Northern Arizona University
Asbestos O&M Program
First Revision: Implemented April 3, 2006

Introduction
This is the Northern Arizona University Asbestos Operations and Maintenance plan. This plan has been developed for use by University employees and contractors as a guide for completing service, cleaning and maintenance tasks which involve contact with or disturbance of asbestos containing building materials (ACBM). This document does not serve as a substitute for training required by local, state, or federal laws for asbestos workers or persons who work in buildings with asbestos. This document is designed for use as a supplement to the reader’s current asbestos training, and to local, state, and federal standards for the maintenance, repair, and removal of asbestos from buildings.

Due to the presence of asbestos in various buildings located on the University campus, this plan includes a number of elements which are designed to protect University employees, students, tenants, contractors, and other building occupants from exposure to asbestos in the course of day to day activities. The main purpose of this plan is to provide specific protocol for maintaining ACBM in university buildings in good condition and prevent disturbance. When small scale disturbance is necessary, or has occurred unintentionally, this plan will provide specific protocol for performing the cleanup or removal of ACBM in a way that will reduce or eliminate the risk of release of airborne asbestos fibers into the building and surrounding area. This plan does not address large scale abatement of asbestos, but deals specifically with day to day operations only.

The key elements which are included in this plan are:

1) Definitions

2) Notification program to inform workers, tenants, and building occupants where ACBM is located, and how and why to avoid disturbance.

3) Surveillance program to assess and document the condition of ACBM in buildings, and to trigger response actions when necessary.

4) Work permit/control system to prevent unauthorized disturbance of asbestos during scheduled maintenance and remodeling activities.
5) Specific work practices to be followed when working with ACBM which will reduce/eliminate the risk of disturbing asbestos, or which will control the release of fibers during intentional small scale disturbance activities.

6) Record keeping system to document the presence of asbestos, ongoing O&M activities, and abatement activities in buildings on the University campus.

7) Worker protection plan which includes medical surveillance and a respiratory protection plan when required.

8) Training program to ensure that university employees and contractors are properly trained and informed in the hazards of asbestos, local laws, and University policy on the disturbance, handling, and removal of asbestos.

9) University protocols and procedures for requesting asbestos surveys, work authorizations, and asbestos abatement.

10) Consequences of failing to comply with this Asbestos O&M plan and the University Safety Policy.

11) Important Contacts

12) Links

11) Attachments
Definitions

Abatement – The removal of asbestos containing building materials (ACBM) from a building using a specific set of work practices designed to protect workers and building occupants from exposure to asbestos fibers. Special training, materials, tools, protective measures, and engineering controls may be necessary.

AHERA – Acronym for the *Asbestos Hazard Emergency Response Act* – 40 CFR 763, Subpart E. This regulation governs the identification and management of Asbestos in K-12 schools. The AHERA requirements are currently the most stringent asbestos regulations in place, and are generally viewed as the state of the art and often adopted for non-AHERA facilities.

Asbestos – A group of naturally occurring magnesium silicate minerals which have a fibrous nature. Due to desirable physical properties, this mineral was used in a number of commercial and industrial applications including architectural finishes and insulation products. Asbestos fibers have known adverse health effects when inhaled.

Asbestos containing material (ACM) – A material or product which contains greater than 1% asbestos.

Asbestos containing building material (ACBM) - Asbestos containing material, including surfacing, thermal system insulation, and miscellaneous materials which are installed on the interior of a building.

APM (APM) – The person responsible for administering the University Operations & Maintenance plan.

Disturbance – Any activity which crumbles, pulverizes, or otherwise disrupts the matrix of ACM or Presumed ACM (PACM); or which generates visible debris or dust from the material; or which renders that material friable. Disturbance includes activities which impact only a small quantity of ACM or PACM.

Fiber – A particulate form of Asbestos which is 5 micrometers or longer, with a length-to-width ratio of at 3 to 1 or greater.

Friable – A condition referring to the ability of a material to be crumbled, pulverized, or reduced to powder by hand pressure; or a material which has previously been crumbled, pulverized, or reduced to a powder by any means.

Intact – ACM which has not deteriorated or been damaged. The matrix of an intact material remains undisrupted and the fibers remain bound within the matrix.

Miscellaneous ACM – Any ACM with the exception of surfacing materials, and Thermal System Insulation. Examples include mastics, floor coverings, and roofing materials.
Operations and Maintenance (O&M) – 1) Program or Plan; A program of work practices used to maintain ACBM in good condition, ensure cleanup of asbestos debris, and prevent ongoing release by controlling the disturbance of ACBM. 2) Work; Small scale, short duration asbestos removal which is performed in the course of day-to-day operations. The scale of O&M work is limited to the amount of debris which can be contained by a single 60”x60” trash bag or glove bag.

OSHA Class I asbestos work is work involving the removal of ACM or PACM Surfacing materials and TSI.

OSHA Class II asbestos work is work involving the removal of ACM which is not Surfacing or TSI.

OSHA Class III asbestos work is work involving the repair and maintenance of building systems which may involve the disturbance of ACM or PACM.

OSHA Class IV asbestos work is work which may put employees in contact with ACM or PACM materials, but where no disturbance occurs.

Presumed ACM (PACM) – Thermal system insulation or surfacing material installed in buildings constructed before 1981. This material is considered to contain asbestos until the designation has been rebutted by analytical methods described in 29 CFR 1926.1101 (k)(5).

Removal – Any operation where ACM or PACM is taken out or stripped from structures or substrates.

Surfacing ACM – Any ACM which is applied as a surface treatment. Examples include spray-applied fireproofing and acoustical ceiling textures.

Thermal System Insulation (TSI) ACM – Any ACM which is applied to pipes, boilers, boiler tanks, ducts, or other systems to prevent heat loss or gain. Examples include pipe insulation, duct wrap, and boiler tank insulation.

Notification

Building Occupants:
In boiler rooms, mechanical spaces, plenums, and other areas which contain ACBM and which are not areas of public access, warning signs alerting occupants to the presence of asbestos will be placed on the entry to that space. In addition, warning labels will be placed directly on friable ACBM materials including TSI Pipe insulation, boiler tank insulation, and duct seam tape. Materials which have a coarse texture that prevents the adhesion of labels will have labels affixed directly adjacent to the material at access points or in areas where disturbance is most likely. In this case the signage will include a description of the material which the signage refers to.

In-house workers and maintenance staff:
Cleaning and maintenance staff shall be briefed on the presence of asbestos in their area of responsibility. Notification may be accomplished through physical labeling of the ACBM where appropriate, verbal notification by the Asbestos Program Manager (APM) on a case by case basis, or through the university asbestos awareness training program.

**Contractors and Vendors:**
Prior to the start of any work, contractors arriving on campus will be alerted in writing, verbally or by a chaperoned site walk, of the presence of any ACBM in the work area. Written notification will consist of N.A.U. form FS-13, titled “Contractor Notification and Confirmation for Asbestos Containing Building Materials on the N.A.U. Campus” (Appendix A) which shall be included in the pre-bid documents for all construction projects, or independently issued to the contractor prior to the start of work. Contractors will be required to read, sign, and return form FS-13 prior to the start of the project. Copies of the FS-13 form will be retained with the project documents, and with records for that building which are maintained in the office of the Asbestos Program Coordinator.

Small projects and repairs for which bids are not submitted are not exempt from these notification requirements.

The office of the APM can issue a site specific FS-13 form along with the work authorization permit for a specific project if it is requested. Information regarding the history, use, location, and management of asbestos on the University campus, or a site specific FS-13 form may be accessed by contacting the office of the APM by telephone or email. Contact information for the APM is contained in the contacts section of this O&M plan.

**Surveillance**

Thorough asbestos inspections of University buildings were performed and completed in June of 2000. The University maintains this database of materials contained in each building on the University campus. This database indicates the location, quantity, and a physical description of known ACBM in each building. In order to keep this database up to date, a program of periodic surveillance is maintained. All accessible spaces with known or assumed asbestos are visually inspected twice a year, or as often as determined to be necessary to adequately track any changes in the condition of the building material. Scheduling flexibility is allowed in areas where access or use prevents an adequate inspection.

Inspections should be performed by individuals who have received a minimum of 16 hours of asbestos training (O&M workers) whenever possible. The inspections for a building should be performed by individuals who are familiar with that building. Ideally, the same person should perform each inspection in order to increase the likelihood of noticing any changes in the condition of ACBM over time.

Periodic inspection results will be recorded on the form entitled “Reinspection of Asbestos-Containing Materials”. A copy of the reinspection will be retained with records for that building which are maintained in the office of the Asbestos Program Coordinator.
In addition to the normal inspection schedule, University employees are encouraged to notify the office of the APM whenever they suspect a change in condition of a known, assumed, or suspected ACBM. University employees such as maintenance and custodial personnel are intimately familiar with the buildings in which they work, and they form the first line of defense against accidental damage and unauthorized disturbance of ACBM in the building. The active participation of the University and maintenance personnel is the most important factor in successfully executing the University O&M plan.

Any changes in the status of ACM at a building are recorded as addendums to the original inspection report for a building. Changes in condition may be caused by authorized abatement activities, deterioration due to age or damage, or ongoing testing of building materials at the building.

New construction on the University campus is required to be certified by the contractor or architect to be free of asbestos. Signed affidavits of non-use of asbestos in new construction (form FS-83) (Appendix A) shall be submitted with closeout documents for each project, and a copy of the form shall be housed in permanent asbestos file for that building.

**Work Controls**

The University maintains an Asbestos Survey Request and Work Authorization permit system for the purpose of preventing accidental or unauthorized disturbance of ACBM on the University Campus. Asbestos Survey Request **must** be submitted and completed prior to the start of any work on the university campus which involves the disturbance of any building materials.

Examples of work which involves disturbance of building materials include:

1) Removing and replacing floor coverings.

2) Hanging or removing built-in shelves, patching holes from removal of same.

3) Removing walls or installing new doors into walls.

4) Any activities that involve drilling, cutting, sanding, scraping, crushing or pulverizing any existing building components as part of the work.

Examples of work which do not involve disturbance of building materials include:

1) Replacing light bulbs

2) Painting walls which do not involve sanding or scraping as part of the prep work.

3) Moving furniture which is not built-in.
Any activities which do not involve drilling, cutting, sanding, scraping, crushing, pulverizing, or removing any existing building components as part of the work.

Work which does not involve the disturbance of building materials may proceed without the submittal and completion of the Asbestos Survey Request. In cases where there is a question whether the work activity will result in disturbance of building materials, the worker, supervisor, dispatcher, or requesting party shall contact the APM for clarification and guidance.

The Asbestos Survey Request form may be accessed on the internet from the Capital Assets and Services/Safety and Environmental Services homepage at the following address:

http://www4.nau.edu/cas/SES/AsbestosInspectionRequest.htm

If computer access is not possible, an Asbestos Survey Request may be made verbally by calling the office of the APM at (928)-523-6435, or by fax using the fax submittal form located in Attachment A of this document.

Once an Asbestos Survey Request is submitted, the APM will perform a site visit, check existing records for the building, and collect samples for additional analysis if necessary. Based on the results of these activities, a Work Authorization Permit will be issued which details any special measures which may need to be followed to prevent disturbance of ACBM, and provide worker and building occupant protection during the course of the work activities. Once the Work Authorization Permit is issued, the work may commence as usual unless special protective measures or asbestos abatement activities are required.

If special work practices are required, the APM can (at the client’s request) solicit estimates and schedule an independent contractor to perform the asbestos removal, or can arrange for O&M trained University employees to perform the work as necessary.

Because the process of collecting estimates, selecting, and scheduling an additional contractor takes time, and because asbestos removal often requires analytical clearance of the work area upon completion, extra time should be budgeted for jobs in which asbestos removal is anticipated.

**Work Practices**

Initiation of asbestos related work on the University campus shall begin with the completion of an Asbestos Survey Request (as described in the Work Controls section of this plan) by the party or department initiating or requesting the work. Following completion of the survey, and issuance of a Work Authorization Permit which requires special work practices for asbestos disturbance, the requesting party should be prepared to work with the APM to schedule trained personnel to perform the work. Oversight services will typically be provided by the APM for O&M tasks. Proceeding with any disturbance of ACBM without informing the APM of the schedule is strictly prohibited. The APM has the authority and responsibility for managing asbestos waste generated
during the course of work, ensuring that safe work practices are employed, and maintaining up-to-date records of O&M activities which disturb asbestos.

Special work practices for O&M work are compiled on a material by material basis in the National Institute of Building Sciences (NIBS) Guidance Manual for Asbestos Operations & Maintenance Work Practices. All O&M work performed on the University campus shall follow either the work practices outlined in this manual, or previously developed and validated work practices approved by the APM. A copy of the NIBS manual is housed in the office of the APM and may be reviewed upon request. If no acceptable work practices for the desired work exist in either the NIBS manual or the university approved and validated work practices, then the APM shall develop new work procedures, or approve work procedures submitted by a third party prior to the start of work. The APM will review work practices with O&M trained personnel prior to the start of work.

If the quantity of friable ACBM to be disturbed exceeds 160 square feet, or 260 linear feet (for Thermal System Insulation), the project does not fall within the scope of O&M work and abatement of the materials must be performed by currently trained asbestos workers. In these cases, the APM will collect estimates from qualified contractors for the work. Copies of the estimates will be turned over to the requesting party for review.

Bids/estimates for abatement contractors will be solicited and processed in accordance with Division 0 of the Northern Arizona University Technical Standards. All abatement work performed on the University campus shall be in accordance with Division 1, Section 01120 (Appendix B), and Division 2, Section 02080 (Appendix C) of the Northern Arizona University Technical Standards. Prior to performing any work on the University Campus, contractors must meet University Insurance and Indemnification Guidelines (Sec II. D-1 and II. D-3), located in Appendix G of this plan. Asbestos abatement contractors will be required to submit the following:

a) An initial exposure assessment, or negative exposure assessment for the work to be performed, including analytical test results for air samples showing effectiveness of the work practices employed on prior jobs with similar scope of work. Initial exposure assessments shall be validated through personnel sampling at the time of the abatement project, and the results of the sampling shall be submitted with the project close-out documents.

b) Proof of notification of work to the State of Arizona Dept. of Environmental Quality, as specified in 40 CFR 61.145.

c) MSDS forms for any hazardous chemicals which the contractor will use on campus.

d) Appropriate training documentation for any asbestos workers and supervisors.

e) Close out documents including record of the work performed; date of work, waste manifests, and records of shipment and receipt of waste at the disposal site.

Once a representative of Capital Assets and services has selected a contractor, the APM shall be notified of the choice. At this point the requesting party may either issue a Purchase Order for the work based on the estimate, or request that the APM have a
Purchase Order generated. Following receipt of the Purchase Order, the APM will act as liaison between the requesting party and the contractor for the purpose of scheduling the work.

Asbestos abatement contractors may also be used for small scale O&M work in cases where trained university employees are not available, or where other factors such as convenience or disposal issues make the use of a contractor more expedient or cost effective than use of University personnel. In these cases, the protocol outlined above for asbestos abatement should be followed.

**OSHA Categories of Work for Asbestos**

OSHA has defined specific categories for various types of asbestos work. These categories are used in part to determine the level of training, personal protective equipment, and engineering controls necessary to safely and successfully perform asbestos related work.

Class I asbestos work is work involving the removal of ACM or PACM Surfacing materials and TSI. Class I asbestos work may only be performed by certified asbestos workers using strict engineering controls. The University does not maintain a team of workers trained to the level required to perform Class I asbestos work, and this work is always performed by a private contractor.

Class II asbestos work is work involving the removal of ACM which is not Surfacing or TSI. Examples of Class II asbestos work include the removal of flooring materials, roofing and siding materials, wall systems, and other asbestos materials which are not classified as Surfacing or TSI. Class II asbestos work may only be performed by certified asbestos workers using accepted protocol and engineering controls. University employees are not trained to the level required to perform Class II asbestos work and this work is always performed by a private contractor.

Class III asbestos work is work involving the repair and maintenance of building systems which may involve the disturbance of ACM or PACM. Class III asbestos work includes the repair or disturbance of TSI, Surfacing, and all other ACM materials which may be included in a building, but is limited in scope to the amount of material which can be disposed of in a single 60”x60” waste bag. Class III asbestos work may be performed by workers who are certified as asbestos O&M workers. The University maintains a number of workers with adequate training required to perform O&M tasks when required.

Class IV asbestos work is work which may put employees in contact with ACM or PACM materials, but where no disturbance occurs. Class IV asbestos work may include custodial and maintenance tasks. Class IV asbestos work may be performed by workers who have received two hours of asbestos awareness training. The University maintains a video training program designed for maintenance and custodial staff, and for any workers whose duties may place them in contact with asbestos.
**Recordkeeping**

The majority of buildings on the University Campus have been surveyed for asbestos. Copies of the asbestos surveys are housed in the office of the APM. These documents contain the location, quantity, and a physical description of all known and assumed ACBM in the buildings. Any additional sampling conducted in the course of ongoing asbestos inspections is located with the initial survey for each building.

New buildings, or buildings which have been remodeled since the completion of the campus wide survey are either certified to be free of asbestos by the Architect and/or General Contractor, or are operated under the assumption that **ALL** building materials contain asbestos. Documentation of the status of new buildings and the results of any ongoing asbestos testing in these buildings are housed in the office of the APM.

Written or computer records of all Asbestos Survey Requests, and resulting Work Authorization Permits, are housed in the office of the APM.

Records of asbestos abatement are housed in the office of the APM. Records of abatement include the date and location of abatement, name of the contractor or University worker, scope of work, and information regarding the transport and disposal of any waste which is generated.

Records of respirator fit tests and medical surveillance are housed in the office of the N.A.U. Industrial Hygienist, who is responsible for administering the University respiratory protection program.

Records of personal air monitoring and negative exposure assessments are housed in the office of the N.A.U. Industrial Hygienist, who is responsible for performing the personal air sampling activities to comply with OSHA Standards. Copies of air monitoring results which are used to complete/validate initial or negative exposure assessments for O&M asbestos work are also housed in the office of the APM.

**Worker Protection**

**Respiratory Protection:**
The University respiratory protection program is administered by the N.A.U. Industrial Hygienist. Employees who perform asbestos O&M work that require the use of a respirator must be enrolled in this program. A copy of the respiratory protection program may be viewed in Attachment D of this O&M plan. A copy of the program, including respirator fit test records, training certificates, and employee sign off forms is permanently housed in the office of the APM. In addition, each trade, department, or organization which performs O&M work shall keep a copy of the respiratory protection program, including copies of all pertinent records for each employee who performs asbestos O&M work.

**Medical Surveillance:**
Medical surveillance is required for O&M workers who perform asbestos work for a minimum of 30 days per calendar year, or who are exposed at or above the OSHA
permissible exposure limit (PEL). Days when asbestos work is conducted for less than sixty minutes are not counted towards the 30-day accrual time.

Medical surveillance includes a medical and work history, pulmonary function test, chest x-ray, and other exam components deemed necessary to be performed at the discretion of a licensed health care professional to render a proper diagnosis. The examining physician will provide a written statement indicating the fitness of the employee to perform asbestos work, any medical conditions which result in limitations in the ability of the employee to wear a respirator or other personal protective equipment (PPE), and any medical conditions which would result in increased risk of health impairment from exposure to asbestos. The written opinion shall not reveal specific findings or diagnoses which do not directly pertain to the fitness of the employee to work with asbestos or wear PPE.

Employees who wear negative pressure respirators in the course of work, and who are enrolled in the University respiratory protection plan are required to undergo annual medical evaluations to determine if they are physically able to perform work wearing a respirator.

**Training**

**Two Hour Awareness Training**

Custodial and maintenance personnel employed directly by the University, or who work for a company which provides services under contract are required to receive a minimum of two hours of initial asbestos awareness training. This awareness training will be maintained with a 30 minute annual refresher training. The training shall include information on the historical uses of asbestos, health effects, University policies, and site specific information, or how to obtain site specific information.

The office of the APM houses a video training program which meets the requirements for the two hour asbestos awareness training. The video and accompanying training packet/quiz can be checked out for the purpose of training maintenance and custodial staff, or contract workers who have not received awareness training from another source.

The two hour awareness training is mandatory for personnel who work in buildings with asbestos, and who may come in contact with ACBM during the normal course of activities, but who will not disturb ACBM. This training does not qualify trainees to perform intentional disturbance or removal of ACBM on the University campus.

**16 Hour O&M Worker Training**

University employees who will perform disturbance and small scale removal of ACBM as a part of their duties shall receive a total of 16 hours of training targeted towards O&M workers. The training will be maintained with an annual 3 hour refresher course. In addition to the material contained in the 2 hour asbestos training, the 16 hour training shall include specific information on work practices, regulatory compliance, respiratory protection, and safety issues.
The 16 hour training is mandatory for personnel who perform small scale, short duration disturbance of ACBM as a part of their duties. This training does not qualify trainees to perform large scale abatement of building materials or removal of asbestos for purposes other than normal Operations & Maintenance activities.

Asbestos Abatement Worker Training:
Because the University does not allow employees to perform asbestos abatement above the level of O&M work (small scale, short duration), there is no need for asbestos abatement worker training. Work of this level shall be performed exclusively by qualified asbestos abatement contractors who employ trained asbestos workers. The APM or a University representative shall confirm that the workers employed by any abatement contractor have received this level of training before abatement work on the campus begins.

Specific Protocols:
The University has developed and implemented specific policies for various activities which may impact ACBM, or for which the involvement of the Asbestos Program is required to meet statutory requirements. These policies should serve as a starting point for any activity which may disturb ACBM in University buildings. Adherence to these policies is required under the Northern Arizona NAU Personnel Policy Manual, section 5.03 (safety), and failure to adhere to the policies may be met with progressive disciplinary measures.

General Procedure for Reporting Unsafe Conditions
In accordance with the NAU Personnel Policy Manual, section 5.03 (safety), any University employee who witnesses what he/she believes to be unsafe or unauthorized disturbance of ACBM, observes asbestos or suspected asbestos debris, or is aware of damaged ACBM which creates an unsafe condition in any University building should immediately contact the office of the APM at 523-6435. The employee should provide the location and nature of the activities or unsafe conditions so that the APM can take appropriate action.

Project Managers
Specific procedures for project managers are outlined in the P&D Master Procedures manual. These procedures include instructions on how and when to request asbestos survey/work authorizations, the FS-13 Contractor Notification form for asbestos, and the FS-83 Contractor Affidavit of non-use of asbestos containing materials (See Attachment A, Forms). In general, Project Managers are responsible for notifying the office of the APM of any upcoming projects which may cause disturbance of existing building materials. Project Managers shall not attempt to independently determine the presence of asbestos, or to perform or contract asbestos abatement. Project Managers shall not assume that ACBM is not present in a work area, even if prior work performed in the same or adjacent areas did not encounter ACBM.

Building Managers
Specific procedures for building managers are contained in the Building Managers Manual. This manual includes instructions on how and when to contact the APM to
Custodial Staff

Custodial staff members make up the first line of defense against asbestos hazards in University buildings. The participation of custodial staff in the University O&M program is the single most important factor in the success of the program. Although custodial workers are not authorized to disturb asbestos, they are intimately familiar with the building or area in which they work.

Custodial workers shall make note of any changes in the condition of ACBM over time and report any damage or deterioration to the department supervisor, building manager, or office of the APM. In addition, any improper or unauthorized disturbance of ACBM which Custodial Staff members observe should be reported to the office of the APM.

Custodial workers should not attempt to clean up any debris which is suspected to contain asbestos. Any debris should be immediately reported to the office of the APM so that immediate appropriate cleaning may be performed and the potential for future debris generation may be assessed and mitigated, if warranted. If special cleaning procedures are deemed to be necessary for a specific area in order to alleviate a known asbestos exposure hazard, the APM may opt to design and implement special cleaning procedures for that area. In that case, the APM will provide proper training and equipment to the custodial staff so that the special cleaning procedures can be safely implemented.

Trades, Maintenance Staff, and Supervisors

As with custodial staff members, maintenance workers develop an intimate knowledge of buildings for which they are responsible. Maintenance workers shall make note of changes in the condition of ACBM and report any deterioration, damage, unauthorized or improper disturbance of ACBM which they witness.

Maintenance workers routinely perform work which has the potential to disturb ACBM. Prior to the start of any work which causes disturbance to any building material, maintenance workers must obtain a work authorization permit from the office of the APM. The asbestos survey/work permit system is in place to prevent accidental disturbance of ACBM and to provide up-to-date records of the location and quantity of asbestos materials, and of asbestos disturbance on the University campus.

To request an asbestos survey and work authorization permit, a worker, supervisor, dispatcher, project manager, or building manager must contact the office of the APM by telephone, fax (see fax request in Appendix A) or by accessing the online Asbestos Survey Request on the Safety and Environmental Services web page. The requesting party will need to furnish the following information.

1) Name and contact information of requesting party.
2) Building name and number, and location of work.
3) Description and scope of work to be performed.
4) Description of materials which may be disturbed.
5) Anticipated start date of work to be performed.
6) Work Order number or Project number.
Following the submittal of the asbestos survey request, the APM will issue a work authorization permit which indicates how the work may proceed. If no ACBM will be impacted by the work, then the work may proceed as usual with no special controls. If it is determined that ACBM is present and will be disturbed by the proposed work, then the work shall be conducted by trained O&M asbestos worker or an asbestos contractor, using work procedures approved by the APM.

O&M Asbestos Workers
O&M workers who perform asbestos removal or repair shall conform to the general procedures described in the NIBS Asbestos Operations & Maintenance Work Practices Guidance Manual, Section III, Worker General Practices. This section of the NIBS manual defines general worker practices for preparing the work area, performing the work, performing cleanup of the work area, and disposing of any waste generated during the work activities. In addition, workers shall use material specific work practices described in the NIBS manual, or alternate methods which have been approved and validated by the APM.

Depending on the nature, frequency, and duration of work to be performed, the office of the APM, and/or the University Industrial Hygienist, may require personal air sampling to be conducted during the work. For this reason and those outlined in the “Work Practices” section (page 12), O&M workers shall not perform removal or repair of ACBM until the office of the APM has been notified of the project.

Special materials, tools, HEPA vacuums, and asbestos labels which are required for the removal or repair of ACBM are available through the office of the APM, who keeps a ready supply of the necessary supplies on-hand.

Dispatchers
Dispatchers are not directly involved with asbestos work on campus, but as part of the communication system between the client requesting work and the workers or department supervisors performing the work, they are an integral part of the asbestos control system. It is the responsibility of the dispatcher to ask if the requesting party has obtained an asbestos survey/work authorization permit already, and to forward this information to the workers or department responsible for performing the work. If an asbestos survey/work authorization permit has not been completed for the job, then it is the responsibility of the dispatcher to inform or remind the workers that the work can not commence until a survey/work authorization permit has been completed by the office of the APM.

Contractors and Consultants
Contractors and who work on the University campus must submit proof of asbestos training appropriate to the level of exposure/disturbance involved in the scheduled work. Copies of the appropriate training documents shall be submitted to the office of the APM for review prior to the start of work.

Any work involving contact with ACBM without disturbance requires two hour asbestos awareness training. The University can provide asbestos awareness training to contractor employees through the video training program which is currently in place.

Any work involving the collection of samples of ACBM requires EPA approved training to the level of an AHERA certified Building Inspector.
Any work involving the small scale disturbance or repair of asbestos or abatement of larger quantities of ACBM, requires EPA approved training to the level of AHERA certified Asbestos Worker, and a supervisor trained to the level of an AHERA certified Contractor/Supervisor.

Contractors performing asbestos abatement, removal, or repair must furnish the following documents prior to the start of work on the University Campus.

a) An initial exposure assessment, or negative exposure assessment for the work to be performed, including analytical test results for air samples showing effectiveness of the work practices employed on prior jobs with similar scope of work. Initial exposure assessments shall be validated through personnel sampling at the time of the abatement project, and the results of the sampling shall be submitted with the project close-out documents.

b) Proof of notification of work to the State of Arizona Dept. of Environmental Quality, as specified in 40 CFR 61.145.

c) MSDS forms for any hazardous chemicals which the contractor will use on campus.

d) Appropriate training documentation for any asbestos workers and supervisors.

e) Close out documents including record of the work performed; date of work, waste manifests, and records of shipment and receipt of waste at the disposal site.

Contractors performing asbestos abatement, removal, or repair shall conform to the requirements of the Northern Arizona University Technical Standards, Division 1, Section 01120, and Division 2, Section 02080, and all applicable OSHA and EPA requirements contained therein.

**Consequences of non-compliance:**

Compliance with this Asbestos O&M plan is mandatory. Due to the history of litigation and government regulation related to asbestos, compliance with this plan is the only way to meet the University goals of protecting employees and building occupants from potential exposure to asbestos; meeting local, state, and federal regulatory requirements for the management of asbestos in buildings; and protecting employees and the University as a whole from legal, financial, and tort liability which would arise from the improper handling of ACBM.

In accordance with the Northern Arizona University Personnel Policy Manual, University employees who intentionally violate the provisions of this O&M plan may be subject to the progressive disciplinary measures.
Important Contacts:

APM: Scott Halle
Building 77, Rm 105A
P.O. Box 4067
Flagstaff, AZ 86011
Office phone: (928)-523-6435
Cell Phone: (928)-220-1038
Email: Scott.Halle@nau.edu

Industrial Hygienist and Alternate APM: Jim Biddle
Building 21, Rm 245
P.O. Box 5640
Flagstaff, AZ 86011
Office phone: (928)-523-6109
Email: James.Biddle@nau.edu

Regional EPA Asbestos Coordinator: Tracy Neal
Office phone: (602)-771-2299

N.A.U. Fire and Police: (928)-523-3000

Links:

N.A.U. Technical Standards (http://www4.nau.edu/cas/Plan-Dev/TechStandards.html)
Asbestos Survey and Work Authorization Request (http://www4.nau.edu/cas/SES/AsbestosInspectionRequest.htm)
National Institute of Building Sciences O&M Work Practices Guidance Manual (http://www4.nau.edu/cas/SES/Asbestos_Program.htm)
Attachments:

Attachment A: Forms

Attachment B: Northern Arizona University Technical Standards, Division 1, Section 01120

Attachment C: Northern Arizona University Technical Standards, Division 2, Section 02080

Attachment D: Respiratory Protection Plan for Asbestos O&M workers
ATTACHMENT A:
FORMS
The following is notification and confirmation for all contractors and subcontractors working at the Northern Arizona University campus. A comprehensive asbestos containing building material (ACBM) survey was completed in July 2000 and is available for review in the Office of NAU Environmental, Health and Safety (EH&S). The survey was performed in accordance with regulations outlined in the Occupational Safety and Health Administration (OSHA) asbestos standard 29 CFR 1926.1101 and the Environmental Protection Agency’s National Emission Standard for Hazardous Air Pollutants 40 CFR 61 Subpart M (NESHAP). The following ACBMs have been identified to be present in the ceiling, walls, flooring, or other accessed areas of this project:

NAU is responsible for informing you of the presence of ACBMs in your project work area on the NAU campus. This document acts as the vehicle of notifying you of ACBMs present. If previously unidentified ACBMs are found or suspected, stop all work immediately and contact the NAU Project Manager, or if unavailable, EH&S. By law, contractors must provide training for their employees who will be working with or near ACBMs. It is the contractor’s responsibility to be knowledgeable of, and comply with, all applicable local, state and federal laws.

The signature below acknowledges that you have received this information and will comply with this document and all legal requirements. If you have any questions, please contact Scott Halle, Office of EH&S, at 520.523.6435.

Company Name: ________________________________

Name of Responsible Party: ______________________

Title: ________________________________

Signature: ________________________________

Date: ________________________________

Submit signed form with bid proposal. Failure to include this form will be considered non-responsive.
I am authorized to make this affidavit on behalf of ________________________________
Architectural/General Contracting Firm

______________________________ who/which is the
(Architect)(Contractor) for

In performing the Contract for the (Design)(Construction) of the above stated project, I

certify that no building materials containing asbestos were specified, used or

incorporated in any way in the completed project.

DATED this _____________ day of ________________________, 2001.

BY: ________________________________

Name

Title

FIRM: ________________________________

License# ________________________________
NAU Facsimile Request for Asbestos Services

Attention: Scott Halle, Asbestos Program Manager

Date of Request: ________________________________

Name of Requestor: ________________________________ Dept: __________________

Telephone: _____________________________________

Fax: __________________________________________

Email: ________________________________________

Work Order or project number: ________________________

Type of services Requested (circle one):  
Removal  Repair  Survey  Evaluation  Other____________

Location of ACM:
Building name and number: ______________________

Room number: _________________________________

Specific Location (ceiling, wall, floor, other): _______________________________

Description of Material: __________________________

Quantity of material in SF or LF: __________________

Date of anticipated Disturbance: ___________________

Describe in detail the nature of work anticipated/requested:
________________________________________________________________________
________________________________________________________________________

Will a load bearing structure be demolished?  ____Yes  ____No

*If you have any questions regarding asbestos on the Northern Arizona University campus, or if this is an EMERGENCY, call Scott Halle at (928)-220-1038.

DO NOT WRITE BELOW THIS LINE

Rec’d: ___________

Action: ________________________________________________________________

Contractor (if applicable): ________________________________________________

Date of Completion: _________________

Comments: _____________________________________________________________
ATTACHMENT B:
NAU TECHNICAL STANDARDS, DIVISION 1, SECTION 01120
Hazardous Materials Procedures-Asbestos Abatement

All asbestos-containing materials (ACM) are to be removed, contained, and disposed of in accordance with all applicable Federal, State, and Local regulations.

The asbestos removal contractor will be responsible for the health and safety of its own employees. Compliance with all applicable regulations will be enforced by the contractor.

The University will visually inspect all removal areas. The Contractor will conduct clearance air monitoring using AHERA guidelines and, if requested, will provide split samples to the University. If contamination is found, the Contractor will be required to perform additional cleaning until acceptable levels are achieved, at no additional cost to the University.

The University or Asbestos Consultant will have the authority to stop work immediately if conditions are not within the specifications for controlling exposure to asbestos.

The successful contractor will be required to respond in a timely manner to all requests, within three (3) working days of the notice.

The contractor shall comply with the provisions of the following regulations:

- The "National Emission Standard for Asbestos", 40 CFR 61.140-156, enforced by the Arizona Department of Environmental Quality, regulating the removal and disposal of asbestos-containing materials. The contractor is to be aware of proposed EPA amendments and comply with the legal regulations at the time of abatement.

- The contractor will be required to notify the State of Arizona Department of Environmental Quality before removal begins as specified in 40 CFR 61.145. Copies of this notification should also be sent to EPA Region IX. The Contractor shall send a copy of this notice to the University Project Manager. The OSHA safety regulations for respirators (29 CFR 1910.134).

In addition, the asbestos removal work must comply with all aspects of the OSHA Asbestos construction standards (29 CFR 1926.1101) and the general industry standards (29 CFR 1910.1001), whichever may apply.

It is recommended that the Contractor follow the guidelines and procedures of the Asbestos Hazard Emergency Response Act (AHERA). 40 CFR 763.80-.99, regulating asbestos in schools.

The Contractor shall inform NAU Risk Management and the Project Manager of any hazardous chemicals they will be using on campus. The Contractor shall comply with the requirements specified in OSHA's Hazard Communication program (29 CFR 1910.1200). The Contractor shall assume responsibility for the safe and legal disposal of all chemicals used on the job site.

Blasting Policy

Prior to any use of explosives on the University campus, the appropriate Project Manager with the Capital Assets and Services, Planning and Development Office shall be given 48 hours notice. It is the responsibility of the Project Manager to notify Campus Police and Campus Risk Management and Safety Services. The Contractor shall submit to the Capital Assets and Services, Planning and Development Office, prior to any blasting, appropriate employee certification for use of explosives.
No explosives will be stored on the campus overnight or weekends. No quantity of explosives will be brought to the campus beyond that which will be used on the day blasting operations are to be performed.

No blasting shall take place earlier than 8 a.m. or later than 5 p.m.

All blasting procedures shall conform to the requirements of the City of Flagstaff blasting policy and the Uniform Fire Code, Article 77. Copies of these documents are on file at the Capital Assets and Services, Planning and Development Office and available for review.
ATTACHMENT C:
NORTHERN ARIZONA UNIVERSITY TECHNICAL STANDARDS, DIVISION 2, SECTION 02080
General

All asbestos-containing materials (ACM) are to be removed following proper abatement procedures as outlined in the Occupational Safety and Health Administration’s (OSHA) asbestos in Construction Industry Standard 29 CFR 1926.1101. ACM is to be properly contained and disposed of in compliance with all applicable Federal and Arizona regulations.

The asbestos removal contractor will be responsible for the safety and health of its own employees. Compliance with applicable OSHA and EPA regulations will be enforced by the contractor.

The University, or an asbestos consultant acting upon the University's behalf, will insure that all contract specifications, approved work plans and applicable regulations are complied with. The University will visually inspect all removal areas. When required, the Contractor will conduct clearance air monitoring using AHERA guidelines and, if requested, will provide split samples to the University. If contamination is found, the Contractor will be required to perform additional cleaning until acceptable levels are achieved, at no additional cost to the University.

The University or Asbestos Consultant will have the authority to stop work immediately if conditions are not within the specifications for controlling exposure to asbestos.

Description of Work

All fees paid to the contractor shall be based on unit prices determined in advance using a competitive proposal process.

The successful contractor will be required to respond in a timely manner to all requests, within three (3) working days of the notice.

Materials commonly encountered: acoustical ceiling tiles/panels, resilient vinyl flooring materials, transite panels, pipe wrap (lagging) and elbows, asphaltic roofing materials, sprayed or troweled-on wall texture materials.

Applicable Regulations
The contractor shall comply with the regulations specified in section 01120 of the Division 1-General Requirements.

The Contractor shall submit, as part of the close-out requirements, an asbestos removal affidavit.

* * * END OF SECTION * * *
ATTACHMENT D:
RESPIRATORY PROTECTION PLAN FOR ASBESTOS O&M WORKERS
Respiratory Protection Program for Asbestos O&M Workers
(per OSHA 29 CFR 1910.134)

Purpose

This respirator program lays out standard policies and procedures concerning the use of respirators for asbestos O&M workers employed by Northern Arizona University. All asbestos O&M workers who are required to wear a respirator in the course of performing their duties are included within the scope of this program and must follow its’ requirements. Employees who are found to be in violation of University policy will face Progressive disciplinary actions defined in the NAU Personnel Policy Manual, section 5.19.

This program is in accordance with the requirements of OSHA 29 CFR 1910.134.

Program Administration

The NAU Asbestos Program Manager (APM) is solely responsible for all facets of this program and has full authority to make necessary decisions to ensure the success of this program. The APM will develop written detailed instructions covering each of the basic elements in this program, and is authorized to amend these instructions.

This respirator program for asbestos O&M workers will be administered and overseen by the Asbestos Program Coordinator, or his/her designated representative. Supervisors will also bear responsibility for enforcing the respirator program in their work areas. Any changes to this program must be approved by the Program Administrator.

The Asbestos Program Coordinator has designated a Program Administrator to execute the elements of this program: The Program Administrator is ______________________.

Respirator Selection

Respirators are designed to protect against specific air contaminants. Use of an improper respirator may reduce or eliminate the intended protection, resulting in injury or illness.

Employees will be assigned a respirator which is appropriate for use in asbestos O&M activities. Application of the National Institute of Occupational Safety and Health (NIOSH) Respirator Decision Logic Guide can be used as one resource to determine the
type of respiratory protection. Outside consultation, manufacturer’s assistance, and other recognized authorities will be consulted if there is any doubt regarding proper selection and use. All respirators used for O&M activities at Northern Arizona University shall be NIOSH-certified respirators. Employees may not substitute other respirators. Any employee who wears a respirator other than one which has been approved by the Program Administrator will face progressive disciplinary action.

Employees may wear their own respirator only after the Program Administrator has determined that the respirator is safe for the anticipated conditions of use and will not in itself create additional hazards. Employees may not wear any respirator unless approval is given by the Program Administrator. If the employer determines that any voluntary respirator use is permissible, the employer shall provide the respirator users with the information contained in Appendix A. Voluntary respirator users must be medically able to use the respirator and ensure that the respirator is cleaned, stored, and maintained so that its’ use does not present a health hazard to the user.

New or modified work processes will be evaluated as necessary for the need for respiratory protection. Should information indicate that respiratory protection is required, it will be made available immediately to all affected employees and such employees will be included within the scope of the respiratory protection program.

Fit Testing

All employees who are required to wear a respirator with a negative or positive pressure, tight-fitting facepiece will be fit tested prior to actual use. Employees will be fit tested with the same make, model, style and size of respirator that they will use. Employees will be re-tested if they, their supervisor, the Program Administrator, or the physician note any changes in their physical appearance which may possibly affect the fit of the respirator. Such changes include, but are not limited to, facial scarring, dental changes, surgery, or obvious weight change. Additionally, employees who wear a tight-fitting facepiece respirator will be fit tested on an annual basis.

If, after passing a fit test, the employee notifies the supervisor, physician, or Program Administrator that the fit is unacceptable, the employee will be given a reasonable opportunity to select a different respirator and be re-tested.

Damaged respirators must be repaired only by the Program Administrator or other qualified person, and only using manufacturer’s parts.

Employee Training

NAU will provide all affected employees with the training necessary to safely wear and use their assigned respirator(s). Training will be provided prior to an employee being assigned to wear a respirator. NAU is committed to ensuring that the training is comprehensive and easy to understand. Training will be provided on the following subjects:

- The respiratory hazards of asbestos fibers to which the employee may be exposed;
• Why respirators are necessary and how improper fit, use or care can compromise the effectiveness;
• The limitations and capabilities of the respirators;
• How to use respirators in emergency situations;
• How to inspect, put on and remove, use and check the seal of the respirator;
• Maintenance and storage procedures;
• How to recognize medical signs and symptoms that may limit the effective use of respirators;
• The general requirements of the OSHA Respiratory Protection Standard (29 CFR 1910.134).

For those employees who wear respirators voluntarily, basic information, found in Appendix A of this program, will be provided as training material.

Respirator Use

Proper use of respirators is essential for the protection of employee health and safety. As previously mentioned, the improper use of a respirator may have serious, potentially fatal consequences. In order to assure employee safety, basic rules of respirator use shall be followed.

Employees who wear respirators with tight-fitting facepieces must not have facial hair, wear glasses, or otherwise have any condition that interferes with the face-to-facepiece seal or valve function. Additionally, employees must perform a user seal check, per the manufacturer’s instructions, each time they put on the respirator.

Employees must leave the respirator use area to wash their faces or respirators; if they detect vapor or gas breakthrough, changes in breathing resistance or leakage of the facepiece; or to replace the respirator or the filter, cartridge, or canister elements.

Note: For work within atmospheres which are immediately dangerous to life and health (IDLH), special procedures have been established and must be followed. See the Program Administrator.

Inspection, Cleaning, Maintenance and Storage

NAU and those employees who wear respirators share responsibility in ensuring that all respirators are cleaned, disinfected, stored, inspected and repaired on a regular basis. NAU will provide respirators that are clean, sanitary and in good working condition and it is essential that they be maintained that way.

Respirators must be cleaned and disinfected as follows:

• Respirators used exclusively by one employee shall be cleaned and disinfected after each use.
• Respirators used by more than one employee shall be cleaned and disinfected before being worn by different individuals, and after each use.
• Respirators for emergency use shall be cleaned and disinfected after each use. Respirators used for fit testing shall be cleaned and disinfected after each use.
Respirators shall be stored in a respirator storage bag or other acceptable container to prevent contamination during periods of non-use.

All respirators must be stored in the containers and locations provided in order to protect them from damage. Additionally, all respirators must be inspected for damage during cleaning and before each use. Any damaged respirator must be removed from service immediately.

**Work Area Surveillance**

Appropriate surveillance of work area conditions and degree of employee exposure or stress will be maintained. During safety audits and at other opportunities the Safety Officer will make inspections of areas where respirators are used to ensure compliance with the respiratory protection program.

**Program Evaluation**

This written respiratory protection program will be evaluated as necessary by the Program Administrator, to assure that proper respiratory protection is being provided to all affected employees. Any employee who has a concern about the respiratory hazards to which they are exposed, or who has a question about the effectiveness of the respirator he/she is using is encouraged to bring it to the attention of the Program Administrator.

**Physical Fitness Determination for Users**

Using a respirator may place a physiological burden on employees that varies with the type of respirator worn, the job and the workplace conditions in which the respirator is used, and the medical status of the employee. In order to ensure that the wearing of a respirator will not create a potential hazard, all employees who wear a respirator will be medically evaluated. The evaluation will take place prior to the employee being fit tested or required to wear a respirator. The medical evaluation will be provided at no cost to the employee. Employees may be re-evaluated at the request of the physician, the employer, or if there is significant change in their health status. Employees should also be re-evaluated if the employee reports medical signs or symptoms that are related to the ability to use a respirator and if information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates the need. In addition, re-evaluation is necessary if changes occur in workplace conditions that may result in a substantial increase in physiological burden placed on an employee. Some examples that may warrant re-evaluation may include, but are not limited to, physical work effort, protective clothing, and temperature.

The Occupational Safety and Health Administration (OSHA) revised its’ Respiratory Protection Standard (29 CFR 1910.134) in 1998. One major revision affecting medical evaluations in this category involves the completion of a medical questionnaire. Employees should complete a questionnaire similar to the one specified in Appendix C of the OSHA Standard prior to the evaluation by the physician or other licensed health care professional. This can be referenced in **Appendix B** of this program manual.
Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.

2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.

4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.
APPENDIX B

OSHA RESPIRATOR
MEDICAL EVALUATION QUESTIONNAIRE

To the employer: Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee:

Can you read (circle one): Yes/No

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date:_______________________________________________________

2. Your name:__________________________________________________________

3. Your age (to nearest year):_________________________________________

4. Sex (circle one): Male/Female

5. Your height: __________ ft. __________ in.

6. Your weight: ____________ lbs.

7. Your job title:_____________________________________________________

8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code): ____________________

9. The best time to phone you at this number: ________________

10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No

11. Check the type of respirator you will use (you can check more than one category):
a. ______ N, R, or P disposable respirator (filter-mask, non- cartridge type only).
b. ______ Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).

12. Have you worn a respirator (circle one): Yes/No

If "yes," what type(s): ____________________________________________________________

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: Yes/No

2. Have you ever had any of the following conditions?

   a. Seizures (fits): Yes/No
   b. Diabetes (sugar disease): Yes/No
   c. Allergic reactions that interfere with your breathing: Yes/No
   d. Claustrophobia (fear of closed-in places): Yes/No
   e. Trouble smelling odors: Yes/No

3. Have you ever had any of the following pulmonary or lung problems?

   a. Asbestosis: Yes/No
   b. Asthma: Yes/No
   c. Chronic bronchitis: Yes/No
   d. Emphysema: Yes/No
   e. Pneumonia: Yes/No
   f. Tuberculosis: Yes/No
   g. Silicosis: Yes/No
   h. Pneumothorax (collapsed lung): Yes/No
   i. Lung cancer: Yes/No
   j. Broken ribs: Yes/No
   k. Any chest injuries or surgeries: Yes/No
   l. Any other lung problem that you've been told about: Yes/No

4. Do you currently have any of the following symptoms of pulmonary or lung illness?

   a. Shortness of breath: Yes/No
   b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes/No
   c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes/No
   d. Have to stop for breath when walking at your own pace on level ground: Yes/No
   e. Shortness of breath when washing or dressing yourself: Yes/No
   f. Shortness of breath that interferes with your job: Yes/No
   g. Coughing that produces phlegm (thick sputum): Yes/No
   h. Coughing that wakes you early in the morning: Yes/No
   i. Coughing that occurs mostly when you are lying down: Yes/No
   j. Coughing up blood in the last month: Yes/No
   k. Wheezing: Yes/No
   l. Wheezing that interferes with your job: Yes/No
   m. Chest pain when you breathe deeply: Yes/No
5. Have you **ever had** any of the following cardiovascular or heart problems?

   a. Heart attack: Yes/No
   b. Stroke: Yes/No
   c. Angina: Yes/No
   d. Heart failure: Yes/No
   e. Swelling in your legs or feet (not caused by walking): Yes/No
   f. Heart arrhythmia (heart beating irregularly): Yes/No
   g. High blood pressure: Yes/No
   h. Any other heart problem that you've been told about: Yes/No

6. Have you **ever had** any of the following cardiovascular or heart symptoms?

   a. Frequent pain or tightness in your chest: Yes/No
   b. Pain or tightness in your chest during physical activity: Yes/No
   c. Pain or tightness in your chest that interferes with your job: Yes/No
   d. In the past two years, have you noticed your heart skipping or missing a beat: Yes/No
   e. Heartburn or indigestion that is not related to eating: Yes/ No
   f. Any other symptoms that you think may be related to heart or circulation problems: Yes/No

7. Do you **currently** take medication for any of the following problems?

   a. Breathing or lung problems: Yes/No
   b. Heart trouble: Yes/No
   c. Blood pressure: Yes/No
   d. Seizures (fits): Yes/No

8. If you've used a respirator, have you **ever had** any of the following problems? (If you've never used a respirator, check the following space and go to question 9:)

   a. Eye irritation: Yes/No
   b. Skin allergies or rashes: Yes/No
   c. Anxiety: Yes/No
   d. General weakness or fatigue: Yes/No
   e. Any other problem that interferes with your use of a respirator: Yes/No

9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes/No

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you **ever lost** vision in either eye (temporarily or permanently): Yes/No

11. Do you **currently** have any of the following vision problems?

   a. Wear contact lenses: Yes/No
   b. Wear glasses: Yes/No
12. Have you **ever had** an injury to your ears, including a broken ear drum: Yes/No

13. Do you **currently** have any of the following hearing problems?
   
   a. Difficulty hearing: Yes/No
   b. Wear a hearing aid: Yes/No
   c. Any other hearing or ear problem: Yes/No

14. Have you **ever had** a back injury: Yes/No

15. Do you **currently** have any of the following musculoskeletal problems?
   
   a. Weakness in any of your arms, hands, legs, or feet: Yes/No
   b. Back pain: Yes/No
   c. Difficulty fully moving your arms and legs: Yes/No
   d. Pain or stiffness when you lean forward or backward at the waist: Yes/No
   e. Difficulty fully moving your head up or down: Yes/No
   f. Difficulty fully moving your head side to side: Yes/No
   g. Difficulty bending at your knees: Yes/No
   h. Difficulty squatting to the ground: Yes/No
   i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: Yes/No
   j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/No

**Part B** Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: Yes/No

   If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: Yes/No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: Yes/No

   If "yes," name the chemicals if you know them:_________________________
   
   ____________________________________________
   
   ____________________________________________

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:
   
   a. Asbestos: Yes/No
   b. Silica (e.g., in sandblasting): Yes/No
   c. Tungsten/cobalt (e.g., grinding or welding this material): Yes/No
   d. Beryllium: Yes/No
   e. Aluminum: Yes/No
f. Coal (for example, mining): Yes/No

g. Iron: Yes/No

h. Tin: Yes/No

i. Dusty environments: Yes/No

j. Any other hazardous exposures: Yes/No

If "yes," describe these exposures: ____________________________________________

___________________________________________________________________________

___________________________________________________________________________

4. List any second jobs or side businesses you have:__________________________

___________________________________________________________________________

5. List your previous occupations:_________________________________________

___________________________________________________________________________

6. List your current and previous hobbies:___________________________________

___________________________________________________________________________

7. Have you been in the military services? Yes/No

If "yes," were you exposed to biological or chemical agents (either in training or combat): Yes/No

8. Have you ever worked on a HAZMAT team? Yes/No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes/No

If "yes," name the medications if you know them: ____________________________

10. Will you be using any of the following items with your respirator(s)?

   a. HEPA Filters: Yes/No
   b. Canisters (for example, gas masks): Yes/No
   c. Cartridges: Yes/No

11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:

   a. Escape only (no rescue): Yes/No
   b. Emergency rescue only: Yes/No
   c. Less than 5 hours \textbf{per week}: Yes/No
   d. Less than 2 hours \textbf{per day}: Yes/No
   e. 2 to 4 hours per day: Yes/No
   f. Over 4 hours per day: Yes/No

12. During the period you are using the respirator(s), is your work effort:

   a. \textbf{Light} (less than 200 kcal per hour): Yes/No
If "yes," how long does this period last during the average shift: __________ hrs. __________ mins.

Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.

b. **Moderate** (200 to 350 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: __________ hrs. __________ mins.

Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

c. **Heavy** (above 350 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: __________ hrs. __________ mins.

Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: Yes/No

If "yes," describe this protective clothing and/or equipment: ________________________________

14. Will you be working under hot conditions (temperature exceeding 77 deg. F): Yes/No

15. Will you be working under humid conditions: Yes/No

16. Describe the work you'll be doing while you're using your respirator(s):

_______________________________________________________________________

_______________________________________________________________________

17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):

_______________________________________________________________________

_______________________________________________________________________

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):
Name of the first toxic substance:___________________________________________
Estimated maximum exposure level per shift:______________________________
Duration of exposure per shift:__________________________________________
Name of the second toxic substance:_______________________________________
Estimated maximum exposure level per shift:______________________________
Duration of exposure per shift:__________________________________________
Name of the third toxic substance:_______________________________________
Estimated maximum exposure level per shift:______________________________
Duration of exposure per shift:__________________________________________
The name of any other toxic substances that you'll be exposed to while using your respirator:
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):