

ATTACHMENT 4. ENVIRONMENTAL EXPOSURE QUESTIONS FROM EPA AND CDC

ATSDR performed a search for currently available questionnaires on exposure to chemicals and their sources. This is a list of questions other agencies have asked or are currently asking related to the topic of interest to ATSDR.

NHAP=EPA National Human Activity Pattern Survey (NHAPS)- This EPA survey was a two-year probability-based telephone survey ($n = 9,386$) of exposure-related human activities in the United States. The primary purpose of NHAPS was to provide comprehensive and current exposure information over broad geographical and temporal scales, particularly for use in probabilistic population exposure models. NHAPS was conducted on a virtually daily basis from late September 1992 through September 1994.
<http://eetd.lbl.gov/IED/viaq/pubs/LBNL-47713.pdf>

NHEXAS=EPA National Human Exposure Assessment Survey – In the early 1990's, EPA initiated this population-based pilot study of the exposure of over 500 people in three areas of the U.S. to metals, pesticides, volatile organic compounds, and other toxic chemicals. Measurements were made of the air people breathed, the foods and beverages they consumed, and the soil and dust in/near their home. Chemicals in their blood and urine were measured. The participants also completed questionnaires to help identify possible sources of exposures and to characterize activities that might contribute to exposure. The purpose of NHEXAS is to evaluate comprehensive human exposure to multiple chemicals on a community and regional scale. Ultimately, the EPA anticipates that the information gained from NHEXAS will help individuals, communities, states, the EPA, and other organizations understand the greatest health risks from various chemicals and decide whether steps to reduce those risks are needed.
<http://www.epa.gov/heads/edrb/nhexas.htm>

NHANES = National Health and Nutrition Examination Survey – Teams of doctors, dentists, nutritionists, and health technicians go out to communities across the United States for the National Health and Nutrition Examination Survey (NHANES), which is updated annually. Since the early 1990s, CDC has surveyed approximately 5,000 people /year. Data from direct examination, testing, and measurement of national samples of the civilian noninstitutionalized population provide the basis for (1) estimates of the medically defined prevalence of specific diseases in the United States and the distribution of the population with respect to physical, physiological, and psychological characteristics and (2) analysis of relationships among the various measurements without reference to an explicit finite universe of persons. For example:

- Growth Charts - How is my baby growing? How does my child compare with other children the same age?
- Cholesterol - What about cholesterol? How do I know if that is too high?
- Lead in Gasoline - measures the amount of lead reduction in people's blood after lead was removed from gasoline.
- Osteoporosis - measures the density of participant's bones.
- Environmental smoke - The last NHANES found that nearly 9 out of 10 nonsmoking Americans were exposed to smoke either at home or on the job.
- Obesity- Today, more than half of the adults in the U.S. are overweight, and the number of overweight children and teens has doubled in the past decade. This has led public health experts to look for ways to improve both diet and fitness.
- Changes in Food/Diet- NHANES helps monitor whether these new foods and dietary changes actually are in the best interest of our health. What vitamins and minerals belong in our food and diet?
- Immunizations - The National Health and Nutrition Examination Survey has turned up important information about the extent of hepatitis B infections, and led to the recommendation that all infants and children be vaccinated against it. While we think of babies and children as the primary target for immunizations, the survey also has alerted doctors to the importance of tetanus shots for older people. (OMB approval #0920-0237) <http://www.cdc.gov/nchs/data/nhanes/comp3.pdf>

The first *National Report on Human Exposure to Environmental Chemicals* was issued in March 2001, and presented exposure data for 27 chemicals from NHANES 1999. The *Second Report*, released in January 2003, presents biomonitoring exposure data for 116 environmental chemicals for the noninstitutionalized, civilian U.S. population over the 2-year period 1999-2000. The *Second Report* also presents exposure data for the U.S. population divided into age, gender, and race/ethnicity groups.

PRODUCTS STORED OR USED IN HOME

(nhap)

- Is any gasoline or kerosene being stored in any room or basement of your home or in an attached garage or carport? (nhap)
- Are any devices with gasoline engines such as lawn mowers being stored in any room or basement of your home or in an attached garage or carport? (nhap)
- Are any paints or varnishes being stored in any room or basement of your home or in an attached garage or carport? (nhap)
- Are any woodworking solvents, paint stripping fluids or adhesives stored in any room or basement of your home or in an attached garage, or carport? (nhap)
- (Yesterday, did anyone at home, or elsewhere involve working with or being near) Household cleaning agents, such as scouring powders or ammonia?
 - About how long?
<0> LESS THAN 1 MINUTE <1-120> RECORD NUMBER OF MINUTES
<180> 3 HOURS <480> 8 HOURS <240> 4 HOURS <540> 9 HOURS <300> 5 HOURS <600> 10 HOURS <360> 6 HOURS <660> 11 HOURS <420> 7 HOURS <720> 12 HOURS <800> MORE THAN 12 HOURS
<888> DK ==>
- (Yesterday, did any of [fill NNAM][fill ap] activities at home, at [fill NPLA] or elsewhere involve working with or being near) Excessive dust in the air?
 - About how long?
<0> LESS THAN 1 MINUTE <1-120> RECORD NUMBER OF MINUTES
<180> 3 HOURS <480> 8 HOURS <240> 4 HOURS <540> 9 HOURS <300> 5 HOURS <600> 10 HOURS <360> 6 HOURS <660> 11 HOURS <420> 7 HOURS <720> 12 HOURS <800> MORE THAN 12 HOURS
<888> DK ==>
- (Yesterday, did any of [fill NNAM][fill ap] activities at home, at [fill NPLA] or elsewhere involve working with or being near) Stain or spot removers?
 - About how long?
<0> LESS THAN 1 MINUTE <1-120> RECORD NUMBER OF MINUTES
<180> 3 HOURS <480> 8 HOURS <240> 4 HOURS <540> 9 HOURS <300> 5 HOURS <600> 10 HOURS <360> 6 HOURS <660> 11 HOURS <420> 7 HOURS <720> 12 HOURS <800> MORE THAN 12 HOURS
<888> DK ==>
- Did [fill name] use cologne, perfume, aftershave, or other fragrances yesterday?
- How many times?
<1> 1-2 <2> 3-5 <3> 6-9 <4> 10+ <8> DK ==>
- Did [fill name] use NAIL polish yesterday?
- Did [fill name] spend ANY time yesterday at a gas station or auto repair shop?
- About how long altogether yesterday did [fill name] spend in those places?
<0> LESS THAN 1 MINUTE <1-120> RECORD NUMBER OF MINUTES

<180> 3 HOURS <480> 8 HOURS <240> 4 HOURS <540> 9 HOURS <300> 5 HOURS <600> 10 HOURS <360> 6 HOURS <660> 11 HOURS <420> 7 HOURS <720> 12 HOURS <800> MORE THAN 12 HOURS
<888> DK ==>

- Did you pump any gasoline yesterday at a gas station?
- [fill were] [fill name] in a car when another person was pumping gasoline?

(nhexas)

- On average, for the past month, how many days did you paint walls, furniture, cars, or other objects?
 - o Never
 - o 1-3 days per month
 - o 1-2 days per week
 - o 3-6 days per week
 - o Daily
 - o Don't know
- On average, for the past month, how many days did you use chemical paint strippers?
 - o Never
 - o 1-3 days per month
 - o 1-2 days per week
 - o 3-6 days per week
 - o Daily
 - o Don't know
- On average, for the past month, how many days did you remove paint by other methods such as scraping, heat gun, or sanding?
 - o Never
 - o 1-3 days per month
 - o 1-2 days per week
 - o 3-6 days per week
 - o Daily
 - o Don't know
- On average, for the past month, how many days did you use lead solder to solder pipes, do electric repairs, or join pieces of stained glass?
 - o Never
 - o 1-3 days per month
 - o 1-2 days per week
 - o 3-6 days per week
 - o Daily
 - o Don't know
- On average, for the past month, how many days did you use lead based oil paint to paint pictures or jewelry?
 - o Never
 - o 1-3 days per month
 - o 1-2 days per week
 - o 3-6 days per week
 - o Daily
 - o Don't know

HOURS OUTSIDE OF HOME

- About how many of these work hours were between 6 PM in the evening and 6 AM in the morning?

NONE 1-80 (LIST) >80

- How many of these hours did you work outdoors? (that is, not inside any building)

RENOVATIONS

- In the last six months, have you or anyone else renovated your home in any way? This would include indoor painting, refinishing floors, adding rooms to the house or laying new carpet. (nhap)

- Was any indoor painting done?
- How about refinishing floors?
- What about additions to the house?
- What about laying carpet?
- Was glue used or was it tacked down?

<1> GLUE <2> TACKED <3> OTHER <8> DK ==>

- During these renovations, did you most often sleep in your home overnight or did you sleep overnight somewhere else?

<1> SLEPT IN HOME <2> SLEPT SOMEWHERE ELSE <3> OTHER <8> DK ==>

PESTICIDE USE

- In the last six months, were any pesticides used to get rid of insects, rodents or other pests at your home? (nhap)

- Was that done:

<1> INSIDE <2> OUTSIDE <3> OR BOTH? <8> DK ==>

- How many of these times were pesticides applied by a PROFESSIONAL?

<0> NONE <1> 1-2 <2> 3-5 <3> 6-9 <4> 10+ TIMES <8> DK ==>

- How many of these times did you PERSONALLY apply pesticides?

<0> NONE <1> 1-2 <2> 3-5 <3> 6-9 <4> 10+ TIMES <8> DK ==>

(nhanes)

Now I have a few questions about products {you use/your family uses} in or around your home.

In the **past month**, were any chemicals used to treat this home to control fleas, roaches, ants, termites, or other insects?

- YES 1
- NO 2 (BOX 1)
- REFUSED 7 (BOX 1)
- DON'T KNOW 9 (BOX 1)

In the **past month**], which of the following areas of your home were treated with these chemical products?

PROBE: For example, products used to control fleas, roaches, ants, termites or other insects?

CODE ALL THAT APPLY

HAND CARD PUQ1

- LIVING ROOM 1
- FAMILY ROOM 2
- DINING ROOM 3
- KITCHEN 4
- BATHROOM(S) 5
- BEDROOM(S) 6
- OTHER ROOMS (DEN, PLAYROOM,
REC ROOM, ETC.) 7
- OUTSIDE (TO FOUNDATION OR
BUILDING) 8
- ENTIRE HOUSE 9
- REFUSED 77
- DON'T KNOW 99

In these questions, we want to get information about who applied these chemical products and the number of times they applied them.

[In the **past month**], when these chemical products were used to treat your home, how many times did

..

IF NEVER, ENTER 0

RESPONSES: ENTER NUMBER OF TIMES, REFUSED = 7, DON'T KNOW = 9

- a. **someone living in your home personally apply these products?** _____
- b. **a professional exterminator apply these products?** _____
- c. **someone other than a professional or household member apply these products (for example, a neighbor or relative living outside your home)?** _____

(nhexas)

IN THE PAST 6 MONTHS, WERE ANY CHEMICALS FOR THE CONTROL OF TERMITES, INSECTS, RODENTS, OR OTHER PESTS USED INSIDE THIS (HOUSE/APARTMENT)?

IN THE PAST 6 MONTHS, WHAT ROOMS IN YOUR HOME WERE TREATED WITH PRODUCTS FOR THE CONTROL OF TERMITES, INSECTS, RODENTS, OR OTHER PESTS? - LIVING ROOM

- FAMILY ROOM
- DINING ROOM
- KITCHEN
- BATHROOM(S)
- BEDROOM(S)
- OTHER ROOMS
- DONT KNOW

WHAT AREAS WITHIN THE ROOM(S) WERE TREATED? –
FLOORS
BASEBOARDS

LOWER HALF OF THE WALLS
UPPER HALF OF THE WALLS
CEILINGS
CUPBOARDS WITH DISHES, POTS, AND PANS
CUPBOARDS WITH FOOD
CABINETS USED FOR STORAGE
CLOSETS
OTHER
OTHER - SPECIFY
DONT KNOW

IN THE PAST 6 MONTHS, HOW MANY TIMES DID (YOU/HE/SHE) PERSONALLY APPLY THESE PRODUCTS INSIDE THIS (HOUSE/APARTMENT)?

IN THE PAST 6 MONTHS, HOW MANY TIMES DID A PROFESSIONAL EXTERMINATOR APPLY THESE PRODUCTS INSIDE THIS HOUSE OR APARTMENT?

IN THE PAST 6 MONTHS, HOW MANY TIMES DID SOMEONE ELSE APPLY THESE PRODUCTS INSIDE THIS (HOUSE/APARTMENT)?

IN WHAT MONTH WERE THEY LAST USED INSIDE THIS (HOUSE/APARTMENT)? WHAT IS (ARE) THE NAME(S) OF THE PRODUCT(S) LAST USED INSIDE THIS (HOUSE/APARTMENT)?

THE LAST TIME THIS PRODUCT WAS USED INSIDE THIS (HOUSE/APARTMENT) HOW WAS IT PREPARED FOR APPLICATION?

THE LAST TIME THIS PRODUCT WAS USED INSIDE THIS (HOUSE/APARTMENT), WHO MIXED THE PRODUCT?

WHERE WAS IT MIXED?

IN THE PAST 6 MONTHS, WERE ANY CHEMICALS FOR THE CONTROL OF TERMITES, INSECTS, RODENTS, OR OTHER PESTS USED OUTSIDE THIS (HOUSE/APARTMENT)?

IN THE PAST 6 MONTHS, HOW MANY TIMES DID (YOU/HE/SHE) PERSONALLY APPLY THESE PRODUCTS OUTSIDE THIS (HOUSE/APARTMENT)?

IN THE PAST 6 MONTHS, HOW MANY TIMES DID A PROFESSIONAL EXTERMINATOR APPLY THESE PRODUCTS OUTSIDE THIS HOUSE OR APARTMENT?

IN THE PAST 6 MONTHS, HOW MANY TIMES DID SOMEONE ELSE APPLY THESE PRODUCTS OUTSIDE THIS (HOUSE/APARTMENT)?

IN WHAT MONTH WERE THEY LAST USED OUTSIDE THIS (HOUSE/APARTMENT)?
WHAT IS (ARE) THE NAME(S) OF THE PRODUCT(S) LAST USED OUTSIDE THIS (HOUSE/APARTMENT)?

THE LAST TIME THIS PRODUCT WAS USED OUTSIDE THIS (HOUSE/APARTMENT), HOW WAS IT PREPARED FOR APPLICATION?

THE LAST TIME THIS PRODUCT WAS USED OUTSIDE YOUR (HOUSE/APARTMENT), WHO MIXED THE PRODUCT?

WHERE WAS IT MIXED?

IN THE PAST 6 MONTHS, HAVE YOU HAD ANY REGULAR LAWN OR YARD TREATMENTS?

WHO USUALLY APPLIES THESE TREATMENTS?

WERE THE TREATMENTS APPLIED WET OR DRY?

IN THE PAST 6 MONTHS, HOW MANY OF THESE LAWN TREATMENTS CONTAINED WEED CONTROL?

IN THE PAST 6 MONTHS ,HOW MANY OF THESE LAWN TREATMENTS CONTAINED INSECT CONTROL?

IN WHAT MONTH WAS THE LAST TREATMENT APPLIED?

DRINKING WATER

(nhap)

➤ Do you get water for general household use from:
<1> THE PUBLIC WATER SYSTEM <2> A PRIVATE WELL <3> OR FROM SOME OTHER SOURCE –
WHAT IS THAT? [specify] <8> DK ===>

➤ Is bottled water ever used for drinking in your home?
<0> NO [goto HSMK] <1> YES <8> DK [goto HSMK] ===>

➤ How many gallons are used each week?
<0> less than 1 <1> 1-2 <2> 3-4 <3> 5-6 <4> 7-8 <5> MORE THAN 8 <8> DK ===>

(nhexas)

➤ What is the source of running water in your house/apartment?

- City or county
- Private well
- Spring
- Pond
- Cistern
- Community well
- Bottled
- Other Specify
- Don't know

- What water source is used most often (more than half the time) for cooking?
- Which water source is used most often (more than half the time) for drinking?
- Do you use any of the following to treat your water at home?

- Charcoal Filter/GAC
- Ceramic Filter
- Reverse Osmosis
- Water Softener
- Boil Water
- Distillation
- Aerator
- Water Filter System (Brita, Pur, etc)

➤ How often is water treatment added to the water? X times/year

(nhanes)

Are any of the water treatment devices listed on this card used in your home?

YES 1
 NO 2 (BOX 1)
 REFUSED 7 (BOX 1)

DON'T KNOW 9 (BOX 1)

Which of these water treatment devices are now used in your home?

CODE ALL THAT APPLY

BRITA OR OTHER PITCHER

WATER FILTER 1

CERAMIC OR CHARCOAL FILTER 2

WATER SOFTENER 3

AERATOR 4

REVERSE OSMOSIS 5

REFUSED 7

DON'T KNOW 9

SMOKING

(nhap)

- These next questions are about things that happened yesterday. Did you smoke any cigarettes yesterday?
- About how many cigarettes did you smoke yesterday?
<1> 1-2 <2> 3-5 <3> 6-9 <4> 10-14 <5> 15-24 (ONE PACK) <6> 25-35 <7> 36+ (TWO PACKS OR MORE) <8> DK ==>
- Did you smoke any cigars or pipe tobacco yesterday?
- For about how long?
<01-59> RECORD NUMBER OF MINUTES <60> ONE HOUR <61> MORE THAN 1 HOUR <62> MORE THAN 2 HOURS <63> MORE THAN 3 HOURS <64> MORE THAN 4 HOURS <65> MORE THAN 5 HOURS <66> MORE THAN 6 HOURS <88> DK ==>
- Is smoking allowed in your home?
- How many household members normally smoke cigarettes in the home?
<0> ZERO <1-10> RECORD ACTUAL NUMBER <11> MORE THAN 10 <88> DK

(nhexas)

- (DO YOU/DOES HE/SHE) CURRENTLY SMOKE TOBACCO PRODUCTS OR USE SMOKELESS TOBACCO PRODUCTS?
- (HAVE YOU/HAS HE/SHE) EVER SMOKED TOBACCO PRODUCTS OR USED SMOKELESS TOBACCO PRODUCTS?
- HOW LONG AGO DID (YOU/HE/SHE) STOP USING TOBACCO PRODUCTS? (MONTHS)
- HOW LONG AGO DID (YOU/HE/SHE) STOP USING TOBACCO PRODUCTS? UNITS
- ON AVERAGE, HOW MANY CIGARETTES(DO YOU/DOES HE/SHE) SMOKE PER DAY?
- ON AVERAGE, HOW MANY CIGARS(DO YOU/DOES HE/SHE) SMOKE PER DAY?
- ON AVERAGE, HOW MANY PIPESFUL OF TOBACCO(DO YOU/DOES HE/SHE) SMOKE PER DAY?

- ON AVERAGE, HOW MANY TIMES PER DAY(DO YOU/DOES HE/SHE) USE SMOKELESS TOBACCO PRODUCTS?
- ON AVERAGE FOR THE PAST MONTH, HOW MANY (HOURS/MINUTES) PER WEEK DID (YOU/HE/SHE) SPEND INSIDE (YOUR/HIS/HER) HOME WITH SOMEONE WHO WAS SMOKING TOBACCO? (MIN/HR) [CONVERTED TO MINUTES]
- ON AVERAGE FOR THE PAST MONTH, HOW MANY (HOURS/MINUTES) PER WEEK DID (YOU/HE/SHE) SPEND AT WORK WITH SOMEONE WHO WAS SMOKING TOBACCO? (MIN/HR) [CONVERTED TO MINUTES]
- ON AVERAGE FOR THE PAST MONTH, HOW MANY (HOURS/MINUTES) PER WEEK DID (YOU/HE/SHE) SPEND IN A CAR, BUS, VAN, OR OTHER ENCLOSED VEHICLE WITH SOMEONE WHO WAS SMOKING TOBACCO? (MIN/HR) [CONVERTED TO MINUTES]
- ON AVERAGE FOR THE PAST MONTH, HOW MANY (HOURS/MINUTES) PER WEEK DID (YOU/HE/SHE) SPEND IN ANY OTHER INDOOR OR ENCLOSED LOCATION WITH SOMEONE WHO WAS SMOKING TOBACCO? (MIN/HR) [CONVERTED TO MINUTES]
- DURING THE PAST MONTH, HAS ANYONE, INCLUDING YOU, SMOKED INSIDE YOUR HOME?
- DURING THE PAST MONTH, HOW MANY PEOPLE, INCLUDING VISITORS, SMOKED TOBACCO INSIDE YOUR HOME?

EATING SEAFOOD

(nhap)

- How many servings of seafood would you say [fill NAME] ate altogether in the last month?

<1> 1-2 <2> 3-5 <3> 6-10 <4> 11-19 <5> 20+ <8> DK ==>

- Was most of the seafood [fill NAME] ate purchased or was it caught by someone you know?

<1> MOSTLY PURCHASED <2> MOSTLY CAUGHT <8> DK ==>

- In the last month, [fill HAVE] [fill NAME] eaten any food that was blackened or charred through cooking?

- How many servings?

<1> 1 OR 2 <2> 3-5 <3> 6-10 <4> 11-19 <5> 20+ <8> DK ==>

HEALTH QUESTIONS

- (nhap)Next, I have a few questions about [fill YOUR] health. Has a doctor told you that [fill NAME] [fill HAVE] asthma?
- (Has a doctor told you that [fill NAME] [fill HAVE]) Angina?
- (Has a doctor told you that [fill NAME] [fill HAVE]) Chronic bronchitis or emphysema?

ASKED OF WOMEN 18-55]

- As you know, there are special health concerns when a woman is pregnant. [fill ARE] [fill NAME] pregnant?
- Including yourself, how many adults, age 18 and older, live in your household?

(nhexas)

- Have you ever had any of the following:

| Condition | Yes/No | Were you told you had this by a doctor or nurse? | How old were you when a doctor or nurse first told you? |
|---|--------|--|---|
| Diabetes | | | |
| Neuromuscular disease such as Polio, MS, Muscular Distrophy | | | |
| Asthma, allergies | | | |
| Ulcer | | | |
| Any disease of the esophagus? | | | |

OUTDOOR SOIL EXPOSURE

(nhap)

- When [fill DIRT] was outdoors yesterday, did he/she spend any time playing on sand, gravel, dirt, or grass?
- About how much time was on sand or gravel?
- About how much time was on dirt?

<00> LESS THAN 1 MINUTE <1-120> RECORD NUMBER OF MINUTES

<180> 3 HOURS <480> 8 HOURS <240> 4 HOURS <540> 9 HOURS <300> 5 HOURS <600> 10 HOURS <360> 6 HOURS <660> 11 HOURS <420> 7 HOURS <720> 12 HOURS <800> MORE THAN 12 HOURS

- About how much time was on grass?

<00> LESS THAN 1 MINUTE <1-120> RECORD NUMBER OF MINUTES

HOUSE STRUCTURE QUESTIONS

(nhap)

- Do you live in an:

<1> APARTMENT <2> DETACHED SINGLE-FAMILY HOUSE <3> A TOWNHOUSE <4> OR SOMETHING ELSE (SPECIFY) [specify] <8> DK ===>

- How many stories or floors are in your building or home? (COUNT ONLY FLOORS WITH FINISHED ROOMS FOR LIVING PURPOSES OR FULL BASEMENTS)

<1> ONE <2> TWO <3> THREE <4> 4 TO 6 <5> 7 TO 12 <6> 13 OR MORE STORIES <8> DK ===>

- How many rooms (not counting bathrooms or half-rooms) do you have in your home?

FUEL SOURCES IN HOME

(nhap)

- Do you have a gas range or gas oven?
- Does your gas range or gas oven have a continuously burning pilot light?

- What is the main type of furnace or heating system used to heat your home?

<1> Central furnace (central system with ducts that blow air into most rooms) <2> Radiator or other steam or hot water system <3> Portable heater <7> Other (SPECIFY) [specify] <8> DK ===>

- What is the main type of fuel used in this system?

Natural gas
Propane gas
Kerosene
Coal
Wood Burning Stove
Gasoline
Solar
Artificial Logs

- Do you use any other heat sources that I haven't mentioned?

(nhexas)

- During which month do you usually start using heating devices? During which month do you usually stop using heating devices?

Start Month: Jan Feb March April May June July August Sept Oct Nov Dec

Stop Month: Jan Feb March April May June July August Sept Oct Nov Dec