OFFICE OF INSPECTOR GENERAL

*Catalyst for Improving the Environment*

**Evaluation Report**

# Significant Modifications Needed To Ensure Success of Fort Worth Asbestos Demolition Method

**Report No. 2004-P-00002**

**December 19, 2003**

## Report Contributors:

Rick Beusse
Stephen R. Schanamann, CIH
Dan Howard
Thane Thompson
Sarah Fabirkiewicz
Darryl Weatherhead
Eric Hanger

## Abbreviations:

| | |
|---|---|
| AHERA | Asbestos Hazard Emergency Response Act |
| CFR | Code of Federal Regulations |
| EPA | Environmental Protection Agency |
| FPA | Final Project Agreement |
| NESHAP | National Emission Standard for Hazardous Air Pollutants |
| OAQPS | Office of Air Quality Planning and Standards |
| OAR | Office of Air and Radiation |
| OECA | Office of Enforcement and Compliance Assurance |
| OIG | Office of Inspector General |
| OPEI | Office of Policy, Economics, and Innovation |
| ORD | Office of Research and Development |
| RACM | Regulated Asbestos-Containing Material |
| QAPP | Quality Assurance Project Plan |
| $s/mm^2$ | Structures Per Millimeter Squared |

**Cover Photo:** Image showing Fort Worth Method – Phase I demolition. Source: Image obtained from EPA Region 6.

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
WASHINGTON, D.C. 20460

OFFICE OF
INSPECTOR GENERAL

December 19, 2003

**MEMORANDUM**

SUBJECT: Final Evaluation Report: Significant Modifications Needed To Ensure Success of Fort Worth Asbestos Demolition Method
Report No. 2004-P-00002

FROM: Kwai-Cheung Chan /s/
Assistant Inspector General for Program Evaluation

TO: Jeffrey R. Holmstead
Assistant Administrator for Air and Radiation

John P. Suarez
Assistant Administrator for Enforcement and Compliance Assurance

J. Paul Gilman, Ph.D.
Assistant Administrator for Research and Development

Richard Greene
EPA Region 6 - Regional Administrator

Jessica L. Furey
Associate Administrator for Policy, Economics, and Innovation

Attached is our final report regarding the design, methodology, and oversight of the Fort Worth, Texas, Project XL proposal for an alternate method of demolishing structures containing asbestos. The subject evaluation was conducted by the Environmental Protection Agency's (EPA) Office of Inspector General (OIG). This report contains findings related to modifications needed to ensure success of the Fort Worth asbestos demolition method and corrective actions the OIG recommends. This report represents the opinion of the OIG and the findings contained in this report do not necessarily represent the final EPA position. Final determinations on matters in the report will be made by EPA managers in accordance with established procedures.

**Action Required**

In accordance with EPA Directive 2750, you are required to provide this office with a written response within 90 days of the final report date. The response should address all recommendations. For the corrective actions planned but not completed by the response date, please describe the actions that are ongoing and provide a timetable for completion. Where you disagree with a recommendation, please provide alternative actions for addressing the findings reported.

We appreciate the efforts of EPA officials and staff, as well as those of the City of Fort Worth, in working with us to develop this report. If you or your staff have any questions regarding this report, please contact me at (202) 566-0832, or Rick Beusse at (919) 541-5747.

# Executive Summary

According to the Environmental Protection Agency's (EPA) National Asbestos Registry System, over 166,000 asbestos demolition and/or renovation projects were conducted in the last two years. Since asbestos is a known human carcinogen, EPA has established stringent work practices to control emissions of asbestos resulting from demolition projects. Buildings and other structures that contain sufficient quantities of asbestos, known as regulated asbestos-containing materials, or RACM, are governed by strict rules specified in EPA's National Emission Standard for Hazardous Air Pollutants (NESHAP). This rule generally calls for removing RACM prior to demolition, which can be costly. EPA's Project XL is a national initiative that encourages testing of alternative ways to achieve environmental results, as long as those results are superior to those achieved under current regulations. Projects proposed under Project XL are intended to test new approaches that could be applied more broadly. Using Project XL, the City of Fort Worth, Texas, has proposed an alternative method for demolishing selected structures that possess RACM.

In general, the "Fort Worth Method," as it is known, calls for thoroughly wetting the structure with a fire hose while it is demolished using a bulldozer or track hoe, but it does not call for removing all the RACM prior to demolition. The City has proposed a three-phased approach to obtaining EPA's approval of the Fort Worth Method. Phase I testing of the proposed Method occurred in 2001 on a small, single family dwelling of less than three stories that was exempt from the NESHAP due to the type of structure. Phase II testing is planned for an abandoned hotel that contains enough RACM to be regulated by the asbestos NESHAP. If the Phase II demonstration is deemed successful, Fort Worth plans to conduct Phase III, consisting of multiple demolitions using the Fort Worth Method. If approved, the Method would then be available for other cities to use in demolishing similar structures. Other cities have already shown interest in the Fort Worth Method. In 2000, a Miami University of Ohio/University of South Carolina survey found that within 35 US cities there was a collective total of more than 91,000 abandoned buildings in need of demolition. According to one EPA asbestos expert's estimate, as many as 80 percent of these structures would contain RACM.

The Office of Inspector General (OIG) initiated this evaluation because of the national policy implications of this precedent-setting demonstration project, and because the project involves a new approach to demolishing buildings containing regulated quantities of asbestos. During our evaluation, we sought to answer three specific questions that address how the design and methodology of the Fort Worth Method could be improved and how EPA could improve its oversight of this

project and other Innovation proposals. Those questions, as well as summaries of what we found and recommendations for each, follow.

1. Is the design and methodology of the Fort Worth Method - Phase II adequate to demonstrate protection of human health and the environment?

The current design and methodology of the Fort Worth Method is not adequate to demonstrate protection of human health and the environment. Significant modifications to the design and methodology will be necessary for EPA to ensure that the data generated and used to evaluate this project will be valid. For example, the description of the Fort Worth Method does not identify the key factors or variables that could be encountered during a demolition, nor does it specify how these or many other hazardous materials would be handled or treated to minimize potential exposures. There are also concerns about the adequacy of the ambient air monitoring that would take place during Phase II, and the Phase II proposal has not been independently peer reviewed to ensure that it is based on sound science. This proposal also has significant national policy implications, because, if determined equivalent to the NESHAP, this demonstration project may set a precedent that other communities could use in demolishing aging structures with asbestos.

We recommend that EPA assist Fort Worth in modifying the Fort Worth Method to produce a single, finalized technical specification document that fully describes the Fort Worth Method, including the demolition strategy and associated Quality Assurance Project Plan (QAPP), and that this proposal be externally peer-reviewed prior to testing.

2. Does the Fort Worth Method - Phase II meet EPA's key Project XL criteria, including superior environmental performance, regulatory flexibility, adequate stakeholder involvement, and transferability to other asbestos demolition projects?

Although initially proposed in September 1999, the Fort Worth Method does not yet meet EPA's Project XL criteria of superior environmental performance, appropriate regulatory flexibility, adequate stakeholder involvement, or transferability. Of 15 external stakeholder groups we interviewed regarding these four criteria, 13 did not believe that the Fort Worth Method, as currently written, is either equivalent or superior to EPA's NESHAP. EPA has yet to determine whether the method is either equivalent or superior to the Asbestos NESHAP. Also, the regulatory flexibility requirements necessary to approve this proposal have not been met, and the proposed Fort Worth Method does not utilize a work practice standard, but rather depends on the analysis of air monitoring samples, which take several days to analyze. As a result, the Agency and the City of Fort Worth could be exposed to liability issues from the public if it is later found that asbestos was released into the environment during the Phase II test.

We recommend that EPA work with the City of Fort Worth to develop a Final Project Agreement that adequately addresses key Project XL Criteria for the entire proposed project (Phase II and Phase III), and that EPA ensure that Project XL team concerns are adequately addressed.

3. Has EPA's oversight to date ensured that the Fort Worth - Phase II project will allow EPA to reach valid conclusions on the effectiveness of such demolition techniques for each type of asbestos?

EPA's oversight to date has not ensured that the Fort Worth Method-Phase II proposal will allow the Agency to reach valid conclusions on the effectiveness of this alternative demolition technique for each type of asbestos. This has occurred because: (1) after more than 4 years, the Fort Worth Method is not defined in sufficient detail to allow independent assessment; (2) a Final Project Agreement, usually established early in an XL project, has yet to be developed; (3) disagreements among XL team members have not been resolved; and (4) the proposal has not been peer reviewed. Also, concerns that the Phase I demolition was not representative have not been satisfactorily addressed. Without significant modifications, the proposed Phase II demolition may also not be representative of the effectiveness of such demolition techniques for each type of asbestos. Given the number of variables involved, it is questionable whether a single test – as described in the latest proposal – is adequate to statistically determine the success or failure of a new demolition method in accordance with sound scientific principles.

EPA is also promoting similar "innovations projects" under the Agency's Innovations Strategy that raise questions regarding how fundamental project criteria, such as environmental performance, will be assessed. Because Federal Register guidance has not been issued for the Innovations Strategy, it is unclear how these proposals will be handled, how differences in views of project adequacy will be addressed, how timeframes will be enforced, and whether external peer review will be required prior to project implementation.

We recommend that EPA develops comprehensive Agency guidance for conducting oversight of these proposed projects. We recommend that EPA assist the City of Fort Worth in designing a demonstration project that can be used to reach complete, reliable, and valid conclusions, and that EPA works with the City to ensure that the structures chosen for the Phase II demolition contain sufficient asbestos to provide representative test results. We also recommend that EPA develop and propose Federal rules and regulations for handling Innovation Strategy proposals, including the opportunity for public notice and comment.

## Recent Developments

The EPA Innovations Action Committee, formerly the Reinvention Action Committee, met on May 12, 2003 and recommended moving forward to Phase II, provided that certain conditions were addressed, including that the Fort Worth Method and the Quality Assurance Project Plan for Phase II be peer reviewed.

Further, City of Fort Worth officials met with Agency and OIG officials on September 29, 2003 and provided additional documentation, including a revised method dated September 23, 2003. In a September 23, 2003 letter from the EPA Region 6 Regional Administrator to OPEI, OAR, OECA and ORD, the Regional Administrator stated that the City of Fort Worth is fully supportive of the need to meet the requirements under Project XL, including:

- preparation of a Final Project Agreement;
- development of a stakeholder plan that includes establishing an effective stakeholder group;
- holding public meetings regarding the project.

We believe such commitments by EPA and Fort Worth are steps in the right direction. However, these commitments also need to fully address the concerns we have discussed in Chapters 2 and 3 regarding superior environmental performance, regulatory flexibility, stakeholder involvement, and the precedent setting nature of Project XL transferability.

## Agency Comments and OIG Evaluation

EPA provided a response to our draft report that consolidated the comments of five EPA offices. Although the Agency did not agree with our presentation of certain issues, it agreed to implement the majority of our recommendations and noted that our report would be helpful as it endeavors to carry out tests in a scientifically sound manner. In addition to technical comments, the Agency expressed concern with two aspects of the draft report. First, it stated that the tone of our draft report was "unnecessarily negative" and suggested that we provide more credit for its recent efforts to work with the City of Fort Worth to improve the proposed Method. In response, we created a "Recent Developments" section in the Executive Summary that discusses and gives credit to the Agency for their recent actions. This information was already provided in Chapters 2 and 4, but we summarized it in the Executive Summary to ensure that the Agency received appropriate credit for its recent efforts to work with the City of Fort Worth on this proposal.

The second Agency concern related to differing interpretations of the precedent-setting nature of the Phase II test and the Agency's assertion that, "Any concerns

regarding broad use of the alternate method seem premature." Our work shows otherwise. Project XL was created to provide the regulated community with the flexibility to develop alternative strategies to replace or modify existing regulatory requirements on the condition that those strategies produce superior environmental performance. In our view, and in the views of many stakeholders we contacted, if EPA were to declare the Fort Worth Phase II test a success, many fiscally challenged municipalities would pressure the Agency to use this process to demolish asbestos containing structures in their areas. However, the majority of stakeholders we contacted believed that the Fort Worth Method needs significant modifications before it could be considered as potentially equivalent to the Asbestos NESHAP.

We continue to believe that OIG involvement in projects such as the Fort Worth Method is both appropriate and timely, especially when such projects have the potential to impact existing and possibly set new environmental and health protection precedents. We have made other modifications to the report based on specific comments from the Agency, and we have included the Agency's consolidated response in its entirety in Appendix I. Our evaluation of the Agency's consolidated response is in Appendix J.

# Table of Contents



## Chapters

# Appendices

This page intentionally left blank

# Chapter 1
## Introduction

## Purpose

The Office of Inspector General (OIG) initiated this evaluation because of the national policy implications of this precedent-setting demonstration project, and because the project involves the demolition of buildings containing regulated quantities of asbestos. While Phase II of the proposal only focuses on one demolition, the entire project has a much larger potential impact. The data generated by the proposal may be used to justify the demolition of as many as 50 buildings containing asbestos in the Fort Worth area. Also, since this proposal was introduced under Project XL, if the tests are considered successful, other cities may use the data generated by this project to justify similar demolitions. Some have already requested information related to this project.

Our evaluation objectives were to determine whether:

1. The design and methodology of the Fort Worth Method - Phase II are adequate to demonstrate protection of human health and the environment.

2. The Fort Worth Method - Phase II meets EPA's key Project XL criteria, including superior environmental performance, regulatory flexibility, adequate stakeholder involvement, and transferability to other asbestos demolition projects.

3. EPA's oversight to date has ensured that the Fort Worth - Phase II project will allow EPA to reach valid conclusions on the effectiveness of such demolition techniques for each type of asbestos.

## Background

Asbestos is made up of microscopic bundles of fibers that may become airborne when disturbed. These fibers get into the air and may be inhaled into the lungs, where they may cause significant health problems. According to EPA Publication (EPA-340-1-90-020), "Scientists have not been able to develop a ‘safe' or threshold level for exposure to airborne asbestos." However, those researchers stated that the greater and the longer the exposure, the greater the risk of contracting an asbestos related disease. Asbestos related diseases include asbestosis, lung cancer, and mesothelioma.

Asbestosis is a serious, progressive, long-term disease caused by inhaling asbestos fibers. The fibers cause scarring of the lung tissue, which makes it harder for the lungs to do their job of getting oxygen into the blood. Lung cancer causes the largest number of deaths related to asbestos exposure. People who work in occupations involving the mining, milling, manufacturing, and use of asbestos and its products, including construction and demolition workers, are more likely to get lung cancer than the general population. Mesothelioma is a relatively rare form of cancer that is found in the thin lining of the lungs, chest, abdomen, and heart. Several hundred cases are diagnosed each year in the United States, and most cases are linked with exposure to asbestos.

Because there is not a safe level of exposure for asbestos, EPA did not promulgate an asbestos emission standard.[1] Instead, the Clean Air Act provides the Administrator with the authority to promulgate a "work practice standard" if it is not feasible to establish an emissions standard. Under Section 112 of the Clean Air Act, asbestos is determined to be a hazardous air pollutant that must be regulated under EPA's asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP). The asbestos NESHAP specifies certain work practices that must be followed during demolitions and renovations of all structures, installations, and buildings that contain RACM. However, asbestos removal in accordance with EPA's asbestos NESHAP is costly because the regulations require that owners and operators take precautions to protect the public by minimizing the release of asbestos fibers during activities involving the processing, handling, and disposal of asbestos-containing materials. Also, Section 61.150 of the Asbestos NESHAP requires owners and operators to "discharge no visible emissions to the outside air" during demolition and renovation activities.

More than 166,000 asbestos demolition and/or renovation projects were conducted in the two-year period between the first quarter of 2001 and the first quarter of 2003, according to the National Asbestos Registry System. About 5.7 million cubic feet of RACM are disposed of annually from demolition/renovation operations, with demolitions comprising approximately ten percent of these activities. In 2000, a Miami University of Ohio/University of South Carolina survey found that the 35 responding cities collectively had more than 91,000 abandoned buildings in need of demolition. According to one EPA asbestos expert's estimate, as many as 80 percent of these structures would contain RACM.

---

[1] In 20 U.S.C. 3601(a)(1-3) of the Asbestos School Hazard Detection and Control Act of 1980, Congress found that: (1) exposure to asbestos fibers has been identified over a long period of time and by reputable medical and scientific evidence as significantly increasing the incidence of cancer and several other severe or fatal diseases, such as asbestosis; (2) medical evidence has suggested that children may be particularly vulnerable to environmentally induced cancers; and (3) medical science has not established any minimum level of exposure to asbestos fibers which is considered to be safe for individuals exposed to the fibers.

### *Project XL Goals*

The proposal under review was submitted under EPA's Project XL program, a national initiative that encourages testing of cleaner, cheaper, and smarter ways to attain environmental results superior to those achieved under current regulations and policies, in conjunction with greater accountability to stakeholders. Project XL was created to provide the regulated community with the flexibility to develop alternative strategies to replace or modify existing regulatory requirements on the condition that those strategies produce superior environmental performance.

### *The Fort Worth Method*

The City of Fort Worth submitted a proposal on September, 30, 1999, for an alternative method to the asbestos NESHAP. Under the Fort Worth Method, the City proposes to demolish substandard structures that are not in danger of imminent collapse but which, if left standing, may become structurally unsound over a period of years. The City proposes to do this without removing all the regulated asbestos-containing material from the structure. If approved, this method could change the way that asbestos demolitions are conducted nation-wide.

The Fort Worth Method calls for structures to be thoroughly and adequately wetted using fire hydrant water prior to and during demolition, and during debris loading. The method also calls for using one or more bulldozers to demolish single story buildings, and a combination of bulldozers and track-hoes to demolish multi-story buildings. Once demolition is complete, the method states that, "Debris that is not contaminated by asbestos-containing material will be treated as construction debris. All other debris will be treated as asbestos-containing material and will be transported to a licensed disposal site in lined and covered containers." Appendix A provides a detailed description of the Fort Worth Method.

The Fort Worth Project XL proposal is divided into three phases:

- Phase I - demolition of a small, single-family wood structure - which was exempt from the NESHAP requirements, occurred on April 22-25, 2001.
- Phase II of the project, the demolition of two buildings at the former "Cowtown Inn", is proposed for the summer of 2004[2].
- If the demolition conducted under Phase I and proposed under Phase II are determined to be successful, Phase III testing would proceed with the demolition of as many as 50 additional buildings in the Fort Worth area.

---

[2] According to a conversation with Region 6 staff in November 2002, the Phase II demolition was intended to be conducted in January, 2003, but was later deferred to June 2003. However, based on the most recent developments (see Chapter 4), EPA plans for demolition to occur any time after August 2004.

The proposed Phase II demolition site is an old Travelodge motel, consisting of 9 predominantly 2-story buildings in varying states of disrepair, that is located in a residential community and very near a school. According to the City of Fort Worth, the positive impacts of the method will include a reduction in crime havens, increased aesthetic beauty, increased development potential, and increased community pride. Fort Worth officials estimate that using the Fort Worth Method on the proposed Phase II structure could reduce demolition costs by as much as 60% compared to using the NESHAP method. Also, since this proposal was introduced under Project XL, other cities may use the data generated by this project to justify similar demolitions, and have already requested information related to this project. Therefore, the Fort Worth Project XL initiative will be precedent-setting for asbestos demolition and renovation activities.

## Scope and Methodology

We reviewed EPA's policies and guidance concerning Project XL and related innovations activities. We also reviewed the Fort Worth Project XL proposed project's design and methodology. We conducted evaluation fieldwork in EPA offices including the Office of Air Quality Planning and Standards (OAQPS); the Office of Enforcement and Compliance Assurance (OECA); the Office of Research and Development (ORD); the Office of General Counsel; the Office of Policy, Economics and Innovation (OPEI); the Office of Children's Health; the Office of Environmental Justice; and, Region 6. We also conducted evaluation fieldwork at the City of Fort Worth, Texas, including touring the proposed Phase II site with an OIG Certified Industrial Hygienist.

In order to obtain external perspectives of the proposed Fort Worth Method, we also interviewed 15 external stakeholder groups from industry associations, environmental groups, academic organizations, and other Federal Agencies. We selected these groups based on information identified during our research, and with input from EPA and the City of Fort Worth. Details on the scope and methodology, a list of documents provided to the stakeholders, and selection of external stakeholder groups are included in Appendix B.

The evaluation was performed in accordance with the *Government Auditing Standards*, issued by the Comptroller General of the United States. We conducted our fieldwork from February 2003 to July 2003.

# Chapter 2
## Significant Modifications Necessary to Ensure Adequate Protection of Human Health

Significant modifications to the design and methodology of the Fort Worth Method will be necessary for EPA to ensure that the data generated and used to evaluate this project will be valid. The description of the Fort Worth Method, revised by the City on May 23, 2002, does not identify all the factors and variables that could be encountered during a demolition or specify how these elements would be addressed. There are concerns that the proposed air monitoring standard under this project is not appropriate. Additionally, the Fort Worth Method has not been independently peer reviewed. As a result, the current design and methodology is not adequate to demonstrate protection of human health and the environment.

### Current Methods of Asbestos Demolition

Under the current Asbestos NESHAP regulations, there are very specific methods for demolishing buildings that contain RACM. For buildings that are not in danger of imminent collapse, the NESHAP Method is the typical demolition process used. Under the NESHAP Method, the owner-operator must follow all of the work practice requirements outlined below:

- Discharge no visible emissions;
- Remove all RACM from a facility being demolished or renovated before any activity begins that would break up, dislodge, or disturb the material;
- Adequately wet and carefully remove facility components that contain, are covered with or coated with RACM; and,
- Adequately wet RACM that is stripped from facility components during the operation, or stripping it in an air-tight containment area with a negative air pressure ventilation and collection system, or in a glove-bag system designed to contain the asbestos material produced by the stripping, or wrapped in leak-tight wrapping to contain all the RACM prior to dismantlement.

Under certain circumstances, an owner-operator may request a variance from the NESHAP requirements. However, in order to qualify for a variance, the owner-operator must propose an alternate demolition process that meets requirements very similar to the NESHAP requirements above.

If a structure is unsound and in danger of imminent collapse, it is not possible to utilize either the NESHAP method or a NESHAP variance because these options would endanger the safety of asbestos workers. In this situation, the structure must be demolished utilizing the NESHAP Imminent Hazard method. Using this method, the owner-operator may demolish the building in an expedient and straightforward demolition process, often using a bulldozer with a spray of water to reduce dust. However, even in this case, certain work practices and public health precautions must be utilized to ensure no visible emissions are released from the section of the building that contains RACM.

## Fort Worth Method Not Adequately Defined

The current description of the Fort Worth Method, dated May 23, 2002, does not identify the key factors and variables that could be encountered during a demolition and does not describe how such issues would be addressed. Based on the current documentation, single-story structures demolished using the Fort Worth Method will be thoroughly wetted using fire hydrant water and demolished using one or more bulldozers, while a combination of bulldozers and track-hoes will be used to demolish multi-story buildings. The walls and interior components will be leveled on top of the building foundation, and debris will be loaded prior to removal of the concrete slab if present. Segregation of demolition debris will be done to the extent feasible to reduce the amount of contaminated debris that will be treated as asbestos-contaminated waste, and the site will be graded for future use following completion of the demolition. According to the method document, "Air monitoring will be conducted in compliance with the Quality Assurance Project Plan and the Final Project Agreement." Please see Appendix A for a more detailed description of the Fort Worth Method.

Our evaluation of the Fort Worth Method document indicates that, as currently written, neither EPA, project officials, nor the public would have a clear understanding of the method prior to its implementation, and may have difficulty replicating this method at other locations. For example, it is unclear:

- Exactly what RACM would be removed or left prior to demolition of the structure (Table 2.2 lists the types of materials that should be specifically addressed in the Method);
- How these materials would be tested for RACM;
- What instrumentation would be used for testing different RACM;
- What detection limits would be used in testing these materials;
- How friable RACM (RACM with a high probability of being crumbled, pulverized, or reduced to powder) would be treated;
- How runoff would be controlled, tested, and a determination made as to whether it contained RACM;

- How testing would be conducted to determine if RACM is adequately wetted[3]; and,
- What volume of asbestos must be present in the Phase II and Phase III structures to provide representative tests for the method.

Also, Section 2C of the Fort Worth Method only provides that the "asbestos assessment report will allow for the development of a demolition strategy." It is unclear whether the resultant "demolition strategy" will receive the same level of scrutiny as is indicated for the asbestos assessment report. The Fort Worth Method is also unclear as to whether EPA or any other regulatory agency is required to review and approve the "demolition strategy" prior to its implementation. Additionally, the Fort Worth Method does not provide for contingency planning in the event that other types of RACM (besides Thermal System Insulation and spray-applied fireproofing) are encountered during the demolition process, nor does it provide for safeguards in the event that unanticipated conditions cause a health or environmental concern in the area.

Another important unaddressed factor is that the Fort Worth Method does not provide for an immediately enforceable stopping point that allows regulators to question if asbestos is being released during demolition. With the various NESHAP methods, the "no visible emissions" work practice standard allows for a demolition to be stopped if visible emissions are identified. However, the Fort Worth Method does not utilize a work practice standard, but rather depends on the analysis of air monitoring samples, which take several days to analyze. Under the Fort Worth Method, demolition activities would continue even if visible emissions were identified, allowing for potential releases of asbestos into the environment. It is especially important for the Phase II demolition to have an immediately enforceable stopping point because the proposed Phase II test structure is located next to a residential neighborhood and a neighborhood school.

A comparative analysis between the NESHAP requirements and the Fort Worth Method is presented in Table 2.1 below.

[3] The absence of visible emissions is not sufficient evidence of being "adequately wet."

**Table 2.1: Comparison of Fort Worth Method to NESHAP Requirements**

| **Demolition Method Comparison** | NESHAP Method | Imminent Hazard Method | Fort Worth Method[1] |
|---|---|---|---|
| Structurally Sound Buildings | Yes | No | Yes |
| Asbestos Assessment | Yes | No | Yes |
| Provide notice to State agency | 10 days in advance | As soon as possible | 2 days in advance |
| Remove All RACM prior to demolition | Yes | No | Only large quantities of Spray-on Fireproofing and Thermal System Insulation |
| Adequately Wet RACM during demolition | Yes | Yes | No[2] |
| Discharge No Visible Emissions | Yes | Yes | No[3] |
| Not Dependent on Air Monitoring Results | Yes | Yes | No[4] |
| Immediately Enforceable Stopping Point | Yes | Yes | No[5] |

1 If the Agency determines that the proposed Fort Worth Method achieves emissions reductions that are equivalent to the current requirements, then it could be used as an alternative to the current asbestos NESHAP. (See Chapter 3 for a detailed discussion).

2 The Fort Worth Method did not specifically state how testing would be conducted to determine if RACM is adequately wetted.

3 As discussed above, the Fort Worth Method does not employ a work practice standard that requires "no visible emissions" of asbestos.

4 As discussed above, the Fort Worth Method depends on the analysis of air monitoring samples, which take several days to analyze.

5 As discussed above, the Fort Worth Method does not provide for an " immediately enforceable stopping point" that allows regulators to question if asbestos is being released during demolition

## *External Stakeholders Views*

We asked 15 external stakeholder groups, including industry associations, environmental groups, and other Federal Agencies to independently review and assess the current documentation of the Fort Worth Method (See Appendices C and D). Thirteen of the 15 external stakeholder groups we interviewed do not believe that the Fort Worth Method is either equivalent or superior to the NESHAP. Three of the 15 stakeholder groups (the U.S. Department of Housing and Urban Development, Division of Healthy Homes and Lead Hazard Control; the International Union of Heat and Frost Insulators and Asbestos Workers; and, the Environmental Information Association) did not believe that further development of the Fort Worth Method should continue because the proposed

method would be unenforceable, and it could never be conducted without releasing asbestos into the environment. Twelve of the 15 did not believe that the method was adequately defined. The remaining groups that did not believe that the method was adequately defined provided the following suggestions for how the method could be improved:

- Air monitoring should be conducted using a contractor that is independent from the demolition contractor;

- The method documentation should specifically address wetting the inside of the structure prior to demolition;

- A bulldozer should not be used, as specified in the method, because it could tear up the material and break it down, therefore making it friable;

- There should be a third party consultant onsite at each demolition to actually "sign-off" on whether the asbestos materials and the building in general have been adequately wetted;

- The method should specifically describe the distance from the demolition building where air samples would be collected; and,

- The documentation should specify the total allowable volume of asbestos that can be contained in the building while using this method.

Appendices C and D summarize the comments received from stakeholders we contacted.

Table 2.2 lists various asbestos containing materials that, based on our work – including input from stakeholders – we believe need to be specifically defined with regards to the Fort Worth Method prior to implementation.

**Table 2.2: Materials That Should Be Addressed in Proposed Fort Worth Method**

| Asbestos Containing Materials that Need to Be Addressed | |
|---|---|
| Specific Type of Thermal System Insulation[4] | • tank insulation<br>• pipe insulation<br>• elbow/fitting/valve insulation<br>• boiler insulation<br>• duct insulation<br>• cement and patching compound |
| Surfacing Material | • mastic for flooring<br>• asbestos-impregnated plaster, stucco<br>• spray-applied fireproofing<br>• spray-applied surface coatings (popcorn ceiling, vermiculite treatments)<br>• spray applied acoustical or decorative surfacing.<br>• troweled-on crows foot texture, splatter texture, and joint compound.<br>• spray-applied surface coatings crows foot texture, splatter texture, etc.<br>• window caulking |
| Miscellaneous Material | C fire curtains in auditoriums<br>C fire doors<br>C vibration-dampening cloths<br>C asbestos-cement tiles, sheets, roofing shingles, and transite<br>C asbestos-impregnated roofing cement and asphalt roofing shingles<br>C linoleum or other floor tile<br>C roll flooring<br>C ceiling tile<br>C asbestos-impregnated pipe |

## Proposed Air Monitoring Standard Not Appropriate

Several stakeholders we contacted suggested that the air monitoring standard proposed in the Fort Worth Method (the 70 s/mm$^2$ Asbestos Hazard and Emergency Response Act (AHERA) clearance criterion) is not appropriate for use in ambient air monitoring around a demolition site because:

- It is not health-based;
- The original reason for its development – that it represented an average background contamination level on asbestos testing filters – is no longer correct; and,

[4] While the method provides that RACM consisting of more than 260 Linear Feet of Thermal System Insulation (TSI) will be removed, it does not specifically list what materials are classified as TSI.

- The criterion is an indoor air, post-abatement clearance level that is used by EPA to determine the success of asbestos abatement work conducted under full containment, and requires sampling in a finite, enclosed space, and with a contained volume of air.

More than half of the external stakeholders (8 of 15) we interviewed did not believe that the AHERA standard was the appropriate measurement for this Method. One stakeholder commented that the AHERA standard was only intended to be used as an indoor clearance procedure after asbestos removal had been conducted, and while containment was still in place. He stated that the air monitoring outlined under the Fort Worth Method was not an aggressive test that requires the use of fans and leaf blowers during containment. Another stakeholder, who was one of the 26 people on the committee that advised EPA on the development of the AHERA Standard, stated that, "nobody ever said that 70 structures was a safe exposure level, just that it was the lowest level measurable (at that time) because of background contamination on the filters." Today, based on sampling performed for the World Trade Center explosions, it has been determined that background contamination of filters is low enough to accurately detect asbestos fibers at about 15 s/mm$^2$. Appendix E provides additional details on the propriety of using the AHERA clearance level in the Fort Worth proposal.

Also, the placement of the ambient air monitors is not adequately addressed in the Quality Assurance Project Plan (QAPP). The placement of the monitors at a particular height may not capture all the asbestos fibers released. For example, some stakeholders suggested that monitoring at multiple heights and multiple distances may be needed to adequately determine whether asbestos particles escaped the demolition area. Further, setting monitors at upwind and downwind locations only, and not monitoring the entire perimeter, may not capture all asbestos released, as winds may be variable and the dispersing of fibers may not be predictable. As observed during the Phase I demolition, wind direction varied significantly.[5]

## Proposal Not Peer Reviewed

The proposed project has not been peer reviewed. The EPA Science Policy Council Peer Review Handbook dated December 2000 provides that, "Peer review is intended to uncover any technical problems or unresolved issues in a preliminary (or draft) work product through the use of independent experts." Further, that document states that, "Peer review enhances the credibility and acceptance of the decision based on the work product."

[5] The Quality Assurance Project Plan (QAPP) for the Phase I demolition required that if wind direction varied by more than 67 degrees for more than a 60-minute period, sampling would be terminated. In their April 9, 2002, Phase I Report Addendum, project officials acknowledged that wind direction varied by more than 67 degrees for more than a 60-minute period and yet demolition was not halted.

Thirteen of the 15 external stakeholder groups interviewed believed the project should be peer reviewed (See Appendix C). Recently, EPA officials told us they would have the Phase II proposal externally peer reviewed prior to implementation.

## Recent Developments

City of Fort Worth officials met with Agency officials on September 29, 2003, and provided additional documentation including a revised method dated September 23, 2003. The revised method provides more details in some areas. However, in some cases, these additional details raise further concerns. According to OECA officials, the revised Method is still insufficient to determine equivalency to other types of construction and other types of RACM. Of particular note is that Fort Worth does not plan to conduct any air monitoring at Project XL demolitions after Phase II. OECA officials remain concerned that a single test is insufficient to gauge project effectiveness. Additionally, based on revised cost estimates for the Phase II demolition, the projected 40 to 60 percent savings that Fort Worth officials envision would only be achieved when air monitoring is not conducted. As such, we believe this revised method is still not equivalent to the NESHAP, and portions of the revised Fort Worth Method may be less protective than the previous version of the Method. Also, a determination of equivalency utilizing only the results of the Phase II test is not scientifically sound, because one demolition would not be representative of the various types of buildings to be demolished, the types of RACM likely to be found, and weather conditions that could be encountered. Appendix G provides a detailed comparison of the May 23, 2002, and September 23, 2003, versions of the Fort Worth Method.

## Conclusion

The Fort Worth Method Phase II test – as presently described – does not ensure protection of human health and the environment. The Method does not provide a reliable, repeatable, scientifically valid test that can be replicated at other locations, or that can be used to predict the success or failure of future uses of this method. Because of the potential national implications of this proposed project, it is important that project documentation, design, and methodology is detailed and clear enough that the Agency – as well as interested and affected parties – completely understand what is being proposed. Further, the air monitoring criteria used to determine success of the proposal must be appropriate, the method must be tested on a representative number and type of buildings to ensure statistical confidence, and the Method should be peer reviewed to assure that decisions made are based on sound science.

## Recommendations

We recommend that the Assistant Administrator for Air and Radiation, the Assistant Administrator for Enforcement and Compliance Assurance, the Regional Administrator for Region 6, and the Associate Administrator for Policy, Economics, and Innovation ensure that:

2-1. Agency officials assist Fort Worth in modifying the Fort Worth Method to produce a single, finalized technical specification proposal, including the demolition strategy and associated QAPP that:

a. identifies and adequately describes how each type of RACM that may be encountered during demolition will be addressed;
b. better defines the wetting requirements;
c. is documented in sufficient detail to allow for independent assessment; and,
d. is evaluated based on an appropriate air monitoring standard and monitoring that is representative.

2-2. Agency officials assist Fort Worth in fully describing the air monitoring that will take place, and to determine whether the air monitoring contractor would be independent from the demolition contractor.

2-3. Agency officials require that the Fort Worth Method is adequately peer reviewed prior to implementation.

2-4. Agency officials outline criteria that determines the volume of RACM necessary to ensure a representative comparison to the NESHAP, and assist the city in locating a structure that meets these criteria.

## Agency Comments and OIG Evaluation

EPA provided detailed comments to our draft report, and where appropriate, we made revisions. EPA concurred with the specific recommendations outlined in this chapter. The Agency responded that it has already specified that revising the Fort Worth Method and the associated QAPP, and peer review of the documents, are pre-requisites for moving forward with the Phase II test.

The Agency disagreed with several specific findings of our technical evaluation of the Fort Worth Method. These included the requirement that RACM be adequately wetted, that no visible emissions be emitted, and that there be an immediately enforceable stopping point. The Agency stated that these requirements were included in the various documents associated with the Fort Worth Method Project XL proposal. However, these requirements are not

specifically stated in the Fort Worth Method, and we continue to believe that these requirements must be included in the Method itself. The Agency's complete written response to our draft report and our detailed evaluation of that response are contained in Appendices I and J.

# Chapter 3
# Agreement Lacking on Key Project XL Criteria

Although the City of Fort Worth initially proposed this project in 1999, four key Project XL criteria outlined in EPA's 1995 Federal Register Notice have not been adequately addressed, including superior environmental performance, regulatory flexibility, adequate stakeholder involvement, and transferability. According to XL requirements, each of these criteria must be satisfactorily demonstrated in order for an XL project to be deemed successful. The principal reason for the delay was because a Final Project Agreement, normally written early in an XL project, has not been developed due largely to internal Agency disagreements about the adequacy and benefits of the Fort Worth proposal.

In 1997, EPA issued a Federal Register Notice clarifying the Project XL process, stating that, while the original criteria provided in the 1995 Federal Register Notice were still important, the first three – superior environmental performance, regulatory flexibility, and stakeholder involvement – actually defined Project XL. The following sections discuss the extent to which these three criteria have been met for the Fort Worth Project XL proposal, as well as the transferability of the proposal for use in other applications.

## Superior Environmental Performance Questionable

The 1997 Federal Register Notice that revised the Project XL process also better defined how superior environmental performance was to be determined. According to that revision, a project can meet the superior environmental performance requirements if it is at least equivalent to the current requirements, while providing additional benefits, such as a clear reduction of risk, or better achievement of community and public health priorities. However, a project that was not considered equivalent to current requirements could not be considered superior overall. Based on information presented in Chapter 2, it is not clear that the currently proposed Fort Worth Method is equivalent to the current Asbestos NESHAP.

EPA's Project XL internal team members have yet to reach agreement on whether the Fort Worth Method is equivalent to the Asbestos NESHAP. Both OECA and OAQPS expressed significant concerns about the adequacy of the proposed Fort Worth Method. Specific concerns raised by both these groups included: the adequacy of Fort Worth wetting method; the ability of the process to control releases of asbestos from RACM; possible contamination of demolition equipment and surrounding area with friable asbestos emissions from building materials; cleanup of contaminated soils; and, how environmental benefits of the

Fort Worth Method would be compared to the Asbestos NESHAP. These specific concerns were expressed to Region 6 staff in numerous submissions of written comments between February 1999 and June 2002.

Although aware that team disagreement had not been resolved, the Reinvention Action Committee[6] decided in January of 2000 that the Fort Worth proposal should move forward in phases. Phase I, demolition of a single family dwelling that was exempt from the NESHAP, was conducted in April 2001 in an attempt to show equivalency to the NESHAP. Over two years after the Phase I test, the Project XL team members are still unable to agree whether the Phase I test was successful, or whether the test demonstrated that the current method is equivalent to the Asbestos NESHAP. As discussed in Chapter 2 above, these issues have yet to be resolved by the Agency, and have carried forward to the Phase II proposal.

Many of the stakeholders that we interviewed were also concerned about the adequacy of the proposed air monitoring process. One of these stakeholders stated,

> *"It is likely that asbestos emissions could be missed by the air monitors because the overall testing requirements seemed incomplete. Further, air monitoring alone is not sufficient. There should be soil samples after the work was done, and methods that captured and tested wetting water to ensure that asbestos was not being released into the environment through a different media. Finally, there should be a comparison test between the Fort Worth Method and the NESHAP. However, the current method is not sufficient to serve as a methodology for that comparison test."*

## Regulatory Flexibility Requirements Not Addressed

In order for a Project XL proposal to be implemented within the scope of the applicable laws and regulations, a legal mechanism that provides sufficient regulatory flexibility (e.g., regulatory waiver, site-specific rule-making) must be in place. Under the Asbestos NESHAP, which implements these requirements of the Clean Air Act, EPA must publish a notice in the Federal Register that approves an alternative means of controlling asbestos before it is implemented. This notice allows the public the opportunity to assess the proposed alternative, and ensures a process of openness in the development of a new demolition method. Because EPA has not issued such a Federal Register Notice for the Fort Worth Method, the Agency has not established the appropriate legal foundation for this demonstration project.

---

[6] Reinvention Action Committee membership for each proposal is made up of at least five different organizations (the relevant Region, the relevant Program office, the Office of Reinvention, the Office of Enforcement and Compliance Assurance, and the Office of General Counsel), and often more. Each Reinvention Action Committee member is charged with arbitrating conflicts and making policy decisions within his/her organization as it pertains to XL projects.

Additionally, prior to publishing the proposal in the Federal Register, EPA must make an official determination of equivalency based on the proposed test plan (or test results). This official determination must include a description of the procedures followed in testing or monitoring and a description of pertinent conditions during testing and monitoring. As noted in Chapter 2, numerous stakeholders have expressed concern regarding the adequacy of the method description. EPA required a test of the Fort Worth Method in order to provide sufficient data to determine if the Fort Worth Method was equivalent to the asbestos standard. However, due to internal disagreements about the Phase I demolition test results, a determination of equivalency has not yet been made by the Agency.

Further, EPA may lack the necessary information to make an equivalency determination because the Phase I demolition using the Fort Worth Method was not representative of a normal asbestos removal (See Chapter 4 for more details). In order for a demonstration project to have predictive value for other asbestos demolition projects, it is necessary for the demolition to be performed in a manner as close as possible to normal commercial asbestos demolition work. As a result, moving forward with Phase II without first meeting the regulatory flexibility requirements of both the Clean Air Act and Asbestos NESHAP could expose the Agency and the City of Fort Worth to liability issues from the public if it is later found that asbestos was released into the environment during the test.

## Stakeholder Involvement Incomplete

The City has performed some stakeholder involvement activities, including inviting stakeholders to review and comment on the Phase I proposal documents on the City's website in 1999. However, according to the 1997 Federal Register Notice, project sponsors should engage "direct participants" in the development of the project. According to the Notice, a direct participant "works intensively with the project sponsors to build a project from the ground up," and "the views of direct participant stakeholders will strongly influence the details of the project as well as EPA's ultimate decision to approve or not to approve the project." EPA's Office of Environmental Justice was not aware of this project, but after reviewing the proposal, it specifically expressed concern about the level of community information and stakeholder involvement covered in the current proposal. A majority of the stakeholders we interviewed were not aware of the Fort Worth proposal prior to our contacting them, and most raised significant concerns with the project. Appendix D provides additional details on the views of stakeholders we contacted.

## Transferability of Method Uncertain

The Fort Worth Method, as it is known, has not been clearly defined in terms that provide a clear understanding of what is to be removed during a Project XL asbestos demolition, making both independent analysis of the Fort Worth Method and replication by others difficult (See Chapter 2 for details). Twelve of the fifteen stakeholders groups interviewed did not believe that the method was sufficiently defined, and ten did not believe that the method could be successfully "transferred" to another municipality with assurance that it would be properly replicated with similar results (See Appendix C). As noted by one stakeholder, there may be inconsistencies in actual application of the Method during the demolition process (depending on worker knowledge and training, instructions by the contractor, and/or equipment used), such that starting with a Method that is not sufficiently detailed significantly increases the likelihood of implementation problems.

## Development of Final Project Agreement (FPA) Necessary

Only the signing of the FPA constitutes the selection of a pilot as a "full fledged" pilot project, according to the 1995 Federal Register Notice that established Project XL. The Notice further requires that FPA's address project-specific issues such as legal authority for project implementation, provisions for regulatory flexibility for pilot projects, public involvement, specific commitments to environmental progress, expected environmental results, and enforceability before implementation. However, nearly four years after the start of this XL project, an FPA is yet to be written and agreed to by EPA internal stakeholders. The "estimated timeframes" for when an FPA should be completed is normally less than 12 months from the date of proposal. This project, however, has continued for several years without the resolution of key issues.

## Recent Developments

In a September 23, 2003, letter from the EPA Region 6 Regional Administrator for to OPEI, OAR, OECA and ORD, the Regional Administrator wrote that the City of Fort Worth is fully supportive of the need to meet the requirements under Project XL, including:

- preparation of a Final Project Agreement;
- development of a stakeholder plan that includes establishing an effective stakeholder group; and
- holding public meetings regarding the project.

We believe such commitments by Fort Worth are steps in the right direction. However, these commitments also need to fully address the concerns we have

discussed in Chapter 2 and in this chapter regarding superior environmental performance, regulatory flexibility, stakeholder involvement, and the precedent-setting nature of Project XL transferability.

## Conclusion

Nearly four years after the Fort Worth project was initially proposed, and two years after the Phase I demolition occurred, core project issues are still in dispute among various EPA offices. As a result, key Project XL criteria have yet to be met, superior environmental benefits from this project have not been assured, and the equivalency of this proposed method has not been determined. Additionally, moving forward to Phase II without the development of an appropriate regulatory flexibility mechanism could potentially open the Agency and the City of Fort Worth to costly liability concerns.

## Recommendations

3-1. We recommend that the Assistant Administrator for Air and Radiation, the Assistant Administrator for Enforcement and Compliance Assurance, the Associate Administrator for Policy, Economics, and Innovation, and the Regional Administrator for Region 6 ensure that Agency officials work with the City of Fort Worth to develop a Final Project Agreement that adequately addresses key project XL Criteria for the entire proposed project (Phase II and Phase III), including:

- < determining whether the project can achieve superior environmental performance;
- < verifying a mechanism for regulatory flexibility;
- < obtaining adequate stakeholder involvement;
- < sufficiently documenting the method so that it can be properly transferred to other communities with similar results; and,
- < ensuring that all Project XL team concerns are adequately addressed.

## Agency Comments and OIG Evaluation

EPA provided detailed comments to our draft report, and where appropriate, we made revisions. EPA disagreed with several of our statements concerning the relationship between the Phase I demolition and the remainder of the Fort Worth Method Project XL demonstration.

We understand that the Phase I demolition was not originally included in the September 30, 1999, proposal. However, nothing in the additional requirements for Phase I precluded the Agency from addressing these key Project XL criteria for the remaining Phases of the demolition project. The Region 6 Conditional

Project Approval Letter to the City included the criteria necessary to move forward to Phase II, including a finding of equivalency from the Administrator. It remains our position that these key Project XL criteria have not been met. The Agency's complete written response to our draft report and our detailed evaluation of that response are contained in Appendices I and J.

# Chapter 4
## Better Agency Oversight Needed

EPA's oversight to date has not ensured that conditions placed on the project in the 2000 Conditional Project Approval Letter have been met, that problems related to representativeness and equivalency have been resolved, or that statutory and regulatory requirements have been satisfied. Additionally, significant concerns have been raised by Project XL team members, other EPA Regional staff and interested stakeholders as to whether data to be generated by the Fort Worth Method - Phase II project will be complete and reliable, and whether the project will ensure that EPA reaches valid conclusions. Without better oversight, national policy decisions related to asbestos demolitions could be made based on a demonstration project that is not representative or transferable to other sites.

### Phase I Conditions Still Not Met

Although this project received conditional approval more than three years ago, EPA oversight has not ensured that conditions placed on the project have been met. These conditions include determining whether the results of Phase I demonstrated equivalency and developing a Final Project Agreement. These conditions were included in a Region 6 Conditional Project Approval Letter to the City dated January 20, 2000. This letter provided that,

> *"If the data from the new Phase I supports a finding by the Administrator that the Fort Worth method is equivalent to the NESHAP method, the City's originally proposed Phase I will become Phase II and will be expanded to a wider variety of buildings subject to the asbestos NESHAP."*

Further, the January 20, 2000 letter stated,

> *"If this determination is that the methods are equivalent, a Final Project Agreement will be developed and signed, to guide the project through to and through implementation. If the methods are not found to be equivalent, the project will end at that time."*

The Phase I demolition was conducted more than two years ago (April 2001); however, the Agency has yet to agree whether Phase I demonstrated equivalency, and has not issued a finding of equivalency as required in the Conditional Project Approval Letter. Further, EPA may lack the necessary information to make an equivalency determination because the demolition was not representative of a normal asbestos removal for the following reasons:

- The pace of demolition was much slower than what would occur under normal conditions;
- The amount of water used on the Phase I demolition was not representative of a normal asbestos removal; and,
- The building demolished under Phase I did not contain significant amounts of spray-applied thermal insulation or asbestos-containing pipe wrap – asbestos-containing materials which easily become friable.[7]

Further, the conditions of the QAPP were not met for the Phase I demolition project. The wind direction varied significantly during the demolition, yet both the demolition and air sampling continued. The QAPP for this project required that if wind direction varied by more than 67 degrees for more than a 60-minute period, sampling would be terminated. In their April 9, 2002, Phase I Report Addendum, project officials acknowledged that wind direction varied by more than 67 degrees for more than a 60-minute period and yet demolition was not halted. In discussions with City of Fort Worth officials, they stated that the winds reversed exactly 180 degrees one of the days, but they decided to continue the demolition operation because the shift was exactly 180 degrees and did not change again. The QAPP conditions regarding wind direction must be clarified before Phase II demolition is allowed to proceed.

In order for a demonstration project to have predictive value for other asbestos demolition projects, it is necessary for the demolition to be performed in a manner as close as possible to normal commercial asbestos demolition work. It is necessary that demonstration projects contain the types of asbestos that can be expected to be encountered in normal commercial asbestos demolition. Further, it is essential that the demolition be conducted in accordance with the Quality Assurance procedures established to ensure that data obtained are reliable and of known quality.

## Stakeholders Concerns Unaddressed

As discussed in Chapter 3, concerns related to this proposed project have been raised internally by OAQPS and OECA since 1999. Further, external stakeholders and other Regional staff members have also expressed concerns. In the process of our evaluation, we contacted and interviewed 15 external stakeholder groups to gather their opinions of this proposal. Appendix B describes the process for identifying these stakeholder groups. One of the groups believed that the current method was superior, one group believed the method was equivalent, and 13 groups did not believe the method was either superior or equivalent. Ten groups we contacted believed that significant modifications would be needed before the Method could become equivalent to the current

[7] Material that, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure.

requirements. Three groups did not believe that further development of the Fort Worth Method should continue because the proposed method would be unenforceable. Better EPA oversight and more complete stakeholder involvement could have resulted in a more timely resolution of these issues.

Two Region 5 employees from the Air Enforcement and Compliance Section commented to the proposal in a November 18, 1999, memorandum that Region 5 was opposed to the acceptance of the Fort Worth Project XL proposal and raised several concerns to the XL Team. Further, this proposal was not well received in March 2002 by participants at the National Conference of State Legislature's 5th Annual Asbestos Meeting when the proposal was presented by a Region 6 employee. While approximately 100 individuals attended this presentation, none appeared to speak in favor of the Fort Worth proposal and significant comments opposing the proposal were made. For example, according to the transcript, one participant noted that:

> *"You can't wet a painted ceiling from the bottom. Are you going to poke holes and saturated ceilings and walls from the backside until you see water dripping? This seems to me about the money. These guys will be taking out the asbestos for money. They will lie and this is floor tile on a grander scale. Is anyone awake here? If this goes through I give you two conferences from now and everybody will be saying, 'who let this go through?' (clapping)."*

Some other commenters were more severe in questioning the feasibility of the proposed Method, with one noting that *"In Colorado we feel that outdoor sampling is a joke..."* As a result of the issues discussed above, we believe that improved EPA oversight and more widespread stakeholder involvement is necessary to develop and approve an alternative asbestos demolition method.

## Agency Policies and Procedures for Similar Types of Alternative Proposals Lacking

Project XL was one of EPA's early efforts to provide innovative environmental alternatives. However, Project XL proposals are no longer being accepted because all such alternative proposals now fall under one of two other EPA innovations strategies: (1) Environmental Council of the States projects, or (2) Innovations Strategies. Although both programs are similar to Project XL in that they provide regulatory flexibility to owners and operators and the opportunity for cost savings, EPA officials were only able to provide general guidance for how Environmental Council of the States projects should be carried out in the form of a Joint EPA/State Agreement, and have not developed policies and procedures for Innovations Strategies.

Unlike Project XL, specific criteria for gauging project success have not been developed nor published in the Federal Register for these other two innovation options. While Innovation projects have already been proposed, the Agency's Innovations guidance is still being developed and no specific criteria have been developed to date to govern these projects. Consequently, three concerns must be sufficiently addressed if future innovations projects are to be effectively administered.

- There should be specific guidance regarding the assessment of the technical merits and enforceability of proposed projects to assure that expertise within the Agency is fully considered. In this instance, technical and enforcement concerns by OAQPS and OECA did not appear to be given sufficient consideration by the Agency co-sponsors prior to the involvement of the Office of Inspector General. This issue contributed to dissenting opinions regarding the environmental effectiveness of the current Fort Worth Method.

- Innovations criteria must include a requirement for peer review, especially when a proposal has significant national policy implications. As discussed earlier, peer review was not performed on this proposal even though significant scientific and technical concerns were raised both internally and externally.

- Future Innovations policies should contain required timeframes that are enforced so that projects cannot continue for years without the resolution of key issues. We noted that the Environmental Council of the States agreement includes suggested timeframes for when EPA must make a decision on whether to accept or reject a proposed project. However, as discussed above, the Project XL guidance also contained suggested timeframes and these timeframes were not met.

## Recent Developments

EPA is currently considering requiring that the City meet certain conditions that address some of our concerns before moving to Phase II. However, these conditions do not address the issue of equivalency. The EPA Innovations Action Committee, formerly the Reinvention Action Committee, met on May 12, 2003, and recommended moving forward to Phase II, provided that certain conditions were addressed. These conditions included:

- Requiring the development of a Final Project Agreement (detailing procedures for the Phase II demolition) by a stakeholder group specifically assembled for this project.
- Requiring EPA staff to work with the City to produce more detailed method documentation.

- Requiring that the Method documentation and Quality Assurance Project Plan for Phase II be peer reviewed.
- Reconsidering the proposed Phase II site or ensuring that children in a nearby school are not exposed to asbestos due to the demolition.

In a September 29, 2003, letter from the EPA Region 6 Regional Administrator to OPEI, OAR, OECA and ORD, the Regional Administrator wrote that the Region and the City of Fort Worth plan to take steps to address items recommended by the Innovation Action Committee, including:

(1) The use of additional monitors at the adjoining school and sampling prior to Phase II to establish a background level; and,

(2) Preparing a remediation plan in case there are emissions.

We believe that these are steps in the right direction. However, there are currently no sufficient data from Phase I, nor agreement among the XL team members regarding the results of Phase I, on which to base an equivalency determination. Further, the revised Phase II proposal attempts to base an equivalency determination on a single test. As a result, insufficient oversight could allow a determination of equivalency for an alternative method that has not satisfactorily established that it will reduce emissions as effectively as the asbestos NESHAP.

Also, while the Agency agrees in its response to our draft report that, "A single test in Phase 2 is insufficient to serve as a launchpad to implement the Fort Worth Method," this expectation does not seem to have been effectively communicated to the City of Fort Worth. The September 23, 2003, revision of the Fort Worth Method states that the City will only conduct air monitoring during the Phase II demolition, and afterwards will not conduct further testing of the Method, but move directly to implementation. We believe that the methodology in this revised proposal indicates ineffective oversight and communication on the part of the Agency. Further, this is contrary to the statutory and regulatory requirements discussed in Chapter 3, and does not satisfy sound scientific processes discussed above. An alternative emission standard can only be approved after notice and opportunity for public comment, and valid scientific assurance that the proposed alternative reduces emissions as effectively as the asbestos NESHAP. Further, EPA must publish a notice in the Federal Register that approves the alternative means of controlling asbestos before it is implemented.

## Conclusion

Agency oversight should ensure that the tests of alternate methods of asbestos demolition are representative and that the results of those tests are valid, because the Agency must use those data to determine if proposed alternatives are

equivalent to current requirements. Many internal and external stakeholders have raised significant concerns related to this project. These concerns should have been indicators that stakeholder involvement was necessary earlier in the process to determine whether there was enough support for this project to continue. The conditions that the Agency is currently considering for the project, including development of a Final Project Agreement and reconsidering the Phase II site, would partially address these concerns. However, these proposed conditions do not address how the Agency will use the data from Phase II, including whether it will use that data to draw conclusions regarding the equivalency of the Fort Worth Method.

## Recommendations

We recommend that the Assistant Administrator for Air and Radiation, the Assistant Administrator for Enforcement and Compliance Assurance, the Associate Administrator for Policy, Economics, and Innovation, and the Regional Administrator for Region 6:

4-1. Ensure that Agency officials work with the City of Fort Worth to design a demonstration project that can be used to reach complete, reliable, and valid conclusions.

4-2. Work with the City to ensure that the structures chosen for the Phase II demolition contain sufficient asbestos to provide a representative test and is sited in a remote location.

4-3. Ensure that Agency officials address the key conditions of the Conditional Project Approval letter, including equivalency and FPA development.

4-4. Ensure that Agency officials specify which legal mechanism will be used and which technical and process criteria will govern the Fort Worth Method project in the future, specify how human health will be protected to at least a level equivalent to the current Asbestos NESHAP, and publish the proposal in the Federal Register to solicit nationwide input on the technical merits and enforceability of the proposal.

We also recommend that the Assistant Administrator for Research and Development and the Associate Administrator for Policy, Economics, and Innovation work jointly to ensure that:

4-5. Agency officials develop a single guidance document for all proposals submitted under the Agency Innovations Strategy that provides fundamental criteria and is published in the Federal Register, including:

- requiring assessment of the technical merits and enforceability of proposed projects;
- ensuring that relevant expertise within the Agency is appropriately considered; and,
- requiring peer review of proposals that have significant national policy implications, to ensure that national policy decisions are based on sound science.

## Agency Comments and OIG Evaluation

EPA provided detailed comments to our draft report, and where appropriate, we made revisions. EPA agreed with all our recommendations in this chapter except for recommendation 4-5. EPA considered recommendation 4-5 to be beyond the scope of this project. Further, EPA disagreed with several of our statements concerning the requirements of the 2000 Conditional Project Approval Letter, as well as our assessment of the Phase I demolition. The Agency stated that it is committed to ensuring that the project is well defined, based on scientifically valid principles, and shaped through full and open dialogue with a broad stakeholder group. The need to further refine the Fort Worth Method as it presently exists, as well as the Quality Assurance Project Plan (air, water, waste monitoring specifics) for the Phase II test, is a prerequisite set out by the IAC.

We are encouraged with the Agency's intentions regarding better clarification of the method, external peer review, stakeholder involvement, and development of a Final Project Agreement. We note, however, that these intentions have yet to be realized after four years of effort. Therefore, we continue to believe our observations and recommendations in this chapter are warranted. For example, in Response 27 (Appendix I), the Agency stated, "...the Phase I test was slower and not fully representative of a NESHAP removal..." and yet the Agency and Fort Worth have continued to move forward with the proposed project as if the Phase I test were fully representative. We agree that the Phase I demolition was not fully representative of a NESHAP demolition. Therefore, use of Phase I data should not be used to determine equivalency to the NESHAP.

Regarding recommendation 4-5, EPA officials have told us that no additional alternative proposals will be conducted under Project XL, and that new alternative approaches to existing regulations will be carried out under other Agency initiatives, such as the Agency's Innovations Strategy. For example, EPA's September 30, 2003, Strategic Plan relies on the Agency's Innovation Strategy for providing flexibility to the regulated community. We note that, whereas Project XL performance criteria were established prior to initiation of any proposals and

were published in the Federal Register, no similar performance criteria has been established or published in the Federal Register for EPA's Innovations Strategy. Therefore, we believe that recommendation 4-5 continues to be an appropriate step to assure that such projects are evaluated based on sound science, irrespective of the name of the program or initiative under which they are carried out. We also believe that the Federal Register notice-and-comment process will allow for nationwide input on the technical merits and enforceability of any such proposals. We are pleased that the Agency's Strategic Plan envisions that such future projects will be clearly defined, based on sound science, and employ a full, open, transparent, and inclusive stakeholder process. The Agency's complete written response to our draft report and our detailed evaluation of that response are contained in Appendices I and J.

**Appendix A**

The Fort Worth Method
[May 23, 2002 Version]

1. Declaration of Substandard Structure

The City of Fort Worth Minimum Building Standards Code provides procedures to order the repair or demolition of structures that may endanger the life, health, and safety of the occupants or the public.

- If a structure does not meet the Minimum Building Standards Code, the Code Compliance Department will give the owner notice to bring the structure into compliance.

- If the structure is not brought into compliance, a hearing will be held before the City's Building Standards Commission. All owners, mortgagees, and lien holders of the property will be given notice and given an opportunity to comment at the hearing.

- The Building Standards Commission may, after notice and hearing, declare a structure to be substandard, and specify in its written order a reasonable time for the structure to be vacated, secured, repaired, or demolished by the owner.

- If the Building Standards Commission's order to vacate, secure, repair, remove, or demolish the building is not complied with within the allotted time, the City may demolish the building at the City's expense, and assess a lien against the subject property for costs.

2. Asbestos Assessment and Abatement

Once the decision has been made that the City will proceed with the demolition of a structure, the facility will have a thorough asbestos assessment conducted by an EPA accredited and TDH licensed asbestos inspector who will prepare a written report of the findings.

a. The assessment will identify asbestos-containing building materials (ACBM) and their locations in accordance with the Asbestos Hazard Emergency Response Act (AHERA), Asbestos School Hazard Abatement Reauthorization Act (ASHARA), and Texas Asbestos Health Protection Act (TAHPA) requirements.

b. The assessment report will be compiled by the asbestos inspector and reviewed for completeness and quality by an asbestos management planner or asbestos consultant.

c. The asbestos assessment report will allow for the development of a demolition strategy. If regulated asbestos containing materials (RACM), consisting of more than 160 SF of spray-on fireproofing or more than 260 LF of thermal system insulation (TSI), are encountered in a single structure, then removal specifications will be prepared and the identified material will be removed prior to demolition by a TDH-licensed asbestos abatement contractor.

3. Worker protection

a. The City will require its demolition contractors to comply with all applicable OSHA regulations for worker protection including but not limited to 29 CFR 1910 and 29 CFR 1926.

b. The City will contract with an asbestos consultant, licensed by the Texas Department of Health (TDH), to provide oversight of the demolition process. The consultant will have a certified industrial hygienist (CIH) on staff.

4. Demolition Method

a. Facilities will be demolished one structure at a time.

b. Demolition contractors will have daily safety meetings prior to work commencement to ensure safe demolition of the structure(s).

c. The demolition method will vary by the size and type of facility and types of RACM. Demolitions will be performed by heavy equipment only. No explosives will be used to explode or implode structures, and burning will not be utilized to demolish structures. Multi-family residential structures typically range from one to four stories. Commercial structures typically range from one to two stories.

i. Heavy equipment. Typically, one or more bulldozers will be used to demolish single story buildings, and a combination of bulldozers and track-hoes will be used to demolish multi-story buildings.

ii. Wetting. A structure will be thoroughly and adequately wetted using fire hydrant water applied with a variable rate 11-G (11 gpm) or 30-G (30 gpm) nozzle prior to, during demolition, and during debris loading. A water meter (or equivalent device) will be installed at the water hydrant to measure the volume of water used during demolition of the structure. The water will be delivered as a mist or concentrated stream. Direct high-pressure water impact of RACM will be prohibited. The demolition debris will be adequately wet at all times and kept wet during handling and loading into containers for transport to a licensed disposal site.

iii. Collapsing structure inward. The majority of the walls and interior components will be leveled on top of the building foundation, and debris will be loaded prior to removal of the concrete slab if present.

iv. Segregation of demolition debris. Segregation of demolition debris will be done to the extent feasible to reduce the amount of contaminated debris that will be treated as asbestos-contaminated waste. Debris that is not contaminated by asbestos-containing material will be treated as construction debris. All other debris will be treated as asbestos-containing material. Any segregation of the waste will be the responsibility of an onsite Asbestos NESHAP trained individual. The asbestos-containing material will be transported to a licensed disposal site in lined and covered containers.

For example, if RACM is isolated on the structure, the contractor will be advised to demolish the other areas of the structure first, taking care not to disturb the RACM, and to load the demolition debris separately. Then the part of the structure containing the RACM will be demolished and that debris will be disposed of as asbestos-containing material.

v. Grading. The site will be graded for future use following completion of the demolition.

d. No engineering controls are planned to be in place during the demolition other than adequately wetting the demolition materials.

5. Storm Water Protection

Demolition projects typically have a minimal to moderate amount of runoff depending on the site location and site conditions.

a. Asbestos has not been identified as a priority or secondary pollutant in storm water runoff within Fort Worth, and the City expects minimal, if any, asbestos impact on runoff from any demolition site. The USEPA relevant standards for asbestos are:

- Drinking Water Standard: 7 million fibers/liter (40 CFR 141.23 (a)(4)(i))
- Reportable Quantity: One pound (40 CFR 302.4 (a) Table 302.4).

Note: The City does not expect to exceed either standard and actually expects to have minimal to no impact on runoff from asbestos and demolition debris.

b. Best management practices will be used to control runoff to the maximum extent practicable. Runoff from the job site will be controlled using a combination of natural drainage, manmade drainage channels, and silt fencing as applicable.

6. Air Monitoring

Air monitoring will be conducted in compliance with the Quality Assurance Project Plan and the Final Project Agreement.

7. Disposal

a. As stated above in Section 4.c.iv., segregation techniques will be used during demolition in an effort to reduce the amount of contaminated debris that has to be treated as asbestos

contaminated waste. Segregation of waste will be the responsibility of the onsite NESHAP-trained individual.

b. Demolition debris will be kept adequately wet during loading and transporting to a waste disposal site.

c. Demolition debris will be loaded onto trailers using a track-hoe or similar equipment. Typically, the contractor will use construction trailers capable of holding 20 cubic yards of waste material.

d. Vehicles used to transport asbestos-containing waste material to the landfill must be covered with a tarp, and must be clearly marked during loading and unloading of waste. Transportation will be immediate and by a direct route.

e. The City will not mandate that its demolition contractors use a specific landfill for disposal. The job specifications for demolitions would state that disposal shall be in accordance with all Federal, State and local requirements. The contractors will be allowed to decide which landfill is a viable option. The City will not pay the contractors until it has received properly completed manifests.

f. The City will maintain waste disposal records for a minimum of two years.

8. Decontamination

Care will be taken to reduce the potential contamination of other job sites by equipment. Heavy equipment involved in the handling of asbestos-containing material may be decontaminated by:

a. Thoroughly rinsing the equipment components that come in contact with the asbestos-containing material. On-site water supply (e.g., fire hose) will be utilized.

b. Collection of rinse water on-site into natural depression, tarp lined area, "baby" pool, etc. The collection will be cleaned and disposable equipment will be disposed of as part of the asbestos-containing material.

c. Trailers utilized to transport asbestos-containing material will be cleaned as above or lined with a disposable liner that will be disposed of along with the final load at the licensed landfill.

d. Hand tools, if used, will be thoroughly rinsed with the rinse water captured on-site in a similar manner to the heavy equipment.

e. Workers handling or coming in contact with asbestos-containing material will wear disposable Tyvek suits or equivalent, respirators (as necessary), and gloves (as necessary). All disposable safety equipment including used respirator cartridges will be disposed of as asbestos-containing material.

**Appendix B**

# Scope and Methodology

To assess whether the Fort Worth Method - Phase II adequately protects human health and meets the key Project XL criteria, we reviewed numerous statutory, regulatory, and guidance documents. These included the Clean Air Act, the Asbestos Hazard Emergency Response Act (AHERA), the Asbestos School Hazard Detection and Control Act (ASHERA), and the Asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP). Further, we reviewed numerous Federal Register Notices that were issued during the development and evolution of the Agency's Project XL Program, as well as EPA Project XL Program guidance documents. We also reviewed a prior GAO report, *Overcoming Obstacles to Innovative State Regulatory Programs*, (GAO-02-268). This report discussed the challenges faced by state, county, or municipal governments when proposing and implementing alternatives to existing federal regulations.

In order to better understand the proposed Fort Worth Method - Phase II demolition process, the evaluation team, including our Certified Industrial Hygienist, toured the proposed Phase II demolition site. We also reviewed numerous Fort Worth Method documents, including the Fort Worth Method document, the Project XL Proposal document, and the Quality Assurance Project Plan. We also interviewed staff from the Fort Worth Method Project XL Team, including officials from OECA, OAQPS, ORD, OPEI, and Region 6. We collected and reviewed various written comment documents that were produced by each of these team members.

In order to ascertain the views of external stakeholders regarding the efficacy of this proposal, we contacted a total of 15 industry associations, environmental groups, and other Federal Agencies. We provided them with the following Fort Worth Method Documents:

- The Fort Worth Method Document, dated May 23, 2002;
- Table - 1: Comparison of the Asbestos NESHAP and the Fort Worth Method for Demolition of Substandard Structures (developed by Fort Worth, undated);
- Asbestos Management in the Demolition of Substandard Structures as a Nuisance Abatement, dated September 30, 1999 (in two parts); and,
- Quality Assurance Project Plan: Ambient Air Monitoring for Asbestos During Demolition of Substandard Structures in City of Fort Worth, Texas (Project XL).

After providing these documents, we scheduled structured interviews with each stakeholder group and requested information and input on the Fort Worth Project XL proposal and the current Fort Worth Method documentation, including:

- whether site preparation, material assessment, and demolition procedures for RACM is adequately described;

- whether work practice requirements for wetting/Misting No Visible Emissions is adequate;

- whether the design and methodology of the proposed asbestos demolition method is adequate to protect human health;

- the expected environmental performance of the proposed asbestos demolition method; and,

- whether the method should be peer reviewed before moving forward.

In selecting the external stakeholder groups, we first obtained input from internal stakeholders, including the City of Fort Worth, Region 6, OAQPS, ORD, OPEI and OECA by providing a list that we developed based on organizations that commented on the most recent revision of the Asbestos NESHAP, research, interviews and our knowledge. We then requested that those stakeholders respond whether the groups on the list are essential and add other organizations to the list that they believe are essential to contact that are not on the list.

After each internal stakeholder had made their selections, we used the responses to identify all of the groups that two or more internal stakeholders had recommended that we interview. We also judgmentally selected organizations that were identified by only one internal stakeholder as "Essential". All groups identified by OPEI were interviewed because all groups they identified were also identified by at least one other internal stakeholder. Region 6 first responded that we should not eliminate any of the original list, but then recommended that we not contact one group. We then contacted the selected organizations to determine if they would agree to review the Fort Worth Method Proposal and participate in an interview with the OIG.

The list below identifies the 15 external stakeholder organizations that agreed to be interviewed:

- Agency for Toxic Substances and Disease Registry
- American Thoracic Society
- California Air Resources Board
- Cole-McDonald Environmental Consulting, Inc.
- Environmental Information Association
- Environmental Institute
- HUD, Division of Healthy Homes and Lead Hazard Control
- International Union of Heat and Frost Insulators and Asbestos Workers
- Laborer's Health and Safety Forum of North America
- National Association of Demolition Contractors
- National Conference of State Legislatures
- National Institute of Building Sciences
- NIOSH, Office of Engineering and Physical Hazards
- OSHA Office of Compliance
- Sierra Club

**Appendix C**

## Summary of Stakeholder Responses

| | Yes | No |
|---|---|---|
| **Technical Assessment** | | |
| Useable for Very Friable Materials | 1 | 14 |
| Useable for Friable Materials | 2 | 13 |
| Useable for Non-Friable Materials | 11 | 4 |
| **Documentation Assessment** | **Yes** | **No** |
| Adequate Definition of Method | 3 | 12 |
| Ensure Accurate Replication | 5 | 10 |
| Provide Reliable Results | 5 | 10 |
| Serve as an Adequate Model | 5 | 10 |
| **Human Health Protection** | **Yes** | **No** |
| Adequate Design | 3 | 12 |
| AHERA Measure Appropriate | 7 | 8 |
| **Overall Environmental Performance** | **Yes** | **No** |
| Superior to the NESHAP | 1 | 14 |
| Equivalent to the NESHAP | 1 | 14 |
| Does not meet the NESHAP | 13 | 2 |
| **Peer Review** | **Yes** | **No** |
| Peer review prior to Phase II demolition | 13 | 2 |

# Design, Methodology, and Worker Protection Issues Identified by Stakeholders

| Design and Methodology Issues | |
|---|---|
| Agency for Toxic Substances and Disease Registry | ATSDR indicated that, "After my review of the Fort Worth Method, I am inclined towards the use of this method in the demolition of structures containing very friable, friable, and non-friable ACM. It is understood that the ACM will be wetted during the demolition phase (disassembling of the structure, staging and loading of ACM debris, decontamination of equipment, and the transportation to an approved waste facility)." However, I do have some questions:<br><br>During the wetting process of the structure disassembly, will the wetting process of the ACM include a surfactant? If not, the addition of a biodegradable surfactant would aid in the reduction of airborne asbestos fibers from very friable and friable ACM debris and dust.<br><br>During transportation of the wetted ACM to an approved disposal facility, is the ACM in a wetted state throughout the procedure? If not, the ACM in transport should be wet throughout the process of transportation to its final destination and disposal.<br><br>During transportation of the wetted ACM to an approved disposal facility, is the ACM in a wetted state stored in a leak proof container, and not exposed to the open atmosphere? If not, the ACM should be stored in such a leak proof container so as to be totally enclosed during transportation. In addition, a simple cover over the ACM would not suffice. The wetted ACM would dry out quickly (especially during hot days and with wind drying), thus introducing dry ACM dust and debris to the atmosphere. The ACM should be stored during transportation, in a leak proof and totally rigid container. |
| American Thoracic Society | It is likely that asbestos emissions could be missed by the air monitors because the overall testing requirements seemed incomplete. In the QAPP, Section B 1.1 calls for 10 sampling locations, 5 upwind and 5 downwind. Overall, this is an appropriate strategy, but there did not seem to be enough monitors to capture all of the likely emissions. Further, air monitoring alone is not sufficient. There should be methods that capture and test wetting water to ensure that asbestos was not being released into the environment through a different media. Finally, there should be a comparison test between the Fort Worth Method and the NESHAP. However, the current method is not sufficient to serve as a methodology for that comparison test. |
| California Air Resources Board | The AHERA requirement was supposed to be used as a clearance after asbestos removal had been conducted under containment. [AHERA] is an aggressive test when used on schools and fans and leaf blowers are used to test for asbestos while containment is still in place. The Fort Worth Method would not be an aggressive test. The perimeter monitoring would not represent sufficient air flow and may not reflect what is actually in the air. It is not clear how far away the monitors would be [from the demolition]. |
| Cole-McDonald Environmental Consulting, Inc. | There should be a 3rd party contractor onsite to observe the process and verify that the demolition is conducted correctly. Some of the requirements (such as following all applicable OSHA requirements) were in the Method document, but the document also references the QAPP regarding some of the technical requirements. |
| Environmental Information Association | The Fort Worth Method does not meet the current NESHAP requirements. However, the method could be used effectively on some non-friable materials, but this is currently allowed under the NESHAP. "Better enforcement of existing regulations is more important than relaxing the current NESHAP requirements." "Relaxing the current requirements will open the door to lower quality, less enforced demolitions." With the problems that EPA has had with Libby and the World Trade |

| | |
|---|---|
| | Center issues, this project seems like the wrong thing to be doing. Also, the only benefits that were cited by the proposal were reduction in costs. "To be looking at a rule change exclusively on costs isn't the right thing to do. The likelihood of a contractor messing this up is much higher than messing up the current NESHAP requirements." |
| Environmental Institute | The sampling plan does not address what will happen if the air samples come back and indicate that there was an asbestos release that exceeded the level. There are not provisions in the plan for what will happen, what the City will do, or how the municipality will deal with the liability issues that may occur as a result of exceeding the asbestos level. "This contingency should be planned for, and it is not there." "If you go to the preamble of the AHERA statute, then 70 is an acceptable level, because statute says that 70 it is an acceptable level for school children to be exposed to." However, there is an issue with the sampling plan. According to the QAPP, TEM analysis would be conducted on samples collected on the machinery and the personnel. However, if this is the case, then it should be applied to the perimeter samples as well. According to the QAPP, the perimeter air samples will be analyzed with PCM, rather than TEM. They assumed that this was due to the overall costs. However, this seemed backwards, and that TEM should be dropped on the personnel, and added to the perimeter. The current analysis process is more stringent in analyzing the samples on the workers and the machinery, and less stringent on analyzing the samples that would indicate whether asbestos is being released off-site. TEM should be added to the perimeter testing, but that if doing TEM on all samples were too costly, then the TEM should be added on the perimeter samples and dropped from the personnel and machinery samples. |
| HUD, Division of Healthy Homes and Lead Hazard Control | HUD commented that the method does not meet the NESHAP, and that after reading the comparison table, they realized what the Fort Worth Method was attempting to do. The Fort Worth Method is trying to jump from the NESHAP to the eminent collapse exemption, and this would change the whole approach to the NESHAP. HUD further commented that they have had experience with conforming to the asbestos NESHAP and this proposal attempts to avoid a lot. HUD stated that it only addresses over 160 square feet of spray-on fireproofing or more than 260 LF of TSI. |
| International Union of Heat and Frost Insulators and Asbestos Workers | Where will the air monitoring stations be located? This is too variable, regarding the movement of air. Perimeter monitoring should be conducted on all sides to capture any asbestos released. Also, asbestos fibers can remain airborne for days. What is to say that all of the fibers that are released from the site will be captured by the monitors. "They are using AHERA because they think that they can pass that requirement, but they will ignore what they want to ignore. The demolition will not be contained, and there will be no aggressive tests, such as use of a leaf blower to stir up the dust, like the ones required under AHERA containment clearance." "The samples will miss the material." "There is maybe a 1% chance that fibers will be captured using this method." This proposal is no where near the requirements that are there to be met. This design and methodology could lead to a larger exposure of asbestos than would be achieved under the required processes of containment. The last line of defense is the "plastic bubble." "Using the proposed method, can the City of Fort Worth guarantee that the ground is clean? What about the liability that the City may incur by conducting this process and then later learning that it had contaminate the soil with asbestos. Will the public end up paying to clean up these demolition sites someday when they become Brown fields?" |
| Laborer's Health and Safety Forum of North America | The Fort Worth Method did not meet the NESHAP requirements. Laborer's said that this method was not appropriate for friable materials, that it was not equivalent to the NESHAP, and should not be used in lieu of the NESHAP. Laborer's did state that it may be okay for non-friable materials, and thought that was the intention of the Fort Worth Method, because the Table that was submitted along with the proposal (Table 1) stated that, "Spray-on fireproofing and large quantities of thermal system insulation will be addressed under full containment conditions."<br><br>Laborer's stated that, based on their interpretation of the Fort Worth Method, that it only applied to structures with less than the NESHAP asbestos threshold of 160/260. As a result, Laborer's evaluated the method from the perspective that it would be used for demolitions with non-friable materials using mechanical means. Laborer's stated that the method seemed sound for this limited scope, although he had some questions regarding the air monitoring. |

| | |
|---|---|
| | Laborer's stated that, overall, this proposal left a bad taste in his mouth. Laborer's didn't know exactly what was covered by the proposal, and what was not. Laborer's said that on the surface, it looked adequate for materials that were non-friable, and for volumes of asbestos that were below the NESHAP, but that Laborer's was concerned about what precedents may be set, and how it may be interpreted in the future.<br><br>Laborer's stated that the method should not be used for Very Friable or Friable materials. However, Laborer's did state that it may be able to be used for non-friable materials, if some modifications were made, as discussed regarding air monitoring methods and clarification of the specific assessment and demolition processes. |
| National Association of Demolition Contractors | With regards to Air Monitoring, the City does not specifically state who will conduct the air monitoring, or if it will be paid for by the City or the contractor. It should be the City using an independent contractor. If it were the contractor, it would be like the fox guarding the henhouse. A bulldozer should not be used because the tracks could tear up the material (break it down making it friable). An excavator should be used instead.<br><br>Also, the documents do not spell out who will determine whether the demolition material, after it is on ground, is contaminated or non-contaminated. This determination should be done by a third party hired by the City, not the contractor. Contaminated waste should not end up at the landfill. It is important to identify who will determine separation, because, "We don't want asbestos containing materials to end up in the recycling stream."<br><br>Further, there are numerous types of pipe wrap and while some may be okay, some cannot be adequately wetted. Water will not work on some materials (specifically, "mag-block" elbows, fittings, etc.) and the minute someone hits these materials it will become airborne. If materials have been painted over several times, water might not get in. The degree of friability does matter.<br><br>As an indicator, (AHERA) is appropriate. This measurement requires TEM analysis, which is very expensive. The method should use PCM and if any fibers are found then use TEM. However, the asbestos could be removed for what it would cost for the TEM analysis. The savings would not be 40-60% (as estimated by the City). Savings will be closer to 10 percent if sampling was reduced. Also, the savings estimate did not include the chance that more materials may have to be taken to an asbestos landfill, and it would be tough to argue that any of the debris was not contaminated. |
| National Conference of State Legislatures | NCSL said that states already have enough troubles with enforcing the current requirements and just believe that this (Fort Worth Method) will simply cause more problems with both enforcement and compliance. Further, the states think their jobs are difficult at best, and while they would welcome a change, it would need to be viable and workable for BOTH the contractors and the enforcers.<br><br>NCSL did not believe that the method was sufficient for either very friable or friable materials, and said that some states are even debating the safety of leaving floor tiles in place, so was unsure about the use of the method for this level of materials. The Fort Worth Method is not as protective as the current NESHAP. However, some states would like to see EPA revisit the NESHAP requirements, and if some of the requirements were removed that would make the entire regulation more enforceable, then the states may be willing to make that trade-off. NCSL also said that the Fort Worth Method should be peer reviewed. However, this review should include state and federal regulators, the regulated community, and those that are or will be impacted by a change to the NESHAP. |
| National Institute of Building Sciences | As one of the 26 people on a committee that advised EPA on this measure [AHERA], the 70 structures was the lowest level measurable because of contamination of the filters. Nobody ever said that 70 structures was a safe level. Also, this measure is specific to inside containment. The standard should be the average upwind, ambient levels, which is well below the AHERA standard. If the method works, there should be no statistical difference between the upwind and downwind samples. |

| | |
|---|---|
| NIOSH, Office of Engineering and Physical Hazards | The lack of a contingency plan was an issue. Specifically, that the method is relying on TEM results for Phase I and Phase II, and these take time to process. Therefore, the people supervising the demolition are not going to be in the position to know if asbestos has been released or concentrations were elevated above the allowable limit until after the release has occurred. Also, there will certainly be times when measured readings exceed the allowable limit, and where no visible emissions were witnessed. The AHERA is appropriate because, since the 70 structures per mm is actually based on the statistical LOD of the TEM method, an adequate safety factor is introduced. Also, a PCM-equivalent site analysis is required by the QAPP that can be used to compare with health-based standards (if detectable asbestos concentrations are ever detected.) |
| Sierra Club | The method is unclear as to the amount of material that can be left in the structure, and the level that triggers the need to remove materials prior to demolition. The big concern is the wetting procedures, because they aren't planning on removing the ACM before demolition. Asbestos may migrate during the demolition. How you can wet the outside of a building and get the ACM adequately wet. Do not see how the method was going to get the interior duct work wet. Also, I didn't see any methods for public safety, including required fencing, warning signs, barricades, etc. This is considered site preparation, and it was not included in the method. There should be procedures for how the site will be managed when the crew is not working, such as overnight and over weekends, etc. Finally, with regards to friable and Class II materials, there are concerns with the use of heavy machinery during demolition.<br><br>How will they keep materials wet during the off hours. With regards to the heavy equipment used during the demolition, there was no mention of wipe sampling or cleaning protocols for that machinery. Asbestos gets everywhere, and can easily go into the machinery block, air filter, etc., and it is possible that maintenance workers could be exposed if equipment decontamination is not specified. Will they be inside wetting, or just outside, and how they know if thoroughly wet if not checking inside the wall covering.<br><br>Once soil is contaminated, it is very expensive to get asbestos out of it. Once rubble is on the ground, it is very difficult to segregate the material. It is going to have to be kept wet, excavated down to the soil, and then hauled to an Asbestos landfill. Further, certain types of asbestos, such as amosite, does not wet well, so this could pose an additional problem.<br><br>The method should be assessed on a site-by-site basis, and not generalized across all buildings. The data from the Amanda Avenue site (pre-Phase I test) demonstrated a several-fold difference between the upwind and downwind levels, and the results to support the method do not identify the types of ACM that are on the site. This exposure indicates that the method is not doing a very good job of containing the asbestos. Also, since this was included in the proposal, one would assume that the method most likely had worse results/data that were not included. Either Ft. Worth is not wetting the structure sufficiently, or that there are flaws in the overall process.<br><br>While the Quality Assurance/Quality Controls (QAQC) are elaborate, nowhere in the QAPP were there specific amounts that stated a pass-fail level. This is important. Also, while the QAPP covered EPA requirements, it did not cover the OSHA requirements very well. There was no provision for down-stream asbestos sampling for surface and storm-water runoff. They recommended that the method explicitly state the number of monitors, and where they will be placed both upwind and downwind. Unless the tests uses a statistically significant number of monitors to capture asbestos during demolition, there is no way to determine if the test has identified the "worse-case scenario" of asbestos release. Air monitoring needed to be done every time that the method was performed, and should not be exempted on days where it expected to rain.<br><br>While these documents address asbestos issues, it should also have a general paragraph or two that required the identification of other hazards, such as mercury ballasts from fluorescent lights, Leaking Underground Storage Tanks, and lead paint. |

| Worker Protection Issues | |
|---|---|
| Agency for Toxic Substances and Disease Registry | There did not seem to be sufficient "worker education" information. There should be information regarding the type and amount of training necessary in order to do the Fort Worth Method. |
| International Union of Heat and Frost Insulators and Asbestos Workers | The use of the bulldozers/heavy equipment increases the likelihood of releases that could impact the machinery operators, and we do not believe that worker's safety is sufficiently addressed in the method either. "Whenever you work with asbestos, you must take steps to protect the workers and protect the environment." |
| OSHA Office of Compliance | Site Preparation: With regards to all material identified in Tables A-C, there was no discussion for establishing a "regulated area," which is required by OSHA if TSI, Surfacing materials, or Class I asbestos work is being conducted. Further, there are no procedures for decontamination of workers, including the provision of showers. Also, if an alternative demolition procedure is going to be conducted, that the entity responsible for the demolition is required to retain a project designer that will develop an alternative procedure for conducting Class I asbestos work. The Fort Worth Method does not include these provision.<br><br>Material Assessment: It was unclear if the correct AHERA material assessment would be conducted (in accordance with 40 CFR 763(e)). It was assumed they would conduct the assessment in accordance with these requirements, but it was not specifically stated.<br><br>Demolition Procedures: The demolition procedures are just not clear enough, and do not provide enough information regarding how the demolition process would be conducted. The method needs to include the requirement for there to be a "competent person" on sight during demolition. Also, the method was not detailed enough, "one guy could do this one way, and the next guy could do it totally different." "To get consistency, this needs to be a lot more detailed on how everything will get done." The method does not ensure that the OSHA required procedures for developing an alternative work practice will be followed. Need to determine how they will ensure that exposures will be below the OSHA PEL, including the requirement that there be a competent person on site. |
| Sierra Club | The whole section on Worker's Protection is minimal, especially related to the respirator requirements. The only Personal Protection Equipment (PPE) mentioned is a Tyvek suit, and the method states that a respirator is optional. That shouldn't be left to the contractor to decide. Also, PPE should include eye protection, hard hat, gloves, and safety shoes. Also, employee training requirements were not addressed, and personal sampling was not mentioned, including a personal sampling plan, procedures, or sampling protocols. |

# Concerns Regarding the AHERA Clearance Level

The Quality Assurance Program Plan (QAPP) for Fort Worth's Project XL uses the EPA indoor post-abatement clearance level to determine success in outdoor asbestos abatement work. This clearance level was developed as part of the regulations implementing the Asbestos Hazard Emergency Response Act (AHERA). Under the AHERA regulations, there are two alternatives for clearance of interior school areas following abatement:

1. Ten samples must be taken and analyzed using Transmission Electron Microscopy (TEM) using the sampling and analytical protocol specified in the regulation (40 CFR 763, Appendix A to Subpart E). Five samples are to be taken from outside the abatement area, and considered as background. Five samples are to be taken from inside the abatement area after abatement but with protective plastic sheeting still in place. The average of the outside samples is compared statistically using the students' T-test. If the inside average is not larger, to a 95% confidence interval, than the outside average, the area may be considered clean.

2. As an alternative, so that fewer samples would be required, the inside samples could be compared to the estimated asbestos background contamination level which analysts found in the mixed cellulose ester (MCE) filters used when the sampling/analytical protocol was developed in the early 1980's. Three indoor sampling/analysis results could be compared to the background contamination level - 70 structures per millimeter squared. If the average of the analysis results was less than 70 s/mm2, the abatement could be considered complete. Appendix A (mandatory) to the AHERA regulation is a sampling, TEM analysis, and clearance protocol for determination whether a school building area can be re-occupied after asbestos abatement work.

40 CFR 763.90(a)(i)(3)further provides that "...An action shall be declared complete when...the average asbestos concentration of the three blank fields described in Appendix A to the subpart is below the fiber background level, as defined in Appendix A of this subpart, of 70 structures per square millimeter (70 s/mm2)."

In neither of these alternatives was the clearance criterion based on health considerations. EPA chose to allow these alternatives because the policy toward all carcinogens was, and is, that there is no safe level of exposure to a known human carcinogen, and the only permissible approach toward a carcinogen must be to minimize exposure to the lowest level possible. In the one alternative, this meant background air levels in a clean area; in the other, it meant the background contamination level of the analytical filter commonly in use. Thus, the AHERA clearance criterion was an economically expedient alternative which, if followed carefully, could ensure the lowest asbestos air levels then measurable using the AHERA analysis protocol. As a result, the AHERA criterion is not health-based.

Further, with respect to the differences discussed above, research conducted on sampling performed for the World Trade Center explosions indicates that the background asbestos contamination level now expected for MCE filters used in TEM sampling is 15-20 s/mm2. In addition, an earlier draft of the Project XL QAPP, (August 17, 2000) which utilized an ISO analytical method (ISO 10312:1995, Ambient Air - Determination of Asbestos Fibers - Direct Transfer TEM Method), calls for a quality control level of 10 structures/mm2 for filter media (section B.5.2.1). If the original AHERA criterion were again used to select the clearance level, the AHERA clearance level would now be 10-20 s/mm2. The AHERA regulation has not, however, changed along with this technological improvement.

# Revised Fort Worth Method

[September 23, 2003 Version]

1. Declaration of Substandard Structure

   a. The City of Fort Worth Minimum Building Standards Code (MBSC)[1] establishes the minimum standards for the continued use and occupancy of all types of buildings and structures within the City of Fort Worth, regardless of the date of their construction, in order to safeguard the public health, safety and welfare and to protect property. When a structure does not meet these standards, the City's Department of Code Compliance is tasked with enforcing the MBSC and requiring the owner to bring the structure into compliance or to demolish it. When the owner fails to comply, the City has two routes by which it can require that action be taken:

      1. an administrative hearing before the Fort Worth Building Standards Commission, pursuant to Chapter 7, Article IV, of the Fort Worth City Code, to order the owner to bring the structure into compliance with the MBSC or demolish it;

      2. or a civil suit, pursuant to Texas Local Government Code Chapter 54, subchapter B[2], for a mandatory injunction to compel the structure's demolition or repair.

   b. When the owner fails to bring the structure into compliance with the MBSC or to demolish it, despite an administrative order or mandatory injunction, the City itself may opt to demolish it.

   c. In some instances, the City may have taken possession of the facility through property tax foreclosure, subsequent to the administrative or judicial order. The City must then acquire the approval of the other local taxing entities prior to demolishing the structure. These include Tarrant County, Tarrant County College, Tarrant County Hospital District, Tarrant Regional Water District, and the various independent school districts located within Fort Worth.

2. Asbestos Assessment and Removal

   a. Once the decision has been made that the City will proceed with the demolition of a structure, the City will contract for a thorough asbestos assessment of the facility, conducted by an asbestos inspector[3] with Environmental Protection Agency accreditation and a Texas Department of Health (TDH) license. The City will obtain an administrative search warrant to gain access to the site for purposes of the assessment.[4] The asbestos inspector will prepare a written report of the findings.

   b. The assessment will identify asbestos-containing building materials (ACBM) and their location within the facility in accordance with the requirements of the

---

[1]Reference to Appendix A of the new method.

[2]Reference to Appendix B of the new method.

[3]25 Texas Administrative Code §295.50

[4]Texas Code of Criminal Procedure, Article 18.05

- Asbestos Hazard Emergency Response Act (AHERA), 15 USC §§2641 et seq.
- Asbestos School Hazard Abatement Reauthorization Act (ASHARA), 20 USC §§4011 et seq., and the
- Texas Asbestos Health Protection Act (TAHPA), Texas Occupations Code, Chapter 1954.

c. The assessment report will be written by the asbestos inspector and reviewed for completeness and quality by a TDH-licensed asbestos management planner[5] or asbestos consultant.[6]

3. Worker protection

While performing demolitions under the Fort Worth Method, worker protection measures will be handled as follows:

a. By contract, the City will require its demolition contractors:

1. to comply with all applicable Occupational Safety and Health Administration (OSHA) regulations for worker protection including but not limited to 29 CFR 1910 and 29 CFR 1926; and

2. to comply with the National Emission Standard for Hazardous Air Pollutants for Asbestos (Asbestos NESHAP) by providing a NESHAP-trained individual to oversee the demolition process.

b. During Phase 2 of the City of Fort Worth Project XL project, the City will separately contract with a TDH-licensed asbestos consultant to provide third-party oversight of the demolition process. The consultant will have a certified industrial hygienist (CIH) on staff that will actively participate in the development of the Quality Assurance Project Plan (QAPP), work methods, etc. This third-party oversight will not be required following a determination by the EPA that the Fort Worth Method is equivalent, for the purpose of proceeding to Phase 3.

4. Demolition Method

a. There are five (5) categories of substandard structures the City of Fort Worth encounters when pursuing nuisance abatement:

Category 1. Structure that does not meet the definition of facility under the Asbestos NESHAP.

Category 2. Structure that meets the definition of facility under the Asbestos NESHAP, but that contains no asbestos-containing materials (ACM);

Category 3. Structure that meets the definition of facility under the Asbestos NESHAP, and that contains ACM but does NOT exceed the NESHAP thresholds:
*(Regulated asbestos containing material (RACM) is less than 260 linear feet on pipes, 160 square feet on other facility components, or 35 cubic feet of facility components where the length and area could not be measured previously.)*

[5] 25 Texas Administrative Code, §295.51

[6] Ibid, §295.47

Category 4. Structure that meets the definition of facility under the Asbestos NESHAP, that is being demolished under an order of a state or local governmental Agency, issued because the building is structurally unsound and in danger of imminent collapse (and thus can be demolished with RACM in situ pursuant to the Asbestos NESHAP); and

Category 5. Structure that meets the definition of facility under the Asbestos NESHAP, and that contains RACM above the Asbestos NESHAP threshold. The Fort Worth Method applies only to Category 5 structures, with the limitations stated herein.

b. If the asbestos assessment report for a Category 5 structure identifies RACM above the Asbestos NESHAP thresholds in the form of spray-on fireproofing (SOF) or thermal system insulation (TSI) in any structure, the City will then request the preparation of removal specifications for the SOF and TSI. SOF and TSI above the Asbestos NESHAP threshold will be completely removed prior to demolition, in accordance with state and federal law by a TDH-licensed asbestos abatement contractor7. RACM other than SOF or TSI will remain in situ during the demolition. The Fort Worth Method demolition will then proceed as if the structure meets the Asbestos NESHAP definition of structurally unsound and in danger of imminent collapse.

c. In addition to the standard requirements of the Asbestos NESHAP, the following criteria will be applied to the Fort Worth Method:

1. The Fort Worth Method will be used to demolish structures ranging from one-to-three stories only.

2. Facilities will be demolished one structure at a time.[7]

3. Demolition contractors will have daily safety meetings prior to work commencement to ensure safe demolition of the structure(s).

4. During demolition, loading, and disposal the demolition debris will be maintained adequately wet as defined by the Asbestos NESHAP.[8]

5. Demolitions will be performed by heavy equipment only. No explosives will be used to explode or implode structures, and burning will not be utilized to demolish structures.

A. Heavy equipment. Typically, one or more bulldozers will be used to demolish single-story buildings, and a combination of bulldozers and track-hoes will be used to demolish multi-story buildings (not to exceed three-stories).

B. Wetting. A structure will be thoroughly and adequately wetted with water using a variable rate nozzle prior to demolition, during demolition, and during debris loading. Direct high-pressure water impact to the RACM will be prohibited. The variable rate nozzle will be capable of delivering water ranging from a mist to a concentrated stream. The demolition debris will be kept adequately wet at all times, including during handling and loading into containers for transport to a licensed disposal site. During the Phase 2 demolitions, a water

---

[7] Id, §295.45 Fort Worth Method Revised 9-23-2003 Page 6.

[8] 40 CFR §61.141 states: "adequately wet means sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from asbestos- containing material, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet." Fort Worth Method Revised 9-23-2003 Page 7.

meter (or equivalent device) will be installed at the water hydrant to measure the volume of water used during demolition of the structure.

C. Collapsing structure inward. The majority of the walls and interior components will be leveled on top of the building foundation, and debris will be loaded prior to removal of the concrete slab if present.

D. Handling of demolition debris.

i. When portions of a structure that do NOT contain RACM can be segregated so that they can safely be demolished without disturbing the area(s) of the structure that contain(s) RACM, these portions will be demolished to allow the debris to be disposed at a proper landfill as non-RACM debris. The area(s) of the structure containing RACM will be demolished and the associated debris disposed as regulated asbestos- containing waste. Segregation will only be used when practical (e.g., a warehouse building that is approximately 5,000 square feet in size and contains RACM in the office area that consists of approximately 1,000 square feet then the 4,000 square feet of open warehouse and NON-RACM will be segregated to the extent practicable to ensure RACM is properly disposed).

ii. When portions of a structure that do NOT contain RACM cannot be segregated as in 4.c.5.D.i. above, they will be demolished in a manner (where possible) to allow the NON-ACM to help contain the RACM during the demolition (e.g., non-ACM allowed to buffer the RACM from ambient air during demolition and subsequent loading). All demolition debris will be disposed as regulated asbestos-containing waste.

E. Grading. The site will be graded for future use following completion of the demolition.

d. Other than adequately wetting the demolition materials, no engineering controls will be in place during the demolition.

5. Storm Water Protection

a. Demolition projects typically have a minimal to no amount of runoff depending on the site location and site conditions.

b. Asbestos has not been identified as a priority or secondary pollutant in storm water runoff within Fort Worth, and the City expects minimal-to-no asbestos impact on runoff from any demolition site. The USEPA relevant standards for asbestos are:

1. Drinking Water Standard: 7 million fibers/liter (40 CFR 141.23 (a)(4)(i)); and
2. Reportable Quantity: One pound (40 CFR 302.4 (a) Table 302.4).

c. Construction site best management practices will be used to control runoff to the maximum extent practicable. Runoff from a job site will be controlled using a combination of natural drainage, manmade drainage channels, and silt fencing as applicable.

d. For large construction sites (five acres or greater) and small construction sites (one acre or more, but less than five acres), all applicable federal and state regulations pertaining to storm water discharges from construction sites will be followed. This includes the development and implementation of a storm

water pollution prevention plan (SWPPP) and the submittal of a Notice of Intent (NOI) to the Texas Commission for Environmental Quality (TCEQ) (for large sites) or the posting of a site notice (for small sites).

6. Air Monitoring

During the process of showing the Fort Worth Method to be equivalent to the Asbestos NESHAP, air monitoring will be conducted in compliance with the applicable Quality Assurance Project Plan and the Final Project Agreement. No air monitoring will be performed during Fort Worth Method demolitions following the determination of equivalency under Phase 2. Fort Worth Method demolitions will follow the Asbestos NESHAP for structures that are structurally unsound and in danger of imminent collapse.

7. Disposal

a. As stated above in Section 4.c.D., segregation techniques will be used during demolition in an effort to reduce the amount of RACM debris. A NESHAP-trained individual will be required on-site to monitor the demolition process as well as the handling of the waste.

b. Demolition debris will be kept adequately wet during loading and transporting to a waste disposal site.

c. Demolition debris will be loaded into end-dump trailers using heavy equipment. Typically, the contractor will use construction trailers capable of holding 20 cubic yards of waste material.

d. End-dump trailers used to transport regulated asbestos-containing waste material to a licensed landfill will be covered with a tarp, and will be clearly marked during loading and unloading of waste. Transportation will be immediate and by a direct route.

e. Disposal will be in accordance with all federal, state and local requirements. A contractor will be allowed to decide which licensed landfill is a viable option.

f. The City will retain a copy of all waste shipment records, including a copy of the waste shipment record signed by the owner or operator of the designated waste disposal site, for a minimum of two years.

8. Decontamination

a. Care will be taken to reduce the potential contamination of other job sites by equipment. Heavy equipment involved in the handling of regulated asbestos-containing material may be decontaminated by:

    1. Thoroughly rinsing the equipment components that come in contact with the regulated asbestos-containing material. On-site water supply (e.g., fire hose) will be utilized; and

    2. Rinse water will be controlled on-site and allowed to naturally evaporate or be absorbed into the ground. Disposable equipment will be disposed as part of the regulated asbestos-containing material.

b. End-dump trailers utilized to transport regulated asbestos-containing material will be cleaned as in 8.a. above, or lined with a disposable liner that will be disposed along with the final load at the licensed landfill.

c. By contract, the demolition contractor will be required to comply with all applicable OSHA regulations that may include the use of personal protective equipment (PPE) such as Tyvek suits or equivalent, respirators (as necessary), and gloves (as necessary). All disposable PPE will be disposed as regulated asbestos-containing material.

# Analysis of the Revised Fort Worth Method

City of Fort Worth Officials met with Agency officials on September 29, 2003 and provided additional documentation, including a revised method dated September 23, 2003. The revised method provides more details in some areas. However, in some cases, these additional details raise further concerns. We believe this revised method is still not equivalent to the NESHAP, and portions of the revised method may be less protective than the previous. Also, a determination of equivalency utilizing the results of the Phase II test only is not scientifically sound because one demolition would not be representative and the various types of buildings to be demolished, and the types of RACM and weather conditions that could be encountered.

Table H.1 below provides a comparison of the May 23, 2002 and September 23, 2003 versions of the Fort Worth Method.

**Table H.1: Comparison of the Revised Fort Worth Method.**

| Comparison of Revised Fort Worth Method | |
|---|---|
| Fort Worth Method<br>May 23, 2002 version | Fort Worth Method<br>September 23, 2003 version |
| The method indicated that it would remove spray-on fireproofing and thermal system insulation, but did not define what specific materials would fall into these categories. | The revised method still does not specifically define what materials will be included in the spray-on fireproofing and thermal system insulation categories. |
| The method was unclear as to what air monitoring processes would be used during the 30-50 Phase III demolitions that would be conducted after the Phase II demolition was completed. | No air monitoring is planned after Phase II. |
| The method did not include an independent, third party observer that would monitor the demolition and disposal of asbestos-containing materials and demolition debris. | The revised method specifically states that an independent, third party observer would only be used to verify the Phase II demolition, and would not be used in the Phase III demolitions that would occur afterwards. Therefore, there may be a conflict of interest issue because the method does not require a qualified independent observer to monitor demolition activities after the completion of Phase II. |
| The method did not adequately define or describe how RACM would be adequately wetted, or what testing would be conducted to determine if RACM left in the structure was adequately wetted during the demolition. | The revised method did not change or modify the wetting processes that will be used during demolition. |

| | |
|---|---|
| The method did not include an immediately enforceable stopping point, but rather relied on the results of air monitoring to determine if asbestos fibers had been released. | The revised method still does not include an immediately enforceable stopping point, and specifically indicates that after Phase II, even air monitoring will be discontinued. Further, specific air monitoring procedures to be conducted under Phase II are still to be determined and therefore cannot be evaluated at this time. |
| The method was unclear regarding the criteria that would be used to determine if a structure would be demolished using the Fort Worth Method. | The revised method provides specific criteria for determining if a structure can be demolished using the Fort Worth Method, and that criteria is much less stringent than the requirements necessary to meet the Imminent Hazard exemption of the NESHAP. |

While the revised method states that, "The Fort Wort demolitions will follow the Asbestos NESHAP for structures that are structurally unsound and in danger of imminent collapse," the method contradicts this statement by including items that are less stringent than the structurally unsound exemption. For example, the imminent hazard exemption under the NESHAP includes the requirement that no visible emissions be allowed from the section of the building where RACM was contained, however, this requirement is not mentioned in the revised Fort Worth method. Therefore it is unclear what does and does not apply.

We also requested that key officials from OECA and OAQPS, who are both familiar with the Asbestos NESHAP and this project, provide us with their views of the revised Fort Worth Method. The OECA representatives response include the following concerns:

- *"...this process cannot comply with the no visible emission standard.*
- "*Phase 2 is insufficient to determine equivalency especially to other types of construction and other types of ACM or the same types of ACM with significantly different concentrations of asbestos."*
- *"This one test will not be sufficient to allow the demolition of additional structures of different construction. They expect to extrapolate the results of Phase 2 beyond that which is prudent."*
- *"In my opinion the QAPP and monitoring proposal is fatally flawed and cannot give us the accuracy and precision needed to make the [equivalency] determination required by the CAA statute."*
- *"This project will not achieve superior environmental results, it may just be cheaper."*
- *"...the revised method does not meet the intent of Project XL, because these project are supposed to be 'a model of how EPA should work with all environmental stakeholders.'" "This Method discriminates against the private sector so it does not reach the XL goal of 'all stakeholders'."*

We agree with OECA's concern that a single test will not be sufficient to make a determination of equivalency. Based on the recent revision, the Fort Worth method will only be tested in one side by side comparison at one specific demolition site, and then the city will request that an equivalency determination be issued by the Agency. If this version of the proposal is approved, and an equivalency determination is issued by the Agency, a method that is deemed successful in one individual instance will be allowed to be used for other demolitions throughout the City of Fort Worth. However, one individual test is not adequate to determine the success or failure of a new demolition method. One data point (demolition), without comparison to any other similar data points within a controlled sample, will not provide a statistically significant pool of data that will allow the Agency to make an equivalency determination that utilizes sound scientific principals. While opinions vary within the field of statistics as to what comprises a sufficient sample size necessary to develop a statistically significant level of confidence, it is statistically impossible to predict future success from one single data point, because there are not other points of comparison.

Further compounding the test of this method is the overall number of unique or independent variables that are likely to be encountered during different demolitions. Under typical scientific methods, the researcher attempts to isolate one specific independent variable within a pre-determined number of samples, and then attempts to compare the occurrence of that one specific variable to determine if those results can be generalized with statistically significant confidence across a larger population. However, in the case of the Fort Worth proposal, the Phase III demolitions will include different types of buildings, with different types and volumes of asbestos-containing materials, under different types of conditions (temperature, wind speed, precipitation, etc.).

More specifically, in the September 29, 2003 meeting with EPA, city officials provided a briefing document that lists the types of buildings that they plan to demolish. This list includes bowling alleys, bars, taverns, grocery stores, automotive service stations/stores, churches and shopping malls. However, Fort Worth proposes to test the method only once, on one specific type of structure (an abandoned hotel), and will then attempt to use the results of that one test to predict the outcome of using this method on other structures. We do not believe that one test will provide sufficient data to accurately predict the outcome of other demolitions when using this method. The method must be tested on a sufficiently sized sample of similar structures in order to scientifically demonstrate its validity. One single test will not provide a comparable or statistically significant data set necessary to determine if the success or failure of the Phase II demolition can predict the success or failure of any other future demolition where the Fort Worth method is used.

# Five Attributes of Environmental Data Quality

According to EPA's data quality objectives order (Order 5360.1), five attributes of data should be known before the data is used for regulatory decisions. These are described below.

| Attribute | Definition |
|---|---|
| **Precision** | Precision is the average amount of variability experienced in measuring emissions; it is sometimes expressed as a relative standard deviation, such as plus or minus 15 percent. The lower the percentage, the more precise the data. |
| **Accuracy** | Accuracy refers to the amount of bias that a measurement may have. For example, an improperly calibrated piece of testing equipment may bias a reading. |
| **Completeness** | Completeness refers to the number of readings that must be taken before a confident judgment can be made. For example, if 4 of 5 readings yield the same information, decision makers may say that a reliable profile of the facility's emissions exists. |
| **Representativeness** | Representativeness involves a qualitative assessment as to whether a reading fairly represents the emissions from a facility. Factors that could affect representativeness include the methods used and weather conditions at the time the readings were taken. |
| **Comparability** | Comparability is the ability to fairly compare emissions results from the same facility at different times. Using different sampling and testing equipment, or different methodologies, could result in an inability to make such comparisons. |

# EPA Response to Draft Report

December 2, 2003

**MEMORANDUM**

SUBJECT: Comments on Draft Evaluation Report: Significant Modifications Needed To Ensure Success of Fort Worth Asbestos Demolition Method
Assignment No. 2002-000654

FROM: Richard E. Greene /s/
Regional Administrator Region 6

Jeffrey R. Holmstead /s/
Assistant Administrator for Air and Radiation 6101A

John P. Suarez /s/
Assistant Administrator for Enforcement
and Compliance Assurance 2201A

J. Paul Gilman, Ph.D. /s/
Assistant Administrator for Research
and Development 8101R

Jessica L. Furey /s/
Associate Administrator for Policy, Economics,
and Innovation 1101A

TO: Nikki L. Tinsley, Inspector General
Office of Inspector General 2410T

Thank you for the opportunity to review and comment on the Office of Inspector General's Draft Evaluation Report "Significant Modifications Needed to Ensure Success of Fort Worth Asbestos Demolition Method". Both Fort Worth and the Agency are committed to an open and transparent process that provides an opportunity for public comment and peer review and we welcome your comments on the project.

Your comments raise some legitimate questions, many of which we believe the City and the Agency are discussing or have resolved, for example, incorporating comprehensive monitoring into our plan as well as a strong peer review process. Along those lines, we wanted to raise two points with regard to your draft report: the tone, which seems unnecessarily negative, and the nature of phase 2, which is merely a test and not a broad authorization of a method.

**Nature of Phase 2**

See Appendix J Note 1

The draft report also does not appear to recognize that we are still at an early stage of this project. Any concerns regarding broad use of the alternate method seem premature. We have completed a preliminary Phase I test on a structure that is not within regulatory jurisdiction, and on the basis of that test, have merely decided to proceed with a second test on a building that is subject to the NESHAP regulation. It is, however, simply a test. If that test fails, then the method must be changed or abandoned. No broadly applicable change will occur unless and until the tests prove to be successful, and the Agency has gone through a regulatory process with full public comment.

The prospect of the new method proving to be successful is an important one, however, since Mayors around the country have been unable to address all of the delapidated and dangerous buildings in their communities due to cost constraints associated with the traditional NESHAP method. If the alternative method proves to be equally effective and protective, it can be carried out at far lower cost, thereby enabling cities to rid more communities of buildings needing demolition, buildings which far too often have become homes to drug dealers or that simply pose dangers to children as attractive nuisances. We are endeavoring to carry out these tests in a scientifically sound manner so that we make the best decisions we can, and many of your comments are helpful in that process.

**Negative Tone of OIG Report**

See Appendix J Note 2

The OIG report seems to have an unnecessarily negative tone. We are concerned that negative comments were included in the draft report and were emphasized, while positive comments were not provided. There were numerous positive and meritorious comments made by the XL partners that were not included in the OIG draft report. For example, ORD provided comments on Phase I regarding the potential utility of a more economical demolition technique, assuming equal environmental protection. Also, Region 6 commented on the urgency of demolishing many buildings that were being used for drug houses and crime centers, etc. The end result of omitting potentially balanced, positive comments leaves the draft report reader with a somewhat slanted and unnecessarily negative impression.

Similarly, several major OIG draft report concerns (e.g., peer review, committing EPA staff to work with Fort Worth to better document the method, etc.) have already been addressed by the Innovative Action Council (IAC). These major concerns received strong OIG criticism in the beginning of the draft report, including the Executive Summary. However, not until page 24 does the OIG acknowledge that these issues are being addressed. Also, there is severe criticism of the Phase I site for not being a NESHAP class structure and for not doing side by side comparisons, when the XL team was prohibited from conducting the first test on NESHAP structures. The structure used in the Phase 1 test was expressly chosen because it was not a NESHAP-regulated structure.

We would encourage you to examine the content of the report, as well as the tone.

**Next Steps**

As you know, your staff reviewed and commented on the beginning phases of a multi-year project that is continuing to evolve. Fort Worth and the Agency have not reached agreement on the methodologies and processes for Phase II of the project and discussions are ongoing. We hope to reach agreement by January 30, 2004, in order to submit the documents for peer review and public comment.

See Appendix J Note 3

Since many of the documents your staff reviewed were under development, changes have been made to the documents which render many of the reports, observations, and comments out of date. However, in an effort to provide useful responses for your final report, we have referenced the updated documents, where appropriate, and note that many of the documents are still under discussion.

Please find attached EPA's coordinated comments to the Draft Report and to the Inspector General's Recommendations. If you have any questions, please contact David Bond (214) 665-6431.

Attachment(s)

**Comments on the Office of Inspector General Draft Evaluation Report "Significant Modifications Needed to Ensure Success of Fort Worth Asbestos Demolition Method" (Assignment No. 2002-000654, dated October 17, 2003)**

Executive Summary

Page i Statement: The City has proposed a three-phased approach to obtaining EPA's approval of the Fort Worth Method. Phase I testing of the proposed Method occurred in 2001 on a small building that did not possess enough RACM to be regulated by the asbestos NESHAP. Phase II testing is planned for a large, abandoned hotel that contains enough RACM to be regulated by the asbestos NESHAP.

**Response 1:** **There appears to be a common misunderstanding throughout the report with respect to the structure selected for the Phase I test. The structure selected for the Phase I test was specifically selected because it did not trigger NESHAP regulations; that allowed for an early, small scale test without the need for regulatory exemptions. EPA required that Phase I be added to the proposal submitted by Fort Worth, that the structure MUST NOT trigger NESHAP regulations, and that sufficient asbestos be in the structure to meet evaluation criteria. The structure that was selected contained 3438 sq ft of surfacing materials containing 2-percent chrysotile, a sufficient amount to meet evaluation criteria. If the Phase I test had failed the evaluation criteria, the project would have ended. Because it was successful, the Agency now plans to proceed with a second test on a building that would trigger NESHAP regulations.**

See Appendix J Note 4

Page ii Recommendation: EPA assist Fort Worth in modifying the Fort Worth Method to produce a single, finalized technical specification document that fully describes the Fort Worth Method, including the demolition strategy and associated Quality Assurance Project Plan (QAPP), and that this proposal be externally peer-reviewed prior to testing.

We recommend that EPA work with the City of Fort Worth to develop a Final Project Agreement that adequately addresses key project XL Criteria for the entire proposed project (Phase II and Phase III), and that EPA ensure that Project XL team concerns are adequately addressed.

We recommend that EPA develops comprehensive Agency guidance for conducting oversight of these proposed projects. We recommend that EPA assist the City of Fort Worth in designing a demonstration project that can be used to reach complete, reliable, and valid conclusions, and that EPA works with the City to ensure that the structures chosen for the Phase II demolition contain sufficient asbestos to provide representative test results. We also recommend that EPA develop and propose Federal rules and regulations for handling Innovation proposals, including the opportunity for public notice and comment.

**Response 2:** **EPA concurs with the majority of the recommendations. The XL criteria were considered in our decision to undertake at least a preliminary phase of the Fort Worth's proposed project (Phase 1). We will continue to employ criteria such as these as we move forward to design and implement Phase 2. We will insure that there is a robust stakeholder process, and an appropriate legal mechanism for this phase of the project. EPA has already determined that a prerequisite for going forward with the Phase 2 test includes having the Method and the QAPP peer-reviewed. In addition EPA will work with the city on a project agreement that addresses the appropriate criteria. (Note: These recommendations and EPA response are set out in more detail in Chapters 2, 3 and 4.)**

See Appendix J Note 5

Pg ii Statement: Although initially proposed in September 1999, the Fort Worth Method does not yet meet EPA's Project XL criteria of superior environmental performance, appropriate regulatory flexibility, adequate stakeholder involvement, or transferability.

**Response 3:** **The Agency does not agree with this statement. See response 18, 20 and 23**.

See Appendix J Note 6

Pg iii Statement: Given the number of variables involved, it is questionable whether a single test – as described in the latest proposal – is adequate to statistically determine the success or failure of a new demolition method in accordance with sound scientific principles.

**Response 4:** **EPA agrees with the IG on this assessment and has begun discussions for additional tests with the City.**

**Main Report**

**Chapter One - Introduction**

Pgs 1 & 5 Statement: This proposal was introduced under Project XL, other cities may use the data generated by this project to justify similar demolitions. Some have already requested information related to this project.

**Response 5:** **We disagree with this statement. There has been no change to NESHAP that would allow another city to use the Ft. Worth method. The project is a test to help determine whether a later change to the NESHAP may be viable; if the test is unsuccessful, there will be no basis for a later change to the NESHAP that could be used by many cities. Both Fort Worth and EPA want the pilot process to be open, therefore as the pilot proceeds other cities may request information. The test is of broad interest because if it is successful in showing an equivalently protective method at much lower cost, it has the potential to help many cities demolish dangerous, abandoned buildings.**

See Appendix J Note 7

Pg. 3 Statement: Appendix A provides a detailed description of the Fort Worth Method.

**Response 6: Appendix A has been superseded. The latest version submitted by the City was given to a representative of the IG's office at a September 29, 2003, meeting.**

See Appendix J Note 8

Pages 4 & 9 Statement: In order to obtain external perspectives of the proposed Fort Worth Method, we also interviewed 15 external stakeholder groups from industry associations, environmental groups, academic organizations, and other Federal Agencies. We selected these groups based on information identified during our research, and with input from EPA and the City of Fort Worth. Details on the scope and methodology, and selection of external stakeholder groups are included in Appendix C.

**Response 7: EPA is unable to respond to this statement based on the fact that we are uncertain what the interviewees were given to review for the purposes of the interviews. The report should include the document(s) that were provided to the stakeholders, for their review, so that everyone who reads the report will be able to know what is being commented on.**

See Appendix J Note 9

Page 6 Statement: Our evaluation of the Fort Worth Method document indicates that, as currently written, neither EPA, project officials, nor the public would have a clear understanding of the method prior to its implementation, and may have difficulty replicating this method at other locations. For example, it is unclear:
**(Bullets not at issue removed from for this document)**

- How these materials would be tested for RACM;
- What instrumentation would be used for testing different RACM;
- What detection limits would be used in testing these materials;

**Response 8: EPA does not agree with the statements, concerning testing. There appears to be a misunderstanding concerning elements of the Ft. Worth Method. The Fort Worth Method is an alternative demolition work practice and does not propose changing RACM testing requirements. The RACM will be tested as stated in the NESHAP (i.e., using 40 CFR part 763 subpart E Appendix E). EPA will work with the city to clarify this point in subsequent versions of the method.**

See Appendix J Note 10

Page 7 Statement: "Another important unaddressed factor is that the Fort Worth Method does not provide for an immediately enforceable stopping point... . With the various NESHAP methods, the "no visible emissions" work practice standard allows for a demolition to be stopped if visible emissions are identified. However, the Fort Worth Method does not utilize a work practice standard, but rather depends on the analysis of air monitoring samples, which take several days to analyze."

**Response 9:** **EPA does not agree with this statement. The Fort Worth Method is indeed a work practice, as is the NESHAP method. The Fort Worth Method addresses the same activities as does the NESHAP, including: asbestos assessment prior to demolition, adequate wetting, demolition process, waste and water handling, and waste disposal. The air sampling protocol (which is embodied in the QAPP) is not an intrinsic part of the Fort Worth Method. We are conducting air sampling (and water and soil sampling) solely as a means of measuring the effectiveness of the City's method against the NESHAP method. As part of the Phase 2 test, we will be monitoring air emissions during the demolition of a building by the NESHAP method, as well as during a demolition by the Fort Worth Method. In addition, the Fort Worth Method does <u>include</u> the no visible emissions requirement - and any demolition would be stopped if visible emissions are identified.**

See Appendix J Note 11

Page 8 Statement: Table 2.1 Comparison of Fort Worth Method to NESHAP Requirements

**Response 10:** **EPA does not agree with this table. For example, on the row labeled "Adequately wet RACM during demolition" appears a "No" for the Fort Worth Method. The "No" should be "Yes." As stated previously, the Fort Worth Method contains the same requirement to adequately wet RACM as does the NESHAP. On the row labeled "Discharge No Visible Emissions" another "No" appears for the Fort Worth Method. This also should be "Yes," since the Fort Worth Method includes this requirement (see Table - 1 in Fort Worth's proposal document). Next, on the row labeled "Immediately Enforceable Stopping Point," the "No" for the Fort Worth Method should be a "Yes", since, like the NESHAP method, the Fort Worth method would stop demolition if visible emissions were identified. Finally, the entry on the row labeled "Not dependent on Air Monitoring Results" should be a "Yes" instead of "No." As discussed above, the Fort Worth Method is a demolition work practice. Air monitoring is not a feature of the Method, but a means of demonstrating whether the Method is equivalent to the Asbestos NESHAP.**

See Appendix J Note 12

Page 10 Recommendation: Table 2.2: Materials that should be Addressed in the Proposed Fort Worth Method.

**Response 11:** **EPA agrees with the recommendations on identifying the types of asbestos in this table. The suggestions are quite helpful and will be of assistance in further defining the method.**

Pages 10 & 11Statement

Several stakeholders we contacted suggested that the air monitoring standard proposed in the Fort Worth Method (the 70 s/mm$^2$ Asbestos Hazard and

Emergency Response Act (AHERA) clearance criterion) is not appropriate for use in ambient air monitoring around a demolition site because:

- It is not health-based;
- The original reason for its development – that it represented an average background contamination level on asbestos testing filters – is no longer correct; and,
- The criterion is an indoor air, post-abatement clearance level that is used by EPA to determine the success of asbestos abatement work conducted under full containment.

More than half of the external stakeholders (8 of 15) we interviewed did not believe that the AHERA standard was the appropriate measurement for this Method. One stakeholder commented that the AHERA standard was only intended to be used as an indoor clearance procedure after asbestos removal had been conducted, and while containment was still in place. He stated that the air monitoring outlined under the Fort Worth Method was not an aggressive test that requires the use of fans and leaf blowers during containment. Another stakeholder, who was one of the 26 people on the committee that advised EPA on the development of the AHERA Standard, stated that, "nobody ever said that 70 structures was a safe exposure level, just that it was the lowest level measurable (at that time) because of background contamination on the filters." Today, based on sampling performed for the World Trade Center explosions, it has been determined that background contamination of filters is low enough to accurately detect asbestos fibers at about 15 s/mm$^2$.

**Response 12:** **EPA agrees in part with this statement. Demolitions will not be carried out under full containment procedures. The AHERA standard of 70 s/sq mm (drawing about 1000 liters of air) equates roughly to an airborne concentration of about 0.015 asbestos structures/cc. The first order for evaluation of the effectiveness of the demolition was to do a statistical test on the upwind versus downwind concentrations to determine if a statistically significant difference existed; if so, the process failed (assuming that the test on the NESHAP method passed). The problem with this approach is identical to the problem that was faced in developing the AHERA standard, in that if the background concentrations are non-detect and anything is measured in the downwind, the test cannot be passed (i.e., the difference will always be significant) because of the way the statistical tests perform the mathematical calculations. Recognizing this possibility, a second test scenario was added and the AHERA test was chosen for convenience. While AHERA is not a health-based standard, it is conservative and is judged suitable by the Agency for reoccupancy of the building by children, who are at the highest risk for asbestos-related disease. As with all the documents, these equivalency determinations will be subject to review and possible change during this process.**

See Appendix J Note 13

Page 11 Statement: The placement of the ambient air monitors is not adequately addressed in the proposed method.

**Response 13: EPA refers the Inspector General to the QAPP, since the placement of the air monitors is not a part of the method document. They are a part of the QAPP as the monitoring will only take place during the testing of the method. In addition, the QAPP has been revised and will be reviewed and peer reviewed and possibly revised again to strengthen the air monitoring.**

See Appendix J Note 14

Page 11 Statement: The placement of the monitors at a particular height may not capture all the asbestos fibers released.
Comment: For example, some stakeholders suggested that monitoring at multiple heights and multiple distances may be needed to adequately determine whether asbestos particles escaped the demolition area.

**Response 14: EPA agrees with this comment and it has been incorporated into the draft QAPP for the Phase 2 test . It has also been suggested some sampling be done from monitors suspended above the demolition area. All samples are taken with the intent that they will represent the whole population and you need to take a sufficient number to have confidence that a subset of the population has the same statistical tendencies that can be inferred on the population as a whole.**

Page 11 Comment: Recently, EPA officials told us they would consider having the Phase II proposal peer reviewed prior to implementation.

**Response 15: EPA agrees with the comment and based on decisions made during the May 12, 2003, IAC meeting, peer review is now a pre-requisite to moving forward with the Phase 2 test.**

See Appendix J Note 15

page 12 Statement: Of particular note is that Fort Worth does not plan to conduct any air monitoring at Project XL demolitions after Phase II. OECA officials remain concerned that a single test is insufficient to gauge project effectiveness.

**Response 16: EPA agrees that air monitoring should be conducted as part of this and any subsequent Phase 2 tests of the Fort Worth demolition method. EPA and the City are discussing additional monitored tests of the method as an addition to the Phase 2 test. OECA officials are satisfied on this point.**

See Appendix J Note 16

Page 13 Recommendation: We recommend that the Assistant Administrator for Air and Radiation, the Assistant Administrator for Enforcement and Compliance Assurance, the Regional Administrator for Region 6, and the Associate Administrator for Policy, Economics, and Innovation ensure that:

2-1 Agency officials assist Fort Worth in modifying the Fort Worth Method to produce a single, finalized technical specification proposal, including the demolition strategy and associated QAPP that:

a. identifies and adequately describes how each type of RACM that may be encountered during demolition will be addressed;
b. better defines the wetting requirements;
c. is documented in sufficient detail to allow for independent assessment; and,
d. is evaluated based on an appropriate air monitoring standard and monitoring that is representative.

2-2. Agency officials assist Fort Worth in fully describing the air monitoring that will take place, and to determine whether the air monitoring contractor would be independent from the demolition contractor.

2-3. Agency officials require that the Fort Worth Method is adequately peer reviewed prior to implementation.

2-4. Agency officials outline criteria that determines the volume of RACM necessary to ensure a representative comparison to the NESHAP, and assist the city in locating a structure that meets these criteria.

**Response 17: EPA concurs with these specific recommendations. The Agency has already specified that revising the method and QAPP, and peer review of the documents, are pre-requisites for moving with the phase 2 test.**

Agreement Lacking on Key Project XL Criteria

Page 15 Statement: Although the City of Fort Worth initially proposed this project in 1999, four key Project XL criteria outlined in EPA's 1995 Federal Register Notice have not been adequately addressed, including superior environmental performance, regulatory flexibility, adequate stakeholder involvement, and transferability. According to XL requirements, each of these criteria must be satisfactorily demonstrated in order for an XL project to be deemed successful. The principal reason for the delay was because a Final Project Agreement, normally written early in an XL project, has not been developed due largely to internal Agency disagreements about the adequacy and benefits of the Fort Worth proposal.

**Response 18: EPA does not agree with this statement. See Response 2.**

See Appendix J Note 17

**As stated in Response 1, EPA required that the Phase 1 test be added to the proposal, and the slow pace of the project to date is largely a result of the logistics involved in actually carrying out and evaluating the Phase 1 test.**

**The Phase 1 test was required to give the Agency more information about the Fort Worth Method prior to making a decision to proceed to FPA development. No regulatory flexibility was needed to conduct Phase 1 and we developed the processes and methods for the Phase 1 test with Fort Worth and the Texas Department of Health. All involved Agency offices concurred on this plan.**

**Superior Environmental Performance Questionable**

Page 15 Statement: Based on information presented in Chapter 2, it is not clear that the currently proposed Fort Worth Method is equivalent to the current Asbestos NESHAP.

EPA's Project XL internal team members have yet to reach agreement on whether the Fort Worth Method is equivalent to the Asbestos NESHAP. Both OECA and OAQPS expressed significant concerns about the adequacy of the proposed Fort Worth Method.

**Response 19: The reason that the Agency is conducting multiple tests is precisely to determine whether the Fort Worth method is equivalent to the NESHAP method. Successful completion of the Phase 1 test does not mean that EPA thinks that the Fort Worth Method has been proven broadly equivalent to the Asbestos NESHAP. See Responses 1 and 18. All EPA program and legal offices involved in the project simply decided that the criteria for success under the Phase 1 test have been met, and that the project should proceed to a Phase 2 test with certain pre-requisites as a result of the May 12, 2003, IAC meeting.**

See Appendix J Note 18

Page 16 Statement: Although aware that team disagreement had not been resolved, the Reinvention Action Committee decided in January of 2000 that the Fort Worth proposal should move forward in phases.

**Response 20: EPA would like to clarify this statement. There appears to be a misunderstanding as to the decision making process in Project XL. If the staff team is unable to come to agreement, it is the responsibility of the Reinvention Action Council (now Innovation Action Council), not Committee to resolve those differences and make a decision on the issues. The opposing views of the Fort Worth XL project were presented to the RAC (now IAC) and the decision was made to proceed in January of 2000, and views were presented again to the IAC in May of 2003 and a decision was made to proceed with a Phase 2 test of the Fort Worth method.**

See Appendix J Note 19

Page 16 Statement: Phase I, demolition of a building containing too little asbestos to be regulated under the NESHAP...

**Response 21: EPA disagrees with this statement. See Response 1.**

See Appendix J Note 20

Page 16 Statement: One of these stakeholders stated,

> *"It is likely that asbestos emissions could be missed by the air monitors because the overall testing requirements seemed incomplete. Further, air monitoring alone is not sufficient. There should be soil samples after the work was done, and methods that captured and tested wetting water to ensure that asbestos was not being released into the environment through a different media. Finally, there should be a comparison test between the Fort Worth Method and the NESHAP. However, the current method is not sufficient to serve as a methodology for that comparison test."*

**Response 22: EPA disagrees with the statement. It appears that the stakeholder misunderstood the procedures followed in the Phase 1 test and the phases of the project in general. See Response 1, 8, 9, 10 and 14. The soil was tested before and after the demolition. The water used on the site was tested for asbestos content to assure that it was not providing asbestos to the site. The Phase 2 test will include the comparison requested.**

See Appendix J Note 21

Regulatory Flexibility Incomplete

Page 16 Statement: In order for a Project XL proposal to be implemented within the scope of the applicable laws and regulations, a legal mechanism that provides sufficient regulatory flexibility (e.g., regulatory waiver, site-specific rule-making) must be in place. Under the Asbestos NESHAP, which implements these requirements of the Clean Air Act, EPA must publish a notice in the Federal Register that approves an alternative means of controlling asbestos before it is implemented. This notice allows the public the opportunity to assess the proposed alternative, and ensures a process of openness in the development of a new demolition method. Because EPA has not issued such a Federal Register Notice for the Fort Worth Method, the Agency has not established the appropriate legal foundation for this demonstration project.

**Response 23: EPA would like to clarify the XL process. The FPA is negotiated, signed by principal stakeholders, and its availability for review is published in the Federal Register prior to the Agency issuing an appropriate implementing legal mechanism. There are ongoing discussions to continue this project outside of Project XL. If this decision is made, the project will meet many of the technical & process standards envisioned in XL and will have an appropriate legal mechanism. The IG's office is aware of these discussions as they were present at a meeting on September 29, 2003, where options were discussed.**

See Appendix J Note 22

Stakeholder Involvement Incomplete

Page 17 Statement: The City has performed some stakeholder involvement activities, including inviting stakeholders to review and comment on the Phase I proposal documents on the City's website in 1999. However, according to the 1997 Federal

Register Notice, project sponsors should engage "direct participants" in the development of the project. According to the Notice, a direct participant "works intensively with the project sponsors to build a project from the ground up," and "the views of direct participant stakeholders will strongly influence the details of the project as well as EPA's ultimate decision to approve or not to approve the project."

**Response 24: EPA is committed to a full and open process and to engaging a diverse group of stakeholders as we develop fair and safe tests of the Fort Worth Method under Phase 2. EPA will insure there is a transparent and inclusive stakeholder process as part of the project, whether the project proceeds under Project XL or another similar process.**

See Appendix J Note 23

Page 19 3-1. We recommend that the Assistant Administrator for Air and Radiation, the Assistant Administrator for Enforcement and Compliance Assurance, the Associate Administrator for Policy, Economics, and Innovation, and the Regional Administrator for Region 6 ensure that Agency officials work with the City of Fort Worth to develop a Final Project Agreement that adequately addresses key project XL Criteria for the entire proposed project (Phase II and Phase III), including:

- < determining whether the project can achieve superior environmental performance;
- < verifying a mechanism for regulatory flexibility;
- < obtaining adequate stakeholder involvement;
- < sufficiently documenting the method so that it can be properly transferred to other communities with similar results; and
- < ensuring that all Project XL team concerns are adequately addressed.

**Response 25: EPA concurs with the recommendation that there be a written agreement that addresses important projects, EPA will also address elements, such as environmental performance, stakeholder involvement, transferability, and the appropriate legal mechanism(s). It is not clear whether the project will proceed in Project XL.**

Chapter 4 Better Agency Oversight

Page 21 Statement: EPA's oversight to date has not ensured that conditions placed on the project in the 2000 Conditional Project Approval Letter have been met, that problems related to representativeness and equivalency have been resolved, or that statutory and regulatory requirements have been satisfied

**Response 26: EPA does not agree with the above statement. This statement continues and perpetuates the misunderstanding of the Phase 1 test. See Response 1. EPA is committed to ensuring that the project is well defined, based on scientifically valid principles, and shaped through**

See Appendix J Note 24

**full and open dialogue with a broad stakeholder group. The need to further refine the Fort Worth Method as it presently exists, as well as the Quality Assurance Project Plan (air, water, waste monitoring specifics) for the Phase 2 test, is a prerequisite set out by the IAC. EPA will conduct formal peer reviews of these documents and present them to the stakeholder group for review as well. The QAPP will include provisions for protecting public health during any Phase 2 tests through broader monitoring of asbestos levels in the area around the test sites and through the ability to halt a test demolition immediately upon detecting visible emissions. Fort Worth also has agreed to prepare for EPA and stakeholder review a remediation plan in the event of unplanned asbestos release during any Phase 2 demolition. Both Fort Worth and EPA are committed to designing a pilot that will provide sufficient information for evaluation of the Fort Worth Method against the existing NESHAP method. Finally, EPA will ensure that the range of conditions under which the Fort Worth Method is validated, assuming successful demonstration tests, defines the limits for eventually broadening use of the Method.**

Page 22 Statement: Further, EPA may lack the necessary information to make an equivalency determination because the demolition was not representative of a normal asbestos removal for the following reasons:

- < The pace of demolition was much slower than what would occur under normal conditions;
- < The amount of water used on the Phase I demolition was not representative of a normal asbestos removal; and
- < The building demolished under Phase I did not contain significant amounts of spray-applied thermal insulation or asbestos-containing pipe wrap – asbestos-containing materials which easily become friable.

**Response 27: EPA disagrees with much of this statement. The Phase 1 test was simply intended to be a preliminary, small scale test to inform EPA on whether the Fort Worth method has promise and should be tested on a structure regulated under the NESHAP.**

See Appendix J Note 25

**Although the pace of the Phase I test was slower and not fully representative of a NESHAP removal, it is EPA's opinion that the pace was sufficient to validate the study. There appears to be confusion as to the findings of the Phase 1 demolition. Phase 1 was the first test of the Fort Worth Method. If the IG is referring to this test, there is no "normal" water use for this method. If the IG is referring to other removals such as NESHAP or AHERA, the comment doesn't relate as Fort Worth is a different technology. In summary, increased water use is not necessarily bad as it would tend to maximize wetting effectiveness. Some of the review team members are of the opinion that the water use during Phase I could have been increased. The third comment on the issue that the types of asbestos were not inclusive of pipe**

**wrap and spray-applied thermal is only valid if Fort Worth intends to use this procedure on structures with significant quantities of this type materials. If so, additional demonstrations would be necessary. However, the Phase 1 structure was considered to contain asbestos similar to structures that will qualify for demolition under the Ft. Worth Method.**

Agency Policies and Procedures for Similar Types of Alternative Proposals Lacking

Page 23 Statement: Project XL was one of EPA's early efforts to provide innovative environmental alternatives. However, Project XL proposals are no longer being accepted because all such alternative proposals now fall under one of two other EPA innovations strategies: (1) Environmental Council of the States projects or (2) Innovations Strategies.

**Response 28: EPA does not agree fully with this statement. The Agency currently is promoting innovative pilot projects under the Joint EPA/State Agreement to Pursue Regulatory Innovation and also the State Innovation Grant Program. Innovation projects may or may not involve federal regulatory flexibility. There is no program named "Innovations Strategies." Should the Agency undertake additional innovation projects in the future that require regulatory changes, EPA will ensure that they are clearly defined, based on credible science, shaped through an open stakeholder process, designed to give us useful information about alternatives to existing programs, and thoroughly evaluated prior to affording broader implementation.**

See Appendix J Note 26

Page 25 Statement: The September 23, 2003 revised method proposes no additional testing during Phase III demolitions, but rather moved directly to implementation of the Fort Worth Method.

Response 29: **A single test in Phase 2 is insufficient to serve as a launchpad to implement the Fort Worth Method. While this was the original plan under the Ft. Worth Method, more test are needed for a broad finding of equivalency. The City and EPA are in discussions to conduct additional tests as necessary to gather adequate scientific data to determine if the Fort Worth method is equivalent to the NESHAP before seeking a broadly applicable regulatory change.**

See Appendix J Note 27

Pages 25 & 26 We recommend that the Assistant Administrator for Air and Radiation, the Assistant Administrator for Enforcement and Compliance Assurance, the Associate Administrator for Policy, Economics, and Innovation, and the Regional Administrator for Region 6:

4-1. Ensure that Agency officials work with the City of Fort Worth to design a demonstration project that can be used to reach complete, reliable, and valid conclusions.

4-2. Work with the City to ensure that the structures chosen for the Phase II demolition contain sufficient asbestos to provide a representative test and is sited in a remote location.

4-3. Ensure that Agency officials address the key conditions of the Conditional Project Approval letter, including equivalency and FPA development.

We also recommend that the Assistant Administrator for Research and Development and the Associate Administrator for Policy, Economics, and Innovation work jointly to ensure that:

4.4 Agency officials develop a single guidance document that provides fundamental criteria and is published in the Federal Register, including:

- < requiring assessment of the technical merits and enforceability of proposed projects;
- < ensuring that relevant expertise within the Agency is appropriately considered; and,
- < requiring peer review of proposals that have significant national policy implications, to ensure that national policy decisions are based on sound science.

**Response 30: Recommendations: EPA concurs with recommendations 4.1 and 4.2. In addressing recommendation 4.3, while we agree to follow the spirit of the conditional approval and will work with the City of Ft. Worth to meet these goals it may not be in the formal Project XL process. EPA considers recommendation 4.4 to be beyond the scope of this project.**

See Appendix J Note 28

# OIG Evaluation of EPA's Response to the Draft Report

EPA provided a response to our draft report that consolidated the comments of five EPA offices. Although the Agency did not agree with our presentation of certain issues, it agreed to implement the majority of our recommendations and noted that our report would be helpful to them as they endeavor to carry out tests in a scientifically sound manner. In addition to technical comments, the Agency discussed two aspects of the draft report. First, they stated that the tone of our draft report was "unnecessarily negative." We address this assertion in our specific responses, and have made changes as appropriate. For example, we have given more prominence early in the report to the Agency's plans to work with Fort Worth to improve the Method and have it peer reviewed prior to implementation. We do not agree that there was a negative tone in draft report. There is a difference between a negative tone and presenting negative results. The report calls into question many key aspects of the proposed Fort Worth Method, and we have recommended processes, procedures, and design elements that should be employed to assure a valid test is conducted.

The second Agency concern related to differing interpretations of the precedent-setting nature of the Phase II test. We are concerned with the several contradictory aspects of the Agency's response. For example, in its response, EPA states, "Any concerns regarding broad use of the alternate method seem premature...it is simply a test." However, this statement seems to be contradicted with other statements in EPA's response, such as, "The test is of broad interest because if it is successful in showing an equivalently protective method at much lower cost, it has the potential to help many cities demolish dangerous, abandoned buildings."

We believe that any test of the method should be well planned out and defined in advance, along with well defined and agreed upon criteria for success, and that this XL project has implications for demolition activities across the nation. Consequently, it is much more than just a test. Further, we believe that OIG involvement in projects such as the Fort Worth Method is both appropriate and timely, especially when such projects, as indicated in the Agency response, have the potential to impact existing and possibly set new environmental and health protection precedents.

We are also concerned with EPA's response because Agency officials acknowledge that they have yet to agree on what they plan to do under this demonstration project, even though this project has been ongoing since 1999. In responding to our draft report, the Agency stated:

> *"Fort Worth and the Agency have not reached agreement on the methodologies and processes for Phase II of the project and discussions are ongoing. We hope to reach agreement by January 30, 2004, in order to submit the documents for peer review and public comment*."

We believe that if the recommendations outlined in this report are carried out, ongoing disagreements – such as how many tests will be conducted, what the criteria for evaluation of results will be, what will be tested, and what the timeframes of the project will be – will move towards effective resolution.

Our specific responses to Agency comments are listed below.

**Transmittal Memorandum**

**Note 1 -** We continue to believe that OIG involvement in projects such as the Fort Worth Method is both appropriate and timely, especially when such projects have the potential to impact existing and possibly set new environmental and health protection precedents. Further, while EPA is still in an early stage of this Project XL Demolition project, the Agency has been working with the City of Fort Worth for over four years to develop this Method and has been unable to date to alleviate internal EPA stakeholder concerns. Also, the Agency is aware of the interest that many cities have exhibited in the outcome of the Fort Worth Project XL proposal, as those cities have indicated interest in using the Fort Worth Method. We are aware of the desire of many municipalities to address the on-going problem of abandoned or structurally unsound buildings, but – as noted in our report – over 165,000 asbestos demolition and renovation projects were conducted in the last 2 years without needing to change the existing Asbestos NESHAP.

**Note 2 -** We have made modifications to the report based on specific comments from the Agency, including creating a "Recent Developments" section in the Executive Summary that discusses and gives credit to the Agency's most recent planned actions. However, there is a difference between a negative tone and presenting negative results. During the development of our Draft Report, we presented the information obtained in a straightforward, factual, accurate manner. Based the responses that we received from stakeholders we contacted, the majority believed that the Fort Worth Method needs significant modifications before it becomes equivalent to the Asbestos NESHAP, and a few did not believe it was possible that the Fort Worth Method would ever be equivalent to the Asbestos NESHAP. This is what we reported. We employed a sound methodology for soliciting stakeholder comments on the design of the proposed Method, including contacting all stakeholders identified by two or more groups involved in the proposed project. Nonetheless, the Fort Worth Method can be significantly enhanced if the Agency publishes the proposed Method in the Federal Register and solicits nationwide comment on the technical merits and enforceability of the proposal.

**Note 3 -** We are encouraged that the Agency plans to have the proposed project externally peer reviewed and to obtain public comment on the technical merits and enforceability of the proposal. However, we remain concerned with the amount of time this project has taken, and the evolving nature of the Fort Worth Method description. For example, as discussed in Chapter 3, the Final Project Agreement (including stakeholder involvement activities), normally concluded within 12 months from the date of proposal, has yet to be finalized (this project was proposed on September 30, 1999). Also, after more than four years, the Agency and the City of Fort Worth have not yet agreed on a fully defined demolition methodology. Prior to providing information to the stakeholder groups listed in Appendix C, we contacted Region 6 and requested that they verify that the documents were the most up-to-date available. At the time of the request (March, 2003), Region 6 staff confirmed that the IG had the most recent version of these documents. Further, as evidenced in the Recent Development

Sections in Chapters 2 and 4, and in Appendix G, we have also assessed the September 23, 2003 version of the Fort Worth Method. As noted in the report, as technical aspects of the proposed Method have been more fully described and documented, additional concerns have been raised, such as the fact that no air monitoring would be employed after the Phase 2 demolition is completed.

**Note 4 -** We agree that the Phase I structure was chosen because it was a single family dwelling of less than three stories, and was therefore exempt from the Asbestos NESHAP due to the type of structure, and have modified the report accordingly. However, for the reasons discussed in Chapter 4, we do not agree with the Agency's conclusion that the Phase I demolition was successful as a demonstration of the Fort Worth Method. The Phase I demolition was not representative of a normal asbestos removal because the pace of demolition was too slow, the amount of water used was excessive, and a key procedure listed in the Quality Assurance Project Plan (QAPP) regarding wind variability was not followed. Additionally, the Fort Worth Method used in Phase 1 was not clearly defined in terms that provided a clear understanding of the RACM that would be removed during a Project XL asbestos demolition, making both independent analysis of the Fort Worth Method and replication by others difficult. (See note 25 for additional discussion of Phase 1 concerns).

**Note 5 -** We are pleased that the Agency concurs with and plans to implement the majority of our recommendations. We would like to clarify that the peer review should include review by external organizations.

**Note 6 -** As discussed in Chapters 2, 3, and 4, we do not agree with the Agency's position that the Fort Worth Method meets the Project XL criteria for superior environmental performance, appropriate regulatory flexibility, adequate stakeholder involvement, and transferability. See OIG responses to Agency comments 18, 20, and 23.

**Note 7 -** As outlined in the 1994 Federal Register Notice establishing Project XL, "The pilots are intended to test new approaches that could conceivably be incorporated into the Agency's programs or in other industries, or other facilities in the same industry. EPA is therefore most interested in pilot projects that test new approaches that could one day be applied more broadly." The transferability criteria of Project XL thus indicates that this demonstration project should be able to be transferred to other organizations or communities that are facing the same situation as Fort Worth. Our statement regards the transferability expectation for Project XL demonstration projects. We have added language on Page 1 of the report to clarify this point.

**Note 8 -** We were aware of and had already included in our Draft report a copy of the September 23, 2003 revision of the Fort Worth Method, which was discussed in our "Recent Developments" sections in Chapters 2 and 4; this has also been added to the Executive Summary. This revised Method is also presented in its entirety in Appendix F, along with an analysis of this version of the Fort Worth Method. Regarding the version of the Fort Worth Method provided to the stakeholders for review, we confirmed in March 2003 that we had the most up-to-date version of the

Fort Worth Method before distributing it to the various stakeholders listed in Appendix C.

**Note 9 -** During our field work activities, we forwarded all documents that we planned to send to the stakeholders (identified in Appendix C) to the Region 6 Project XL coordinator for this project. At the time of the request (March 2003), Region 6 staff confirmed that the IG had the most recent version of these documents. We have listed these documents in Appendix B.

**Note 10 -** We are pleased that the Agency will work with the City of Fort Worth to clarify the RACM testing requirements and to ensure that future versions of the Fort Worth Method clearly state that the RACM testing requirements to be employed are those stated in the current Asbestos NESHAP (40 CFR, Part 763).

**Note 11 -** We continue to believe that the proposed Fort Worth Method does not adequately address the criteria for immediately stopping the demolition. Neither version of the Fort Worth Method (see Appendices A and F) uses the phrase "no visible emissions," nor does either version clearly address the authority for an inspector to halt demolition work if visible emissions are observed. In our view, these provisions should be specifically stated in the Method to avoid later debate and uncertainty.

**Note 12 -** Regarding the row labeled "Adequately wet RACM during demolition," we refer specifically to Section 4(c)(ii) "Wetting" of the May 23, 2002 method, "A **structure** [emphasis added] will be thoroughly and adequately wetted..." Further, Section 4(c)(5)(B) of the September 23, 2003 Method uses the same statement. Both documents indicate that the "structure" will be adequately wetted, but does not specifically state that RACM inside the structure will be adequately wetted.

Regarding no visible emissions, please see Note 11 above. While "no visible emissions" was discussed in the 1999 Fort Worth Method Proposal document, no language regarding visible emissions was carried forward from the proposal documents to the Fort Worth Method.

Regarding an immediately enforceable stopping point, as noted above in Note 11, the Fort Worth Method does not include language requiring work to stop if visible emissions are observed.

Regarding dependency on air monitoring results, we maintain that the Fort Worth XL project is dependent on air monitoring because the QAPP stipulates that air monitoring results will determine successful project completion. Further, the City states that the Fort Worth Method will save approximately 40 to 60 percent over the NESHAP method. However, the majority of these savings would only be realized on demolitions where no air monitoring is conducted.

**Note 13 -** We acknowledge the difficulties in applying the AHERA clearance level to ambient asbestos testing. We also agree that the AHERA clearance level is not a health-based

standard. As discussed in Appendix E, the AHERA clearance level was intended to measure the lowest asbestos air levels then measurable using the AHERA analysis protocol. Currently, substantially lower levels can be measured due to lower filter background contamination levels. For example, as discussed in Appendix E, levels of 10 to 20 structures per cubic centimeter can now be measured due to improvements in filter technology. Consequently, we believe that the AHERA clearance level of 70 structures per cubic centimeter should be revisited, and any standard based on these assumptions should be revisited. Further, the adequacy of this testing level for determining re-occupancy of an enclosed area of a building does not make it an adequate clearance level for ambient air monitoring.

**Note 14** - We agree with this statement, and have modified the statement in the body of the report.

**Note 15** - Please see Note 5 regarding external peer review.

**Note 16** - Please see Note 18 regarding our discussion of the Agency's Response 19.

**Note 17** - We understand that the Phase I demolition was not originally included in the September 30, 1999 proposal. However, nothing in the additional requirements for Phase I precluded the Agency from addressing these key Project XL criteria for the remaining Phases of the demolition project. It remains our position that these key Project XL criteria have not been met.

**Note 18** - We remain concerned that, after more than four years, agreement on the number of tests to be conducted to demonstrate equivalency to the Asbestos NESHAP has not been obtained. While the Agency asserts that there will be multiple tests, this point does not seem to have been effectively communicated to the City, since the September 23, 2003 Fort Worth Method – the most recently revised version – still indicates that only one Phase II test will be conducted. Also, as discussed in Chapter 4, the Region 6 Conditional Project Approval Letter to the City dated January 20, 2000 included the criteria necessary to move forward to Phase II. This required that the data from the Phase I demolition support a finding of equivalency from the Administrator, and that the City of Fort Worth develop a Final Project Agreement. Agency oversight has not ensured that either of these criteria have been met. In this instance, the Agency failed to follow its own written procedures and requirements for this project.

**Note 19** - We have changed the word Council to Committee regarding the RAC/IAC. Further, we understand the decision-making process of the IAC that is outlined in the Project XL criteria. The impact of the IAC's decision-making process was discussed in Note 18.

**Note 20** - We have discussed this issue with the Agency, and have addressed it in Note 4.

**Note 21 -** We believe that the Agency may have misunderstood the intent of this stakeholder's comment. The stakeholder expressed concern that run-off from the site be captured and tested to determine if asbestos from the structure was being carried away from the site in a different medium. Further, we continue to have this concern based on Section 8(a)(2) of the September 23, 2003 revised Fort Worth Method, which states that, "Rinse water will be controlled on-site and allowed to naturally evaporate or be absorbed into the ground." We believe that this is a potential health hazard because any asbestos present in the rinse water will be left on-site in a friable condition.

**Note 22 -** In three of its responses to our Draft, the Agency has mentioned that it is considering continuing the Fort Worth Method under a different process. Specifically, it states, "There are ongoing discussions to continue this project outside of Project XL;" "...whether the project proceeds under Project XL or another similar process;" and, "It is not clear the project will proceed in Project XL." We are concerned that the Agency has not determined which regulatory vehicle the Agency will use to move this project forward, if it does not utilize Project XL. Accordingly, we have added recommendation 4-4 in Chapter 4 which requests that the Agency officials specify which legal mechanism will be used and which technical and process criteria will govern the Fort Worth Method project in the future, specifically how human health will be protected to at least a level equivalent to the current Asbestos NESHAP.

**Note 23 -** We are pleased that the Agency plans to use a full, open, transparent, and inclusive stakeholder process. However, we are concerned that stakeholder involvement has not yet been conducted. Further, the Agency does not appear to have addressed stakeholder comments to date. As discussed in Chapter 4, this stakeholder input includes numerous technical concerns provided by EPA staff and external stakeholders, as well as the stakeholders that we interviewed. Nonetheless, the Fort Worth Method can be significantly enhanced if the Agency publishes the proposed Method in the Federal Register and solicits nationwide comment on the technical merits and enforceability of the proposal, and we have included this in recommendation 4-4 in Chapter 4.

**Note 24 -** We believe that this response from the Agency validates the concerns that we have outlined in Chapter 4 of the report. After four years of developing this project, the Agency's plans discussed in this response have yet to be fully developed and implemented.

**Note 25 -** We are concerned with the Agency's statement that the Phase I demolition was "not fully representative of a NESHAP removal..." while still attempting to maintain that it was representative. For reasons discussed below, we believe that the Phase I demolition was not representative of an Asbestos NESHAP removal. Therefore, in our view, use of Phase I data should not be used to determine equivalency to the NESHAP.

Both the contractor that conducted the Phase I demolition, and the City of Fort Worth Engineer, agreed that under normal circumstances about two to four hours of time

would have been sufficient to demolish the Phase I structure, in lieu of the 2 days that were spent actually demolishing the Phase I structure. We do not believe that the pace of the Phase I demolition would be representative of the pace that would be used if the Fort Worth Method were approved for commercial use.

We are also concerned that the more than 11,000 gallons of water used during the Phase I test would not likely have been used during a two to four hour demolition. In our view, use of water at this rate on larger structures is not realistic.

As a Project XL proposal, since the Method may potentially be applied to structures throughout the nation, we believe that the Fort Worth Method document should address representative types and quantities of RACM that would be encountered throughout the country.

**Note 26 -** The "Innovations Strategies" referred to in this statement references the Innovation Strategy as discussed in the September 30, 2003 document, "2003-2008 EPA Strategic Plan: Direction for the Future." Nonetheless, we are pleased that – irrespective of the program name under which such activities may be undertaken in the future – the Agency is committed to ensuring that such projects are clearly defined; based on sound science; employ a full, open, transparent, and inclusive stakeholder process; and use the Federal Register notice-and-comment rulemaking process to solicit nationwide input on the technical merits and enforceability of the proposal.

**Note 27 -** We agree with this comment. As discussed in Note 18, we are concerned that the number of tests to be performed has yet to be determined.

**Note 28 -** We made the recommendation for the development of a single guidance document because of our concerns about the Fort Worth XL Project. However, the Agency outlines its reliance on the Innovation Strategy in the September 30, 2003 Strategic Plan, as discussed in Note 26. As a result, we believe that this would be an appropriate step to assure that Innovations Strategy projects are evaluated based on sound science. It is our position that, irrespective of the program name under which such activities may be undertaken in the future, we believe that EPA should ensure that such projects are clearly defined; based on sound science; employ a full, open, transparent, and inclusive stakeholder process; and use the Federal Register notice-and-comment process to solicit nationwide input the technical merits and enforceability of the proposal.

# Distribution

## EPA Headquarters

Assistant Administrator for Air and Radiation
Assistant Administrator for Enforcement and Compliance Assurance
Assistant Administrator for Research and Development
Associate Administrator for Policy, Economics, and Innovation
Audit Follow-up Coordinator, Office of Air and Radiation
Audit Follow-up Coordinator, Office of Policy, Economics, and Innovation
Audit Follow-up Coordinator, Office of Research and Development
Audit Follow-up Coordinator, Office of Enforcement and Compliance Assurance
Audit Follow-up Coordinator, Office of Air Quality Planning, and Standards

## EPA Region 6

Regional Administrator
Audit Follow-up Coordinator

## City of Fort Worth

Mayor
Environmental Management Department

## Office of Inspector General

Inspector General
Assistant Inspector General for Program Evaluation
Assistant Inspector General for Human Capital
Assistant Inspector General for Planning, Analysis, and Results
Assistant Inspector General for Congressional and Public Liaison
Counsel
Science Advisor
Product Line Directors
Editor
Human Resource-Center Managers