Homes, U.S. Department of Housing and Urban Development, 451 Seventh Street, S.W., Washington, D.C. 20410; and the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

6.13 If I want to tell somebody that the time estimate was incorrect, whom should I contact?

Director, Office of Lead Hazard Control and Healthy Homes, U.S. Department of Housing and Urban Development, 451 Seventh Street, S.W., Washington, D.C. 20410; and the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

6.14 What is that noise coming from the device on your belt?

That is an air pump. It is used to collect an air sample that will be analyzed for formaldehyde. The air pump will be running the entire time that we are in your home. It pulls air through a small glass tube that is connected by tubing to the pump [*point out tube*].

7.0 RESULTS

7.1 How will the results be published?

The survey results will be published as group totals and as statistical summaries. Names and addresses will not be published, nor will any other published information identify you.

7.2 How will the survey results be used? What will you do with this information?

We will write a report for the federal government describing the results of the survey, and we will publish articles in scientific journals about the survey. The report will contain only group totals. No information that would permit the identification of any individual or household will be released or published. The information will be used to assess levels of lead, mold, pesticides and formaldehyde, and other potential hazards found in the Nation's housing, and to identify the associated risks. The information will be used to develop guidelines for providing a safer environment for our children and for improving the Nation's health.

7.3 Can I get a copy of the results?

You will be able to get a free copy of the published report by writing to:
American Healthy Homes Survey II
c/o Office of Lead Hazard Control and Healthy Homes
U.S. Department of Housing and Urban Development
451 Seventh Street, S.W. (P3206)
Washington, D.C. 20410
The results of this study will be published after all the data is analyzed.

7.4 Who else will receive the survey results for my home?

The survey results will be provided to HUD in statistical form and as a summary of all homes that we tested. Your name, address, and any other identifying information will not be provided to any of the sponsoring agencies as part of this study.

8.0 REFUSAL REVERSAL

8.1 I just do not have time for your survey. I'm too busy now. Come back next week.

(Such statements are usually a "put-off" tactic and will be continued when you come back. Try to retain control of the situation by establishing an appointment.)
For example: "I'd be happy to come back at a time more convenient for you. How about 7:00 p.m. next Tuesday or Wednesday? …I'll look forward to talking with you then."

8.2 You don't want me in your survey; I don't have any children.

We are studying all homes where children MIGHT live, not just those where children CURRENTLY live. Also, while more children than adults suffer from allergies or the effects of lead, adults can also get asthma, allergies, or lead poisoning.

8.3 You don't want me in your survey; I don't have any lead in my paint.

We are studying all types of homes in this study. We must survey both homes with lead hazards and homes without lead hazards to understand the extent of the lead problem in the United States. We need to understand the differences between homes with and without lead to figure out what must be done to reduce and eliminate the problem. In addition, we are studying other substances in homes that may cause health problems.

8.5 I had a bad experience recently with someone taking a survey, so I don't think I want to participate.

I regret that your experience in that survey was a bad one. However, this is an important national research effort authorized by the U.S. Department of Housing and Urban Development. We will make every effort to make your contact with us a pleasant one.

Thank You for Your Participation in This Important Survey

I3- INTRODUCTION AND INFORMED CONSENT

Staff Involved: Assigned Interviewer and Technician

Overview: This protocol is the first task in a series of testing tasks conducted at each DU that is successfully recruited. These tasks (protocols I3 through I12 and T1 through T6) are performed at the scheduled time arranged with the resident during recruitment (protocol I2).
Prior to traveling to the DU to conduct the testing tasks, all of the equipment and supplies needed to conduct the testing must be organized for daily use and packed into the Interviewer (and/or Technician, if desired) auto(s) so that the needed materials will be available while onsite to complete the testing.

After arriving onsite, the Interviewer and Technician prepare the needed materials and package them so that each task during the testing phase can be performed with minimal replicate trips to the transport vehicle(s).

After the equipment and supplies are assembled, the Interviewer contacts the resident and an introduction of the 2 field team members is made to the resident using a standardized format followed by asking the respondent to read and sign the Informed Consent and Waiver before continuing with the inventory and interview (see forms at end of this protocol). If the resident is disabled (e.g., auditory or visual disability) or has difficulty communicating in English, the Interviewer will ask for permission to get a neighbor, nearby friend, or relative to assist and to assure that the resident understands and agrees to signing the form. The Interviewer will answer any questions the respondent has regarding the study and the activities to be conducted in their home using the FAQs as an aid (provided in protocol I2).

Once the Informed consent is signed, the Interviewer will retrieve the drinking water sample from the respondent.

The introduction and informed consent (this I3 protocol), the room inventory (I4 protocol), and the resident questionnaire (I5 protocol) will all be carried out using a part of a standardized set of documentation referred to here as a Resident Questionnaire Form Set. This form set contains a cover page that identifies the unit ID number and address (recorded by the Interviewer) and all of the various data forms and support documents that will be needed by the Interviewer to complete testing in the DU with exception of the questionnaire itself. . To increase the efficiency and accuracy, administering the questionnaire will be performed using a pre-programmed Tablet. Other data collection activities performed by the Interviewer will be captured in the Resident Questionnaire Form Set. Backup Resident Questionnaire Form Sets have the same forms as the Resident Questionnaire Form Set plus the questionnaire. The backup Form Sets are provided in the Interviewer Equipment - Kit (W) in the remote case that the Tablet failures to operate. The Interviewer should always carry one Backup Resident Questionnaire Form Set with them into each DU when testing for backup use.

Data Recording on:	Pre-programmed Tablet., and Resident Questionnaire Form Set (bound) and Technician Form Set (bound) pulled from Kit (B)
Items needed from Kit (A)	
• It is recommended to keep the entire Kit (A) with you during testing. It can be left in automobile once you have pulled the completed Recruiting Questionnaire for each DU to be tested that day.	•
Equipment Needed from Kit (W), Kit (X), and Kit (Y)	
• Take all items listed on the Interviewer DU Checklist • Take all items listed on the Technician DU Checklist •	•
Items needed from Shipper Kit (C)	
•	• Take shipper to the field to temporarily hold collected samples that must be kept cold until they can be placed into the freezer (see step 2.6 below).
Supply items from Kit (B)	
• Resident Questionnaire Form Set. If this is the first DU in the PSU, use a Kit (B) with a "-WQ" suffix. If this is the second DU in the PSU, use a Kit (B) with a "-W" suffix. Note: A loose copy of the Informed Consent is inside the form set.	•
Glove Use Directives:	**use new for each type of sample (see protocol I0)**

COORDINATE TRAVEL PLANS WITH TECHNICIAN.

The Technician is scheduled to arrive at the DU for testing activities far enough in advance so that the equipment and supplies can be prepared before the scheduled appointment time. Details on the review and organization of the equipment and supplies used by the Field Team prior to testing are provided under protocol I1 (referred to there as Events 3 and 4). The Technician does not have any of the information as to the exact location of the recruited DUs or the schedule. The Interviewer needs to communicate this information frequently with the Technician to ensure the Interviewer and Technician is present at the recruited DU and ready to perform testing at the appointed time. These protocols are written under the assumption that the Technician and the Interviewer travel together to each recruited DU in the same auto.**PROCEDURAL DIRECTIVES FOR ONE OR TWO DUs PER TEST DAY**

[Performed by Technician and Interviewer (copied here from protocol I3)].
The procedures for initiating testing in a DU are slightly different when there are two DUs to be testing in a day rather than one. Interviewers are directed to NOT schedule more than two DUs per day for testing. The differences have to do with handling of supplies coming out of the Kit (B) boxes. Under no circumstances should more than one Kit (B) box be open and actively used at the same time. If only 1 DU is to be tested in a day, then all the steps shown in the Procedure below apply and the Field Team may, at their option, select and divide up the contents of a Kit (B) box the night before testing (as opposed to the morning of the testing day). However, this pre-loading of supplies among the equipment to be carried into the DU cannot be done for the 2nd DU testing in the same day. Handling of the Kit (B) box targeted for use in the second DU cannot go beyond placing the entire unopened box into the auto until the Field Team has

completed the End-of-DU activities (protocol I12/T6) for the first DU, which include moving all subkits back into first DU's "OPENED" Kit (B) and temporarily storing the collected samples that must be kept cold during the work day in the shipper Kit (C).

DAILY SETUP PROCEDURE
[Performed jointly by Technician and Interviewer].

1. **Pack needed equipment/supplies for one day into the Field Team auto.** It is assumed that the Field Team will assemble and place the needed equipment/supplies into the auto in the morning before heading out for testing (See Notes I3-1 and I3-2).

   NOTE I3-1. Event 3. These steps conform to the steps as outlined under Event 3 in protocol I1.

   NOTE I3-2. Packing the night before for the first DU tested in a day. If desired, all steps except 1.6 and 1.7 below can be done the night before for the first DU tested that day (but NOT the 2nd DU, if scheduled). Since the sorbent tubes need to be kept cold until shortly before they are used, you must wait until the morning of a testing day to pack Kit (C) with ice packs and, sorbent tubes and IPA vials as directed under steps 1.6 and 1.7.

   1.1 Select a Kit (B) box to use for each DU planned for testing that day. If this is the first DU in the PSU to get tested, then be sure to use a Kit (B) with an ID number having a "-WQ" suffix. If this is the 2nd DU in the PSU to get tested, be sure to use a Kit (B) with an ID number having a "-W" suffix (see Note I3-3).

   NOTE I3-3. Spare Kit (B) boxes. It is recommended that the Field Team keep at least 1 spare Kit (B) **having NO "-W" or "-WQ" suffixes** in the auto at all times in the highly unlikely (but possible) case that a selected Kit (B) box is deficient or that second unplanned DU gets scheduled for testing after the Field Team departs from the base of operations. **CAUTION**: Never go into a spare Kit (B) box and pull out subkits to supplement one that is already open. If used as a replacement for another, the deficient kit must be marked "BAD" and taped shut and not used in any way.

   1.2 Open the Kit (B) box, verify contents, and put subkits with equipment going into the DU. For the first DU to be tested that day, use a black marker to write the word "OPENED" on the selected Kit (B) box on the same side of the box as the box ID number. **NEVER** open and use more than one Kit (B) box at the same time. Complete the Kit (B) checklist inside that box to indicate that all of the supplies are present (enter the number present under the *Number Present* column) and as you are doing this, move the "I" subkits (I3. I6, I8, and I9) into the Interviewer's rolling briefcase and the "T" subkits (T1, T3, T4, T4b, T5) into the Technician's tool bucket. Place the Kit (B) checklist back into its plastic sleeve and back in the box it came from.

   1.3 Complete the first page of the Form Sets. Pull the Resident Questionnaire and Technician Form Sets from the Opened Kit (B) box and complete the cover page of each placing a Kit (B) box label retrieved from the *Box Label* bag as indicated on these forms. Be sure to record the correct DU ID number on the coversheet in the form sets. The DU ID number is identified by the Interviewer using the recruitment questionnaire for that DU. It is comprised of 3 fields from the *AHHS Main and Reserve Sample DU addresses* list: PSUID-AHHS SEGID-SAMP TYPE (format is: XXX-YYY-ZZ).

   1.4 Complete the 2nd page of the Form Sets and store with items going into the DU. This page, bound into the form sets, contains the *DU checklist - Items Going IN and Out*

of DU undergoing Testing for each member of the Field Team (see Note I3-3). The form in the Resident Questionnaire is not the same as the form in the Technician Form Set. These forms are used to ensure you have all the equipment items packed that are needed to complete testing for that DU. Complete the entries making sure those supplies coming out of the equipment kits are placed into your equipment going out for testing (rolling briefcase or tool bucket). Place the Resident Questionnaire Form Set into the Interviewer's rolling briefcase and the Technician Form Set the Technician's tool bucket. In addition, if not already done under step 1.3 above, pull the relevant recruiting questionnaire from Kit (A) recruiting supplies, and place it into the rolling briefcase.

1.5 Close the Kit (B) box and leave it in the auto. This box will be needed immediately after testing in the DU to store the unused supplies and those samples that do not have to be kept cold (vacuum dust bag, drinking water, dust wipe for Pb, and soil).

1.6 Pack Shipper Kit (C) with 3 frozen blue ice packs (This step must be done in the morning before going out to test DUs). Go into freezer at the local base of operations and move 3 frozen blue ice packs into Kit (C) for daily use as temporary cold storage (see Note I3-4).

> **NOTE I3-4. Shipper Kit (C) used for 2 purposes**: At the end of the PSU, this shipper will be used to ship collected pesticide samples to an EPA designated lab. However, until that happens, it gets used as daily cooler to store media (sorbent tubes and IPA vials) and collected samples (pesticides, formaldehyde, vacuum dust and Swiffer™ dust) are required to be kept cold as soon as possible after sample collection. Because of this dual use, the Chain-of-Custody form (COC) for Kit (C) is not kept inside the kit. The COCs serve as a packing list for the out bound shipments to the labs at the end of the PSU and there are 4 COC forms for each PSU: one for pesticide samples, one for formaldehyde in air samples, one for drinking water samples, and one for he combined vacuum dust and Swiffer™ dust samples. The later three of these are stored in and left in their respective insulated shippers at the base of operations. The COC for pesticide samples is stored in Kit (D) until the end of the PSU where it gets moved back to Kit (C). All COCs get used at the end of each testing day back at the local base of operations (protocol I13/T7).

1.7 Pack Shipper Kit (C) with Box 3 containing two *Field Calibration Check Only* sorbent tubes, three new sorbent tubes, and six IPA Vials (This step must be done in the morning before going out to test DUs). Go into freezer at the local base of operations and retrieve *BOX 3 - SORBENT TUBES AND IPA VIALS FOR DAILY USE*. Box 3 should already have two *Field Calibration Check Only* sorbent tubes. Retrieve *BOX 2 - NEW SORBENT TUBES*, pull out 3 new unopened sorbent tubes and place them into Box 3 (see Note I3-5). Place Box 2 back into the freezer. Retrieve *BOX 4 - IPA VIALS FOR PESTICIDE SAMPLING*, pull out six vials and place them into Box 3. Place Box 4 back into the freezer. Place Box 3 (now containing 5 sorbent tubes and 6 IPA vials) into shipper Kit (C).

> **NOTE I3-5. Recycle unused sorbent tubes and IPA vials.** The tube and vial counts placed into the Box 3 are enough to complete testing in 2 DUs, even if one is the first DU in a PSU. At the end of each day, any un-opened sorbent tubes and IPA vials **MUST BE** recycled back into the freezer so that you will have enough of these to collect all planned samples.

1.8 Select and pack a 2nd Kit (B) box if 2 DUs are to be tested in the same day. Be sure to include this kit in the auto but DO NOT OPEN IT until the first DU has been tested and samples and data from that first DU have been moved into that OPENED Kit (B) box and that box is shut.

2. Travel to the DU and retrieve the needed sorbent tubes and IPA vials for 1 DU. The sorbent tubes and IPA vials for one testing day are inside *BOX 3 - SORBENT TUBES AND IPA VIALS FOR DAILY USE*. Take into the DU only those you need for that DU and leave the rest behind in Box 3 located in shipper Kit (C) left in the auto. If you run short, you can go back out to the auto to get another sorbent tube or vial. It is desirable to avoid recycling sorbent tubes that have been warmed up. Therefore, it is best to take only those tubes that are really needed into the DU.

2.1 If this is the first DU in a PSU, pull the following items from Box 3 in shipper Kit (C):

- Place one of the two *Field Calibration Check Only* sorbent tubes into the T1subkit bag.
- Place two new unopened sorbent tubes into T1 subkit bag.
- Place two IPA vials into the T4 subkit bag.
- Place two IPA vials into the T4b subkit bag.

2.2 If this is NOT the first DU in a PSU, pull the following items from Box 3 in shipper Kit (C):

- Place one of the two *Field Calibration Check Only* sorbent tubes into the T1subkit bag.
- Place one new unopened sorbent tube into T1 subkit bag.
- Place two IPA vials into the T4 subkit bag.

3. **Move the needed equipment and supplies for one DU into the DU** (see Note I3-6). After Step 1, all the needed equipment and supplies will be located in the four packages listed below. Although manageable for the 2 person Field Team, this is a lot of items to get into the DU at one time and in some cases, it may not be wise to try and get all these packages up to the DU until the Interviewer and the Technician have made contact and introduced themselves to the resident. However, this decision is up to the Interviewer who has already developed a rapport with the resident.

- One rolling briefcase containing the Interviewer equipment, needed equipment supplies, needed Kit (B) supplies, and the relevant completed Recruiting Questionnaire from Kit (A).
- One duffle bag containing the vacuum and related equipment.
- One 5 gallon bucket w/tote containing the Technician equipment, needed equipment supplies, and needed Kit (B) supplies.
- One Kit (XRF) box.

NOTE I3-6. Event 4. These steps conform to the steps as described outlined under Event 4 in protocol I1.

4. **Conduct resident introduction**. Using the Introduction page of the Resident Questionnaire Data Set for the assigned DU, conduct an introduction using the standardized Introduction (see form at end of this protocol).

5. **Hand the resident a copy of the Informed Consent**. There is a loose copy inside the Resident Questionnaire for the participant.
6. **Go over the Informed Consent**. Read the Informed Consent to the Resident as they follow along in their copy or simply ask them to read it. Answer any questions that arise concerning what is going to be done. The FAQs provided in the Recruiting Supplies - Kit (A) is intended to provide answers to questions regarding the study. It should be kept at hand during the recruitment in case it is needed to help answer questions.
7. **Interviewer, then resident signs 2 copies of the Informed Consent**. Sign the both copies Informed Consent using a blue ink pen (the one bound in the Resident Questionnaire Form Set and the loose copy). Then, have the resident sign both copies and check off the boxes as to the reports desired using a blue ink pen.
8. **Give loose copy of signed Informed Consent to resident**.
9. **Retrieve the drinking water sample from the resident**.
   - 9.1 **Place an ID label on the bottle (labels are in Kit (B) subkit I3).** This label will have a "-05" suffix on it.
   - **9.2 Place a replicate ID label on the *Drinking Water Sample Collection Log*** (bound within the Resident Questionnaire Form Set). This label will have the same "-05" suffix on it as the one placed on the bottle. Retain the remaining ID replicate "-05" labels in subkit I3 as they will be used later in the end-of-day activities.
   - **9.3 Seal the bottle.** Screw the cap on tightly and wipe off the outside of the bottle so it is dry before sealing the cap. Seal the cap using electrical tape. Place the end of the tape (on the roll) over the edge where the cap meets to top of the bottle and hold it there with your thumb. Pull and stretch the tape as you wrap it around and over the cap edge. Make 2 full warps around the cap pulling hard at the end to stretch-break the tape. Push any trailing tape on the cap tightly against the cap to finish the seal. Place the bottle in your equipment pack for temporary storage.
12. **Move on to the Room Inventory task (protocol I4).**

OMB#: xxxx-xxxx
Expires: mm/dd/yyyy

Cover Sheet for Resident Questionnaire Form Set

Dwelling Unit ID:		Kit (B) Number:	place Kit (B) label here

PSUID - AHHS SEGID - SAMP TYPE

DU Address and Contact Telephone Numbers (if available)	

Interviewer Name	

**Note all fields to be completed by Interviewer

Interviewer DU Checklist - Items Going In and Out of DU Undergoing Testing			
Item	**Number for 1 DU**	**Number Before Testing**	**Number After Testing**
RE-USABLE EQUIPMENT from Kit (W)			
Checkbook for writing $130 checks to residents	1		
FAQs sealed in plastic and bound (7 pages)	1		
Pens, blue ink	1		
Recruiting Questionnaire (for DU undergoing Testing) in Clipboard	1		
Rolling briefcase to hold equipment and supplies	1		
Backup Resident Questionnaire Form Set	1		
Clipboard	1		
Compass	1		
Flashlight with extra batteries	1		
Humidity/Temperature Meter (air measurements)	1		
Knee pads, pairs	1		
Marker, black sharpie	1		
Moisture meter (building materials measurements)	1		
Pens, blue ink	1		
Samsung Galaxy Tablet with power charger	1		
Stopwatch	1		
Tape measure (wide 25')	1		
Thermometer (drinking water measurements)	1		
Color Coded Cards: Blue, Tan, Pink, Yellow, White, Purple, Green	1		
Duffel bag to carry vacuum sampling equipment	1		
Dust Stream Sampler inside a re-closable bag	1		
Extension cord, 25' and 2-prong outlet adapter	1		
Vacuum cleaner with bag & hose attachment	1		
SUPPLIES STORED IN WITH EQUIPMENT			
Bags, spare polyethylene re-closable bags 14"x20"	1		
Cleaning Clothes (wipes), boxes	1		
Gloves, nitrile, sized to fit hands of Interviewer, 100 each per box Estimated max. usage rate = 12/DU	at least 12		
Tape, black electrical, rolls (to seal water sample bottles)	1		
Tape, masking, blue or green, rolls (for protocol I8)	1		
Trash bags	1		
SUPPLIES STORED IN Kit (B): *At end of DU, items listed go back in Kit (B) box unless otherwise marked*			
Resident Questionnaire Form Set	1		
Subkit I6	1		
Subkit I8 *move to Kit(C) at end of DU*	1		
Subkit I9 *move to Kit(C) at end of DU*	1		
Subkit I3	1		
Drinking water sample	1		
Vacuum bag dust sample	1		
Vacuum dust sample *move to Kit(C) at end of DU*	1		
Dust wipe Swiffer™ sample *move to Kit(C) at end of DU*	1 - 2		

DU ID#_____ Interviewer Name: _____ Date: ____ / ____ / _____

Time Begun: _____ (AM / PM) Final Result Code:
_____

AMERICAN HEALTHY HOMES SURVEY II
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)
U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

RESIDENT QUESTIONNAIRE/ROOM INVENTORY
INTRODUCTION: Hello. We have an appointment to do some environmental testing here today. Is (MR./MS. NAME OF CONTACT) here?
My name is (INTERVIEWER NAME). This is (NAME OF TECHNICIAN). We are with QuanTech. I spoke to (you/MR. /MS. NAME OF RESPONDENT, SEE CONTACT RECORD) last week and invited your household to participate in a research study for the United States Department of Housing and Urban Development. (SHOW ID BADGE, ASK TO GO INSIDE)

Box A

IF THE CONTACT IS NOT AT HOME, ATTEMPT TO CONDUCT THE SURVEY WITH THE PERSON ANSWERING THE DOOR, IF AT LEAST18 YEARS OLD AND A RESIDENT OF THE HOME.

IF THE RESIDENT HAS ANY COMMUNICATION PROBLEM (E.G., AUDITORY OR VISUAL DISABILITY, OR SPEAKS A LANGUAGE OTHER THAN ENGLISH), ASK TO SPEAK WITH ANOTHER ADULT IN THE HOUSEHOLD. IF NOT, ASK PERMISSION TO GET A NEIGHBOR OR NEARBY FRIEND OR RELATIVE TO ASSIST WITH THE QUESTIONNAIRE.

TIME: _____ DATE: _____ DAY OF WEEK: _____

IF LATER THE SAME DAY, PLAN TO RETURN THEN. IF ANOTHER DAY, RE-ARRANGE THE APPOINTMENT BY TELEPHONE.

NEW APPOINTMENT DATE: _____ TIME: _____

COMPLETE THE RECORD OF CONTACT TO DOCUMENT THIS/THESE ACTIVITY(IES).

Before we can begin our work, I would like to ask you to please read and sign the informed consent form which explains the study in detail and gives us permission to collect dust, soil, and other environmental samples in this home. I will go over each item of the form with you so that you know exactly what we are going to do. You will be given a copy of the informed consent to keep.

Box B

WAIT FOR THE RESPONDENT TO READ EACH ITEM ON THE CONSENT FORM. ANSWER ANY QUESTIONS THEY MAY HAVE REGARDING THE STUDY AND WORK YOU ARE DOING. THEN SIGN BOTH COPIES AND ASK THE RESPONDENT TO ALSO SIGN AND DATE BOTH COPIES OF THE CONSENT FORM. AFTER CHECKING THE SIGNATURE AND DATE, PROVIDE RESPONDENT WITH ONE COPY AND PROCEED. DO **NOT** BEGIN ANY WORK UNTIL RESPONDENT GIVES PERMISSION AND HAS SIGNED THE CONSENT FORM.

Thank you, now I would like to begin with some questions about your house/apartment. First I need a list of the rooms in your home, so we can determine which ones to take samples in – we do not need to sample in every room. [COMPLETE ROOM INVENTORY]

Dwelling Unit ID: _____

INFORMED CONSENT TO PARTICIPATE IN THE AMERICAN HEALTHY HOMES SURVEY II

Sponsor / Study Title:	**HUD OHHLHC / "American Healthy Homes Survey (AHHS) II This is a follow-up study to the American Healthy Homes Survey conducted in 2005-2006, funded by the U.S. Department of Housing and Urban Development (HUD), Office of Lead Hazard Control and Healthy Homes (OLHCHH)."**
Protocol Number:	**AHHS II**
Principal Investigator:	**David Cox, Ph.D.**
Telephone:	**(800) 229-5220 (24 Hours)**
Address:	**QuanTech 6110 Executive Blvd. Suite 480 Rockville, MD 20852**

This document tells you what you need to make an informed decision about the American Healthy Homes Survey II. This information is provided to you based on the Department of Health and Human Services regulation on "Protection of Human Subjects" (Title 45 CFR, part 46).

Purpose

The U.S. Department of Housing and Urban Development (HUD) and the U.S. Environmental Protection Agency (EPA) are surveying American homes. The survey is looking at causes of lead poisoning and things that affect health and safety. The survey is called the American Healthy Homes Survey II. QuanTech, under contract to HUD, is carrying out the survey. Approximately 20 homes will be included in this survey.

Financial Disclosure

Dr. David Cox, the study principal investigator, has direct ownership in QuanTech. Due to this potential conflict of interest, Dr. Cox will not be involved in the informed consent process or recruitment for this study. You can ask to speak with the study principal investigator if you have additional questions.

Procedure

The survey team is asking permission to visit your home for about 3 ½ hours. The team will:

1. Question you about your home's construction and the heating and cooling systems; also questions about your family's health, earnings, and ethnic background.
2. Collect samples of house dust from floors, windows, and a used vacuum bag.
3. Collect samples of soil outside your home.
4. Pick up a water sample you have collected, and collect a second sample.
5. Sample the air in your home using a small pump.
6. Look for common household safety devices (for example, smoke detectors), and things that affect safety (for example, frayed electrical wiring).
7. Measure lead in painted surfaces in your home without damaging the paint.
8. Take measurements of temperature, humidity, and moisture content in drywall/plaster.

The survey team will be using the dust, soil, water and air samples to test for:

1. Lead
2. Formaldehyde
3. Pesticides
4. Mold

New Information About the Study

You will be told about any new information found during the study that may affect whether you want to continue to take part.

Cost

There is no cost to you for taking part in this study.

Benefits

The results will help improve public health across the United States. In appreciation you will receive:

- Reports on the findings of the air, water and dust tests and safety checks;
- A pamphlet about lead in homes, for adults;
- **A check for $130** when the team finishes the survey in your home.

We will tell you about any immediate hazards we notice, and send you a report on the results of our tests. However, HUD, EPA, and QuanTech cannot take any actions to correct hazards in your home. If the survey team finds lead paint or lead hazards in your home, you will be sent a report of the lead test results, unless you *specifically* decline to receive it. Please note that the presence of intact lead paint in a house is not considered a hazard. Lead must be accessible to young children or pregnant women to be a hazard.

Risks or Discomforts

The survey team will use a detector to measure lead in the paint in your home. The detector contains a small amount of radioactive material. This material is enclosed in a protective case inside the detector, and will not harm you. None of this material will remain in your home after they have left. The detector has been approved for use in homes in all fifty states.

If you accept the report on lead paint and/or lead hazards in your home, and you *own* the home, the law requires you to disclose the report to any buyers or renters. Exemptions include: (1) houses built 1978 or later; (2) dwellings with no bedrooms, such as lofts, efficiencies, and studios; (3) short-term leases of 100 days or less, as for vacation homes; and (4) housing designated for the elderly or the handicapped, where no children are allowed to live. Some localities may have additional reporting rules.

We will use the information we collect in your home only for scientific research and reports. Your answers will be combined with others, so that no one can identify your answers. No one outside the study will have access to your information. For example, your report on lead paint and/or lead hazards will not be given to HUD, EPA or State or local government agencies.

Alternatives to Being in The Study

You do not need to take part in this research study.

Subject Protections

Your participation is voluntary. There are no penalties or loss of benefits if you decide not to participate. You may decline to answer any questions you wish, and you may stop participating at any time. You do not have to accept any of the reports offered, including the lead hazards report.
Your part in the research may stop at any time for any reason, such as, the sponsor or the principal investigator decides to stop the study.

If you feel that you have not been adequately informed about the risks, benefits, procedures, or your rights, or if you feel under pressure to continue against your wishes, you can call QuanTech, Dr. David Cox, at (240) 397-2993. For any questions about this study, the results, or the information about your home, you can also call Dr. Cox at the toll-free number (800) 229-5220.

Privacy

To ensure that your information collected for this study will be kept private, your name will not be used whenever possible. A code will be used instead of your name. All of your study data will be kept in a secure location.

The sponsor, the sponsor's representatives, the Food and Drug Administration (FDA), and Chesapeake IRB may have access to the study data.

Getting Answers to Your Questions or Concerns About the Study

You can ask questions about this consent form or the study (before you decide to start the study, at any time during the study, or after completion of the study). Questions may include:

- Incentives for being in the study, if any;
- Your responsibilities as a study subject;
- Eligibility to participate in the research;
- The principal investigator's or study site's decision to exclude you from participation;
- Results of tests and/or procedures;
- Other questions, concerns, or complaints.

Contact the principal investigator or study staff listed on the first page of this form with any questions, concerns or complaints.

Getting Answers to Your Questions About Your Rights as A Research Subject

This study has been reviewed by an Institutional Review Board (IRB). This Committee reviewed this study to help ensure that your rights and welfare are protected and that this study is carried out in an ethical manner.
For questions about your rights as a research subject, contact:

- By mail:
  Study Subject Adviser
  Chesapeake IRB
  6940 Columbia Gateway Drive, Suite 110
  Columbia, MD 21046
- or call **toll free**: 877-992-4724
- or by **email**: adviser@chesapeakeirb.com

Please reference the following number when contacting the Study Subject Adviser: Pro00019737.

Report Request

The following reports on the test results for your home can be mailed to you upon the completion of the study (currently estimated for Fall 2018). The reports are 3-6 pages long. Please check below to receive the reports.

Report Topic	**Please send me a copy**
Lead*	☐
Other test results and home safety	☐

*If your home has lead-based paint or a lead-based paint hazard, we will automatically send you a lead report unless you *specifically* decline to accept it. If any children under the age of 6 or pregnant women live in or regularly visit your home, we strongly encourage you to accept the lead report.

PLEASE INDICATE (BY CHECKING THE BOX) IF YOU *DO NOT* WANT THE LEAD REPORT, EVEN IF LEAD PAINT OR LEAD HAZARDS ARE FOUND IN YOUR HOME: ☐

For the Interviewer to complete:
I have fully informed the survey subject, _____, about the nature and purpose of the procedures described above, including their possible benefits and any risks involved. I have asked the subject if he or she has any questions about the procedures. I have answered those questions to the best of my ability. I will give the subject a signed and dated copy of this consent form.

Interviewer Signature _____ Date _____

Printed Name of Interviewer _____

For the Subject to complete:
I have read the above information and have been informed about the nature and purpose of the procedures described above, including their possible benefits and their risks to my family or me from participating in this study. I understand that my participation is entirely voluntary. I agree to participate in this survey. I recognize that I am free to stop participating in this survey at any time without any effect on my rights.

Subject Signature _____ Date _____

Printed Name of Research Subject _____

Drinking Water Sample Collection Log

DU ID

Completed by: *(name)* on *(date)*

Sample ID	**Comments**
Field sample ID label here	

I4 - ROOM INVENTORY

Staff Involved: Assigned Interviewer

Overview: Once consent is obtained (protocol I3), the Technician will fit the Interviewer with a personal air pump and initiate collection of an air sample for formaldehyde (see protocol T1). The Interviewer will then complete the Room Inventory (see form at end of this protocol) to list all rooms in the home. This information will be used to select the rooms in which environmental sampling will be conducted. One room of each of 5 room types will be selected for sampling plus the basement, if one exists. Note that this "five" count includes the Exterior as it is classified as a room type and is not explicitly shown on the Room Inventory form. The Room Inventory form groups the 4 types of rooms together using 4 sets of ID numbers, shown on the form in Column 1. They include Kitchens, KIT (Room ID's 11 through 13), Common Living Areas, CLA (Room ID's 21 through 24), Bedrooms, BR (Room ID's 30 through 39), and other rooms, OTHER (Room ID's 40 and higher). The Interviewer will discuss the rooms selected with the respondent; if one of the rooms is unavailable for some reason, a second room in the stratum will be selected, if possible. The Room Inventory will also ask which is the major used entrance to the unit and in which areas of the yard children play. Once rooms are selected, this information will be communicated to the Technician. The Room Inventory form has a carbonless duplicate back. The back of the Room inventory is for the Technician who will need this information for testing while the Interviewer administers the Resident Questionnaire.

In addition, the Interviewer will query the respondent about the likely location of the drinking water service line coming into the home and record this for the Technician who will later examine it to determine whether it is a lead service feed line.

Data Recording on: Resident Questionnaire Form Set (same one started in I3)

Equipment Needed from Kit (W)

- 1 blue ink pen
- 1 clipboard
- 1 black sharpie marker
- 1 flashlight with extra batteries
- 1 tape measure (25')
- 1 compass

Supplies Needed from Kit (B)

- none

Glove Use Directives: **optional (see protocol I0)**

PROCEDURE

1. **Have Technician mount the air sampling train for formaldehyde sampling and start sample collection (protocol T1).**
2. **Walk with resident and list all rooms in the DU on the Room Inventory form**. Have the resident show you through each room of the house and record/list all rooms in the home on the Room Inventory (see form at the end of this protocol). Use a blue ink pen to record the findings. Use the following parameters.
   - 2.1 **Room column and room IDs**. The numbers, referred to below, are on the left under the Room column.
     - **2.1.1 Kitchens (IDs 11-13)**. List each kitchen room on one of these rows. Note that in the case of an efficiency containing a kitchen as part of one common living area, the room is considered a common living area and is to be recorded on ID 24.

2.1.2 Common Living Areas (IDs 21-24). List each common living area room on one of these rows.

2.1.3 Child's bedrooms (IDs 30 –34). List the age(s) in years of the children who sleep there.

2.1.4 Adult bedrooms (IDs 35-39). Fill in an identifier to help you distinguish between different bedrooms in the DU, to ensure that the Interviewer and Technician sample in the same rooms.

2.1.5 Bathrooms (IDs 45-48). Fill in an identifier to help you distinguish between different bathrooms in the DU.

2.1.6 Additional rooms not already listed (IDs 49-54). Enter these in rows 49-54.

2.1.7 Major entrance (ID 61) is the primary used entrance into the DU.

2.2 Exists column. For ***every listed room on the form***, circle whether the listed room exists (yes) or not (no). It is generally recommended that you start by circling the 1's in the yes column for all the rooms you have found and listed. Then afterwards circle the 2's for those that do not exist.

2.3 Level column. Enter the level of the house where the room is located.

2.3.1 For DUs with basements, basement is level 0. A basement is a floor below ground level. All floors above a basement are labeled 1, 2, 3, etc. to indicate the successive floors going up from ground level (level 1).

2.3.2 For DUs without basements, the ground floor is level 1. Floors above the ground floor are labeled 2, 3, 4, etc.

2.3.3 For DUs in high-rise buildings, <u>the main entrance to the DU</u> is level 1. Floors above level 1 inside the DU are labeled 2, 3, 4, etc.

2.4 **Selection column**. See step (3) below.

3. Randomly select primary testing rooms from like groups. After identifying and recording all the rooms, use the random selection procedure in step 3 to randomly select the 4 primary testing rooms from the groupings shown below:

3.1 Kitchen (KIT), IDs 11-13

3.2 Common Living Area (CLA), IDs 21-24

3.3 Bedroom (BR), IDs 30-39, where the children's bedrooms are 30-34 and Adult bedrooms are 35-39

3.4 Other Room, IDs 40-54.

4. Random selection procedure for primary (testing) rooms. Place an 'S' in the applicable row under the selection column for the rooms selected using the following parameters:

4.1 If only one entry exists, select the one entry.

4.2 If more than one entry exists, select randomly among all rooms in the group using *the Random Selection Procedure for Items* shown at the end of this protocol.

4.3 When selecting the bedroom (BR), preference is for children's bedrooms. If one or more child's bedroom is listed within the 30-34 grouping, use steps 4.1 and 4.2 above to select a child's bedroom as a primary room. Otherwise use the bedrooms listed within the 35-39 grouping as the group from which to randomly select as a primary room. Place an 'S' in the applicable row under the selection column for the rooms selected as primary rooms.

4.4 When selecting the other room, include adult bedrooms in the random selection if a child's bedroom was selected as the primary (BR) room. If one or more child's bedroom is listed within the 30-34 grouping (and one of these is selected as a primary

room), then expand the pick list for the other room to include this grouping (35-54 as opposed to 40-54).

5. **Verify and complete room selections**.
   - **5.1 Verify that only four 'S' entries exist** in the last column (far right) of the form.
   - **5.2 If a Basement exists, is accessible <u>and used for habitation</u>, then place a 'B' in the applicable row** under the selection column for the basement.
   - **5.3 Place a "D" to** indicate the selected room is where the technician should be able to get to the drinking water service line coming into the home.
6. **Select a random wall to be tested as the exterior wall** to receive additional LPB testing using *the Random Selection Procedure for Items* shown at the end of this protocol.
7. **Visit and confirm access to selected rooms**. Show the completed form to the Technician and briefly visit each selected room with the resident and Technician to ensure all agree on which rooms have been selected. Explain to the resident while visiting each room that the Technician will be making measurements in these rooms while we (Interviewer and resident) complete a questionnaire.
8. **Pass copy of Room Inventory form to Technician**. Remove the duplicate back-copy of the completed Room Inventory form and hand it to the Technician.
9. **Move on to the Resident Questionnaire Task** (protocol I5).

<u>RANDOM SELECTION PROCESS FOR ITEMS</u>

1. Count the number of items (like room count or four walls)
2. Go to the Random Number Table
   - 2.1 Select the first unused row of the table.
   - 2.2 Look under the column that matches the count number to get the selection and remember the selected number.
   - 2.3 Put a line through that row of the table to indicate that it has been used.
3. **For rooms**, starting at the top of the list of rooms from which you need to make a selection and count down the selected number down from the top (where the first listed room is one).
   <u>For example</u>, if there are two child's bedrooms and the first row of the table is used, then the 2nd listed room is to be tested.

   For walls, start at the main entrance door in the room, count the walls clockwise (left to right) until the selected number is reached and select that wall for testing.
   <u>For example</u>, if the main entrance door in the room faces west and first row of the table is crossed-out (already used), then the 3rd wall or the east wall is to be tested.

Dwelling Unit ID#_____

Room Inventory Form

List ALL rooms in the dwelling unit before making any selections!

ROOM	Exists? Yes	Exists? No	Level	Selection S = 4 primary rooms B = Basement D = water service line	Comments WP = wallpaper on most walls
11. Kitchen	1	2			
12. Kitchen	1	2			
13. Kitchen/Living room	1	2			
21. Living/Sitting room/Parlor	1	2			
22. Den/Family/Rec/Florida/Great room	1	2			
23. Den/Family/Rec/Florida/Great room	1	2			
24. Efficiency (K/LR/BR or LR/BR)	1	2			
30. Child's Bedroom (age(s):)	1	2			
31. Child's Bedroom (age(s):)	1	2			
32. Child's Bedroom (age(s):)	1	2			
33. Child's Bedroom (age(s):)	1	2			
34. Child's Bedroom (age(s):)	1	2			
35. Bedroom (identify:)	1	2			
36. Bedroom (identify:)	1	2			
37. Bedroom (identify:)	1	2			
38. Bedroom (identify:)	1	2			
39. Bedroom (identify:)	1	2			
40. Dining room	1	2			
41. Study/office	1	2			
42. Sewing room	1	2			
43. Guest Bedroom	1	2			
44. Laundry Room	1	2			
45. Bathroom (identify:)	1	2			
46. Bathroom (identify:)	1	2			
47. Bathroom (identify:)	1	2			
48. Bathroom (identify:)	1	2			
List any additional rooms:					
49.	1	2			
50.	1	2			
51.	1	2			
52.	1	2			
53.	1	2			
54.	1	2			
61. Most Commonly Used Entrance (Identify closest room ID _____)					
Attached garage?	1	2			

Note: A child's bedroom is occupied by at least one person age 17 or younger.

☐ **Check: Verified Rooms by Level**

Circle one random selected exterior wall to receive additional LBP testing:

(1) North (2) East (3) South (4) West

Random Number Table for Random Selections
(use this form for all protocols requiring a random selection)

Random Number Selections from a Group of 2 to 14 Items													
	Number of Items to Pick From:												
Row	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1	2	2	3	1	3	4	5	3	7	11	5	3	5
2	2	3	3	4	2	5	8	5	10	1	3	7	2
3	2	1	3	1	4	2	8	3	2	5	7	3	2
4	2	3	3	1	3	1	6	8	6	9	3	13	2
5	1	1	3	5	4	2	6	2	5	3	4	2	2
6	1	3	2	3	4	7	6	2	6	3	12	4	14
7	2	3	2	2	5	6	6	1	1	8	9	8	8
8	2	2	1	4	2	4	5	5	4	6	6	10	13
9	2	2	3	1	5	3	6	6	7	2	8	7	1
10	1	3	1	1	3	2	2	7	5	6	10	4	13
11	2	1	3	1	5	7	3	6	10	6	3	2	13
12	1	2	3	2	5	4	2	4	8	3	10	11	9
13	1	2	2	2	4	3	2	6	3	8	4	4	6
14	2	1	3	3	3	2	3	7	5	10	5	4	7
15	2	2	1	4	4	7	3	7	2	9	7	5	11
16	2	3	1	3	3	6	6	9	8	11	5	2	11
17	2	3	3	2	4	3	4	2	9	3	3	12	12
18	1	2	2	2	4	4	2	4	7	2	5	9	12
19	1	1	1	3	5	3	3	4	2	4	8	7	8
20	1	3	3	2	2	2	2	3	5	7	11	12	12
21	2	1	4	4	5	1	3	2	2	3	4	7	4
22	2	1	3	4	3	5	3	5	5	10	1	11	2
23	2	1	3	3	1	5	3	3	5	5	4	7	3
24	1	3	2	3	5	4	7	3	8	4	8	5	6
25	1	3	2	2	6	2	5	5	3	2	1	10	2
26	2	3	3	4	5	5	5	8	6	3	6	3	12
27	2	3	3	2	2	6	2	1	6	2	5	8	12
28	1	3	3	4	6	3	7	1	3	3	2	8	11
29	2	2	4	4	3	7	3	2	8	10	6	10	8
30	1	1	2	5	5	2	3	2	3	4	4	8	11
31	2	3	1	4	4	4	5	7	6	3	6	2	3
32	1	3	3	4	5	5	4	3	9	6	3	9	12
33	1	2	3	3	2	4	6	8	4	3	4	11	13
34	2	1	1	3	3	3	7	4	8	2	4	11	1
35	1	1	3	2	6	6	6	3	8	4	6	1	7
36	1	1	3	5	3	4	5	6	10	2	9	1	11
37	1	2	2	3	3	7	7	4	3	2	3	6	12
38	1	2	3	5	4	7	6	1	1	8	6	8	13
39	1	1	1	3	3	6	5	3	7	8	12	6	1
40	2	2	1	1	2	4	7	9	5	9	5	11	12

I5- RESIDENT QUESTIONNAIRE

Staff Involved: Assigned Interviewer

Overview: After the Room Inventory has been completed (protocol I4), the Interviewer will administer the remaining portions of the Resident Questionnaire using the tablet.

Data Recording on: Remaining Portions of Questionnaire (on tablet)

Equipment Needed from Kit (W)

- 1 blue pen
- 1 clipboard
- 1 Samsung Galaxy tablet
- 1 backpack to hold tablet and other supplies
- 1 Backup Resident Questionnaire Form Set (needed only if tablet fails)
- 1 set Color Coded Cards:
  - 1 Building Categories – Blue
  - 1 Heating Sources – Tan
  - 1 Work Activities – Green
  - 1 Home Activities – Pink
  - 1 Race and Education – Purple
  - 1 Income A – Yellow
  - 1 Income B – White

Supplies Needed from Kit (B)

- Resident Questionnaire Form Set
-

Glove Use Directives: **optional (see protocol I0)**

PROCEDURE

1. **Pick location to give questionnaire**. Go to a convenient place in the DU (such as the Kitchen) to give the resident questionnaire using the tablet. Take extra care not to pinch the sampling train tube coming from the pump during this effort.
2. **Move on to the Interior Walkthrough (protocol I6) after completing the interview.**

1. HOUSE AND EXPOSURE

I have a few more questions about your house/apartment. (NAME OF TECHNICIAN) will be preparing our sampling equipment and forms in the meantime.

Q1. What year was your home/apartment built?

YEAR OF CONSTRUCTION.....|___|___|___|___| ➔ (SKIP TO Q2b)

DON'T KNOW.....8

PROMPT: Only if needed, Hand respondent card with building age categories - blue

Q2. Which category of years on this card do you think most closely matches when the building was built?

1990 TO PRESENT.....1
BETWEEN 1978 AND 1989.....2
BETWEEN 1960 AND 1977.....3
BETWEEN 1946 AND 1959.....4
BETWEEN 1940 AND 1945.....5
1939 OR BEFORE.....6

DON'T KNOW.....8

Q2a. RECORD ANY COMMENTS RESPONDENT MAKES ABOUT BUILDING AGE.

_____

Q2b. Have there been any additions to this house since 1977 (that is, in 1978 or later)?

YES.....1
NO.....2

DON'T KNOW.....8

Q3. Have you ever received a copy of a pamphlet called "Protect Your Family from Lead in Your Home"? (Show respondent a copy of the most current version of the pamphlet.)

YES.....1
NO.....2

DON'T KNOW.....8
REFUSED.....9

Q3a. Have you ever had this home tested for lead in paint, dust, or soil?

YES.....1
NO.....2

DON'T KNOW.....8
REFUSED.....9

Q4. [IF NEEDED, ASK] How many stories are in the house/building, including the basement? (IF SPLIT LEVEL, OR PARTIAL BASEMENT, COUNT THE GREATEST NUMBER OF STORIES ON TOP OF EACH OTHER.)

NUMBER OF STORIES..... |___|___|

DON'T KNOW.....8

INTERVIEWER NOTE: IF SINGLE FAMILY HOME, SKIP TO Q7

Q5. [IF NEEDED, ASK] How many apartments/housing units are in this building?

NUMBER OF HOUSING UNITS.....|___|___|___|___| ➔(SKIP TO Q7)

DON'T KNOW.....8

Q6. [IF NEEDED, ASK] Would you say that there are 4 or fewer units, or 5 units or more, in the building?

4 OR FEWER UNITS.....1
5 UNITS OR MORE.....2

DON'T KNOW.....8

BOX C
DO THIS AS YOU LEAVE THE RESPONDENT'S HOME

INTERVIEWER: if the respondent does not know how many units are in the building, verify by some other means (e.g. by looking at the mailboxes for the building). Record on the top of the Exterior Conditions Log as you leave the housing unit.

Q7. What is the <u>main</u> heating source in your home? You may refer to the tan card for your answer. (CIRCLE <u>ONE</u>)

PROMPT: Only if needed, hand respondent card with heating sources - tan

GAS-HEATED FORCED AIR (VENTS).....01
ELECTRIC-HEATED FORCED AIR (VENTS)
(INCLUDES HEAT PUMPS).....02
OIL/KEROSENE-FIRED FURNACE.....03
ELECTRIC BASEBOARD HEAT.....04
RADIATORS (STEAM OR HOT WATER).....05
GAS STOVE/FIREPLACE/WALL FURNACE.....06
WOOD BURNING STOVE/FIREPLACE.....07
KEROSENE SPACE HEATER.....08
RADIANT/CERAMIC HEATER.....09
ELECTRIC SPACE HEATER 10
SOME OTHER SOURCE.....11
(SPECIFY_____)

NO SOURCE OF HEAT.....12 ➔ (SKIP TO Q9)
DON'T KNOW.....98

Q8. Are there any <u>other</u> sources you use for heat? You may refer to the tan card for your answer(s). (<u>CIRCLE ALL THAT APPLY</u>)

GAS-HEATED FORCED AIR (VENTS).....01
ELECTRIC-HEATED FORCED AIR (VENTS)
(INCLUDES HEAT PUMPS).....02
OIL/KEROSENE FIRED FURNACE.....03
ELECTRIC BASEBOARD HEAT.....04
RADIATORS (STEAM OR HOT WATER).....05
GAS STOVE/FIREPLACE/WALL FURNACE.....06
WOOD BURNING STOVE/FIREPLACE.....07
KEROSENE SPACE HEATER.....08
RADIANT/CERAMIC HEATER.....09
ELECTRIC SPACE HEATER 10
SOME OTHER SOURCE.....11
(SPECIFY_____)

NO OTHER SOURCE OF HEAT.....12
DON'T KNOW.....98

Q9. What kinds of air-conditioning system(s) are in this home? Are there…

WINDOW UNITS.....1
CENTRAL AIR CONDITIONING.....2
EVAPORATIVE COOLER (SWAMP COOLER.....3
NO AIR CONDITIONING.....4 ➔ (SKIP TO Q11)

DON'T KNOW.....8 ➔ (SKIP TO Q11)

Q10. How often have you used air conditioning in the past month? Would you say…

EVERYDAY,.....1
20 TO 30 DAYS,.....2
10 TO 19 DAYS,.....3
1 TO 9 DAYS, OR.....4
NOT AT ALL.....5

DON'T KNOW.....8

Q11. In the past month, approximately how many hours a day did you keep the windows or doors open in your home? Was it…

LESS THAN 1 HOUR PER DAY.....1
1-3 HOURS PER DAY.....2
4-12 HOURS PER DAY.....3
MORE THAN 12 HOURS PER DAY, OR.....4
NOT AT ALL.....5

DON'T KNOW.....8

Q12. Have there ever been water problems or dampness in your home from broken pipes, persistent leaks, heavy rain, or floods?

YES.....1
NO.....2 ➔ (SKIP TO Q14)

DON'T KNOW.....8 ➔ (SKIP TO Q14)

Q12a. How recently have there been water problems or dampness in your home? Would you say:

RIGHT NOW.....1 ➔ (SKIP TO Q13)
NOT NOW BUT IN THE LAST 3 MONTHS.....2
3 to 12 MONTHS AGO.....3
MORE THAN A YEAR AGO.....4

DON'T KNOW..... 8

Q12b. When the water or dampness problem stopped or was fixed, were water damaged materials removed?

YES.....1 ➔ (SKIP TO Q14)
NO.....2 ➔ (SKIP TO Q14)
NO DAMAGED MATERIALS.....3 ➔ (SKIP TO Q14)

DON'T KNOW..... 8 ➔ (SKIP TO Q14)

Q13 Can you describe the water problem or leak?

(SPECIFY_____)

Q14. Does your home frequently have a mildew odor or musty smell?

YES.....1
NO.....2

DON'T KNOW.....8

Q15. Do you use a dehumidifier in your home?

YES.....1
NO.....2

DON'T KNOW.....8

Q16. In the past six months, have you had any of the following pets living in your home? Please answer Yes or No for each type of pet. Did you have a…

		YES	NO	DK
Q16a.	CAT	1	2	8
Q16b.	DOG	1	2	8
Q16c.	HAMSTER	1	2	8
Q16d.	GERBIL	1	2	8
Q16e.	GUINEA PIG	1	2	8
Q16f.	RABBIT	1	2	8
Q16g.	BIRD	1	2	8
Q16h.	ANY OTHER PETS	1	2	8

(SPECIFY_____)

IF Q16a – Q16h ARE ALL NO OR DK, THEN SKIP TO Q17

Q17. Of the pets you just mentioned, which are <u>currently</u> living in your home?

NONE.....01
CAT.....02
DOG.....03
HAMSTER.....04
GERBIL.....05
GUINEA PIG.....06
RABBIT.....07
BIRD.....08
OTHER.....09
(SPECIFY_____)

DON'T KNOW.....98

Q18. In the last 12 months, have you seen mice or evidence of mice, such as nests or droppings, in your home?

YES.....1
NO.....2 ➔(SKIP TO Q20)
DON'T KNOW.....8 ➔(SKIP TO Q20)

Q19. About how often do see mice or evidence of mice in your home? Is it…

Every Day,.....
.....1
Once a week,.....
.....2
Once a month,.....
.....3
Once a year.....
.....4
Seldom.....
.....5
Never.....
.....6
DON'T KNOW.....
.....8

Q20. What is the source of water for your home?

City or county supplied (main).....01 ➔ (SKIP TO Q20b)
A well.....02 ➔ (SKIP TO Q20b)
A collection tank.....03
OTHER.....09 ➔ (SKIP TO Q20b)
(SPECIFY_____)
DON'T KNOW.....98 ➔ (SKIP TO Q20b)

Q20a. Where does the water that fills your collection tank come from?

Rain runoff.....01
A spring.....02
A river or lake.....03
OTHER.....09
(SPECIFY_____)

DON'T KNOW.....98

Q20b. Where does your waste water go?

Central city or county sewer.....01
Septic tank/system.....02
OTHER.....09
(SPECIFY_____)

DON'T KNOW.....98

Q20c When you collected the drinking water sample for us (which I'll get from you later), where did you collect it?

Kitchen 01
Bathroom.....02
OTHER.....09
(SPECIFY_____)
DON'T KNOW.....98

Q20d Do you use bottled water for drinking and cooking?

YES.....1
NO.....2
DON'T KNOW.....8

HAND RESPONDENT WATER USE CARD - *COLOR TBD*

Q20e. The card lists several activities that can be done using water in the **home**. Water from the kitchen tap is used for which activities?

[CIRCLE ALL THAT APPLY]

01.....WATER FOR DRINKING
02.....WATER FOR COOKING
03.....WATER FOR CLEANING
04.....WATER IS USED TO MAKE UP BABY FORMULA
05.....NONE
98.....DON'T KNOW

HAND RESPONDENT FORMALDEHYDE SOURCES CARD - *COLOR TBD*

Q20f. The card lists several items that may contribute to formaldehyde levels in the home. Which of these items have been brought in or built into the home in the last year?

[CIRCLE ALL THAT APPLY]

01.....NEW CABINETRY IN THE KITCHEN
02.....NEW CABINETRY IN ANY OF THE BATHROOMS
03.....NEW FLOORING
04.....NEW SOFT-FURNITURE
05.....NEW HARD-FURNITURE
06.....PART ROOM REVOVATIONS
07.....WHOLE ROOM REVOVATIONS
08.....NEW ROOFING
98.....DON'T KNOW

2. ACTIVITIES IN THE HOUSE

INTERVIEWER NOTE: TAG THE ROOM INVENTORY FORM WITH A CLIP SO THAT IT CAN BE EASILY REACHED AS IT WILL BE NEEDED TO OBTAIN ROOM CODES FOR ANSWERING MANY OF THE FOLLOWING QUESTIONS

Q21. Do you use air fresheners such as plug-ins, gels or solids, or sprays in the home?

YES.....1
NO.....2 ➔ (SKIP TO Q22)
DON'T KNOW.....8 ➔ (SKIP TO Q22)

Q21a. Please tell me which room(s) you use air fresheners in, the type of air freshener, and how many are in each room.

Room Name	Room code from Room Inventory	21b. Plug-in How many are in… [ENTER NUMBER IN ROOM]	21c. Gel/Solid How many are in… [ENTER NUMBER IN ROOM]	21d. Spray in last month?
				Y.....1 N.....2 DK.....8
				Y.....1 N.....2 DK.....8
				Y.....1 N.....2 DK.....8
				Y.....1 N.....2 DK.....8
				Y.....1 N.....2 DK.....8
				Y.....1 N.....2 DK.....8

Q22 Do you use air cleaning appliances such as ionizers, ozone generators, or air filtration appliances in the home?

YES.....1
NO.....2 ➔ (SKIP TO Q23)
DON'T KNOW.....8 ➔ (SKIP TO Q23)

Q22a. Please tell me which room(s) you use air cleaning appliances in and the type of air cleaning appliance in each room.

Room Name	Room code from Room Inventory	22b. ionizer [ENTER NUMBER IN ROOM]	22c.ozone generator [ENTER NUMBER IN ROOM]	22d. air filtration appliance [ENTER NUMBER IN ROOM]	22e. Other air cleaner [ENTER NUMBER IN ROOM]

Q23 (recent carpet installation) DELETED since not a source of formaldehyde.

Q24 In the last 6months, has any new furniture or cabinetry been purchased for the home?

YES.....1
NO.....2 ➔ (SKIP TO Q25)
DON'T KNOW.....3 ➔ (SKIP TO Q25)

Q24a Where in the home is the new furniture or cabinetry?

Room Name	Room Code from Room Inventory
_____	_____
_____	_____
_____	_____
_____	_____

Now I will ask some questions about **pesticide** application in this home.

Q25. In the last 12 months, have you had cockroaches in your home?

YES.....1
NO.....2 ➔ (SKIP TO Q25c)
DON'T KNOW.....8 ➔ (SKIP TO Q25c)

Q25a. When was the last time you saw cockroaches inside your home? Was it…

WITHIN THE LAST WEEK,.....1
WITHIN THE LAST MONTH,.....2 ➔ (SKIP TO Q25c)
2 TO 4 MONTHS AGO.....3 ➔ (SKIP TO Q25c)
5 – 12 MONTHS AGO.....4 ➔ (SKIP TO Q25c)
DON'T KNOW.....8 ➔ (SKIP TO Q25c)

Q25b. Approximately how many cockroaches do/did you see per day on average in your home?

LESS THAN 5.....1
5 TO 50.....2
MORE THAN 50.....3
DON'T KNOW.....8

Q25c. In the last 12 months, have you had bed bugs in your home?

YES.....1
NO.....2 ➔ (SKIP TO Q26)
DON'T KNOW.....8 ➔ (SKIP TO Q26)

Q25d. When was the last time you saw bed bugs inside your home? Was it…

WITHIN THE LAST WEEK,.....1
WITHIN THE LAST MONTH,.....2
2 TO 4 MONTHS AGO.....3
5 – 12 MONTHS AGO.....4
DON'T KNOW.....8

The following set of questions pertains to **indoor** pesticide applications.

Q26. Are pesticides or chemicals to kill bugs used **inside** your home?

PROMPT: Show card for types of indoor pesticide products - Grey

YES.....1		
NO.....2	→	(SKIP TO Q32)
REFUSED TO ANSWER.....7	→	(SKIP TO Q32)
DON'T KNOW.....8	→	(SKIP TO Q32)

Q27. Who usually applies the pesticides or chemicals to kill bugs **inside** your home? (CIRCLE ALL THAT APPLY)

SELF (YOU).....1
FAMILY MEMBER.....2
(SPECIFY_____)

PROFESSIONAL PEST CONTROL APPLICATOR.....3
BUILDING MAINTENANCE STAFF.....4
OTHER.....5
(SPECIFY_____)

REFUSED TO ANSWER.....7
DON'T KNOW.....8

Now, the following questions are about pesticides or chemicals that have been used to kill bugs **inside** your home. These could have been used by you, a family member, a family friend, a professional pest control worker, and/or the building (or apartment) maintenance staff.

Q28. During the **warm months** in your area, did you or anyone else use any pesticides or chemicals to kill bugs **inside** your home?

YES.....1		
NO.....2	→	(SKIP TO Q29)
REFUSED TO ANSWER.....7	→	(SKIP TO Q29)
DON'T KNOW.....8	→	(SKIP TO Q29)

Q28a. How often did you or anyone else use pesticides or chemicals to kill bugs **inside** your home during the **warm months**?

PROMPT: On average, how often was it used during the warm months in your area?

DAILY.....01
EVERY TWO TO SIX DAYS.....02
WEEKLY.....03
ONCE EVERY 2 WEEKS (BIWEEKLY).....04
ONCE EVERY 3 WEEKS.....05
MONTHLY.....06
ONCE EVERY 2 MONTHS (BIMONTHLY).....07
ONCE EVERY 3 MONTHS.....08
LESS THAN ONCE EVERY 3 MONTHS.....09

REFUSED TO ANSWER.....97
DON'T KNOW.....98

Q28b. What kinds of bugs were being killed **inside** your home during the **warm months**? (CIRCLE ALL THAT APPLY)

ANTS....01
COCKROACHES....02
CRICKETS....03
FLEAS/TICKS....04
FLIES....05
LICE....06
MOSQUITOES....07
TERMITES....08
WASPS/BEES....09
WATER BUGS....10
BED BUGS....11

REFUSED TO ANSWER....97
DON'T KNOW....98

Q28c. Where were pesticides used **inside** your home during the **warm months**? (CIRCLE ALL THAT APPLY)

PROMPT: Read the list as needed

ATTIC....01
BASEMENT....02
BATHROOM – CHILD'S....03
BATHROOM - OTHER....04
BEDROOM – CHILD'S....05
BEDROOM – OTHER....06
CHILD'S PLAY ROOM....07
DINING ROOM....08
FAMILY ROOM....09
GAME ROOM....10
HALLWAY....11
INDOOR ENCLOSED PORCH/SUNROOM....12
KITCHEN....13
LAUNDRY ROOM/UTILITY ROOM....14
LIVING ROOM....15
OFFICE/STUDY/DEN....16
OTHER INDOOR AREA....17
(SPECIFY_____)

REFUSE TO ANSWER....97
DON'T KNOW....98

Q28d. During the **warm months**, are pesticides or chemicals that kill bugs normally applied **inside** your home using any of the following?
(CHECK ALL THAT APPLY)

HAND RESPONDENT PESTICIDE PRODUCTS CARD - GREY

AEROSOL CAN.....01
SPRAYER.....02
FOGGER.....03
FOAM/GEL.....04
GRANULES/DUST/POWDER/PELLETS.....05
LOTION.....06
SHAMPOO.....07
BAIT STATION/TRAP.....08
CANDLES/COIL.....09
FLY STRIP.....10
PET COLLAR/SPOT-ON.....11
ANY OTHER.....12
(SPECIFY_____)

REFUSED TO ANSWER.....97
DON'T KNOW.....98

Q29. During the **cold months** in your area, did you or anyone else use any pesticides or chemicals to kill bugs **inside** your home?

YES.....1
NO.....2 → (SKIP TO Q30)

REFUSED TO ANSWER.....7 → (SKIP TO Q30)
DON'T KNOW.....8 → (SKIP TO Q30)

Q29a. How often did you or anyone else use pesticides or chemicals to kill bugs **inside** your home during the **cold months**?

PROMPT: On average, how often were they used during the cold months?

DAILY.....01
EVERY TWO TO SIX DAYS.....02
WEEKLY.....03
ONCE EVERY 2 WEEKS (BIWEEKLY).....04
ONCE EVERY 3 WEEKS.....05
MONTHLY.....06
ONCE EVERY 2 MONTHS (BIMONTHLY).....07
ONCE EVERY 3 MONTHS.....08
LESS THAN ONCE EVERY 3 MONTHS.....09

REFUSED TO ANSWER.....97
DON'T KNOW.....98

Q29b. What kinds of bugs were being killed **inside** your home during the **cold months**? (CIRCLE ALL THAT APPLY)

ANTS....01
COCKROACHES....02
CRICKETS....03
FLEAS/TICKS....04
FLIES....05
LICE....06
MOSQUITOES....07
TERMITES....08
WASPS/BEES....09
WATER BUGS....10
BED BUGS....11

REFUSED TO ANSWER....97
DON'T KNOW....98

Q29c. Where were pesticides used **inside** your home during the **cold months**? (CHECK ALL THAT APPLY)

PROMPT: Read the list as needed

ATTIC....01
BASEMENT....02
BATHROOM – CHILD'S....03
BATHROOM - OTHER....04
BEDROOM – CHILD'S....05
BEDROOM – OTHER....06
CHILD'S PLAY ROOM....07
DINING ROOM....08
FAMILY ROOM....09
GAME ROOM....10
HALLWAY....11
INDOOR ENCLOSED PORCH/SUNROOM....12
KITCHEN....13
LAUNDRY ROOM/UTILITY ROOM....14
LIVING ROOM....15
OFFICE/STUDY/DEN....16
OTHER INDOOR AREA....17
(SPECIFY_____)

REFUSE TO ANSWER....97
DON'T KNOW....98

Q29d. During the **cold months**, are pesticides or chemicals that kill bugs normally applied **inside** your home by you or someone else using any of the following?

HAND RESPONDENT PESTICIDE PRODUCTS CARD - GREY

AEROSOL CAN.....01
SPRAYER.....02
FOGGER.....03
FOAM/GEL.....04
GRANULES/DUST/POWDER/PELLETS.....05
LOTION.....06
SHAMPOO.....07
BAIT STATION/TRAP.....08
CANDLES/COIL.....09
FLY STRIP.....10
PET COLLAR/SPOT-ON.....11
ANY OTHER.....12
(SPECIFY_____)

REFUSED TO ANSWER.....97
DON'T KNOW.....98 ➔ (SKIP TO Q32)

Q30 DELETED – FREQUENCY OF PESTICIDE APPLICATION

Q31 DELETED – FREQUNCY OF PESTICIDE APLLICATION

Q31a. During the most recent use of a pesticide or chemical to kill bugs in your home, where was it applied **inside** your home?
(CIRCLE ALL THAT APPLY)

PROMPT: Read the list as needed

ATTIC.....01
BASEMENT.....02
BATHROOM – CHILD'S.....03
BATHROOM - OTHER.....04
BEDROOM – CHILD'S.....05
BEDROOM – OTHER.....06
CHILD'S PLAY ROOM.....07
DINING ROOM.....08
FAMILY ROOM.....09
GAME ROOM.....10
HALLWAY.....11
INDOOR ENCLOSED PORCH/SUNROOM.....12
KITCHEN.....13
LAUNDRY ROOM/UTILITY ROOM.....14
LIVING ROOM.....15
OFFICE/STUDY/DEN.....16
OTHER INDOOR AREA.....17
(SPECIFY_____)

REFUSE TO ANSWER.....97
DON'T KNOW.....98

Q31b. During the **most recent use**, how was the pesticide or chemical applied **inside** your home?

HAND RESPONDENT PESTICIDE PRODUCTS CARD - GREY

AEROSOL CAN.....01
SPRAYER.....02
FOGGER.....03
FOAM/GEL.....04
GRANULES/DUST/POWDER/PELLETS.....05
LOTION.....06
SHAMPOO.....07
BAIT STATION/TRAP.....08
CANDLES/COIL.....09
FLY STRIP.....10
PET COLLAR/SPOT-ON.....11
ANY OTHER.....12
(SPECIFY)_____

REFUSED TO ANSWER.....97
DON'T KNOW.....98

Q31c. Who used the pesticides or chemical **inside** your home in the **most recent use**?

SELF (YOU).....01
FAMILY MEMBER.....02
PROFESSIONAL PEST CONTROL APPLICATOR.....03 ➔ (SKIP TO Q31e)
BUILDING MAINTENANCE STAFF.....04 ➔ (SKIP TO Q31e)
OTHER.....05 ➔ (SKIP TO Q31e)

REFUSED TO ANSWER.....07 ➔ (SKIP TO Q32)
DON'T KNOW.....08 ➔ (SKIP TO Q32)

Q32. During the past 30 days, was any pesticide or chemical used by you or anyone else to kill bugs **outside** your home?

YES.....1 ➔ (SKIP TO Q34)
NO.....2

REFUSED TO ANSWER.....7
DON'T KNOW.....8

Q33. During the past year, was any pesticide or chemical used by you or anyone else to kill bugs **outside** your home?

YES.....1
NO.....2

REFUSED TO ANSWER.....7
DON'T KNOW.....8

HAND RESPONDENT WORK ACTIVITIES CARD - GREEN

Q34. This card has a list of **work activities**. In the last six months [IF NEEDED AND IN HOUSE LESS THAN 6 MONTHS: Since you moved to this address], have you or has anyone in your household done any of these activities at work? [CIRCLE ALL THAT APPLY]

CONSTRUCTION/PAINT ACTIVITIES
- 01.....BUILDING DEMOLITION
- 02.....PAINT REMOVAL (INCLUDING SANDING OR SCRAPING)
- 03.....PLUMBING
- 04.....SANDBLASTING (INCLUDING OUTDOOR DECKING/PORCH FLOORING)
- 05.....PRESSURE-TREATED WOOD CONSTRUCTION (DECKS, FENCES, PLAYSETS, FURNITURE, OTHER OUTDOOR STRUCTURES)
- 06.....PRESSURE CLEANING/WASHING WOOD STRUCTURES (DECKS, FENCES, PLAYSETS, FURNITURE, OTHER OUTDOOR STRUCTURES)

INDUSTRY ACTIVITIES
- 07.....BATTERY MANUFACTURING OR SALVAGE WORK
- 08.....EXPLOSIVE OR AMMUNITION WORK
- 09.....FOUNDRY WORK
- 10.....GLASS WORK
- 11.....LEAD SMELTER WORK
- 12.....OIL REFINERY WORK
- 13.....OTHER LEAD-RELATED INDUSTRY WORK
- 14. .....PESTICIDE/CHEMICAL-RELATED WORK
- 15. .....WOOD TREATMENT PLANT/MILLWORK PLANT

MISCELLANEOUS (LEAD)
- 16.....CAR RADIATOR REPAIR
- 17.....MAKING OR SPLICING CABLE
- 18.....WORK AT A FIRING RANGE OR POLICE WORK
- 19.....WELDING OR TORCH CUTTING

ANIMAL CARE
- 20.....ANIMAL CARE WORKER/VETERINARIAN
- 21.....EXTERMINATION OF PESTS

FARMING/LANDSCAPING
- 22.....AGRICULTURAL/HORTICULTURAL/LANDSCAPE RELATED WORK

- 23.....NONE.....(SKIP TO Q35)
- 98.....DON'T KNOW.....(SKIP TO Q35)

Q34a. How often does anyone who does this work wear or bring his or her work clothes home?

NEVER	1	➔ (SKIP TO Q35)
RARELY	2	
OFTEN	3	
ALWAYS	4	
DON'T KNOW	8	➔ (SKIP TO Q35)

Q34b. Do you usually wash or clean these work clothes here at home?

YES	1
NO	2
DON'T KNOW	8

HAND RESPONDENT HOME ACTIVITIES CARD - PINK

Q35. The card lists several activities that can be done at **home**. In the last six months [IF NEEDED, AND IN HOME LESS THAN 6 MONTHS: Since you moved to this address], have you or anyone in your household participated in any of these activities **here at home**?
[CIRCLE ALL THAT APPLY]

01.....MAKE BULLETS OR FISHING SINKERS
02.....PAINT CARS OR BICYCLES
03.....RELOAD BULLETS, TARGET SHOOT, OR HUNT
04.....REMOVE PAINT FROM ANY PART OF THE HOUSE
05.....REMOVE PAINT FROM FURNITURE
06.....SAND OR PAINT PARTS OF THE HOUSE
07.....SOLDER ELECTRONIC PARTS
08.....SOLDER PIPES OR METAL
09.....USE ARTISTS' PAINT (JEWELRY, PICTURES)
10.....WORK WITH STAINED GLASS
11.....WORK WITH POTTERY OR GLAZES
12.....BUILD/SAND/SANDBLAST OR PAINT OUTDOOR WOODEN DECKING/WOODEN FLOORING OR WOODEN PATIO FURNITURE/PLAYSETS
13.....PRESSURE CLEANING/WASHING WOOD STRUCTURES (DECKS, FENCES, PLAYSETS, FURNITURE, OTHER OUTDOOR STRUCTURES)
15.....NONE
98.....DON'T KNOW

Q36. How many people live in this home, including yourself and any children?

NUMBER OF RESIDENTS |__| |__|

REFUSED.....997
DON'T KNOW.....998

Q36a. Do any children under the age of 18 live in this home?

YES.....1
NO 2 ➔ (SKIP TO 37)

REFUSED.....997
DON'T KNOW.....998

Q36b. Do any children under the age of 6 live in this home?

YES.....1
NO 2

REFUSED.....997
DON'T KNOW.....998

Q37. Is this home used for childcare?

YES.....1
NO.....2 ➔ (SKIP TO Q37)

DON'T KNOW.....8 ➔ (SKIP TO Q37)

Q37a. Not including children who live here, how many children are cared for in this house?

NUMBER OF CHILDREN.....|__| |__|

REFUSED.....997

DON'T KNOW.....998

Q37b. Which rooms in this home are used for childcare?

Room Name	Room Code from Room Inventory
_____	_____
_____	_____
_____	_____
_____	_____

Q38. Is there a garage attached to your home?

YES.....1
NO.....2 ➔ (SKIP TO 39)

DON'T KNOW.....8 ➔ (SKIP TO 39)

Q38a. Do you ever start your car in the garage with the garage door closed?

YES.....1
NO.....2 ➔ (SKIP TO 39)

DON'T KNOW.....8 ➔ (SKIP TO 39)

Q38b. How long do you usually let it run in the garage?
[INTERVIEWER NOTE: IF RESPONDENT GIVES RANGE OF TIME, RECORD LONGEST TIME.]

NUMBER OF MINUTES .....|__| |__|

DON'T KNOW.....998

Q39. How many times in last two months have you had to reset a circuit breaker or replace a fuse?

NONE.....1
ONCE.....2
2 OR MORE TIMES.....3

DON'T KNOW.....8

Q44. How often are cigarettes smoked inside the house?

LESS THAN ONCE A DAY.....1
1-3 TIMES A DAY.....2
4-10 TIMES A DAY.....3
MORE THAN 10 TIMES A DAY.....4
DON'T SMOKE INSIDE THE HOUSE.....5

DON'T KNOW.....8

Q44a. How often are cigars, pipes or other types of tobacco products smoked inside the house?

LESS THAN ONCE A DAY.....1
1-3 TIMES A DAY.....2
4-10 TIMES A DAY.....3
MORE THAN 10 TIMES A DAY.....4
DO NOT SMOKE INSIDE THE HOUSE.....5

DON'T KNOW.....8

Q45. These next questions provide us with information that will help us when we analyze the dust samples.

		1.	2.	3.	4.	5.
		KITCHEN	COMMON LIVING AREA	BEDROOM	OTHER ROOM	BASEMENT
	ENTER ROOM CODE FROM ROOM INVENTORY FORM	1___	2___	3___	______	______
Q45a	How long ago was the floor or carpet last cleaned? (<u>not</u> including shampooing or steam cleaning)	DAYS....................|__| |__| WEEKS................|__| |__| DON'T KNOW................8	DAYS....................|__| |__| WEEKS................|__| |__| DON'T KNOW................8	DAYS....................|__| |__| WEEKS................|__| |__| DON'T KNOW................8	DAYS....................|__| |__| WEEKS................|__| |__| DON'T KNOW................8	DAYS....................|__| |__| WEEKS................|__| |__| DON'T KNOW................8
Q45b	How was the floor or carpet last cleaned? [CIRCLE MOST RECENT METHOD]	VACUUMED...................1 MOPPED........................2 SWEPT...........................3 OTHER...........................4 Specify:_______________ DON'T KNOW................8	VACUUMED...................1 MOPPED........................2 SWEPT...........................3 OTHER...........................4 Specify:_______________ DON'T KNOW................8	VACUUMED...................1 MOPPED........................2 SWEPT...........................3 OTHER...........................4 Specify:_______________ DON'T KNOW................8	VACUUMED...................1 MOPPED........................2 SWEPT...........................3 OTHER...........................4 Specify:_______________ DON'T KNOW................8	VACUUMED...................1 MOPPED........................2 SWEPT...........................3 OTHER...........................4 Specify:_______________ DON'T KNOW................8
Q45c	When was the last time the carpet or rug was shampooed or steamed cleaned?	1-4 WEEKS....................1 1-6 MONTHS..................2 7-12 MONTHS................3 >1 YEAR........................4 NEVER...........................5 NO CARPET/RUG..........6 DON'T KNOW................8	1-4 WEEKS....................1 1-6 MONTHS..................2 7-12 MONTHS................3 >1 YEAR........................4 NEVER...........................5 NO CARPET/RUG..........6 DON'T KNOW................8	1-4 WEEKS....................1 1-6 MONTHS..................2 7-12 MONTHS................3 >1 YEAR........................4 NEVER...........................5 NO CARPET/RUG..........6 DON'T KNOW................8	1-4 WEEKS....................1 1-6 MONTHS..................2 7-12 MONTHS................3 >1 YEAR........................4 NEVER...........................5 NO CARPET/RUG..........6 DON'T KNOW................8	1-4 WEEKS....................1 1-6 MONTHS..................2 7-12 MONTHS................3 >1 YEAR........................4 NEVER...........................5 NO CARPET/RUG..........6 DON'T KNOW................8

Q46. Do you have a vacuum cleaner?

YES.....1
NO.....2 ➔ (SKIP TO Q47)

DON'T KNOW.....8 ➔ (SKIP TO Q47)

Q46a. Is your main vacuum cleaner a bagless vacuum cleaner?

YES.....1
NO.....2

DON'T KNOW.....8

IF 46a IS "YES," USE SECOND PHRASE FOR 46b AND 46c.

Q46b. How long since the vacuum bag was changed? / How long since you emptied the vacuum cleaner cup?

NUMBER.....|___|___|
WEEKS.....1
MONTHS.....2
YEARS.....3

DON'T KNOW.....8

Q46c. Has the vacuum cleaner bag only been used at this home? / Since you emptied the cup, has the vacuum cleaner only been used in this house?

YES.....1 ➔ (GO TO BOX, BELOW)
NO.....2 ➔ (SKIP TO Q47)

DON'T KNOW.....8 ➔ (SKIP TO Q47)

INTERVIEWER NOTE: IF 46c IS "YES," AND RESPONDENT USES VACUUM CLEANER BAGS, READ:
When we end this interview, I am going to ask you to give me the bag from your vacuum cleaner.

IF 46c IS "YES," AND RESPONDENT TELLS YOU THEY HAVE A BAGLESS VACUUM CLEANER, READ:
When we end this interview, I will empty the contents of your container into a plastic bag.

These next few questions are general questions to help us categorize your home for the survey.

Q47. Do you own or rent this home?

OWN .....1 ➔ (SKIP TO Q51)
RENT.....2

REFUSED.....7 ➔ (SKIP TO Q51)
DON'T KNOW 8

Q48. Is the housing authority your landlord or is your house/apartment privately owned?

HOUSING AUTHORITY.....1
PRIVATE LANDLORD.....2 ➔ (SKIP TO Q50)

REFUSED.....7
DON'T KNOW.....8

Q49. Is your rent amount lower because you are in either a Federal, State or local government-housing program?

YES.....1
NO.....2 ➔ (SKIP TO Q51)

REFUSED.....7 ➔ (SKIP TO Q51)
DON'T KNOW.....8 ➔ (SKIP TO Q51)

Q50. Each year, as part of your rental agreement, is your household required to complete recertification by reporting income to determine the amount of rent you pay?

YES.....1
NO.....2

REFUSED.....7
DON'T KNOW.....8

Q51. I need to ask about your 2016 household income. This information will never be associated with your household. Was the total 2016 income for the household below or above $35,000?

BELOW $35,000.....1 ➔ (INCOME CARD A-YELLOW)
$35,000 OR MORE.....2 ➔ (INCOME CARD B-WHITE)

DON'T KNOW.....8

HAND RESPONDENT CARD WITH INCOME CATEGORIES AS SPECIFIED IN Q50 ABOVE.

Q52. Which number on the card represents your total household income for 2017?

Up to $ 4,999.....01
$ 5,000 to $ 9,999.....02
$ 10,000 to $ 14,999.....03
$ 15,000 to $ 19,999.....04
$ 20,000 to $ 34,999.....05
$ 35,000 to $ 49,999.....06
$ 50,000 to $ 69,999.....07
$ 70,000 to $ 89,999.....08
$ 90,000 to $119,999.....09
$120,000 or above.....10

REFUSED.....97
DON'T KNOW.....98

Q53. For statistical purposes, I need to ask about your race and ethnicity.

HAND RESPONDENT CARD WITH RACE CATEGORIES.

Which race or races do you consider yourself as belonging to (please tell me all that apply)?

WHITE.....1
BLACK OR AFRICAN AMERICAN.....2
ASIAN.....3
NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER.....4
AMERICAN INDIAN OR ALASKAN NATIVE.....5

REFUSED 8

Q54. Do you consider yourself Hispanic or Latino?

HISPANIC OR LATINO 1
NOT HISPANIC OR LATINO.....2

REFUSED 8

END: We have now finished with all our survey questions. Thanks so much for answering these questions. Now, if you don't mind I would like to perform a quick household walkthrough with you to survey household features, including those that may have an impact on safety. (Interviewer begins to stand) then after we do a

quick walkthrough, I would like to collect your vacuum cleaner bag from your vacuum (ON INTERIOR WALK THROUGH FORM -> CONTINUE WITH WALK THROUGH FORM.)

TIME ENDED: _____ (AM/PM)

Dwelling Unit ID_____

RESPONDENT REFUSAL/BREAK-OFF REPORT

B1. What was the reason you were unable to proceed with testing the dwelling unit?

UNIT INELIGIBLE.....1	➔ (CONTINUE WITH B2)
RESPONDENT REFUSED TO PARTICIPATE 2	➔ (SKIP TO B3)
ADDRESS INCORRECT.....3	➔ (SKIP TO B8)
LANGUAGE PROBLEM.....4	➔ (SKIP TO B10)
NO ADULT IN HOUSEHOLD.....5	➔ (SKIP TO B10)
OTHER.....6	➔ (SKIP TO B3)

SPECIFY _____

B2. Explain in detail how you verified the unit was ineligible:

_____

_____

_____

_____ ➔ (SKIP TO B10**)**

B3. What were the reasons given for the refusal?
(CIRCLE ALL THAT APPLY)

TOO BUSY.....01
DOES NOT WANT TO KNOW ABOUT LEAD, ALLERGENS OR OTHER ENVIRONMENTAL CONTAMINANTS IN HOUSE.....02
DID NOT UNDERSTAND LETTER (TOO TECHNICAL).....03
WORRY ABOUT LEAD DISCLOSURE RULE.....04
SURVEY TOO LONG/TOO MUCH TIME IN HOUSE.....05
NEGATIVE REACTION TO GOVERNMENT SURVEYS.....06
INCENTIVE INSUFFICIENT.....07
What would be persuasive?_____

NEEDS MORE INFORMATION.....08
What is needed?_____

NEEDS REQUEST IN WRITING.....09
NEEDS US TO ASK OWNER.....10
(OWNERS NAME AND PHONE_____)

OTHER.....11
(SPECIFY_____)

B4. Strength of refusal: (CIRCLE ONE)

MILD, NO HOSTILITY.....1
FIRM, BUT NOT HOSTILE.....2
HOSTILE.....3

B5. What methods did you use to persuade respondent to participate?

_____

_____

_____

_____

B6. Did you ask to speak to any other person in the household?

YES.....1
NO.....2 ➔ (SKIP TO B8)

B7. What happened with that other person?

_____

_____

B8. Would you recommend contacting the household again?

YES.....1 ➔ (SKIP TO B10)
NO.....2

B9. Explain why you would not recommend contacting the household again.

_____

_____

_____

_____

B10. Did you call the QuanTech office?

YES.....1
NO.....2 ➔ (CALL QUANTECH OFFICE)

B11. What was the result of your call to the home office?

_____

_____ ➔ **(END)**

I6- INTERIOR WALKTHROUGH OBSERVATIONS

Staff Involved: Assigned Interviewer

Overview: After the Resident Questionnaire has been completed (protocol I5), the Interviewer is directed to perform data collection using the Interior Walkthrough Observations using the Resident Questionnaire Form Set (see forms at end of this protocol). These efforts include cleanliness and clutter observations, safety observations, collection of the resident vacuum bag, and measurement of hot water temperature.

Data Recording on: **Resident Questionnaire Form Set (same one started in I3)**

Equipment Needed from Kit (W)

- 1 duffel bag to carry equipment and other supplies
- 1 Thermometer (drinking water measurements)
- 1 blue pen
- 1 clipboard
- stopwatch
- 1 flashlight with extra batteries (for all protocols all DUs)
- 1 tape measure (25')
- cleaning wipes
- trash bag
- 2 spare Polyethylene re-closable bags 14"x20"

Supplies Needed from Kit (B) - Subkit I6

- 1 row of 4 self-adhesive, pre-printed ID labels inside re-closable bag
- 2 polypropylene re-closable bags 14" x20"

Glove Use Directives: **Use new (see protocol I0)**

PROCEDURE

1. **Conduct walk through and record data**. Using the Resident Questionnaire Form Set for the assigned DU, perform data collection to capture interior household walk-through data. Be sure to visit and collect data on the entire house (if allowed) not just the rooms selected for later testing.
   - **1.1 Complete recording of: Emergency Phone Numbers; Fire Extinguishers; Smoke Alarms; Stairways; Window Guards and Stops; Grab Bars; Air Cleaning Devices; Household Cleanliness and Clutter data; and Combustion Source Information.**
   - **1.2 Collect and store vacuum bag sample**. Collect a vacuum bag if the respondent replied YES to Q46c (Has the vacuum cleaner bag only been used at this home? / Since you emptied the cup, has the vacuum cleaner only been used in this house?). When the time for the vacuum bag collection is reached, obtain and store this sample using the following parameters:
     - **1.2.1 Locate vacuum**. Ask the resident to show you the vacuum as prompted by the Resident Questionnaire Form Set
     - **1.2.2 Don a pair of gloves and pull out Subkit I6**. If desired, for personal protection, don a pair of lab gloves before handling the vacuum bag. If not desired, you can use a cleaning wipe to clean your hands after handling this sample.
     - **1.2.3 Ask Resident to remove and hand you the vacuum bag or dust container**. Ask the Resident to remove the bag or dust container from their vacuum cleaner to avoid causing any damage to their vacuum.

1.2.3.1 For vacuum bags, very slowly place bag into the polyethylene (sample) bag (from subkit I6) and seal it. Take care to avoid spreading dust in the house. If possible, take the bag outside to gently squeeze air out so it will fit in the sample bag.

1.2.3.2 For bagless vacuums, very slowly pour the contents into the polyethylene (sample) bag (from subkit I6) and seal it. Take care to avoid spreading dust in the house. If possible, take the vacuum outside to make this transfer into the sample bag.

1.2.4 Assign unique ID number to collected sample (2 places). Be sure to retain, in subkit I6, the two ID labels remaining after completing these steps.

1.2.4.1 Place one sample ID label on sample bag. Place a Sample ID label on the bag using the first row of 4 Sample ID labels provided with Sub-kit I6. Then place this labeled bag into another sample bag of similar size to double bag the sample and seal it.

1.2.4.2 Place one replicate sample ID label on *Vacuum Cleaner Bag Collection Log*. and complete the appropriate entries on this Log. Temporarily store the collected sample. Note that there is no Chain-of-Custody (COC) form to be completed for this sample. The bound Resident Questionnaire with the collection log will serve in lieu of a COC.

2. Measure the hot water temperature at the kitchen faucet.

2.1 Go to the kitchen faucet and open the hot water tap and let it run as fast as possible without causing splashing out of the sink. Start the stopwatch.

2.2 Measure temperature at 2 minutes. Wait 2 minutes and take a hot water temperature reading recording the result in the Hot Water Temperature Log.

2.3 Measure temperature at 3 minutes. Wait another 1 minute and take a hot water temperature reading recording the result in the Hot Water Temperature Log.

2.4 Measure temperature at 4 minutes. Wait another 1 minutes and take a hot water temperature reading recording the result in the Hot Water Temperature Log. Close the tap.

3. **Move on to the Room Observation and Building Moisture Measurements (protocol I7).**

Emergency Phone Numbers

Are poisoning or emergency phone numbers posted near at least one phone?	IF YES, WHERE LOCATED?			
	IN ROOM?	ON PHONE?	VISIBLE FROM PHONE?	DISTANCE FROM PHONE?
Yes..............1 No...............2	Yes......1 No.......2	Yes......1 No.......2	Yes.......1 No.........2	______ FT

Fire Extinguishers

Is there a fire extinguisher in the house?	IF PRESENT				
	ROOM	CODE	CHARGE STATUS	EXPIRED?	TYPE(S)
Yes......1 No.......2			Charged...........1 Not Charged.....2 Can't Tell..........3	Yes.......1 No.........2	ABC.............1 A...................2 B...................3 C..................4
			Charged...........1 Not Charged.....2 Can't Tell..........3	Yes.......1 No.........2	ABC.............1 A...................2 B...................3 C..................4
			Charged...........1 Not Charged.....2 Can't Tell..........3	Yes.......1 No.........2	ABC.............1 A...................2 B...................3 C..................4
			Charged...........1 Not Charged.....2 Can't Tell..........3	Yes.......1 No.........2	ABC.............1 A...................2 B...................3 C..................4

Smoke Alarms

Smoke alarm(s) present in home? Yes......1 No.......2 (SKIP TO NEXT PAGE)	TYPE Central System.......1 Battery Operated....2	LEVEL(S) OF HOME (circle all that apply) - 0 - 1 - 2 - 3 - 4 - 5	NUMBER PRESENT __________
Are smoke alarm(s) present where all household members sleep (in room or immediately outside room)? Yes...............1 No.................2		IF NO, number of rooms not covered by smoke alarm? __________	
TEST ALARMS – ARE ALL OPERABLE? Yes....................1 No......................2 Can't Test..........3		IF NO, How many are not operational? __________	

Stairway/Hallways

		FLOORING TYPE (circle all that apply)	IF AREA RUG OR MAT, SKID RESISTANT?
Stairways			
HAND RAILS PRESENT? Yes.........1 No...........2	BOTH SIDES? Yes........1 No.........2	Mat (2'x3' or less)................1 Area rug.............................2 Wall-to-wall carpet...............3 Cement/brick.......................4 Wood Flooring.....................5 Vinyl Tile.............................6 Grouted Tile........................7 Linoleum.............................8 Other..................................9	Yes...............1 No...............2
OPENING > 6"? Yes...........1 No...........2			
Halls		Mat (2'x3' or less)................1 Area rug.............................2 Wall-to-wall carpet...............3 Cement/brick.......................4 Wood Flooring.....................5 Vinyl Tile.............................6 Grouted Tile........................7 Linoleum.............................8 Other..................................9	Yes...............1 No...............2

Window Guards and Stops

Are there rooms on a second story or higher above true ground level?	IF YES Are window guards or stops present on the windows in any of the rooms that are second story or higher above true ground level?
Yes 1 No 2	Yes..........................1 No............................2 No access................3

Grab bars (bathrooms) – do not include towel racks

ROOM #	TYPE	GRAB BARS PRESENT?	IF YES, WHERE LOCATED? (circle all that apply)	CHILD SAFETY LOCKS? (circle all that apply)
	Half.......1 Full........2	Yes......1 No.......2	Wall inside tub...........1 Wall outside tub.........2 Near toilet..................3 Other..........................4	Toilet...................1 Cabinets..............2 None....................3
	Half.......1 Full........2	Yes......1 No.......2	Wall inside tub...........1 Wall outside tub.........2 Near toilet..................3 Other..........................4	Toilet...................1 Cabinets..............2 None....................3
	Half.......1 Full........2	Yes......1 No.......2	Wall inside tub...........1 Wall outside tub.........2 Near toilet..................3 Other..........................4	Toilet...................1 Cabinets..............2 None....................3
	Half.......1 Full........2	Yes......1 No.......2	Wall inside tub...........1 Wall outside tub.........2 Near toilet..................3 Other..........................4	Toilet...................1 Cabinets..............2 None....................3

Air Cleaning Devices

Air cleaning device present? Yes…….1 No.........2 (Continue to Thank You)

ROOM CODE	TYPE	MAKE/MODEL	DOES UNIT PRODUCE OZONE?	OZONE RATING (MG/HR)	# Hours use per week	How often is the filter changed?
	Built In......1 Portable....2		Yes…….1 No.........2 DK.........8			Annually…….1 Bi-annually…2 Quarterly……3 As needed....4 Don't know…5
	Built In......1 Portable....2		Yes…….1 No.........2 DK.........8			Annually…….1 Bi-annually…2 Quarterly……3 As needed....4 Don't know…5
	Built In......1 Portable....2		Yes…….1 No.........2 DK.........8			Annually…….1 Bi-annually…2 Quarterly……3 As needed....4 Don't know…5
	Built In......1 Portable....2		Yes…….1 No.........2 DK.........8			Annually…….1 Bi-annually…2 Quarterly……3 As needed....4 Don't know…5

Home Cleanliness (Circle one):	**Household Clutter Code (Circle one):**
Appears clean..1	Organized, nothing out of place......................1
Some evidence of housecleaning...................2	Average amount of clutter...............................2
No evidence of housecleaning........................3	Lack of organization, nothing in place.............3

Combustion Source Information	***Present?***
Combustion furnace present?	Yes.....1 No.....2
Gas stove/ fireplace present?	Yes.....1 No.....2
Wood fireplace present?	Yes.....1 No.....2
Gas hot water heater present?	Yes.....1 No.....2
Gas dryer present?	Yes.....1 No.....2
Gas cook stove/oven present?	Yes.....1 No.....2
Portable fuel-fired heater present?	Yes.....1 No.....2
Other combustion source present? (SPECIFY:_____)	Yes.....1 No.....2
CO monitor present in home?	Yes.....1 No.....2
Cook stove fan exhausts to outside?	Yes.....1 No.....2

Thank you very much. I will begin my environmental sample collection now. I will need your vacuum cleaner bag or the contents from your bag-less vacuum container.

INTERVIEWER NOTE: Look at the answer to question Q46c [Has the vacuum cleaner bag only been used at this home? / Since you emptied the cup, has the vacuum cleaner only been used in this house?]

Collect the vacuum cleaner bag sample if they answered YES to this question.

Skip collection of the vacuum bag sample If they answered NO or DONT KNOW to this question.

Vacuum Cleaner Bag Collection Log

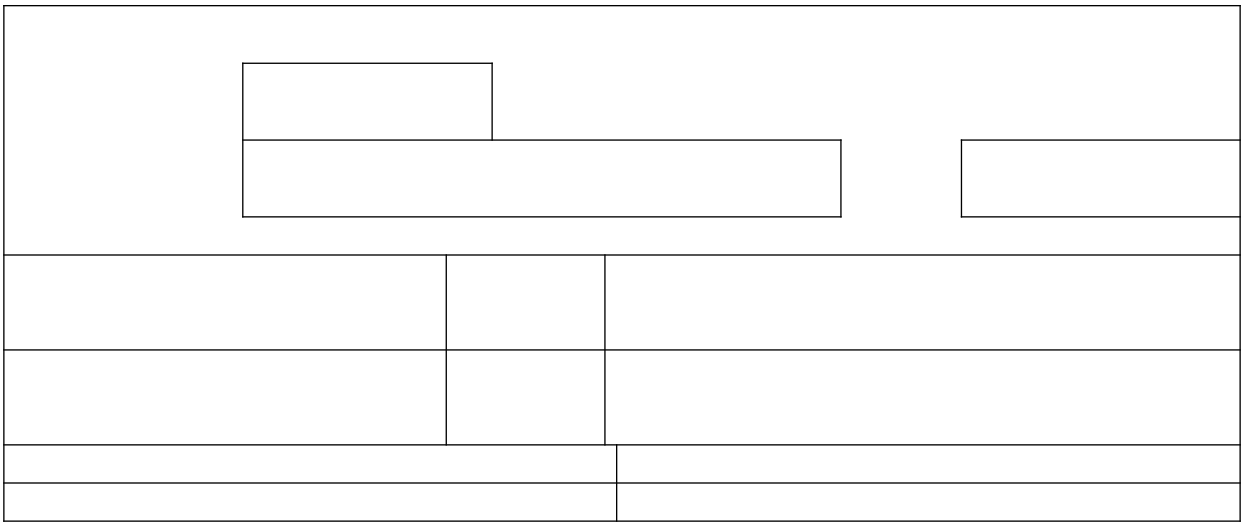
<table>
<tr><td>Vacuum cleaner Present?

Yes.....1

No.....2</td><td colspan="2">If yes, type of vacuum system used most:
Standard Vacuum (w/bag) 1
Bag-less Vacuum (no bag).....2
Central house collection system (duct reservoir).....3
If yes, Enter Make _____ Model No. _____</td></tr>
<tr><td rowspan="2">Field sample ID label here</td><td>Sample collected?
Yes.....1
No.....2</td><td>If no sample, reason:
No vacuum cleaner.....1
Vacuum used at other house 2
Respondent refused.....3
Unable to access bag/container 4
No replacement bag available.....5
Other.....6
SPECIFY: _____</td></tr>
</table>

Hot Water Temperature Log

Measurement	Temperature in degrees F
(a) Temperature after 2 minutes	
(b) Temperature after 3 minutes	
(c) Temperature after 4 minutes	
Measure the hot water temperature at the intervals shown above with the faucet running as fast as possible without causing splashing outside of the sink.	



I7- ROOM OBSERVATION and BUILDING MOISTURE MEASUREMENTS

Staff Involved: Assigned Interviewer

Overview: After the Interior Walkthrough Observations have been completed (protocol I6), the Interviewer is directed to perform data collection using the Room Observation Measurements form and the Building Materials Moisture Testing Log (see forms at end of this protocol). These efforts include measurement of room dimensions, temperature and humidity from all the primary rooms designated on the Room Inventory form (protocol I4), and building moisture testing in 3 rooms. These efforts are conducted on a room-by-room basis. Making room observations and building measurements while in the same room is designed to save time. It is more efficient than going back to the 3 rooms targeted for moisture measurements after collecting room observation measurements in all the rooms.

Data Recording on: Resident Questionnaire Form Set (same one started in I3**)**

Equipment Needed from Kit (W)

- 1 duffel bag to carry other supplies
- 1 clipboard
- 1 blue ink pen
- 1 compass
- 1 flashlight with extra batteries
- 1 tape measure (25')
- 1 Humidity/Temperature Meter (air measurements)
- 1 moisture meter (building materials measurements)
-

Supplies Needed from Kit (B): none

-

Glove Use Directives: Optional (see protocol I0)

PROCEDURE

1. **Collect data in each of the four primary rooms and basement (if one exists) one room at a time** using the Room Observation Measurements form and Building Materials Moisture Testing Log programmed into the tablet (see equivalent forms at end of this protocol).
   - 1.1 **Perform room observation measurements** following the directives shown in the Room Observation forms.
     - 1.1.1 **Record Room ID numbers from completed Room Inventory form**. The room ID fields are obtained from the completed room Inventory form (from protocol I4).
     - 1.1.2 **Record building level**. Use same rules as for completing Room Inventory form. Use this as a check against the original level assignment on that form.
     - 1.1.3 **Record carpet types**.
     - 1.1.4 **Record air temperature and humidity measurements using the temperature/humidity meter**. See *Operating Instructions for Temperature/Humidity Meter*.
     - 1.1.5 **Record room dimensions using your tape measure.**
       - 1.1.5.1 **Wall height.** Measure in feet and inches to closest 1 inch.
       - 1.1.5.2 **Wall length.** Measure in feet to closest 1 foot. If the room is not rectangular, provide the north (x direction) and east (y direction) measurements that when multiplied together give the best estimate of the floor area in the room.
       - 1.1.5.3 **Number of windows, doors and unpainted surfaces.** For each component (windows, doors, and unpainted surfaces), record total number observed on each wall as indicated on the form.
         - Doors that are mostly glass are considered windows on this form.

- The primary example of an unpainted area is an open doorway (a cased opening that has no door).

1.1.5.4 **Height of windows, doors and unpainted surfaces.** For each component (windows, doors, and unpainted surfaces), record the height of the component in feet to closest 0.5 feet (6 inches).

- If the component height varies in the room, record an estimated average height.

1.1.5.5 **Combined width of windows, doors and unpainted surfaces**. For each component (windows, doors, and unpainted surfaces), record the total combined width of that component present in the room. Measure in feet to closest 0.5 feet (6 inches).

- Window widths are to be measured from the left edge of the window trim (where it meets the wall) across the window to the right edge of the window trim where it meets the wall.
- Door widths are likewise measured from outside trim edge to outside trim edge.

1.2 **Perform building moisture measurements when in CLA, BR or the Basement** following the directives shown in the Building Materials-Moisture Testing Log form, using the moisture meter. Use the following parameters to make these measurements:

1.2.1 **Record Room ID numbers from completed Room Inventory form**. The room ID fields are obtained from the completed room Inventory form.

1.2.2 **Examine all the room walls for water damage and record the estimated area** of this damage in square feet of surface area.

1.2.3 **Pick a wall to test with accessible interior and exterior surface**. If possible, pick a wall that is accessible on both the interior (inside the selected room) and on the opposite side of that wall (outside the selected room <u>but still inside the DU</u>).

Note: No moisture measurements are to be made on the exterior of the DU. If no wall is accessible on the opposite side inside the DU, then pick any accessible interior wall.

1.2.4 **Record building moisture measurements on the interior wall** using the moisture meter as indicated on the Building Materials-Moisture Testing Log form at 3 inches, 3 feet and 6 feet off the floor. See *Operating Instructions for Building Moisture Meter*.

1.2.5 **Record building moisture measurements on the exterior wall** using the moisture meter as indicated on the Building Materials-Moisture Testing Log form at 3 inches, 3 feet and 6 feet off the floor. If it cannot be tested indicate so on the form Building Materials-Moisture Testing Log.

1.2.6 **Record building moisture measurements on up to 2 areas that have visible water damage stains** using the moisture meter near the center of the damaged areas as indicated on the Building Materials-Moisture Testing Log. Look around the room for any signs of visible water damage. These areas may be on a wall other than the one tested above. If there are more than 2 areas, select the two that look the worst of those that are accessible.

2. **Move on to collect the Fungi Vacuum Dust Sampling(protocol I8).**

<u>Operating Instructions for Temperature/Humidity Meter (Testo 615)</u>

****To be Updated after purchase of meters****

1. Go to the center of the room and turn on the meter by pressing the white I/O button. After about 6 seconds, the active display screen should show the following information:
   - A small black arrow in the top left corner pointing up at "%" marked on the meter case. This is the indicator that verifies that the top large number is in % relative humidity.
     - If this arrow at the bottom of the screen pointing down to "td" marked on the meter case, then press the %/td button to toggle the arrow back to the top pointing up at "%".
   - A large number towards the top center (with no units). This is the number that is recorded in the Room Humidity field on Room Inventory Form.
   - A large number towards the bottom followed by the units (ºF). This is the number that is recorded in the Room Temperature field on Room Inventory Form.
     - If a ºC is displayed, then the meter is displaying degrees centigrade and must be changed to Fahrenheit. See *Instructions on changing ºC to ºF*.
2. Hold the meter away from you (so that your body does not affect the readings) and press the HOLD MAX/MIN button. "Hold" will be displayed on the screen and this will freeze the screen so you can record the data on the Room Observation Form .
3. Press the HOLD MAX/MIN button three more times to get back to the active display screen before taking any other readings. The active display screen shows only the two numbers (humidity and temperature) with no "Hold", "Max", or "Min" indicators.

4. Turn off the meter by pressing the white I/O button.

Instructions on changing ºC to ºF (Testo 615)

****To be Updated after purchase of meters****

1. Turn off the meter by pressing the I/O button.
2. Access the options screen by pressing and holding down the HOLD MIN/MAX button while pressing the I/O button to turn on the meter. Do not release the HOLD button until the screen displays a flashing "Auto" and a large "ON".
3. Press the HOLD MIN/MAX button again to change the display to the temperature units (ºC or ºF)
4. Toggle between the temperature units by pressing the %/td button. When the desired ºF is reached, press the HOLD MIN/MAX button again, then turn off the meter by pressing the I/O button. Next time you turn on the meter, it will be set to display temperature in the desired ºF.

Operating Instructions for Building Moisture Meter (Tramex meter)

****To be Updated after purchase of meters****

1. **Turn on the meter** by sliding the on-off button located on the top of the meter. The display meter will show the temperature, the date, and the time. If the date and time are not correct, there is NO NEED to change them to the correct date and time since these settings do not affect the building moisture reading.
2. **Press the On button** on the keypad to activate the meter.
3. **Press the "Wall" key** to put the meter into the wall-reading mode of operation. The top right corner indicates the amount of moisture in the wall. It has the following format:

   Rel = XXX, where XXX is a number from 000-100.

   This XXX number is the only number (Reading) that you will be recording on the Building Materials -Moisture Testing Log.
4. **Examine the wall that you are going to test and, for setting the meter, categorize it as**

one of three substrate wall-types: brick, drywall, or plaster. Then set the meter to the selected wall-type before pressing the meter against the wall and taking a Reading as follows:

To change the wall-type being sampled, press the Wall button. This will take you to a screen that is blank except for the current wall-type (such as Plaster) in the bottom left corner. To scroll the different wall types, use the up and down keys. To select the displayed wall type, press the Enter key. The normal display screen will now show the selected wall-type in the bottom left corner.

NOTES:

For actual wood walls, use the drywall setting
For actual plaster walls, use the plaster setting
For actual drywall or wallboard, use the drywall setting
For actual concrete, concrete block or cinderblock, use the brick setting

5. **Press the back of the meter to the selected location on the wall and record the REL= number** as the reading on the Building Materials -Moisture Testing Log. Also record the actual substrate type (wood, plaster, drywall-wallboard, concrete-cinderblock-other concrete block) on the Log (do not use the wall-type selected to set the meter!)

   NOTE: If the wall type does not change, additional readings at other locations can be collected by simply moving the meter to those locations and pressing the back of the meter to the wall at those locations.

6. **When all readings have been collected, turn off the meter** by sliding the on-off button located on the top of the meter.

Room Observation Form - KIT

Room ID #_____

> BUILDING LEVEL (0 = basement): _____

> ROOM CARPET CODE (circle all that apply): **Antislip features?** Yes. .1 No. .2

Mat (2'x3' or less)……1 Area Rug.....2 Wall-to-Wall Carpet.….3 Concrete/brick.....4
Wood Flooring.....5 Vinyl tile/linoleum.....6 Grouted tile.....7
Other .....8 Specify for Other:_____

> ROOM WINDOW TREATMENT (circle all that apply): Blinds 1 Curtains 2 Drapes 3 Shades 4
None 5 Other 6....Specify for Other:_____

Blind/curtain cords present? Yes 1 No 2 IF cords present, looped? Yes 1 No 2

> ROOM TEMPERATURE: _____**ºF** **ROOM HUMIDITY:** _____**%**

> ROOM DIMENSIONS: **Avg. Wall Height:** |__||__| ft |__||__| in			**Number**	**Height (FT)**	**Combined width (FT)**
North wall	**Length:** _____ FT	o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….____ ….____ ….____
East wall	**Length:** _____ FT	o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….____ ….____ ….____
South wall		o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….____ ….____ ….____
West wall		o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….____ ….____ ….____

> OBSERVATIONS:	**Yes**	**No**	
Food debris observed?	1	2	
Greasy stove?	1	2	No stove present.....3
Mildew observed?	1	2	
Other moisture evidence?	1	2	
Cockroach stains?	1	2	
Live/dead cockroaches?	1	2	
Room/window Air Conditioner?	1	2	
Dehumidifier?	1	2	
Humidifier/vaporizer?	1	2	
Child safety locks on cabinet drawers/doors?	1	2	
Child safety locks on electrical outlets?	1	2	Plugged-in Items - List Codes:
Extension cords plugged into outlets?	1	2	
Power Strips plugged into outlets?	1	2	
Multi outlet adapters plugged into outlet?	1	2	

Plugged-in Items Codes: 1=Lamps/clocks/fans 2=Cooking/Microwaves 3=Computer/Entertainment
4=Space heater/AC 5=Other _____

Room Observation Form - CLA

Room ID #_____

> BUILDING LEVEL (0 = basement): _____

> ROOM CARPET CODE (circle all that apply): **Antislip features?** Yes. .1 No. .2

Mat (2'x3' or less)……1 Area Rug.....2 Wall-to-Wall Carpet.….3 Concrete/brick.....4
Wood Flooring.....5 Vinyl tile/linoleum.....6 Grouted tile.....7
Other .....8 Specify for Other:_____

> ROOM WINDOW TREATMENT (circle all that apply): Blinds 1 Curtains 2 Drapes 3 Shades 4
None 5 Other 6....Specify for Other:_____

Blind/curtain cords present? Yes 1 No 2 IF cords present, looped? Yes 1 No 2

> ROOM TEMPERATURE: _____**ºF** **ROOM HUMIDITY:** _____**%**

> ROOM DIMENSIONS: **Avg. Wall Height:** |__||__| ft |__||__| in			**Number**	**Height (FT)**	**Combined width (FT)**
North wall	**Length:** _____ FT	o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….____ ….____ ….____
East wall	**Length:** _____ FT	o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….____ ….____ ….____
South wall		o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….____ ….____ ….____
West wall		o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….____ ….____ ….____

> OBSERVATIONS:	**Yes**	**No**	
Food debris observed?	1	2	
Greasy stove?	1	2	No stove present……3
Mildew observed?	1	2	
Other moisture evidence?	1	2	
Cockroach stains?	1	2	
Live/dead cockroaches?	1	2	
Room/window Air Conditioner?	1	2	
Dehumidifier?	1	2	
Humidifier/vaporizer?	1	2	
Child safety locks on cabinet drawers/doors?	1	2	
Child safety locks on electrical outlets?	1	2	Plugged-in Items - List Codes:
Extension cords plugged into outlets?	1	2	
Power Strips plugged into outlets?	1	2	
Multi outlet adapters plugged into outlet?	1	2	

Plugged-in Items Codes: 1=Lamps/clocks/fans 2=Cooking/Microwaves 3=Computer/Entertainment
4=Space heater/AC 5=Other _____

After completing this form, complete the Building Moisture Measurements for this room

Room Observation Form - BR

Room ID #_____

> BUILDING LEVEL (0 = basement): _____

> ROOM CARPET CODE (circle all that apply): **Antislip features?** Yes. .1 No...2

Mat (2'x3' or less)……1 Area Rug.....2 Wall-to-Wall Carpet.….3 Concrete/brick.....4
Wood Flooring.....5 Vinyl tile/linoleum.....6 Grouted tile.....7
Other .....8 Specify for Other:_____

> ROOM WINDOW TREATMENT (circle all that apply): Blinds 1 Curtains 2 Drapes 3 Shades 4
None 5 Other 6....Specify for Other:_____

Blind/curtain cords present? Yes 1 No 2 IF cords present, looped? Yes 1 No 2

> ROOM TEMPERATURE: _____**ºF** **ROOM HUMIDITY:** _____**%**

> ROOM DIMENSIONS: **Avg. Wall Height:** |__||__| ft |__||__| in			**Number**	**Height (FT)**	**Combined width (FT)**
North wall	**Length:** _____ FT	o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….______ ….______ ….______
East wall	**Length:** _____ FT	o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….______ ….______ ….______
South wall		o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….______ ….______ ….______
West wall		o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….______ ….______ ….______

> OBSERVATIONS:	**Yes**	**No**	
Food debris observed?	1	2	
Greasy stove?	1	2	No stove present.....3
Mildew observed?	1	2	
Other moisture evidence?	1	2	
Cockroach stains?	1	2	
Live/dead cockroaches?	1	2	
Room/window Air Conditioner?	1	2	
Dehumidifier?	1	2	
Humidifier/vaporizer?	1	2	
Child safety locks on cabinet drawers/doors?	1	2	
Child safety locks on electrical outlets?	1	2	Plugged-in Items - List Codes:
Extension cords plugged into outlets?	1	2	
Power Strips plugged into outlets?	1	2	
Multi outlet adapters plugged into outlet?	1	2	

Plugged-in Items Codes: 1=Lamps/clocks/fans 2=Cooking/Microwaves 3=Computer/Entertainment
4=Space heater/AC 5=Other _____

After completing this form, complete the Building Moisture Measurements for this room

Room Observation Form - Other Room

Room ID #_____

> BUILDING LEVEL (0 = basement): _____

> ROOM CARPET CODE (circle all that apply): **Antislip features?** Yes. .1 No...2

Mat (2'x3' or less).....1 Area Rug.....2 Wall-to-Wall Carpet.....3 Concrete/brick.....4
Wood Flooring.....5 Vinyl tile/linoleum.....6 Grouted tile.....7
Other .....8 Specify for Other:_____

> ROOM WINDOW TREATMENT (circle all that apply): Blinds 1 Curtains 2 Drapes 3 Shades 4
None 5 Other 6....Specify for Other:_____

Blind/curtain cords present? Yes 1 No 2 IF cords present, looped? Yes 1 No 2

> ROOM TEMPERATURE: _____ºF **ROOM HUMIDITY:** _____%

> ROOM DIMENSIONS: **Avg. Wall Height:** |__||__| ft |__||__| in			**Number**	**Height (FT)**	**Combined width (FT)**
North wall	**Length:** _____ FT	o Windows..... o Doors..... o Other unpainted surfaces.....	....____..... ....____..... ....____.....	....____.... ....____.... ....____....	....____ ....____ ....____
East wall	**Length:** _____ FT	o Windows..... o Doors..... o Other unpainted surfaces.....	....____..... ....____..... ....____.....	....____.... ....____.... ....____....	....____ ....____ ....____
South wall		o Windows..... o Doors..... o Other unpainted surfaces.....	....____..... ....____..... ....____.....	....____.... ....____.... ....____....	....____ ....____ ....____
West wall		o Windows..... o Doors..... o Other unpainted surfaces.....	....____..... ....____..... ....____.....	....____.... ....____.... ....____....	....____ ....____ ....____

> OBSERVATIONS:	**Yes**	**No**	
Food debris observed?	1	2	
Greasy stove?	1	2	No stove present.....3
Mildew observed?	1	2	
Other moisture evidence?	1	2	
Cockroach stains?	1	2	
Live/dead cockroaches?	1	2	
Room/window Air Conditioner?	1	2	
Dehumidifier?	1	2	
Humidifier/vaporizer?	1	2	
Child safety locks on cabinet drawers/doors?	1	2	
Child safety locks on electrical outlets?	1	2	Plugged-in Items - List Codes:
Extension cords plugged into outlets?	1	2	
Power Strips plugged into outlets?	1	2	
Multi outlet adapters plugged into outlet?	1	2	

Plugged-in Items Codes: 1=Lamps/clocks/fans 2=Cooking/Microwaves 3=Computer/Entertainment
4=Space heater/AC 5=Other _____

Room Observation Form - Basement

Room ID #_____

> BUILDING LEVEL (0 = basement): _____

> ROOM CARPET CODE (circle all that apply): **Antislip features?** Yes. .1 No...2

Mat (2'x3' or less)……1 Area Rug.....2 Wall-to-Wall Carpet.….3 Concrete/brick.....4
Wood Flooring.....5 Vinyl tile/linoleum.....6 Grouted tile.....7
Other .....8 Specify for Other:_____

> ROOM WINDOW TREATMENT (circle all that apply): Blinds 1 Curtains 2 Drapes 3 Shades 4
None 5 Other 6....Specify for Other:_____

Blind/curtain cords present? Yes 1 No 2 IF cords present, looped? Yes 1 No 2

> ROOM TEMPERATURE: _____**ºF** **ROOM HUMIDITY:** _____**%**

> ROOM DIMENSIONS: **Avg. Wall Height:** |__||__| ft |__||__| in			**Number**	**Height (FT)**	**Combined width (FT)**
North wall	**Length:** _____ FT	o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….______ ….______ ….______
East wall	**Length:** _____ FT	o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….______ ….______ ….______
South wall		o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….______ ….______ ….______
West wall		o Windows..... o Doors..... o Other unpainted surfaces.…	….____…… ….____…… ….____……	….____…. ….____…. ….____….	….______ ….______ ….______

> OBSERVATIONS:	**Yes**	**No**	
Food debris observed?	1	2	
Greasy stove?	1	2	No stove present.....3
Mildew observed?	1	2	
Other moisture evidence?	1	2	
Cockroach stains?	1	2	
Live/dead cockroaches?	1	2	
Room/window Air Conditioner?	1	2	
Dehumidifier?	1	2	
Humidifier/vaporizer?	1	2	
Child safety locks on cabinet drawers/doors?	1	2	
Child safety locks on electrical outlets?	1	2	Plugged-in Items - List Codes:
Extension cords plugged into outlets?	1	2	
Power Strips plugged into outlets?	1	2	
Multi outlet adapters plugged into outlet?	1	2	

Plugged-in Items Codes: 1=Lamps/clocks/fans 2=Cooking/Microwaves 3=Computer/Entertainment
4=Space heater/AC 5=Other _____

After completing this form, complete the Building Moisture Measurements for this room

Building Materials - Moisture Testing Log

Initials _____

Room	Area water damage (SF)	Area tested	Substrate Code	Reading	If not tested, reason
Common Living Area ID # _____ If not tested, reason: _____		Interior wall		3 in—	
				3 ft—	
				6 ft—	
		Exterior wall		3 in—	
				3 ft—	
				6 ft—	
		Visibly water damaged area 1		Center—	
		Visibly water damaged area 2		Center—	
	Does this Room have a musty smell (circle one).....1= YES.....2=NO Does this room have any visible mold growth (circle one).....1=YES.....2=NO				
Bedroom ID # _____ If not tested, reason: _____		Interior wall		3 in—	
				3 ft—	
				6 ft—	
		Exterior wall		3 in—	
				3 ft—	
				6 ft—	
		Visibly water damaged area 1		Center—	
		Visibly water damaged area 2		Center—	
	Does this Room have a musty smell (circle one).....1= YES.....2=NO Does this room have any visible mold growth (circle one).....1=YES.....2=NO				
Basement ID# _____ If not tested, reason: _____		Below grade wall		3 in—	
				3 ft—	
				6 ft—	
		Visibly water damaged area 1		Center—	
		Visibly water damaged area 2		Center—	
	Does this Room have a musty smell (circle one).....1= YES.....2=NO Does this room have any visible mold growth (circle one).....1=YES.....2=NO				

Substrate Codes

D - drywall or wallboard
W - wood
P - plaster
C - concrete, concrete block or cinderblock
O - Other

Reason Codes (for No Test)

I - Inaccessible
NA - Not allowed
NP - None Present (such as no water damaged areas present)
NX - Does not Exist (such as no Basement in DU)
O - Other (SPECIFY IN BOX)

I8- FUNGI VACUUM DUST SAMPLING

Staff Involved: Assigned Interviewer

Overview: After the Room Inventory and Building Moisture Measurements have been completed (protocol I7), the Interviewer will perform vacuum dust sampling for mold using the *Fungi Vacuum Dust Sample Collection Log* provided in the Resident Questionnaire Form set (see form at the end of this protocol). These efforts include using the DustStream™ sampler connected to a vacuum cleaner to collect one composite dust sample from the floors of 2 primary rooms, the Common Living Area (CLA) and the Bedroom (BR) (as designated in the selection column of the Room Inventory form).

Data Recording on: Fungi Vacuum Sample Log

Equipment Needed from Kit (W)

- 1 blue pen
- 1 clipboard
- 1 flashlight with extra batteries
- 1 pr knee pads
- 1 tape measure (25')
- 1 duffle bag to carry vacuum equipment
- 1 vacuum cleaner with bag & hose attachment
- 1 25' extension cord with 2 prong adapter
- 1 Stopwatch
- 2 DustStream Sampler attachments (goes on vacuum) inside a re-closable bag.
- cleaning wipes
- gloves
- blue masking tape
- trash bag

Supplies Needed from Kit (B) - Subkit T8

- 1 row of 4 self-adhesive, pre-printed ID labels inside re-closable bag.
- 2 DustStream dust sample collection filters
- 2 50mL centrifuge tubes (to hold final sample).
- 1reclosable bag 7"x8" for the sample filters and one for the sampler after cleaning

Glove Use Directives: **Use new (see protocol I0)**

PROCEDURE

1. **Retrieve Equipment and needed supplies as indicated in the list above**.
2. **Enter CLA and BR room IDs on the** *Fungi Vacuum Dust Sample Collection Log* as designated on the Room Inventory form. This room ID is obtained from the Room Inventory form (protocol I4).
3. **Go to the CLA**, **locate the sofa, tape the corners of the 3' x 6' sampling area, and record the sampling area**. In the absence of a sofa locate what appears to be most commonly used chair in the room. Using a tape measure and a roll of blue masking tape, mark the corners of a 3-foot by 6-foot rectangular sampling area on the floor immediately against the selected sofa (or other primary use chair). Place the long side of the rectangle against the sofa and record the dimensions on the *Fungi Vacuum Dust Sample Collection Log*. If the sample location cannot accommodate a sample area of these dimensions, adjust the dimensions accordingly (but try to sample a total of 18 square feet) and record these dimensions on the Vacuum Sample Log.
4. **Plug in and test the vacuum to be sure that it will run.** Use the extension cord as needed to reach the sampling location with the vacuum.
5. **Assign ID number to sample collection containers and Log form,. Note that** COCs will be completed at the end of the day, not while onsite at the DU.

5.1 Place sample ID label on each of two 50mL centrifuge tubes. Using two of the supplied labels with a -02 suffix, ensure both sample containers have the sample ID number on them.

5.2 Place sample ID label on the *Fungi Vacuum Dust Sample Collection Log*. Place a third replicate ID label (same ID number) on a chain of custody form and complete the appropriate entries on this form.

6. **Don a new pair of lab gloves**.
7. **Clean Gloves and attach DustStream sampler**. Wipe off the gloves with a cleaning wipe and fit a clean DustStream sampler to the sampling vacuum cleaner and dispose of the cleaning wipe in a trash bag. Wrap a piece of blue tape around the interface joint between the DustStream sampler and the vacuum cleaner hose end so that it will seal any gaps and ensure that the sampler will not accidentally fall off while in use.
8. **Insert a new filter tube into the DustStream sampler and collect sample.** Hold the DustStream sampler with open end up and insert a new filter tube. Collect the vacuum sample using the following parameters:
   8.1 **Turn on the vacuum, place sampler at one corner of the marked area and start the stopwatch to time the vacuuming process**. Starting at one corner of the marked sampling area, place the DustStream sampler in contact with the floor surface taking care not to disturb the masking tape used to mark the corners.
   8.2 **Avoid vacuuming up any large debris that is not considered dust or dirt.**
   8.3 **While vacuuming, slightly tilt the sampler to one side** to create a slight gap between the floor surface and the sampler. NOTE: Vacuum efficiency is improved by increasing the airflow into the sampler. A sampler in total contact with the floor surface will not collect sample as it completely blocks all airflow.
   8.4 **Watch the stopwatch while slowly sweeping over the sampling area back and forth** with slight overlapping on each pass until the entire area is vacuumed. **Adjust the rate of movement so that a total of 5minutes** is used to vacuum the entire 18 square foot area.
   8.5 **If the corner marking masking tape is accidentally vacuumed,** hold the sampler facing up towards the ceiling, stop the vacuum and pick the tape out of the sampler with your gloved hand and discard the tape in a trash bag. Turn the vacuum back on and return to vacuuming the sampling area. Be sure to account for the lost sample time when you do this so you get a total of five minutes of vacuuming time.
   8.6 **At the end of sample collection in the CLA, hold the sampler facing up, then turn off the vacuum and remove the filter tube** so that the collected dust remains in the tube. **Place the tube in the labeled 50mL centrifuge tube** and screw the lid tight. Carefully set the DustStream sampler on the end of the vacuum hose so that it lies within the area just sampled while handling the filter tube.
   8.7 **Place the capped centrifuge tube back into the subkit bag** and place this sample in the supplies/equipment bag for temporary storage.
   8.8 **Complete the remaining data fields on the *Fungi Vacuum Dust Sample Collection Log* for this room.**
9. **Move equipment and supplies to the BR**. Do not remove the DustStream sampler from the vacuum cleaner nor the gloves from your hands. They will be used on the second room (BR) to be sampled.
10. **Locate a randomly selected bed, tape the corners of the 3' x 6' sampling area, and record the sampling area**. If 2 or more beds are in the room, randomly select one using the

Random Selection Procedure after step 17 of this protocol. Using a tape measure and a roll of blue masking tape, mark the corners of a 3-foot by 6-foot rectangular sampling area on the floor immediately against the side of the bed where a resident is most likely to get in and out of bed. Place the long side of the rectangle against the bed and, if possible, have the rectangular sample area extend under the bed by 3 or 4 inches so that part of the sample goes under the bed. Record the dimensions on the *Fungi Vacuum Dust Sample Collection Log*. If the sample location cannot accommodate a sample area of these dimensions, adjust the dimensions accordingly (but try to sample a total of 18 square feet) and record these dimensions on the *Fungi Vacuum Dust Sample Collection Log*.

11. **Plug in and test the vacuum to be sure that it will run.** Use the extension cord as needed to reach the sampling location with the vacuum.
12. **Don a new pair of lab gloves.**
13. **Clean gloves**. Wipe off the gloves with a cleaning wipe and dispose of the cleaning wipe in a trash bag. NOTE: There is no need to change or clean the DustStream sampler since the sample collected here in the BR will be composited in the laboratory with the one collected from the CLA.
14. **Insert a new filter tube into the** DustStream **sampler and collect the sample.** Hold the DustStream sampler open end up and insert a new filter tube. Collect the vacuum sample using the same parameters as listed under step (8) placing this filter tube into the second labeled 50mL centrifuge tube and placing it into the same subkit bagas the sample collected in the CLA.
15. **Review recorded data and complete all data entries on the *Fungi Vacuum Dust Sample Collection Log***.
16. **Retain the I8 subkit bag containing the remaining labels and temporarily store the collected sample, later moving it into the Kit (C) shipper to keep it cold until the samples can be moved into the freezer at the end of the day**.
17. **Clean the DustStream sampler thoroughly (inside and out) for use on the next DU** using several cleaning wipes. Let air dry for a couple of minutes before placing the sampler in and sealing shut a new clean 1-qt re-closable. Double-bag the sampler and re-store this with other Interviewer equipment.
18. **Move on to the Dust Wipe Swiffer™ Sample collection (protocol I9).**

RANDOM SELECTION PROCEDURE FOR ITEMS (like beds)

- If only one item exists, select the one item.
- If more than one item exists, use the following procedure:

1. Count the number of items (beds)
2. Go to the Random Number Table
3. Select the first unused row of the table.
4. Look under the column that matches the count number to get the selection and remember the selected number.
5. Put a line through that row of the table to indicate that it has been used.
6. Starting at the bed closest to the main entrance of the room, count clockwise (left to right) the beds until the selected number is reached and select that bed to sample.

FUNGI VACUUM DUST SAMPLE COLLECTION LOG
(vacuum 5 min per 18 sq. ft.)

CLA Room ID _____ Initials _____

BR Room ID _____

Sample #	Sample Collected?	Location	Sample surface code (circle one)	Floor area vacuumed
sample ID label here	Yes.....1 No.....2 If No, reason code: _____	Floor in CLA	Smooth/cleanable..1 Not smooth.....2 Carpeted.....3	3' x 6'.....1 Not 3' x 6'.....2 Enter: |___||___|in X |___||___|in
	Yes.....1 No.....2 If No, reason code: _____	Floor in BR	Smooth/cleanable..1 Not smooth.....2 Carpeted.....3	3' x 6'.....1 Not 3' x 6'.....2 Enter: |___||___|in X |___||___|in

Reason Codes (for No sample)

I - Inaccessible, NA - Not allowed, NR - No more room to collect sample, O - Other (SPECIFY IN BOX)

I9- DUST WIPE SWIFFER® SAMPLING

Staff Involved: Assigned Interviewer

Overview: After collection of the vacuum dust sample (protocol I8), the Interviewer will collect a dust wipe composite sample from 2 rooms (CLR and BR) using dry Swiffer™ dusters in first two DUs tested in a PSU [Kit (B) ID suffixes "-WQ" and -"W" only]. The dusters are removed from a re-closeable bag and are used to wipe the tops of structures that are not often cleaned. The Swiffer™ dusters are then returned to the re-closeable bag and stored temporarily with other collected samples until they can be placed in the freezer.

Data Recording on: Resident Questionnaire Form Set (same one started in I3**)**

Equipment Needed from Kit (X)

- 1 blue pen
- 1 clipboard
- nitrile gloves
- trash bag

Items needed from Shipper Kit (C)

This shipper is taken to the field to temporarily hold all types of collected samples that must be kept cold until they can be placed into the freezer. Three frozen blue ice packs are placed into the Kit (C) shipper in the morning for each testing day. The COC for this shipper is NOT to be used until samples are transferred in the freezer at the local base of operations.

Supplies Needed from Kit (B)

- 1 row of 4 self-adhesive, pre-printed ID labels inside re-closable bag.
- 1 dry Swiffer™ duster inside a re-closeable bag.
- 1 One-quart re-closable bag

Glove Use Directives: **Use new (see protocol I0)**

PROCEDURE

0. **Collect Field Blank (if required).** If this DU is the first DU in the PSU to be tested [Kit (B) box has a -"WQ" suffix], then collect a field blank using steps 0-1 through 0-5 below:
   (0-1) **Get ready to collect dust**. Open the top of the bags containing a duster that has a "-04" suffix on the sample ID labels and then put on a new pair of gloves.
   (0-2) **Touch the duster with newly gloved hands**. Reach into the bag and pull out the duster and then out it back (do not wipe anything!).
   (0-3) **Skip to next step**.
   (0-4) **Store and label the sample** Place one of the "-04" suffix sample ID labels on the bag containing the field blank sample and place the entire bag inside another bag. Be sure to squeeze as much air out of the bags as possible before sealing so they do not consume too much room in the freezer when they are ultimately stored back at the Interviewer's base of operations.
   (0-5) **Complete the logs and store sample**. Place a second sample ID label on the *Dust Wipe Swiffer™ Sample Collection Log*. Store the sample with your equipment until it can be moved to Kit (D) before you leave the DU. Retain the other labels in the subkit bag. COCs will be completed at the end of the day, not while onsite at the DU.
1. **Get ready to collect a regular dust sample**. Open the top of the bag containing the duster and then put on a new pair of gloves.
2. **Collect dust in the CLA**. Using the duster, wipe the tops of structures not often cleaned, for example, tops of doorways and doors, tops of book shelves, sconces, etc., - anywhere dust settles.

3. **Collect dust in the BR**. Using the same duster, wipe the tops of structures in the BR not often cleaned, in the same way.
4. **Store and label the sample**. Place the dirtied duster back in the original re-closeable bag and then toss your gloves into the trash. Place one of the "-03" suffix sample ID labels on the bag containing the sample and place the entire bag inside another bag. Be sure to squeeze as much air out of the bags as possible before sealing so they do not consume too much room in the freezer when they are ultimately stored back at the Interviewer's base of operations.
5. **Complete the logs and store sample**. Place a second sample ID label on the *Dust Wipe Swiffer™ Sample Collection Log*. Store the sample with your equipment until it can be moved to Kit (D) before you leave the DU. Retain the other labels in the subkit bag. COCs will be completed at the end of the day, not while onsite at the DU. .

DUST WIPE SWIFFER™ SAMPLE COLLECTION LOG

CLA Room ID _____ Initials _____

BR Room ID _____

Sample #	Sample Collected in the indicated room?	Location	Comments
sample ID label here for field blank			Field blank
sample ID label here	Yes.....1 No.....2 If No, reason code: _____	CLA	
	Yes.....1 No.....2 If No, reason code: _____	BR	

Reason Codes (for No sample)

I - Inaccessible, NA - Not allowed, NR - No more room to collect sample, O - Other (SPECIFY IN COMMENTS BOX)

I11- - EXTERIOR WALKTHROUGH OBSERVATIONS

Staff Involved: Assigned Interviewer

Overview: After the Dust Wipe Swiffer™ sample has been collected (protocol I9), the Interviewer contacts the Technician to complete the collection of the formaldehyde sample. Once that equipment is removed, the Interviewer performs walkthrough observations of the exterior of the DU using the Exterior Conditions Log form (see form at the end of this protocol). This includes collection of outside temperature and humidity measurements, and observations on building conditions.

Data Recording on: **Resident Questionnaire Form Set - Exterior Conditions Log**

Equipment Needed from Kit (X)

- 1 blue pen
- 1 clipboard
- 1 compass
- 1 flashlight with extra batteries (use for all protocols all DUs)
- 1 tape measure (25')
- 1 Humidity/temperature meter (air measurements)
-

Supplies Needed from Kit (B) none

-

Glove Use Directives: **Use new (see protocol I0)**

Procedure

1. **Complete collection of the formaldehyde sample**. Call/contact the technician to come and complete the final shutdown of the sampling train and collect the formaldehyde sample. The Technician will follow their procedures provided in protocol T1 to complete this effort.
2. **Conduct exterior walkthrough using the Exterior Conditions Log**. Use the following parameters to conduct this work:
   - 1.1 **For single-family residence,** make building condition observations on the outside of the DU including the immediately surrounding real property that goes with the house.
   - 1.2 **For multifamily residence,** make building condition observations on the outside of the building where the DU is located including the immediate surrounding real property close to the unit.
   - 1.3 **For Outdoor Air Conditions measurements use the humidity/temperature meter.** See *Operating Instructions for Temperature/Humidity Meter* in protocol I7.
   - 1.4 **For Random Exterior Wall measurements**, measure the wall recorded on the Room Inventory form
3. **Check with Technician and move on to End-Of-DU Collected Sample and Data Review activities to ensure that all targeted data and sample collection has been completed.**

EXTERIOR CONDITIONS LOG

Number of Units in Building
If the respondent does not know how many units are in the building (Q6 in Questionnaire), verify by some other means (such as by looking at the mailboxes) and answer the following questions (circle one): 4 or fewer units.....1 5units or more.....2 Don't Know.....8

Outdoor Air Conditions	
Outdoor: Temperature _____°F	Relative Humidity _____%

Random Exterior Wall (from Room Inventory form); circle selection: N E S W	
Estimated wall length in feet= _____	Estimated wall height in feet= _____

Building Condition (exterior)	**YES**	**No**	**NA**
1 Roof missing parts of surfaces (tiles, boards, shakes)	1	2	8
2 Roof has holes or large cracks	1	2	8
3 Gutters or downspouts broken	1	2	8
4 Chimney masonry cracked, bricks loose or missing, out of plumb	1	2	8
5 Exterior walls have large cracks or holes	1	2	8
6 Two or more windows broken, missing, or boarded up	1	2	8
7 Foundation has major cracks, missing material, or structure leans	1	2	8

Outdoor Water Present in the Yard?	**If Yes….**			
Pool YES.....1 NO.....2	Fence present? YES.....1 NO.....2	Type of fence? Full perimeter.....1 3 sides of house....2 Other.....3	Fence height: _____ FT	Lock on fence from outside house? YES.....1 NO.....2
Hot tub YES.....1 NO.....2	Cover? YES.....1 NO.....2	Cover locked/secure? YES.....1 NO.....2		a
Pond/natural waters YES.....1 NO.....2				

T1- FORMALDEHYDE IN AIR SAMPLING

Staff Involved: Assigned Field Technician and Interviewer

Overview: Immediately after introductions are made between the Interviewer, respondent, and Technician, the Technician: prepares the sampling equipment (sampling train, pump, tubing and sorbent tube); conducts a (pre-sampling) flow rate measurement; collects a field blank (only for the first DU in a PSU; and, initiates air sample collection by attaching the calibrated assembly to the Interviewer's clothing. Air sampling for formaldehyde continues until the Interviewer has completed all interior activities. The Interviewer then has the Field Technician (while the Interviewer is still inside the DU): complete air sample collection; conducts a (post sampling) flow-rate measurement; disassembles the sampling train; and store the collected sample. Relevant sampling data are collected on a form.

Data Recording on: Technician Form Set (bound) pulled from Kit (B)

Equipment Needed from Kit (X)

- 1 tool bucket with blue Pocket Bucket Tote
- 1 blue ink pen
- 1 clipboard
- 1 black sharpie marker
- 1 box of cleaning clothes (wipes)
- 1 box nitrile gloves
- 1 trash bag
- 1 box of cleaning clothes (wipes)
- 1 box nitrile gloves
- 1 trash bag
- roll of blue or green masking tape
-
- **Galson Pack; QT added items**:
  - Spare (3/16" ID x 5/16" OD) tubing*: one 3' ± 3" section.
  - Spare (1/4" ID x 3/8" OD) tubing*: one 10" section
  - Bag of at least twenty short tubing sections for covering the open ends of sorbent tubes (1/4" ID x 3/8" OD
  - Sheet of at least 4 sample labels: "Field Calibration Check Only - XX"
- 14 spare small 4"x6" bags used to hold sorbent tubes.
-
- **Galson Pack; SGS items used**:
  - Gilair3 Personal air-sampling pump
  - Charger for pump
  - Sorbent tube breaker
  - Small Phillips-head screwdriver
  - Black tube holder base fitting with 2 sections of tubing*: one 3' ± 3" section (3/16" ID x 5/16" OD) between pump and fitting inserted through <u>three</u> clothing clips AND one 1" section (1/4" ID x 3/8" OD) on other side of fitting (connects to open end of sorbent tube).
  - Rotameter, Low Flow with one section of tubing*: one 6" to 10" section (1/4" ID x 3/8" OD).
  - Laboratory Pump Calibration Data sheet
- **Galson Pack; SGS items present but NOT generally used**:
  - Tube cover with clip
  - *Using a Field Rotameter* sheet
  - *Low Flow Sampling Procedure* sheet
  - *Equipment Failure Questionnaire*
- *Gilair Pump Quick Start Guide*

*All tubing is Saint Goban E-3603 Tygon Non-DEHP tubing

Supplies Needed from Shipper Kit (C), Box 3 (*Sorbent tubes and IPA vials for daily use*)

- 1 or 2 (If DU is the 1st in the PSU) new sorbent tubes [ORBO 555, DPNH-treated
-

silica gel] plus 2 caps per sorbent tube placed into a 4"x6" reclosable plastic bag. • 1 *Field Calibration Check Only* sorbent tube.
Supplies Needed from Kit (B) - Subkit T1
• 3 rows of 4 self-adhesive, pre-printed ID labels •
Glove Use Directives: **Use new (see protocol I0)**

START OF PSU AND START OF DAY DIRECTIVES

There are several items that must be completed by the Interviewer and the Technician prior to doing any testing. These are discussed in protocol I1and I3. The Technician is directed to review and become familiar with the information in protocol I1. The key section of I3 involving the Technician is copied from protocol I3 and placed into this protocol (steps 1 - 3 below).

GENERAL DIRECTIVES

- **Charging of pump**. All pumps will be fully charged and flow rates checked/adjusted prior to shipment to the field in the technician's equipment [Kit (X)] within a small cooler with the words "Galson Laboratories" on it (this is referred to as the "Galson pack"). The Technician must ensure that they keep the pump fully charged while not in use so that they will be ready when needed. This includes charging them between DUs as opportunities arise to do so. There is a light on the charger when it is plugged into an outlet and plugged into the pump. IF the light is green, it is fully charged and ready to use. If the light is red, then it does not yet have a full charge. A fully charged pump should be able to run continuously for at least 8 hours, which means that there will be enough charge to handle collection of an air sample in up to 2 DUs per day.
- **Interviewer apparel and personal hygiene directives**. The Interviewer is directed to not wear any garments that have been dry-cleaned recently or any garments that are new that have never have been wet-washed. They must wear clothes that have only been cleaned by wet-washing in a standard or high efficiency washer and dryer. In addition, the Interviewer and Technician are directed to not wear any perfume other than what may already be presence in deodorant they routinely wear under their arms. These precautions are needed to ensure that the clothing being worn by the Interviewer does not contribute any formaldehyde to the collected air sample (a low but not zero probability event). In addition, it is recommended that the interviewer wear a belt while conducting interviews to provide a location to mount the pump (which has a belt clip). A spare belt is included in the Galson Pack for backup use.
- **Handling of sorbent tubes**. All the sorbent tubes will be transported to, from, and in the field using three small 5"x3" x 3" mailer boxes (Box 1, Box 2, and Box 3; see Note T1-1). All these boxes go out bound from QT to the field inside Kit (D). When Kit (D) arrives at the PSU, the Interviewer is directed to open the kit and move the three sorbent tube boxes (Box 1, Box 2 and Box3) into the freezer (see protocol I1).
  - **BOX 1 - SORBENT TUBES TO BE ANALYZED**. This box is used to hold collected air samples (tubes that have already been used to collect a sample plus one spiked QC sample per PSU). This box stays in the freezer at the local base of operations throughout the testing. At the start of the PSU, this box contains one labeled spiked QC sample in a plastic bag along with one replicate sample ID label. At the end of the PSU, this box contains the spiked QC sample plus all the air samples collected in each tested DU.

Please note that a sample ID label matching the spike QC sample in Box 1 is already on the COC, so do not use up the last replicate label on the COC. Rather, it is to be placed on the Formaldehyde in Air Collection Log in the Technician Form Set for the first DU tested in a PSU.

- **BOX 2 - NEW SORBENT TUBES.** This box is used to hold new unopened sorbent tubes. This box stays in the freezer at the local base of operations throughout the testing as serves as a source for obtaining new tubes.
- **BOX 3 - SORBENT TUBES AND IPA VIALS FOR DAILY USE**. This box is used to hold and transport sorbent tubes going to and from the DUs. It gets populated with sorbent tubes and IPA vials each morning when a DU is scheduled for testing. At the start of the PSU, this box contains two opened sorbent tubes with a *Field Calibration Check Only* sample ID labels on them. These *Field Calibration Check Only* tubes stay in Box 3 for the duration of testing in a PSU and Box 3 goes in and out of the freezer at the local base of operations as testing is done in the recruited DUs. They are created by QT Office staff but used by the Technician for determining the air flow rate through the sorbent tubes before and after air sample collection.

  NOTE T1-1. Sorbent tube and IPA vial counts. The total of 15 new sorbent tubes are sent to each PSU (five groups of three). For each testing day, the technician places three new tubes into Box 3 (along with the two *Field Calibration Check Only* tubes) and transports these cold to each DU location inside Kit (C). One of the three new sorbent tubes gets used at the first DU in a PSU for a field blank, while the other two get used in the first and (if scheduled) the second DU. At the end of the testing day, all sorbent tubes and IPA vials (for protocol T4) and go back into the freezer at the local base of operations:

  - All collected air samples are placed into Box1;
  - All unopened tubes are put back into Box 2;
  - Both *Field Calibration Check Only* tubes stay in Box 3 unless being used in a DU;
  - Any not-used IPA vials go back into *BOX 4 - IPA VIALS FOR PESTICIDE SAMPLING*.
  - Box 1, Box 2, Box 3 and Box 4 go back into the freezer.

PROCEDURAL DIRECTIVES FOR ONE OR TWO DUs PER TEST DAY

[Performed by Technician and Interviewer (copied here from protocol I3)].

The procedures for initiating testing in a DU are slightly different when there are two DUs to be tested in a day rather than one. Interviewers are directed to NOT schedule more than two DUs per day for testing. The differences have to do with handling of supplies coming out of the Kit (B) boxes. Under no circumstances should more than one Kit (B) box be open and actively used at the same time. If only 1 DU is to be tested in a day, then all the steps shown in the Procedure below apply and the Field Team may, at their option, select and divide up the contents of a Kit (B) box the night before testing (as opposed to the morning of the testing day). However, this pre-loading of supplies among the equipment to be carried into the DU cannot be done for the 2nd DU testing in the same day. Handling of the Kit (B) box targeted for use in the second DU in a day cannot go beyond placing the entire unopened box into the auto until the Field Team has completed the End-of-DU activities (protocol I12/T6) for the first DU, which include moving all subkits back into first DU's "OPENED" Kit (B) and temporarily storing the collected samples that must be kept cold during the work day in the shipper Kit (C).

DAILY SETUP PROCEDURE

[Performed jointly by Technician and Interviewer (copied here from protocol I3)].

1. **Pack needed equipment/supplies for one day into the Field Team auto.** It is assumed that the Field Team will assemble and place the needed equipment/supplies into the auto in the morning before heading out for testing (See Notes I3-1 and I3-2).

   NOTE I3-1. Event 3. These steps conform to the steps as outlined under Event 3 in protocol I1.

   NOTE I3-2. Packing the night before for the first DU tested in a day. If desired, all steps except 1.6 and 1.7 below can be done the night before for the first DU tested that day (but NOT the 2nd DU, if scheduled). Since the sorbent tubes need to be kept cold until shortly before they are used, you must wait until the morning of a testing day to pack Kit (C) with ice packs and, sorbent tubes and IPA vials as directed under steps 1.6 and 1.7.

   1.1 Select a Kit (B) box to use for each DU planned for testing that day. If this is the first DU in the PSU to get tested, then be sure to use a Kit (B) with an ID number having a "-WQ" suffix. If this is the 2nd DU in the PSU to get tested, be sure to use a Kit (B) with an ID number having a "-W" suffix (see Note I3-3).

   NOTE I3-3. Spare Kit (B) boxes. It is recommended that the Field Team keep at least 1 spare Kit (B) **having NO "-W" or "-WQ" suffixes** in the auto at all times in the highly unlikely (but possible) case that a selected Kit (B) box is deficient or that second unplanned DU gets scheduled for testing after the Field Team departs from the base of operations. **CAUTION**: Never go into a spare Kit (B) box and pull out subkits to supplement one that is already open. If used as a replacement for another, the deficient kit must be marked "BAD" and taped shut and not used in any way.

   1.2 Open the Kit (B) box, verify contents, and put subkits with equipment going into the DU. For the first DU to be tested that day, use a black marker to write the word "OPENED" on the selected Kit (B) box on the same side of the box as the box ID number. **NEVER** open and use more than one Kit (B) box at the same time. Complete the Kit (B) checklist inside that box to indicate that all of the supplies are present (enter the number present under the *Number Present* column) and as you are doing this, move the "I" subkits (I3. I6, I8, and I9) into the Interviewer's rolling briefcase and the "T" subkits (T1, T3, T4, T4b, T5) into the Technician's tool bucket. Place the Kit (B) checklist back into its plastic sleeve and back in the box it came from.

   1.3 Complete the first page of the Form Sets. Pull the Resident Questionnaire and Technician Form Sets from the Opened Kit (B) box and complete the cover page of each placing a Kit (B) box label retrieved from the *Box Label* bag as indicated on these forms. Be sure to record the correct DU ID number on the coversheet in the form sets. The DU ID number is identified by the Interviewer using the recruitment questionnaire for that DU. It is comprised of 3 fields from the *AHHS Main and Reserve Sample DU addresses* list: PSUID-AHHS SEGID-SAMP TYPE (format is: XXX-YYY-ZZ).

   1.4 Complete the 2nd page of the Form Sets and store with items going into the DU. This page, bound into the form sets, contains the *DU checklist - Items Going IN and Out of DU undergoing Testing for* each member of the Field Team (see Note I3-3). The form in the Resident Questionnaire is not the same as the form in the Technician Form Set. These forms are used to ensure you have all the equipment items packed that are needed to complete testing for that DU. Complete the entries making sure those supplies coming

out of the equipment kits are placed into your equipment going out for testing (rolling briefcase or tool bucket). Place the Resident Questionnaire Form Set into the Interviewer's rolling briefcase and the Technician Form Set the Technician's tool bucket. In addition, if not already done under step 1.3 above, pull the relevant recruiting questionnaire from Kit (A) recruiting supplies, and place it into the rolling briefcase.

1.5 Close the Kit (B) box and leave it in the auto. This box will be needed immediately after testing in the DU to store the unused supplies and those samples that do not have to be kept cold (vacuum dust bag, drinking water, dust wipe for Pb, and soil).

1.6 Pack Shipper Kit (C) with 3 frozen blue ice packs (<u>This step must be done in the morning before going out to test DUs</u>). Go into freezer at the local base of operations and move 3 frozen blue ice packs into Kit (C) for daily use as temporary cold storage (see Note I3-4).

> **NOTE I3-4. Shipper Kit (C) used for 2 purposes**: At the end of the PSU, this shipper will be used to ship collected pesticide samples to an EPA designated lab. However, until that happens, it gets used as daily cooler to store media (sorbent tubes and IPA vials) and collected samples (pesticides, formaldehyde, vacuum dust and Swiffer™ dust) are required to be kept cold as soon as possible after sample collection. Because of this dual use, the Chain-of-Custody form (COC) for Kit (C) is not kept inside the kit. The COCs serve as a packing list for the out bound shipments to the labs at the end of the PSU and there are 4 COC forms for each PSU: one for pesticide samples, one for formaldehyde in air samples, one for drinking water samples, and one for he combined vacuum dust and Swiffer™ dust samples. The later three of these are stored in and left in their respective insulated shippers at the base of operations. The COC for pesticide samples is stored in Kit (D) until the end of the PSU where it gets moved back to Kit (C). All COCs get used at the end of each testing day back at the local base of operations (protocol I13/T7).

1.7 Pack Shipper Kit (C) with Box 3 containing two *Field Calibration Check Only* sorbent tubes, three new sorbent tubes, and six IPA Vials (<u>This step must be done in the morning before going out to test DUs</u>). Go into freezer at the local base of operations and retrieve *BOX 3 - SORBENT TUBES AND IPA VIALS FOR DAILY USE*. Box 3 should already have two *Field Calibration Check Only* sorbent tubes. Retrieve *BOX 2 - NEW SORBENT TUBES*, pull out 3 new unopened sorbent tubes and place them into Box 3 (see Note I3-5). Place Box 2 back into the freezer. Retrieve *BOX 4 - IPA VIALS FOR PESTICIDE SAMPLING*, pull out six vials and place them into Box 3. Place Box 4 back into the freezer. Place Box 3 (now containing 5 sorbent tubes and 6 IPA vials) into shipper Kit (C).

> **NOTE I3-5. Recycle unused sorbent tubes and IPA vials.** The tube and vial counts placed into the Box 3 are enough to complete testing in 2 DUs, even if one is the first DU in a PSU. At the end of each day, any un-opened sorbent tubes and IPA vials **<u>MUST BE</u>** <u>recycled back into the freezer so that you will have enough of these to collect all planned samples.</u>

1.8 Select and pack a 2nd Kit (B) box if 2 DUs are to be tested in the same day. Be sure to include this kit in the auto but DO NOT OPEN IT until the first DU has been tested and samples and data from that first DU have been moved into that OPENED Kit (B) box and that box is shut.

2. Travel to the DU and retrieve the needed sorbent tubes and IPA vials for 1 DU.

The sorbent tubes and IPA vials for one testing day are inside *BOX 3 - SORBENT TUBES AND IPA VIALS FOR DAILY USE*. Take into the DU only those you need for that DU and leave the rest behind in Box 3 located in shipper Kit (C) left in the auto. If you run short, you can go back out to the auto to get another sorbent tube or vial. It is desirable to avoid recycling sorbent tubes that have been warmed up. Therefore, it is best to take only those tubes that are really needed into the DU.

2.1 If this is the first DU in a PSU, pull the following items from Box 3 in shipper Kit (C):

- Place one of the two *Field Calibration Check Only* sorbent tubes into the T1subkit bag.
- Place two new unopened sorbent tubes into T1 subkit bag.
- Place two IPA vials into the T4 subkit bag.
- Place two IPA vials into the T4b subkit bag.

2.2 If this is NOT the first DU in a PSU, pull the following items from Box 3 in shipper Kit (C):

- Place one of the two *Field Calibration Check Only* sorbent tubes into the T1subkit bag.
- Place one new unopened sorbent tube into T1 subkit bag.
- Place two IPA vials into the T4 subkit bag.

3. **Move the needed equipment and supplies for one DU into the DU** (see Note I3-6). After Step 1, all the needed equipment and supplies will be located in the four packages listed below. Although manageable for the 2-person Field Team, this is a lot of items to get into the DU at one time and in some cases, it may not be wise to try and get all these packages up to the DU until the Interviewer and the Technician have made contact and introduced themselves to the resident. However, this decision is up to the Interviewer who has already developed a rapport with the resident.

- One rolling briefcase containing the Interviewer equipment, needed equipment supplies, needed Kit (B) supplies, and the relevant completed Recruiting Questionnaire from Kit (A).
- One duffle bag containing the vacuum and related equipment.
- One 5-gallon bucket w/tote containing the Technician equipment, needed equipment supplies, and needed Kit (B) supplies.
- One Kit (XRF) box.

NOTE I3-6. Event 4. These steps conform to the steps as described outlined under Event 4 in protocol I1.

SAMPLE COLLECTION PROCEDURE

1. Get the sampling equipment out of the Galson pack. Pull out the personal air sampling pump, rotameter, and *Laboratory Pump Calibration Data* sheet, and complete the pump and rotameter information entries on the *Formaldehyde in Air Sample Collection Log*. The correction formula for the rotameter is located on the side of the rotameter as shown in Figure T1-1.

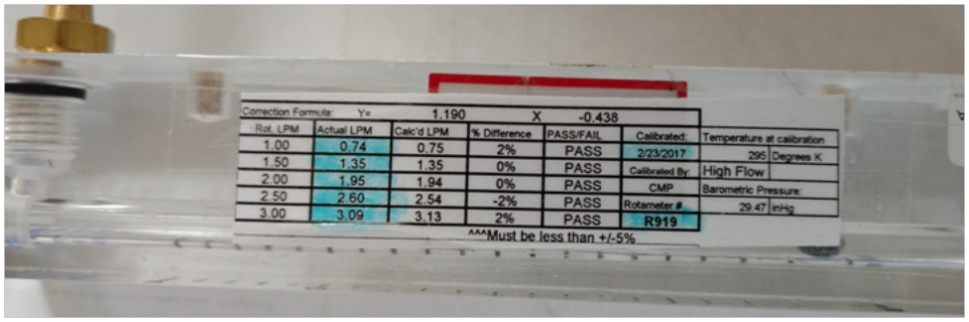


Figure T1-1. Flow rate correction data on rotameter.

2. **Get a sorbent tube labeled *Field Calibration Check Only***. Two of these (for use in all the DUs tested) are stored in Box 3, which is kept in Kit (C) in the auto during each testing day (see Note T1-2). One of these is placed into subkit T1 by the Technician during the Daily Setup Procedure (above).

   NOTE T1-2. Source of *Field Calibration Check Only* tubes. The assigned QT sample custodian creates two of these prior to shipment of equipment Kit (X) to the PSU using the Procedure to Create *Field Calibration Check Only* Sorbent Tubes. This procedure is provided in this protocol so that the Technician can create new *Field Calibration Check Only* sorbent tubes in the very remote case that the two pre-made tubes both fail to achieve the minimum flow rate required to begin collection of the air sample.

3. **Assemble the sampling train, measure and record the BEFORE-sampling flow rate**. Use the Procedure to Conduct Flow Rate Measurements using the *Field Calibration Check Only* Sorbent Tubes provided later in this protocol to obtain the BEFORE-sampling flow rate.

4. **Collect a field blank (1 per PSU in first DU tested).** If this is the first DU tested in a PSU, collect a field blank as follows:

   4.1 Get a new sorbent tube.

   4.2. Open tube. Open both ends of the tube using the *Procedure to Open Sorbent Tubes*.

   4.3 Insert one end of the sorbent tube into the sampling train. Look at the sorbent tube for an arrow. Insert the open sorbent tube into the short section of 3/8"OD tubing coming from the black tube holder base so that the arrow on the sorbent tubing is pointing toward the pump (see Notes T1-3 and T1-4).

   NOTE T1-3. Direction of air flow through sorbent tubes. The arrow on the sorbent tubing MUST go toward the pump. If no arrow is shown on tube, examine the dark colored media in the tube. There will be a small section of media closer to one end that is capped by narrow ribbons of packing material. It is this section that must point toward the pump. This section is used to capture any break-through of formaldehyde that slips past the media before this smaller section. This section, that must point toward the pump, also happens to be the end of the tube where all the media is located (the other end is empty as diagrammed in Figure T1-2).

   NOTE T1-4. Inserting opened sorbent tubes into sampling train. An opened sorbent tube is put into the sampling train by carefully inserting the sorbent tube into the 3/8" OD clear tubing. Take care not to break the tube or inflict injury on yourself when inserting the sorbent tube, wear gloves to help protect your hands. If you break a sorbent tube in a manner that it cannot be sealed in the tubing, use a

new one and be sure to use a black marker to mark the broken tube with the word "BAD" both on the tube itself and, if it has an ID label, across the sample ID label too. If you are handling a *Field Calibration Check Only* tube that goes BAD and have no more *Field Calibration Check Only* tubes, you will have to create a new one making sure that the BAD tubes get placed in the Galson Pack so they will get back to QT after the end of the PSU. Place any BAD tubes that gets generated into one of the spare 4"x6" plastic bags located in the Galson Pack. BAD tubes DO NOT need to be kept cold.

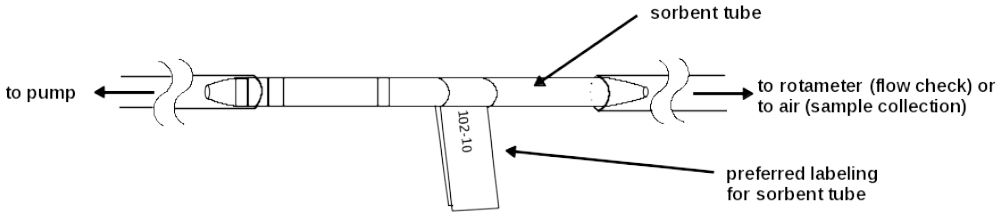


Figure T1-2. Diagram showing orientation of sorbent tube and placement of ID label.

4.4 Cover the exposed end of the sorbent tube. Place a short 1" section of tubing on sorbent tube by carefully pushing the short section over the tube (See Figure T1-3). Short tubing sections are located in a bag inside the Galson pack.

4.5 Remove the sorbent tube and cap. <u>DO NOT TURN ON THE PUMP</u> (this is a field blank; no air is to be drawn through this sample). Gently pull the sorbent tube from the sampling train and pull off the short tubing cover disposing of the short tubing section (only use them once). Place the supplied red caps over the ends of the sorbent tube.

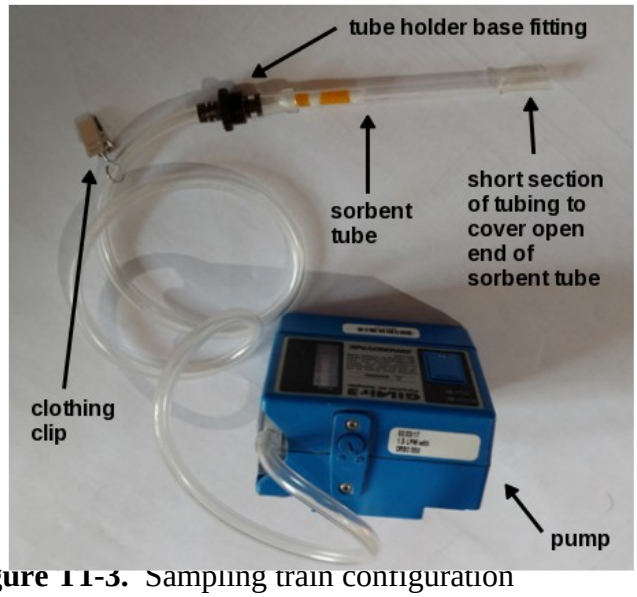


Figure T1-3. Sampling train configuration for collecting air samples.

4.6 Label, record and store the sample. Get the sample ID label from subkit T1. Wrap the label around the opened sorbent tube as shown in Figure T1-2. Place a replicate ID label on the field blank row of *Formaldehyde in Air Sample Collection Log*. Temporarily store this sample in subkit T1 until it can be transferred back into Box 3 inside Kit (C) in the auto for transport back to the local base of operations where they can be placed into the freezer (See Note I3-4).

5. Initiate collection of the regular sample (1 per DU).

5.1 Get a new sorbent tube.

5.2. Open tube. Open both ends of the tube using the *<u>Procedure to Open Sorbent Tubes</u>*.

5.3 Insert one end of the sorbent tube into the sampling train. Look at the sorbent tube for an arrow. Insert the open sorbent tube into the short section of 3/8"OD tubing coming from the black tube holder base so that t<u>he arrow on the sorbent tubing IS pointing toward the pump (see Note T1-3).</u>

5.4 Cover the exposed end of the sorbent tube. Secure a short 1" section of tubing on sorbent tube by carefully pushing the short section over the tube. This completes assembly of the sampling train for the regular sample as shown in Figure T1-3. Short tubing sections are located in a bag inside the Galson pack.

5.5 Mount the sampling train on the Interviewer. Keep in mind that the tubing must be placed on the Interviewer in a manner that will not restrict the flow of air through the tubing. A great deal of the Interviewer's activity will likely be done in a sitting position (during administration of the questionnaire). This means that you must avoid placing the tubing where it can get pinched when leaning back in a chair. Since the air sample is not intended to be a breathing zone sample, the end open to the air can be placed anywhere on the front shirt or blouse of the Interviewer. Avoid lower locations since some of the Interviewer's activities will involve being on the knees and we want air samples (not dust). The Interviewer must be wearing a belt so that the pump can ride on his/her hip for the duration of the visit inside the DU. Use the belt in the Galson pack if needed. It is generally advisable to clip the pump to the belt on the opposite side of the Interviewers dominate hand (If right-handed, mount it on the left. If left-handed, mount it on the right). Clip the pump securely on the belt and snake the tubing up the side of the Interviewer then up behind the arm and then across to the top of the shoulder opposite of the pump using the extra clips to hold it in place. Then clip it to the front of the shirt lapel, shirt pocket, or button seam where it will not be get in the way while the Interviewer performs the assigned data collection and observational tasks. Use pieces of blue or green tape if needed to keep the tubing in place and out of the way.

5.6 Turn ON the pump and record the starting clock time. Using a small Phillips-head screwdriver, open the door covering the ON/OFF switch on the pump. Loosen the screw just enough to allow you to rotate the door to give you access to the power switch and after you have the power ON, rotate the door back into position over the power switch and lightly tighten it in place so that the pump cannot be accidently turned off as the Interviewer moves around during sample collection. Use your phone to obtain the time and record the starting clock time on the *Formaldehyde in Air Sample Collection Log*.

5.7 Allow the pump to run until all activities inside the DU are completed. The target amount of elapsed time for collection of the interior air sample of the DU for formaldehyde is 3.5 hours. If all the activities in the DU have been completed and the elapsed time is less than 3 hours, continue to stay within the DU until the pump has been on for at least 3 hours. Use this extra time for conduct a thorough review of the data and samples collected as described under protocol T12/T6.

6. Terminate collection of the regular sample (1 per DU).

6.1 Turn OFF the pump, record the stopping clock time and record the elapsed time on the pump. Using a small Phillips-head screwdriver, open the door covering the ON/OFF switch on the pump. Loosen the screw just enough to allow you to rotate the door to give you access to the power switch and after you have the power OFF, rotate the door back into position over the power switch and lightly tighten it in place so that the door can't be inadvertently lost. Immediately, look at the elapsed time window on the end of the pump (it will go blank shortly after you turn off the pump; see Figure T1-4) and record this number on the *Formaldehyde in Air Sample Collection Log.* In addition, use your phone to obtain the time and record the stopping clock time on the *Formaldehyde in Air Sample Collection Log*.

Figure T1-4. Pump window showing elapsed time in minutes (9 minutes in this figure).

6.2 Remove the sorbent tube and cap. Gently pull the sorbent tube from the sampling train and pull off the short tubing cover disposing of the short tubing section (only use them once). Place the supplied red caps over the ends of the sorbent tube.

6.3 Label, record and store the sample. Get the sample ID label from subkit T1. Wrap the label around the opened sorbent tube as shown in Figure T1-2. Place a replicate ID label on the regular sample row of *Formaldehyde in Air Sample Collection Log.* Temporarily store this sample in the T1 subkit bag until it can be placed into Box 3 inside shipper Kit (C) used for cold transport back to the local base of operations where they can be placed into the freezer.

6.4 Measure and record the AFTER-sampling flow rate. Use the Procedure to Conduct Flow Rate Measurements using the *Field Calibration Check Only* Sorbent Tubes provided later in this protocol to obtain the after-sampling flow rate.

6.5 Store all of the air sampling equipment back into the Galson pack.

PROCEDURE TO OPEN SORBENT TUBES

Gently place the end of the tube into the hole on the top of the tube beaker and using your fingers, spin the tube 4-5 times to score a line in the glass (see Figure T1-5). Then, without removing the end of the tube from the tube breaker, tilt the tube to break off the end. Repeat to open the other end of the tube. Open the tube breaker and shake excess glass shards out of the tube breaker into the trash.

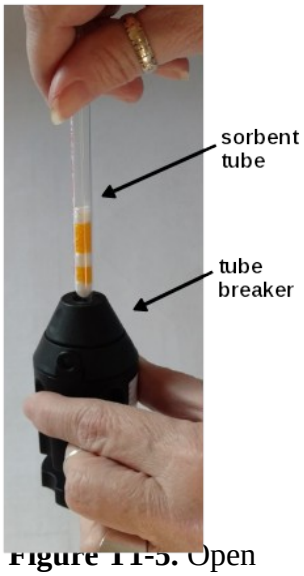


Figure T1-5. Open sorbent tube with tube breaker.

PROCEDURE TO CREATE *FIELD CALIBRATION CHECK ONLY* SORBENT TUBES

(1) Obtain a new sorbent tube with 2 red caps (loose).

(2) Open a new sorbent tube. Open both ends of the tube using the *Procedure to Open Sorbent Tubes*.

(3) Place a "Field Calibration Check Only - XX" label on tube (See Note T1-5). Wrap the label around the opened sorbent tube as shown in Figure T1-2. Be sure to place the label so that it is at least 1 " from the ends to allow room for the red caps which get placed on the opened ends after sample collection.

NOTE T1-5. *Field Calibration Check Only* Labels.

Labels for these tubes originate from the QT QA Officer and have the following format:

Field Calibration Check Only - XX where XX ranges from 01 to 28.

The first 14 labels (01 to 14) are used by the assigned QT sample custodian to create 2 of these tubes for each of the seven Field Teams. Normally, only one of the tubes will get used by each field team to conduct one pre-sampling and post-sampling flow rates in a PSU because they are not subject to failing unless handled improperly. Two are provided to each Field Team in the remote case that the first tube fails to obtain the minimum rate of 1.1 liters per min (LPM) during a pre-sampling calibration check. It is possible, but highly unlikely, that the minimum flow rate cannot be achieved with either of the two tubes sent to each PSU. To address this very remote possibility, the instructions to create

Field Calibration Check Only tubes is provided here and 2 uniquely numbered labels for creating up to two more of these tubes are provided to the Technician inside the Galson Pack where all the field sampling equipment for collection of air samples is stored.

(4) Repeat Steps 1-3 above for each tube to be made.

PROCEDURE TO CONDUCT FLOW RATE MEASUREMENTS USING THE *FIELD CALIBRATION CHECK ONLY* SORBENT TUBES

(1) Assemble the sampling train as shown in Figure T1-6. The long 5/16" OD clear tubing going through the clothing clip(s) connects the pump to the black tube holder base fitting. A short 3/8" OD clear tube connects the black tube holder base fitting to the opened sorbent tube (See Notes T1-3 and T1-4). The 3/8" OD clear tubing coming out of the rotameter, goes to the other end of the opened sorbent tube (See Notes T1-6 and T1-7).

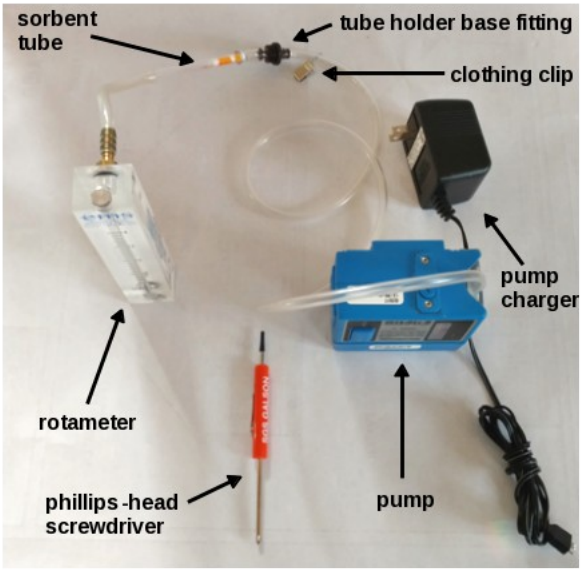


Figure T1-6. Sampling train configuration for field calibration checks.

NOTE T1-6. Use clean surface for assembly and flow rate measurements. It is extremely important assemble and conduct flow rate checks of the sampling pumps on a clean surface, particularly at the inlet of the rotameter. If the surface you have to work with is not free of dust, use a cleaning cloth to clean the surface before placing any items on that surface. The goal is to avoid pulling any dust or particulate on or around the surface you are using into the inlet side of the rotameter. Doing so could clog the *Field Calibration Check Only* tube and cause it to fail.

NOTE T1-7. Use the <u>same</u> *Field Calibration Check Only* tube at each DU. The sorbent tube labeled *Field Calibration Check Only* used for the BEFORE-sampling flow rate check <u>must be</u> the same one that is used for the AFTER-sampling flow rate check. This same tube can be re-used repeatedly in other DUs as long as the BEFORE-sampling flow rate check has an acceptable flow rate (see Note T1-8).

(2) Turn the pump ON. Using a small Phillips-head screwdriver provided in the Galson Pack, open the door covering the ON/OFF switch on the pump. Loosen the screw just enough to allow you to rotate the door to give you access to the power switch and then turn it ON.

(3) Read the flow rate off the rotameter (DO NOT use the rotameter on the pump itself). Be sure you are looking at the rotameter perpendicular to the face and not at an angle. Read the flow rate looking at the center of the ball (see Figure T1-7). The divisions on the rotameter are 0.2 LPM each. Read the flow rate to the closest 0.1 LPM (See Note T1-8) and record this number on the *Formaldehyde in Air Sample Collection Log* along with the ID of the *Field Calibration Check Only* tube being used. If you are the assigned QT sample custodian, then record the flow rate check results on the *Air Sample Collection Setup Log*.

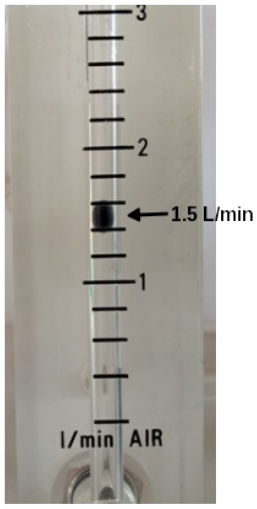


Figure T1-7. Rotameter operating at 1.5 L/min

Note T1-8. Acceptable flow rates. The target flow rate is 1.5 LPM at the start of air sample collection and this is at or close to the maximum flow rate for the pump. <u>DO NOT try to adjust the flow of the pump</u>. <u>If this is a BEFORE-sampling check</u> AND the flow rate is below 1.1 LPM, assume the tube is bad and try using a different sorbent tube. If the 2nd one fails to achieve this flow rate, then check the

personal air pump to be sure it is fully charged by plugging it in (see Charging of Pump under General Directives in this protocol). If the pump is fully charged, then assume the 2nd tube is bad as well and mark both bad tubes with the word "BAD" placing these BAD tubes in the Galson Pack so they will get back to QT after the end of the PSU (refer to Note T1-4). Under these circumstances, you will have to create a new *Field Calibration Check Only* tube as described above. Call QT to discuss the situation if possible. If you are unable to reach QT, continue on and collect the air sample at whatever pre-sampling flow rate you obtained, but be sure to talk with QT before testing at the next DU.

(4) Turn the pump OFF. If this is the AFTER-sampling check, use the screwdriver to securely close the door covering the ON/OFF switch on the pump after turning it off.

OMB No. aaaa-bbbb
expires: mm/dd/yyyy

Cover Sheet for Technician Form Set

Dwelling Unit ID: _____

PSUID - AHHS SEGID - SAMP TYPE

Kit (B) Number: place Kit (B) label here

DU Address _____

_____

_____

_____

_____

Interviewer Name _____

Check if this is **1st** DU in the PSU to get tested ► ☐ ◄ If checked, use Kit (B) box with a -WQ suffix. In these DUs: *collect* a pesticide QC sample in addition to a regular pesticide sample AND a dust wipe Swiffer™ QC sample in addition to a regular dust wipe Swiffer™ sample.

Check if this is **2nd** DU in the PSU to get tested ► ☐ ◄ If checked, use Kit (B) box with a -W suffix. In these DUs collect: a regular dust wipe Swiffer™ sample.

In all other DUs (except the 1st and 2nd DU tested in a PSU), use a Kit (B) box with no "-WQ" or "-W" ID suffixes: A regular pesticide sample **IS** collected in all these DUs, but **NO** regular dust wipe Swiffer™ sample is collected in these DUs.

****Note all fields to be completed by Technician**

Technician DU Checklist - Items Going In and Out of DU Undergoing Testing				
Item		**Number for 1 DU**	**Number Before Testing**	**Number After Testing**
RE-USABLE EQUIPMENT				
Clipboard		1		
Compass		1		
Flashlight with extra batteries		1		
GALSON PACK		1		
Knee pads, pairs		1		
Knife, razor-type		1		
Marker, black sharpie		1		
Pens, blue ink		1		
Petri dishes, spares; each inside plastic bag		1		
Scoopula		1		
Tape measure (25’ wide)		1		
Teflon tape, rolls (to seal pesticide sample jars)		1		
Template (AL or stainless), square 12"x12" internal dim.		1		
Tool bucket with Pocket Bucket Tote		1		
Trowel		1		
SUPPLIES STORED WITH EQUIPMENT				
Cleaning clothes (wipes), boxes		1		
Gloves, nitrile, sized to fit hands of technician, 100 each per box Estimated maximum usage rate = 50/DU (half a box)		at least 50		
Dust Wipe Media (individual packets); spares		12		
Tape, black electrical, rolls		1		
Tape, masking, blue or green, rolls		1		
Trash bags		1		
SUPPLIES STORED IN Kit (C) used as temporary (in auto) cold storage [In the morning, place 5 tubes and 6 vials in kit inside Box 3 - SORBENT TUBES & IPA VIALS FOR DAILY USE; this is the maximum likely to be used per day]				
New Sorbent Tubes [If 1st DU in PSU, take 2 tubes into DU else take 1]		1 or 2		
Opened sorbent tubes marked *Field Calibration Check Only*		1		
IPA Vials [If DU 1st DU in the PSU, take 4 tubes into DU else take 2]		2 or 4		
SUPPLIES STORED IN Kit (B): *At end of DU, items listed go back in Kit (B) box unless otherwise marked*				
Technician Form Set		1		
Subkit T1	*Move to Kit (C) at end of DU*	1		
Subkit T3		1		
Subkit T4	*Move to Kit (C) at end of DU*	1		
Subkit T4b	*Move to Kit (C) at end of DU*	0 or 1		
Subkit T5		1		
Formaldehyde in air sample	*Move to Kit (C) at end of DU*	1 or 2		
Pesticide in dust sample	*Move to Kit (C) at end of DU*	1 or 2		
Dust wipe samples for Pb		10		
Soil samples for Pb		0 - 6		

Formaldehyde In Air Sample Collection Log

Pump Information:	**Pump Number: PG**_____
	Calibrated Flow Rate (LPM): _____
Rotameter information:	**Rotameter Number: R**_____
	Correction Formula: Y=_____ **and X=**_____ **Corrected flow rate = (Y) times (measured flow rate) + X**

Sampling Flow Rate Information

Date	2-digit ID on the *Field Calibration Check Only* Sorbent Tube Used	BEFORE-sample collection with sorbent tube In-line		AFTER-sample collection with sorbent tube In-line	
		Clock time completed	Measured Flow rate LPM	Clock time completed	Measured Flow rate LPM

Sample Information

ID	Clock time when pump started	Clock time when pump stopped	Elapsed time on Pump (minutes)	Comments
place regular Sample ID Label here				*Regular Sample*
place Field Blank Sample ID Label here				*Field Blank Collected only in **1st** DU in the PSU to get tested*

The same *Field Calibration Check Only - XX* sorbent tube must be used for both the BEFORE- and AFTER-sample collection. The acceptance criterion for the *Field Calibration Check Only* tube of a corrected flow rate of 1.1 LPM or higher ONLY applies to the BEFORE-sample collection measurement. Any flow rate above 0 LPM for the AFTER-sample collection measurement is acceptable.

T2- LEAD-BASED PAINT TESTING (using XRF)

Staff Involved: Assigned Field Technician

Overview: The Technician conducts LBP testing using combination of automated data collection programmed into the XRF instrument and a checklist (one for each room and the exterior). LBP testing will include selected surfaces on the interior and on the exterior. The checklist contains a list all of the building components to be tested if present. The interior testing is to be done before the exterior and includes testing in the KIT, CLR, BR and OTHER rooms. Actual testing of any surfaces cannot be started until the Interviewer completes the Room Inventory efforts (protocol I4). In addition, the Technician must be present with the Interviewer for the Introduction and Informed Consent (protocol I3) so that the resident becomes familiar with the Technician and comfortable with his/her presence in the DU. After this introduction is completed, the Informed Consent is signed, and collection of the air sample for formaldehyde has been started, the Technician will warm up the XRF and perform internal calibration and QC checks. By the time these checks are completed, the Interviewer should have completed the Room Inventory, which is needed to direct the Technician to the rooms selected for environmental sampling. The Interviewer and Technician will make a quick visit with the resident to each of these interior rooms to communicate agreement on the rooms that are selected for testing. During this quick visit, the drinking water service line will be tested for Pb if it can be located and assessed. Once this is done, the testing of selected surfaces in the four selected rooms and the primary entryway will be performed. Testing on the exterior locations will be performed after completing collection of all of the interior samples. Exterior testing includes measurements on a porch area (if it exists), and on other selected exterior surfaces on one randomly selected side of the DU (designated as east, west, north or south as determined during the room inventory).

Data Recording on:	Technician Form Set (bound) pulled from Kit (B) plus completed room inventory sheet

Equipment Needed from Kit (Y) and Kit (Z)

- 1 Heuresis model Pb200i system including:
  - Shipping box with packing material and list of supplied items.
  - One iM2100 Pelican case
  - One Pb200i analyzer w/lanyard
  - One download cable
  - One wood std block with QC test films 1.02 and <0.001 mg/cm^2
  - One 16-slot smart charger with car & wall adaptors
  - 18 nickel metal hydride rechargeable batteries
  - 3 battery holders
  - One holster and strap (can be used on belt or over shoulder)
  - One holster shield inside holster
  - One spare snout protector
  - One battery door (on XRF)
  - One packet of information containing a valid leak test, emergency instructions, FedX shipping label for return to Heuresis
- 1 blue ink pen
- 1 clipboard
- 1 flashlight with extra batteries
- 1 tape measure (25')
- 1 pair knee pads
- 1 compass

Glove Use Directives: not required

to be updated by QuanTech after XRF programming has been completed

General XRF Use Information

(a) Custody. The XRF, Kit (Z), is shipped directly from the XRF manufacturer to the Technician (and back at the end of the PSU) and is not the responsibility of the Interviewer.

(b) Electronic Storage. The Heuresis PB 200i has enough storage capacity to hold all of the readings in all DUs in the survey. Therefore, the Technician is directed to never erase any of the stored data from the XRF.

(c) Charging. The Technician is responsible for ensuring that the batteries in the XRF and the spares are fully charged prior to testing in each unit.

(d) Mode of Operation. ***to be updated by QuanTech after XRF programming has been completed***

(e) Warm-up. Prior to use for any testing, the XRF must be turned on and allowed to warm up for at least 5 minutes. The Technician should place the XRF on top of its carrying case and keep it far removed from any other electronic device in the home such as a television set when turning it on (necessity unclear but this is a prudent precaution).

(f) Calibration Checks. All readings must be bracketed (prior to and after testing building components) by measurements on the manufacturer's calibration check standards. If the XRF must be turned off after warm-up, tests must be made on the calibration check standards prior to shutting down. In case of a battery failure that requires a switch in the battery pack, this may not be possible. If this happens contact the assigned QT custodian or the QA manager (Dr. Gary Dewalt) to discuss options.

(g) Rooms Selected for Testing. Obtain a copy of the Room Inventory form from the Interviewer and participate in a quick walk through of the DU with the Interviewer before starting the testing on the interior. Locate and collect a reading on the drinking water service line coming into the DU at this time.

(h) Testing Path Precautions. The Technician shall take care to ensure that no persons (occupant or neighbor) are inadvertently exposed to radiation from the XRF. The Heuresis PB 200i contains a nominal 5 milli-Curies of Co-57. The degree of penetration of the radiation from this XRF is very much dependent on the thickness and type of material you're measuring: if it's a steel door there is essentially no exposure on the other side of the door, but a hollow wood door or wall made of drywall is a different story. Also, in taking a single sub-10-second measurement with an XRF instrument with a 1 to 5 mCi 57Co source, the dose levels caused by an incidental exposure are not dangerous. However, despite these facts, the Technician is directed to skip any measurement on components where a person could be less than 1 meter in a direct line from the front of the XRF. This means that walls that are common to other DUs where persons may be located should not be tested by the technician. In such cases, be sure to note on the applicable form that this is the reason the component was not tested.

TESTING AT THE DU

NOTE: *These instructions will be dated to reflect final programming of the XRF before training for the survey is conducted.*

1. **Collect readings on each of the interior components using the six LBP Testing Checklists** (Miscellaneous, Kitchen, Common Lining Area, Bedroom, Other Room, and Exterior) using the parameters provided below:

4.1 ****To be completed after final XRF programming****
- 4.1.1 **1 DU ID#**.
- 4.1.2 **2 Room ID#**.
- 4.1.3 **3 Comp(loc).**
- 4.1.4 **4 Def Other**.
- 4.1.5 **5 Substrate**.
- 4.1.6 **6 Comp Cond**.
- 4.1.7 **7 % Det**.

END OF DAY LBP TESTING ACTIVITIES

These activities are a part of the offsite end-of-day activities. The daily activities relevant to these protocols include the following:

1. **Download data.** ****To be completed after final XRF programming****
2. **Recharge Batteries**. ****To be completed after final XRF programming****

Random Selection Process for Windows

1. Count the number of window systems in the room.
2. Go to the Random Number Table provided in the Technician Form Set
   2.1 Select the first unused row of the table.
   2.2 Look under the column that matches the count number to get the selection and remember the selected number.
   2.3 Put a line through that row of the table to indicate that it has been used.
3. Starting at the main entrance door in the room, count clockwise (left to right) the windows until the selected number is reached and test this window system.

For example, if the room has 4 windows and the first row of the table is used, then the 3rd window (going left to right from the main entrance) is to be tested.

GENERAL OPERATION OF THE HEURESIS MODEL Pb200I

****To be completed after final XRF programming****

A. Turning ON the XRF.
B. Starting up the *AHHS II* program
C. Summary of Data Entry using the *AHHS II* program.
D. Downloading Data to the tablet

IMPORTANT NOTE: THIS DOWNLOAD PROCEDURE MUST BE COMPLETED AT THE CONCLUSION OF WORK IN EACH DWELLING UNIT

Table T1-1. Data Collection Programming on the Heuresis model Pb200i

to be updated by QuanTech after XRF programming has been completed

Pick List Choices (Code.....Clarification, if needed)

1st Entry: DU ID NOT pick list but uses virtual keyboard; format is ###-###-ZZ

2nd Entry: Room ID

KIT.....Kitchen	OTHER.....Other selected room
CLA.....Common Living Area	EXT.....Exterior (includes entryway)
KIT.....Bedroom	

3rd Entry: Component (quadrant location = 1,2,3 or 4)

QC Std 0.....QC standard <0.01 mg/cm²	Str rail(1).....stair rail
QC Std 1.04.….QC standard 1.04 mg/cm²	Str risr(2).....any riser
QC Std 3.58.….QC standard 3.58 mg/cm²	Str tred(4).....any tread
Interior items:	Pipe.....Drinking water service line
N Wall(4).....north wall	**Exterior items:**
E wall(1).....east wall	X N Sid(4).....North wall siding
S wall(3).....south wall	X E Sid(1).....East wall siding
W Wall(1).....west wall	X S Sid(3).....South wall siding
Win sill(1).....random window sill	X W Sid(1).....West wall siding
Win sash(3).....sash on same window above	X Mdoor(1).…main entryway door
Win aprn(2).....apron on same window above	X Mjamb(3)....jamb on same door above
Win jamb(4).....jamb on same window above	X Pceil(4).....porch celing
Basebrd(2).....baseboard on east wall	X Pfloor(2).....porch or stairwell floor
Beam(4).....beam or column	X Prail(3).....rail in porch/stairwell above
Cabinet(3).....built-in cabinet	X Thres(3).....threshold on same door above
Ceiling(4).....ceiling	X Waprn(3).…same window above
Chairrai(1).....chair rail	X Wsash(2).…same window above
Cls shlf(3).....any closet, shelf or support	X Wsill(2).....randomly picked operable window
Cmold(2).....crown molding	X Cbord(1).....cornerboard
Door(3).....random door	X Fndwall(1)..foundation wall
Dr jamb(4).....jamb on door above	X Skirt(2).....skirt or dripboard
Fireplac(2).....fireplace or chimney	X Chmny(3)…chimney
Floor(2).....floor	X Lattice(3)….lattice
Other 1(2).....other painted/deteriorated comp	X Other1(2)….other painted/deteriorated comp
Other 2(2).....other painted/deteriorated comp	X Other2(2)….other painted/deteriorated comp
Radiator(3).....radiator or built-in heater	

4th Entry (optional) Define Other NOT pick list but uses virtual keyboard

5th Entry: Substrate Type

Brick	Stone
Concrete	Vinyl
Ceramic	Wood
Drywall.....drywall or sheetrock	Wallpaper
Metal	Other
Plaster.....plaster or stucco	

6th Entry:.....Component Condition

Satisfactory.....substrate okay	Replace.....substrate needs replacing
Repair.....substrate needs repair	

7th: % Deteriorated

0%	26-50%	91-99%
1-10%	51-75%	100%
11-25%	76-90%	

AHHS II - Protocol T2

LBP TESTING CODES AND CHECKLIST INSTRUCTIONS

Use the checklists to keep track of items tested or reviewed for testing
All components listed on the checklists are to be tested if found and painted, varnished, or otherwise coated. Bracket all interior and exterior readings by QC standards as listed on the forms.

SPECIAL DIMENSION MEASUREMENTS INSTRUCTIONS FOR WINDOWS

The purpose of recording dimensions of the random window (in inches) is to be able to calculate the total painted surface areas of the window system (the non-glass portions). Mullions, if they exist, are ignored.

- **N = Window Count**. This is the total number of windows in room.
- **W=Width**. Measure horizontal width, side to side, starting at left edge of trim (where it meets the wall) all the way across the window to the right edge of the trim (where it meets the wall).
- **H=Height**. Measure vertical height top to bottom start starting at the top of the trim (where it meets the wall) all the way across the window where either the left of right side trim stops (this is often at the sill).
- **X1= Trim Width Left**. Measure the width of the trim on the left side starting at the left edge of the glass and wrapping the tape measure across the sash, jambs and other left side trim to the wall edge.
- **X2=Trim Width Right**. If the left is the same as the right, you can use the same number determined for X1. If not, use same procedure as for X1 on the right side.
- **X3=Trim Width Top**. Measure the width of the trim on the top part of the window starting at the top of the trim (where it meets the wall) and wrapping the tape measure across the top trim to where it meets edge of the glass. If you can't reach it, estimate the width.
- **X4=Trim Width Bottom**. Measure the width of the trim on the bottom part of the window starting at the bottom glass edge and wrapping the tape measure across the sash, sill and apron (if it exists) to the wall edge under the sill or apron.

TEST LOCATIONS (LOC) ARE DEFINED IN QUADRANTS AS FOLLOWS:

Components with large areas =>

1 = upper left quadrant	**2 = upper right quadrant**
4 = lower leftquadrant	**3 = lower right quadrant**

Components with narrow areas =>

1 (N) left or top quadrant	**2 (E) middle left or 2nd quadrant down**	**3 (S) middle right or 3rd quadrant down**	**4 (W) right or bottom quadrant**

OMB No. xxxx-xxxx
expires: mm/dd/yyyy

Heuresis XRF Job Number: ___________________

LBP Testing Checklist for Miscellaneous Tests

Check off items on the checklist as they are tested or not tested using the following Test Codes:

- **1 = Tested this Item**
- **6= Not Tested - Could not locate drinking water service line.**
- **7= Not Tested - Found drinking water service line, but inaccessible with XRF.**

Record Testing of drinking water service line in the row below:

Item Tested.................Clarification............................Test Code......Clock Time when tested

Pipe...________........____________________

Record g any <u>extra</u> readings taken on the calibration check standards (such as needed due to a battery failure) in the rows below:

Item Tested.................Clarification............................Test Code......Clock Time when tested

Std 0 -frnt, -bck............front&back std <0.01 mg/cm²…________........____________________
Std 1 -frnt, -bck............front&back std 1.04 mg/cm².….________........____________________
Std 3 -frnt, -bck............front&back std 3.58 mg/cm².….________........____________________

Std 0 -frnt, -bck............front&back std <0.01 mg/cm²…________........____________________
Std 1 -frnt, -bck............front&back std 1.04 mg/cm².….________........____________________
Std 3 -frnt, -bck............front&back std 3.58 mg/cm².….________........____________________

Std 0 -frnt, -bck............front&back std <0.01 mg/cm²…________........____________________
Std 1 -frnt, -bck............front&back std 1.04 mg/cm².….________........____________________
Std 3 -frnt, -bck............front&back std 3.58 mg/cm².….________........____________________

Heuresis XRF Job Number: _____

LBP Testing Checklist for KIT

Check off items on the checklist as they are tested or not tested using the following Test Codes:

1 = Tested this Item
2 = Not Tested - Item not present
3 = Not Tested - Items present, but not painted, varnished or otherwise coated
4 = Not Tested - Items present and painted, but inaccessible
5 = Not Tested - Items present and painted, but not safe to test

At end of testing in a room, fill in the open quantity blanks for selected items shown below:

Component Code (test quad)	**Clarification**	**KIT Test Code**	**Quantity**	**Units**
Std 0 -frnt, -bck	front&back std <0.01 mg/cm²	_____		
Std 1 -frnt, -bck	front&back std 1.04 mg/cm²	_____		
Std 3 -frnt, -bck	front&back std 3.58 mg/cm²	_____		
N Wall(4)	north wall	_____		
E wall(1)	east wall	_____		
S wall(3)	south wall	_____		
W Wall(1)	west wall	_____		
Win sill(1)	random window sill	_____		
Win sash(3)	sash on window above	_____		
Win aprn(2)	apron on window above	_____		
Win jamb(4)	jamb on window above	_____		

Dimensions: N=____ W=____ X1=____ X2=____ X3=____ X4=____

Door(3)	random door	_____		
Dr jamb(4)	jamb on door above	_____		
Floor(2)	floor	_____		
Basebrd(2)	baseboard on east wall	_____		
Ceiling(4)	ceiling	_____		
Cmold(2)	crown molding	_____		
Chairrai(1)	chair rail	_____		
Fireplac(2)	fireplace or chimney	_____		
Beam(4)	beam or column	_____	_____	each
Cls shlf(3)	any closet, shelf or support	_____	_____	linear feet
Cabinet(3)	built-in cabinet	_____	_____	linear feet
Str rail(1)	stair rail	_____	_____	linear feet
Str tred(4)	any tread	_____	_____	each
Str risr(2)	any riser	_____	_____	each
Radiator(3)	radiator or built-in heater	_____	_____	each
Other 1(2)	other deteriorated comp	_____		
Other 2(2)	other deteriorated comp	_____		
Std 0 -frnt, -bck	front&back std <0.01 mg/cm²	_____		
Std 1 -frnt, -bck	front&back std 1.04 mg/cm²	_____		
Std 3 -frnt, -bck	front&back std 3.58 mg/cm²	_____		

Heuresis XRF Job Number: _____

LBP Testing Checklist for CLA

Check off items on the checklist as they are tested or not tested using the following Test Codes:

1 = Tested this Item
2 = Not Tested - Item not present
3 = Not Tested - Items present, but not painted, varnished or otherwise coated
4 = Not Tested - Items present and painted, but inaccessible.
5 = Not Tested - Items present and painted, but not safe to test

At end of testing in a room, fill in the open quantity blanks for selected items shown below:

Component Code (test quad)	**Clarification**	**CLA Test Code**	**Quantity**	**Units**
Std 0 -frnt, -bck	front&back std <0.01 mg/cm²	_____		
Std 1 -frnt, -bck	front&back std 1.04 mg/cm²	_____		
Std 3 -frnt, -bck	front&back std 3.58 mg/cm²	_____		
N Wall(4)	north wall	_____		
E wall(1)	east wall	_____		
S wall(3)	south wall	_____		
W Wall(1)	west wall	_____		
Win sill(1)	random window sill	_____		
Win sash(3)	sash on window above	_____		
Win aprn(2)	apron on window above	_____		
Win jamb(4)	jamb on window above	_____		

Dimensions: N=____ W=____ X1=____ X2=____ X3=____ X4=____

Door(3)	random door	_____		
Dr jamb(4)	jamb on door above	_____		
Floor(2)	floor	_____		
Basebrd(2)	baseboard on east wall	_____		
Ceiling(4)	ceiling	_____		
Cmold(2)	crown molding	_____		
Chairrai(1)	chair rail	_____		
Fireplac(2)	fireplace or chimney	_____		
Beam(4)	beam or column	_____	_____	each
Cls shlf(3)	any closet, shelf or support	_____	_____	linear feet
Cabinet(3)	built-in cabinet	_____	_____	linear feet
Str rail(1)	stair rail	_____	_____	linear feet
Str tred(4)	any tread	_____	_____	each
Str risr(2)	any riser	_____	_____	each
Radiator(3)	radiator or built-in heater	_____	_____	each
Other 1(2)	other deteriorated comp	_____		
Other 2(2)	other deteriorated comp	_____		
Std 0 -frnt, -bck	front&back std <0.01 mg/cm²	_____		
Std 1 -frnt, -bck	front&back std 1.04 mg/cm²	_____		
Std 3 -frnt, -bck	front&back std 3.58 mg/cm²	_____		

Heuresis XRF Job Number: _____

LBP Testing Checklist for BR

Check off items on the checklist as they are tested or not tested using the following Test Codes:

1 = Tested this Item
2 = Not Tested - Item not present
3 = Not Tested - Items present, but not painted, varnished or otherwise coated
4 = Not Tested - Items present and painted, but inaccessible.
5 = Not Tested - Items present and painted, but not safe to test

At end of testing in a room, fill in the open quantity blanks for selected items shown below:

Component Code (test quad)	Clarification	BR Test Code	Quantity	Units
Std 0 -frnt, -bck	front&back std <0.01 mg/cm²			
Std 1 -frnt, -bck	front&back std 1.04 mg/cm²			
Std 3 -frnt, -bck	front&back std 3.58 mg/cm²			
N Wall(4)	north wall			
E wall(1)	east wall			
S wall(3)	south wall			
W Wall(1)	west wall			
Win sill(1)	random window sill			
Win sash(3)	sash on window above			
Win aprn(2)	apron on window above			
Win jamb(4)	jamb on window above			

Dimensions: N=____ W=____ X1=____ X2=____ X3=____ X4=____

Door(3)	random door			
Dr jamb(4)	jamb on door above			
Floor(2)	floor			
Basebrd(2)	baseboard on east wall			
Ceiling(4)	ceiling			
Cmold(2)	crown molding			
Chairrai(1)	chair rail			
Fireplac(2)	fireplace or chimney			
Beam(4)	beam or column		_____	each
Cls shlf(3)	any closet, shelf or support		_____	linear feet
Cabinet(3)	built-in cabinet		_____	linear feet
Str rail(1)	stair rail		_____	linear feet
Str tred(4)	any tread		_____	each
Str risr(2)	any riser		_____	each
Radiator(3)	radiator or built-in heater		_____	each
Other 1(2)	other deteriorated comp.			
Other 2(2)	other deteriorated comp.			
Std 0 -frnt, -bck	front&back std <0.01 mg/cm²			
Std 1 -frnt, -bck	front&back std 1.04 mg/cm²			
Std 3 -frnt, -bck	front&back std 3.58 mg/cm²			

Heuresis XRF Job Number: _____

LBP Testing Checklist for Other Room

Check off items on the checklist as they are tested or not tested using the following Test Codes:

1 = Tested this Item
2 = Not Tested - Item not present
3 = Not Tested - Items present, but not painted, varnished or otherwise coated
4 = Not Tested - Items present and painted, but inaccessible.
5 = Not Tested - Items present and painted, but not safe to test

At end of testing in a room, fill in the open quantity blanks for selected items shown below:

Component Code (test quad)	Clarification	OTHER ROOM Test Code	Quantity	Units
QC Std 0	QC standard <0.01 mg/cm²	_____		
QC Std 1.04	QC standard 1.04 mg/cm²	_____		
QC Std 3.58	QC standard 3.58 mg/cm²	_____		
N Wall(4)	north wall	_____		
E wall(1)	east wall	_____		
S wall(3)	south wall	_____		
W Wall(1)	west wall	_____		
Win sill(1)	random window sill	_____		
Win sash(3)	sash on window above	_____		
Win aprn(2)	apron on window above	_____		
Win jamb(4)	jamb on window above	_____		

Dimensions: N=____ W=____ X1=____ X2=____ X3=____ X4=____

Door(3)	random door	_____		
Dr jamb(4)	jamb on door above	_____		
Floor(2)	floor	_____		
Basebrd(2)	baseboard on east wall	_____		
Ceiling(4)	ceiling	_____		
Cmold(2)	crown molding	_____		
Chairrai(1)	chair rail	_____		
Fireplac(2)	fireplace or chimney	_____		
Beam(4)	beam or column	_____	_____	each
Cls shlf(3)	any closet, shelf or support	_____	_____	linear feet
Cabinet(3)	built-in cabinet	_____	_____	linear feet
Str rail(1)	stair rail	_____	_____	linear feet
Str tred(4)	any tread	_____	_____	each
Str risr(2)	any riser	_____	_____	each
Radiator(3)	radiator or built-in heater	_____	_____	each
Other 1(2)	other deteriorated comp	_____		
Other 2(2)	other deteriorated comp	_____		
Std 0 -frnt, -bck	front&back std <0.01 mg/cm²	_____		
Std 1 -frnt, -bck	front&back std 1.04 mg/cm²	_____		
Std 3 -frnt, -bck	front&back std 3.58 mg/cm²	_____		

Heuresis XRF Job Number: _____

LBP Testing Checklist for Exterior

[NOTE: it is assumed that the XRF will be turned off after completing testing of the interior rooms.] Check off items on the checklist as they are tested or not tested using the following Test Codes:

1 = Tested this Item
2 = Not Tested - Item not present
3 = Not Tested - Items present, but not painted, varnished or otherwise coated
4 = Not Tested - Items present and painted, but inaccessible.
5 = Not Tested - Items present and painted, but not safe to test

At end of testing in a room, fill in the open quantity blanks for selected items shown below:

Component Code (test quad)	Clarification	Exterior Test Code	Quantity	Units
QC Std 0	QC standard <0.01 mg/cm²	_____	[redacted]	[redacted]
QC Std 1.04	QC standard 1.04 mg/cm²	_____	[redacted]	[redacted]
QC Std 3.58	QC standard 3.58 mg/cm²	_____	[redacted]	[redacted]
X N Sid(4)	North wall siding	_____	[redacted]	[redacted]
X E Sid(1)	East wall siding	_____	[redacted]	[redacted]
X S Sid(3)	South wall siding	_____	[redacted]	[redacted]
X W Sid(1)	West wall siding	_____	[redacted]	[redacted]
X Mdoor(1)	main entryway door	_____	[redacted]	[redacted]
X Mjamb(3)	jamb on door above	_____	[redacted]	[redacted]
X Thres(3)	threshold on door above	_____	[redacted]	[redacted]
X Pfloor(2)	porch or stairwell floor	_____	_____	square feet
X PCeil(4)	porch celing	_____	[redacted]	[redacted]
X Prail(3)	rail in porch/stairwell above	_____	_____	linear feet

Items Below Are To Be Tested on A Randomly Selected Exterior Wall (N, E, S or W) identified on the Room Inventory form

Component Code (test quad)	Clarification	Exterior Test Code	Quantity	Units
X Wsill(2)	random operable window	_____	[redacted]	[redacted]
X Wsash(2)	same window above	_____	[redacted]	[redacted]
X Waprn(3)	same window above	_____	[redacted]	[redacted]

Dimensions: N=____ W=____ X1=____ X2=____ X3=____ X4=____

X Cbord(1)	cornerboard	_____	_____	feet
X Fndwall(1)	foundation wall	_____	[redacted]	[redacted]
X Skirt(2)	skirt or dripboard	_____	[redacted]	[redacted]
X Chmny(3)	chimney	_____	_____	square feet
X Lattice(3)	lattice	_____	_____	square feet
X Other1(2)	other deteriorated comp	_____	[redacted]	[redacted]
X Other2(2)	other deteriorated comp	_____	[redacted]	[redacted]
Std 0 -frnt, -bck	front&back std <0.01 mg/cm²	_____	[redacted]	[redacted]
Std 1 -frnt, -bck	front&back std 1.04 mg/cm²	_____	[redacted]	[redacted]
Std 3 -frnt, -bck	front&back std 3.58 mg/cm²	_____	[redacted]	[redacted]

OMB No. xxxx-xxxx
expires: mm/dd/yyyy

Random Number Table for Random Selections

(use this form for all protocols requiring a random selection)

Random Number Selections from a Group of 2 to 14 Items													
	Number of Items to Pick From:												
Row	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1	2	2	3	1	3	4	5	3	7	11	5	3	5
2	2	3	3	4	2	5	8	5	10	1	3	7	2
3	2	1	3	1	4	2	8	3	2	5	7	3	2
4	2	3	3	1	3	1	6	8	6	9	3	13	2
5	1	1	3	5	4	2	6	2	5	3	4	2	2
6	1	3	2	3	4	7	6	2	6	3	12	4	14
7	2	3	2	2	5	6	6	1	1	8	9	8	8
8	2	2	1	4	2	4	5	5	4	6	6	10	13
9	2	2	3	1	5	3	6	6	7	2	8	7	1
10	1	3	1	1	3	2	2	7	5	6	10	4	13
11	2	1	3	1	5	7	3	6	10	6	3	2	13
12	1	2	3	2	5	4	2	4	8	3	10	11	9
13	1	2	2	2	4	3	2	6	3	8	4	4	6
14	2	1	3	3	3	2	3	7	5	10	5	4	7
15	2	2	1	4	4	7	3	7	2	9	7	5	11
16	2	3	1	3	3	6	6	9	8	11	5	2	11
17	2	3	3	2	4	3	4	2	9	3	3	12	12
18	1	2	2	2	4	4	2	4	7	2	5	9	12
19	1	1	1	3	5	3	3	4	2	4	8	7	8
20	1	3	3	2	2	2	2	3	5	7	11	12	12
21	2	1	4	4	5	1	3	2	2	3	4	7	4
22	2	1	3	4	3	5	3	5	5	10	1	11	2
23	2	1	3	3	1	5	3	3	5	5	4	7	3
24	1	3	2	3	5	4	7	3	8	4	8	5	6
25	1	3	2	2	6	2	5	5	3	2	1	10	2
26	2	3	3	4	5	5	5	8	6	3	6	3	12
27	2	3	3	2	2	6	2	1	6	2	5	8	12
28	1	3	3	4	6	3	7	1	3	3	2	8	11
29	2	2	4	4	3	7	3	2	8	10	6	10	8
30	1	1	2	5	5	2	3	2	3	4	4	8	11
31	2	3	1	4	4	4	5	7	6	3	6	2	3
32	1	3	3	4	5	5	4	3	9	6	3	9	12
33	1	2	3	3	2	4	6	8	4	3	4	11	13
34	2	1	1	3	3	3	7	4	8	2	4	11	1
35	1	1	3	2	6	6	6	3	8	4	6	1	7
36	1	1	3	5	3	4	5	6	10	2	9	1	11
37	1	2	2	3	3	7	7	4	3	2	3	6	12
38	1	2	3	5	4	7	6	1	1	8	6	8	13
39	1	1	1	3	3	6	5	3	7	8	12	6	1
40	2	2	1	1	2	4	7	9	5	9	5	11	12

T3- LEAD WIPE SAMPLING FOR Pb

Staff Involved: Assigned Field Technician

Overview: After the interior LBP testing has been completed (protocol T2), the Technician will perform lead wipe sample collection in the KIT, CLR, BR and OTHER rooms. These efforts include collection of two wipe samples in each of the rooms, one from a random windowsill and one from the center of the largest open area on the floor. Also included are collection of one field blank and one sample from the floor in the center of the doorway to the major entrance to the DU. One square foot templates will be used for floor samples. The entire interior sill area will be wiped for windowsill samples. The surface type wiped for floor and window samples, carpet pile depth (for carpeted surfaces), window treatments, surface area wiped, and proximity of floor samples to doors, windows, and traffic patterns will be recorded using a form.

Data Recording on: Technician Form Set (bound), pulled from Kit (B), plus completed room inventory sheet

Equipment Needed from Kit (X)

- 1 tool bucket with blue Pocket Bucket Tote
- 1 blue ink pen
- 1 clipboard
- 1 black sharpie marker
- 1 pocket knife
- 1 flashlight with extra batteries
- 1 roll electrical tape
- 1 roll blue tape
- 1 tape measure (25')
- 1 box of cleaning clothes (wipes)
- 1 box nitrile gloves
- 1 pr knee pads
- 1 trash bag
- 1 template (aluminum or stainless), square with 12 in. x 12 in. internal dimensions
- 12 spare ASTM compliant Dust Wipe Media (individual packets)

Supplies Needed from Kit (B) - Subkit T3

- 10 ASTM compliant Dust Wipe Media (individual packets; spares in equipment kit)
- 10 rigid-walled dust wipe containers for storing the samples
- 10 rows of 4 self-adhesive, pre-printed ID labels (ID suffixes 12 through 20)
-

Glove Use Directives: **Use new or cleaned gloves between samples (see protocol I0)**

GENERAL SAMPLING PROCEDURE

1. **Check Supplies**. Ensure there are sufficient supplies in your tool bucket tote to collect all ten lead wipe samples.
2. **Go to each room and collect samples**. Go to the each of the 4 primary rooms to sample (KIT, CLA, BR, and Other room) as designated on the Room Inventory form and collect a windowsill and floor sample using the following parameters:
   - 2.1 **Record the Room ID number on the form** as shown on the Room Inventory form.
   - 2.2 **Use the *Procedure to Collect Each Wipe Sample* protocol** shown in this document for each sample collected.
   - 2.3 **Collect the floor sample first using the 1 sq. ft. template**. Locate this sample in the center of the largest open area on the floor.
   - 2.4 **Collect the windowsill sample second without using any template**. For window systems, use the Random Selection Process provided in this protocol to select among the

different window systems present in the room. The entire interior sill area will be wiped for windowsill samples.

2.5 **If this is the Kitchen, collect a field blank after the windowsill sample.**

3. **Temporarily store samples**. Place the all the collected samples in a doubled 2-gal re-closable bag to hold them together and temporarily store them in your tool bucket.
4. **Review and complete data entries**. Review the samples collected and the data recorded on the Lead Wipe Sample Collection Log. Ensure that all data fields are completed. Make any needed corrections.
5. **Move on to pesticide wipe sample collection, protocol T4**.

Random Selection Process for Windows

1. **Count the number of window systems in the room**.
2. **Go to the Random Number Table** (*see form in protocol T1, also on page 11 in Technician form set*).
   2.1 **Select the first unused row of the table**.
   2.2 **Look under the column that matches the count number to get the selection and remember the selected number.**
   2.3 **Put a line through that row of the table to indicate that it has been used.**
3. **Starting at the main entrance door in the room, count clockwise (left to right) the windows until the selected number is reached and test this window system.**

For example, if the room has 5 windows and the 5th row of the table is used, then the 5th window (going left to right from the main entrance) is to be tested.

Procedure to Collect Each Wipe Sample

1. **Label the container(s) and forms**. Place a unique Sample ID label on the side of the sample container using the first unused row of 4 Sample ID labels provided in the sub-kit. Place a second replicate ID label (same ID number as above) on the indicated place on the *Lead Wipe Sample Collection Log* starting at the first open entry of this form (NOTE: Be sure that the field sample ID label goes on the correct row). Place a third replicate ID label (same ID number) on a chain of custody form and complete the appropriate entries on both forms to the extent possible using a blue ink pen. For backup labeling, write the sample ID number on the sample container (opposite side of sample label) using a black sharpie marker. Be sure this hand-written ID number matches the ID number shown on the label.
2. **Put on gloves**. Don a new pair of lab gloves if not wearing gloves or if existing gloves are damaged or potentially contaminated.
3. **Clean gloves, sample container, wipe package, and template.** Wipe off the gloves with a cleaning wipe, then the outside of the tube and wipe package to be used for sample collection, then the sampling template (square shaped) if it is to be used and dispose of the cleaning wipe in a trash bag.
4. **Repeat step (3).**
5. **Place the sampling template (floor samples only)** on the sampling location. Tape down an outside corner if needed to hold the template still while sampling.
6. **Open the wipe package and remove the wipe** taking care to avoid touching anything with the wipe except the surface to be sampled. Temporarily discard the package in a pocket of your tool belt.

7. **Wipe the sampling location to collect surface dust using the Standard Wiping Procedure**
   - 7.1 **If the sample to be collected is a field blank (Kitchen only), collect it** by performing the Standard Wiping Procedure, except do not touch the wipe to any surfaces (the wipe simply gets folded 3 times as you would if actually wiping the surface).
   - 7.2 **If the sample is a regular floor sample, collect a 1 square foot sample using the template**.
   - 7.3 **If the sample is a windowsill sample, collect the entire interior sill area**.
8. **Clean equipment for interim storage**. Wipe off the template (if used) with a cleaning wipe. Discard the cleaning wipe and store the template for use in the next room.
9. **Pickup debris**. Put any trash generated in a trash bag.

Standard Wiping Procedure *(Note: This procedure is equivalent to the ASTM procedure)*

A1. **Select wiping pattern**. Select either an "S" or Z" wiping pattern and collect the sample. Ensure that the whole sampling location is thoroughly wiped. The "S" pattern is performed as shown in Figure 1. At each turn, the wipe is rotated so that the same edge of the wipe is always leading (moving forward). The "Z" pattern is performed as shown in Figure 2, and the wipe is not rotated at each turn. The wiping patterns shown in Figures 1 and 2 can be performed as shown (right-handedly) or in mirror image (left-handedly), beginning the wiping motion at the upper right rather than the upper left.

A2. **Position the wipe pad on the hand**. Spread and/or fold the wipe on the hand in such a way that the wipe touches only the sampling location. Do not touch the sampling location with any part of the gloved hand. Place an open flat hand with the fingers together on the wipe pad. On some surfaces, it may be necessary to hold the wipe pad between thumb and forefinger, or between forefinger and middle finger to manipulate it.

A3. **Wipe location side-to-side**. Wipe the entire sampling location either using an overlapping side-to-side "S" pattern (Figure 1a) or a back and forth "Z" pattern (Figure 2a). Apply firm pressure to the wipe pad. For an "S" pattern, position the hand so that the same edge of the wipe pad is always pushed forward. This will require twisting of both the wrist and arm upon reaching the edges of the sampling location as the surface is wiped. The "Z" pattern does not require this twisting.

A4. **Fold wipe in half, sample side in**. Fold the wipe pad in half with the dirty side inward. Exercise care during folding to avoid loss of collected dust.

A5. **Wipe location top-to-bottom**. Using the folded wipe pad, repeat the wiping procedure within the sampling location except use a forward and back overlapping "S" (Figure b) or "Z" (Figure 2b) pattern.

A6. **Fold wipe in half, sample side in**. Fold the wipe pad in half again with the collected residue side inward. Exercise care during folding to avoid loss of collected dust.

A7. **Wipe location edges and corners**. Wipe edges and corners within the sampling location as illustrated in Figure 1c or Figure 2c for the "S" or "Z" wiping pattern, respectively.

A8. **Fold wipe in half, sample side in**. Fold the wipe pad in half again with the collected dust side inward. Exercise care during folding to avoid loss of collected dust.

A9. **Store collected sample**. Insert the folded wipe pad into the sample container.

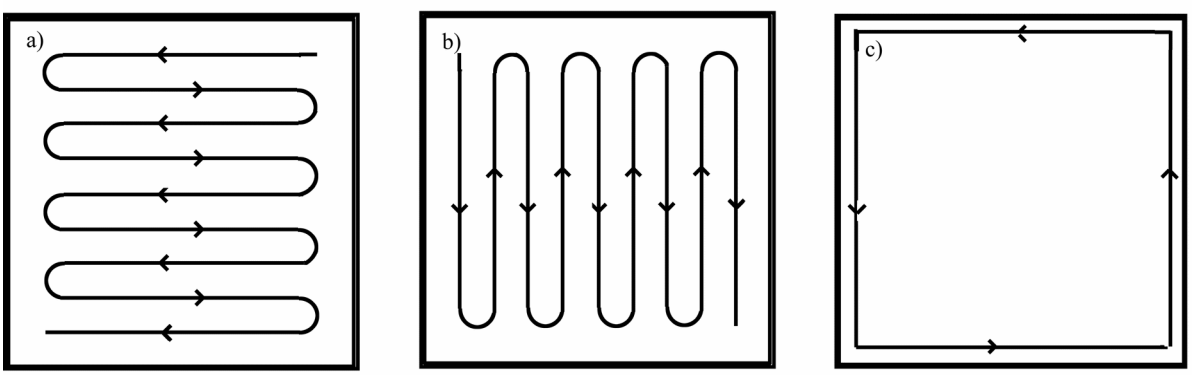


FIGURE T3-1: Schematic of a side-to-side overlapping "S" wiping pattern. Only the center of the wipe path is shown, not the entire wiping width. Figure 1a shows the first "S" wipe pattern; Figure 1b shows the second "S" wipe pattern; and Figure 1c shows the final pattern that concentrates on the edges and corners.

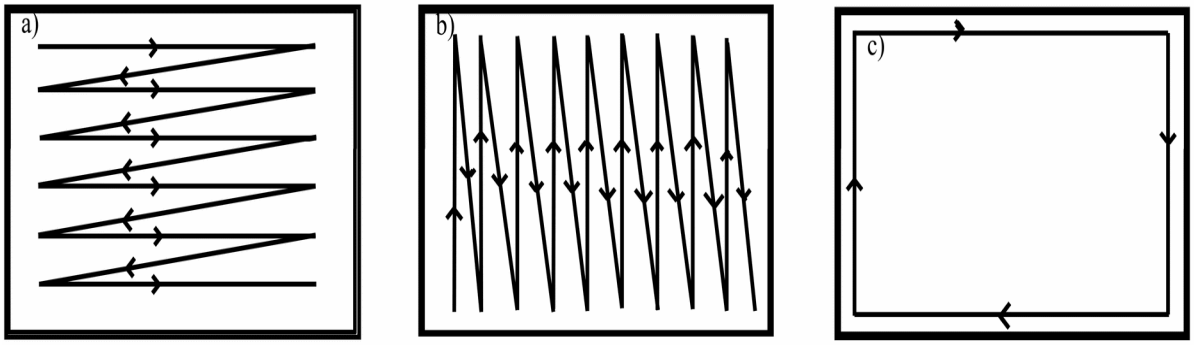


FIGURE T3-2: Schematic of a side-to-side overlapping "Z" wiping pattern. Only the center of the wipe path is shown, not the entire wiping width. Figure 2a shows the first "Z" wipe pattern; Figure 2b shows the second "Z" wipe pattern; and Figure 2c shows the final pattern that concentrates on the edges and corners.

OMB No. aaaa-bbbb
expires: mm/dd/yyyy

LEAD WIPE SAMPLE LOG - KIT

Room # _____ Initials _____

Sample #	**Sample Collected?**	**Location**	**Sample surface code (circle one)**	**Carpet pile depth (nearest 1/8 in)**	**Proximity** (circle all that apply)	**Floor area wiped**
sample ID label here	Yes.....1 No.....2 If No, reason code: _____ _____ _____	Floor	Smooth/cleanable…1 Not smooth.....2 Carpeted.....3	|___| / 8 in	<3 ft to door.....1 <3 ft to window…2 In traffic pattern..3	12" x 12".....1 Not 12"x12"....2 Enter: |___||___|in X |___||___|in
				Sampled window treatment (circle all that apply)	**Sill surface area wiped**	
sample ID label here	Yes.....1 No.....2 If No, reason code: _____ _____ _____	Window Sill	Smooth/cleanable…1 Not smooth.....2	Blinds.....1 Curtains…2 Drapes.....3 Shades….4 None.....5	|___| |___|----|___|/8 in X |___| |___|----|___|/8 in	
sample ID label here	Yes.....1 No.....2 If No, reason code: _____ _____ _____	Field Blank				

Reason Codes (for No sample)

I -Inaccessible, NA -Not allowed, NM -No more room to collect sample, NP -None present, NR -Not required,
O -Other (SPECIFY IN BOX)

OMB No. aaaa-bbbb
expires: mm/dd/yyyy

LEAD WIPE SAMPLE LOG - CLA

Room # _____ Initials _____

Sample #	**Sample Collected?**	**Location**	**Sample surface code (circle one)**	**Carpet pile depth (nearest 1/8 in)**	**Proximity** (circle all that apply)	**Floor area wiped**
sample ID label here	Yes.....1 No.....2 If No, reason code: _____ _____ _____	Floor	Smooth/cleanable…1 Not smooth.....2 Carpeted.....3	|___| / 8 in	<3 ft to door.....1 <3 ft to window…2 In traffic pattern..3	12" x 12".....1 Not 12"x12"....2 Enter: |___||___|in X |___||___|in
				Sampled window treatment (circle all that apply)	**Sill surface area wiped**	
sample ID label here	Yes.....1 No.....2 If No, reason code: _____ _____ _____	Window Sill	Smooth/cleanable…1 Not smooth.....2	Blinds.....1 Curtains…2 Drapes.....3 Shades….4 None.....5	|___| |___|----|___|/8 in X |___| |___|----|___|/8 in	

Reason Codes (for No sample)

I -Inaccessible, NA -Not allowed, NM -No more room to collect sample, NP -None present, NR -Not required,
O -Other (SPECIFY IN BOX)

OMB No. aaaa-bbbb
expires: mm/dd/yyyy

LEAD WIPE SAMPLE LOG - BR

Room # _____ Initials _____

Sample #	Sample Collected?	Location	Sample surface code (circle one)	Carpet pile depth (nearest 1/8 in)	Proximity (circle all that apply)	Floor area wiped
sample ID label here	Yes.....1 No.....2 If No, reason code: _____ _____ _____	Floor	Smooth/cleanable…1 Not smooth.....2 Carpeted.....3	|___| / 8 in	<3 ft to door.....1 <3 ft to window…2 In traffic pattern..3	12" x 12".....1 Not 12"x12"....2 Enter: |___||___|in X |___||___|in
				Sampled window treatment (circle all that apply)	**Sill surface area wiped**	
sample ID label here	Yes.....1 No.....2 If No, reason code: _____ _____ _____	Window Sill	Smooth/cleanable…1 Not smooth.....2	Blinds.....1 Curtains…2 Drapes.....3 Shades….4 None.....5	|___| |___|in----|___|/8 in X |___| |___|in ----|___|/8 in	

Reason Codes (for No sample)

I -Inaccessible, NA -Not allowed, NM -No more room to collect sample, NP -None present, NR -Not required,
O -Other (SPECIFY IN BOX)

OMB No. aaaa-bbbb
expires: mm/dd/yyyy

LEAD WIPE SAMPLE LOG - Other Room

Room # _____ Initials _____

Sample #	**Sample Collected?**	**Location**	**Sample surface code (circle one)**	**Carpet pile depth (nearest 1/8 in)**	**Proximity** (circle all that apply)	**Floor area wiped**
sample ID label here	Yes.....1 No.....2 If No, reason code: _____ _____ _____	Floor	Smooth/cleanable…1 Not smooth.....2 Carpeted.....3	|___| / 8 in	<3 ft to door.....1 <3 ft to window…2 In traffic pattern..3	12" x 12".....1 Not 12"x12"....2 Enter: |___||___|in X |___||___|in
				Sampled window treatment (circle all that apply)	**Sill surface area wiped**	
sample ID label here	Yes.....1 No.....2 If No, reason code: _____ _____ _____	Window Sill	Smooth/cleanable…1 Not smooth.....2	Blinds.....1 Curtains…2 Drapes.....3 Shades….4 None.....5	|___| |___|----|___|/8 in X |___| |___|----|___|/8 in	

Reason Codes (for No sample)

I -Inaccessible, NA -Not allowed, NM -No more room to collect sample, NP -None present, NR -Not required,
O -Other (SPECIFY IN BOX)

LEAD WIPE SAMPLE LOG - Entryway

Room # _____ Initials _____

Sample #	**Sample Collected?**	**Location**	**Sample surface code (circle one)**	**Carpet pile depth (nearest 1/8 in)**	**Proximity** (circle all that apply)	**Floor area wiped**
sample ID label here	Yes.....1 No.....2 If No, reason code: _____ _____ _____	Floor	Smooth/cleanable…1 Not smooth.....2 Carpeted.....3	|___| / 8 in	<3 ft to door.....1 <3 ft to window…2 In traffic pattern..3	12" x 12".....1 Not 12"x12"....2 Enter: |___||___|in X |___||___|in

Reason Codes (for No sample)

I -Inaccessible, NA -Not allowed, NM -No more room to collect sample, NP -None present, NR -Not required, O -Other (SPECIFY IN BOX)

T4- PESTICIDE WIPE SAMPLING

Staff Involved: Assigned Field Technician

Overview: After completing the collection of the dust wipe samples for lead (protocol T3), the Technician will collect, using subkit T4, two pesticide wipe sample(s) in the Kitchen. . Each sample is a composite of two sets of 3 different wipes that are sequentially used to wipe two sampling areas of the floor. The first 3 wipes are used sequentially (1 after another) for one area. The second 3 wipes are used sequentially for a second area. These 2 areas are located as far apart in the Kitchen as is practical. One square foot templates will be used for these floor samples. Relevant sampling data are collected on a form. In addition to these regular samples, there will be 2 QC samples for each PSU: one is a blank and one is a spiked QC sample. The blank will be collected in the first DU tested in a PSU and the QC spiked sample is not collected, but will be shipped to the PSU and, for the duration of the activities in a PSU, will reside in a freezer. The spiked QC sample is labeled by the QT office staff prior to shipment to the local base of operations. Chain of Custody (COC) forms are completed for all the samples during the end-of-day offsite activities (protocol I13/T7)..

Data Recording on: Technician Form Set (bound), pulled from Kit (B), plus completed room inventory sheet

Equipment/Items Needed from Kit (X)

- 1 tool bucket with blue Pocket Bucket Tote
- 1 blue ink pen
- 1 clipboard
- 1 black sharpie marker
- 1 tape measure (25')
- 1 pr knee pads
- 1 box nitrile gloves
- 1 template (aluminum or stainless), square with 12 in. x 12 in. internal dimensions
- 1 roll Teflon tape (1")
- 1 trash bag
- 1 glass petri dish (4in diameter or larger) inside 1-qt re-sealable bag
- Pesticide Shipper [Kit (C)] with one frozen blue ice pack in it from portable freezer [Kit (Y)] left in vehicle and a COC form that stays with Kit. Used to temporarily store collected samples.

Supplies Needed from Kit (B) - Subkit T4

- 2 rows of 4 self-adhesive, pre-printed ID labels
- 1 piece of aluminum foil (minimum size of 12 x 16 inches)
- 1 plastic petri dish
- Jar containing 6 wipe pads each (do not open until used) inside 4" x 6" bubble bag
- 8 (7 plus 7 spare) Alcohol Wipes in individual packets
-

Supplies Needed from Kit (B) - Subkit T4b; used only for first DU in a PSU

- 1 row of 4 self-adhesive, pre-printed ID labels
- 1 rows of 4 self-adhesive, pre-printed ID labels
- Jar containing 6 wipe pads each (do not open until used) inside 4" x 6" bubble bag
- 7"x8" re-closable bag (to double bag the jar).
-
-

Supplies Needed from freezer - Box Labeled "BOX 4 - IPA Vials for T4 - Keep in Freezer"

- 2 vials (9 mL of isopropanol [IPA]) for each T4 subkit. If this is the first DU in a PSU, include 2 more vials for the T4b subkit. (See Note T4-1)

Glove Use Directives: **Use new gloves only (see protocol I0)**

Note T4-1. Isopropanol issues. There is a tendency for vials containing isopropanol (IPA) to lose volume over time. To address this issue, vials containing IPA will be placed into a freezer

at QT upon receipt from EPA. Prior to sending them to the PSUs, QT office staff will divide the IPA vials into groups of 34 placing them inside a reclosable plastic bag with that bag going into a mailer box (5" x 5" x 3" internal dimensions) labeled "BOX 4 - IPA Vials for T4 - Keep in freezer". Each box contains enough IPA for a maximum of 14 DUs plus four spares. Immediately prior to shipping supplies to the PSU, one IPA box is placed into Kit (D). Box 4 is moved to a freezer at the local base of operations when received by the Interviewer. The Technician will pull the vials needed for each test day.

PROCEDURE TO COLLECT SAMPLES

1. **Gather supplies to collect pesticide samples and go to the kitchen**. Take the needed equipment and supplies into the kitchen where the sample is to be collected as indicated on the completed room inventory form.
2. **Select sample locations**. Select two 12” x 12” floor locations in the Kitchen that are least likely to be routinely walked-on such as under a table, in a corner or behind a door, and that are as far apart as possible. The selected locations must be large enough to accommodate either the square-shaped (for use away from a wall edge) template or a U-shape (for use against a vertical surface like a wall or cabinet.
3. **Make a clean surface to work on**. Select a location on the floor for a workspace near the locations to be sampled. Open the closing mechanism for each of the T4 subkit bags (T4, T4b; the T4b bag will only be in the Kit for the first DU in the PSU) and place them so you can easily reach inside them with clean gloves to pull items out. Pull out the section of aluminum foil (from the T4 subkit bag), unfold it and lay it flat on the floor.
4. **Clean Gloves and work surface**. Don a pair of new gloves. Open the first alcohol wipe package, unfold the wipe and wipe off the gloves first and then wipe the surface of the aluminum foil to create a clean surface to place supplies on while sampling.
5. **Retrieve and clean the outside of the jars**. Pull the jar out of each subkit bags (2 jars for the first DU in the PSU and 1 jar for all other DUs). Open a second alcohol wipe package, unfold the wipe and wipe off the outside of the jars as you pull them from the Kits (DO NOT OPEN THE JARS) and place them on the cleaned aluminum foil. Discard your gloves (as they will hamper your ability to label the jars and log forms).
6. **Label the sample jars and forms**. For the two "regular" sample jars in subkit T4, place a unique Sample ID label (suffix = "-23") on the side of the jar using one of the stickers of replicate Sample ID labels provided in the sub-kit. Place a replicate sample ID label (same ID number as above) on the *Pesticide Sample Collection Log* for the non-QC sample data entries (see Note T4-2).

   NOTE T4-2: COC forms for these samples are located in the insulated shipper Kit (D) along with the COC forms for formaldehyde which is stored at the base of operations. Completing the COCs for pesticide samples is not done until the collected samples are placed into one of the portable freezers at the end of the day.

   If a pesticide QC (blank) sample is to be collected in this unit (first DU in a PSU), then use the supplies in subkit T4b and repeat the sample ID labeling process (one label with suffix "-24" on the Jar, one replicate label on the *Pesticide Sample Collection Log*..
7. **Clean gloves, the template and place template on the first location**. Don a pair of new gloves. Open a third alcohol wipe package, unfold the wipe and wipe off the template to be used. Place the template on the first sampling location and discard the cleaning wipe.
8. **Clean the petri dish and the vials**. Open a fourth alcohol wipe package, unfold the wipe and wipe off the inside of the petri dish and then the outside of the petri dish. Set each half of the

petri dish down on the aluminum foil, inside facing up to make a tray to hold the sample wipe pads. Then, wipe off the outside of the all the IPA vials you need (2 for a QC blank, if collected, and 2 for the regular sample), setting them on the aluminum foil. Discard the cleaning wipe.

9. **Collect blank QC sample (subkit T4b supplies).** If a blank QC sample is to be collected, then open the lid of the sample jar having the sample ID Label with a "-24" suffix, setting the lid on the cleaned aluminum foil surface with the top down. **Do not touch the wipe pads**. Open one vial of isopropanol and pour the entire contents (9-mL in each vial) into the jar containing the wipe pads. Repeat this with a second vial so that a total of 18-mL has been added to the jar. Discard the vials and vial caps. Re-seal the jar containing the wipe pads and IPAand slowly invert the jar at least 3 times with light shaking to distribute the isopropanol. Set the jar back on the clean aluminum foil surface.
    10. **Collect the first regular sample on the first of two areas**. Open the lid of one of the labeled regular sample jars (sample ID suffix IDs "-23") containing the wipe pads, setting the lid on the cleaned aluminum foil surface with the top down. Open the fifth alcohol wipe package, unfold the wipe and wipe off the gloves to be sure they are clean before touching the wipe pads in the jar. Discard the cleaning wipe.10.1 **Place wipes in petri dish, verify the wipe count, separate into 2 stacks**. Using the petri dish, verify the number of wipes in each jar (6 total) by carefully removing the wipe pads from the jar and placing them in one half of the petri dish. Tease the wipe pads apart placing them in the other half of the petri dish as you count them. Make sure that the wipes do not touch anything except your clean gloves or the petri dish. The jar should have a total of 6 wipes. If there are more than 6, remove the extras setting them to the side as waste and without touching your gloves to anything but the extra wipes. If there are fewer than 6 wipes, keep a mental count for reporting later in the comment section of the log form. After counting the wipes, separate the wipes into 2 stacks of 3 wipes each, one stack in each half of the petri dish.
    10.2 **Wet one stack of three wipes with isopropanol**. Open one vial of isopropanol and pour the entire contents (9-mL) over the surface of all three wipe pads in one side of the petri dish. Discard the vial and vial caps without touching any other surfaces.
    10.3 **Wipe the selected location and store sample in jar**. Pick up the 1st wetted wipe pad and wipe the floor surface inside the template using the “Standard Wiping Procedure”. Place the folded wipe pad into the labeled sample jar.
    10.4 **Repeat step 10.3 above for the 2nd wetted wipe** so that the surface now has been sampled twice.
    10.5 **Repeat step 10.3 above for the 3rd wetted wipe** so that the surface now has been sampled three times and then screw the lid tightly back on the jar.10.6 **Clean the template and place it on the second location**. Open a sixth alcohol wipe package, unfold the wipe and wipe off the template to be used. Place the template on the second sampling location and discard the cleaning wipe.
9. **Collect the second regular sample on the second of two areas**. Repeat steps 10.2 through 10.5 for this second area.
10. **Re-seal each jar using Teflon tape and store**. Check the lids of each jar to be sure they are tightly shut. Seal the gap between the lid and the jar by wrapping a ribbon of Teflon tape about 3 times around that portion of the jar slightly stretching the tape as you wrap. Place each sealed glass jar containing the sample in a bubble bag taking care to squeeze as much

air out of it as you can before it is sealed. Place the collected samples inside the now, mostly empty, subkit T4 bag and set that bag in your bucket tote until they can be placed into shipper Kit (C) for temporary cold storage (protocol I12/T6).

11. **Measure the approximate distance between the centers of the 2 regular samples in inches** and record this number on the *Pesticide Sample Collection Log*.
12. **Clean equipment for storage**. Open a seventh alcohol wipe package, unfold the wipe, wipe off the template(s) and petri dish and store them with field equipment. Discard the petri dish and the cleaning wipe.
13. **Pick up trash**. While wearing the gloves, clean-up remaining debris using the trash bag (toss all empty vials, cleaning wipes and packaging, aluminum foil, etc.) and then finally tossing the gloves in the trash bag.
14. **Complete and verify data entries**. Check the *Pesticide Sample Collection Log* for data entries and ensure all needed entries have been made (see Note T4-2).
    NOTE T4-2. The completed *Pesticide Sample Collection Log* (bound) remains with the other bound forms in the Technician Form Set and is sent back to QuanTech headquarters with the other samples and field data. EPA will be sent a copy of the applicable forms from QT headquarters.
15. **Move on to lead soil sample collection, protocol T5**.

Standard Wiping Procedure *(Note: This is the same basic procedure as for use in collecting lead dust wipes, equivalent to the ASTM procedure. Although the 4" x 4" wipe pad is smaller than a lead wipe, it can still be folded twice as per the standard wiping protocol shown below)*

A1. **Select wiping pattern**. Select either an "S" or Z" wiping pattern and collect the sample. Ensure that the whole sampling location is thoroughly wiped. The "S" pattern is performed as shown in Figure 1. At each turn, the wipe is rotated so that the same edge of the wipe is always leading (moving forward). The "Z" pattern is performed as shown in Figure 2, and the wipe is not rotated at each turn. The wiping patterns shown in Figures 1 and 2 can be performed as shown (right-handedly) or in mirror image (left-handedly), beginning the wiping motion at the upper right rather than the upper left.

A2. **Position the wipe pad on the hand**. Spread and/or fold the wipe pad on the hand in such a way that the wipe pad touches only the sampling location. Do not touch the sampling location with any part of the gloved hand. Place an open flat hand with the fingers together on the wipe pad. On some surfaces, it may be necessary to hold the wipe pad between thumb and forefinger, or between forefinger and middle finger to manipulate the wipe pad.

A3. **Wipe location side-to-side**. Wipe the entire sampling location either using an overlapping side-to-side "S" pattern (Figure 1a) or a back and forth "Z" pattern (Figure 2a). Apply firm pressure over the wipe pad. For an "S" pattern, position the hand so that the same edge of the wipe pad is always pushed forward. This will require twisting of both the wrist and arm upon reaching the edges of the sampling location as the surface is wiped. The "Z" pattern does not require this twisting.

A4. **Fold wipe in half, sample side in**. Fold the wipe pad in half with the collected residue side inward. Exercise care during folding to avoid loss of collected dust.

A5. **Wipe location top-to-bottom**. Using the folded wipe pad, repeat the wiping procedure within the sampling location except use a forward and back overlapping "S" (Figure b) or "Z" (Figure 2b) pattern.

A6. **Fold wipe in half, sample side in**. Fold the wipe pad in half again with the collected residue side inward. Exercise care during folding to avoid loss of collected dust.

A7. **Wipe location edges and corners**. Wipe edges and corners within the sampling location as illustrated in Figure 1c or Figure 2c for the "S" or "Z" wiping pattern, respectively.

A8. **Fold wipe in half, sample side in**. Fold the wipe pad in half again with the collected dust side inward. Exercise care during folding to avoid loss of collected dust.

A9. **Store collected sample**. Insert the folded wipe pad into the sample container.

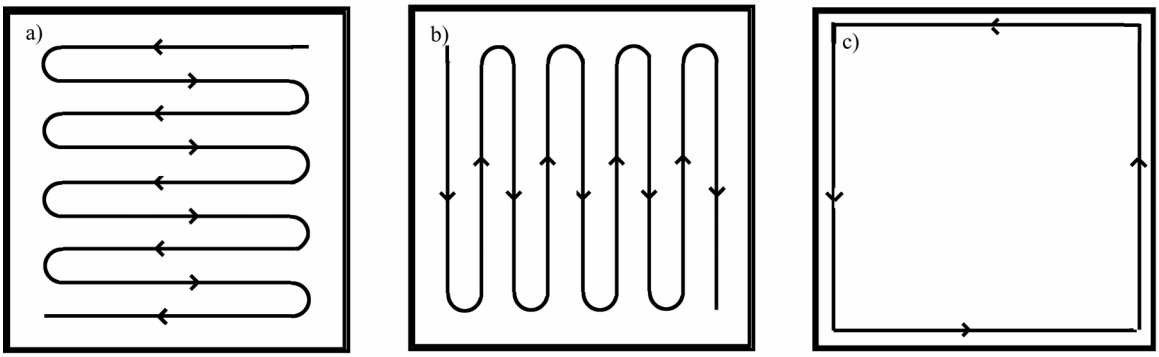


FIGURE 1: Schematic of a side-to-side overlapping "S" wiping pattern. Only the center of the wipe path is shown, not the entire wiping width. Figure 1a shows the first "S" wipe pattern; Figure 1b shows the second "S" wipe pattern; and Figure 1c shows the final pattern that concentrates on the edges and corners.

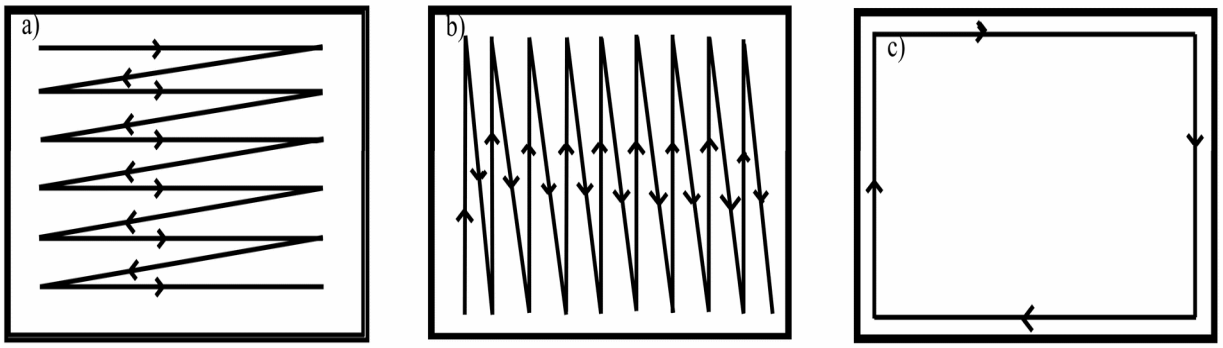


FIGURE 2: Schematic of a side-to-side overlapping "Z" wiping pattern. Only the center of the wipe path is shown, not the entire wiping width. Figure 2a shows the first "Z" wipe pattern; Figure 2b shows the second "Z" wipe pattern; and Figure 2c shows the final pattern that concentrates on the edges and corners.

PESTICIDE WIPE SAMPLE COLLECTION LOG

Kitchen **Room ID #** _____ Initials _____

Sample #	**Sample collected ?**	**Location**	**Sample surface code (circle one)**	**Surface area wiped**
Field sample ID label here	Yes.....1 No.....2 If No, reason code: _____ _____ _____ _____ _____	Floor	Smooth Cleanable.....1 Rough Not cleanable.....2 Carpeted.....3	12” x 12”.....1 NOT 12” x 12”.....2 Enter: |___||___|in X |___||___|in
Approximate distance between the centers of two samples listed above (inches): _____				
Field blank sample ID label here	Yes.....1 No.....2 If No, reason code: _____ _____ _____ _____ _____	Field Blank Sample		
Spiked QC sample label here [sent from QT to field in Kit (D)]	Yes.....1 No.....2 If No, reason code: _____ _____ _____ _____ _____ _____	Spiked QC Sample		
Collect a field blank and complete entries for spiked QC sample in the first DU tested only. Replicate sample ID labels for the spiked QC sample are supplied with that sample which is stored inside Box 1 in the freezer at the local base of operations.				

Reason Codes (for no sample):
- I - Inaccessible
- NA - Not allowed
- NP - No collection jar present
- NR - Not required
- O - Other (SPECIFY IN BOX)

T5- LEAD SOIL SAMPLING

Staff Involved: Assigned Field Technician

Overview: After completing the collection of pesticide wipe samples, soil samples will be collected from the locations listed below. At each location, samples will be collected from bare soil, i.e., not covered with grass, concrete, asphalt, or other permanent covering, if possible. If no soil is bare, soil samples will be collected from covered surfaces, if possible. Thus, soil samples may be collected from soil covered by grass or mulch, but not concrete or asphalt. A maximum of six soil samples will be collected as shown below. Relevant sampling data are collected on the forms in this protocol.

- One (1) main entry composite sample.
- Two (2) foundation/dripline composite samples.
- One (1) mid-yard area composite sample.
- One (1) or two (2) composite play area samples.

In addition to the soil samples, an estimate will be made of the total bare soil on the property associated with the DU and recorded as <9 sq. ft. or >=9 sq. ft.

Data Recording on: Technician Form Set (bound) pulled from Kit (B)

Equipment Needed from Kit (X)

- 1 tool bucket with blue Pocket Bucket Tote
- 1 blue ink pen
- 1 clipboard
- 1 black sharpie marker
- 1 pocket knife
- 1 flashlight with extra batteries
- 1 roll of electrical tape
- 1 tape measure (25')
- 1 box of cleaning clothes (wipes)
- 1 box nitrile gloves
- 1 pr knee pads
- 1 trowel
- 1 scoopula
- 1 trash bag

Supplies Needed from Kit (B) - Subkit T5

- Six 6oz. Jars for storing samples inside subkit bag)
- Six rows of 4 self-adhesive, pre-printed ID labels
-

Glove Use Directives: **Use new or clean gloves between samples (see protocol I0)**

General Procedure

1. **Collect one main entry composite sample** as listed below. This sample represents soil which may be blown or easily tracked into the home. This sample is a composite of 3 scoop samples spread out as much as possible in a roughly 1- foot diameter circle placed as close as possible to the front entryway.
   1.1 **Select sampling area immediately adjacent to main entryway**. Locate the main entryway of the DU and select a sampling location in the immediate area near this entryway for soil that may be blown or easily tracked into the home. For multi-family housing, select the entryway that is most often used by the residents going into the building where the unit is located.
   1.2 **Collect the composite sample** as shown in the *Procedure to Collect Composite Soil Sample*.

2. **Collect the first (1 sample) of two foundation/dripline composite samples** as listed below. This sample is from the exterior wall area matching the main entry to the DU. This sample is a composite of 3 scoop samples spread out along the foundation/dripline areas within 3 feet of the building foundation.
   2.1 **Select sampling area along wall that includes the main entryway**. Locate the main entryway of the DU and select a sampling location from the exterior wall area matching the main entry to the DU.
   2.2 **Collect the composite sample along the dripline** as shown in the *Procedure to Collect Composite Soil Sample*.
3. **Collect the second (1 sample) of two foundation/dripline composite samples** as listed below. This sample is from an exterior wall area (different from the sample above) that is selected as the most likely wall to be a part of or immediately adjacent to a children's play area. This sample is a composite of 3 scoop samples spread out along the foundation/dripline areas within 3 feet of the building foundation.
   3.1 **Select sampling area along wall most likely to be facing children's play area (not the main entryway)**. Locate the main entryway of the DU and select a sampling location from a NON-ENTRYWAY exterior wall area that is selected as the most likely wall to be a part of or immediately adjacent to a children's play area.
   3.2 **Collect the composite sample in dripline** as shown in the *Procedure to Collect Composite Soil Sample*.
4. **Collect one (1 sample) mid-yard composite sample** as listed below. This soil represents lead in the residential yard away from the housing unit. This sample is a composite of 3 scoop samples spread out as much as possible in a roughly 1-foot diameter circle located on the most prominent bare soil area on any side of the DU found approximately midway between the drip line and the nearest property boundary or between the drip line and another building on the housing unit property.
   4.1 **Select sampling area in mid-yard at most prominent bare area**. Locate the most prominent bare soil area on any side of the DU found approximately midway between the drip line and the nearest property boundary or between the drip line and another building on the housing unit property. If no mid-yard soil is bare, soil samples will be collected from a covered mid-yard area, if possible by carefully removing the covering of mulch or grass after a scoop sample is collected.
   4.2 **Collect the composite sample** as shown in the *Procedure to Collect Composite Soil Sample*.
5. **Collect one or two (1-2 samples) composite play area samples** as listed below. This sample is a composite of 3 scoop samples that are collected from fixed 'units' of play equipment
   5.1 **Identify number of fixed units of play equipment**. A play area is defined as an area that has fixed play equipment including swing sets, climbing gyms, sandboxes, permanent/immovable pools, and sport/game areas (basketball, net games, horseshoes, ball field, etc.). Pieces of attached, contiguous equipment, such as an attached slide, swings, and teeter-totter, will be treated as one fixed 'unit' of play equipment.
   5.2 **Select one or two sampling areas at fixed units of play equipment**.
      5.2.1 **If only one (1) fixed 'unit' of play equipment exists, one composite sample will be collected at this unit**.

5.2.2 **If two (2) fixed 'units' of play equipment exist, two composite samples will be collected, one each at each unit**.

5.2.3 **If three (3) or more fixed 'units' of play equipment exist, two composite samples will be collected, one each at 2 randomly selected units**. Two (2) fixed units will be randomly selected (See Random Selection Procedure) from among all fixed 'units' that appear to be the most commonly used by children using the Random Selection Procedure for Items.

5.3 **Collect the composite sample(s)** as shown in the *Procedure to Collect Composite Soil Sample*.

6. **Temporarily store samples**. Place the all the collected samples in a 2-gal re-closable bag to hold them together and temporarily store them in your tool bucket.
7. **Review and complete data entries**. Review the samples collected and the data recorded on the Lead Soil Sample Collection Log . Ensure that all data fields are completed. Make any needed corrections.

Procedure to Collect Composite Soil Sample

NOTE: When collecting soil samples, collect enough soil to fill the sample containers!

1. **Label the container(s) and forms.** Place a Sample ID label on a sample container (jar) using the first unused row of 4 Sample ID labels provided with Technician Set. Place a second replicate ID label (same ID number as above) on the indicated place on the Lead Soil Sample Collection Log. For backup labeling, write the sample ID number on the sample container (opposite side of sample label) using a black sharpie marker. Be sure this hand-written ID number matches the ID number shown on the label.
2. **Put on gloves.** Don a new pair of nitrile gloves as needed.
3. **Clean gloves, scoopula, trowel, and tape measure.** Wipe off the gloves with a cleaning wipe, then the sampling trowel, scoopula, and the tape measure to be used for sample collection and dispose of the cleaning wipe in a trash bag.
4. **Repeat step (3).**
5. **Dig test hole to 1/2 inch depth**. Using the trowel or scoopula and a tape measure, dig a small test hole adjacent to the sampling location to a depth of ½ inch. Use this hole as a visual aid during soil collection to help limit collection to a depth of ½ inch. Clean the sampling trowel using a wipe and dispose of the cleaning wipe in a trash bag.
6. **Collect first of three (3) sub-samples**. Collect soil placing it in the labeled jar (soil collection container) by scooping soil with the trowel or scoopula down to the depth indicated by the test hole. Continue to collect soil down to that depth until about a 1/3 of the jar is filled. Remove any large debris from the sample such as sticks and plant material by picking it out with your gloved hand.
7. **Collect soil from two more locations to complete the composite sample** as listed below:

7.1 **If this is not a dripline sample, collect roughly the same volume of soil from two more locations within a 1-foot diameter circle around the first sample location.** Put these sub-samples in the same soil collection container as the first sub-sample from (6) above. Be sure that the soil container is full or close to full. Seal the jar tight using the supplied lid and seal the jar lid on the jar using electrical tape. Place the end of the tape (on the roll) over the edge where the cap meets to top of the jar and hold it there with your thumb. Pull and stretch the tape as you wrap it around and over the cap edge. Make 2 full warps around the cap pulling hard at the end to stretch-break the tape. Push any

trailing tape on the cap tightly against the cap to finish the seal. Place the jar back into the subkit T5 bag.

7.2 **For dripline samples, collect roughly the same volume of soil from two more locations along the dripline so that the three portions of the composite are roughly equally spaced along that side of the DU and the maximum distance between any two sub-samples is roughly one foot.** Put this sub-sample into the same soil collection container as the first sample from (6) above. Be sure that the soil container is full or close to full. Seal the jar tight using the supplied lid and seal the jar lid on the jar using electrical tape jar. Place the end of the tape (on the roll) over the edge where the cap meets to top of the jar and hold it there with your thumb. Pull and stretch the tape as you wrap it around and over the cap edge. Make 2 full warps around the cap pulling hard at the end to stretch-break the tape. Push any trailing tape on the cap tightly against the cap to finish the seal. Place the jar back into the subkit T5 bag.

8. **Complete data entries on forms**. Record the data collection information on the applicable row of the Lead Soil Sample Collection Log matching the label on the sample container..

Random Selection Process for Items (playsets)

1. **Count the number of items (playsets)**.
2. **Go to the Random Number Table (see form in protocol T1)**
   2.1 **Select the first unused row of the table**.
   2.2 **Look under the column that matches the count number to get the selection and remember the selected number.**
   2.3 **Put a line through that row of the table to indicate that it has been used.**
3. **Starting at the left most item (playset), count items clockwise (left to right) until the selected number is reached and collect samples from this item (playset).**
   For example, if there are 3 play set areas and the 6th row of the table is the first open row not previously used, then the 3rd play set (going from left to right) is to be tested.

LEAD SOIL SAMPLE COLLECTION LOG

DU ID:_____ Initials_____

>GENERAL AREAS

Sample number	Sample Collected?	Sample Type	Other Data	Wall (circle one)	Type of cover code (circle one)
sample ID label here	Yes.....1 No.....2 If No, reason code: _____	Major entry		N E S W	Bare.....1 Grass.....2 Mulch.....3 Moss.....4 Ivy/plant.....5 Sand/Gravel.....6
sample ID label here	Yes.....1 No.....2 If No, reason code: _____	Foundation/ drip line		N E S W	Bare.....1 Grass.....2 Mulch.....3 Moss.....4 Ivy/plant.....5 Sand/Gravel.....6
sample ID label here	Yes.....1 No.....2 If No, reason code: _____	Foundation/ drip line		N E S W	Bare.....1 Grass.....2 Mulch.....3 Moss.....4 Ivy/plant.....5 Sand/Gravel.....6
sample ID label here	Yes.....1 No.....2 If No, reason code: _____	Mid yard	Distance to wall: |___| |___| ft	Play Area? Y.....1 N.....2	Bare.....1 Grass.....2 Mulch.....3 Moss.....4 Ivy/plant.....5 Sand/Gravel.....6

>PLAY AREAS

Sample number	Sample Collected?	Sample Type	Is the Play Eqpt treated wood?		Type of cover code
sample ID label here	Yes.....1 No.....2 If No, reason code: _____	Play equipment	Yes....1 No.....2		Bare.....1 Grass.....2 Mulch.....3 Moss.....4 Ivy/plant.....5 Sand/Gravel.....6
sample ID label here	Yes.....1 No.....2 If No, reason code: _____	Play equipment	Yes....1 No.....2		Bare.....1 Grass.....2 Mulch.....3 Moss.....4 Ivy/plant.....5 Sand/Gravel.....6

>TOTAL AREA OF BARE SOIL	Less than 9 ft²: Yes.....1 No.....2	9 ft² or more: Yes.....1 No.....2
	Percent of yard area with bare soil: |___||___| %	

Reason Codes (for No sample)
I -Inaccessible, NA -Not allowed, NS -No soil present, NSP - no second play area to sample from

O -Other (SPECIFY IN BOX)