



Five Year Follow-up Interview  
Pesticide Use Module  
Commercial Pesticide Applicator

**November 17, 2006**

**OMB # 0925-0406**  
Expires 11/30/2007

**Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: PHS Reports Clearance Officer, Rm. 721-B, Humphrey Building, 200 Independence Ave., SW, Washington, D.C. 20201, ATTN: PRA; and to Office of Management and Budget, Paperwork Reduction Project (0925-0406), Washington, D.C. 20503.**

This questionnaire is intended to be administered utilizing a CATI system. The following specific information will be available electronically prior to the start of the interview:

Subject Name

Gender

Birthdate

C2ENRDOB / C2\_SASDATE\_ENRDOB

Address; City, State, Zip Code

Enrollment Date

C2ENRODATE

Current Date

C2\_SASDATE\_STARTDA

Current Time

In addition, the CATI system will contain listings of common crops, animals, pesticides, pesticide application methods, etc., to facilitate the interviewer data entry.

In this document and when using the CATI system:

LARGE CASE PRINT = instructions to the interviewer; do not read these to the respondent

Shaded Areas = instructions to the programmer (will not appear on CATI screen); do not read to the respondent

Underline = portions of the question to be verbally stressed by interviewer; will appear as bold text on CATI

(Parenthesis) = clauses that the interviewer can choose to read or not to read, depending on the flow of the interview and the respondent's grasp of the question

< > = response edit check. A signal screen will appear: "Response is not in normal range. Are you sure this is correct?"

<< >> = response range. A signal screen will appear: "Input invalid, value not in range". Interview must change response.

WHEN CONDUCTING AN INTERVIEW WITHOUT USING THE CATI SYSTEM, FILL IN:

Respondent ID # \_\_\_\_\_

Name of Interviewer \_\_\_\_\_

**PARTID**

Date of Interview \_\_\_\_/\_\_\_\_/\_\_\_\_

Time Interview Started \_\_\_\_\_

Time Interview Ended \_\_\_\_\_

MM DD YY

**Call Result (on CATI):**

1. Consent
2. Refuse
3. Applicator is deceased
4. Applicator chronically ill
5. Applicator is unable to participate because of language difficulties
6. Applicator is unable to participate for other reasons
7. Maxed

INTERVIEWER: CTRL F7 TO EXIT AND DO NOT SAVE

**I would like to start by verifying some general information we received from you when you completed your enrollment questionnaire/interview.**

**[If BIRTHDATE NOT KNOWN, Go to Q1NB]**

**1. Is your birthdate (auto fill in)?**

**C2SAMEBD**

1. Yes  REF **[Go to SIGNAL SCREEN]**
0. No **[Go to SIGNAL SCREEN]**  DK **[Go to SIGNAL SCREEN]**

=====

**SIGNAL SCREEN:**

**APPLICATOR VERIFICATION**

**Am I speaking with (first name, middle initial, last name)?**

**IF NO; CANCEL, THEN CTRL-F7 TO EXIT, THEN NO TO SAVE FORM.**

**IF YES; PROBE TO DETERMINE IF:**

-----1) BIRTH DATE HAS BEEN MIS-READ OR NUMBERS HAVE BEEN TRANSPOSED

-----2) THERE IS, OR EVER HAS BEEN, ANOTHER PERSON WITH THE SAME NAME  
LIVING AT THIS RESIDENCE. IS THEIR BIRTHDATE (fill in birth date)?

-----3) THE PERSON YOU ARE SPEAKING WITH HAS BEEN A REGISTERED COMMERCIAL  
PESTICIDE APPLICATOR.

-----4) THE PERSON REMEMBERS COMPLETING THE AHS ENROLLMENT QUESTIONNAIRE  
AT THEIR PESTICIDE LICENSING CLASS OR OVER THE PHONE IN (enrollment year).

-----**IF CORRECT PARTY; SUPPRESS AND CONTINUE**

-----**IF INCORRECT PARTY; CANCEL, THEN CTRL-F7 TO EXIT, THEN NO TO SAVE FORM**

=====

1NB. What is your birthdate?

C2CON\_BD            \_\_\_\_/\_\_\_\_/\_\_\_\_?  
                         MM  DD  YYYY  
<birth years limited to 1910-1980> <<datatype>>

**[Go to Q1b if pre-loaded gender is NOT FILLED IN]**

1a. WE CURRENTLY HAVE (APPLICATOR NAME) LISTED AS (AUTO FILL IN OF GENDER), IS THIS CORRECT?

C2VERGEN            1. Yes            **[Go to Q2]**  
                         2. No  
                         3. Unsure

1b. [IF NOT FILLED IN AND UNSURE, ASK]            Are you:

C2ASKGEN            1. Male            \_\_\_REF  
                         2. Female            \_\_\_DK

2. Is your current address (auto fill in)?

C2SAMEAD            1. Yes            **[If "state" in current address does not equal IA, Go to Q3b, ELSE Go to Q4]**  
                         2. No  
                         3. New 911  
                         \_\_\_REF            **[Go to Q5]**  
                         \_\_\_DK            **[Go to Q5]**

2NA. What is your new address? \_\_\_\_\_ \_\_\_REF    \_\_\_DK

2NC. What is your city? \_\_\_\_\_ \_\_\_REF    \_\_\_DK

2NS. What is your state? \_\_\_\_\_ \_\_\_REF    \_\_\_DK

2NZ. What is your zip code? \_\_\_\_\_ \_\_\_REF    \_\_\_DK

**[IF Q2=New 911, Go to Q4]**  
**[IF STATE IS NOT=IOWA, Go to Q3]**

2a. Did you change your residence when you changed your address?

C2CHANGE            1. Yes            \_\_\_REF **[Go to Q4]**  
                         0. No            **[Go to Q4]**    \_\_\_DK **[Go to Q4]**

3. What year did you move into your current residence?  
**C2MOVEIN**                   |\_|\_|\_|\_|                   \_\_\_REF   \_\_\_DK  
 <1993-current year>

**[If STATE=IOWA FOR Q2NC, Go to Q4]**

3a. What was the month that you left Iowa?  
**C2LEFTSM**                   |\_|\_|                   \_\_\_REF  
 <<01-12>>                   \_\_\_DK

3b. What was the year that you left Iowa?  
**C2LEFTSY**                   |\_|\_|\_|\_|                   \_\_\_REF  
 <<1900-2005>> <1993-current year>   \_\_\_DK

Now I would like to ask you some questions concerning your primary source of drinking water.

4. Is a private well (or spring) your usual source of drinking water (at any time within the last 12 months)?  
**C2PRIVWE**                   1. Yes                   \_\_\_REF **[Go to Q9]**  
                                   0. No   **[Go to Q9]**       \_\_\_DK **[Go to Q9]**

5. How deep is your well (or spring)?  
**C2DEEPWE**                   1. <50 feet                   \_\_\_REF  
                                   2. 50-100 feet               \_\_\_DK  
                                   3. 100-150 feet  
                                   4. >150 feet

Private wells (or springs) are tested for both bacteria and nitrates. The following questions are concerned only with nitrate levels.

6. Has your well (or spring) been tested for nitrates?  
**C2TESTWE**                   1. Yes                   \_\_\_REF **[Go to Q7]**  
                                   0. No   **[Go to Q7]**       \_\_\_DK **[Go to Q7]**

6a. Did the report indicate that the nitrate level was safe or unsafe for bottle-fed infants?  
**C2TESTSA**                   1. Safe (Less than or equal to 45 mg/liter)   \_\_\_REF  
                                   2. Unsafe for infants (Greater than 45 mg/liter)   \_\_\_DK

6b. What year was the well (or spring) tested?  
**C2TESTYR**                   |\_|\_|\_|\_|                   \_\_\_REF  
 <<1968-current year>>                   \_\_\_DK

7. How far is your drinking water well (or spring) from the nearest area where pesticides are mixed, handled or loaded?

C2WDFMIX

- 1. No pesticides mixed near home  REF
- 2. < 50 feet  DK
- 3. 50-99 feet
- 4. 100-199 feet
- 5. 200-1/4 mile (1320 ft)
- 6. > 1/4 mile

8. How far is your well (or spring) from the nearest area where pesticides are applied?

C2WDFAPL

- 1. No pesticides applied near home  REF
- 2. < 50 feet  DK
- 3. 50-99 feet
- 4. 100-199 feet
- 5. 200-1/4 mile (1320 ft)
- 6. > 1/4 mile

9. Are you currently living on a farm? (By farming, we mean living on a farm that sold over \$1000 worth of crops, nursery, greenhouse or animal products in a year.)

C2LIVEFA

- 1. Yes  REF
- 0. No  DK

9a. Since (year of enrollment) have you worked on a farm other than as a commercial applicator or handler? (By farming, we mean working on a farm that sold over \$1000 worth of crops, nursery, greenhouse or animal products in a year.)

C2WORKFA

- 1. Yes  REF
- 0. No  DK

[IF Q9b = 2 (NO), Go to Q10]

9a1. Since (year of enrollment), did you personally mix, load, handle, or apply pesticides while working on a farm other than as a commercial applicator or handler?

C2FARMAP

- 1. Yes  REF [Go to Q10]
- 0. No  DK [Go to Q10]

9a2. On the average, how many days per year did you personally mix, load, handle, or apply pesticides (while working on a farm)?

C2FADMXA

- ||| days  REF [Go to Q10]
- <<0-365>>  DK [Go to Q10]

9a3. On the days when you worked with pesticides (while working on a farm), on average, how many hours per day did you mix, load or apply them?

C2FAHMXA |\_\_|\_\_| hours      \_\_REF  
<<0-24>> <0-12>      \_\_DK

10. Are you still a registered commercial applicator or handler?

C2STCOMM 1. Yes [Go to Q11]      \_\_REF [Go to Q11]  
0. No      \_\_DK [Go to Q11]

10a. What was the last year you were a registered commercial applicator or handler?

C2LACOMM |\_\_|\_\_|\_\_|\_\_|      \_\_REF  
<Enrollment year-current year> <<1910-2005>>      \_\_DK

=====

**SIGNAL SCREEN**  
(Year entered in Q10a) IS PRIOR TO ENROLLMENT  
IF INCORRECT: CANCEL AND-ENTER CORRECT YEAR FOR LAST YEAR REGISTERED.  
IF CORRECT: SUPPRESS and CONTINUE

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The next questions will ask about your pesticide use as a commercial pesticide worker. Some people do not consider “herbicides” or weed killers to be pesticides. During this interview, when answering questions about pesticides, we would like for you to include your use of herbicides and weed killers, as well as any chemicals used to kill insects, fungus, molds, or rodents.

11. Since (year of enrollment), did you personally mix, load, handle, or apply pesticides for use on crops, animals, or any other purpose as a commercial pesticide worker?

C2MIXAPL 1. Yes  
0. No [Go to HEALTH MODULE. At end of Health Module, return to question H1 – H3 and then to Q20]  
\_\_REF [Go to HEALTH MODULE. At end of Health Module, return to question H1 – H3 and then to Q20]  
\_\_DK [Go to HEALTH MODULE. At end of Health Module, return to question H1 – H3 and then to Q20]

12. On the average, how many days per year did you personally mix, load, handle, or apply pesticides?

C2DMXAPL |\_\_|\_\_|\_\_| Days      \_\_REF [Go to HEALTH MODULE then to Q20]  
<<0-365>>      \_\_DK [Go to HEALTH MODULE then to Q20]

13. On the days when you worked with pesticides, on average, how many hours per day did you mix, load, handle or apply them?

C2HMXAPL

|\_\_|\_\_| Hours      \_\_REF  
<<0-24>> <0-12>      \_\_DK

13a. What was the last year that you personally mixed, loaded, handled or applied pesticides as a commercial pesticide worker?

C2LAHAND

|\_\_|\_\_|\_\_|\_\_|      \_\_REF [Go to HEALTH MODULE then to Q20]  
<Enrollment year-current year> <<1993-2005>>      \_\_DK [Go to HEALTH MODULE then to Q20]

[Go to HEALTH MODULE. At end of Health Module, return to question H1 – H3 and then Exposure Module Q14 if Q11 is "yes".]

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**REFERENCE YEAR**

If Q13a = current year and current month is Jan-Oct, then REFERENCE YEAR = last calendar year  
If Q13a = current year and current month is Nov-Dec, the REFERENCE YEAR = this calendar year  
If Q13a year < enrollment date, Go to SIGNAL SCREEN  
Else, insert Q13a year response as REFERENCE YEAR

=====

H1. Has a Doctor or other health care professional ever told you that you had hay fever?

C2HF

1. Yes      \_\_REF [Go to H2]  
0. No [Go to H2]      \_\_DK [Go to H2]

H1a. During the last 12 months, how many episodes of wheezing or whistling in your chest have you had?

C2HFW

1. None      \_\_DK  
2. 1-2      \_\_REF  
3. 3-6  
4. 7-11  
5. 12 or more

H2. Has a doctor or other health care professional ever told you that you had asthma?

C2AST

1. Yes      \_\_REF [Go to H3]  
0. No [Go to H3]      \_\_DK [Go to H3]

H2a. At what age did it start?

C2ASTAGE

|\_\_|\_\_| Age in years      \_\_REF  
<1-97> <<1-current age>>      \_\_DK



**H2b. Have you received medical treatment for asthma in the last 12 months?**

**C2ASTMED**

1. Yes  REF  
0. No  DK

**H3. What year did you first start work as a commercial pesticide applicator or handler?**

**C2STAWK**

- \_\_\_\_|\_\_\_\_|\_\_\_\_|\_\_\_\_| Year  REF  
<1928-1997> <<birthyear+16-enrollment year>>  DK

The next questions will ask about your pesticide use as a commercial pesticide worker.

**14. I am going to ask you in which ways you personally worked with pesticides in (Reference Year). Again, please include your work with herbicides (or weed killers), as well as chemicals used to kill insects, fungus, molds or rodents.**

**C2APPEST**

As a commercial pesticide worker, did you personally mix, load, handle or apply pesticides for:

READ RESPONSES AND MARK ALL THAT APPLY  
ENTER AT MOST 10 VALUES. WHEN COMPLETE PRESS ENTER.

1. Farm crops
  2. Lawns or turf, including cemeteries and golf courses
  3. Farm animals/shelters
  4. Stored grain or other agricultural products
  5. Interior or exterior building applications (home, commercial, or public)
  6. Nursery or garden (including shrubs, flowers and ornamentals)
  7. Weed or brush control (for fence rows, pastures, public lots, or highway right of ways)
  8. Trees, including fruit trees
  9. Rodent or termite control
  10. Other applications
- REF  
 DK

**[If Q14 = 10, Go to Q14a, Else Go to Q15]**

**14a. What was this?**

**C2PESTOT**

\_\_\_\_\_ (fill in)  REF  DK

**[For the following questions, number of screens will equal number of types of pesticide applications listed in Q14, up to a maximum of 10. Type of pesticide application is an automatic fill in.]**

[ASK Q15 for each type of application listed in Q14]

15. What pesticides did you personally mix, load, handle, or apply for (application) during (**Reference Year**)?

C2\_PESTICIDE\_VERBATIM<sup>1</sup>

[INSERT PESTICIDE LIST]

TYPE PESTICIDE NAME THEN CHOOSE FROM LIST BY ENTERING.  
ENTER AT MOST 25 PESTICIDES

IF PESTICIDE IS NOT ON LIST, CHOOSE “Other” and fill in name  
[FOR ATRAZINE AND 2,4d, GO TO SIGNAL SCREEN]

=====

**SIGNAL SCREEN**

**Did you use (atrazine/2,4-D) alone or was it part of a manufacturers mixture?**

----IF ALONE: **SUPPRESS** AND CONTINUE

----IF MANUFACTURER’S MIXTURE: **Could you tell me the brand name?**

-----IF YES: **CANCEL** AND REPLACE ATRAZINE WITH BRAND NAME.

-----IF NO: **Could you tell me what chemical (s) it was mixed with?**-----

-----IF YES: **CANCEL** AND REPLACE ATRAZINE WITH CHEMICAL NAME, THEN USE  
INGREDIENT TO SEARCH FOR BRAND NAME.-----

-----IF NO: **SUPPRESS** AND CONTINUE AS IF ATRAZINE WAS USED ALONE.

---IF **PERSONALLY MIXED**: **SUPPRESS** AND CONTINUE, ENTERING OTHER CHEMICALS  
IN MIXTURE AS SEPARATE PESTICIDES FROM LIST.

=====

PROBE FOR A COMPLETE LIST:

**Are there any other pesticides that you personally used for (application) during (**Reference Year**)?**

AT LAST ENTRY, TYPE AND ENTER “DONE”.

IF NO PESTICIDES USED, TYPE AND ENTER “NONE”.

<sup>1</sup> In Commercial Applicator Supplemental Pesticide File

\_\_\_REF \_\_\_DK  
[Go to next application]  
[At last application, Go  
to Q16]

\_\_\_NONE  
[Go to next application]  
[At last application, Go  
to Q16]

\_\_\_Other  
[Go to Q15a1]

\_\_\_DONE  
[Go to next application]  
[At last application, Go  
to Q16]

Q15a1. What was this pesticide?  
C2\_PESTICIDE\_VERBATIM<sup>1</sup> \_\_\_\_\_ (fill in)

[ASK Q16 and Q17 FOR EACH OF THE PESTICIDES FOR EACH APPLICATION LISTED IN Q15.]

Now I am going to ask about your personal use of these pesticides.

16. In (Reference Year), how many days did you personally mix, load, handle or apply (pesticide) for (application)?  
C2DAYS<sup>1</sup> |\_\_|\_\_|\_\_| days \_\_\_REF  
<<1-365>> \_\_\_DK

[Go to next pesticide; at last pesticide for last application, go to Q18]

17. On average, how many hours per day did you personally mix, load, handle, or apply (pesticide) for (application)?  
C2HOURS<sup>1</sup> |\_\_|\_\_| hours \_\_\_REF  
<<0-24>> <0-12> \_\_\_DK

[Repeat the following statement only when beginning next application.]

Now I am going to ask some additional questions about those pesticides you used for (application).

18. During (Reference Year), when (pesticide) was applied for (application), was the (pesticide) liquid, dry, or gas?  
MARK ALL THAT APPLY:

1. Liquid, including pastes and gels C2LIQUIDFLAG [Go to 18a]
  2. Dry, including granular C2DRYFLAG [Go to 18b]
  3. Gas C2GASFLAG [Go to 18c]
- \_\_\_REF  
\_\_\_DK

<sup>1</sup> In Commercial Applicator Supplemental Pesticide File

**IF LIQUID IS CHECKED, ASK:**

**18a.** What percent of the time was the **(pesticide)** applied for **(application)** a liquid formulation?

**C2LIQUIDPCT** \_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

**IF DRY IS CHECKED, ASK:**

**18b.** What percent of the time was the **(pesticide)** applied for **(application)** a dry formulation?

**C2DRYPCT** \_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

**IF GAS IS CHECKED, ASK:**

**18c.** What percent of the time was the **(pesticide)** applied for **(application)** a gaseous formulation?

**C2GASPCCT** \_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

The following questions will refer to the **(pesticide)** applied for **(application)** when it was (fill in the highest % formulation):  
(IF THERE WAS A TIE, FILL IN THE ONE FIRST ON THE LIST.)

**18d.** During **(Reference Year)**, when using **(pesticide)** for **(application)**, did you usually handle the **(pesticide)**, or fill **(or load)** the application equipment yourself?

**C2CPG** 1. Yes \_\_\_REF **[Go to next pesticide for this application]**  
0. No **[Go to Q19]** \_\_\_DK **[Go to Q19]**

**18e.** During **(Reference Year)**, when handling the **(pesticide)** or filling the application equipment did you...

**C2CPH** READ RESPONSES

1. Personally open the bags or containers and pour or pump into the application equipment yourself (includes mini-bulk and mixing with seed)? **[Go to Q19]**
2. Use a closed system (for dry formulations this includes Lock and Load and Smart Box systems. For liquid formulations this would include dissolvable packets or pumped directly from a storage tank into application equipment fill hose)? **[Go to Q19]**
3. Use something else? **[Go to Q18e1]**  
\_\_\_REF **[Go to Q19]**  
\_\_\_DK **[Go to Q19]**

**18e1.** What was this?

**C2CPI** \_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

**[All responses, Go to Q19]**

19. During (Reference Year), did you personally apply (pesticide) for (application)?

C2CPJ

1. Yes  REF  
0. No  DK

[If NO, DK or REF at last pesticide for this application, Go to first pesticide for next application]

[If NO, DK or REF at last pesticide for last application, Go to Q20]

[If Q14 = 3, 4, 5, 6, 8, or 9, Go to Q19c]

19a. During (Reference Year), did you use a tractor or other vehicle (including Terra-Gators and Rogators) to apply (pesticide) for (application)?

C2CPK

1. Yes  REF [Go to next pesticide]  
0. No [Go to Q19c]  DK [Go to Q19c]

19b. During (Reference Year), when you applied (pesticide) for (application), did you use:

C2CPL

READ RESPONSES

1. A broadcast spray (spread over the entire field; includes fertilizer spreader, buggy or hopper, broadcast sprayer, or duster).
  2. A banded or directed spray (sprayed it over the rows; includes drip, in furrow, ridged up, T- band, planter box, band sprayer and post emergent directed spraying).
  3. Injection or drilling (includes row fumigation and proportional injection).
  4. Hand held sprayer (gun, wand, hand-boom, or pump).
  5. A mist blower or fogger.
  6. or something else
- REF  
 DK

[If Q19b = 4, Go to 19b1, If Q19b = 6, Go to Q19b2; Else Go to NEXT PESTICIDE. AT LAST PESTICIDE, Go to Q20]

19b1. Was this:

C2CPM

READ RESPONSES

1. Low pressure or  REF  
2. High pressure?  DK

[ALL RESPONSES Go to NEXT PESTICIDE. AT LAST PESTICIDE, Go to Q20]

**19b2. What was this?**

**C2CPN** \_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

**[ALL RESPONSES Go to NEXT PESTICIDE. AT LAST PESTICIDE, Go to Q20]**

**19c. During (Reference Year), which application method did you usually use?**

**C2CPO** READ ALL RESPONSES; CHOOSE ONE

1. Hand-held sprayer (gun, wand, hand, boom or pump)
  2. Hand held spreader (includes coffee can spreader)
  3. Backpack sprayer
  4. Band sprayer
  5. Gas canister
  6. Mist blower or fogger
  7. Pre-treated seed
  8. Personally applied to seed
  9. Greenhouse sprayer
  10. Dusting
  11. Dips, pour-ons (also hand wipes, oral paste, or boluses)
  12. Soil injection
  13. Animal rubbing device, ear tags, or feed and water additives, dust bags, and rope wicks
  14. Airblast
  15. Dried pellets
  16. Sealed packets
  17. Spray bottle
  18. Drip canister
  19. Animal injection
  20. Lawn spreader
  21. Something else
- \_\_\_REF  
\_\_\_DK

**[If Q19c = 21, GO TO Q19c1, Else, Go to NEXT PESTICIDE. AT LAST PESTICIDE Go to Q20]**

**19c1. What was this?**

**C2CPP** \_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

**If Q11 = YES Go to Q20b**

20. Since (year of enrollment), did you load or apply any fertilizer such as manure (including poultry litter) as a commercial applicator?

C2NATFER

1. Yes \_\_\_\_\_REF [Go to Q21]  
0. No [Go to Q21] \_\_\_\_\_DK [Go to Q21]

20a. What was the last year that you loaded or applied manure as a commercial applicator?

C2NATFDT

- \_\_\_\_|\_\_\_\_|\_\_\_\_|\_\_\_\_| Year \_\_\_\_\_REF [Go to Q21]  
<<1993-2004>> <enrollment year-current year> \_\_\_\_\_DK [Go to Q21]

**REFERENCE YEAR = Q20a**

20b. During (Reference Year), did you apply any fertilizer such as manure (including poultry litter) as a commercial applicator?

C2NATFRA

1. Yes \_\_\_\_\_REF  
0. No \_\_\_\_\_DK

**If Q11 = YES THEN Go to Q22**

21. Since (year of enrollment), did you load or apply any nitrogen in any other form as a commercial applicator?

C2NITRO

1. Yes \_\_\_\_\_REF [Go to Cooking Practices Module]  
0. No [Go to Cooking Practices Module] \_\_\_\_\_DK [Go to Cooking Practices Module]

21a. What was the last year that you loaded or applied nitrogen in any other form as a commercial applicator?

C2NITDT

- \_\_\_\_|\_\_\_\_|\_\_\_\_|\_\_\_\_| Year \_\_\_\_\_REF [Go to Cooking Practices Module]  
<<1993-2004>> <enrollment year-current year> \_\_\_\_\_DK [Go to Cooking Practices Module]

**REFERENCE YEAR = Q21a**

22. During (Reference Year), did you apply any nitrogen in any other form as a commercial applicator?

C2ONITRA

1. Yes  
0. No [If Q11 = YES THEN GO TO Q23, ELSE GO TO Cooking Practices Module]  
\_\_\_\_\_REF [If Q11 = YES THEN GO TO Q24, ELSE GO TO Cooking Practices Module]  
\_\_\_\_\_DK [If Q11 = YES THEN GO TO Q24, ELSE GO TO Cooking Practices Module]

22a. During (**Reference Year**), which of the following types of nitrogen did you personally apply as a commercial applicator?  
 READ RESPONSES. MARK ALL THAT APPLY.  
 PROBE FOR COMPLETE LIST. WHEN COMPLETE PRESS ENTER.

- |                                   |                       |
|-----------------------------------|-----------------------|
| 1. Anhydrous ammonia              | C2_ANHYD_AMMONIA      |
| 2. Liquid nitrogen                | C2_LIQUID_NITROGEN    |
| 3. Dry nitrate                    | C2_DRY_NITRATE        |
| 4. Regular or complete fertilizer | C2_REGULAR_FERTILIZER |
| 5. Something else...              | C2_NIT_SOMETHING_ELSE |
| ___REF                            |                       |
| ___DK                             |                       |

[If Q22a = 5, Go to Q22a1; Else, Go to Q22b]

22a1. What was this?  
 C2ON TSA \_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

22b. How many total acres was nitrogen applied to in (**Reference Year**)?  
 C2NACRES |\_\_|\_\_|\_\_|\_\_| Acres \_\_\_REF  
 <1-9997> \_\_\_DK

22c. How many days did you apply nitrogen in (**Reference Year**)?  
 C2NTIMES |\_\_|\_\_|\_\_| Days \_\_\_REF  
 <<1-365>> \_\_\_DK

23. During (**Reference Year**), did you load any nitrogen in any other form as a commercial applicator?  
 C2ONITRH

1. Yes
0. No [If Q11 = YES THEN Go to Q24, ELSE Go to Cooking Practices Module]  
 \_\_\_REF [If Q11 = YES THEN Go to Q24, ELSE Go to Cooking Practices Module]  
 \_\_\_DK [If Q11 = YES THEN Go to Q24, ELSE Go to Cooking Practices Module]



23a. During (**Reference Year**), which of the following types of nitrogen did you load as a commercial applicator?

READ RESPONSES. MARK ALL THAT APPLY.  
PROBE FOR COMPLETE LIST. WHEN COMPLETE PRESS ENTER.

- |                                   |                            |
|-----------------------------------|----------------------------|
| 1. Anhydrous ammonia              | C2_ANHYD_AMMONIA_LOAD      |
| 2. Liquid nitrogen                | C2_LIQUID_NITROGEN_LOAD    |
| 3. Dry nitrate                    | C2_DRY_NITRATE_LOAD        |
| 4. Regular or complete fertilizer | C2_REGULAR_FERTILIZER_LOAD |
| 5. Something else...              | C2_NIT_SOMETHING_ELSE_LOAD |
| ___REF                            |                            |
| ___DK                             |                            |

[If Q23a = 5, Go to Q23a1; Else, Go to Q23b]

23a1. What was this?

C2ONTSH \_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

23b. How many days did load nitrogen in (**Reference Year**) as a commercial applicator?

C2ONTMX |\_\_|\_\_|\_\_| Days \_\_\_REF  
<<1-365>> \_\_\_DK

[If Q11 was "no", DK or Ref, Go to Cooking Practices Module]

24. As a commercial pesticide worker, was (**Reference Year**) a typical year for you as far as number of pesticides you used and the amounts you used?

C2TYPICA 1. Yes \_\_\_REF  
0. No \_\_\_DK

[If 18d = NO, DK OR REF FOR ALL PESTICIDES, Go to Q26]

25. During (**Reference Year**), when you mixed or loaded or handled pesticides as a commercial pesticide worker, did you normally wear any of the following special clothing or protective equipment:

READ RESPONSES. MARK ALL THAT APPLY. HIGHLIGHT AND ENTER TO RECORD RESPONSE.  
WHEN COMPLETE, PRESS ENTER.

- |  |                    |
|--|--------------------|
| 1. Chemically resistant overalls like Tyvek                            | C2_TYVEK_MIX       |
| 2. Chemically resistant boots/shoes (different than normal work boots) | C2_BOOTS_MIX       |
| 3. Cartridge respirator, gas mask                                      | C2_RESP_MIX        |
| 4. Full face shield  | C2_FACE_SHIELD_MIX |
| 5. Gloves  | C2_GLOVES_MIX      |
| 6. None  | C2_PPE_NONE_MIX    |
| 7. Other, specify:   |                    |
| ___REF   |                    |
| ___DK  |                    |

[If Q25 = 7, Go to Q25a]

25a. What was this?

C2OCLOTH \_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

[If Q25 is not equal to 5, Go to Q26]

25b. Which type of glove do you normally wear (when mixing, loading or handling pesticides)?

C2GLOVES READ RESPONSES- CHOOSE ONE

1. Fabric or leather gloves
  2. Chemically resistant gloves, or those designed for pesticide use (includes natural, butyl, chloroprene, nitrile, and fluorocarbon (Viton); or various plastics: polyvinyl chloride (PVC), polyvinyl alcohol, and polyethylene; brand names (Silver Shield and 4H)
  3. Thin, disposable gloves (includes surgical gloves)
  4. Other waterproof rubber or plastic gloves
  5. Something else... [Go to Q25b1]
- \_\_\_REF  
\_\_\_DK

[If Q25b is not equal to 5, Go to Q26]

25b1. What type are these?

C2GOTHER \_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

[If Q19 = NO, DK, OR REF FOR ALL PESTICIDES, Go to Q27]

Now, I want to ask about special clothing or protective equipment you may have used when applying pesticides as a commercial pesticide worker.

26. During (**Reference Year**), when you applied pesticides, which of the following special clothing or protective equipment did you normally wear or use?

READ RESPONSES. MARK ALL THAT APPLY. WHEN COMPLETE, PRESS ENTER.

- |  |                      |
|--|----------------------|
| 1. Chemically resistant overalls like Tyvek                            | C2_TYVEK_APPLY       |
| 2. Chemically resistant boots/shoes (different than normal work boots) | C2_BOOTS_APPLY       |
| 3. Cartridge respirator, gas mask                                      | C2_RESP_APPLY        |
| 4. Full face shield  | C2_FACE_SHIELD_APPLY |
| 5. Gloves  | C2_GLOVES_APPLY      |
| 6. None  | C2_PPE_NONE_APPLY    |
| 7. Other, specify:   |                      |
| ___REF   |                      |
| ___DK  |                      |

[If Q26 = 7, Go to Q26a]

26a. What was this?

C2AOCLOT \_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

[If Q26 DOES NOT EQUAL 5 (gloves), Go to INSTRUCTIONS BEFORE Q27]

26b. Which types of glove do you normally wear when applying pesticides?

C2AGLOVE

READ RESPONSES - CHOOSE ONE

1. Fabric or leather gloves
2. Chemically resistant gloves, or those designed for pesticide use (includes natural, butyl, chloroprene, nitrile, and fluorocarbon (Viton); or various plastics: polyvinyl chloride (PVC), polyvinyl alcohol, and polyethylene; brand names Silver Shield and 4H)
3. Thin, disposable gloves (includes surgical gloves)
4. Other waterproof rubber or plastic gloves
5. Something else...

\_\_\_REF

\_\_\_DK

[If Q26b = 5, Go to Q26b1; Else, Go to Q27]

26b1. What type are these?

C2AGOTHE

\_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

[If BOTH Q25 AND Q26 DO NOT EQUAL 5 (gloves), Go to Q28]

27. How many pairs of gloves (that you used for mixing, loading, handling or applying) did you go through during an average year?

C2GPAIRS

|\_|\_|\_|\_|

\_\_\_REF

<1-997>

\_\_\_DK

[If Q26 does not equal 5, Go to Q28]

Thinking about the gloves you just described:

27a. During an average year, did you normally use this type of glove when applying herbicides?

C2GHERB

1. Yes \_\_\_REF
2. No \_\_\_DK
3. Did not use herbicides

27b. During an average year, did you normally use this type of glove when applying insecticides?

C2GINS

1. Yes \_\_\_REF
2. No \_\_\_DK
3. Did not use insecticides

27c. During an average year, did you normally use this type of glove when applying fumigants?

C2GFUM

- 1. Yes  REF
- 2. No  DK
- 3. Did not use fumigants

27d. During an average year, did you normally use this type of glove when applying fungicides?

C2GFUNG

- 1. Yes  REF
- 2. No  DK
- 3. Did not use fungicides

28. Since (year of enrollment), did you have any incidents as a commercial pesticide worker with fertilizers, herbicides or other pesticides that caused you an unusually high personal exposure?

C2HIEXP

- 1. Yes  REF [Go to Q31]
- 0. No [Go to Q31]  DK [Go to Q31]

28a. How many of the exposure incidents have you had since (enrollment year)?

C2HENUM

- REF
- <1-10> <<1-97>> DK

28b. Were any of the incidents during (last calendar year)?

C2HELYR

- 1. Yes  REF [Go to Q31]
- 0. No [Go to Q31]  DK [Go to Q31]

29. Regarding the most recent incident, what was the name of the chemical you were exposed to?

C2HECHEM

INSERT PESTICIDE LIST

SELECT ONLY ONE PESTICIDE. IF MORE THAN ONE, MAKE REMARK.

\_\_\_\_\_ (fill in)  REF  DK

**29a. Regarding the most recent incident, what parts of your body were exposed?**

READ RESPONSES. MARK ALL THAT APPLY. WHEN COMPLETE, PRESS ENTER.

- |                                      |                             |                     |
|--------------------------------------|-----------------------------|---------------------|
| 1. Head                              | <b>C2_HEAD</b>              | <b>[Go to Q29b]</b> |
| 2. Face (eyes, nose, mouth)          | <b>C2_FACE</b>              | <b>[Go to Q29b]</b> |
| 3. Torso, arms, legs                 | <b>C2_TORSO_ARMS_LEGS</b>   | <b>[Go to Q29b]</b> |
| 4. Hands                             | <b>C2_HANDS</b>             | <b>[Go to Q29b]</b> |
| 5. Feet                              | <b>C2_FEET</b>              | <b>[Go to Q29b]</b> |
| 6. Lungs (from breathing)            | <b>C2_LUNGS</b>             | <b>[Go to Q29b]</b> |
| 7. Digestive tract (from swallowing) | <b>C2_DIGESTIVE_TRACT</b>   | <b>[Go to Q29b]</b> |
| 8. Something else...                 | <b>C2_BP_SOMETHING_ELSE</b> |                     |
| ___REF                               |                             | <b>[Go to Q29b]</b> |
| ___DK                                |                             | <b>[Go to Q29b]</b> |

**29a1. What part was this?**

**C2HEBOTH** \_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

**29b. Regarding the most recent incident, what pesticide or fertilizer-related job were you doing when the exposure occurred?**

- |                |   |                      |
|----------------|---|----------------------|
| <b>C2HEJOB</b> | 1. Mixing                                   | <b>[Go to Q29d1]</b> |
|                | 2. Loading                                  | <b>[Go to Q29d1]</b> |
|                | 3. Applying                                 | <b>[Go to Q29c]</b>  |
|                | 4. Cleaning/maintenance/repair of equipment | <b>[Go to Q2d1]</b>  |
|                | 5. Cleaning up a spill                      | <b>[Go to Q29d1]</b> |
|                | 6. Something else...                        | <b>[Go to Q29e1]</b> |

**29b1. What was this?**

**C2HEJOTH** \_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

**[ALL RESPONSES, Go to Q29d]**

**29c. What application method were you using?**

**C2HEAPPL**

1. Broadcast from farm vehicle
  2. Hand-held spray gun or wand
  3. Backpack sprayer
  4. Banded sprayer
  5. Gas canister
  6. Mist blower or fogger
  7. Pre-applied to seed
  8. Greenhouse sprayer (only in greenhouse applications)
  9. Airblast
  10. Applied dried pellets
  11. Power knapsack or air sprayer or duster
  12. Hand treatment such as pour-ons, hand wipes, oral paste or boluses
  13. Animal injection
  14. Animal self-application method, like rubbing device, dust bags, ear tabs, rope wicks or in feed additives
  15. Banded from a farm vehicle
  16. Soil injection
  17. Hand held spreader (including coffee can spreaders)
  18. Personally applied to seed
  19. Dusting
  20. Sealed packets
  21. Spray bottle
  22. Drip canister
  23. Lawn spreader
  24. Something else...
- \_\_\_REF  
\_\_\_DK

**[If Q29fc= 24, Go to 29c1; Else, Go to Q29d1]**

**29c1. What was this?**

**C2HEAOTH** \_\_\_\_\_ (fill in) \_\_\_REF \_\_\_DK

**29d. Did you have any of the following symptoms that you think may have been related to this incident?**

**29d1. (Did you have) headaches or dizziness?**

- C2HEHEAD**
1. Yes \_\_\_REF
  0. No \_\_\_DK

**29d2. (Did you have) nausea or vomiting?**

**C2HENAUS** 1. Yes REF  
0. No DK

**29d3. (Did you have) skin irritation?**

**C2HESKIN** 1. Yes REF  
0. No DK

**29d4. (Did you have) eye irritation?**

**C2HEEYEI** 1. Yes REF  
0. No DK

**29d5. (Did you have) tightness or discomfort in your chest?**

**C2HETIGH** 1. Yes REF  
0. No DK

**29d6. (Did you have) difficulty breathing?**

**C2HEDIFB** 1. Yes REF  
0. No DK

**29d7. (Did you have) difficulty walking?**

**C2HEDIFW** 1. Yes REF  
0. No DK

**29d8. (Did you have) blurred or double vision?**

**C2HEBLUR** 1. Yes REF  
0. No DK

**29d9. (Did you have) drooling or tearing?**

**C2HEDROO** 1. Yes REF  
0. No DK

**29d10. (Did you have) twitching, jerking or involuntary movements of arms or legs?**

**C2HETWIT** 1. Yes REF  
0. No DK



**29d11. (Did you) pass out?**

- C2HEPASS** 1. Yes  REF  
0. No  DK

**29d12. (Did you have) convulsions, seizures or fits?**

- C2HECONV** 1. Yes  REF  
0. No  DK

**29d13. (Did you have) any other symptoms that we have not mentioned?**

- C2HEOTHE** 1. Yes  REF **[Go to Q29e]**  
0. No **[Go to Q29e]**  DK **[Go to Q29e]**

**29d13a. What were these symptoms?**

**C2HEOSPE** \_\_\_\_\_ (fill in)  REF  DK

**29e. How soon after the incident did you wash off or change clothes?**

- C2HEWASH** 1. <30 minutes  
2. 30-59 minutes  
3. 1-3 hours  
4. 4-6 hours  
5. 7-9 hours  
6. >9 hours after the incident  
 REF  
 DK

**30. Did this incident result in a health care visit?**

- C2HECARE** 1. Yes  REF **[Go to Q31]**  
0. No **[Go to Q31]**  DK **[Go to Q31]**

**30a. Were you hospitalized?**

- C2HEHOSP** 1. Yes  REF  
0. No  DK

For the next set of questions, I'd like you to think about the time period from **(date of enrollment)** to the present time.

31. After mixing, handling or applying pesticides as a commercial pesticide worker, do (did) you usually bathe or shower before continuing with other -----activities?

- C2BATHE**
- 1. Yes  REF
  - 0. No  DK

32. Do (did) you usually wear the same work clothes you used to mix, handle or apply pesticides two or more days without washing them?

- C2CLOTHE**
- 1. Yes  REF
  - 0. No  DK

33. Do (did) you usually take your work boots or shoes off before entering your home?

- C2BOOTS**
- 1. Yes  REF
  - 2. No  DK
  - 3. Did not wear

34. Are (were) the clothes you use(d) when mixing, handling or applying pesticides usually washed separately?

- C2WASHED**
- 1. Yes  REF
  - 0. No  DK

35. Are (were) agricultural or commercial pesticides ever stored (even temporarily) in your home or basement?

- C2STORED**
- 1. Yes  REF
  - 0. No  DK

36. As a commercial pesticide worker, does (did) the vehicle you usually use to apply pesticides have an enclosed cab?

**C2ENCLOS** [ASK ONLY If Q19a=Yes FOR AT LEAST ONE PESTICIDE; OTHERWISE Go to Q37]

- 1. Yes  REF [Go to Q37]
- 0. No [Go to Q37]  DK [Go to Q37]

36a. Do (did) you usually spray with the windows closed?

**C2WINDOW**

[If ANSWER IS "IT DEPENDS ON THE WEATHER," THEN ASK: When it is (was) warm, what do you do?]

- 1. Yes  REF
- 0. No  DK

**36b. Does (did) your cab have a charcoal filter?**

- C2FILTER**
- 1. Yes  REF
  - 0. No  DK

**[If Q36b = 1, Go to Q36b1; Else, Go to Q37]**

**36b1. How often do you clean the charcoal filter during the season?**

- C2CLEANF**
- 1. Every day  REF
  - 2. Every other day  DK
  - 3. Every week
  - 4. Every two weeks
  - 5. Once a month
  - 6. Once a season
  - 7. Never

**37. As a commercial pesticide worker, do (did) you usually repair your spraying or mixing equipment?**

- C2REPAIR**
- 1. Yes  REF
  - 0. No  DK

**38. For most of the herbicides, insecticides and fungicides that you use(d) as a commercial pesticide worker, do (did) you...**

**C2AMOUNT** READ RESPONSES

- 1. Usually apply less than the minimum recommended label rate
  - 2. Usually apply more than the recommended label rate
  - 3. Usually apply the recommended rate
  - 4. Do not apply pesticides
- REF  
 DK

**The next questions ask about your views regarding the occupation of commercial pesticide worker. Do you agree or disagree with the following statements?**

**39. Commercial pesticide work is more dangerous than jobs in industry or manufacturing.**

- C2DANGER**
- 1. Agree  REF
  - 2. Disagree  DK

**40. Accidents are just one of the occupational hazards of commercial pesticide work that must be accepted if you're going to be in the business.**

**C2ACCIDE**

1. Agree  REF
2. Disagree  DK

**41. During a normal work week, as a commercial pesticide worker, it's common for me to experience a number of 'close calls' that under different circumstances might have resulted in personal injury or equipment damage.**

**C2CLOSEC**

1. Agree  REF
2. Disagree  DK

**42. To perform the job, most commercial pesticide workers take risks that might endanger their health.**

**C2PROFIT**

1. Agree  REF
2. Disagree  DK

**[Go to COOKING PRACTICE MODULE]**