PJS

SM-32 (REV. 5-78)

Shell Oil Company
Interoffice Memorandum

PLAINTIFF'S EXHIBIT
SH-2956

JANUARY 30, 1987

FROM: SR. INDUSTRIAL HYGIENIST, HEALTH & SAFETY, MFG. & TECH.

TO: SEE ATTACHED DISTRIBUTION LIST

SUBJECT: ASBESTOS COMPLIANCE IMPLEMENTATION MEETING

On January 9, 1987, an implementation meeting on the Asbestos Standard was held in Houston for Manufacturing. The purpose of the meeting was to discuss common problems with the standard and opportunities for facilitating compliance. Present were:

Deer Park Manufacturing Complex
Mike Bush, Al Schmit, Paul Masta

Norco Manufacturing Complex
Kirk Menard, Jerry Crail

Geismar Chemical Plant
Mike Barclay

Wilmington Manufacturing Complex
Sharon Sever

Marietta Chemical Plant
Ralph Layfield

Martinez Manufacturing Complex
Marj Kovacevich

Wood River Manufacturing Complex
Terry Harper, Don Elliot

Head Office

Ron Brown	Mfg. Support
Bert Grant	"
Glenda Greene	HS&E, S&IH
Philip Snyder	H&S, M&T
Lee Haring	HS&E, Industrial Hygiene

The OSHA Asbestos Standard as it applies to Shell Manufacturing, becomes effective January 16, 1987. Several implementation issues were discussed during the meeting (see attachment 1) and are summarized below.

BT8702001

SUMMARY OF ISSUES DISCUSSED

1. When does a regulated area exist?

A regulated area exists when employee exposure "exceeds or can reasonably be expected to exceed the permissible exposure limit". Based on experience and monitoring to date, it is believed that regulated areas would only have to be established for "major removal jobs". While a specific working definition is not available, these would probably not include working on pipe but would include working on blown-on insulation, reactors, columns, and cutting transite. NOTE: Significantly, recent discussions between OSHA and the ORC suggest that OSHA may interpret "can reasonably be expected to exceed" as data showing exposure above the action level.

Meeting attendees agreed that, in general, exposure from these jobs can be controlled most of the time through the use of water and other established methods.

While the official interpretation from OSHA is not yet available for Small-Scale, Short-Duration Tasks, the group believes that regulated areas would only exist for much larger jobs than that intended to be covered by SSSD.

2. Does all of the monitoring data have to be below the permissible exposure limit of 0.2 f/cc before a job can be treated as unregulated?

For administrative purposes, Shell currently considers compliance to exist when an analysis of the representative monitoring data shows that 95% of the measurements are below the permissible exposure limit. It should be noted that for purposes of determining compliance, OSHA will use the results of their monitoring regardless of past Shell data.

When an asbestos job is considered as not regulated, Shell locations need to have a sufficient data base for comparable jobs, and conditions of exposure. The burden is on Shell to properly determine when a job may or will exceed the permissible exposure limit.

While Shell industrial hygiene staff need to continue to fully characterize each job monitored, additional documentation is recommended when exposures exceed the PEL. Factors to be documented include length of each job, procedures used and obstacles encountered, elevation, probable cause of overexposure, weather conditions, and the number of employees involved.

3. What is a Small-Scale, Short-Duration (SSSD) Operation?

As OSHA uses the term, an SSSD operation is only a consideration after the decision is made that a regulated area exists. Generally, employers must comply with the requirements of paragraph (e) Regulated Areas, which include:

(e)(2) Demarcation
(3) Limited Access
(4) Respirators
(5) Prohibited Activities
(eating in regulated areas, etc.)
(6) Major Tasks: Removal, renovation, and demolition require negative-pressure enclosures where feasible

Small-Scale, Short-Duration Operations define an exception to (6) above. When a SSSD operation exists, employers do not have to use negative-pressure enclosures which are otherwise deemed feasible.

At this time, it is believed that the definition of SSSD will not have substantial impact on compliance activities since most regulated areas will only have to be established for jobs significantly larger than an SSSD operation.

It is noted that the definition will probably be important to the California locations since their proposed standard requires "feasible" negative-pressure enclosures for removal, renovation, and demolition regardless of exposure. Thus a SSSD operation would be the only exception to this requirement. Martinez and Wilmington will work on a tentative definition of SSSD to aid in implementation if the OSHA definition is not forthcoming in a timely manner.

4. Are negative pressure enclosures feasible?

Several factors were discussed with regard to the feasibility of using negative-pressure enclosures. Several locations had either used such enclosures or reviewed their potential use. While problems do exist with the use of such structures (see below), most problems would appear to be susceptible to corrective measures, providing sufficient resources were applied. Not using a negative-pressure enclosure in regulated areas based on feasibility must be decided on a case by case basis. Significantly, feasibility does not include a consideration of cost effectiveness.

Wind - All locations noted problems with maintaining the integrity of enclosures in outdoor environments. Wind has resulted in structures losing the negative pressure, blowing over, and tearing.

Configuration - Some jobs would not easily permit constructing a negative-pressure enclosure.

Heat Stress - During summer months it is anticipated that heat stress would have to be anticipated for employees wearing protective clothing in such structures.

Maintaining Negative Pressure - Geismar reported that they were not able to maintain a negative pressure due to thermal currents overcoming the capacity of the fan that was used. Other locations described losses associated with tears in seams.

Safety Concerns - Negative-pressure enclosures should be considered confined spaces. As such, the requirements of the anticipated future confined space regulation would probably apply. Locations are concerned for the possible buildup of flammable or toxic gases in the enclosure. Safety issues exist with employees leaning over scaffolding to pull in plastic sheeting, employees possibly falling from heat stress, etc.

Cost - Norco and Deer Park reported that using a negative-pressure enclosure would result in at least a cost increase of 300%. For example, a 60 x 40 ft. tank would cost $80,000 instead of $30,000 according to a Houston asbestos removal contractor. Costs for Shell Manufacturing are estimated to be substantial.

5. What are the benefits of using negative-pressure enclosures? And when should they be used?

Discussion

Clearly the primary value of using negative-pressure enclosures is to prevent the contamination of adjacent work areas and employees in those areas. They have been more commonly found in use for indoor asbestos removal. It is unclear whether employees working inside such enclosures would have greater potential exposure because of the enclosure. Attachment 2 identifies that one of OSHA's purposes in establishing this requirement is to prevent exposure to adjacent personnel above the action level. In the preamble, OSHA also notes that most employers will elect to use other methods of control in environments which do not "lend themselves to the construction of negative-pressure enclosures".

Meeting attendees strongly felt that while enclosures would have some application (eg. as windbreaks, in areas which could not be isolated, and indoors), in general, the benefits were outweighed by the problem considerations listed above. It was felt that the 0.1 f/cc action level for "other workers" in the area could be met and documented by other methods. Negative-pressure enclosures are considered but one method to achieve this end, but not necessarily the best method even though technically feasible. The following approach was discussed.

A. Conducting sufficient "boundary monitoring" over the duration of major removal jobs as an initial alternative to using negative pressure enclosures. This would be supplemented by monitoring of personnel in the immediate area but who are not directly engaged in the removal operation.

B. Establishing adequate demarcation around asbestos removal work to isolate the exposure source.

C. Requiring the use of the best control technique. Negative-pressure enclosures would be but one alternative (with probable limited utility in outdoor environments).

D. Fully characterize and document all operations that are considered regulated areas. This could include photographs of the work, documentation of the length of the job, the monitoring results, factors which influenced how the job was performed, probable reasons for exposures that are measured, etc. Such reports are now being generated by some of the contractors.

Conclusions

Subsequent discussions with the Shell Legal Department and HS&E reaffirm the need to use negative-pressure enclosures in regulated areas for major tasks. The only exemptions that exist are: 1) if not feasible, 2) if a small-scale, short-duration task, or 3) if a greater hazard would exist if an enclosure was used in a specific instance. In each case where feasibility or greater hazard is relied upon, the supporting facts will have to be persuasive and well documented. Industry is not permitted to consider cost or effectiveness since these matters were considered in the rulemaking process. ORC reports that as of mid-January, OSHA expects the use of negative-pressure enclosures in outdoor environments. ORC continues to work with them on this issue.

6. Who needs to have a Competent Person - Shell or the contractor?

If the removal work is performed by a contractor, the contractor must have a competent person. A Competent Person is one who has received the required training as outlined by the OSHA standard. One alternative is attendance at an EPA course. It is also recommended that even if the work is contracted out, Shell should also have at least one Competent Person to perform an audit function. Shell is required to have a Competent Person on site if Shell personnel work in a regulated area, eg. insulators.

7. Labels on installed asbestos insulation - any new options?

HS&E currently recommends that the "unit container" approach identified under hazcom be used for asbestos. Appropriate signs would be placed at the boundary to plants (units) which (may) contain asbestos insulation. ORC reported that OSHA was agreeable to such an approach.

8. What steps should be taken before work is performed on equipment which "may" contain asbestos?

Asbestos should be assumed to be present unless a sufficient number of bulk samples have been taken to rule it out. The revised OSHA standard should not significantly change existing practices. ORC recently reported that bulk samples do not have to be analyzed down to 0.1%, but rather 1% will be acceptable. Apparently the 0.1% rule was a carryover from the OSHA Haz-Com Standard and will not be applied to analytical requirements.

9. What are the considerations in collecting and analyzing bulk samples?

Microscopic analysis is the preferred method. EPA provides a round robin quality control program for plants who do this type of analysis. Interested parties should contact Todd Morman at Westhollow. Such a quality control check is recommended for locations engaged in this work. Chemical methods of analysis are faster but have false positives. Many locations are using Hager Labs in Denver which can supply overnight microscopic analysis for about $30 per sample.

Attachment 3 identifies some considerations in bulk sample collection.

10. Can water be used in cleaning up a contaminated work area?

Guidance received from Environmental Conservation, Mfg. & Tech. indicates that asbestos insulation cleanup should not permit washing of insulation debris to the sewer which could otherwise be contained and picked up by conventional methods. Introduction of asbestos to sewers would require a change in NPDES permits. After cleanup, a final washdown of equipment is permitted to minimize employee exposure.

11. What other considerations have surfaced in cleaning up a work area?

While the issue of contaminated scaffolding has surfaced at several locations, no special requirements exist, providing the boards are sufficiently cleaned after use. Reportedly both vacuuming and water has been used. Some locations use a felt/tar paper as found in roofing to achieve better containment of loose debris. After removing asbestos from piping many locations use a wire brush on the piping to remove any residual insulation. Many locations report that they lay down heavy plastic or other material where there exists a likelihood of contaminating soil, gravel, etc.

12. What are the recommendations for training?

Initial and annual training is required for employees exposed in excess of the action level. Specific elements must be included in the training as outlined by the standard, eg. a review of the standard and it's appendices. As a practical matter, training is also required to some degree for employees who are required to follow certain pre-

ventative workpractices to maintain exposures below the action level. The number of Shell employees who fall into the latter category far outnumber the number of employees who are actually required to receive training under the standard.

The Shell HS&E TRP on Asbestos was reviewed. Several locations expressed a reservation about using the TRP as it now exists. Some parts of the TRP do not sufficiently emphasize the operator's role in removing asbestos. In addition to these "future state" considerations, the TRP overemphasizes the use of negative pressure enclosures. Locations would prefer to see a product which placed the emphasis on the work that is performed 99% of the time, not those few situations where negative-pressure enclosures could be considered.

Comments and proposed revisions to the TRP should be sent to P. J. Snyder. Locations should move to implement the required training without waiting for a revised TRP.

13. What are the difficulties in implementing the fit testing requirements of the Asbestos Standard?

Either quantitative or qualitative respirator fit testing is required every six months for "each employee wearing a negative-pressure respirator". If this is interpreted to mean any employee who uses a negative-pressure respirator (for any reason), costs for fit testing within Shell will be substantial. DPMC reports an additional estimated cost of $300,000/year. This is based on the precautionary use of respirators at manufacturing locations whenever asbestos is disturbed. It is noted that the California proposed standard limits the fit testing requirement to employees who are exposed in excess of the permissible exposure limit.

It was proposed that fit testing continue to be conducted at least every two years (DPMC proposes annually) for employees who are identified as not specifically required by the OSHA standard to wear respiratory protection.

Subsequent discussions in Head Office support making an interpretation that this testing frequency would apply only where respirators are required. ORC reports that OSHA presently intends to use the 0.1 f/cc action level for this determination and not 0.2 f/cc. Where respirators are worn for other reasons, locations should look to the provisions of the respirator standard (1910.134) for guidance on fit testing, equipment maintenance, etc.

14. Are there any difficulties with the fit testing protocols supplied by OSHA?

Local procedures now in use for fit testing should be reviewed and modified to conform to either the qualitative or the quantitative fit testing protocol incorporated in the standard.

The quantitative fit testing (QFT) procedure substantially reflects the approach of the proposed revision to 1910.134, the Respirator Standard (see attachment 5). While this procedure does incorporate several controversial features such as requiring jogging in place, no testing if interfering facial hair is present, and performing three independent tests every six months, no major revision by OSHA is anticipated. Locations using QFT should proceed to implement this protocol for employees who are required to wear respirators under this standard.

Reportedly minor revisions to the qualitative fit testing procedure can be anticipated so as to have it more closely conform with the Inorganic Lead Standard. OSHA's intent to follow this protocol is reflected by the Preamble at pg 22697, column 1. Features which have been added to the lead standard's protocol and may be subject to modification include the selection from five mask sizes, not two; the jogging exercise; the retesting upon request within one week; retesting if significant weight change occurs; no testing if interfering facial hair is present; and recordkeeping. Until further clarification is received, locations using qualitative fit testing should modify their procedures for employees who are required to wear respirators under this standard.

15. When is protective clothing required?

Protective clothing is required by the regulation when employees are exposed above the permissible exposure limit. In other words, a regulated area must exist for this requirement to apply.

It is noted that most locations do not require protective clothing where employees engage in minor tasks or incidental maintenance which might involve asbestos. Locations should assure that local procedures also minimize the possibility of employees washing asbestos contaminated clothing at home. It is recommended that coveralls be obtained in different sizes in order to cover all employee requirements.

Some locations report the successful use of nylon swim trunks under coveralls when regulated areas are established.

16. What measures are recommended as minimum recommendations where exposures are below the PEL and regulated areas are not required?

Requirements for:
"restricted areas" not "incidental maintenance"

1. an assumption of asbestos
2. respirator
3. wet methods
4. gloves
5. barricade
6. coveralls
7. propser disposal (bag and tag)
8. signs
9. vacuums (optional)
10. wetting agents (optional)
11. proper hygienic practices

17. Are there any plans to systematically remove asbestos insulation and gasketing?

    While a few locations mentioned that consideration was being given to a systematic replacement of asbestos over a number of years (10 yrs), Ron Brown commented that there is no Head Office support at this time for the investment that this would necessitate. Marietta described their practice of creating a 4 ft. buffer zone at flanges whenever asbestos is removed, thereby minimizing future exposures.

    Regarding gaskets, Ron Brown is currently following an industry task force which is reviewing alternatives to asbestos gasketing. This is on the agenda for a future maintenance managers meeting and a NPRA meeting in February. Gasket handling does not represent a major source of exposure, however peak exposures in excess of 0.1 f/cc have been measured. Specific practices such as frequent vacuuming of shelving, use of plastic bags, and oiling of gaskets prior to removal have helped reduce this exposure potential.

18. If a location uses contractors to remove asbestos, what responsibility does Shell have?

    Where a contractor is exercising control of an asbestos removal job, the contractor would carry primary responsibility for complying with the OSHA Asbestos Standard. It is Shell's position that contractors must comply with applicable health and safety standards. Further, HS&E has recommended that Shell have on site a Competent Person to audit contractor performance.

    Additionally, third party liability for health effects allegedly resulting from exposure to (Shell's) asbestos also suggests that an audit program be in place to verify that such asbestos work comply with the OSHA regulation. Requirements for asbestos work should be discussed in planning for a job, and then be verified during the progress of the work.

P J. Snyder

P. J. Snyder

PJS:bjd

Attachment

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Industrial Hygienist, Safety & Industrial Hygiene, HS&E
Technologist, Safety & Industrial Hygiene, HS&E

MANUFACTURING LOCATIONS

Anacortes Refinery	- Manager, Health, Safety & Environment Manager, Maintenance
Deer Park Complex	- Superintendent, Health, Safety & Environmental Superintendent, Maintenance Manager, Health & Safety Supervisor, Administrative Support Staff Industrial Hygienist
Geismar Plant	- Superintendent, Maintenance Manager, Health, Safety & Environment Industrial Hygienist
Marietta Plant	- Manager, Health, Safety & Environment Manager, Maintenance Safety Assistant, Health, Safety & Environment
Martinez Complex	- Superintendent, Maintenance Manager, Health & Safety Industrial Hygienist
Norco Complex	- Superintendent, Engineering & Maintenance Manager, Health, Safety & Medical Maintenance Manager, Shops/Crafts Industrial Hygienist II
Odessa Refinery	- Manager, Health, Safety & Environmental Supervisor, Maintenance
Taft Plant	- Manager, Maintenance Safety & Training Representative
Wilmington Complex	- Superintendent, Maintenance Manager, Health, Safety & Environmental Industrial Hygienist
Woodbury Plant	- Manager, Health, Safety & Environment Manager, Operations/Maintenance
Wood River Complex	- Superintendent, Maintenance Manager, Safety & Industrial Hygiene Industrial Hygienist Craft Coordinator, Maintenance

ATTACHMENT 1

ISSUES LISTED FOR DISCUSSION AT THE JANUARY 9, 1987 MEETING

WHEN DOES A REGULATED AREA EXIST?

TRAINING OF EMPLOYEES

COMPETENT PERSON

SMALL-SCALE, SHORT-DURATION DEFINITION

MANAGING CONTRACTORS

NEGATIVE-PRESSURE ENCLOSURES

REQUIREMENTS WHEN EXPOSURES DO NOT EXCEED .2 F/CC

SAMPLING AND ANALYSIS OF BULK SAMPLES

LABELS ON INSTALLED ASBESTOS

AREA CLEANUP

FIT TESTING

IDENTIFYING ASBESTOS BEFORE PERFORMING MAINTENANCE

NEGATIVE PRESSURE ENCLOSURE

1910.58

(e) Regulated Areas

(1) Shall establish a regulated work area where airborne concentrations ... can reasonably be expected to exceed the permissible exposure limit.

(6) Wherever feasible, the employees shall establish negative pressure enclosures before commencing removal, demolition, and renovation operations.

(iv) Exception: For small scale, short duration operation, ... the employer is not required to comply with the requirements of (e) (6).

From the Asbestos Standards preamble

pg. 22708, col. 1 "it intended to provide employees engaged in the most hazardous asbestos operations ... with the greatest possible amount of protection and also to protect members of the public and other workers on site who are not directly involved in the abatement project from bystander exposure to asbestos".

pg. 22710, col. 3 "their purpose is to restrict the spread of asbestos dust that may be generated when large amounts of asbestos containing material are handled during asbestos removal".

pg. 6, col. 3 "such a requirement is necessary for construction sites where asbestos projects ... are performed because such sites are likely to involve several employers ... and many workers who are not directly involved ... (the enclosures) will prevent the exposure of these workers to concentrations of asbestos fibers that exceed the action level".

pg. 22711, col. 2 "the small-scale, short duration operation exemption ... applies to those work operations where it is impractical to construct a negative-pressure enclosure because of the configuration of the work environment".

pg. 22711, col. 2 "OSHA is confident that most employers engaged in maintenance and renovation projects in environments that do not lend themselves to the construction of negative pressure enclosures will elect to use glove bags, wet methods and other control measures to ensure that ... exposures ... remain below the action level".

Industrial Hygiene Forum

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Background

In recent years various EPA programs and regulations have focused public attention on asbestos-containing building materials. (40 CFR, Part 61-National Emission Standards for Hazardous Air Pollutants, 40 CFR, Part 763-Asbestos; Friable Asbestos-Containing Materials in School: Identification and Notification). As public awareness of the potential for building materials to contain asbestos increased, a commensurate demand for material identification (bulk sample analysis for asbestos) followed.

Many of the bulk samples received in NIOSH's Division of Respiratory Disease Studies lab arrive in large quantities, enclosed within poorly constructed containers. The physical state in which many bulk samples arrive suggests a lack of sophistication on behalf of the collectors. Further, one must conclude that if disruption of asbestos-containing material can cause exposure, then the sample collector is at some risk when utilizing a disruptive sampling technique.

A review of the current asbestos hazard abatement literature provided very little information on the techniques necessary to sample building materials safely and efficiently. The few techniques that were specified (scraping with a knife and pressing a film canister into the material) as well as others, were found to be highly disruptive when performed dry (Table I).

Industrial Hygienists at NIOSH's Morgantown Lab have developed a bulk sampling technique which provides an adequate quantity of material for analysis while minimizing the disruption of the parent material. The procedure employs core sampling, which allows collection of multi-layered materials with minimum disruption.

Devices for core sampling can be fabricated from existing or easily obtainable office, laboratory equipment (Figure 1). The best coring devices are those in which the sampler also serves as the sample container. A short length of clear, acrylic tube (Figure 2) with one end sharpened and provided with caps has proven very effective.

Modified disposable syringes or cork borers serve well as reusable samplers. However, they require a separate sampling container such as a glass vial as well as cleaning between samples.

In general, any cylindrical device that is thin walled, has a sharpened edge or an edge which can be sharpened, and a diameter of 1, 4" or so will make an ideal core sampler. If the sampler ends can be sealed to contain the material, so much the better, as the transfer and cleaning steps are eliminated.

Conclusions

Fiber release during dry sampling, as measured with standard air sampling techniques, can produce fiber concentrations greater than 1000 fibers per cubic centimeter in the air immediately adjacent to the sampling point (Table I). Because data available to date provide no evidence for the existence of a safe (threshold) level of exposure to asbestos, the prudent investigator should make every reasonable attempt to minimize, if not eliminate, fiber exposure during bulk sampling. The best system found for controlling fiber release during materials sampling includes: (1) wetting the material before sampling; (2) coring with a small diameter tube; (3) utilizing the coring device as the sample container; and (4) repairing the damaged surface.

TABLE I
Fiber Release 10 cm From Point of Sampling

Sampling Method	Fibers/cc	
	Dry	Wet
Cork Borer		
With Bag	7(8)[A]	0(0)
Without Bag	470(550)	9(11)
Knife	903(1056)	0(0)
Glass Vial	1847(2160)	17(20)

[A](Fibers/mm^2).

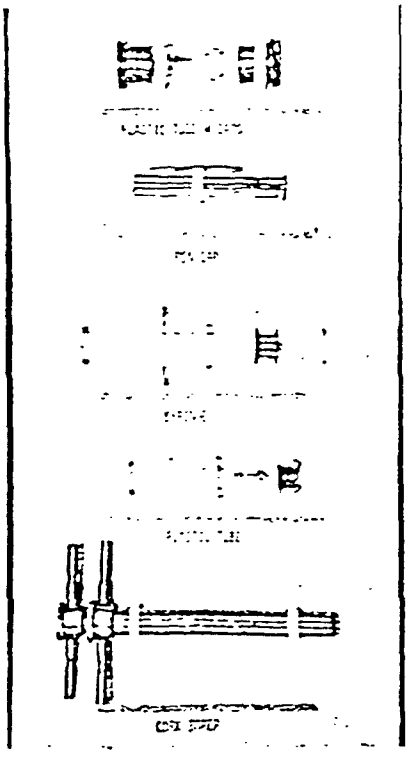

Figure 1 — Devices for core sampling.

If the material to be sampled cannot be wetted, a high efficiency particulate respirator must be worn while sampling, as well as providing some method to contain any material released during the disturbance.

Bulk Sampling Procedure

A. *What to Sample*

1. Identify areas and materials to be sampled based on building specifications and visual observations.
   a. Friable materials (easily able to crumble with light hand pressure).
   b. Exposed and deteriorating non-friable materials.
   c. Any materials which might be expected to contain asbestos which is/will be subjected to a disruptive activity.
2. Determine the number of individual random samples necessary to make up a collective "sample" for a homogeneous material.
   a. EPA recommends a minimum of 3 samples for a homogeneous material less than 1000 ft^2 in area, 5

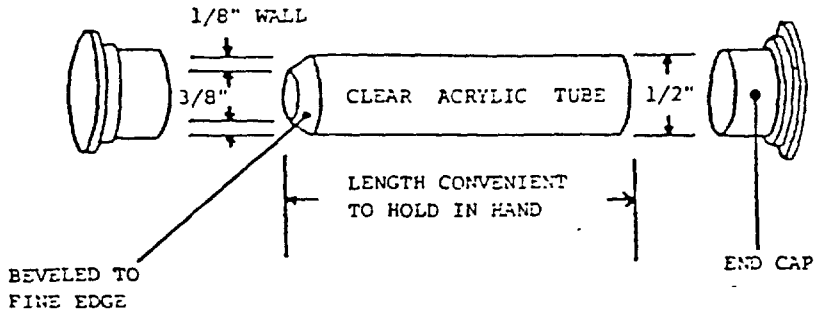

Figure 2 — Sampler/container.

samples 1000-5000 ft^2, 7 samples for areas greater than 5000 ft^2.

B. How to Sample

1. **Wet the Surface:** This is particularly important. Use a spray bottle to apply water. You may add a laundry detergent to serve as a wetting agent.
2. **Use a Containment Device:** If you can't wet the material, then use a containment device around the sampler, such as a plastic bag.
3. **A Respirator is Mandatory:** If you can't follow item 1 or 2; you must wear a high efficiency particulate respirator and provide a means of containing/cleaning debris.
4. **Obtain a Representative Sample:** Slowly push the sampler into the material with a twisting motion until you penetrate the entire thickness of the material. A metal or plastic tube, 1, 4" or so in diameter, works well for this. The representativeness of the coring is the major quantity setting factor. However, 1 cc or so of material will usually provide an adequate amount for analysis.
5. **Place Material in Container:** With a single-use sampler you need only wet-wipe the exterior before capping. With a reusable coring device, eject the sample into a glass vial or other similar container and wet-wipe the tube and plunger of the sampler.
6. **Label the Sample:** Use a code which can be referenced to the date, location, etc.
7. **Clean Debris:** Use wet paper towels to clean debris; discard in plastic bags
8. **Repair the Sampler Damage:** Latex paint, dabbed on wet or dry material is acceptable for friable surfaces. Tape works well for repairing core holes left in jacketed insulation and the like. Hair spray has also been reported as an effective sealant for friable materials.
9. **Sample Shipment:** Check the requirements of your post office before attempting to ship samples by mail. Private carriers are not restricted by DOT when shipping asbestos for non-commercial use (40 CFR 173.1090).
10. **Laboratory Preparation:** At the laboratory, forced removal of the cores should be done in a hood or under 50 mL or so of distilled water in order to prevent exposure to the analyst.

(From Wood River's proposed asbestos procedure.)

BID PACKAGE REQUIREMENTS

1. Contractors shall demonstrate reliability in performance of general contracting activities through the submission of a list of references of persons who can attest to the quality of work performed by the contractor.

2. Contractors must demonstrate ability to perform asbestos abatement activities by submitting evidence of the successful completion of training courses covering asbestos abatement. At a minimum, the contractor shall furnish proof that employees have had instruction on the dangers of asbestos exposure, on respirator use, decontamination and OSHA regulations.

3. Contractors must be able to demonstrate prior experience in performing previous abatement projects through the submission of a list of prior contracts including the names, addresses and telephone numbers of building owners for whom the projects were performed. In rare circumstances inexperienced contractors may be qualified if they can demonstrate exceptional qualifications in the other contractor standards.

4. Additional evidence of successful completion of prior abatement projects should be demonstrated by contractors through the submission of air monitoring data, if any, taken during and after completion of previous projects in accordance with 29 CFR 1926.58.

5. Contractors must possess written standard operating procedures and employee protection plans which include specific reference to OSHA medical monitoring and respirator training programs. In addition, the contractor must be prepared to make available for viewing at the jobsite a copy of OSHA regulations at 29 CFR 1926.58 governing asbestos controls and Environmental Protection Agency regulations at 40 CFR Part 61, Subpart M, (NESHAPS) governing asbestos stripping work practices and disposal of asbestos waste.

6. Contractors must be able to provide a description of any asbestos abatement projects which have been prematurely terminated, including the circumstances surrounding the termination.

7. Contractors must provide a list of any contractual penalties which the contractor has paid for breach or noncompliance with contract specifications, such as overruns of completion time or liquidated damages.

8. Any citations levied against the contractor by any Federal, State or local government agencies for violations related to asbestos abatement shall be identified by contractors, including the name or location of the project, the date(s) and how the allegations were resolved.

9. Contractors must submit a description detailing all legal proceedings, lawsuits or claims which have been filed or levied against the contractor or any of his past or present employees for asbestos-related activities.

10. Contractors must supply a list of equipment that they have available for asbestos work. This should include negative air machines, scaffolding, decontamination facilities, disposable clothing, etc.

11. Contractor must provide a copy of current respirator program and include a list of available respiratory equipment.

12. Contractor must designate a "competent person" as defined in OSHA to supervise the abatement project.

13. What will constitute a completed job:

    A job will be considered complete when the following criteria has been met:

    a. Visual inspection
    b. Air sampling

    Visual Inspection: The primary test for releasing the contractor is a thorough visual inspection of the worksite. Where ACM has been removed, substrate surfaces should be checked to insure no trace of ACM remains. Special attention should be given to pipes, beams and irregular surfaces that may have corners and hard-to-reach areas. If a sealant was specified in the contract, inspect the encapsulated surfaces to insure the correct amount of sealant has been used; there should be no holes, voids or cracks. Pay close attention to areas located behind obstructions, such as other pipes or ducts, for these signs. Inspection of entire work area is required to insure it has been adequately cleaned. Examine all surfaces for both dust and debris, particularly overhead areas such as suspended light fixtures. The use of a damp cloth to collect dust from these surfaces followed by an inspection of the cloth for evidence of dust is an appropriate method. If dust and/or debris is found, the entire area should be re-cleaned and the test repeated.

    Air Sampling: Sampling for asbestos must demonstrate levels below 0.01 f/cc by OSHA approved sampling methods. When enclosures are used aggressive sampling shall be implemented prior to removal of enclosure to demonstrate levels below 0.01 f/cc. A minimum of three samples required.

12/05/86

ATTACHMENT 5

OUTLINE OF THE ASBESTOS QUANTITATIVE
RESPIRATOR FIT TESTING PROTOCOL

I Equipment
- A. Negative-pressure masks only.
- B. Program responsibility assigned.
- C. Capable of showing fit factor of at least 2000.
- D. High efficiency filter on exhaust.
- E. Daily changes of cartridges, weekly for filters

II Before Testing
- A. Assure proper adjustment.
  1. positive or negative fit check
  2. wear mask for five minutes

III Perform Qualitative Test (screen)
- A. Use either:
  1. isoamyl acetate
     a. verify ability to smell IAA
     b. eye protection required
  2. irritant fume
     a. eye protection required

IV Perform Quantitative Test
- A. Pass fail parameters
  1. initial peak penetration shall not exceed
     5% - ½ mask
     1% - full face mask
  2. cannot issue if mask fails two of three tests
  3. minimum fit factors
     ½ mask - 100
     full face - 1000

  May determine graphically if variation on peaks is minimal, otherwise calculate average F.F.

Note: * items are those changed from the 1985 proposed respirator standard

ABS-060638

BT8702001

V Procedure

A. No testing if hair in respirator sealing surface.

B. Adjust mask for comfort (not overtightened)

C. Exercise regimen (five minutes estimated)

1. normal breathing - 1 min.
2. deep breathing - 1 min.
3. side to side (3 cycles, 5 sec. each position)
4. up and down (3 cycles, 5 sec. each position)
*5. read "rainbow passage" - 30 sec. estimated
6. grimace - 15 seconds
7. bend-touch toes - 30 seconds
8. normal breathing - 1 min.

D. Repeat three times for mask selected.
refitting and retesting permitted once.

E. Referral to physician those employees who exhibit breathing difficulty during test.

VI Data Interpretation and Use

A. Fit factor is lowest of three independent tests.

B. Employee has option to have an immediate retest after trying the mask for one week.

*C. Repeat testing when significant weight change occurs, etc.

VII Records

A. Must issue fit factor card

1. name
2. date of test
3. PF for each mask
4. name, signature of tester

B. Summary of all test results to be retained for three years for all masks tested.

FEBRUARY 2, 1987

D. P. ATWOOD
G. T. GOLL
O. D. LONG

Health & Safety, Mfg. & Tech. held an asbestos compliance implementation meeting in January for Manufacturing locations. Minutes from this meeting are attached for your information.

Attachment

Phil BD

BT8703002

P. J. SNYDER

ABS-060640

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