SAFE PRACTICE PROCEDURE NO. 4

SAFETY CONTROLS FOR ASBESTOS WORK AT BETTIS

1—INTRODUCTION

Significant exposures to asbestos may occur to Laboratory personnel during removal of insulation containing asbestos. Any sawing, cutting, or breaking up of asbestos-bearing materials may generate unacceptable levels of airborne asbestos. The primary danger of inhaling asbestos dust is the development of a lung condition called asbestosis. The development of asbestosis is related to the duration and degree of exposure. The threshold limit value (TLV) for all types of asbestos is 2 fibers per cc of air averaged over an 8-hour period. Fibers must be greater than 5 microns in length and have a 3:1 aspect ratio.

2—GENERAL

Asbestos work controls are for jobs involving the removal of asbestos insulation. These controls are not intended for jobs involving the normal use of welding blankets, protective equipment containing asbestos, asbestos ropes, gaskets, tapes, and gasket cements. Work involving the removal (demolition) or unusual handling of the above-mentioned items that might generate significant quantities of airborne asbestos fibers would be applicable to the controls for asbestos work. In any event, all work involving asbestos-bearing materials shall be performed in such a manner as to minimize the generation of airborne or surface deposition of asbestos fibers.

3—INFORMATION REQUIRED BEFORE BEGINNING JOB

Before beginning a job involving the removal of insulation, all materials shall be identified regarding the asbestos contained within. If materials to be used do not contain asbestos, the following asbestos work controls are not applicable.

If the asbestos content is not known, the substance is assumed to be asbestos, and all work controls apply.

4—ASBESTOS WORK PERMIT

Any person who plans to perform asbestos work, as defined in Section 2, that requires compliance with work controls must first obtain an "Asbestos Work Permit" from Safety Engineering (see Figure C.4-1). This is necessary so that Safety Engineering may (1) follow all significant asbestos work at Bettis, (2) review the performance of asbestos jobs to ensure compliance to required controls, and (3) implement breathing zone air sampling for selected jobs to assess asbestos fiber concentrations experienced related to specific jobs. Permits are issued after Safety Engineering has approved the specific procedure for the job.

Permits for second and third shift work are available in advance from Safety Engineering.

5—CONTROLS FOR WORKING WITH ASBESTOS

a. Rope off an area (about a 20-foot radius) around a job that involves the handling of asbestos. Use safety rope.

b. Post the area with signs identifying a potential airborne hazard and the requirement to wear respirators and coveralls when within the roped-off area. The sign shall have the following wording: "CAUTION - Airborne Asbestos - Respirators and Protective Clothing Required for Entry." These signs are available from Safety Engineering.

c. Any person who enters the asbestos work area must don a respirator approved for asbestos exposure. Used respirator filters shall be disposed of as asbestos waste. Respirators shall be thoroughly cleaned prior to removal from the asbestos work area if applicable. Approval for storeroom withdrawal of respirators is obtained from Safety Engineering prior to work start-up.

NO. _____

ASBESTOS WORK PERMIT

(TO BE POSTED AT WORK SITE)

DATE OF WORK _____ NAME(S) OF ASBESTOS WORKERS: BADGE NUMBER

LOCATION OF WORK _____ (1) _____ _____

_____ (2) _____ _____

_____ (3) _____ _____

DESCRIPTION OF WORK: _____

_____

_____

_____

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_____ _____

SIGNATURE (AREA SUPERVISOR)* SIGNATURE (SAFETY ENGINEERING)*

* SIGNATURES BY AREA SUPERVISORS AND SAFETY ENGINEERING ARE REQUIRED FOR ALL JOBS.

COMMENTS: _____

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Figure C.4-1. Asbestos Work Permit

d. Asbestos workers shall wear coveralls, gloves, surgeon's caps, and shoe covers when working within the asbestos work area. Used clothing shall be sealed in clear plastic bags for disposal after the work with asbestos. This clothing shall be removed before leaving the work area.

e. The spreading of asbestos fibers on the job shall be controlled by using the following techniques:

(1) Seal items with loose asbestos in clear plastic bags.

(2) Asbestos materials shall not be allowed to accumulate in the work area. Dust that might have settled out on surfaces shall be vacuumed using a vacuum cleaner with a HEPA-Filter, D.O.P.-tested exhaust system and/or cleaned by wet cleaning methods. No dry sweeping shall be performed. All asbestos work areas should be thoroughly cleaned before they are released to general traffic.

(3) The use of a water spray to wet down materials before they are cut, etc., substantially reduces the generation of dust. Insulation shall be wetted before removal, whenever possible.

(4) When tearing out old asbestos insulation, cutting materials, etc., the use of local exhaust at the point of dust generation via hoses connected to vacuum cleaners reduces the generation of airborne dust. Consider the use of an exhausted containment area, for example a tent or Nucon type bag, for larger asbestos jobs in the field.

(5) To contain the spreading of asbestos fibers measures may include:

(a) Isolating areas with curtains

(b) Portable partitions or plastic sheets

(c) Placing or suspending plastic sheets beneath work areas

(d) Enclosing the pipe with insulation in a sealed plastic sleeve and breaking insulation through the bag.

(6) Vacuum off tools before removing them from the work area.

(7) Dispose of asbestos-bearing scrap as soon as generated in sealed containers labeled as asbestos, that is, 55-gallon drums with sealable, double, clear plastic liners.

(8) Dispose of scrap drums of asbestos in accordance with the Pollution Control Manual for the Bettis Atomic Power Laboratory, EC-1 (IV-26).

6—STORAGE OF ASBESTOS-BEARING MATERIALS

Asbestos materials should be stored in sealed containers or sealed in plastic bags. Spillage from containers and bags must be vacuumed immediately to prevent dispersion.

7—NEW INSTALLATIONS OF INSULATION

All insulation jobs should be accomplished with asbestos-free materials, other asbestos substitutes are listed in Table C.4-1. Asbestos-free insulation materials such as Kalo tubing, cement, and block, are available from Bettis Stores. Immediately after installation of these materials, they must be stenciled as asbestos-free. These stencils are available from Works Engineering.

TABLE C.4-1. ASBESTOS SUBSTITUTES

Reinforcing Fiber

1. Glass
2. Aramid (Kevlar)
3. Cotton
4. Synthetic fibers (nylon, etc.)
5. Graphite
6. Alumina
7.
8. Spunbonded fibers
9. Boron

Heat Barrier

1. β glass
2. Ekonol
3. Kynol
4. Mineral wool
5. Calcium silicate
6. Calcined diatomateous silica
7. Glass foam
8. Alumina
9. Perlite
10. Sodium silicate
11. Alumina-silica
12. Gypsum board
13. Fiberfrax

Electrical Insulation

1. Kapton
2. Micarta
3. Nomex
4. Silicone elastomers
5. Viton
6. Polyimides
7. Polymer/concrete
8. Mica

Modifier

1. Cabosil
2. Poly (polyethylene oxide)
3. Methocel
4. Flakeglass
5. Mica
6. Mineral fillers
7. Fybex