

A PROTOCOL FOR DOCUMENTING AND INVESTIGATING SYMPTOMS  
REPORTED NEAR BIOSOLIDS LAND APPLICATION SITES

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**STEP 1: HEALTH QUESTIONNAIRE FOR ASSESSING  
SYMPTOMS POTENTIALLY RELATED TO LAND  
APPLICATION OF BIOSOLIDS**

Version: September 2, 2008

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**Contact Information**

Steve Wing, Ph.D.  
Department of Epidemiology  
School of Public Health, CB#7435  
University of North Carolina  
Chapel Hill, NC 27599-7435  
919-966-7416 (voice)  
919-966-2089 (fax)  
[steve\\_wing@unc.edu](mailto:steve_wing@unc.edu)

## **Step 1. Health Questionnaire for Assessing Symptoms Potentially Related to Land Application of Biosolids**

### **Introduction to the Questionnaire**

#### **What is the purpose of this questionnaire?**

This health questionnaire is a tool to be used as part of an investigation of symptoms of illness reported by residents near sites where biosolids are applied to land. It is designed as a telephone questionnaire to collect standard health-related information. It may also be conducted face-to-face. If the soil amendment of concern is biosolids, other investigation tools will be used to gather information specific to generation, treatment, storage and land application of biosolids. If, after completing the health questionnaire, it appears that a resident's concern is related to a soil amendment other than biosolids, the resident should be referred to the appropriate person, department, or agency. Please note that this survey is intended for individuals who report symptoms. The survey could also be completed by an adult on behalf of a child or someone who could not answer the questions themselves.

#### **Who will administer this questionnaire?**

This questionnaire should be administered by professionals in the health or environmental agencies that assume responsibility for investigating symptoms reported by residents near biosolids land application sites.

#### **What is the structure of the questionnaire?**

This questionnaire is designed to collect information about residents' symptoms, possible causes, household and environmental factors, and other information pertinent to their health. Respondents are also asked for demographic information.

The questionnaire guides the interviewer through the following sections:

- I. Introduction
- II. Personal Contact Information
- III. Description of Concern(s)
- IV. Symptoms Information
- V. Evidence of Land Application(s)
- VI. Household Information
- VII. Personal Health Information
- VIII. Demographic Information
- IX. Closing

## **How was this questionnaire designed?**

The following questionnaires were consulted in developing this instrument:

- 1) Standard Foodborne Disease Outbreak Questionnaire (Centers for Disease Control and Prevention)  
([http://www.cdc.gov/foodborneoutbreaks/standard\\_ques.htm](http://www.cdc.gov/foodborneoutbreaks/standard_ques.htm))
- 2) Hepatitis A Outbreak Questionnaire (North Carolina Institute for Public Health)
- 3) PA DOH Biosolids Health Complaint Questionnaire (PA Department of Health)
- 4) Bureau of Labor Statistics, Current Population Survey 2007

## **Instructions to the Interviewer**

- ◆ Read through the questionnaire prior to administration to familiarize yourself with the questions, instructions, and skip patterns
- ◆ Ask the questions exactly as they are worded in the questionnaire
- ◆ Read each question slowly
- ◆ Ask the questions in the order in which they are presented in the questionnaire
- ◆ Ask every question specified in the questionnaire
- ◆ Do not assume answers
- ◆ Repeat the question(s) as needed
- ◆ Have a calendar handy for helping the interviewee answer questions about dates

Interviewer instructions are given in all capital letters and parentheses, for example, “(READ OUT).” Explanations of some of the instructions that appear in the questionnaire are as follows:

- ◆ **WRITE RESPONSE:** Write out what the respondent says.
- ◆ **CHECK ALL THAT APPLY:** Check all answer choices that the respondent names.  
**Do not read the answer choices unless there are instructions to do so.**
- ◆ **CHECK ONE:** Check only one answer choice. If respondent gives more than one, ask them to please choose one.
- ◆ **IF UNKNOWN, ASK FOR THEIR BEST ESTIMATE:** These are for questions where the respondent may not know, but try to obtain their best guess.
- ◆ **READ OUT:** Read out the answer choices for the respondent to choose from. **If a question does not have the “READ OUT” instruction, then do not read out the answer choices.**
- ◆ **PROMPT:** Give the respondent an opportunity to respond to the question, before reading what is written in the prompt.

**HEALTH QUESTIONNAIRE**  
FOR ASSESSING SYMPTOMS POTENTIALLY RELATED  
TO LAND APPLICATION OF BIOSOLIDS

INTERVIEWER NAME \_\_\_\_\_ AGENCY \_\_\_\_\_ DATE (MM/DD/YY): \_\_\_\_/\_\_\_\_/\_\_\_\_

**I. INTRODUCTION**

**VERSION 1** (If concerned citizen contacts interviewer directly):

INTERVIEWER: Thank you for your call. In order to document your concern and determine the appropriate next steps, I would like to ask you for some additional information. You may refuse to respond to any questions that you are not comfortable answering. If you prefer, the information that you provide can be kept confidential so that none of it will be linked to your name or other information that could identify you, except to contact you and locate the site of concern if it is determined that a follow-up site investigation is necessary. Would you like your name and information to be kept confidential?

- 1  No  
2  Yes

The questions should take about 20-25 minutes to complete. May I proceed with the questions?

**VERSION 2** (If interviewer returns the call of a concerned citizen):

INTERVIEWER: Hello, my name is \_\_\_\_\_ (name of interviewer) from the \_\_\_\_\_ (name of agency). I am calling to follow-up on a concern that you reported to \_\_\_\_\_ (name and agency of first responder) on \_\_\_\_\_ (date of report). In order to document your concern and determine the appropriate next steps, I would like to ask you for some additional information. You may refuse to respond to any questions that you are not comfortable answering. If you prefer, the information that you provide can be kept confidential so that none of it will be linked to your name or other information that could identify you, except to contact you and locate the site of concern if it is determined that a follow-up site investigation is necessary. Would you like your name and information to be kept confidential?

- 1  No  
2  Yes

The questions will take about 20-25 minutes to complete. May I proceed with the questions?

**(If No)** Is there a convenient time when I can call you back? (IF RESPONDENT DOES NOT HAVE A PERSONAL HOME PHONE NUMBER, OFFER TO CONDUCT THE INTERVIEW IN PERSON AT A PLACE OF HIS OR HER PREFERENCE.)

Name \_\_\_\_\_  
Date (MM/DD/YY): \_\_\_\_/\_\_\_\_/\_\_\_\_  
Time \_\_:\_\_ am pm  
Phone Number: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

**II. PERSONAL CONTACT INFORMATION**

To begin, I need your personal contact information so that we can follow up with you as necessary regarding your concern. What is your...?

1. **First Name:** \_\_\_\_\_ **Last Name:** \_\_\_\_\_
2. **Phone Number (or number where you can be reached):** (\_\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_
3. **Physical Home Address:** \_\_\_\_\_  
**City:** \_\_\_\_\_ **State:** \_\_\_\_\_  
**Zip:** \_\_\_\_\_ **County:** \_\_\_\_\_
4. **Mailing Address (if different from home address):** \_\_\_\_\_  
**City:** \_\_\_\_\_ **State:** \_\_\_\_\_  
**Zip:** \_\_\_\_\_ **County:** \_\_\_\_\_

**III. DESCRIPTION OF CONCERN**

The next questions are about the nature of your concern.

5. **Is your concern related to symptoms you have had recently and/or are currently experiencing?**

1  Yes (Skip to 7)

2  No



6. **(If No) What is your concern? (WRITE RESPONSE. REFER RESIDENT TO A SPECIALIST WHO CAN RESPOND TO THEIR CONCERN AND END THE CALL.)**

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**IV. SYMPTOMS INFORMATION**

7. **What are your symptoms? (WRITE RESPONSE)** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
8. **What do you believe is the cause of your symptoms? (WRITE RESPONSE)**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

9. **For the next question, I will read you a list of symptoms. Please respond “yes” or “no” if you have had any of the following symptoms associated with the health concern that you are reporting? (READ EVERY SYMPTOM AND RECORD PERTINENT INFORMATION FOR EACH SYMPTOM)**

<b>Symptom</b>	<b>No</b>	<b>Yes</b>	<b>(If Yes) What day did you first experience this symptom? (IF UNKNOWN ASK FOR THEIR BEST ESTIMATE)</b>
a. Excessive cough	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
b. Runny nose, congestion	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
c. Sore throat	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
d. Difficulty breathing	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
e. Loss of appetite	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
f. Nausea	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
g. Vomiting	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
h. Diarrhea	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
i. Trouble urinating	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
j. General ill feeling	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
k. Fever or chills	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
l. Headache	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
m. Lightheaded or dizzy	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
n. Ringing in ears	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
o. Burning, tearing or irritated eyes	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
p. Burning or irritated nose	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
q. Burning or scratchy throat	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
r. Skin irritation or redness	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
s. Ulcer or boils on skin	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
t. Round patches or scaly areas on skin	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
u. Rash with spots or bumps	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
v. Itching	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
w. Other, <b>please specify:</b> _____	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____
x. Other, <b>please specify:</b> _____	<input type="checkbox"/>	<input type="checkbox"/>	(MM/DD/YY): ____/____/____

10. **Did you visit a medical provider, e.g., a doctor or nurse, for any of your symptoms?** (CHECK ONE)

- 1  No  
2  Yes

11. **Does anyone other than you presently live in your household?** (CHECK ONE)

- 1  No (Skip to 13)  
2  Yes



12. **(If Yes) Has anyone else in your household had similar symptoms?** (CHECK ONE)

- 1  No  
2  Yes (IF YES, ASK RESPONDENT IF YOU MAY ASK THE SAME QUESTIONS OF THE OTHER HOUSEHOLD MEMBER(S) WHEN YOU HAVE COMPLETED THE QUESTIONNAIRE. IF HOUSEHOLD MEMBER IS UNDER 18, ASK IF RESPONDENT IS WILLING TO ANSWER THE QUESTIONS FOR THE INDIVIDUAL.)

13. **Do you know of anyone else in your neighborhood that has had similar symptoms?** (CHECK ONE)

- 1  No  
2  Yes

## **V. EVIDENCE OF LAND APPLICATION**

As you may know, a variety of soil amendments are sometimes applied—meaning spread, sprayed, or injected—to agricultural land. These soil amendments may include treated sewage sludge, also known as biosolids; manure; food residuals produced from food preparation and consumption at establishments, such as, restaurants, hotels, and cafeterias; septage, meaning waste content found in a septic tank; compost or decomposed organic material; and others. These next questions ask about possible evidence of the land application of biosolids or other soil amendments on farmland near your home. For these questions please think about the 1 month prior to when you started having your first symptoms.

14. **Did you notice any indications that land application would be occurring near your home, for example, signs or flags in the road?**

- 1  No (Skip to 16)  
2  Yes



15. **(If Yes) Please describe:** \_\_\_\_\_

16. **Did you notice material being hauled, stockpiled or applied—meaning spread, sprayed, or injected—to fields near your home?**

- 1  No (Skip to 23)  
2  Yes



17. **(If Yes) If known, please identify the material that was being applied: (CHECK ALL THAT APPLY)**

- 1  Biosolids or treated sewage sludge
- 2  Manure
- 3  Food residuals
- 4  Septic tank waste
- 5  Compost
- 6  Liquid fertilizer for spraying
- 7  Agricultural lime
- 8  Other \_\_\_\_\_
- 9  Don't know

18. **If known, how was the material being applied: (READ OUT. CHECK ALL THAT APPLY)**

- 1  Stockpiled
- 2  Spread
- 3  Sprayed
- 4  Injected
- 5  Other \_\_\_\_\_
- 6  Don't know

19. **On what day or days did you notice that material was being applied? (IF UNKNOWN, ASK FOR THEIR BEST ESTIMATE)**

(MM/DD/YY): \_\_\_\_/\_\_\_\_/\_\_\_\_ (MM/DD/YY): \_\_\_\_/\_\_\_\_/\_\_\_\_ (MM/DD/YY): \_\_\_\_/\_\_\_\_/\_\_\_\_

(MM/DD/YY): \_\_\_\_/\_\_\_\_/\_\_\_\_ (MM/DD/YY): \_\_\_\_/\_\_\_\_/\_\_\_\_ (MM/DD/YY): \_\_\_\_/\_\_\_\_/\_\_\_\_

(MM/DD/YY): \_\_\_\_/\_\_\_\_/\_\_\_\_ (MM/DD/YY): \_\_\_\_/\_\_\_\_/\_\_\_\_ (MM/DD/YY): \_\_\_\_/\_\_\_\_/\_\_\_\_

20. **How many days total did you notice that material was being applied? (CHECK ONE. IF APPLICATION WAS INTERMITTENT, RECORD THE TOTAL # OF DAYS)**

- 1  1-2
- 2  3-5
- 3  6-7
- 4  8-14
- 5  15-21
- 6  21+

21. **If known, where was the application occurring in relation to your property? Please provide descriptive information that could help somebody locate the site of application for investigation purposes, for example, a road or landmark. (WRITE RESPONSE)**

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22. If known, what was the weather like during application? (CHECK ALL THAT APPLY)

- 1  Sunny/clear  
 2  Rainy  
 3  Windy  
 4  Snowy  
 5  Other \_\_\_\_\_  
 6  Don't remember/Don't know

23. Did you notice any land application material near your home or on the roads near your home? (CHECK ONE)

- 1  No  
 2  Yes

24. Did you notice more insects, rodents, or birds on or near your property than usual? (CHECK ONE)

- 1  No (Skip to 26)  
 2  Don't know/Don't remember  
 3  Yes



25. (If Yes) Please describe: \_\_\_\_\_

26. Did you detect any odors associated with the land application material? (CHECK ONE)

- 1  No (Skip to 38)  
 2  Yes



27. (If Yes) Please describe the odor: (WRITE RESPONSE) \_\_\_\_\_

28. What was the level of odor? (READ OUT. CHECK ONE)

- 1  Faint  
 2  Moderate  
 3  Strong

29. What day did you first notice the odor? (IF UNKNOWN, ASK FOR BEST ESTIMATE.)

(MM/DD/YY): \_\_\_\_ / \_\_\_\_ / \_\_\_\_

30. How many days total did you notice the odor, including days when the odor came back after going away? (CHECK ONE)

- 1  Less than 1 day  
 2  1-2 days  
 3  3-4 days  
 4  5-6 days  
 5  1 week  
 6  More than 1 week

31. **Is the odor still present?** (CHECK ONE)

- 1  No  
2  Yes

32. **Did you choose not to open windows because of the presence of outside odors?** (CHECK ONE)

- 1  No  
2  Yes

33. **Did you choose not to go outside or alter your outdoor activities because of the presence of outside odors?** (CHECK ONE)

- 1  No  
2  Yes

34. **Is there anything that you wanted to do at or near your home but chose not to because of the presence of outside odors?** (CHECK ONE)

- 1  No (Skip to 36)  
2  Yes



35. **(If Yes) Please describe:** (WRITE RESPONSE) \_\_\_\_\_

36. **Is there anything that you did differently or with difficulty because of the presence of outside odors?** (CHECK ONE)

- 1  No (Skip to 38)  
2  Yes



37. **(If Yes) Please describe:** (WRITE RESPONSE) \_\_\_\_\_

38. **Did you notice any dust?** (CHECK ONE)

- 1  No (Skip to 40)  
2  Yes



39. **Where did you see the dust?** (WRITE RESPONSE) \_\_\_\_\_

**VI. HOUSEHOLD INFORMATION**

The next questions are related to your household.

40. How long have you lived at your current residence? (CHECK ONE)

- 1  Under 1 year
- 2  1-2 years
- 3  3-5 years
- 4  6-10 years
- 5  11-20 years
- 6  More than 20 years
- 7  Don't know/can't remember

41. What is the source of your drinking water at home? (READ OUT. CHECK ONE)

- 1  Public water supply, e.g., city, county, town, village
- 2  Private household well
- 3  Private community water supply
- 4  Other
- 5  Don't know

42. During the seven days prior to your symptoms, did you notice any change in the color, taste, or smell of your water?

- 1  No
- 2  Yes

43. Do you have a septic system on your property? (CHECK ONE)

- 1  No
- 2  Yes

44. Do you have pets? (CHECK ONE)

- 1  No (Skip to 46)
- 2  Yes



45. (If Yes) Do they have access to fields where land application occurs?

- 1  No
- 2  Yes
- 3  Don't know

46. Do you have farm animals? (CHECK ONE)

- 1  No (Skip to 48)
- 2  Yes



47. (If Yes) Do they have access to fields where land application occurs?

- 1  No  
 2  Yes  
 3  Don't know

## VII. PERSONAL HEALTH INFORMATION

Next, I will ask you about your health and certain health behaviors.

48. I will read you a list of conditions. Please respond "yes" or "no" if you have any of the following conditions? (READ EVERY CONDITION AND RECORD PERTINENT INFORMATION FOR EACH CONDITION.)

CONDITION	No	Yes		No	Yes
a. Hay fever/Pollen/Allergies	No 1 <input type="checkbox"/>	Yes 2 <input type="checkbox"/>	→ (If Yes) Has the condition worsened since your health concern began?	No 1 <input type="checkbox"/>	Yes 2 <input type="checkbox"/>
b. Asthma	No 1 <input type="checkbox"/>	Yes 2 <input type="checkbox"/>	→ (If Yes) Has the condition worsened since your health concern began?	No 1 <input type="checkbox"/>	Yes 2 <input type="checkbox"/>
c. Chronic Bronchitis	No 1 <input type="checkbox"/>	Yes 2 <input type="checkbox"/>	→ (If Yes) Has the condition worsened since your health concern began?	No 1 <input type="checkbox"/>	Yes 2 <input type="checkbox"/>
d. Skin Allergies	No 1 <input type="checkbox"/>	Yes 2 <input type="checkbox"/>	→ (If Yes) Has the condition worsened since your health concern began?	No 1 <input type="checkbox"/>	Yes 2 <input type="checkbox"/>
e. Food Allergies	No 1 <input type="checkbox"/>	Yes 2 <input type="checkbox"/>	→ (If Yes) Has the condition worsened since your health concern began?	No 1 <input type="checkbox"/>	Yes 2 <input type="checkbox"/>
f. Other Allergies	No 1 <input type="checkbox"/>	Yes 2 <input type="checkbox"/>	→ (If Yes) Has the condition worsened since your health concern began?	No 1 <input type="checkbox"/>	Yes 2 <input type="checkbox"/>

49. Do you smoke cigarettes? (CHECK ONE)

- 1  No  
 2  Yes

50. During the seven days prior to your symptoms, did you swim in a body of water (other than a swimming pool) near fields where soil amendments were applied? (CHECK ONE)

- 1  No (Skip to 52)  
 2  Yes



51. (If Yes) Please describe: (PROBE: HOW FAR IS THE BODY OF WATER FROM THE LAND APPLICATION FIELDS? WRITE RESPONSE) \_\_\_\_\_

**VIII. DEMOGRAPHIC INFORMATION**

Next, I will ask a few questions about your age, race, and occupation.

52. **In what age group do you belong?** (READ OUT. CHECK ONE)

- 1  <18 (WRITE AGE) \_\_\_\_\_
- 2  18-24
- 3  25-34
- 4  35-44
- 5  45-54
- 6  55-64
- 7  65+

53. **Do you consider your race to be . . . ?** (READ OUT. CHECK ALL THAT APPLY)

- 1  White or Caucasian
- 2  Black or African American
- 3  American Indian or Alaska Native
- 4  Asian
- 5  Native Hawaiian or other Pacific Islander
- 6  Mixed
- 7  Other: (WRITE RESPONSE) \_\_\_\_\_
- 8  Don't know/refused (DO NOT READ)

54. **Are you of Hispanic, Latino, Latina or Spanish origin?** (CHECK ONE)

- 1  No
- 2  Yes
- 3  Don't know/refused (DO NOT READ)

55. **What is the highest level of education that you completed?** (CHECK ONE)

- 1  Less than high-school diploma
- 2  High-school graduate
- 3  Some college, no degree
- 4  Associate degree
- 5  Bachelor's degree
- 6  Master's degree
- 7  Professional degree
- 8  Doctoral degree

56. **What is your gender?** (ONLY ASK IF THERE IS UNCERTAINTY ABOUT THE RESIDENT'S GENDER. OTHERWISE SILENTLY RECORD. CHECK ONE.)

- 1  Male
- 2  Female
- 3  Don't know/refused (DO NOT READ)

**IX. CLOSING**

**If it would help the investigation, would it be okay if an investigator visited your property to further inspect possible evidence of land application and compliance with application standards? (IF RESIDENT IS CONCERNED ABOUT CONFIDENTIALITY, REMIND THEM THAT THEIR ADDRESS WILL ONLY BE USED DURING THE INVESTIGATION TO LOCATE THEIR PROPERTY, BUT WILL NOT BE LINKED TO THEIR NAME OR OTHER INFORMATION THAT COULD IDENTIFY THEM.)**

- 1  No  
2  Yes

**Thank you very much for reporting your concern(s) and answering these questions that will help us better understand what you and others like you may be experiencing. We would like to remind you that if you requested confidentiality before we began the questionnaire, the information that you provide will not be linked to your name or other information that could identify you, except to contact you and locate the site of concern if it is determined that a follow-up site investigation is necessary. Please feel free to call back with questions, comments or concerns as needed. Note to Interviewer: If resident agreed to allow you to speak with other members of the household, please ask to do so now.**