UNITED STATES ARMY
ENVIRONMENTAL HYGIENE
AGENCY
ABERDEEN PROVING GROUND, MD 21010-5422

OCCUPATIONAL AND ENVIRONMENTAL HEALTH
GUIDELINES FOR THE EVALUATION AND CONTROL
OF ASBESTOS EXPOSURE

DTIC ELECTED
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Approved for public release; distribution unlimited.
This technical guide will be republished as TB MED 513 within a year.

Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) to Commander, US Army Environmental Hygiene Agency, ATTN: HSHB-MO, Aberdeen Proving Ground, MD 21010-5422.
**Title**: Occupational and Environmental Health Guidelines for the Evaluation and Control of Asbestos Exposure (Unclassified)

**Abstract**: This publication provides preventive medicine information and guidance about controlling asbestos exposure. It applies to military and civilian personnel and onpost dependents worldwide who are occupationally or nonoccupationally exposed to asbestos.
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Glossary
USAEHA TECHNICAL GUIDE NO. 148

OCCUPATIONAL AND ENVIRONMENTAL HEALTH

GUIDELINES FOR THE EVALUATION AND CONTROL OF ASBESTOS EXPOSURE

1. PURPOSE. This publication--
   a. Provides preventive medicine information and guidance about controlling asbestos exposure.
   b. Applies to military and civilian personnel and on-post dependents worldwide who are occupationally or nonoccupationally exposed to asbestos.

2. REFERENCES. Required and related publications are listed in the Appendix A.

3. EXPLANATION OF ABBREVIATIONS AND TERMS. Abbreviations and special terms used in this publication are explained in the glossary.

4. RESPONSIBILITIES.
   a. Installation commanders will establish the installation asbestos management program per AR 11-AA.
   b. Preventive medicine personnel will--
      (1) Perform medical surveillance (para 7).
      (2) Measure individual exposures and workplace air concentrations (para 8).
      (3) Participate in the assessment process (para 10).

(4) Perform cleanup sampling when not conducted as part of a cleanup contract (para 12).

(5) Advise about the types of personal protective equipment needed (para 13).

(6) Maintain all records per paragraph 14.

(7) Coordinate with safety and Directorate of Engineering and Housing (DEH) personnel to provide assistance in the areas of exposure control and work practices.

c. The DEH personnel will administer the asbestos control program for real property per AR 11-AA and TM 5-XXX.

5. TECHNICAL ASSISTANCE.

a. Continental United States. Requests will be forwarded through command channels to the Commander, US Army Environmental Hygiene Agency, Aberdeen Proving Ground, MD 21010-5422, with a copy furnished to the Commander, US Army Health Services Command, ATTN: HSCL-P, Fort Sam Houston, TX 78234-6000.

b. Outside Continental United States. Requests from the--

(1) US Army Europe and Seventh Army areas of responsibility will be forwarded through command channels to the Commander, 7th Medical Command, ATTN: AEEMPS-PM, APO New York 09102.

(2) US Army Western Command, US Army Japan, and Eighth US Army areas of responsibility will be forwarded through command channels to Commander, US Army Pacific Environmental Health Engineering Agency-Sagami, APO San Francisco 96343-0079.

(3) US Southern Command areas of responsibility will be forwarded through command channels to the Commander, US Southern Command, ATTN: SCSG, APO Miami 34003.

(4) Installation medical support in Panama will be forwarded through Commander, US Army Medical Department Activity Panama to the Commander, US Army Environmental Hygiene Agency, Aberdeen Proving Ground, MD 21010-5422 with a copy furnished to the Commander, US Army Health Services Command, ATTN: HSCL-P, Fort Sam Houston, TX 78234-6000 and Commander, US Southern Command, ATTN: SCSG, APO Miami 34003.

6. BACKGROUND.

a. Inhaling asbestos fibers can cause asbestosis, a serious fibrotic lung disease, and an increased risk of cancer. A latency period on the order of 20 years between first exposure to asbestos and the appearance of the disease may be anticipated.
b. Since a synergistic effect occurs between asbestos exposure and cigarette smoking, smokers who work with asbestos have a much higher potential of developing lung cancer than do nonsmokers. However, available data indicate that those who stop smoking will gradually reduce this risk to a level no greater than that of nonsmoking asbestos workers.

c. Asbestos is found not only in the workplace but in housing, schools, hospitals, and recreational and administrative buildings.

(1) Asbestos has been used for high temperature insulation, fire-proofing, brake shoes and clutch linings, cementitious products, floor tiles, roofing shingles, various gasket materials, and other miscellaneous products. Other forms of asbestos are the woven fiber types such as hot mitts, fire blankets, and welding curtains.

(2) Typical work tasks involving asbestos have included--

(a) Installing, repairing, or removing asbestos insulation on furnaces, boilers, pipes, and other heating distribution systems.

(b) Spraying or troweling asbestos materials on walls and ceilings for fireproofing, sound reduction, and decorative purposes.

(c) Sawing, sanding, or grinding fire retardant building materials.

(d) Replacing or removing brake shoes and clutch linings.

(e) Demolishing or renovating buildings.

7. MEDICAL SURVEILLANCE.

a. Preplacement examinations. Before being assigned to an occupation with exposure to airborne concentrations of asbestos at or above the action level (see glossary) or to an area where respirators are worn, employees will receive a preplacement medical evaluation to include--

(1) Comprehensive medical and work histories to elicit symptomatology of respiratory disease, smoking history, and any past exposure to asbestos.

(2) A physical examination with emphasis on respiratory, cardiovascular, and gastrointestinal systems.

(3) Clinical laboratory studies. Specifically--

(a) Chest x-ray, 14 x 17 inches, posterior-anterior. Note: Interpretation and classification will only be performed by a B-reader, a board eligible/certified radiologist, or an experienced physician with known expertise in pneumoconioses. All interpreters will have a set of the ILO-U/C International Classification of Radiographs for Pneumoconioses, 1980, immediately available for reference.
(b) Pulmonary function tests to include measurement of forced vital capacity and forced expiratory volume at one second. (See TB MED 509.)

(4) Completion of respiratory disease standardized questionnaire which appears as part 1 in Appendix B.

b. Annual examinations.

(1) The medical evaluation will be performed annually for those employees exposed at or above the action level. Construction/demolition workers who are not exposed consistently will be examined within 10 working days of their thirtieth day of exposure at or above the action level during 1 year. Examinations will be conducted on such workers annually thereafter.

(2) Content of annual examinations will be as discussed in paragraph a above, except:

(a) Chest x-ray evaluations will be conducted at the discretion of the physician for construction and demolition workers.

(b) Chest x-ray evaluations for all other workers will be conducted every 5 years until the elapsed time since first exposure reaches 10 years or greater. At such time, the frequency of chest x-ray evaluation will be every 2 years for workers between 35 and 45 years of age, and yearly for those workers who have attained the age of 45 years or greater.

(c) All employees will complete the abbreviated respiratory disease standardized questionnaire which appears as Part 2 in Appendix B.

c. Termination of employment examinations.

(1) The medical evaluation listed in paragraph b above will be made available to any employee who has been exposed to asbestos at or above the action level. This examination will be performed within 30 calendar days before or after termination of employment.

(2) No examination is required if the employee has undergone an examination specified in paragraphs a or b above within the past year.

d. Physician's statement.

(1) The examining physician will include a written signed statement in the employee's medical record stating--

(a) The results of the examination.

(b) Information as to whether the employee has any medical condition which would place the employee at increased risk of health impairment subsequent to asbestos exposure.
(c) Recommended limitation on use of personal protective equipment by the employee.

(d) A statement that the employee has been appraised of the examination results and of any conditions which may be related to asbestos exposure.

(2) Per 51 FR 22738, the employer will obtain the written signed statement from the examining physician and provide a copy to the affected employee within 30 days from its receipt.

8. OCCUPATIONAL EXPOSURE.

a. The following provisions are adopted in their entirety:


(2) Section 1926.58, title 29, CFR, as added by 51 FR 22756.

b. These provisions will be superseded by any more stringent provisions set by the Occupational Safety and Health Administration or adopted by the American Conference of Governmental Industrial Hygienists.

9. NONOCCUPATIONAL EXPOSURE.

a. Likely Locations. Nonoccupational exposures to asbestos fibers are most likely in those locations which do contain asbestos and--

(1) Have a high activity or traffic level such as halls and laboratories.

(2) Have a high potential for disturbance of the asbestos material such as recreational areas (gymnasiums).

(3) Have highly exposed surface areas such as auditorium and hallway walls and ceilings.

b. Exposure Limit. Soldiers, employees, and family members will not be nonoccupationally exposed to airborne concentrations of asbestos exceeding the greater of the outdoor ambient concentration or the minimum level detectable by the method specified in 51 FR 22739. This exposure limit is necessary until such time as a nationally recognized nonoccupational asbestos exposure standard is established.

10. ASSESSING THE NEED FOR CORRECTIVE ACTION.

a. The potential for exposure to asbestos fibers from structural sources in both the nonoccupational and occupational settings is determined by an assessment process which includes:

(1) Bulk sampling to determine the presence of asbestos.
(2) Evaluation of factors which influence asbestos fiber release and transport, and the potential for personal exposures to asbestos.

b. The factors to be evaluated include:

(1) Factors relating to current conditions that have evidence of--
   (a) Deterioration or delamination from substrate.
   (b) Physical damage.
   (c) Water damage.

(2) Factors relating to potential for future damage, disturbance, or erosion which have--
   (a) Proximity to air plenum or direct airstream.
   (b) Accessibility to building occupants and maintenance personnel.
   (c) Frequency of normal use and required maintenance in the area.
   (d) Activity and vibration likely to cause fiber release.
   (e) Life-cycle projection for the building: planned change in use, renovation, or demolition.

(3) Other factors--
   (a) Inherent friability of asbestos-containing material.
   (b) Percent asbestos content.
   (c) Number of usual occupants and duration of occupancy.

c. Apply simple, qualitative "present/absent" or "high/low" ratings to the factors. In paragraphs b(1) and b(2) above. Refer to the US Environmental Protection Agency (EPA) Publication No. 560/S-85-024 for more details on these factors. Avoid the use of elaborate schemes which apply numerical ratings to each factor and then combine scores into an overall "exposure index."

d. The assessment process may be supplemented, where appropriate, by air samples. However, a negative (none detected) air sample result is not sufficient evidence to discount the possibility of asbestos exposure at other times and under other circumstances.
e. By determining the likelihood of asbestos fiber release, this assessment process determines if corrective actions are needed and how urgently (when) corrective actions are needed. The decision on which corrective action to take must consider the nature and location of asbestos-containing materials, as well as other factors. Details on this selection process are contained in TM 5-XXX.

11. CONTROL ACTIONS.

a. Based on the results of the assessment (paragraph 10) and on other professional judgmental considerations, DEH will take action to control exposure to asbestos (AR 11-AA and TM 5-XXX).

b. The decision upon a control action will be preceded by, and supported by, the assessment. In particular, asbestos-containing materials should not be removed for the sole purpose of eliminating asbestos.

c. Ultimate control of asbestos exposure will be incorporated into the installation abatement program (AR 11-AA and TM 5-XXX).

d. Guidelines for the disposal of asbestos will be included in AR 11-AA and TM 5-XXX.

12. CLEANUP AIR MONITORING AND SAMPLING. Cleanup air monitoring is required in addition to the sampling required by 51 FR 22757. The cleanup air concentration level should not be regarded as a nonoccupational exposure limit or be used to determine when abatement action should be initiated.

a. Prior to initiating removal action, take three general area air samples to determine an airborne concentration baseline.

b. Within 48 hours after the removal action has been completed, take three general air samples. If the concentration is greater than the baseline or greater than 0.01 fiber (longer than 5 micrometers) per cubic centimeter of air, the area should be recleaned and resampled.

c. After completion of the removal action, perform a complete visual inspection to ensure that dust-free conditions exist. If this is not the case, the area should be recleaned and reinspected.

d. Before resuming normal operations, the level of cleanliness measured against the criteria in paragraphs b and c must be met.

e. Cleanup air samples (para a and b above) can be analyzed by optical (phase contrast) or electron microscopy. Samples to be analyzed by optical microscopy should be collected at a flow rate of 2 to 12 liters per minute on 37 mm diameter open face, 0.8 micrometer pore, cellulose ester filters (1 to 5 liters per minute if 25 mm diameter filters are used). To ensure a detection limit of 0.01 fiber per cubic centimeter, a minimum volume of
approximately 3000 liters should be sampled through 37 mm diameter filters (1300 liters through 25 mm diameter filters). Samples to be analyzed by electron microscopy will require smaller air volumes.

13. PERSONAL PROTECTIVE EQUIPMENT. The local preventive medicine or industrial hygiene authority should make specific recommendations on personal protective equipment and work practices to be used during asbestos operations.

14. RECORDKEEPING. Recordkeeping requirements are outlined in AR 40-5, paragraph 5-17, and TB MED 503, paragraph 3-2f.
Section I
Required Publications


Section II
Related Publications

A related publication is merely a source of additional information. The user does not have to read it to understand this publication.

AR 11-XX  (Respiratory Protection Program) (to be published)

TN 5-XXX  (Asbestos Control) (to be published)

TB MED 502  (Respiratory Protection Program)

TB MED 509  (Pulmonary Function Testing in Occupational Health Surveillance) (in press)

EPA Publication
No. 560/5-85-024  (Guidance for Controlling Asbestos-Containing Materials in Buildings). (Copies of this publication may be obtained from the Superintendent of Documents, US Government Printing Office, Washington, DC 20402)
This appendix is extracted from 51 FR 22747. It contains the medical questionnaire that will be administered to all employees who are exposed to asbestos, tremolite, anthophyllite, actinolite, or a combination of these minerals above the action level, and who will therefore be included in the medical surveillance program. Part 1 of the appendix contains the initial medical questionnaire which will be obtained for all new employees who will be covered by the medical surveillance requirements. Part 2 includes the abbreviated periodic medical questionnaire which will be administered to all employees who are provided periodic medical examinations under the medical surveillance provisions of this publication.
Part 1
INITIAL MEDICAL QUESTIONNAIRE

1. NAME ____________________________

2. SOCIAL SECURITY # 1 2 3 4 5 6 7 8 9

3. CLOCK NUMBER 10 11 12 13 14 15

4. PRESENT OCCUPATION ____________________________

5. PLANT ____________________________

6. ADDRESS ____________________________ (Zip Code)

7. ____________________________

8. TELEPHONE NUMBER ____________________________

9. INTERVIEWER ____________________________

10. DATE ____________________________ 16 17 18 19 20 21

11. Date of Birth
    Month Day Year 22 23 24 25 26 27

12. Place of Birth ____________________________

13. Sex 1. Male 2. Female


16. What is the highest grade completed in school? ____________________________
    (For example 12 years is completion of high school)

OCCUPATIONAL HISTORY

17A. Have you ever worked full time (30 hours per week or more) for 6 months or more? 1. Yes 2. No

IF YES TO 17A:

B-2
B. Have you ever worked for a year or more in any dusty job?  
1. Yes  2. No  3. Does Not Apply  
Specify job/industry ________________________ Total Years Worked ______

C. Have you ever been exposed to gas or chemical fumes in your work?  
1. Yes  2. No  
Specify job/industry ________________________ Total Years Worked ______

D. What has been your usual occupation or job—the one you have worked at the longest?  
1. Job occupation ________________________________
2. Number of years employed in this occupation ____________________
3. Position/job title ________________________________
4. Business, field or industry _________________________

(Record on lines the years in which you have worked in any of these industries, e.g. 1960-1969)

Have you ever worked: YES NO

E. In a mine? ........................................... ____ ____
F. In a quarry? ........................................... ____ ____
G. In a foundry? ........................................... ____ ____
H. In a pottery? ........................................... ____ ____
I. In a cotton, flax or hemp mill? ...................... ____ ____
J. With asbestos? ........................................... ____ ____

18. PAST MEDICAL HISTORY

A. Do you consider yourself to be in good health? ............... ____ ____
   If "NO" state reason ________________________________

B. Have you any defect of vision? ............................ ____ ____
   If "YES" state nature of defect ________________________

C. Have you any hearing defect? ............................. ____ ____
   If "YES" state nature of defect ________________________
D. Are you suffering from or have you ever suffered from: YES NO
   a. Epilepsy (or fits, seizures, convulsions)? ..........
   b. Rheumatic fever? ...................................
   c. Kidney disease? .....................................
   d. Bladder disease? ....................................
   e. Diabetes? ...........................................
   f. Jaundice? ............................................

19. CHEST Colds AND CHEST ILLNESSES

19A. If you get a cold, does it usually go to your chest? (Usually means more than 1/2 the time) 1. Yes 2. No
     3. Don't get colds

20A. During the past 3 years, have you had any chest illnesses that have kept you off work, indoors at home, or in bed?
     1. Yes 2. No
     IF YES TO 20A:
     B. Did you produce phlegm with any of these chest illnesses? 1. Yes 2. No
        3. Does not apply
     C. In the last 3 years, how many such illnesses with (increased) phlegm did you have which lasted a week or more? Number of illnesses 1. Yes No such illness 2. No

21. Did you have any lung trouble before the age of 16? 1. Yes 2. No

22. Have you ever had any of the following?
   1A. Attacks of bronchitis? 1. Yes 2. No
      IF YES TO 1A:
      B. Was it confirmed by a doctor? 1. Yes 2. No
         3. Does Not Apply
      C. At what age was your first attack? Age in Years
         Does Not Apply
   2A. Pneumonia (include bronchopneumonia)? 1. Yes 2. No
IF YES TO 2A:
   B. Was it confirmed by a doctor?  1. Yes ___ 2. No ___
       3. Does Not Apply ___
   C. At what age did you first have it? Age in Years
       Does Not Apply ___

3A. Hay Fever?
   IF YES TO 3A:
       B. Was it confirmed by a doctor? 1. Yes ____ 2. No ___
          3. Does Not Apply ___
   C. At what age did it start? Age in Years
       Does Not Apply ___

23A. Have you ever had chronic bronchitis?
   IF YES TO 23A:
       B. Do you still have it? 1. Yes ___ 2. No ___
          3. Does Not Apply ___
       C. Was it confirmed by a doctor? 1. Yes ___ 2. No ___
          3. Does Not Apply ___
       D. At what age did it start? Age in Years
          Does Not Apply ___

24A. Have you ever had emphysema?
   IF YES TO 24A:
       B. Do you still have it? 1. Yes ___ 2. No ___
          3. Does Not Apply ___
       C. Was it confirmed by a doctor? 1. Yes ___ 2. No ___
          3. Does Not Apply ___
       D. At what age did it start? Age in Years
          Does Not Apply ___

25A. Have you ever had asthma?
   IF YES TO 25A:
       B. Do you still have it? 1. Yes ___ 2. No ___
          3. Does Not Apply ___
C. Has it confirmed by a doctor? 
1. Yes 2. No 3. Does Not Apply

D. At what age did it start? 
Age in Years ___ Does Not Apply ___

E. If you no longer have it, at what age did it stop? 
Age stopped ___ Does Not Apply ___

26. Have you ever had:

A. Any other chest illness? 
1. Yes 2. No

If yes, please specify _________________________________________

B. Any chest operations? 
1. Yes 2. No

If yes, please specify _________________________________________

C. Any chest injuries? 
1. Yes 2. No

If yes, please specify _________________________________________

27A. Has a doctor ever told you that you had heart trouble? 
1. Yes 2. No

IF YES TO 27A:

B. Have you ever had treatment for heart trouble in the past 10 years? 
1. Yes 2. No 3. Does Not Apply

28A. Has a doctor ever told you that you had high blood pressure? 
1. Yes 2. No

IF YES TO 28A:

B. Have you ever had any treatment for high blood pressure (hypertension) in the past 10 years? 
1. Yes 2. No 3. Does Not Apply

29. When did you last have your chest X-rayed? (Years) 25 26 27 28

30. Where did you last have your chest X-rayed (if known)? ___________________________

What was the outcome? ___________________________

FAMILY HISTORY

31. Were either of your natural parents ever told by a doctor that they had a chronic lung condition such as:

FATHER  
1. Yes 2. No 3. Don't Know

MOTHER  
1. Yes 2. No 3. Don't Know
A. Chronic Bronchitis?  

B. Emphysema?  

C. Asthma?  

D. Lung Cancer?  

E. Other Chest Conditions?  

F. Is parent currently alive?  

G. Please Specify Age if Living  

H. Please specify cause of death  

<table>
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<th>32A. Do you usually have a cough? (Count a cough with first smoke or on first going out of doors. Exclude clearing of throat.) [If no, skip to question 32C.]</th>
</tr>
</thead>
</table>
| 1. Yes  
| 2. No |

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<tr>
<th>32B. Do you usually cough as much as 4 to 6 times a day 4 or more days out of the week?</th>
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| 1. Yes  
| 2. No |

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<tr>
<th>32C. Do you usually cough at all on getting up or first thing in the morning?</th>
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</table>
| 1. Yes  
| 2. No |

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<tr>
<th>32D. Do you usually cough at all during the rest of the day or at night?</th>
</tr>
</thead>
</table>
| 1. Yes  
| 2. No |

**IF YES TO ANY OF ABOVE (32A, B, C, or D), ANSWER THE FOLLOWING. IF NO TO ALL, CHECK DOES NOT APPLY AND SKIP TO NEXT PAGE**

<table>
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<tr>
<th>32E. Do you usually cough like this on most days for 3 consecutive months or more during the year?</th>
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</table>
| 1. Yes  
| 2. No  
| 3. Does not apply |

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<tr>
<th>32F. For how many years have you had the cough?</th>
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</table>
| Number of years  
| Does not apply |
33A. Do you usually bring up phlegm from your chest? (Count phlegm with the first smoke or on first going out of doors. Exclude phlegm from the nose. Count swallowed phlegm.) (If no, skip to 33C)
   1. Yes  2. No

B. Do you usually bring up phlegm like this as much as twice a day or more days out of the week?
   1. Yes  2. No

C. Do you usually bring up phlegm at all on getting up or first thing in the morning?
   1. Yes  2. No

D. Do you usually bring up phlegm at all during the rest of the day or at night?
   1. Yes  2. No

IF YES TO ANY OF ABOVE (33A, B, C, or D), ANSWER THE FOLLOWING. IF NO TO ALL, CHECK DOES NOT APPLY AND SKIP TO 34A.

E. Do you bring up phlegm like this on most days for 3 consecutive months or more during the year?
   1. Yes  2. No  3. Does not apply

F. For how many years have you had trouble with phlegm?
   Number of years ___
   Does not apply ___

EPISODES OF COUGH AND PHLEGM

34A. Have you had periods or episodes of (increased*) cough and phlegm lasting 3 weeks or more each year? *(for persons who usually have cough and/or phlegm)
   1. Yes  2. No

IF YES TO 34A:

B. For how long have you had at least 1 such episode per year?
   Number of years ___
   Does not apply ___

WHEEZING

35A. Does your chest ever sound wheezy or whistling?
   1. When you have a cold?
      1. Yes  2. No
   2. Occasionally apart from colds?
      1. Yes  2. No
   3. Most days or nights?
      1. Yes  2. No
TG No. 148

IF YES TO 1, 2, or 3 in 35A
B. For how many years has this been present?
   Number of years ___
   Does not apply ___

36A. Have you ever had an attack of wheezing that has made you feel short of breath?
   1. Yes ___ 2. No ___

IF YES TO 36A:
B. How old were you when you had your first such attack?
   Age in years ___
   Does not apply ___
C. Have you had 2 or more such episodes?
   1. Yes ___ 2. No ___
   3. Does not apply ___
D. Have you ever required medicine or treatment for the(se) attack(s)?
   1. Yes ___ 2. No ___
   3. Does not apply ___

BREATHLESSNESS
37. If disabled from walking by any conditions other than heart or lung disease, please describe and proceed to question 39A.
   Nature of condition(s) ___________________________

38A. Are you troubled by shortness of breath when hurrying on the level or walking up a slight hill?
   1. Yes ___ 2. No ___

IF YES TO 38A:
B. Do you have to walk slower than people your age on the level because of breathlessness?
   1. Yes ___ 2. No ___
   3. Does not apply ___
C. Do you ever have to stop for breath when walking at your own pace on the level?
   1. Yes ___ 2. No ___
   3. Does not apply ___
D. Do you ever have to stop for breath after walking about 100 yards (or after a few minutes) on the level?
   1. Yes ___ 2. No ___
   3. Does not apply ___
E. Are you too breathless to leave the house or breathless on dressing or climbing one flight of stairs?
   1. Yes ___ 2. No ___
   3. Does not apply ___

TOBACCO SMOKING
39A. Have you ever smoked cigarettes? (No means less than 20 packs of cigarettes or 12 oz. of tobacco in a lifetime or less than 1 cigarette a day for 1 year.)
   1. Yes ___ 2. No ___
IF YES TO 39A:

B. Do you now smoke cigarettes (as of one month ago)  
   1. Yes  2. No  3. Does not apply

C. How old were you when you first started regular cigarette smoking?  
   Age in years  
   Does not apply

D. If you have stopped smoking cigarettes completely, how old were you when you stopped?  
   Age stopped  
   Check if still smoking  
   Does not apply

E. How many cigarettes do you smoke per day now?  
   Cigarettes per day  
   Does not apply

F. On the average of the entire time you smoked, how many cigarettes did you smoke per day?  
   Cigarettes per day  
   Does not apply

G. Do or did you inhale the cigarette smoke?  

40A. Have you ever smoked a pipe regularly?  
   (Yes means more than 12 oz. of tobacco in a lifetime.)  
   1. Yes  2. No

IF YES TO 40A:
FOR PERSONS WHO HAVE EVER SMOKED A PIPE

B. 1. How old were you when you started to smoke a pipe regularly?  
    Age

    2. If you have stopped smoking a pipe completely, how old were you when you stopped?  
    Age stopped  
    Check if still smoking pipe  
    Does not apply

C. On the average over the entire time you smoked a pipe, how much pipe tobacco did you smoke per week?  
   oz. per week (a standard pouch of tobacco contains 1 1/2 oz.)  
   Does not apply

D. How much pipe tobacco are you smoking now?  
   oz. per week  
   Not currently smoking a pipe

E. Do you or did you inhale the pipe smoke?  

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41A. Have you ever smoked cigars regularly? (Yes means more than 1 cigar a week of a year.)

1. Yes  2. No

IF YES TO 41A:
FOR PERSONS WHO HAVE EVER SMOKED CIGARS

B. 1. How old were you when you started smoking cigars regularly? Age ___.

2. If you have stopped smoking cigars completely, how old were you when you stopped? Age stopped ____ Check if still smoking cigars ____

Does not apply ____

C. On the average over the entire time you smoked cigars, how many cigars did you smoke per week? Cigars per week ____ Does not apply ____

D. How many cigars are you smoking per week now? Cigars per week ____ Check if not smoking cigars currently ____

E. Do or did you inhale the cigar smoke?

1. Never smoked ____
2. Not at all ____
3. Slightly ____
4. Moderately ____
5. Deeply ____

Signature __________________________ Date __________________________
1. NAME __________________________________________________________

2. SOCIAL SECURITY # 1 2 3 4 5 6 7 8 9

3. CLOCK NUMBER 10 11 12 13 14 15

4. PRESENT OCCUPATION ____________________________________________

5. PLANT __________________________________________________________

6. ADDRESS _______________________________________________________

7. ___________________________________________________________(Zip Code)

8. TELEPHONE NUMBER ____________________________________________

9. INTERVIEWER ___________________________________________________

10. DATE ___________ ___________ ___________ ___________ ___________


12. OCCUPATIONAL HISTORY

12A. In the past year, did you work full time (30 hours per week or more) for 6 months or more?

1. Yes _____ 2. No _____

IF YES TO 12A:

B. In the past year, did you work in a dusty job?

1. Yes _____ 2. No _____ 3. Does Not Apply _____


D. In the past year, were you exposed to gas or chemical fumes in your work?

1. Yes _____ 2. No _____


F. In the past year, what was your: 1. Job/occupation? ____________________________

2. Position/job title? ____________________________
13. RECENT MEDICAL HISTORY

A. Do you consider yourself to be in good health?
   Yes ____ No ____
   If "NO" state reason ________________________________

B. In the past year, have you developed:
   Yes No
   Epilepsy? ____ ____
   Rheumatic fever? ____ ____
   Kidney disease? ____ ____
   Bladder disease? ____ ____
   Diabetes? ____ ____
   Jaundice? ____ ____
   Cancer? ____ ____

14. CHEST COOLS AND CHEST ILLNESSES

A. If you get a cold, does it usually go to your chest?
   (Usually means more than 1/2 the time)
   1. Yes ____ 2. No ____ 3. Don't get colds ____

15A. During the past year, have you had any chest illnesses that have kept you off work, indoors at home, or in bed?
   1. Yes ____ 2. No ____ 3. Does not apply ____
   IF YES TO 15A:

B. Did you produce phlegm with any of these chest illnesses?
   1. Yes ____ 2. No ____ 3. Does not apply ____

C. In the past year, how many such illnesses with (increased) phlegm did you have which lasted a week or more?
   Number of illnesses ____
   No such illnesses ____

16. RESPIRATORY SYSTEM

In the past year have you had:
   Yes or No Further Comment on Positive Answers
   __________
   Asthma
   Bronchitis
   Hay Fever
   Other Allergies

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<table>
<thead>
<tr>
<th>Condition</th>
<th>Yes or No</th>
<th>Further Comment on Positive Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumonia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuberculosis</td>
<td></td>
<td></td>
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<tr>
<td>Chest Surgery</td>
<td></td>
<td></td>
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<tr>
<td>Other Lung Problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Disease</td>
<td></td>
<td></td>
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<tr>
<td>Do you have:</td>
<td></td>
<td></td>
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<tr>
<td>Frequent colds</td>
<td></td>
<td></td>
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<tr>
<td>Chronic cough</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shortness of breath when walking or climbing one flight or stairs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheeze</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cough up phlegm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoke cigarettes</td>
<td>Packs per day</td>
<td>How many years</td>
</tr>
</tbody>
</table>

Date __________________________ Signature __________________________

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Section I
Abbreviations

CFR  Code of Federal Regulations
DEH  Directorate of Engineering and Housing
EPA  US Environmental Protection Agency
FR   Federal Register
TWA  time-weighted average

Section II
Terms

Action level
A workplace concentration of airborne asbestos fibers greater than or equal to 0.1 fiber, longer than 5 micrometers, per cubic centimeter of air, averaged over a 7 or 8 hour work shift.

Approved
Respiratory protection equipment tested and listed as satisfactory according to standards established by a competent authority (such as the National Institute for Occupational Safety and Health or the Mine Safety and Health Administration) to provide respiratory protection against the hazard for which it is designed. (The approval authority may be specified by law.)

Asbestos
General term used to describe six distinctive varieties of fibrous mineral silicates—chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

Nonoccupational exposure
Exposure to asbestos fibers that is not occupational as defined herein.

Occupational exposure
Exposure to asbestos fibers that occurs as a result of employment in an area containing asbestos materials or working with asbestos material as part of an occupational task.
END
DATE
FILMED
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