



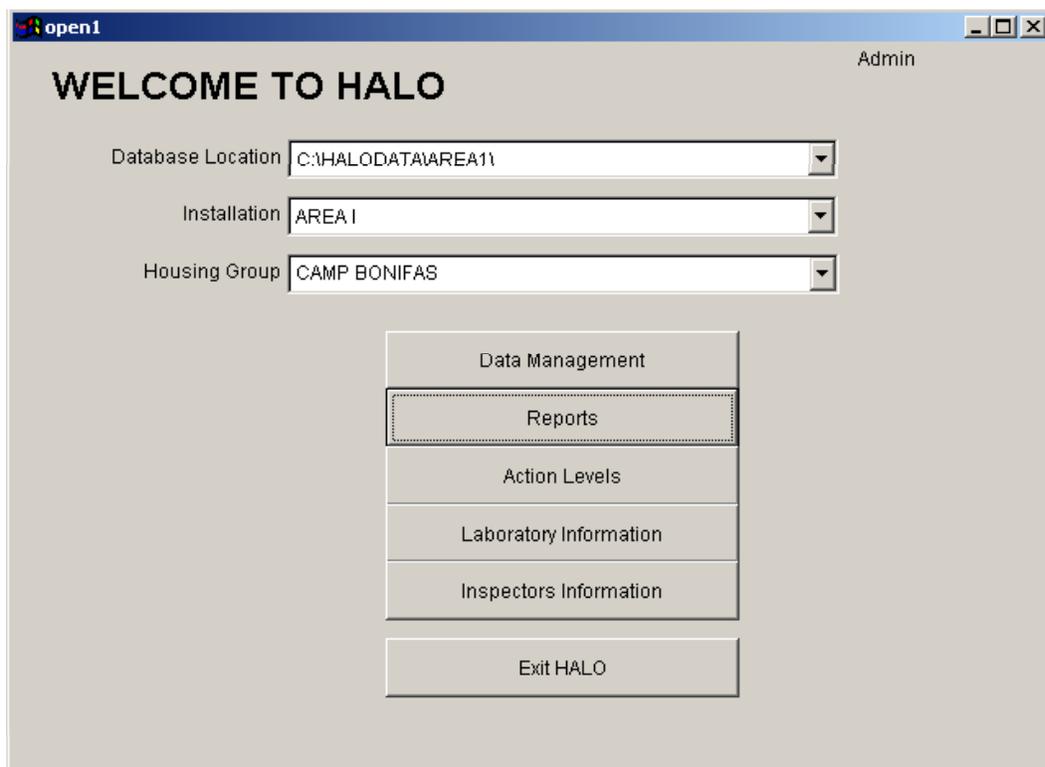
US Army Corps
of Engineers®
Engineer Research and
Development Center

Hazardous Asbestos and Lead Optimal Management System (HALO)

Implementation Guide and User's Manual Second Edition

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Foreword

This study was conducted for the Strategic Environmental Research and Development Program (SERDP) under Project No. 63716DP470, “Compliance”; #541, “Lead-Based Paint Hazard Mitigation.” The SERDP technical monitor was Dr. Robert Holst.

The work was performed by the Materials and Structures Branch (CF-M) of the Facilities Division (CF), Construction Engineering Research Laboratory (CERL). The CERL Principal Investigator was Dr. Ashok Kumar. Part of this work was done by James J. Long, U.S. Navy Public Works Center, Norfolk, VA, under Military Interagency Purchase Request #97-1251601. Marty Savoie is Chief, CF-M, and Michael Golish is Chief, CF. The technical editor was Linda L. Wheatley, Information Technology Laboratory. Dr. Alan Moore is the Director of CERL.

CERL is an element of the U.S. Army Engineer Research and Development Center (ERDC), U.S. Army Corps of Engineers. The Commander and Executive Director of ERDC is COL John W. Morris III, EN, and the Director is Dr. James R. Houston.

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Foreword to the Second Edition

During the 3 years since the HALO program was first released, the program has undergone a major overhaul. In addition to now being network compatible, the entire layout of the data entry screens has been modified to improve the program's usability. This User's Manual has also been modified to reflect the new screen formats and additional reporting capabilities of HALO 3.0.

HALO 3.0 and this Second Edition of the User's Manual are the direct result of many individuals who contributed their time in reviewing the new program and provided comments on what worked and what needed to be changed. Without their support it would have been impossible to bring the program to its current level of excellence.

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1 Introduction

Background

Before the dangers of lead and asbestos in the environment were known, lead-based paints and asbestos were commonly used building materials. Now that the dangers are recognized, the Army finds itself with many structures containing lead and asbestos coatings or materials.

Family housing presents a particular problem since young children are more sensitive to lead poisoning than adults. Identification of lead hazards in paint, dust, and soil is required by U.S. Environmental Protection Agency (EPA) and U.S. Department of Housing and Urban Development (HUD) rules. When lead hazards are found, action must be taken to manage or remove them.

The Residential Lead-Based Paint Hazard Reduction Act of 1992, often referred to as Title X (read as Title Ten), requires disclosure of known lead hazards in housing built before 1978. Section 1017 of Title X required HUD to develop guidelines for lead hazard identification and control. HUD published “Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing” (1995) to meet this requirement. The 1995 guidelines replaced the 1990 publication “Lead-Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing.” Chapter 7 of the guidelines, “Lead-Based Paint Inspection,” is currently under revision.

The U.S. Army Center for Public Works has published Public Works Technical Bulletin 420-70-2 “Installation Lead Hazard Management” to provide technical guidance to Army personnel who operate and maintain Army facilities. Technical Bulletin 420-70-2 assists in identifying and controlling hazards from lead-contaminated paint, dust, and soil, and from other sources in facilities constructed before 1978. It also stresses a program of risk assessment, ongoing monitoring, interim controls, and abatement.

Asbestos is a naturally occurring mineral mined from the earth. Commercial use of asbestos began in the early 1900s. It has been used in many building materials for its many beneficial characteristics such as resistance to heat, fire, and chemical corrosion. It is also a flexible, durable, and strong material. However,

serious adverse health effects have been linked to exposure to this naturally occurring mineral. When asbestos fibers become airborne and are inhaled, there is an increased risk of asbestos-related diseases including asbestosis (scarring of the lungs), mesothelioma (cancer of the chest and abdominal lining), lung cancer, and cancer of the gastrointestinal tract. There is no safe level of exposure to asbestos.

To address the hazards of asbestos exposure, Congress enacted the *Asbestos Hazard Emergency Response Act* (AHERA) on October 22, 1986. AHERA mandated a regulatory program for addressing asbestos issues in public schools. On November 28, 1990 Congress passed the *Asbestos Schools Hazard Abatement Reauthorization Act* (ASHARA). This act amended AHERA by extending many of the training and accreditation requirements to persons performing asbestos work in public and commercial facilities. The U.S. Army Center for Public Works Technical Bulletin 420-70-8, "Installation Asbestos Management Program," provides technical guidance to Army personnel in managing asbestos-containing materials.

Separate from AHERA and ASHARA, the Occupational Safety and Health Administration (OSHA) mandates the control of employee exposure to airborne asbestos fibers and specifies training requirements for employees working with asbestos-containing materials or presumed asbestos-containing materials. For these reasons, managing asbestos and asbestos hazards are either directly or indirectly required.

Tracking the details of an effective lead and asbestos hazard management program can present a formidable task, even for a relatively small number of buildings. A computer database program is ideally suited to this task.

There are several commercially available programs designed to work with lead hazard data, derived mostly from paint inspection protocols. The HALO system is designed to assist Army personnel in performing lead and asbestos hazard inspections, tracking data, assessing risk, and selecting appropriate management actions. HALO uses regulation-based algorithms to assign risks so that the hazards found in family housing and other structures can be properly managed. The program serves to:

- Standardize the collection and analysis of risk assessment data
- Support the development of installation lead hazard and/or asbestos hazard management plans
- Support the implementation of interim and long-term lead hazard control strategies
- Provide guidance in managing lead and asbestos

- Generate standard and required reports, notifications, and other notifications.

Objectives

The primary objective of the HALO program is to assist Army installations in managing housing units and nonresidential buildings that may contain lead and/or asbestos related hazards by taking as input the hazard information and giving as output the required disclosure documents and management plans customized for their installation. A second objective is to enable the collection of ancillary data for worker protection issues.

Approach

HALO accomplishes the stated objectives by presenting on-screen forms for entry of hazard information to generate a comprehensive database. Then, using regulation-based algorithms; the data are used to generate the appropriate hazard management plan. For example, HALO can output a building-specific Disclosure of Information document with all the lead hazards found and any remedial actions taken. Asbestos documents provided in HALO offer guidance for managing asbestos and asbestos hazards.

The program uses relational database tables to store all the necessary information and Microsoft (MS) FoxPro® to link and relate them as necessary. While the program is designed for risk assessment data, inspection information can be stored and analyzed as well.

Mode of Technology Transfer

Users may directly download the HALO program from the Construction Engineering Research Laboratory (CERL) web page. The web address is:

<http://www.cecer.army.mil/>

2 Program Installation

Hardware and Software Requirements

The program runs under MS Windows 95®, 98®, ME®, NT®, or 2000® operating systems. The hardware requirements are similar to those that are needed to run the operating system. Requirements include a Pentium-class processor, 16 megabytes (MB) of random access memory (RAM) and 10 MB of hard disk space for the program. Additional hard disk space is required to hold the lead hazard data. A mouse is required since some user actions do not have keyboard equivalents. The program will run on portable computers as well as on desktop computers.

Due to the large amount of information on the form screens, the display mode must be set to a minimum resolution of 800 x 600 pixels. The 640 x 480 pixels screen resolution will not show the entire entry form. The program is also expecting a 256-color mode for the display, though the program will function in 16-color mode with degraded appearance. Most modern desktops and portables will have the 256-color mode available.

The asbestos and lead guidance documents generated by the program use MS Word® version 7 or better commands to format the output. To generate reports, users must have MS Word 7 or better installed on their machines. MS Word 7 is a component of MS Office 95®, MS Word 8 is a component of MS Office 97®, and Word 2000® is a component of MS Office 2000®.

Compact Disk Version

The program is distributed on a compact disk (CD). Begin by placing the CD into the disk drive. On most computers, this is drive **D:**.

On the desktop screen, click the **start** button. On the menu that appears, select **run**. A dialog box will appear. Enter the following into the dialog box:

d:\setup

(Replace “**d:**” with the appropriate letter for your CD drive)

Click the **OK** button to start the setup process. The setup program will prompt the user as needed. During setup, the user must choose a destination folder for the program. It is recommended that the default location of **C:\HALO** be used. In addition to unpacking the distribution files, the setup program also creates the needed subfolders and places a shortcut labeled **HALO** in the Program menu.

World Wide Web Version (<http://www.cecer.army.mil/>)

The program is distributed as a single file. It is downloaded from the web to the user's computer by clicking on the link to **HALO.exe** while in a web browser. The browser will display a dialog box. You should select **save to Disk**. The browser will then display a file save dialog box. Save the file anywhere that is convenient. For example, you can create a new folder labeled **HALOTMP** and store the program file until installation is complete. Once the file is saved, exit your browser. Using a compression/extraction program such as Winzip or Pkunzip, extract all the files in halo.zip to the **HALOTMP** folder. Refer to the instructions for your compression/extraction program. These and other such programs can be downloaded from the Internet (see www.winzip.com or www.pkware.com)

Next, locate and double click on the Setup.exe icon to install HALO. During setup, the user must choose a destination folder for the program. It is recommended that the default location of **C:\HALO** be used. In addition to unpacking the distribution files, the setup program also creates the needed subfolders and places a shortcut labeled **HALO** in the Program menu.

3 HALO Program Overview

On Screen Help

To help the user remember the function of various buttons shown on the forms, the program implements a technique called **Tool Tips**. As you move the mouse pointer over a button or field, help information appears either in a box just below the mouse pointer or in the lower left hand corner of the screen to remind you of the button's function.

Conventions Used in this Manual and the Software

Throughout the remaining chapters of this document, data to be entered by you, the user, will be shown in **Courier bold**. When using the screen forms, the user has some common options. They are shown as buttons on the lower portion of the form (see Figure 1).



Figure 1. Button bar appearance on screen forms.

To modify previously entered data, click the Edit button. To enter a new record, click the Add button on the button bar below the form. Normally, information shown in gray indicates that the user cannot change it. In Add mode, a new empty form will be shown for the user to type into. In Edit mode, the text will change from gray to black and the input fields can now be modified. Further, the Add and Edit buttons change to **Save** and **Revert** (see Figure 2) in Edit Mode. All the other buttons are grayed out to indicate they are non-functional in these modes. To save the information after entry or editing, click the Save button. If you decide not to save the information, click the Revert button to restore the original data.



Figure 2. Button bar appearance when in Edit and Add modes.

Each row in a data table used by the program is referred to as a record, where a record represents a particular installation, unit, sample, or other activity. To change from one record to the next, click the Next button. To view earlier records, use the Prev button. These buttons move the record pointer one record at a time. To find a specific record in a large table, the Find button will cause a dialog box to appear which allows the user to enter a search expression. The Top and Bottom buttons position the table record pointer to the first and last records respectively. The Delete button removes a record from the table. **IMPORTANT!** Once a record is deleted, it cannot be recovered! The Exit button closes the current form and its associated tables.

Main Menu Screen

The HALO program is accessed through the main menu screen. Figure 3 shows the main choices available. To enter the system, the Database Location, Installation, and Housing Group must be entered or selected.

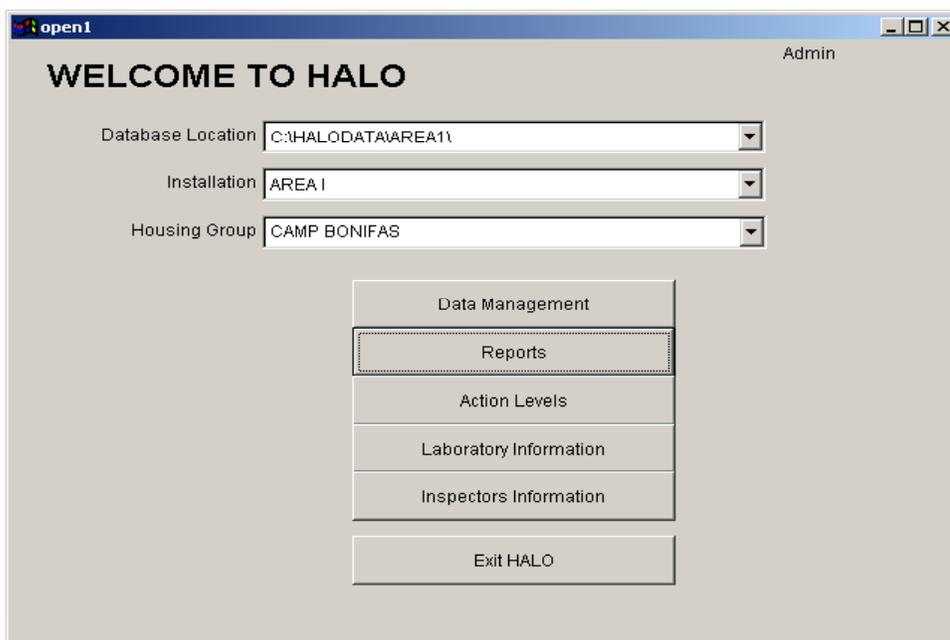


Figure 3. HALO Main Menu.

Each menu option is supported by a dropdown menu with a number of selections that create the program functionality. These options are described below:

<i>Database Location</i>	Identifies the network location for the HALO data to be used.
Add New Database	Allows the user to use a new or different database.
<i>Installation</i>	Identifies the subset of data pertaining to the installation or area of interest.
Add/Edit New Installation	Allows the user to add a new installation, view contact information and assign housing groups to the installation.
<i>Housing Group</i>	Identifies the particular housing group of interest.
Add/Edit New Housing Group	Allows the user to add a new housing group, view contact information, assign housing groups to the installation, and view buildings assigned to this housing group.
<i>Data Management</i>	
Lead Management	
Paint Samples	Review/Edit lead content measurements.
Dust Samples	Review/Edit lead content measurements.
Soil Samples	Review/Edit lead content measurements.
NIBS	Access National Institutes of Building Sciences (NIBS) Lead Management Guidance and lead work practices.

Asbestos Management

Asbestos Air	Review/Edit asbestos air sample data for a particular unit.
Bulk Samples	Review/Edit asbestos bulk sample data for a particular unit.
NIBS	Access NIBS Asbestos Management Guidance and asbestos work practices.

Abatement Activities

Paint	Input management activities.
Dust	Input management activities.
Soil	Input management activities.
Asbestos	Input management activities.

Reports

Paint Disclosure	Print a disclosure report for a unit.
Lead Hazard Management Plan	Generate a lead hazard management plan for an installation in MS Word 8 format.
Asbestos Management Plan	Generate an Asbestos Management plan in MS Word format.
Priority Ranking Report	Ranks each positive (asbestos or lead) material in a housing group based on the internal HALO ranking algorithm.
Building/Floor Plan Report	Displays the floor plan for that building, when available.
Data Dictionary	Prints the Data Dictionary.

Action Levels	Edit action levels in cases where state or local regulations are more stringent than Federal standards for lead dust, soil, paint, and asbestos, or when Federal standards change.
Laboratory Information	Input data about analytical laboratory.
Inspector Information	Input data about inspectors.

Deleting Data

Deleting records in the HALO database needs to be done in a particular sequence. HALO contains linked fields called master-child fields. The master-child fields are how the program draws relationships between data fields. For example, the master field *Installation* is linked to child field *Units*. Each installation may have numerous units, each unit is a child record to the master field *Installation*. The user needs to delete the child field data records before deleting the master field data record. In other words, if the user deletes the installation record, the program does not automatically delete all the unit records associated with the deleted installation. This becomes particularly important when deleting sample records. If a record has data associated with it, do not delete it until the associated data has been deleted.

Keyboard Shortcuts

The program will respond to keyboard entries as well as the mouse. Most, but not all, actions can be performed without the use of a mouse. Each screen tab and button control has a description on it with one letter underlined. This letter, when used with the **ALT** key, can be used instead of a mouse click. For example, to add a new record to the current input screen, press the **ALT** key, and, while holding it down, press the “**A**” key. This action is the same as moving the mouse pointer over the **A**dd button and single clicking the mouse. Either an upper or lower case “**A**” will work.

The user can use the keyboard to select a particular item by using the **Tab** key to move the highlight bar and then pressing the **Enter** key when the desired item is highlighted.

4 Initial Data Entry

A variety of data can be entered and tracked in the HALO program. For example, installation data, housing data, personnel data, paint condition, lead content data, suspect asbestos-containing materials, asbestos bulk sample results, and air sample results for lead and asbestos can all be entered. The various data entry screens are arranged in a hierarchy from summary tables down to individual entry screens. The summary tables allow the user to select a particular record to be displayed on the individual entry screen. Data entry is performed via the selected individual item screens.

While it is possible to enter building, housing group and installation information in any order, the user **must** enter the building information before any lead or asbestos hazard data can be entered. The assignment of buildings to housing groups and housing groups to installations can be done at any time. A building can only be assigned to one housing group at a time, however, and a housing group may be assigned to only one installation at a time. Printed reports show only the current assignments.

Database Location Entry Screen

To add a database path, begin by selecting **Add New Database** from the Database Location dropdown box on the main menu screen. Once selected, the screen in Figure 4 will appear. To locate the path, click on the **Locate** button and navigate to the desired file location, as shown Figure 5. Once the path has been defined, it will be stored in the Database Location field as one of the drop down choices. HALO will automatically set up the appropriate folder and files at the selected location.

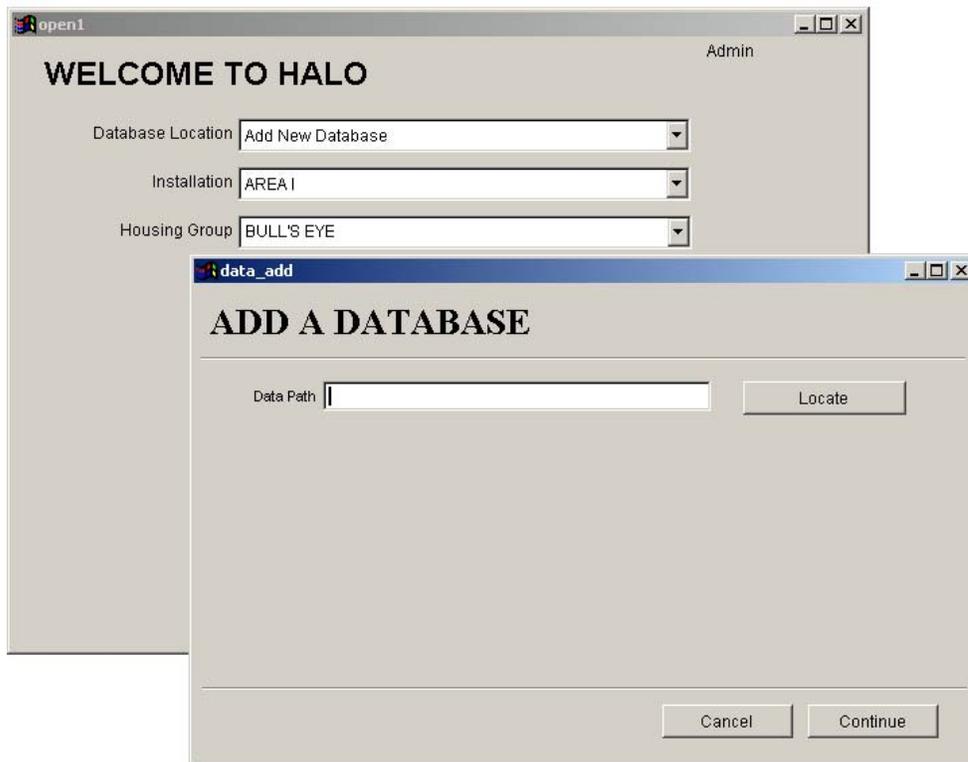


Figure 4. Database location field.

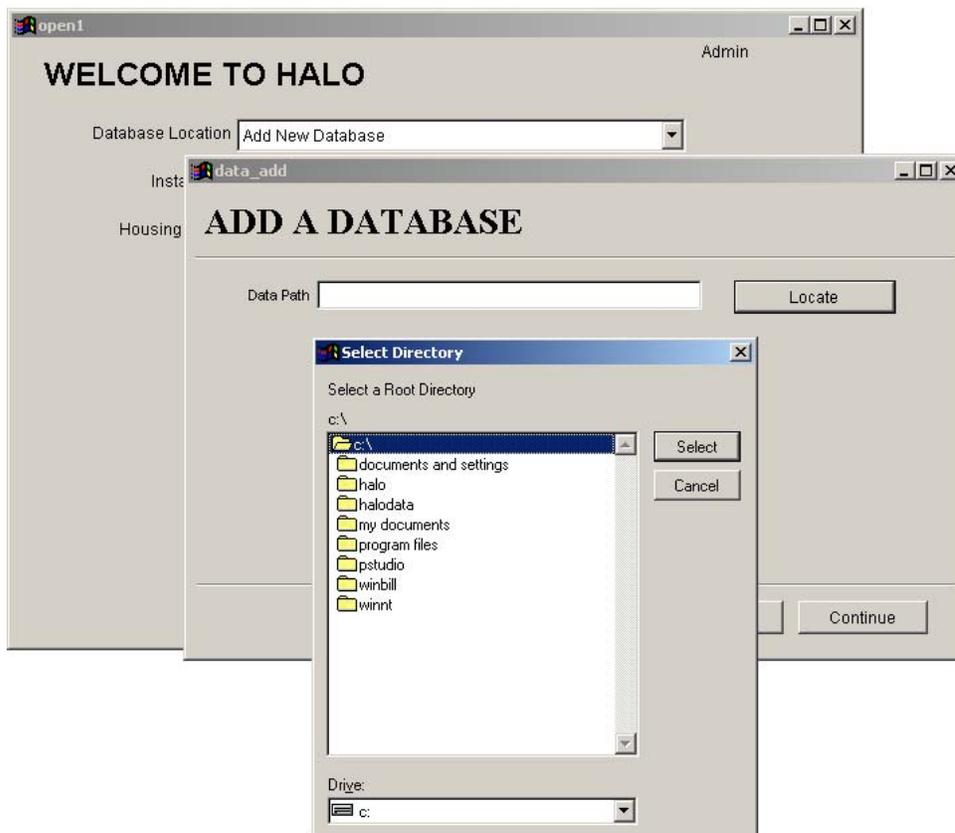


Figure 5. Database path navigator.

Installation Information Entry Screens

To define installation information, begin by selecting **Add/Edit New Installation** from the Installation dropdown menu on the main menu screen. The screen form shown in Figure 6 will appear.

The installation information can be entered by either selecting the **A**dd or **E**dit buttons and then clicking on the **S**ave button when entry is complete. Two additional options are available from this screen. Facility contact information can be added or edited. The user can also assign or de-assign housing groups to the selected installation (see Figures 7 and 8).

Installation contacts are entered using the Contacts screen. Clicking the view/edit contacts for this installation button causes the screen shown in Figure 7 to appear. (Note: Contact information should not be confused with inspector information, which will be discussed later. The reason for the separation is that inspectors need to have approved training, and their entries will include the certification courses they have taken.)

The screenshot shows a web-based application interface. At the top, a window titled 'open1' contains the text 'WELCOME TO HALO' and 'Admin'. Below this, a larger window titled 'Install1' is open, displaying the 'Installation Information' form. The form includes several input fields: 'Installation Name', 'Major Command', 'City/State', and 'Country'. Below the input fields are two buttons: 'View/Edit Contacts for this Installation' and 'View/Edit Housing Groups Assigned to this Installation'. At the bottom of the screen, a navigation bar contains buttons for 'Top', 'Prev', 'Next', 'Bottom', 'End', 'Print', 'Add', 'Edit', 'Delete', and 'Exit'. The 'Next' button is highlighted with a dashed border.

Figure 6. Installation Information screen.

The screenshot shows a multi-windowed application. The top window is titled 'open1' and contains 'WELCOME TO HALO' and 'Admin'. Below it is a window titled 'Install1' with 'Installation Information'. The foreground window is titled 'contact1' and contains the following form:

CONTACTS FOR

Installation Name

Title

First & Last Name

E-Mail

Telephone

Fax

Office Symbol

Building Number

Room Number

Buttons: Top, Prev, Next, Bottom, Find, Print, **Add**, Edit, Delete, Exit

Figure 7. Contact information screen.

All members of the asbestos and lead hazard management team for the installation should be entered here. A suggested list of persons to be included on the team are: the asbestos/lead hazard management team leader, the director of public works, the chief of the environmental office, the community medical authority, the chief of the housing management office, the installation customer relations officer, the installation resource manager, the legal counsel, the installation safety officer, the public affairs officer, and the U.S. Army Corps of Engineers representative. These data will be used to generate a list that will be printed in lead hazard and asbestos hazard management plans.

The screen shown in Figure 8, accessed by clicking on the **View/Edit Housing Groups Assigned to this Installation** button, allows the user to assign a housing group to an installation. The program is designed to work with any number of installations. This gives the user flexibility in grouping housing areas. An individual housing group can be associated with only one installation at a time, however. This screen can be used to change the assignments at any time. When the lead hazard management plan is printed, it will reflect the assignments currently in effect.



Figure 8. Housing groups assigned to this installation.

To assign a housing group to an installation, use the mouse to highlight a housing group name in the left-hand box, then click the “>” button to transfer the name to the Housing Groups Assigned box on the right. If all housing groups are desired, then the “>>” button will move them all at once. To complete the assignment process, click the **Save these Assignments** button to update the installation group table entries and to assign the selected group names to the installation.

The opposite procedure is used to de-assign a housing group from an installation. Remember to click the **Save these Assignments** button after the appropriate selections have been made.

Housing Group Information Entry Screens

To define a housing group, begin by selecting **Add/Edit New Housing Group** from the Housing Groups dropdown menu on the main menu screen. The screen shown in Figure 9 will appear. Housing group information can be entered by selecting either the **Add** or **Edit** buttons and then clicking on the **Save** button. The two functions available through this screen are to assign or de-assign

housing groups to/from the selected installation and assign or de-assign buildings to/from the selected housing group (see Figures 10 and 11).

WELCOME TO HALO Admin

house1

Data

Housing Groups

Installation: AREA III

Housing Group Name: CAMP HUMPHREYS

Project Manager: Bill Smith

Year Built: 1952

Date of Inspection: 05/31/01

View/Edit Housing Group(s) Assigned to this Installation

View/Edit Building(s) assigned to this Housing Group

Top Prev Next Bottom Find Print Add Edit Delete Exit

Figure 9. Housing Groups information entry screen.

WELCOME TO HALO Admin

assign1

Databa

Housing Groups

Hou

Hou

Assign Housing Groups to:

AREA I

Note: Multiple housing groups can be assigned to an Installation. A housing group can only be assigned to one installation. If you assign a housing group that is currently assigned to another installation it will be removed from that installation. To remove a housing group from an installation it must be assigned to another installation.

Housing Groups Not Assigned

- BULL'S EYE-AREA I
- CAMP BONIFAS-AREA I
- CAMP GIANT-AREA I
- LIBERTY BELL-AREA I

> >> < <<

Housing Groups Assigned

- PANMUNJOM-AREA I

Cancel

Save these Assignments

Figure 10. Housing Group assignment screen.



Figure 11. Building assignment screen.

Building Information Entry Screens

To enter building information, first ensure that the correct installation and housing group names appear in the fields on the main menu screen. Then, select from the main menu screen. The screen shown in Figure 12 will appear. This screen displays the installation and housing group, in addition to a list of buildings in the database. The installation and housing group cannot be modified here but are presented for reference. To select a building for editing, select the building from the dropdown box. If the building list is large, the user can type the first digit of the building number, and the list will scroll to the first building with that digit. To add a new building, select the **Add/Edit New Building** from the same dropdown box (see Figure 13). Using the form shown in Figure 13, the user should enter the information that is known.



Figure 12. Data Management screen.

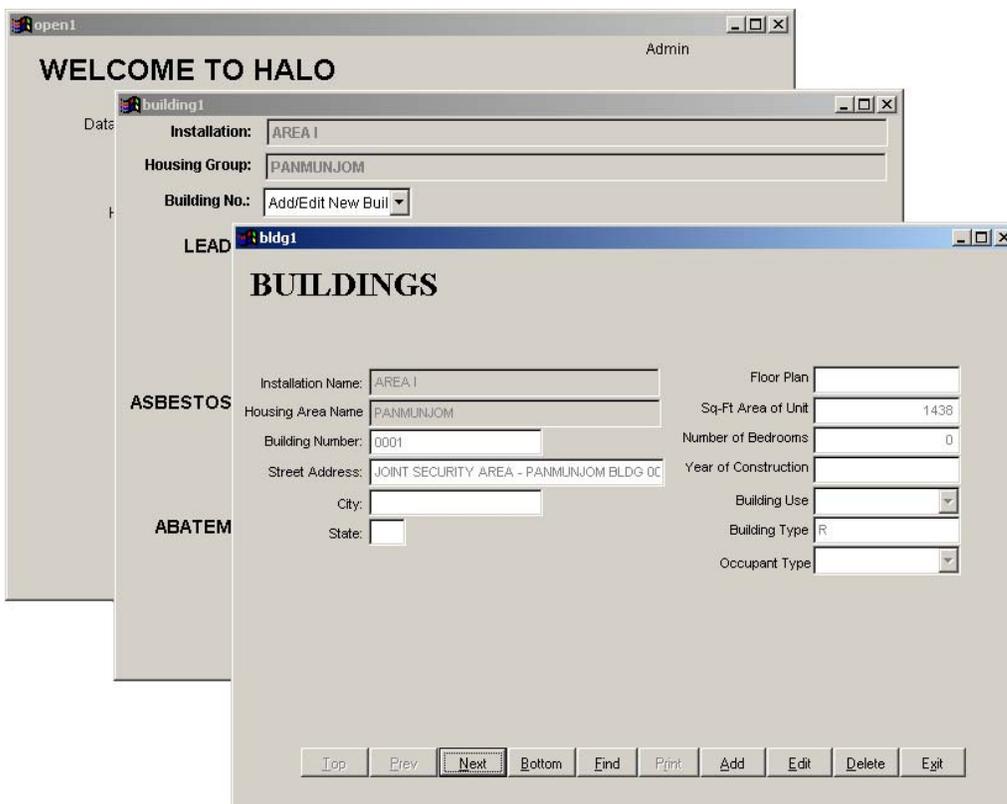


Figure 13. Building information entry screen.

The Building Use defaults to “Residential,” but the actual use should be entered here. Select “Residential,” “Industrial,” or “Commercial.” The Building Type field will be generated accordingly.

To enter the Occupant Type, click on the small arrow to the right of the entry box to see the list of choices. Select a type from the dropdown list. The choices are Child Development Center (CDC), School, Multiple Family Dwelling (MFD), Single Family Dwelling (SFD), and Industrial.

If the building list is large, the user may have difficulty finding a specific unit. In this case the user can click the **Find** button on this screen. A search screen will appear as shown in Figure 14.

To find a specific unit, a portion of the address must be entered and the **Find** button clicked with the mouse. Note that a partial address may be entered, but it must start from the beginning. For example, **1218 Nar** will result in finding the address 1218 Narrow Lane. Entering **Narrow Lane** by itself will result in a “Request not found” message.

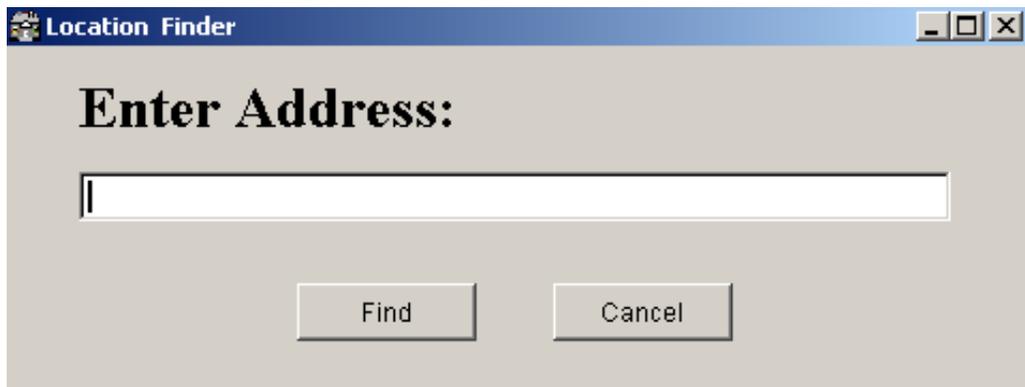


Figure 14. The unit search dialog box.

5 Lead Hazard Data Entry

Lead hazard data are tracked and managed through screens for paint, dust, and soil samples. In each case, there is a Review/Edit button for each building selected. The **Review** button shows a summary of the samples that were taken in that particular building. The **Edit** button provides access to the screens where the data can be entered or edited.

Housing unit information must be entered in the database before data entry can proceed. In the case of data for common areas in multi-family units, the same data should be entered for each apartment unit in the database so that the proper disclosure forms are generated.

Paint Sample Data Entry

To enter the data obtained from either a paint inspection or a risk assessment, the user needs to access the Data Management entry screen. The user then selects the building from the dropdown box (Figure 12).

Once a building is selected, the user clicks on the **Edit** button next to the appropriate data type (paint, dust, or soil). At this point, the user can choose to enter either paint inspection data or risk assessment data by selecting the appropriate study type from the Risk Assessment dropdown box. If paint inspection data are entered and, later, risk assessment data are gathered, then the program will use the previously entered data as part of the risk assessment.

HALO is set up to record multiple assessments for any single unit. If the installation performs additional inspections, a new record can be created and additional data entered. The program uses the latest results in its decision algorithms.

NOTE: If the paint inspection was performed using an x-ray fluorescence (XRF) meter, the program will treat positives as positive, but negative results will be treated as indeterminate. Paint chips analyzed using laboratory techniques are treated as accurate.

Entering Paint Inspection Data

In Figure 15, note that the **Risk Assessment** setting is for paint inspection. If the user selects “Paint Inspections” in the **Risk Assessment** box, then the button in the upper right hand corner reads “View/Edit Paint Inspections.” If the user selects “Risk Assessment” in the **Risk Assessment** box, then the button in the upper right hand corner reads “View/Edit Risk Assessment” and the risk assessment factors are accessible. Only in Risk Assessment mode can there be composite samples. The dwelling selection protocol can be one of the following: **all targeted, worst case, or random.**

The screenshot shows a multi-windowed application. The main window is titled "WELCOME TO HALO" and has "Admin" in the top right corner. Below the title bar, there are three overlapping windows:

- building1**: Contains fields for "Installation: Fort A. P. Hill", "Housing Group: A. P. Hill Housing", and "Building No.: PO 1201".
- asbpoint**: The active window, titled "Paint Data" with a "View/Edit Paint Inspections" button in the top right. It contains the following fields:
 - Installation: Fort A. P. Hill
 - Hsg. Group: A. P. Hill Housing
 - Building No.: PO 1
 - Address: PO 1201
 - City/State: Bowling Green VA
 - Risk Assessor: Darnes & Moore
 - Risk Assessment: Paint Inspectio (dropdown menu)
 - Dwelling selection (dropdown menu)
 - Date Inspected/Assessed: 03/13/1995
 - Date sent to the Lab: 03/14/1995
 - Date results reported: 03/14/1995
 - Composite or Single Sample?: Single (dropdown menu)
 - Shipped by: Michael Tyler
 - Received by: E. Moon
 - Analyzed by: Homiyar N. Choksi
 - Approved by: Schneider Laboratories, Inc.

At the bottom of the "asbpoint" window, there is a row of buttons: Top, Prev, Next, Bottom, End, Print, Save, Revert, Delete, and Exit.

Figure 15. Paint Data screen for paint inspection and single samples.

To enter the measured lead hazard data, click on the **View/Edit Paint Inspections** button. The screen shown in Figure 16 will appear. In this screen, the user can enter either an XRF reading or a paint chip sample analysis. When entering the XRF values, the user must also enter which energy shell is being used (K or L). The allowed values for Result Classification are: P for above the threshold, N for below threshold, and I for indeterminate. One of three possible paint conditions can be entered: **Intact, Fair, or Poor.**

The screenshot shows a multi-windowed application. The background window is titled 'open1' and contains a 'WELCOME TO HALO' message and an 'Admin' button. A middle window titled 'building1' shows fields for 'Installation: Fort A. P. Hill', 'Housing Group: A. P. Hill Housing', and 'Building No.: PO 1201'. The foreground window, titled 'asbinspe', is the 'Paint Inspections' data entry screen. It contains the following fields and values:

- Installation: Fort A. P. Hill
- Risk Assessor: Dames & Moore
- Address: PO 1201
- Room Name: Bedroom
- Room Number: 1
- Substrate: Wood
- Component: Floor
- Component Color: Brown
- Replication Number: 0
- Test Location: 3 feet from north wall
- XRF Reading: 10.00
- XRF Correction Value: 0.00
- Corrected XRF Reading: 10.00
- XRF Energy Shell (K or L): K
- Result Classification (P,N or I): P
- Paint Condition: Inta
- Sample Id #: 123-345BR-3
- Lab Result: (empty)
- Units: mg/cm²
- Lab Confidence Interval: (empty)

At the bottom of the 'asbinspe' window, there is a row of buttons: Top, Prev, Next, Bottom, End, Print, Add, Edit, Delete, and Exit. A 'View All' button is located in the top right corner of the 'asbinspe' window.

Figure 16. Paint Inspections data entry screen.

The XRF reading may require correction. This correction is found on the Performance Characteristics Sheet (PCS) for the unit. This number is subtracted from the reading to yield the final result. The units for XRF data can be one of three kinds: mg/cm², % (percent by weight), or ppm (parts per million). To save typing and ensure the program can interpret the entries, the user should use the dropdown lists rather than attempting to type the entries' sample results.

Laboratory data can be entered in the fields at the bottom of the Paint Inspection screen. A laboratory sample identification number and numerical result should be entered first. The user can then select the appropriate units as described earlier. The laboratory confidence interval must also be entered in the same units as the sample result data. To view all of the samples in a table format, click on the **View All** button. The screen in Figure 17 will appear.

WELCOME TO HALO Admin

building1
Dat: Installation: Fort A. P. Hill
Housing Group: A. P. Hill Housing
Building No.: PO 1201

asbpaint
View/Edit Risk Assessment

Paint Data

Installation: Fort A. P. Hill
Hsg. Group: A. P. Hill Housing
Building No.: PO 1
Address: PO 1201
City/State: Bowling Green VA

Risk Assessor: Dames & Moore
Risk Assessment: Risk Assessm
Dwelling selection:

Date Inspected/Assessed: 03/13/1995
Date sent to the Lab: 03/14/1995
Date results reported: 03/14/1995
Composite or Single Sample?: Single

Shipped by: Michael Tyler
Received by: E. Moon
Analyzed by: Homiyar N. Choksi
Approved by: Schneider Laboratories, Inc.

Judged to be in poor condition?
 Serves as a day-care facility?
 Presence of 2 or more children?
 Recently prepared for reoccupancy?
 Code violations?
 Random Sampling?

Top Prev Next Bottom Find Print Add Edit Delete Exit

Figure 18. Paint Data entry screen for risk assessments.

WELCOME TO HALO Admin

building1
Dat: Installation: Fort A. P. Hill
Housing Group: A. P. Hill Housing
Building No.: PO 1201

asbasses
View/Edit Composite View All

Risk Assessment Samples

Installation: Fort A. P. Hill
Risk Assessor: Dames & Moore
Building No.: PO 1
Address: PO 1201
City/State: Bowling Green VA

Sample Id #: PO1201-01
Component: PAINT - RED
Substrate:

Lab Result: 2.230
MDL: 0.50
Units: %
of Sub-samples: 0

Composite or Single Sample?: Single
Room Name: EXTERIOR
Room #: 0
Paint Condition: Intact
Mass Digested (mg): 360.000
Mass of Lead (μ): 72837.300
Sample Length:
Width (inches):
Sample Area (in²): 0.00

Top Prev Next Bottom Find Print Add Edit Delete Exit

Figure 19. Risk Assessment Samples entry screen.

The screen shown in Figure 22 is used to enter the information about each sub-sample. The number of subsample entries should match the number of subsamples specified in Figure 21.

The screenshot displays three overlapping windows from the HALO software. The top window, titled 'WELCOME TO HALO', shows the user is logged in as 'Admin'. Below it, the 'building1' window contains the following data: Installation: Fort A. P. Hill, Housing Group: A. P. Hill Housing, and Building No.: PO 1201. The foreground window, 'asbcompo', is titled 'Composite Samples' and contains the following data: Sample Id #: PO1201-01, Lab Result: 2.230, # of Sub-samples: 0, and Units: %. Below this, there are input fields for Sub-Sample Id #, Room Name, Room Number (with a value of 0), Component, and Sub-sample Size (cm²). At the bottom of the 'asbcompo' window is a navigation bar with buttons for Top, Prev, Next, Bottom, Find, Print, Add, Edit, Delete, and Exit.

Figure 22. Data entry screen for subsamples of a composite sample.

Dust Sample Data Entry

In addition to evaluation of the paint coatings, a risk assessment may include the sampling of dust and soil. To enter dust sample data, the user should click on the **Data Management** button on the Main Menu screen, select the building, and then select the **edit** button for Dust. Selecting the **edit** button will cause the screen shown in Figure 23 to appear.

In Figure 23 the user has already selected “Single” from the dropdown box in the **Composite or Single sample** field. This screen has entries for the condition of the housing unit according to the HUD guidelines as well as the chain of custody information. From this screen the user can enter, view, and edit dust sample data.

WELCOME TO HALO

Admin

building1

Dat: Installation: Fort A. P. Hill

Housing Group: A. P. Hill Housing

Building No.: PO 1201

LE asb_dust

Dust Samples View/Edit Single Sample

Installation: Fort A. P. Hill

Hsg. Group: A. P. Hill Housing

Building No.: PO 1

Address: PO 1201

City/St: Bowling Green VA

ASBESTO

ABATE

Risk Assessor: Dames & Moore

Shipped By: Michael Tyler

Received By: E. Moon

Lab Instrument:

Analyzed By: Homiyar N. Choksi

Lab Method:

Code Violations?

Judged to be in poor condition?

Presence of 2 or more children?

Recently prepared for reoccupancy?

Serves as a day-care facility?

Dwelling Selection Protocol: All

Composite or Single Sample?: Single

Date Sampled: 03/13/1995

Date Sent to Lab: 03/14/1995

Top Prev Next Bottom Find Print Add Edit Delete Exit

Figure 23. Dust Samples screen.

To enter dust data, click on the **View/Edit Single Sample** button. The screen shown in Figure 24 will appear. Here, when the user enters the length and width of the sample in inches, the resultant area is automatically computed in square feet. Lab Result must be entered in units of $\mu\text{g}/\text{ft}^2$.

NOTE: The surface type can be only one of three types: **floor**, **windowsill**, or **window well**. The program will ignore any other entries, including abbreviations. The choices are restricted because action levels are specified for only these surfaces.

To view the data in a table format, click on the **View All** button as shown in Figure 24. Clicking on **View All** will bring up the screen shown in Figure 25. Results that exceed the applicable action level will be highlighted in red, as in the example in Figure 25.

Figure 24. Dust sample information screen (Single Sample).

Sample Id #	Room	Surface	Smooth?	Length (in.)	Width (in.)	Area (ft²)	Lab Results	Units
PO1201-01	ENTRY	FLOOR	T	12.00	12.00	1.00	100.00	µg/ft²

Figure 25. Summary of the dust samples screen.

In Figure 26 the user has already selected “Composite” in the **Composite or Single Sample** dropdown box. As a result, information associated with **Composite Dust Samples** will be active. This screen has entries for the condition of the housing unit according to the HUD guidelines as well as the chain of custody information.

Subsample data can be entered or edited in a table by clicking on the **View/Edit Composite** button.

The screenshot shows a multi-windowed application. The main window is titled "WELCOME TO HALO" and "Admin". A secondary window titled "building1" contains the following data:

- Installation: Fort A. P. Hill
- Housing Group: A. P. Hill Housing
- Building No.: PO 1201

A third window titled "asb_dust" is the primary focus, titled "Dust Samples". It contains the following data:

- Installation: Fort A. P. Hill
- Hsg. Group: A. P. Hill Housing
- Building No.: PO 1
- Address: PO 1201
- City/St: Bowling Green VA
- Risk Assessor: Dames & Moore
- Shipped By: Michael Tyler
- Received By: E. Moon
- Lab Instrument: (empty)
- Analyzed By: Homiyar N. Choksi
- Lab Method: (empty)
- Dwelling Selection Protocol: All
- Composite or Single Sample?: Composite
- Sample ID #: PO1201-01
- Lab Result: 20.00
- Units: $\mu\text{g}/\text{ft}^2$
- Date Sampled: 03/13/1995
- Date Sent to Lab: 03/14/1995

At the bottom of the "asb_dust" window, there is a row of navigation buttons: Top, Prev, Next, Bottom, Find, Print, Add, Edit, Delete, and Exit.

Figure 26. The Dust Samples data screen.

While paint data are entered on two screens, composite dust data are entered using three screens. Some of the information is entered on the Single Sample Information screen shown in Figure 27. In particular, this screen is used to input the sample identification number, the number of subsamples, and the laboratory results. Since a composite sample is composed of material collected from numerous locations, the room name field does not need to be completed on the Composite Dust Samples Information screen or on the Hazard Management screen. From a hazard management standpoint, if a composite sample collected from floors, window sills, or window troughs exceeds the action level, then all floors, window sills, or window troughs in that unit need to be addressed as hazard(s). Therefore, the room location is not required in order to properly manage the hazard. The Composite Dust Samples Information will contain the details for each subsample in case this information is needed.

WELCOME TO HALO

Admin

building1

Installation: Fort A. P. Hill

Housing Group: A. P. Hill Housing

Building No.: PO 1201

ASBEST

ABAT

LE asbdusts

Single Sample Information

View/Edit Composite View All

Installation: Fort A. P. Hill

Hsg. Group: A. P. Hill Housing

Building No.: PO 1

Address: PO 1201

Risk Assessor: Dames & Moore

Single Samples Only:

Room Name: ENTRY

Room #: 0

Sample Length (Inches): 12.00

Sample Width (Inches): 12.00

Sample Area in ft² (Cal.): 1.00

Substrate: WOOD

Sample ID #: PO1201-01

Surface Type: FLOOR

Smooth Surface?

Min Detection Limit: 20.00

Lab Result: 20.00

Units: µg/ft²

of Sub-samples: 1

Top Prev Next Bottom Find Print Add Edit Delete Exit

Figure 27. Composite Sample Information – entered on the Single Sample Information screen.

When you click the **View/Edit Composite** button (as shown in Figure 27), the screen shown in Figure 28 appears. The location, dimensions, and other characteristics of the subsamples are entered here.

WELCOME TO HALO

Admin

building1

Installation: Fort A. P. Hill

Housing Group: A. P. Hill Housing

Building No.: PO 1201

ASBEST

ABAT

LE asbdustc

Composite Dust Samples

View All

Building No.: PO 1

Address: PO 1201

Installation: Fort A. P. Hill

Risk Assessor: Dames & Moore

Sample ID #: PO1201-01

Sub-Sample Id: PO1201-01A

Room: BEDROOM

Room #: 1

Surface Type: SILL Smooth Surface?

X Dimension (Inches): 1.75

Y Dimension (Inches): 23.00

Sub-Sample Area (ft²): 0.28

Top Prev Next Bottom Find Print Add Edit Delete Exit

Figure 28. Composite Dust Samples screen.

open1 Admin

WELCOME TO HALO

building1

Date: Installation: Fort A. P. Hill

Housing Group: A. P. Hill Housing

Building No.: PO 1201

asb_soil

Soil Samples View/Edit Sample Information

Installation: Fort A. P. Hill

Hsg. Group: A. P. Hill Housing

Building No.: PO 1

Address: PO 1201

City/State: Bowling Green VA

Risk Assessor: Dames & Moore

Date Sampled: 03/13/1995

Date Sent to Lab: 03/14/1995

Lab Confidence Interval (ppm): 0.5

Shipped to Lab By: Michael Taylor

Analyzed By: Homiyar N. Choksi

Received at the Lab By: E. Moon

Top Prev Next Bottom Find Print Add Edit Delete Exit

Figure 30. Soil Samples screen.

open1 Admin

WELCOME TO HALO

building1

Date: Installation: Fort A. P. Hill

Housing Group: A. P. Hill Housing

Building No.: PO 1201

asbssamp

Sample Information View All

Installation: Fort A. P. Hill

Housing Group: A. P. Hill Housing

Building No.: PO 1

Address: PO 1201

City: Bowling Green ST. VA

Risk Assessor: Dames & Moore

Sample Id #: PO1201-01

Bare or Covered?: Bare

Lab Result: 1000.00

Date Sampled: 03/13/1995

Location: Front yard

Units: ppm

High Contact or Play Area?

Top Prev Next Bottom Find Print Add Edit Delete Exit

Figure 31. Soil Sample Information screen.

To view the data in table format, click on the **View All** button from the Soil Sample screen. Clicking on **view All** will cause the screen in Figure 32 to appear. Entries exceeding the action level are shown in red. All other entries are shown in green.

The screenshot displays the HALO software interface. The main window, titled "WELCOME TO HALO", shows a "building1" form with the following details:

- Installation: Fort A. P. Hill
- Housing Group: A. P. Hill Housing
- Building No.: PO 1201

A secondary window, titled "asbss_va", displays "Sample Information" for the same installation. It includes a "Risk Assessor" field set to "Dames & Moore". Below this is a table of soil samples:

Sample Id #:	Location	Bare or Covered?	Lab Result	Units:	High Contact?
PO1201-01	Front yard	B	1000.00	ppm	<input checked="" type="checkbox"/>
PO1201-02	Back yard	B	200.00	ppm	<input checked="" type="checkbox"/>

The table indicates that the first two samples (PO1201-01 and PO1201-02) are highlighted in red, indicating they exceed the action level. The remaining rows are highlighted in green, indicating they are within the action level. A "Return to View/Edit Samples" button is located at the bottom right of the table.

Figure 32. Summary of the soil samples.

National Institute of Building Sciences Guidance Documents

To view the NIBS documents for lead, click on the **Data Management** screen from the main menu and select the **NIBS** button in the Lead Management section. For further instructions, please refer to Chapter 8, **Reports**.

6 Asbestos Hazard Data Entry

Asbestos Hazard information can be based on either air data (measurement of asbestos fibers in air) or bulk sample data (measurement of asbestos fibers in a sample of material). Separate data entry screens for air and bulk sample data can be reached by using the corresponding **Review** and **Edit** buttons on the main menu. The **Review** button allows the user to review all of the sample data taken for the selected building. The **Edit** button allows the user to enter sample collection data and results for both the air and bulk building materials. In addition, the user can enter room, photograph, and floor plan data for bulk building materials. Building information must be entered in the database before asbestos data entry can proceed.

Asbestos Bulk Sample Data Entry

Homogeneous Area Data Entry

To enter asbestos data, the user needs to access the **Data Management** button from the main menu. Select the appropriate building from the dropdown box and then select the **Edit** button for Bulk. Selecting **Edit** will cause the screen shown in Figure 33 to appear. The address of the selected unit will appear at the top of the homogeneous area screen as shown in Figure 33. By clicking on **Add**, the user can enter information pertinent to each homogeneous area of suspect asbestos-containing material. Homogeneous areas (containing materials that are similar in color, texture, appearance, and use) must be entered before sample data can be entered.

By clicking on **Print**, the user can print a homogeneous summary table(s) for either the selected building or for the entire Housing Group. Pressing the **Print** button brings up a dialog box asking if you wish to include the evaluation information for each positive material. If you click **Yes**, then you will be asked if you wish to preview the report before printing. The user can print from the preview screen or cancel to close the window without printing. If the user clicks **No** on the preview dialog box, the program will give the user the option of printing the summary table for the entire Housing Group.

The screenshot shows a software interface with three overlapping windows. The top window is titled 'WELCOME TO HALO' and 'Admin'. The middle window is titled 'building1' and contains fields for 'Installation: AREA I', 'Housing Group: PANMUNJOM', and 'Building No.: 0006'. The foreground window is titled 'asbha1' and is titled 'Homogeneous Area'. It has a menu bar with 'View/Edit Samples', 'View/Edit Rooms', 'View/Edit Photos', and 'View/Edit Floor Plan'. The form contains the following data:

Installation	AREA I
Hsg. Group	PANMUNJOM
Address	JOINT SECURITY AREA - PANMU
City/St	
Building No.	0006
Homogeneous Area	5
Material	VINYL FLOOR TILE
Material Desc	12"X12"
Material Color	BROWN WITH WHITE STREA
Material Classification	RSF
Material Texture	
Abatement	INCORPORATE INTO O&M
Date Identified	11/06/2000
No. Samples	2
Priority	
Priority Ranking	4.54
Action Taken	
Inspectors Name	BAAH

At the bottom of the window are navigation buttons: Top, Prev, Next, Bottom, Find, Print, Add, Edit, Delete, Exit.

Figure 33. Homogeneous Area data entry screen.

Sample Data Entry

To enter sample data, click on the **View/Edit Samples** button from the Homogeneous Area screen, and Figure 34 will appear.

The **Bulk Sample Information** screen shows the building location and the material's homogeneous area number (H.A. #) at the top of the screen. The user may not update this information on this screen; this data serves only to guide the user through sample data entry. The Sample Id #, Lab Result, Lab Sample Id #, and Date Sampled are entered on this screen. The Duplicate field expects a **Y** (yes) or **N** (no) entry to indicate whether a duplicate sample of this material was collected. The laboratory date summary table on the right is generated by clicking on the **Types of Asbestos** button. Clicking on this button causes the screen in Figure 35 to appear.

The asbestos type and percentage are entered by clicking on the **Add** button on this screen. It is common to find several types of asbestos in a single asbestos-containing material. By clicking **Save** (when selected, the **Add** button changes to **Save**) and then **Exit**, the view will return to the **Bulk Sample Information** screen. The types of asbestos will be displayed in a table on this screen.

Once the sample information has been entered, the user must enter data related to the condition and location of the asbestos-containing material. Select the **View/Edit Evaluation** button on the Bulk Sample Information screen to enter this data. The Evaluation Information screen is shown in Figure 36.

The screenshot shows a multi-windowed application. The top window is titled 'WELCOME TO HALO' and 'Admin'. Below it is a 'building1' window with fields for 'Installation: AREA I', 'Housing Group: PANMUNJOM', and 'Building No.: 0006'. The main window is titled 'asbev' and 'Evaluation Information'. It contains the following fields:

Installation	AREA I
Hsg. Group	PANMUNJOM
Address	JOINT SECURITY AREA - PANMU
City/St	
Building No.	0006
H.A. #	5
Quantity	230.0
% Damage	0.00
Unit of Measure	SF
Material Condition	ND
Condition of Mat'l	No Damage
Potential for Contact	Accessible/Occupied
Potential for Vibration Disturbance	Low
Potential for Air Disturbance	Low
Facility Criticality	Essential
Friability	Non
Damage Type	
Number of Building Occupants	5
Priority Ranking	4.54

At the bottom of the 'asbev' window are navigation buttons: Top, Prev, Next, Bottom, End, Print, Add (highlighted), Edit, Delete, and Exit.

Figure 36. The Evaluation Information data entry screen.

Data related to the particular asbestos-containing material (homogeneous area) is entered on the Evaluation Information screen. Based on the information entered, HALO calculates a priority ranking number for the material. The priority ranking number is generated through an algorithm based on the current regulations and guidelines. The greater the priority ranking number the higher the priority. Refer to the “HALO Homogeneous Area Information Form” and the “HALO Homogeneous Area Evaluation Form” in Appendix A for additional descriptions and guidance for conducting the material evaluation.

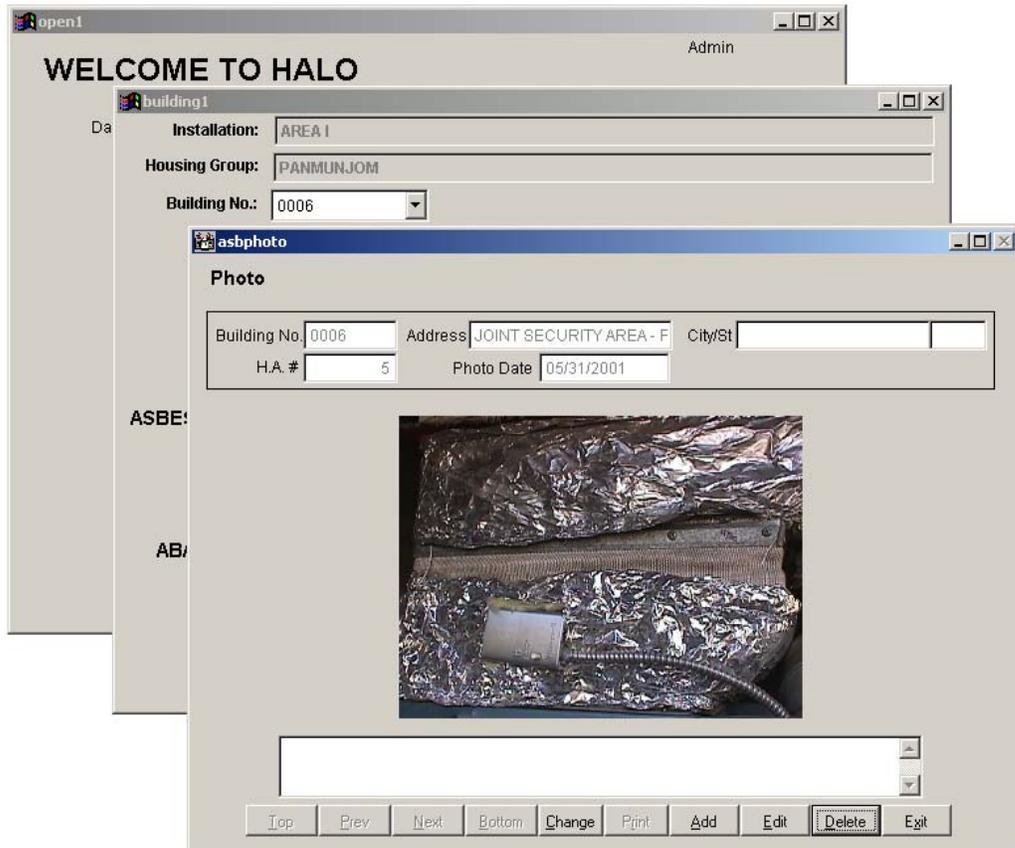


Figure 38. The Photo entry screen.

Click on the **A**dd button to insert a photograph into the database. The database will prompt the user for the location of the file. Select the location of the file and then the specific file. The database will insert the file into the Photo screen. Images may be in bitmap or JPEG format. Multiple photographs can be inserted for each homogeneous material by using the **A**dd button.

Floor Plan Data Entry

To enter floor plan data, click on the **View/Edit Floor Plan** button from the Homogeneous Area screen, and Figure 39 will appear.

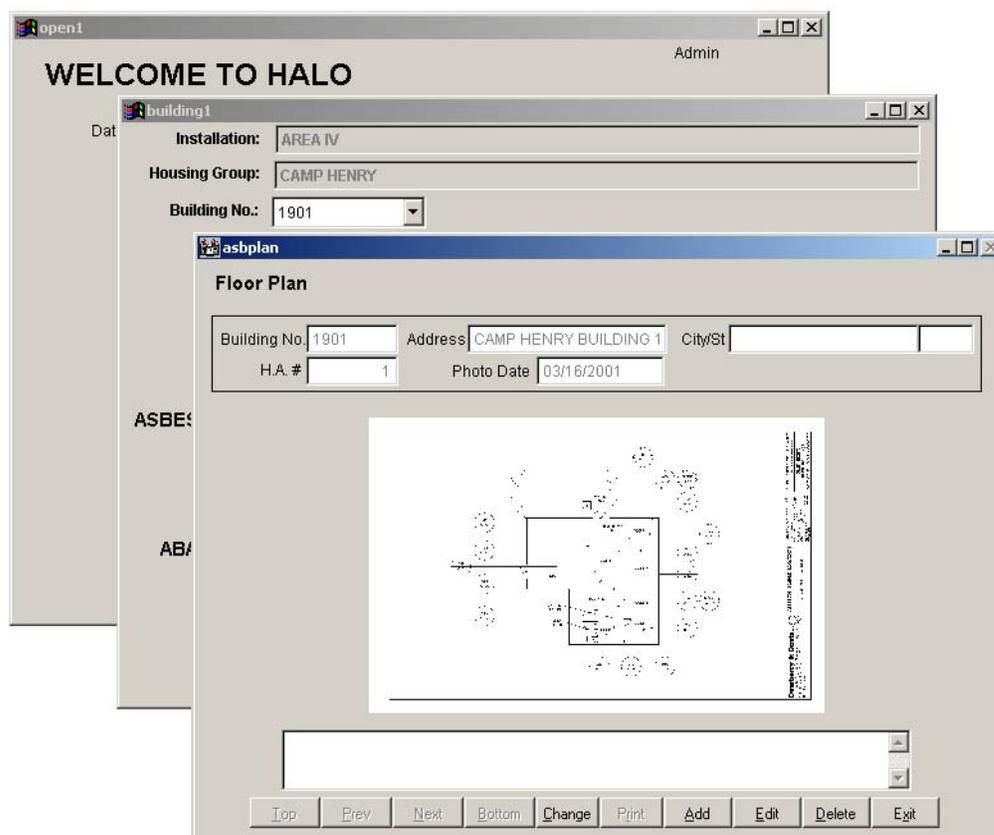


Figure 39. The Floor Plan entry screen.

Click on the **A**dd button to insert a floor plan into the database. The database prompts the user for the location of the file. Select the file location and then the specific file. The database will insert the file into the Floor Plan screen. The file may be saved in bitmap or JPEG format. As with photographs, multiple floor plan drawings can be associated with each homogeneous material.

Asbestos Air Sample Data Entry

To enter data for asbestos air sampling, select the **D**ata Management button from the main menu screen and select the **E**dit button for Asbestos Air. Once the **E**dit has been selected, the screen in Figure 40 will appear. This is the area information screen.

The screenshot shows a multi-layered software interface. The top window is titled 'open1' and 'Admin', with a 'WELCOME TO HALO' message. Below it is a 'building1' window with fields for 'Installation: AREA I', 'Housing Group: PANMUNJOM', and 'Building No.: 0001'. The main window is titled 'asbair1' and 'Homogeneous Area'. It contains the following fields:

- Installation: AREA I
- Hsg. Group: PANMUNJOM
- Address: JOINT SECURITY AREA - PANMU
- City/St: (empty)
- Building No.: 0001
- Asbestos Contractor: Joes Asbestos Abatement
- Technician: John Smith
- Cassette Size: 25
- Filter Area: 380
- Microscope Field Area: 785
- Parameter: PCM

At the bottom of the 'asbair1' window is a navigation bar with buttons: Top, Prev, Next, Bottom, Find, Print, Add, Edit, Delete, and Exit.

Figure 40. Area information screen for Asbestos Air samples.

The address of the selected building will appear at the top of the Homogeneous Area information screen as shown in Figure 40. This data cannot be edited, but serves to guide the user through data entry. The user enters Asbestos Contractor information, Cassette Size, Microscope Field Area, Technician, Filter Area, and Parameter information for the sampling event in the appropriate fields. Additional sample data and results are entered using the **View/Edit Samples** button in the upper right-hand corner. By clicking on this button, the screen in Figure 41 will appear. The user enters detailed information related to the air samples on this screen.

To view the samples in a table format, click on the **View All** button, and the screen in Figure 42 will appear.

National Institute of Building Sciences Guidance Documents

To view the NIBS documents for asbestos, click on the Data Management screen from the main menu and select the **NIBS** button in the Asbestos Management section. For further instruction, refer to Chapter 8, **Reports**, in this manual.

7 Hazard Management Data

Actions taken to manage and initiate asbestos and lead hazards can also be tracked in HALO. Because this information will be used to generate plans, reports, and other documents, accurate data entry is extremely important. Each remedial action must be associated with a particular building. If an action applies to multiple units, then the data must be repeated for each unit affected.

First, the user must select **Data Management** from the main menu. Select a building from the building dropdown box. Then, select the **Review/Edit** button for one of the following: paint, dust, soil, or asbestos from the Abatement Activities section.

Lead in Paint

If the user clicks on the Paint **Review/Edit** button, the screen shown in Figure 43 will appear.

By clicking on the **Edit** button, the user can enter the abatement method, beginning and completion date, and the project manager for an abatement activity for a particular hazard. Use the **Top**, **Prev**, **Next**, **Bottom**, and **Find** buttons to associate an abatement activity with the appropriate hazard. Remedial action taken can then be entered, and the entry will appear in the summary tables. Some actions require ongoing monitoring. If so, the **Monitored?** box can be checked to indicate that requirement. In addition, if the project has been cleared of all hazards, then the **Project Cleared?** box can be checked.

After completing the Paint Abatement Activity screen, the user can click on the **View/Edit Abatement Workers** button in the upper right-hand corner. The screen shown in Figure 44 will appear. The screen contains information about the workers on the project. By selecting the **Edit** button, identifying information can be entered along with measurements of exposure levels.

To view the data in table format, click on the **view All** button from the Worker Protection information screen. When this button is clicked on, the screen in Figure 45 appears.



Figure 43. Lead paint abatement activity data screen.

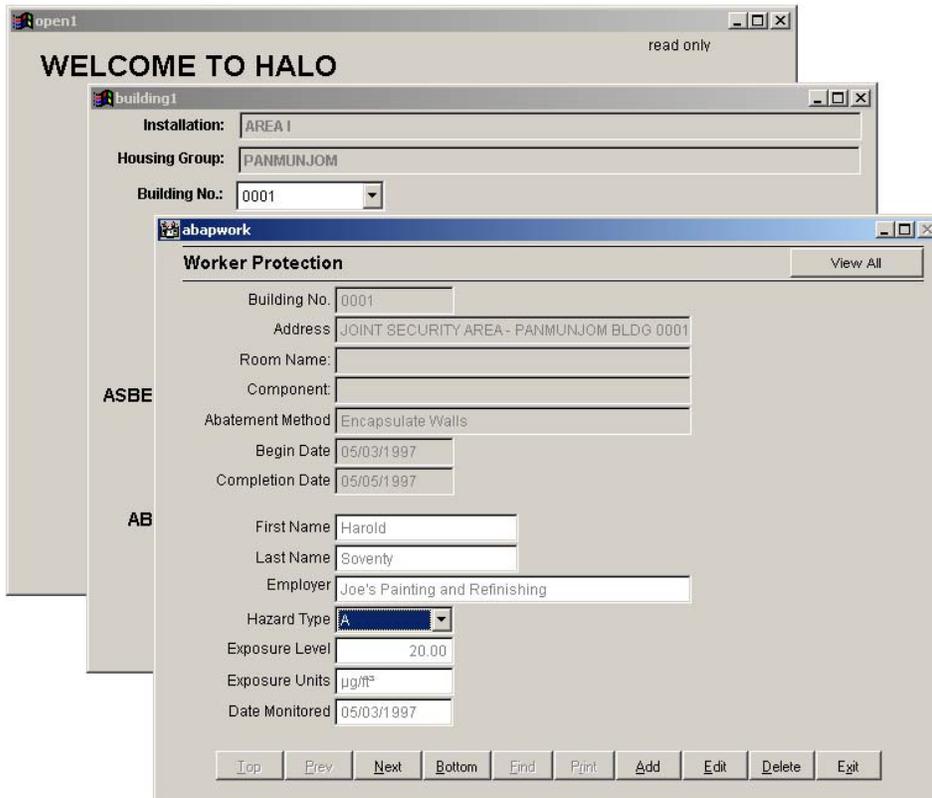


Figure 44. Worker Protection information screen.

open1 read only

WELCOME TO HALO

building1

Installation: AREA 1

Housing Group: PANMUNJOM

Building No.: 0001

abapclea

Clearance Samples View All

Building No. 0001

Address JOINT SECURITY AREA - PANMUNJOM BLDG 0001

Room Name:

Component:

Abatement Method Encapsulate Walls

Begin Date 05/03/1997

Completion Date 05/05/1997

Sample Id # 123-622BR-4 Above Action Level?

Sample Surface Wall

Lab Result 30.00

Units µg/m²

First Name William

Last Name Walkfar

Hazard Type: A

Top Prev Next Bottom Find Print Add Edit Delete Exit

Figure 46. Clearance Samples information screen.

open1 read only

WELCOME TO HALO

building1

Installation: AREA 1

Housing Group: PANMUNJOM

Building No.: 0001

aba_dust

Dust

Installation AREA 1

Hsg. Group PANMUNJOM

Address JOINT SECURITY AREA - PANMU

Building No. 0001

Room Name:

Component:

Abatement Method HEPA Vac/Wash with suitable detergents On-Going Monitoring?

Begin Date 05/03/1997 Completion Date 05/03/1997 Project Cleared?

Project Manager Erin Oster

Top Prev Next Bottom Find Print Add Edit Delete Exit

Figure 47. Lead Dust abatement activity data screen.

By clicking on the **E**dit button, the user can enter the abatement method, beginning and completion dates, and the project manager associated with a particular hazard. Some actions require ongoing monitoring. If so, the **Monitored?** box can be checked to indicate that requirement. In addition, if the project has been cleared of all hazards, then the **Project Cleared?** box can be checked.

Lead in Soil

If the user clicks on the Soil **Review/Edit** button, the screen shown in Figure 48 will appear.

By clicking on the **E**dit button, the record on the screen becomes the current one. The user can now enter the abatement method, beginning and completion dates, and the project manager associated with a particular hazard. Remedial action taken can then be entered, and the entry will appear in the summary tables. Some actions require ongoing monitoring. If so, the **Monitored?** box can be checked to indicate that requirement. In addition, if the project has been cleared of all hazards, then the **Project Cleared?** box can be checked.

The screenshot displays a multi-windowed application. The main window, titled 'aba_soil', is titled 'Soil' and contains the following data entry fields:

- Installation: AREA I
- Hsg. Group: PANMUNJOM
- Address: JOINT SECURITY AREA - PANMUNJO
- Building No.: 0001
- Sample Sub-Area: (empty)
- Location: (empty)
- Abatement Method: Removal
- Begin Date: 05/03/2001
- Completion Date: 05/03/2001
- Project Manager: Erin Oster

On the right side of the form, there are two checkboxes:

- On-Going Monitoring?
- Project Cleared?

At the bottom of the window is a navigation bar with the following buttons: Top, Prev, Next, Bottom, End, Print, Add, Edit, Delete, and Exit.

Figure 48. Soil lead abatement activity data screen.

Asbestos

If the user clicks on the Asbestos **Review/Edit** button, the screen shown in Figure 49 will appear.

The screenshot shows a multi-layered window titled 'ABAAsbes' with the following content:

Installation: AREA 1
Housing Group: PANMUNJOM
Building No.: 0001

Asbestos
Building No.: 0001 **Address:** JOINT SECURITY AREA - PANMUNJOM BLDG
Hazard Area: 1 **Component:** VINYL FLOOR TILE

Abatement Method: Full Containment On-going Monitoring?
Begin Date: 05/03/2001 **Completion Date:** 05/03/2001 Project Cleared?
Project Manager: Erin Olster

Abatement Workers

Name	Employer	Exp. Level	Units	Date Mon.
Soventy	Joe's Painting and Refinishing	20.00	µg/ft ²	05/03/1997
Ableson	Joe's Painting and Refinishing	20.00	µg/ft ²	05/03/1997

Clearance Samples

Sample Id #	Surface	Lab Result	Units	Hazard?	Name
123-622BR-4	Wall	30.00	µg/ft ²		William Walkfar

Buttons at the bottom: Top, Prev, Next, Bottom, Find, Print, Add, Edit, Delete, Exit

Figure 49. Asbestos abatement activity data screen.

By clicking on the **Edit** button, the user can enter the abatement method, beginning and completion dates, and the project manager associated with a particular hazard. Some actions require ongoing monitoring. If so, the **Monitored?** box can be checked to indicate that requirement. In addition, if the project has been cleared of all hazards then the **Project Cleared?** box can be checked. Note: Worker and clearance sample information must be entered in the Paint Abatement Activity section. This is a limitation of the current version of the HALO program.

8 Reports

Paint Disclosure Report

EPA and HUD rules entitled “Disclosure of Known Lead-Based Paint (LBP) and/or LBP Hazards in Housing Upon Sale or Lease of Residential Property” apply to Department of Defense family housing built before 1978 and to their disposal by lease or sale. Compliance with these rules must be documented. Users can create the necessary disclosure form in HALO simply by clicking on **Reports** on the main menu. The screen in Figure 50 will appear.

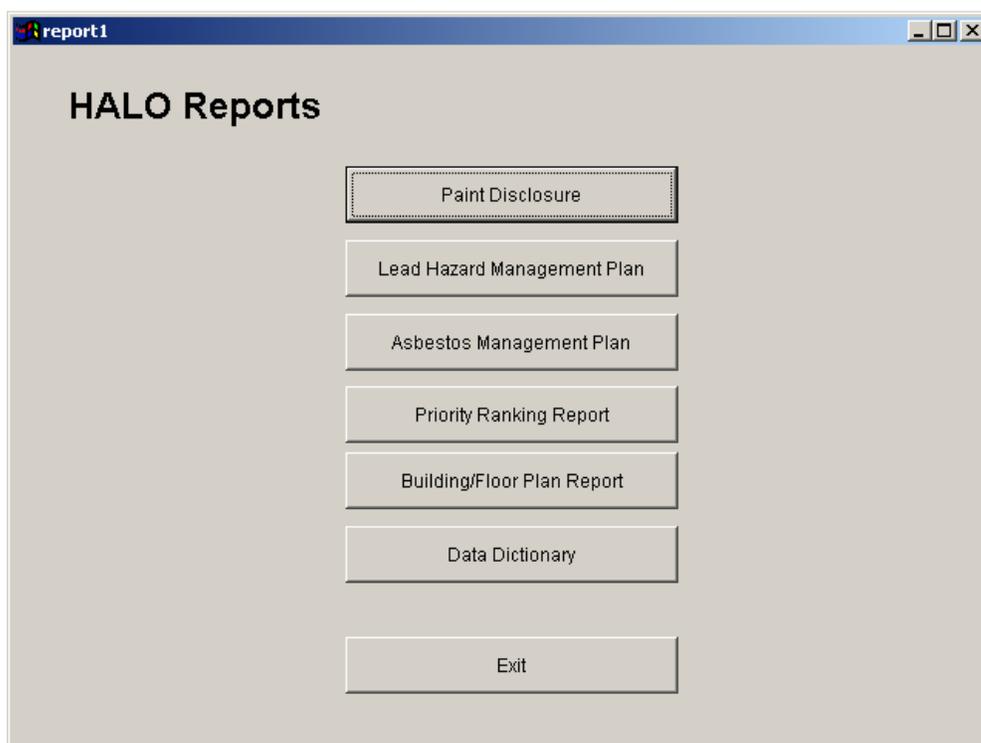


Figure 50. HALO disclosure report menu screen.

Clicking on **Paint Disclosure** on the menu that appears will generate a list of all units that are included in the database (see Figure 51). The user can then select the unit for which the report is needed.

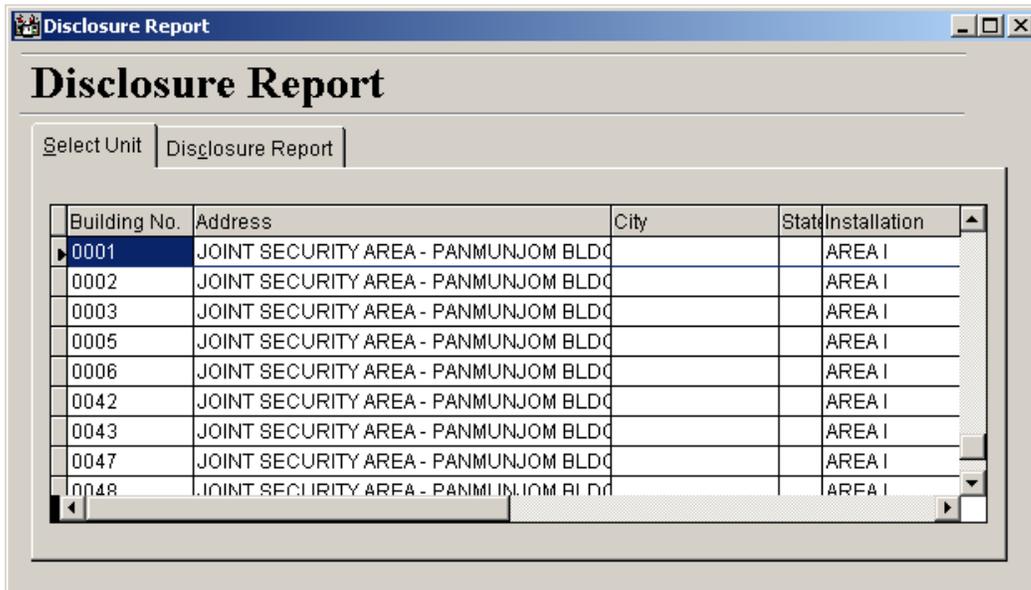


Figure 51. Disclosure Report unit selection screen.

If there are many dwelling units requiring the same disclosure report, it may be more convenient to choose the unit by street address using the **F**ind button on the report print screen shown in Figure 52. This screen is obtained by clicking on the **D**isclosure Report tab. Once an address is chosen, click on the **P**rint button to begin the printing process.

Pressing the **p**rint button will cause a dialog box to appear that asks if you wish to preview the report. If you click **Y**es, a new window will open with a preview of the report shown. The user can print from the preview screen or cancel to close the window without printing. If you click **N**o, the print process will begin immediately. A sample disclosure report is shown in Appendix B.

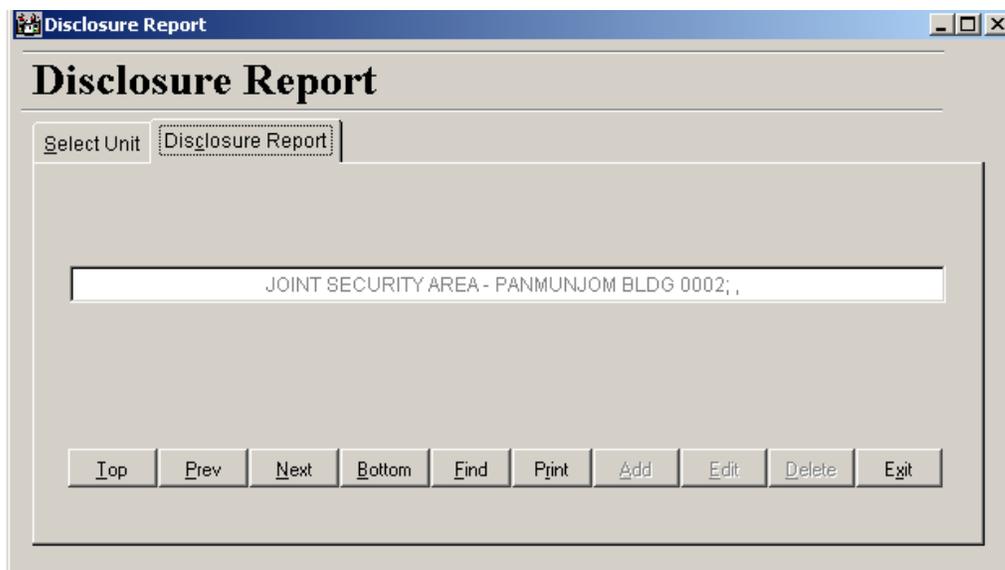


Figure 52. Disclosure Report screen.

Installation Lead Hazard Management Plan

HALO can produce a lead hazard management plan. The report (as it is called in the program) contains a summary of the latest guidance on lead hazard management, a listing of the lead hazard management team, and a summary of the inspection and/or risk assessment data for that installation.

Click on **Reports** on the main menu. Then click on **Lead Hazard Management Plan** on the menu that appears. The screen shown in Figure 53 will appear. This screen is used to select the Installation and Housing Group Area for which the report is to be generated. In this case, AREA I is the desired installation.

Housing Group Area	Year Built	Date Assessed	Project Manager
BULL'S EYE		/ /	

Figure 53. Create Installation Report screen.

By clicking on the **Create** button, the user begins the report generation process. The program will merge the appropriate HALO data with a pre-existing report template. HALO modifies the file to include a summary of the lead hazard data and puts all the supporting data in an appendix. The user can specify the name and location for the output file. Once the file has been created, it should be previewed and edited before printing.

If the management plan is created in Word 8, the registration message illustrated in Figure 54 will appear.



Figure 54. MS-Word 8 registration message.

This registration message occurs because FoxPro® 5 and MS-Word 8 are not fully compatible. If the user clicks on the **OK** button shown in Figure 54, the Lead Hazard Management Plan will be properly created in MS-Word 8, despite the registration message.

Asbestos Management Plan

HALO can also generate an Asbestos Management Plan for a specific Housing Group. Select **Reports** from the main menu, and then select Asbestos Management Plan to create this guidance document. Once selected, the screen illustrated in Figure 55 will appear.

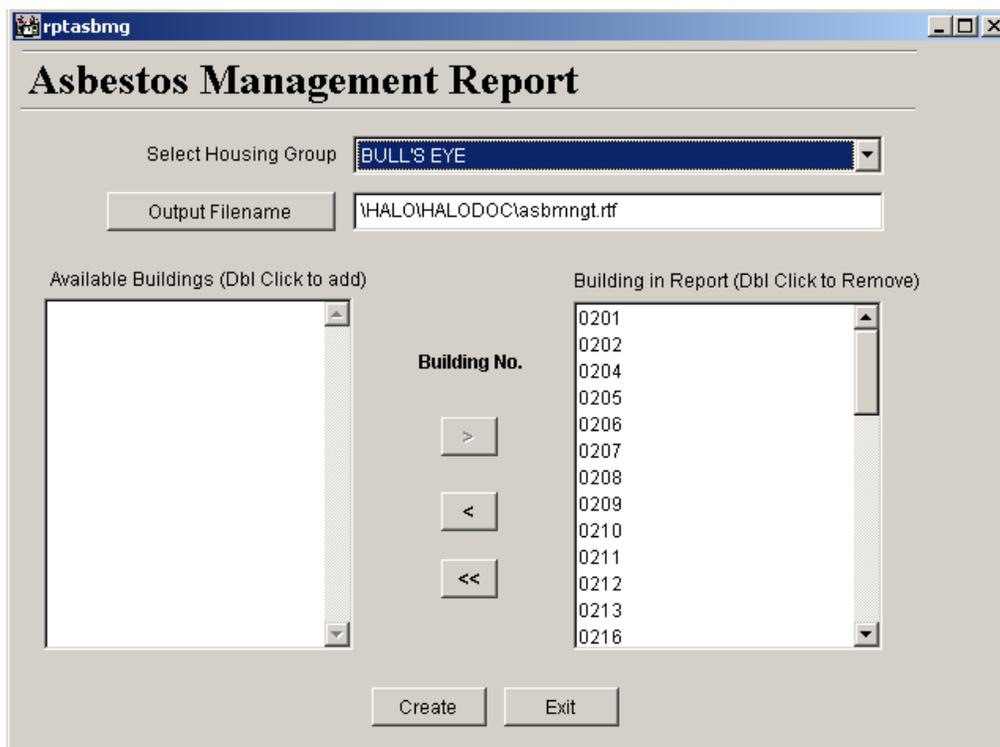


Figure 55. Creating the Asbestos Management Plan.

The program creates a Word document using a document template included with the program. The user can select the Housing Group of interest and specify an output file name and location. Once created, the document may be viewed, edited, or printed using MS-Word. The Asbestos Management Plan is supplemented by the homogeneous summary tables described in Chapter 6 and with the Priority Ranking Report described in the next section.

Priority Ranking Report

Also included in the HALO Program is the Priority Ranking Report. Select **Reports** from the main menu, and then select **Priority Ranking Report** to create this guidance document. Once selected, the screen illustrated in Figure 56 will appear.

The user can select the Housing Group of interest and the maximum number of records to be printed. To establish priority, the highest priority ranked materials for each building are selected for inclusion in the report.

Upon clicking **Run**, the user will be offered the opportunity to preview the report or print it directly.



Figure 56. Asbestos Priority Ranking Report for a particular housing group.

Building/Floor Plan Output

The user can print floor plans that have been stored in HALO. Select **Reports** from the main menu (Figure 50), and then **Building/Floor Plan Report**. Clicking this button brings up a window that asks if you want to preview the report. Clicking **No** sends the report to the printer.

Computer Data Entry and the Data Dictionary

For installations with a large number of housing units, entering data by hand may not be efficient. Since most laboratories can return the results of their measurements electronically, it may be worthwhile to write a simple program to insert the data into the HALO database.

Another possible method of data entry is the use of a scan form, such as those commonly used as answer sheets for standardized tests. The form can be customized to gather much of the field data, such as paint condition, room label, substrate, etc. A scanning machine transfers the information to the computer. A simple program could be written to insert the data into the HALO database.

To automate data entry, the user needs to know the field names in the various tables used by HALO. These field names are contained in a Data Dictionary that can be accessed by choosing **Reports** from the Main Menu, then **Data Dictionary**. The user can preview and print the Data Dictionary using the on-screen buttons.

National Institute of Building Sciences Guidance Documents

To assist asbestos and lead program managers, the NIBS guidance documents have been included in HALO. The documents provide insight into managing the hazards of lead and asbestos. They also include work practices that should be used when performing work that will impact asbestos or lead-containing components.

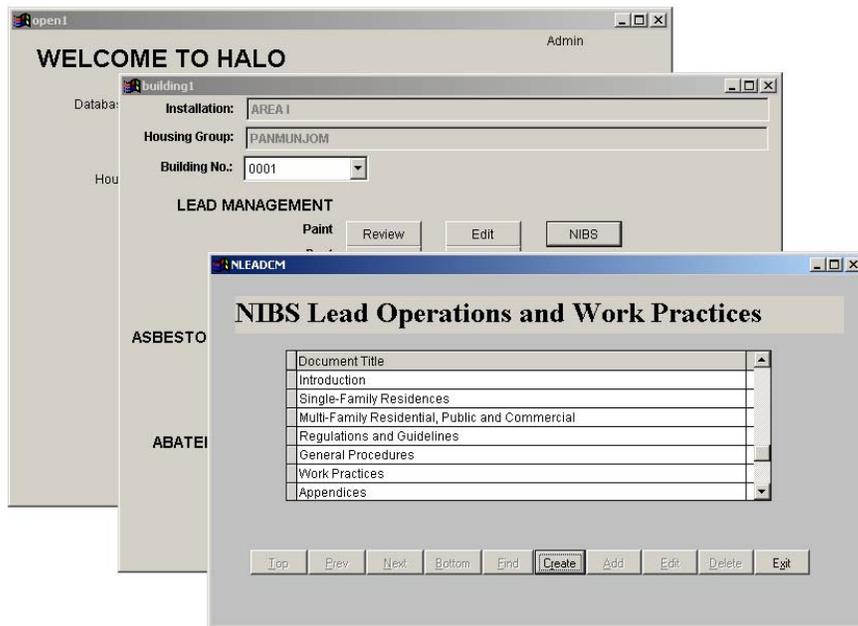


Figure 57. Selecting the appropriate NIBS work practice.

NIBS documents can be accessed from the **Data Management** button on the main menu. Selecting the **NIBS** button for either lead or asbestos management will generate a list of available guidance documents. Once the desired section of NIBS has been selected, HALO creates a Word document and saves it to a user-specified location as shown in Figure 58. Once created, the document may be viewed, edited, or printed using MS-Word.

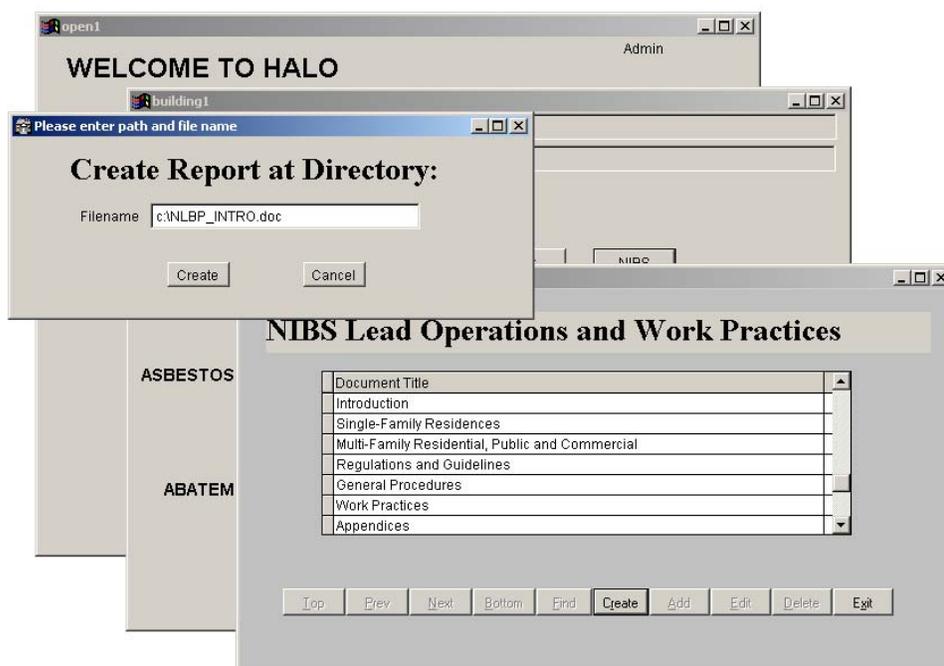


Figure 58. NIBS report directory designation.

9 Action Level, Laboratory, and Inspector Data Entry

Action Levels

If state or local regulations differ from the current HUD and EPA standards, the action levels used by the program can be edited to reflect the proper values. To edit the action levels, select **Action Levels** from the main menu. The screen that appears is shown in Figure 59 where the action levels used by the program can be edited. The user can click the **Defaults** button to restore these values at any time. Values that have been changed are shown in red.

Category	Parameter	Value
Dust	Dust, Window Sill ($\mu\text{g}/\text{ft}^2$)	500
	Dust, Window Well ($\mu\text{g}/\text{ft}^2$)	800
	Dust, Floors ($\mu\text{g}/\text{ft}^2$)	100
Soil	Soil, Lower Level (ppm)	400
	Soil, Intermediate Level (ppm)	2000
	Soil, Highest Level (ppm)	5000
Paint	Paint, XRF (mg/cm^2)	1.00
	Paint, Lab Analysis (% by wt)	0.50
	Paint, Lab Analysis (ppm)	5000.00
Paint	Paint, Percent Positive	15
	Asbestos, Bulk (%)	1
Asbestos	Asbestos, Air (fibers/cc)	0.10

Buttons: Defaults, Prev, Next, Bottom, Find, Print, Add, Edit, Delete, Exit

Figure 59. Action Levels screen.

Laboratory Information Entry Screens

To enter laboratory information, begin by selecting **Laboratory Information** from the main menu. The screen shown in Figure 60 will appear.

This screen displays a list of laboratories involved in analyzing the lead and/or asbestos samples. To edit or update laboratory information, click on a name to make that record the current one. Then select the **Laboratory Information** tab to access this laboratory's entry. Add a new laboratory by selecting the **Laboratory Information** tab and clicking the **Add** button.

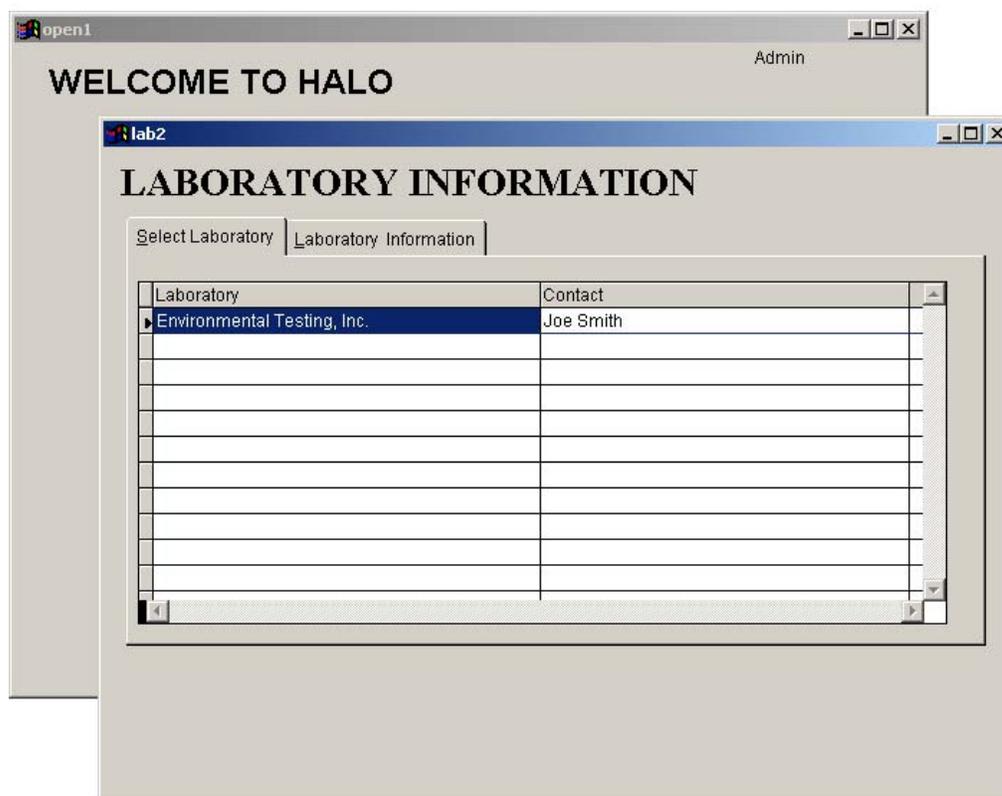


Figure 60. The Laboratory Information screen.

When you select the **Laboratory Information** tab, the screen appears as shown in Figure 61. This screen can be used to add new laboratories.

open1 Admin

WELCOME TO HALO

lab2

LABORATORY INFORMATION

Select Laboratory: Laboratory Information

Lab Name: Environmental Testing, Inc. Contact: Joe Smith

Street Address: 8405 Fairfax Dr. Phone: 703 741-5555 Ext: 2292

City: Arlington Fax: 703 741-3299

State: VA Zip: 22201 Parameter: Lead

Accreditation Body: AIHA

Accreditation ID #: 568-22-011

Accreditation Expiration Date: 03/31/2002

Top Prev Next Bottom Find Print Add Edit Delete Exit

Figure 61. Laboratory Information screen.

Inspector Information Entry Screens

To enter inspector information, begin by selecting **Inspector Information** from the main menu. The screen shown in Figure 62 will appear.

This screen displays a list of inspectors involved in obtaining lead and asbestos hazard data. To edit or update an inspector's information, click on a name to make that record the current one. Then, select the **Inspector Information** tab to access this person's entry. To add a new inspector, select the **Inspector Information** tab and click the **Add** button.

Clicking on the **Inspector Information** tab produces the screen shown in Figure 63. This screen can be used to add new inspectors, edit inspector information, or view the inspector's certification. HALO also verifies the expiration date for each certification. If the inspector is current, the entry will be highlighted in green. If the certification is within 3 months of expiration, the entry will be highlighted in yellow. When the certification expires, the entry becomes highlighted in red. If the course listed is not required for certification, there is no expiration date and the entry will not be highlighted.



Figure 62. Inspectors screen.

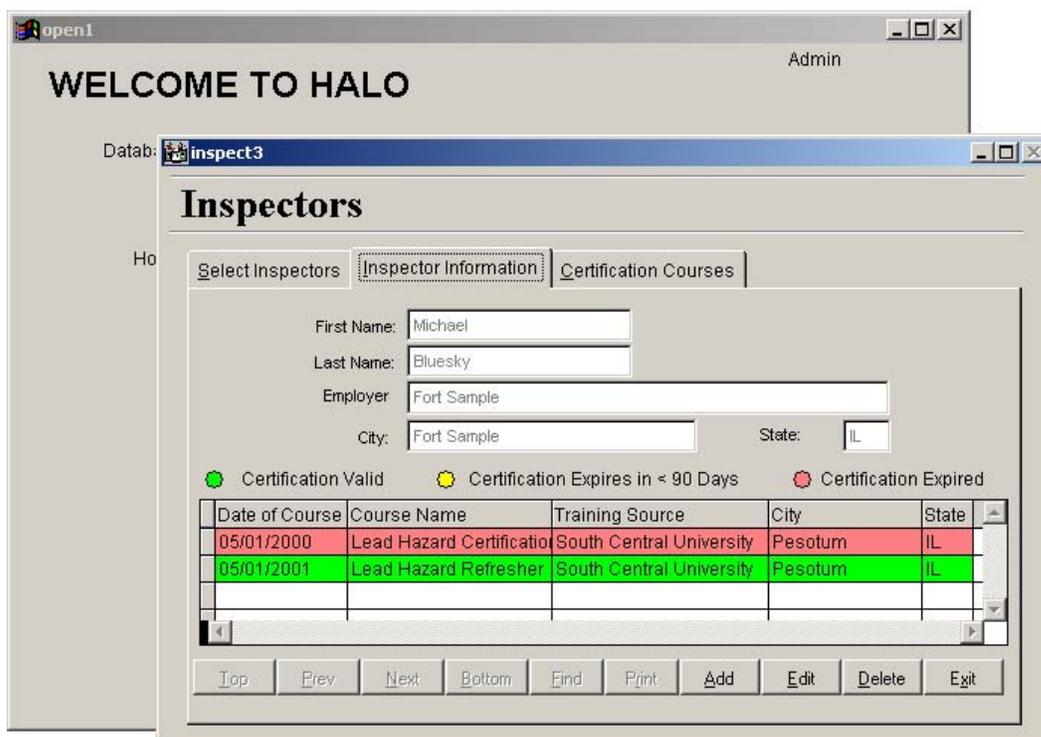


Figure 63. Inspectors information screen.

The buttons for positioning the record pointer (**T**op, **N**ext, etc.) allow the user to change the inspector being viewed. The scroll bars on the table allow the user to view course listings larger than the available display. This screen is also used to select a certification record for editing, should that ever be necessary. To select a record, use the mouse to click on the desired entry. Then select the **C**ertification Courses tab.

After selecting the **C**ertification Courses tab, the screen shown in Figure 64 will appear. On this screen, the user may enter the course information. Courses required for inspector certification will usually have an expiration date. While most certification periods are for 1 year, the program makes no assumptions and uses whatever date the user enters as the expiration date. For courses that have no expiration date, the entry box should be left blank.

The screenshot shows a Windows-style application window titled "open1" with a user name "Admin" in the top right corner. The main content area displays "WELCOME TO HALO". Below this, a database connection window titled "inspect3" is visible. The primary window is titled "Inspectors" and contains three tabs: "Select Inspectors", "Inspector Information", and "Certification Courses". The "Certification Courses" tab is selected and shows a form with the following fields and values:

Inspector	Michael Bluesky
Date of Course	05/01/2000
Expiration Date	05/01/2001
Course Name	Lead Hazard Certification
Name of Training Source (School)	South Central University
City	Pesotum
State	IL

At the bottom of the form, there is a row of buttons: Top, Prev, Next, Bottom, Find, Print, Add, Edit, Delete, and Exit.

Figure 64. Certification Courses entry screen.

The buttons for positioning the record pointer (**T**op, **N**ext, etc.) allow the user to change the course being viewed.

References

Department of Housing and Urban Development, "Guidelines for the Control of Lead Based Paint Hazards in Housing," June 1995.

Housing and Community Development Act of 1992 (PL 102-550), 28 October 1992, Title X, "Residential Lead-Based Paint Hazard Reduction Act of 1992."

U.S. Environmental Protection Agency, "Lead; Requirements for Lead-Based Paint Activities in Target Housing and Child Occupied Facilities," 40 CFR Part 745, 29 August 1996.

U. S. Army Center for Public Works, "Installation Lead Hazard Management," Public Works Technical Bulletin No. 420-70-2, 20 February 1997.

U.S. Army Center for Public Works, "Installation Asbestos Management Program," Public Works Technical Bulletin No. 420-70-8, 23 March 1998.

Appendix A: HALO Data Collection Forms

HALO HOMOGENEOUS AREA INFORMATION FORM

Installation:

Address:

Housing Group:

Building Number:

Instructions: This sheet is to be filled out for each Homogeneous Area within the building. All entries should be made within the Data Entry Box provided for each information block. When using the HALO data management system, blocks 1-13 are entered on the Homogeneous Area Screen, block 14 is entered on the Bulk Sample Screen, and block 15 is entered on the Evaluation Information Screen. Note: when entering information from block 3, enter entire Material type not just the code.

1. **Homogeneous Area #:** Enter the Homogeneous Area (HA) identifier in the space provided. The HA identifier should be a two-digit number assigned by the inspector. HA's, as defined by AHERA, may include similar material located in multiple room or floors within the same building.

2. **Priority:** For each HA which is determined to have an asbestos content greater than 1%, the inspector shall Place an [I] if the material poses an immediate hazard to life and health. HA's identified as immediate hazards to life and health shall have analysis of the corresponding samples expedited. Furthermore, the inspector shall notify the asbestos program manager of all such homogeneous areas.

3. **Material:** From the list of materials provided on the reserve side of this form enter the two-letter code for the listing which most closely represents this material. If Undetermined is selected, then enter description below.

4. **Material Description:** Enter a description of the material including size below (i.e., 2' X 4' acoustical ceiling tiles, or 6" OD aircell pipe insulation on steam line).

5. **Material Classification:** Enter one of the following AHERA material classifications.

[TSI] Thermal System Insulation [SUR] Surfacing Material
[RSF] Resilient Flooring [MIS] Miscellaneous

6. **Material Color:** Enter the color of the material below. Mandatory Field for flooring, Optional Field for other materials.

7. **Material Texture:** (Optional Field) Enter the texture of the material.

8. **Number of Samples:** Enter the number of samples collected (including QA/QC samples).

9. **Priority Ranking:** For each HA which is determined to have an asbestos content greater than 1%, enter the calculated Priority Ranking from the Evaluation form.

10. **Abatement:** For each HA which is determine to have an asbestos content greater than 1%, enter one of the following letters corresponding to the recommended abatement action for this material.

[A] Complete removal of the material [B] Partial removal of the material
[C] Repair the material [D] Incorporation into an O&M program

11. **Action Taken:** For each HA which is determined to have an asbestos content greater than 1%, identify any action taken.

12. **Date Identified:** Enter the Date the material was identified. (Survey date, NOT date of laboratory results).

13. **Inspectors Name:** Enter inspectors name

14. **Sample #'s:** Enter the Sample # with the corresponding Laboratory ID Number and Results for each sample collected.

Sample ID #	Lab ID #	Results
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

15. **Room Information:** Enter the Room name and number for each room within the building in which the material is present.

Room	Room #	Room	Room #	Room	Room #
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

MATERIAL CODES

- | | | |
|-------------------------|-------------------------------|-----------------------------|
| AF Access Flooring | FR Fire Brick | RO Rope Insulation |
| AP Acoustic Panel | FS Fire-stop | RR Rolled Roofing |
| AS Asphalt Shingle | GA Gasket | SF Spray-on Fireproofing |
| AT Acoustic Tile | GB Gypsum Board | SI Spray-on Insulation |
| BI Blown-in Insulation | GM Glue/Mastic | SK Stack Breeching |
| BJ Boiler Jacket | II Incinerator Insulation | SO Spray-on Finish Material |
| BU Built-up Roof | IN Insulation | SP Straight Pipe Insulation |
| CG Coating | IP Insulation Panels | ST Stair Tread |
| CN Fire Curtain | IW Insulation Wrap | TA Tar |
| CP Corrugated Paper | JC GB Joint Compound | TB Transite Board |
| CT Carpet Mastic | JF Joint Filler | TD Transite Duct |
| DC Door Frame Caulk | MA Mastic | TK Tank Insulation |
| DE Debris | PB Particle/Composition Board | TP Transite Pipe |
| DT Duct | PC Pipe Covering | TR Tar Paper |
| EA Soil | PJ Pipe Joint | TW Tar Wap |
| EI Electrical Insulator | PM Patching Material | VB Vinyl Base |
| FC Flex Connector | PS Spray-on Plaster | VS Vinyl Sheet |
| FD Fire Door | PT Paint | VT Vinyl Tile |
| FH Fire House | PW Pipe Wrap | WR Wrap |
| FL Flashing | QT Quarry Tile | WG Window Glazing |
| FP Fixture Paper | XX Undetermined | |

HALO HOMOGENEOUS AREA EVALUATION FORM

Installation:

Building Number:

Housing Group:

Address:

Damage Prefix

Priority Ranking

Instructions: This form is designed to be used with the HALO data management system and must to be filled out for each Homogeneous Area within the building. All entries should be made within the Data Entry Boxes provided on this form and entered on the HALO Evaluation Information Screen. Entries for information blocks 12 and 13 are generated by the HALO system and should be entered in the space provided at the top of this form. When not using the HALO data management system, a summary of the algorithm used to generate the Priority Ranking should be attached.

1. **Homogeneous Area #:** Enter the Homogeneous Area (HA) identifier in the space provided. The HA identifier should be a two digit number assigned by the inspector (See Homogeneous Information Form information block 1. HA's, as defined by AHERA, may include similar material located in multiple room or floors within the same building.

2. **Quantity:** Enter the amount of material present in the building for this HA.

3. **Units of Measure:** Enter the Unit of Measure for this HA. (i.e., sf for square foot, lf for linear foot etc.)

4. **Friability:** Determine friability and enter one of the following. *Note, selections B and C are optional and have been included on this form and in the HALO database to allow for a more accurate evaluation of the suspect material. When these options are not in use, friable material should be assigned a default [A]High.*

[A] High [B] Moderate [C] Low [D] Non-friable

5. **Percentage of Material Damaged:** Estimate the percentage of the damaged material for this HA. Enter percentage.

6. **Damage Type:** Enter the type of damage from the list below.

[A] Physical damage (i.e. impact) [B] Normal deterioration [C] Water damage
[D] Vibration damage [E] Air erosion

7. **Condition of Material:** Determine the condition of the material for this HA and enter one of the following.

[A] No damage [B] Potential for damage [C] Potential for significant damage
[D] Damage [E] Significant damage

8. **Potential for Vibration and Disturbance:** Determine the potential for vibration and disturbance of the material for this HA and enter one of the following.

[A] High [B] Moderate [C] Low [D] None

9. **Potential for contact:** Determine the potential for contact with the material by the building occupants for this HA and enter one of the following.

[A] Accessible and Occupied [B] Accessible and Unoccupied
[C] Inaccessible and likely [D] Inaccessible and not likely

10. **Facility Criticality:** Determine the facilities criticality and enter one of the following. (Determination usually made by Facility DPW prior to inspection/survey)

[A] Critical [B] Essential [C] Non-essential

11. **Building Occupants:** Estimate the number of building occupants and enter one of the following.

[A] Greater than 100 [B] Less than 100 but greater or equal to than 40
[C] Less than 40 but greater than or equal to 10 [D] Less than 10

12. **Building Damage Prefix:** Generated by the HALO Data Management System. Enter the result at the top of this form.

13. **Priority ranking:** Generated by the HALO Data Management System. Enter the result at the top of this form.

Appendix B: Sample Disclosure Report

Disclosure of Information on Lead-Based Paint and/or Lead-Based Paint Hazards

Lead Warning Statement

Housing built before 1978 may contain lead-based paint. Lead from paint, paint chips, and dust can pose health hazards if not managed properly. Lead exposure is especially harmful to young children and pregnant women. Before renting pre-1978 housing, lessors must disclose the presence of known lead-based paint and/or lead-based paint hazards in the dwelling. Lessee must also receive a federally approved pamphlet on lead poisoning prevention.

Housing Address:

123 henry

Lessor's Disclosure

(1) Presence of lead-based paint and/or lead-based paint hazards (check one below):

Known lead-based paint or lead-based paint hazards are present in the housing (explain):

See Attached Report

Lessor has no knowledge of lead-based paint and/or lead-based paint hazards in the housing.

(2) Records and reports available to the lessor (check one below):

Lessor has provided the lessee with all available records and reports pertaining to lead-based paint and/or lead-based paint hazards in the housing (list documents below):

Lead Hazard Disclosure Report for 123 henry

Lessor has no reports or records pertaining to lead-based paint and/or lead-based paint hazards in the housing.

Lessee's Acknowledgment (initial each item)

_____ Lessee has received copies of all the information listed above.

_____ Lessee has received the pamphlet **Protect Your Family From Lead in Your Home.**

Agent's Acknowledgment (initial)

_____ Agent has informed the lessor of the lessor's obligations under 42 USC 4853 and is aware of his/her responsibility to ensure compliance.

Certification of Accuracy

The following parties have reviewed the information above and certify, to the best of their knowledge, the information provided by the signatory is true and accurate.

Lessor Date

Lessor Date

Lessee Date

Lessee Date

Agent Date

Agent Date

Lead Hazard Disclosure Report for 123 henry

Components in this housing unit were assessed for the presence of lead based paint and the information gathered during the assessment is shown below.

This housing unit was assessed for the presence of lead contaminated household dust. The information gathered in the assessment is shown below.

The exterior grounds of this housing unit were not assessed for the presence of lead contaminated soil however, similar grounds were assessed and lead contaminated soil was not found in the community.

Type of Hazard	Location	Room #	Component	Hazard?
Paint	bedroom	1	baseboard	Y
Abatement Method:				
Paint	bedroom	1	baseboard	Y
Abatement Method:				
Dust	bedroom	1	wood	U
Abatement Method:				
Dust		0	wood	U
Abatement Method:				

Lessor Signature _____ Date: _____

Lessee Signature _____ Date: _____

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14. ABSTRACT <p>Before the dangers of lead and asbestos in the environment were known, lead-based paints and asbestos insulation were commonly used building materials. Now that the dangers are recognized, Army housing and nonresidential buildings must be inspected to determine the level of lead and asbestos hazards present and to manage these hazards in a manner consistent with applicable laws, regulations, and policies.</p> <p>Hazardous Asbestos and Lead Optimal Management System (HALO) is a software tool designed to track required information relating to the degree of lead and asbestos hazards present and the remedial actions taken.</p> <p>This user's manual describes the HALO program, the procedures for installation on your computer, the data entry screens, and the various reports available. The HALO program is designed to run on IBM-compatible personal computers running several Windows operating systems. The program requires at least a Pentium-class computer with 16 MB of RAM, at least 10 MB of available hard disk space, and a display resolution of 800 by 600 pixels. In addition, to generate the Lead Hazard Management Plan and/or the Asbestos Management Plan, Microsoft Word® 7 or later is required.</p>					
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