

MISSOURI WORKSHOPS ON ASBESTOS TREATMENT IN SCHOOLS

Grant Number 1 R18 OH 01054-01

Final Report

INTRODUCTION

This project, which is predominantly educational, is rather unusual in that it began as a consequence of compliance activities by the University administration and was later taken over by the academic sector. The University of Missouri system monitors its compliance activities on its four campuses through a central Safety and Risk Management Committee. This Committee, made up in part of representatives from the campus Safety Committees, develops policy and procedures for bringing the system into compliance. The staff developed and presented to the Committee for its ultimate adoption in April, 1979, a detailed statement of policy which outlined the appropriate procedures for asbestos handling on the campuses, both by University and outside personnel. Having thus become familiarized with the regulatory and mechanical requirements for the proper handling of asbestos, both the system staff and the Columbia campus staff agreed to investigate a NIOSH request for a proposal to carry out certain teaching and training activities in this area. Upon investigation it appeared that the project would be to the advantage of the University. Dr. Louis V. Holroyd, who was at that time Director of Environmental Health and Safety and Russ Hanson, Environmental Chemist, and Jim Woods, Safety Coordinator, prepared the proposal to NIOSH. Cooperating in the preparation of the proposal were Dr. William McMahon of Engineering Extension, who would be responsible for the workshop and subsequent training plans, and Dr. Bart Griffith, who would coordinate the preparation of the audio-visual materials. The work was to be carried out in four phases:

1. An on-campus, in-house training program for Physical Plant employees and other interested professionals and development of prototype training materials.
2. Removal of asbestos using all correct protocol from a room on the Columbia campus and further refinement of the training materials.
3. Four workshops at various locations in the state on proper asbestos handling for both workers and various professionals.
4. Continuing promotion of the workshop concept in Missouri and elsewhere as requested by OSHA and EPA and distribution of the workshop training materials.

The project was very fortunate to have obtained the assistance of Ms. Stacey Clink, who joined the University as an Industrial Hygienist in time to assume responsibility for developing and carrying out the training aspects. Ms. Clink was also responsible for those activities in the project which were health related; e.g. environmental monitoring and medical surveillance required as a consequence of the demonstration in-house removal program.

Phase One - Prototype Training Program

Task

In order to develop useful and productive training materials, a prototype workshop was held. Eight members of the maintenance and construction crews of the University of Missouri Physical Plant were trained in this two day workshop. In addition, representatives from the Environmental Protection Agency (EPA), Region VII, Toxic Substances Section, were present to share their expertise and advice. Grant support personnel from University of Missouri Engineering Conferences, and University of Missouri Educational Resources Group were in attendance also.

Results

The major benefit from this endeavor was that it demonstrated the workability of the modular curriculum format. Also of benefit, was the discovery that a successful workshop was heavily dependent on the quality of the staff support available, particularly with regard to the reliable provision and operation of workshop equipment. Audio-visual equipment was used extensively throughout the program. In addition, a variety of actual construction tools were used for demonstration. With this sort of complex programming, the need for well-trained workshop assistants became abundantly clear. In any event, the main purpose of the prototype workshop was to refine the preliminary draft of the training materials, and that purpose was fully achieved.

Phase Two - In-House Training Project

Task

The second step in our program involved practical application of the information presented in the prototype workshop. The covering of a ceiling of a small room (10' X 20') in the University of Missouri Physics Building contained 7-15% chrysotile. The sprayed-on material was not homogenous and included glass wool as a fibrous constituent. The removal of the ceiling material presented a considerable challenge, since the room contained large and delicate equipment used for cryogenic operations. Very elaborate preparations were therefore required. Two carpenters trained in the prototype workshop performed the majority of the work. Four other members of the grant staff, including the Industrial Hygienist and the Principal Investigator, also participated. The work was performed during a semester break when there was little activity in the building and took seven full days from initial preparation to final clean-up. Temporary shower and equipment rooms were constructed external to the work area. A clean room area was also established.

Personal air monitoring was performed on all those who were directly involved in the work. (The TWA exposures ranged from 3.25 fibers/cc

of air to 4.39 fibers/cc of air.) It should be noted that all workers were novices in the techniques of wet removal. Area or environmental sampling showed no evidence of external contamination. All personnel wore proper protective equipment including air purifying respirators.

In conjunction with the removal operation, a medical surveillance program was established for exposed individuals. This provided first hand experience in the performance of the necessary medical procedures.

Result

Counted among the successes of this phase was a thorough first hand understanding of the equipment and procedures involved in safe asbestos removal work. This includes EPA notification procedures, amended water requirements, and creative construction principles. The project staff also discovered that there was a very strong tendency to underestimate the time required to complete such a complex project. This revelation was one of many resulting from the hands-on experience. The expertise acquired and the credibility gained thereby enhanced the teaching of the workshops presented later. The instructor, because of the on-site experience, would be able to relate more accurately to problems and questions raised during workshops.

Phase Three - Workshops

Task

The third phase of the program included workshops held in cities throughout Missouri. Four workshops were to be held and participants trained in the safe removal of asbestos-containing materials by wet techniques. In a nine week period, workshops were scheduled for Columbia, Kansas City, St. Louis, and Rolla, Missouri. (The course outline is included in the teacher's manual.) The workshops, held on two consecutive days were to begin at 10:00 a.m., end at 4:30 p.m., and include a lunch break on the first day. An evening session also was to be held from 6:30 p.m. until 9:00 p.m. The second day was to begin at 8:00 a.m. and conclude at 11:30 a.m.

Result

It came as a surprise that contractors and workers did not make up a majority of the 92 participants who chose to attend, since they were the audience the project had originally intended to reach. Some contractors did attend, but the majority of workshop attendees were official enforcement personnel from the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA), National Institute for Occupation Safety and Health (NIOSH), and Missouri Department of Natural Resources (MO DNR), University, and other agencies, construction inspectors, industrial hygiene personnel, industrial safety and health professionals and educators. The material was actually designed for an audience of

contractors engaged in asbestos removal work (or desiring to be) attending with several of their key foremen and employees. It turned out that the material could easily be adapted by the instructor to an astonishingly wide variety of participants.

As a consequence of the hands-on approach to training, performance was tested in two ways. A multiple choice questionnaire was used to test the participant's grasp of the factual material and a performance checklist was used to evaluate the attendees abilities with the personal protective equipment and respirators. Donning, doffing, respirator inspection, and respirator fitting were included on the checklist. Copies of both evaluations are in the teacher's notes (Unit XIII - Evaluation). The completed performance checklists will be kept on file along with the record of the Continuing Education Units (CEU's) issued through the workshop. Of the 92 students recorded, a mean test score of 90% was achieved on the factual information portion. The questionnaire contained an evaluation of approximately one third of the course objectives.

The success of the workshops was indicated by the high degree of motivation toward the program held by the course attendees and their resultant high testing scores. The modular or unit design of the curriculum was thereby upheld as a completely usable and, indeed, correct format for the workshop presentations. The high degree of interest generated at Region VII EPA and Missouri Department of Natural Resources is also a testimony to the success of the workshops.

Counted among the learning experiences for the staff from the workshop presentation was the discovery that no comprehensive set of teaching materials that presented a hands-on approach to safe asbestos removal techniques was available from existing sources. Therefore, all training materials needed to be developed essentially from the raw materials. Secondly, the logistics of the program presentation and the great amount of necessary demonstration equipment used in the workshop made it apparent that it was not a portable "dog and pony". Although workshops were successfully held in four different Missouri cities, because the delicate equipment was not designed to be transported excessive wear resulted. It is therefore concluded that the program should be presented in one location with the equipment assembled and housed at a single place.

Phase Four - Workshop Promotion and Distribution

As a final task of this project, several of the follow-up recommendations are being carried out. All the training materials and the curriculum have been produced and packaged into an instructor's kit. This kit is workshop-ready, and contains all that is necessary except some audio-visual and demonstration equipment to present an asbestos workshop, according to our design. Because of the unusual "product" nature associated with the workshop curriculum, the workshop kit will be submitted with this report. This kit may be retained with the report, forwarded to another group better

suites to utilize the materials, or returned for redistribution. Kits have been offered to the EPA asbestos coordinators and to selected NIOSH officials. In addition, the master of the materials is on permanent file at the Industrial and Technical Referral Center of the University of Missouri for rental, loan, or sale for the cost of reproduction to any interested individuals or organizations who wish to use the materials for their own training purposes. (For a list of recipients of the kit as of December 4, 1981, see the appendix.)

Because of the great interest generated by the workshops, an outgrowth of the grant activity has been a desire to hold future workshops. The University of Missouri-Columbia Engineering Conference Unit has been exploring the possibility of setting up a series of in-house workshops for the Associated General Contractors Association in St. Louis, Missouri, as well as, other similar groups in the general geographic region. One such workshop for laborers was held October 2 and 3, 1981, at St. Louis.

Other ideas for future marketing of the workshop as a whole or the workshop curriculum materials will be pursued by Engineering Conferences on a continuing basis.

SUMMARY

As originally proposed, staff at the University of Missouri first prepared a prototype workshop on safe asbestos removal and offered it to campus Physical Plant workers and staff. Next, in order to gain experience, a room on the campus was properly prepared and the asbestos on the ceiling removed by University personnel. With this experience the workshop content was then improved and offered to participants at four locations in the state - Columbia, Kansas City, St. Louis, and Rolla. The 92 participants did not turn out to be predominately contractors and workers as expected, but rather, included additionally officials from numerous federal and state agencies, construction inspectors, industrial hygienists, lawyers, industrial safety and health professionals and educators. In one respect the project timing was particularly fortunate in that the Missouri Department of Natural Resources had just taken over the asbestos monitoring program from the Environmental Protection Agency, and the DNR staff assigned to asbestos control benefited from participating in the workshops. Post workshop analyses showed that most of the objectives of the training session had been met.

Subsequent to the grant supported workshops, a workshop for members of a laborers union was held under private auspices in St. Louis. Other training sessions are being arranged by the University Extension Division. Copies of the lesson plan and the audio-visual materials have been made available to the various regional OSHA and EPA offices and to date (December, 1981) approximately five kits have been supplied. Further kits are available to government agencies or at cost to others.

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APPENDIX
FINAL REPORT

Workshop kits have been distributed to:

Dr. Jack Berberich
NIOSH
Cincinnati, OH

Mr. Wolfgang Brandner
EPA Region VII
Kansas City, MO

Mr. Steven Farrow
EPA Region VIII
Denver, CO

Mr. Kazi Goslawski
EPA Region III
Philadelphia, PA

Mr. Kirby Narcisse
EPA Region IX
San Francisco, CA