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

JUN 29 1994

MEMORANDUM

SUBJECT: Asbestos NESHAP Demolition Decision Tree Guidance Document

FROM: John B. Rasnic, Director
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TO: Air, Pesticides and Toxics Management Division Directors
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Region VI

Air and Toxics Division Directors
Regions VII, VIII, IX and X

Attached you will find the final version of the Asbestos NESHAP Demolition Decision Tree. Over the past few years, several demolition projects with unique issues were brought to the attention of the Stationary Source Compliance Division (SSCD). In order to maintain as much national consistency as possible, SSCD developed this guidance document addressing both normal and unique demolition projects and outlining a decision process that should be followed. The document is designed to help regulatory inspectors decide which of the regulatory requirements may be applicable to a given demolition.

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Although this guidance is directed toward EPA asbestos NESHAP inspectors, it may also be appropriate for State and local regulatory inspectors. However, this guidance should be used only as a supplement to any existing program requirements, particularly State or local requirements.

The guidance document was prepared in the SSCD by Jeffery KenKnight with assistance from Tom Ripp and the Regions.

Attachment

cc: Asbestos NESHAP Coordinators
Regions I-X

Asbestos/NESHAP Demolition Decision Tree

U.S. ENVIRONMENTAL PROTECTION AGENCY
Manufacturing, Energy, and Transportation Division
Office of Compliance

June 1994

DISCLAIMER

The policies in this document are intended solely as guidance. EPA may decide to follow this guidance or act at variance therewith, based on an analysis of individual circumstances. Furthermore, although this guidance is directed toward EPA asbestos NESHAP inspectors, it may also be appropriate for State and local regulatory inspectors. However, this guidance should be used only as a supplement to any existing State and local program requirements.

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I. INTRODUCTION

This guidance has been prepared to help asbestos NESHAP inspectors provide guidance to the regulated community and to build stronger enforcement cases through more thorough and effective inspection practices. The guidance touches on difficult situations inspectors may encounter while conducting an asbestos inspection. In order to limit the scope of this document it concentrates on affected facilities undergoing demolition and deals only with EPA guidance regarding the asbestos NESHAP.

The primary focus of this document is the application of a demolition decision tree that is designed to help inspectors decide which of the NESHAP regulatory requirements are applicable to a given situation. Determining compliance with these requirements is addressed in the inspection checklist found in Guidelines for Asbestos NESHAP Demolition and Renovation Inspection Procedures (EPA 340/1-90-007, Revised November 1990).

Regardless of the current status of a facility (e.g., a partially burned structure, a structurally sound facility, etc.), regulatory inspectors utilizing the decision tree should always begin with Flow Chart 1. For example, if a facility is an ordered demolition, the inspector must first determine if the order was made by a qualified agency. An inspector should then determine if the demolition is ordered because the facility is structurally unsound and in danger of imminent collapse. If this is true, the decision process will proceed to Flow Chart 2, which details a chain of decisions an inspector should consider when conducting an asbestos NESHAP compliance inspection. Facilities that are <u>not</u> structurally unsound and will not be demolished by intentional burning (normal demolition) will proceed from Flow Chart 1 to Flow Chart 3 and possibly to Flow Chart 4. Demolition by intentional burning is covered in Flow Chart 1.

The decision tree is accompanied by a list of pertinent definitions and a detailed explanation of the process including examples of situations that may be encountered. Two case studies have been included in the appendices to the guidance that demonstrate how the demolition decision tree can be applied to real life situations.

II. DEFINITIONS

Installation means any building or structure or any group of buildings or structures at a single demolition or renovation site that is under the control of the same owner or operator (or owner or operator under common control).

Asbestos Containing Waste Material includes regulated asbestos-containing material waste and materials contaminated with asbestos including disposable equipment and clothing.

Regulated Asbestos Containing Material (RACM) is defined as (a) friable material, (b) Category I non-friable material that has become friable, (c) Category I non-friable material that will be or has been subjected to sanding, grinding, cutting or abrading, or (d) Category II non-friable material that has a high probability of becoming or has become crumbled, pulverized or reduced to powder by the forces expected to act on it during the course of the demolition.

Facility means any institutional, commercial, public, industrial, or residential structure, installation, or building (including any structure, installation, or building containing condominiums or individual dwelling units operated as a residential cooperative, but excluding residential buildings having four or fewer dwelling units); any ship; and any active or inactive waste disposal site. For purposes of this definition, any building, structure, or installation that contains a loft used as a dwelling, is not considered a residential structure, installation, or building. Any structure, installation or building that was previously subject to this subpart is not excluded, regardless of its current use or function.

Ordered Demolition* means a demolition that is mandated by order of a qualified State or local governmental agency because a facility is either structurally unsound and in danger of imminent collapse or it is being demolished as part of a government project (e.g., urban renewal project or road project).

Qualified State or Local Governmental Agency* means the governmental agency that has legal authority to inspect a facility and declare it structurally unsound and in imminent danger of collapse. Generally, these responsibilities will be held by the local building department or local engineering department. In order for such an agency to make declarations concerning a building's structural soundness and risk of collapse, the persons making such determinations must have appropriate training and/or experience.

Suspect RACM* means any material that is believed to contain asbestos that is either friable or Category I or II nonfriable material that has or will become regulated by actions that are expected to act upon the material.

Unique Methods* means any method of removing RACM that is not normally or has not been previously considered but when implemented will allow the owner/operator to remove RACM in situations otherwise thought too dangerous or impossible (i.e., the removal of material from a structurally unsound facility).

* Definitions to be used only for the purposes of this document.

III. Demolition Decision Tree

The demolition decision tree provided in flow charts 1-4 is designed to help regulatory inspectors determine which of the NESHAP regulatory requirements are applicable to a given demolition. The decision tree is a series of decisions that an inspector should go through when evaluating the demolition of a regulated facility. Use of the flow charts is explained in the following discussions.

IV. INSPECTION OF FACILITIES UNDERGOING ORDERED DEMOLITION

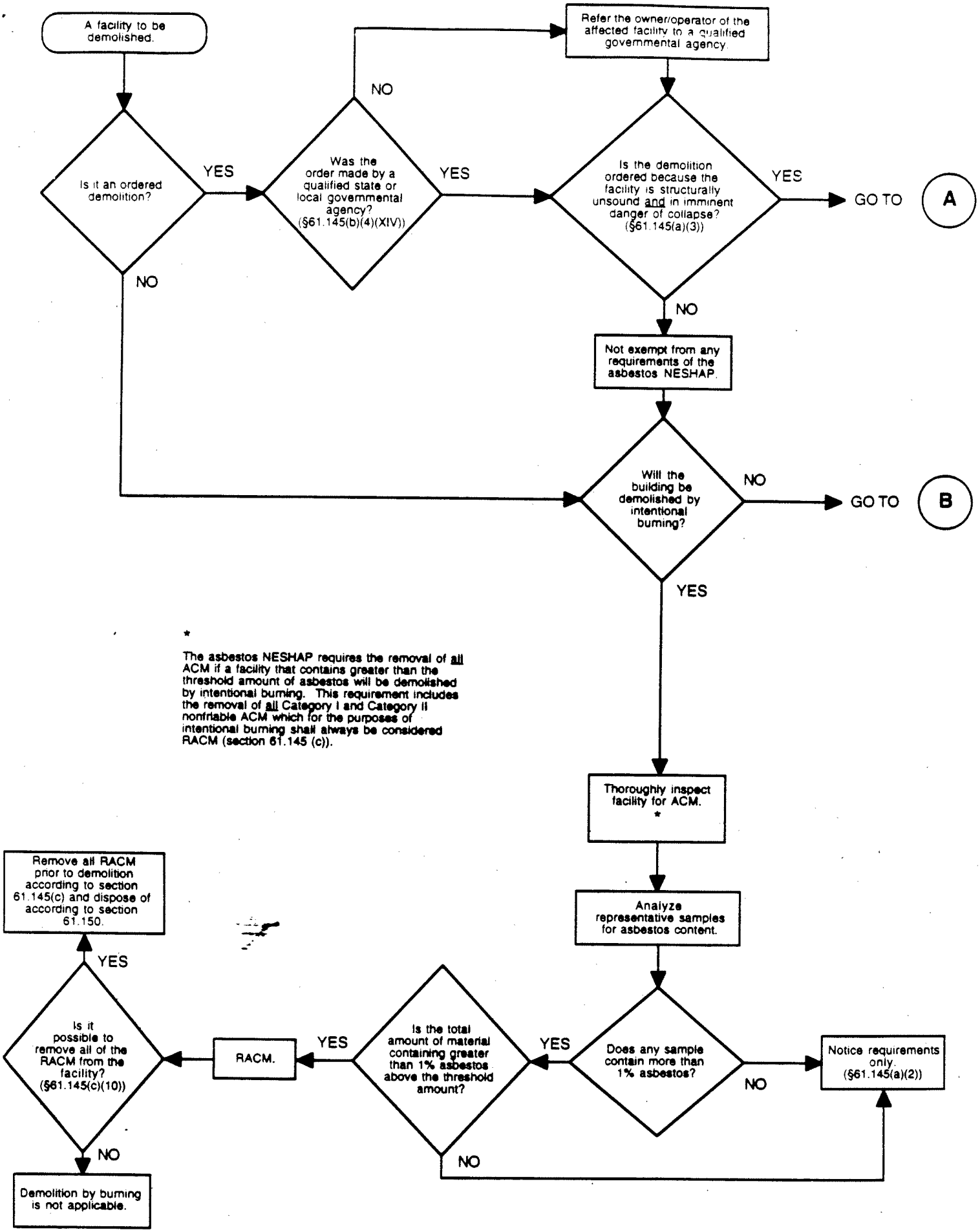
[Refer to Flow Chart 1]

Regulatory inspectors sent out to make asbestos NESHAP inspections of facilities undergoing demolition must first confirm whether or not the demolition is an ordered demolition and if so, the reason for the order and its origin. This information should be included on the notification.

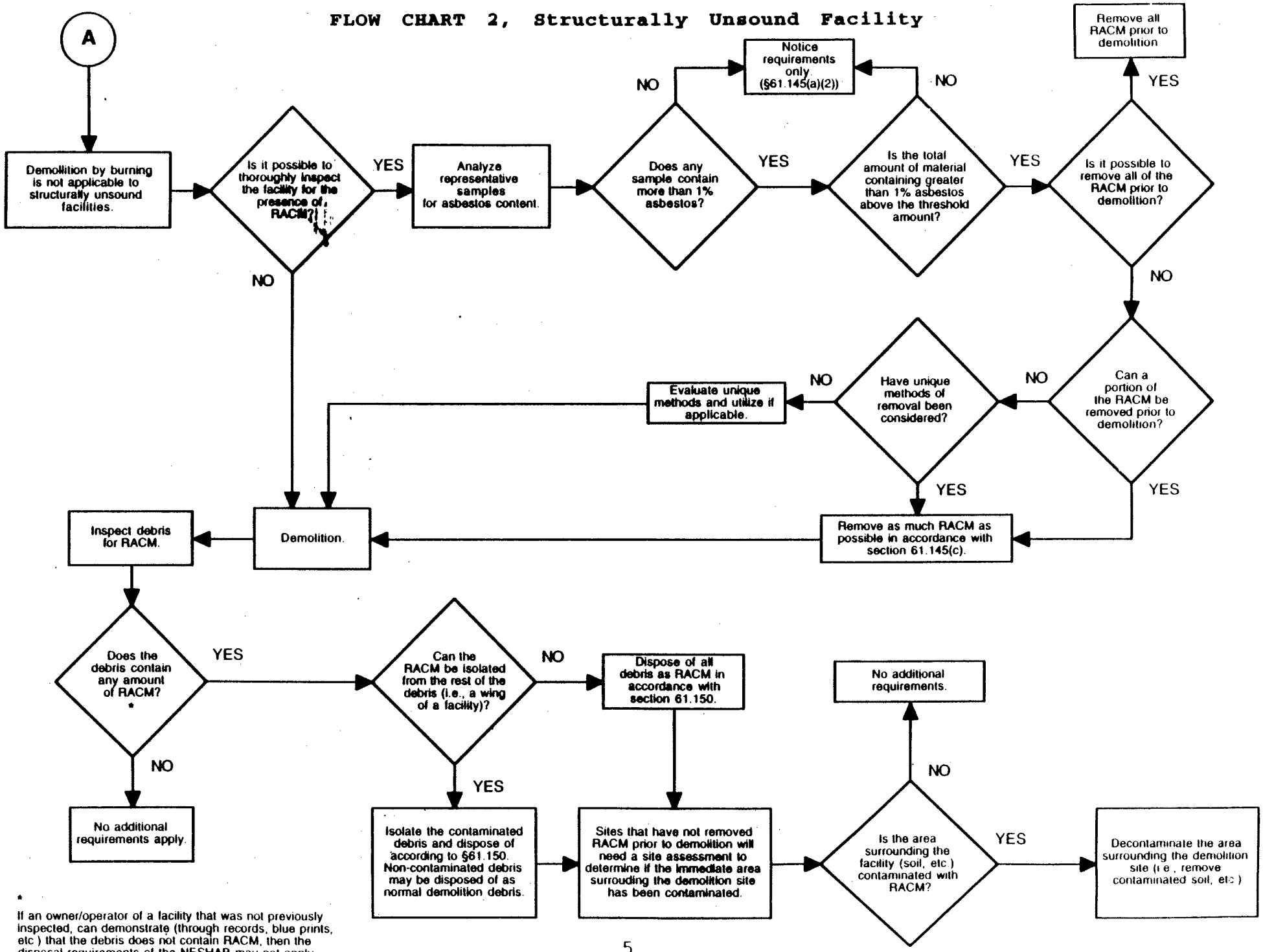
It is important to make a distinction between ordered demolitions that are made because the facility is structurally unsound and in danger of imminent collapse and those that are ordered as part of one common project, such as a highway right of way or an urban renewal project, because the former allows for some exemptions from the requirements of the asbestos NESHAP.

Demolitions ordered as part of one common project may in fact include facilities that are structurally sound. These facilities are not exempt from any of the requirements of the asbestos NESHAP. The owner/operator of such a facility is required to follow <u>all</u> the requirements of the asbestos NESHAP including inspection and notification and if applicable, abatement.

FLOW CHART 1

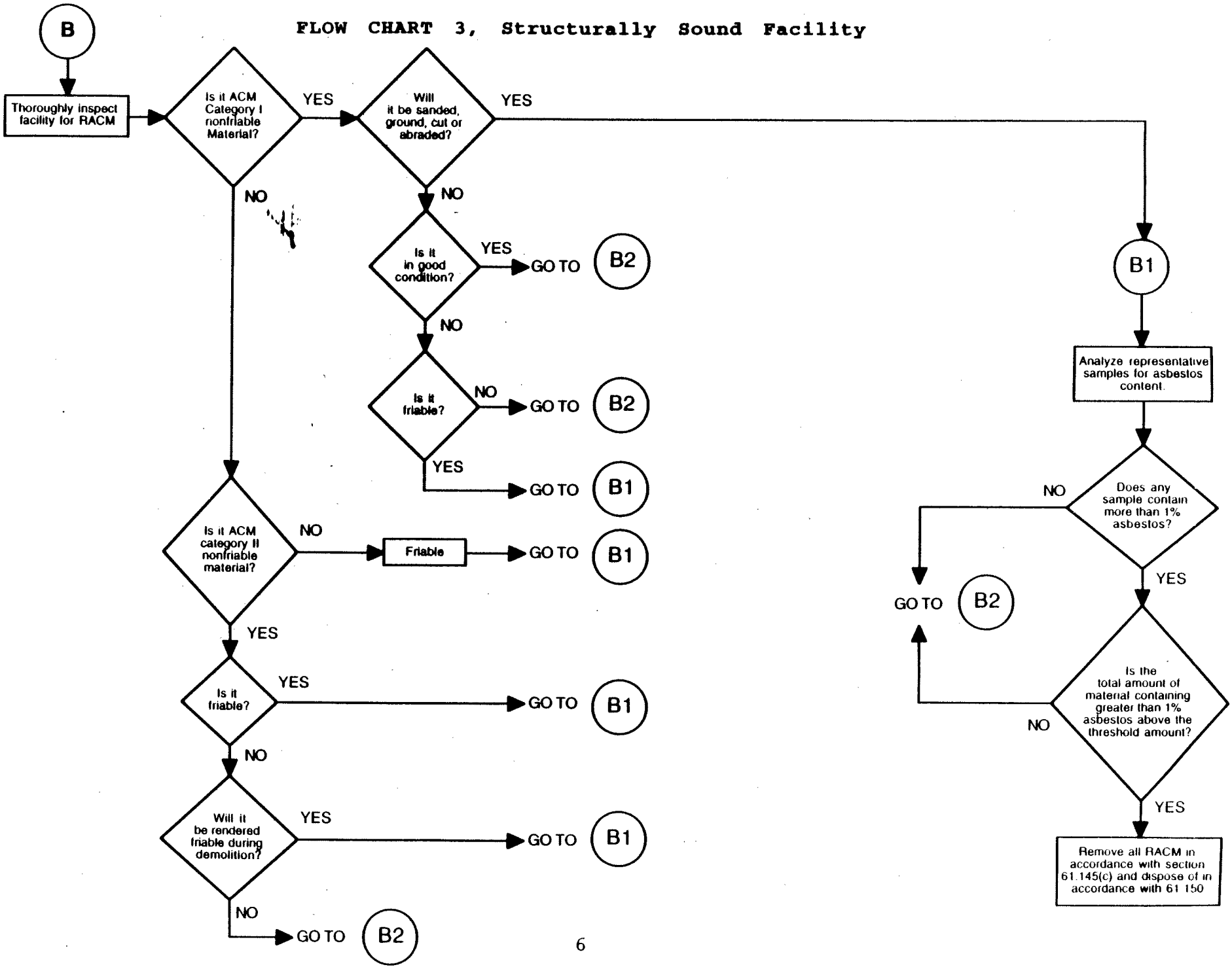

A facility to be demolished.
Is it an ordered demolition?
YES
NO
Was the order made by a qualified state or local governmental agency? (§61.145(b)(4)(XIV))
NO
YES
Refer the owner/operator of the affected facility to a qualified governmental agency.
Is the demolition ordered because the facility is structurally unsound and in imminent danger of collapse? (§61.145(a)(3))
YES
GO TO A
NO
Not exempt from any requirements of the asbestos NESHAP.
Will the building be demolished by intentional burning?
NO
GO TO B
YES
*
The asbestos NESHAP requires the removal of all ACM if a facility that contains greater than the threshold amount of asbestos will be demolished by intentional burning. This requirement includes the removal of all Category I and Category II nonfriable ACM which for the purposes of intentional burning shall always be considered RACM (section 61.145 (c)).
Thoroughly inspect facility for ACM. *
Analyze representative samples for asbestos content.
Does any sample contain more than 1% asbestos?
YES
NO
Notice requirements only. (§61.145(a)(2))
Is the total amount of material containing greater than 1% asbestos above the threshold amount?
YES
NO
RACM.
Is it possible to remove all of the RACM from the facility? (§61.145(c)(10))
YES
Remove all RACM prior to demolition according to section 61.145(c) and dispose of according to section 61.150.
NO
Demolition by burning is not applicable.

FLOW CHART 2, Structurally Unsound Facility

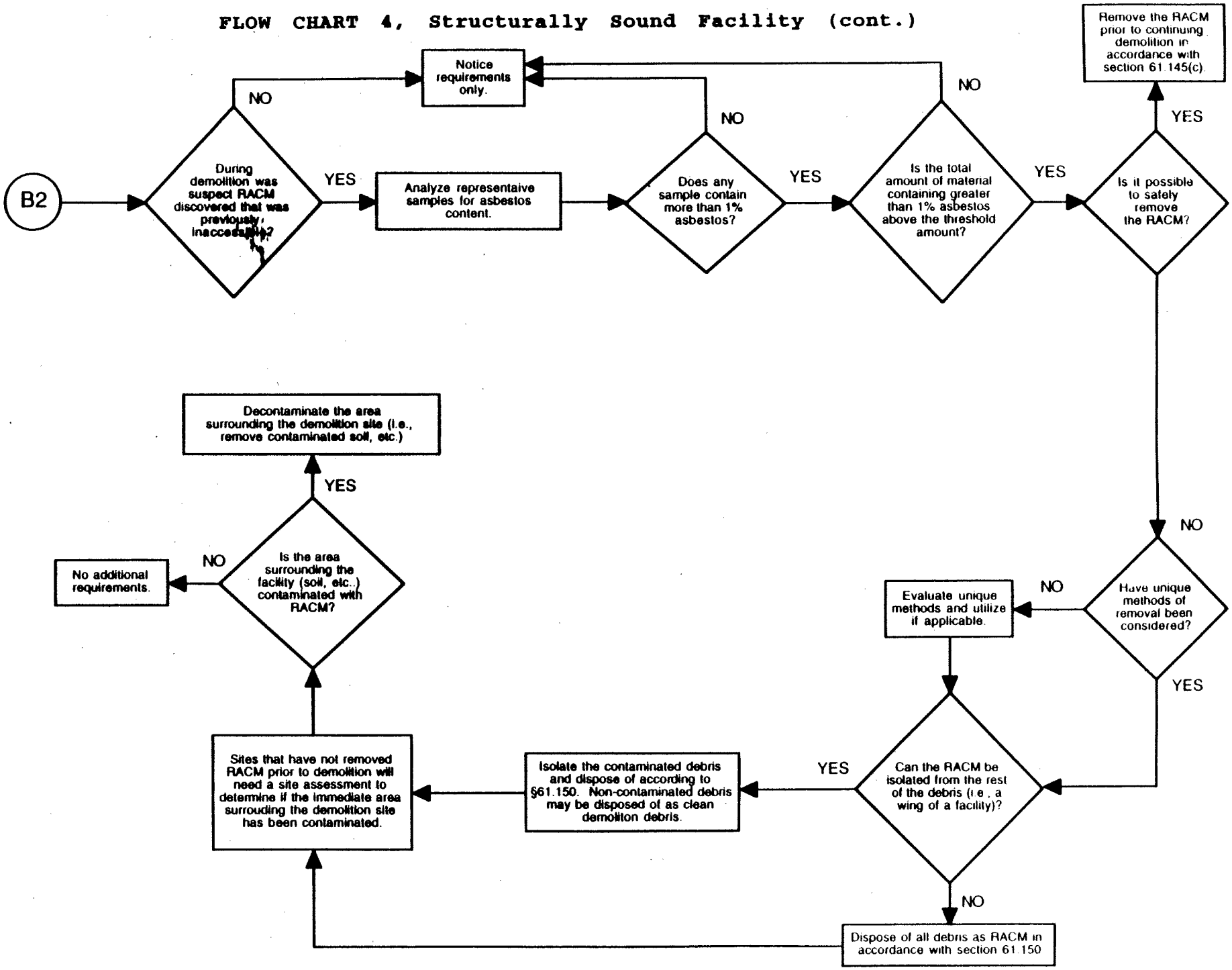


* If an owner/operator of a facility that was not previously inspected, can demonstrate (through records, blue prints, etc.) that the debris does not contain RACM, then the disposal requirements of the NESHAP may not apply

FLOW CHART 3, Structurally Sound Facility



FLOW CHART 4, Structurally Sound Facility (cont.)



Buildings declared unsafe (ordered by a State or local governmental agency) and in danger of collapse as a result of some emergency such as a fire, earthquake or other disaster, must typically be demolished immediately and cannot await an inspection by EPA. Section 61.145 (a)(3) of 40 CFR gives certain exemptions to the requirements of the asbestos NESHAP only when the facility is structurally unsound and in danger of imminent collapse. However, with respect to the procedures for emission control, ordered demolitions are subject to paragraphs (c)(4) through (c)(9) of section 61.145. Additionally, paragraphs (b)(1), (b)(2), (b)(3)(iii), (b)(4) (except(b)(4)(viii)), and (b)(5) of section 61.145 still apply to ordered demolitions.

To discourage abuse of this provision, the notification that is submitted must identify the government representative who ordered the demolition, the date the order was issued and the date demolition was ordered to begin. Representatives from a qualified governmental agency typically make those determinations.

If the appropriate agency is unable to make such a determination (e.g., due to lack of resources or personnel) it may be appropriate for that agency to retain the services of a private contractor or State regulatory agency to make the determination.

Conversely, it would be inappropriate for the owner/operator of a facility to retain the services of a private contractor or use in-house professionals to make such a determination because it would be in their best interest to have the building categorized as being structurally unsound in order to gain the exemptions and subsequent cost savings from not having to adhere to all of the requirements of the asbestos NESHAP.

V. Structurally Sound Facilities Undergoing Normal (other than intentional burning) Demolition

[Refer to Flow Charts 3 & 4]

A. Inspection of a Facility

A majority of inspections will be of structurally sound facilities undergoing normal (other than intentional burning) demolition. Guidance for demolitions can be found in A Guide to Normal Demolition Practices Under the Asbestos NESHAP (EPA 340/1-92-013, September 1992). Section 61.145 requires a thorough inspection of the affected facility prior to

demolition. The responsibility to thoroughly inspect lies with the owner/operator of the affected facility.

A thorough inspection includes identifying all asbestos containing materials present including Category I and II nonfriable ACM and the quantities to be affected, the nature of the demolition and the steps that will be taken to control any release of fibers. Guidance for inspections can be found in EPA's Guidelines for Asbestos NESHAP Demolition and Renovation Inspection Procedures (EPA 340/1-90-007, November 1990, (Revision)).

EPA requires inspectors in the regulated community to attend and pass the 3-day Building Inspectors Course under 40 CFR Part 763, the revised Asbestos Model Accreditation Plan (MAP) as mandated by section 15(a)(3) of the Asbestos School Hazard Abatement Reauthorization Act (ASHARA).

B. Material Identification and Analysis

Category I nonfriable material that has not been or will not be subjected to sanding, cutting or abrading and will not become friable during demolition and subsequent clean-up and disposal is not subject to the handling requirements of the asbestos NESHAP.

Category II nonfriable material that is not friable and will not become friable (crumbled, pulverized, or reduced to powder) during demolition and subsequent clean-up is not subject to the handling requirements of the asbestos NESHAP.

Once all suspect RACM is identified, and it is determined that the facility contains greater than the threshold amount (260 linear feet, 160 square feet or 35 cubic feet), the material(s) should be assumed to be RACM, or sampled and analyzed to verify that RACM is or is not present.

If either the suspect amount of asbestos is below the threshold amount or the asbestos content of the representative sample(s) contain less than one percent, only the notice requirements listed at 40 CFR 61.145(a)(3) apply.

C. Removal of RACM Prior to Demolition

If RACM exists in quantities above the threshold amount, then all the RACM must be removed prior to demolition. RACM may include Category I nonfriable material that is friable or

is likely to be subjected to sanding, grinding, cutting, abrading, or burning during demolition. Most normal demolition techniques will not require the removal of Category I nonfriable ACM that is not in poor condition and is not friable prior to the demolition. However, waste consolidation methods both at the demolition site and at the disposal site may render these materials friable. RACM may also include Category II nonfriable material that has a high probability of becoming crumbled, pulverized or reduced to powder by the forces expected to act on the material during the course of the demolition. Most Category II nonfriable ACM is expected to become RACM during demolition. EPA recommends that all Category II nonfriable ACM be removed prior to demolition to avoid any further requirements of the asbestos NESHAP.

D. Discovery of RACM During Demolition

Suspect RACM that is discovered during demolition which was previously inaccessible must be sampled and analyzed for its asbestos content when the combined amount of suspect RACM (the amount of RACM identified during the initial inspection and the amount of newly discovered suspect material) is above the threshold amount.

If the threshold amount is exceeded and the samples tested contain more than one percent asbestos, all of the RACM must be removed if possible. If the asbestos cannot be safely removed, the asbestos-containing material must be kept wet and the entire waste pile (or the portion that contains asbestos-containing waste material) must be disposed of as asbestos-containing waste material in accordance with 40 CFR 61.150. The cost of disposing of the entire contaminated waste pile as asbestos waste should discourage contractors from this as a means to avoid the removal requirements of the asbestos NESHAP.

When the combined amount of suspect RACM (the combined amount of RACM identified during the inspection and the amount of newly discovered material) is less than the threshold amount or the samples of intact material (not samples of contaminated waste) contain less than one percent of asbestos, only the notice requirements found in 40 CFR 61.145(a)(3) would apply to the demolition.

E. Evaluation of Unique Methods for Removing RACM

When newly discovered RACM is difficult or "impossible" to remove, innovative methods of removal should be evaluated and used if applicable. These unique methods might include

the use of equipment such as cranes, a specially adapted grappling bucket (Bainbridge Case Study, see Appendix A) or temporarily shoring up a structure. If unique methods have not been considered by the contractor, the demolition should not continue while the RACM remains in place until unique methods have been considered and determined to be infeasible.

When the asbestos cannot be safely removed, the asbestos-containing material must be kept wet and the entire asbestos contaminated waste pile (or the portion that is contaminated) must be disposed of as asbestos-containing waste material in accordance with 40 CFR 61.150.

F. Isolating RACM Contaminated Debris

Sometimes RACM is identified in only one room of a facility or a wing of a facility. Contaminated debris t can be isolated must still be disposed of in accordance h 40 CFR 61.150 of the asbestos NESHAP while the remainder f the debris (non-contaminated) may be disposed of as normal "clean" demolition debris. This determination should be made based on a visual inspection and analyses of samples of the waste. If any asbestos contamination is found in an area (even below one percent) then the waste must be disposed of in accordance with section 61.150, unless the owner/operator of the affected facility can demonstrate that the intact material contained less than one percent.

G. Site Assessment

Any facility that undergoes demolition without removing all of the RACM should undergo a site assessment to determine if the immediate area surrounding the facility has been contaminated with asbestos.

A site assessment should include but is not limited to a visual evaluation and a comprehensive soil sampling scheme to determine compliance with the asbestos NESHAP. The degree of testing should be evaluated on a case-by-case basis.

H. Decontamination of Demolition Site

If the surrounding soil has been contaminated by the demolition activities at the site, the site must be cleaned up to background levels of asbestos contamination. Alternatively, the site may be operated in accordance with section 61.154 (Standard for active waste disposal sites) and closed in accordance with section 61.151 (Standard for

inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations). However, according to 40 CFR 61.05, the establishment of an active waste site requires prior approval from EPA or the delegated State program. To clean up the site to background levels, it will probably be necessary to remove all the asbestos contaminated soil. The contaminated soil should be treated and disposed of as asbestos-containing waste material.

VI. DEMOLITION OF STRUCTURALLY UNSOUND FACILITIES

[Refer to Flow Chart 2]

A. Demolition of Structurally Unsound Facilities

Facilities declared unsafe and in danger of imminent collapse as a result of some emergency such as a fire, earthquake or other disaster can not be demolished by means of fire because of the inability to properly inspect such facilities for the presence of asbestos.

A representative from a qualified governmental agency typically makes this declaration.

B. Inspection of Facility

Facilities declared unsafe because of some emergency such as fire, earthquake or other disaster can often be dangerous if not impossible for regulatory inspectors to enter and EPA would not expect an inspector to enter such an environment.

Some facilities that are too dangerous to enter may contain suspect RACM (e.g., roofing, siding, etc.) that can be easily identified without entering the facility.

In some cases, a facility is declared unsafe when only one wall or a portion of a facility is unsound. Occasionally a facility is made unsound when the key structural load supporting members from the facility are intentionally removed to avoid the inspection and removal (if applicable) requirements of the asbestos NESHAP. In such cases the owner/operator of that facility can:

- Make the facility safe to enter by knocking down the portion that is unsafe or temporarily shoring up the structure, thus allowing the inspector to go in to conduct a thorough inspection, subsequently triggering abatement if applicable.

- Identify materials in the safe portion of the facility that are suspect and abate if applicable. Unsafe portions of the facility (portions that can not be safely inspected) should be carefully pulled down while applying adequate amounts of water to control any visible emissions.

- Assume the entire facility or the portion that was not thoroughly inspected to be asbestos and properly handle and dispose of all the demolition debris as asbestos-containing waste material.

Any portion of a facility that can be safely entered should be thoroughly inspected. A thorough inspection includes identifying all asbestos containing materials present including Category I and II nonfriable ACM and the quantities to be affected, the nature of the demolition and the steps that will be taken to control any release of fibers.

EPA requires that inspectors in the regulated community attend and pass the 3-day Building Inspectors Course under 40 CFR Part 763, the revised Asbestos Model Accreditation Plan (MAP) as mandated by section 15(a)(3) of the Asbestos School Hazard Abatement Reauthorization Act (ASHARA).

C. Material Identification and Analysis

Before demolition may begin, all suspect ACM (all material that can be safely examined) must be identified, including Category I and II nonfriable material. Once all suspect RACM is identified, and it is determined that a facility contains greater than the threshold amount (260 linear feet, 160 square feet or 35 cubic feet), the material(s) should be assumed to be RACM, or sampled (in the safe portion of the facility) and analyzed to verify that RACM is or is not present.

Category I nonfriable material that has not been or will not be subjected to sanding, cutting or abrading and will not become friable during demolition and subsequent clean-up is not subject to the handling requirements of the asbestos NESHAP.

Category II nonfriable material that is not friable and has not or will not become friable (crumbled, pulverized, or reduced to powder) during demolition and subsequent clean-up is not subject to the handling requirements of the asbestos NESHAP.

If either the suspect amount of asbestos is below the threshold amount or the asbestos content of the representative sample(s) contains less than one percent, only the notice requirements listed at 40 CFR 61.145(a)(3) apply.

D. Removal of RACM Prior to Demolition

RACM that exists in quantities above the threshold amount (that can be safely removed) must be removed prior to demolition. RACM may include Category I nonfriable material that is friable or is likely to be subjected to sanding, grinding, cutting, or abrading during demolition. Most normal demolition techniques will not require the removal of Category I nonfriable ACM that is not in poor condition and is not friable prior to the demolition. However, waste consolidation methods both at the demolition site and at the disposal site may render these materials friable. RACM may also include Category II nonfriable material that has a high probability of becoming crumbled, pulverized or reduced to powder by the forces expected to act on the material during demolition. Most if not all Category II nonfriable ACM is expected to become RACM during demolition. EPA recommends that all Category II nonfriable ACM be removed prior to demolition to avoid any further requirements of the asbestos NESHAP.

E. Evaluation of Unique Methods for Removing RACM

When RACM is difficult or "impossible" to remove, innovative methods of removal should be evaluated and used if applicable. These unique methods might include the use of equipment such as cranes or a specially adapted grappling bucket (Bainbridge Case Study, see appendix A). If unique methods have not been considered by the contractor, the demolition should not continue while the RACM remains in place until unique methods have been considered and determined to be infeasible.

When the asbestos cannot be safely removed, the asbestos-containing material must be kept wet and the entire asbestos contaminated waste pile (or the portion that is contaminated) must be disposed of as asbestos-containing waste material in accordance with 40 CFR 61.150.

F. Post Demolition Inspection for RACM Contaminated Debris

Demolition debris from a facility that is demolished without an inspection or demolished with RACM in place must be inspected. All ACM material must be identified and treated properly.

Debris that is inspected and found to contain any amount of RACM is assumed to be entirely contaminated unless the owner/operator of the facility can demonstrate through building and/or maintenance records that the facility either contains no asbestos or that the quantities are less than the threshold amount or the contaminated debris can be sufficiently isolated from the majority of the demolition debris.

G. Isolating RACM Contaminated Debris

Sometimes RACM is identified in only one room of a facility or a wing of a facility. Contaminated debris that can be isolated should be disposed of in accordance with section 61.150 of the asbestos NESHAP while the remainder of the debris (non-contaminated debris) can be disposed of as normal "clean" demolition debris. This determination should be based on a visual inspection and sampling and analysis of the debris. If any asbestos contamination is found in an area (even below one percent), the waste must be disposed of in accordance with section 61.150, unless the owner/operator of the affected facility can demonstrate that the intact material contained less than one percent.

H. Site Assessment

Any facility that undergoes demolition without removing all of the RACM should undergo a site assessment to determine if the immediate area surrounding the facility has been contaminated with asbestos.

A site assessment should include but is not limited to a visual evaluation and a comprehensive soil sampling scheme to determine compliance with the asbestos NESHAP. The degree of testing should be evaluated on a case-by-case basis.

I. Decontamination of Area Surrounding Demolition Site

If a site assessment detects contamination of soil surrounding a demolition site, the site must be cleaned up to background levels of asbestos contamination. Alternatively, the site may be operated in accordance with 40 CFR 61.154 (Standard for active waste disposal sites) and closed in accordance with 40 CFR 61.151 (Standard for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations). However, according to 40 CFR 61.05, the establishment of an active waste site requires prior approval from EPA or the delegated State program. To clean up the site to background levels, it will probably be necessary to remove all the asbestos contaminated soil. The contaminated soil should be treated and disposed of as asbestos-containing waste material.

VII. DEMOLITION OF A FACILITY BY INTENTIONAL BURNING

[Refer to Flow Chart 1]

A. Inspection of Facility

In order for a facility to be demolished by burning, section 61.145 requires a thorough inspection of the affected facility prior to demolition.

EPA requires inspectors in the regulated community to attend and pass the 3-day Building Inspectors Course under 40 CFR Part 763, the revised Asbestos Model Accreditation Plan (MAP) as mandated by section 15(a)(3) of the Asbestos School Hazard Abatement Reauthorization Act (ASHARA).

B. Material Identification and Analysis

Before intentionally burning a facility, <u>all</u> suspect ACM must be identified including all Category I and II nonfriable material.

C. Removal of RACM Prior to Demolition

The asbestos NESHAP requires the removal of <u>all</u> ACM if a facility will be demolished by intentional burning. This requirement includes the removal of <u>all</u> Category I and II nonfriable ACM which for the purposes of intentional burning shall always be considered RACM (section 61.145(c)).

Appendix A.

CASE STUDY
The Bainbridge Naval Training Center

Background

The Bainbridge Naval Training Center (BNTC) near Port Deposit, Maryland, is a federal facility owned by the U.S. Navy occupying approximately 1,300 acres in a residential and rural area in northeast Maryland.

The BNTC was an active Navy facility from the early 1940s until 1976. On November 3, 1986, the U.S. Congress authorized the Secretary of the Navy to dispose of the Bainbridge facility by sale to private parties or transfer to other government agencies. Over 700 abandoned buildings and structures in various stages of dilapidation existed on the site. Congress specified that before any sale, the Secretary of the Navy was required to "restore such property to a condition that meets all applicable Federal and State of Maryland environmental protection regulations" Public Law 99-956.

Site Description

The buildings at the BNTC were mainly one to three story wood frame structures. A few of the buildings were masonry and several of the wood frame structures had concrete grade slabs. Some of the buildings contained friable asbestos in the form of boiler wrap and pipe lagging, while most buildings had asbestos-cement transite board (Category II non-friable ACM) on the exterior, the interior, or in both areas. Because of the age of the buildings, the lack of maintenance, exposure to the elements, and vandalism, the buildings at BNTC were in various stages of dilapidation. Some of the structures had collapsed entirely, while nearly all the other structures to be demolished had sustained some structural damage making thorough inspections difficult and in some cases impossible.

Navy's Preliminary Agreement with the State of Maryland

The Navy decided to turn the BNTC site over to the State of Maryland. In doing so, the Navy agreed as mandated by Congress to "restore the property to a condition that meets all applicable Federal and State of Maryland environmental protection regulations." The restoration activities included demolition and clean-up at the BNTC site. The Navy contracted a private demolition company to demolish and clean-up the BNTC site. Before EPA's involvement, most buildings that were standing at the BNTC had only friable asbestos insulation removed prior to demolition.

Regulatory Inspections

During several inspections of the BNTC site in 1991, EPA inspectors observed that the demolition activities were being conducted in violation of the notification, demolition, emission control, and disposal requirements of the asbestos NESHAP. The transite material found on the exterior and interior of most buildings was initially thought by the State of Maryland and the Navy to be exempt from the requirements of the asbestos NESHAP. The intent of EPA to regulate the demolition of buildings containing transite material (asbestos-cement material) is expressed in the preamble to the final promulgation of the asbestos NESHAP published November 20, 1990, 55 FR 48408. EPA's applicability determination of January 8, 1992, was made to further clarify what types of activities are likely to cause Category II nonfriable ACM to become RACM.

The Navy then conducted an inspection of the BNTC and concluded that all but four of the buildings were structurally unsound. The buildings were inspected by the Navy and categorized into four classes:

> Remedial Class 1: a building requiring removal of all friable asbestos (primarily insulation materials) but which will not be demolished.
>
> Remedial Class 2: a building requiring pre-demolition "removal of friable asbestos from parts of the structure that can be safely entered."
>
> Remedial Class 3: a building that has collapsed or is structurally unsound in its present condition and is to be demolished "as is," with the debris treated as asbestos-containing waste material.
>
> Remedial Class 4: a building requiring no action.

The Navy Categorized most of the buildings as remedial Class 3, therefore buildings were demolished "as is," with no abatement prior to demolition and the debris was treated as asbestos containing material.

Application of Demolition Decision Tree to the BNTC

The Demolition Decision Tree is written in a generic format so that it can be applied to various demolition scenarios. The BNTC site because of the number and variety of buildings is a good example of how the application of the Decision Tree may help inspectors decide which of the NESHAP regulatory requirements are applicable to a given demolition.

In applying the decision tree to the BNTC site (beginning with Flow Chart 1), the inspector should first determine whether the demolition is an ordered demolition. If the demolition is not an ordered demolition, the facility is not exempt from any of the requirements of the asbestos NESHAP. When demolitions are "ordered," the inspector should determine if the order was made by an appropriate governmental agency. Although EPA does not have any criteria for such determinations, they should be made at the request of the regulating agency by registered engineers or building inspectors who are trained (qualified) to make such decisions. Ordered demolitions typically come from a governmental agency that regulates building safety. The fact that a facility is off limits or has been declared unusable, is insufficient grounds for allowing certain exemptions (section 61.145(a)(3)) to the requirements of the asbestos NESHAP. Prior to the start of demolition at the BNTC site, the Navy conducted their own survey and concluded that the vast majority of the buildings were structurally unsound. It should be obvious from Flow Chart 1, that the initial survey which was conducted by the Navy was inappropriate. The appropriate procedure in this situation would have been for the State of Maryland, EPA, or an independent contractor (agreed to by the regulatory agency and the Navy) to conduct a comprehensive survey of the affected facilities.

Structurally Unsound Facilities (Flow Chart 2)

Facilities declared structurally unsound and in danger of imminent collapse would move from Flow Chart 1 to Flow Chart 2. The buildings declared structurally unsound at the BNTC site were categorized as Remedial Class 3 buildings by the Navy.

Regulatory inspectors should then determine if it is possible for the owner/operator to inspect a facility or the portion that is safe for the presence of asbestos. If facilities or safe portions of facilities contain suspect RACM in amounts greater than the threshold amount, representative samples should be sampled and analyzed for asbestos content. If the samples contain more than one percent asbestos, inspectors should investigate the possibilities of removing all the RACM or RACM from the safe portions (Remedial Class 2) of the facility. Whenever possible, all RACM should be removed prior to demolition. When RACM is identified in facilities that have been declared unsafe, inspectors should evaluate unique methods for removing the RACM. Unique methods may include the demolition of the portion deemed unsafe or temporarily shoring up the unsafe portion of the structure thereby creating a safe working environment allowing for proper inspection and abatement as applicable. Other unique methods might include the use of specially adapted demolition equipment. The demolition contractor at the BNTC site attempted to remove the transite siding with a modified grappling bucket. This method proved ineffective, forcing the demolition contractor

to remove as much of the transite material as deemed feasible by hand. If unique methods have not been considered by the contractor, the demolition should not continue while the RACM remains in place until unique methods have been considered and determined to be infeasible.

The lower portion of Flow Chart 2 should make it clear to an inspector that demolition debris from facilities not thoroughly inspected or debris from facilities demolished with RACM in place, must be thoroughly inspected. Debris containing any amount of asbestos (even below one percent) should be treated and disposed of as RACM in accordance with section 61.150. Non-contaminated material that can be isolated from asbestos contaminated waste may be disposed of as "clean" demolition debris in any landfill that normally accepts demolition material. Because the demolition techniques used at the BNTC site caused most if not all transite material (Category II nonfriable) to become RACM, the demolition debris was assumed to be entirely asbestos contaminated and was disposed of as RACM in accordance with the NESHAP. EPA inspectors observed that the demolition activities were being performed in violation of the emissions control requirements of the asbestos NESHAP (section 61.145(c)). The observed visible emissions at the BNTC site and the data obtained through air monitoring was enough evidence to expect some degree of contamination to the environment in and around the demolition sites. To fulfill its obligation to "restore such property to a condition that meets all applicable Federal and State of Maryland environmental protection regulations," the Navy was required to submit a comprehensive soil sampling protocol for determining possible site contamination levels at the BNTC site. The results of the soil sampling revealed contamination at those sites demolished with transite material in place. As a result of the contamination, the soil was removed and disposed of as asbestos containing waste material.

Lessons Learned

The BNTC case is a good example of how the application of the demolition decision tree would have prevented a lot of confusion as to which of the regulatory requirements were applicable to the demolition activities. Specifically, it could have made clear EPA's intent on regulating the demolition of buildings containing transite material.

Appendix B.

CASE STUDY
Jewel Lake Condominium
Anchorage, Alaska

Background

The Jewel Lake Condominium facility was a 20 unit, three-story structure that suffered extensive fire damage. The third floor and the main stairway were severely burned. Smoke and water damage were prevalent throughout the remainder of the building. It was declared a public nuisance and hazard by both the Alaska Department of Occupational Health and Safety (ADOHS) and the Municipality of Anchorage (MOA) Public Works Department, Division of Building Safety. It was condemned (ordered) by the MOA and declared unsafe due to the danger of imminent collapse.

A survey of the facility found extensive use of asbestos containing materials within the surviving portions of the building. The building contained 28 fire doors (containing Amosite) and 12,000 square feet of asbestos containing sprayed-on material (acoustical plaster).

The original demolition plan called for a complete knock-down of the structure. The plan also called for a backhoe to break up the debris before disposing of the entire debris pile as asbestos contaminated waste.

The building was located in a densely populated neighborhood and the work was to be conducted at temperatures below freezing which would make the application of adequate amounts of water impractical.

Application of Demolition Decision Tree

In applying the decision tree to the Jewel Lake Condominium site, an inspector should first confirm that the demolition was ordered by a qualified governmental agency. The Jewel Lake site was "ordered" by the ADOHS and the MOA. Both the ADOHS and the MOA conform with the definition of "qualified governmental agency." The inspector should then determine if the order was made because the facility is structurally unsound <u>and</u> in danger of imminent collapse. The Jewel Lake facility suffered extensive fire damage, causing the structure to become structurally unsound <u>and</u> in danger of imminent collapse as determined by a construction engineer working for the MOA. In addressing structurally unsound facilities in the Decision Tree move from Flow Chart 1 to Flow Chart 2.

A thorough inspection of the facility confirmed the presence of suspect asbestos containing materials in quantities above the

threshold amount. Subsequent analyses of the suspect materials confirmed the presence of asbestos. Using the middle section of Flow Chart 2 (unique methods), the inspector should determine if the utilization of unique methods will facilitate the removal of RACM before demolition. The "unique methods" used at the Jewel Lake site, included the knock-down and removal of only the damaged portion (unsafe portion) of the facility. This portion was removed with adequate amounts of water and disposed of entirely as asbestos contaminated material. The remaining intact portion of the facility was demolished and disposed of as normal debris after abatement of all the remaining RACM.

Lessons Learned

The application of the demolition decision tree to the Jewel Lake site would have clearly defined which portions of the asbestos NESHAP are applicable. The apparent confusion among the regulated and regulatory communities caused a five month delay in the demolition of the Jewel Lake facility. The Demolition Decision Tree guidance clearly states that even in cases where a facility is declared unsafe, all options of removing RACM should be considered. In the Jewel Lake case, the upper floor (the burned out portion) was removed, thereby creating a safe working environment. This allowed for the proper abatement of all the remaining RACM prior to the demolition. Removing the damaged portion of the Jewel Lake facility avoided the near certain contamination to the surrounding neighborhood that would have occurred considering the proposed work plan.