Neighborhood Planning for Community Revitalization

Health and Safety at Deconstruction Services

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Health and Safety at Deconstruction Services

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Executive Summary

Deconstruction Services is a program of the Green Institute of Minneapolis, Minnesota. It employs members of the Phillips Neighborhood in living wage jobs that impact the environment by reducing the waste stream. Deconstruction is a new industry that involves the removal of reusable building materials from buildings that are scheduled for demolition or remodel. Deconstruction Services is also a training program for individuals wishing to start in the construction field. The nature of the workplace and the workforce presents a number of health and safety hazards to employees. The goal of this research assistantship was to continue the process of addressing the workplace hazards at Deconstruction Services, and to especially address the issue of lead exposure.

Research involving the review of standards and evaluation of the workplace resulted in the creation of several safety documents and programs unique to Deconstruction Services. An exposure assessment process for lead resulted in the drafting of a lead program that conservatively protects employees from exposure and provides them with comprehensive training. A Respiratory Protection Program was written to protect employees from respiratory hazards encountered in the workplace. A set of written programs was established to assist supervisors in the appropriate handling of accident situations in the workplace. Finally, a safety walkthrough program was implemented to actively involve all employees in improving the workplace safety culture.

The following recommendations for further action and research will assist Deconstruction Services in continuing develop a strong health and safety culture.

Recommendations:

1. Continue to characterize employee lead exposure. This can be accomplished by implementing the lead program included in this report and continuing the exposure assessment cycle by conducting further personal sampling on lead containing sites. Sampling procedures would include both whole shift and task-based personal samples.
2. Actively implement the programs developed during the assistantship. By actively working with the safety programs already written for Deconstruction Services, employees will begin to be comfortable with the culture of safety and become active members of a safe workplace.
3. Evaluate training programs. Establish a training schedule and training program for both newly hired employees and those who have been with the program for a length of time.
4. Continue to use research assistants and interns to assist the safety officer with addressing safety issues that appear next on the priority list.

Introduction

In establishing a work plan for a Neighborhood Planning for Community Revitalization (NPCR) research assistantship at Deconstruction Services, two goals were clear: 1) Continue to develop a culture of health and safety in the workplace, and 2) Characterize workplace lead exposure. This report summarizes the process for meeting these goals by providing a background of Deconstruction Services and its health and safety culture, identifying methods used in the process, summarizing the products and results of the research, discussing the process and its limitations, and presenting a set of conclusions and recommendations.

Background

The Green Institute is a non-profit organization in the Phillips Neighborhood of Minneapolis, Minnesota. It was organized as a direct result of community opposition to a city proposal to locate a garbage transfer station within the neighborhood. Since its inception in 1993, the Green Institute has been involved in a number of environmentally sound community programs including green education, community greening, the ReUse Center, Deconstruction Services and the construction of the Phillips Eco-Enterprise Center (PEEC). The ReUse Center is a large retail store specializing in the sale of reusable building materials that have been donated to the program. The PEEC is a new building located on the proposed garbage transfer site that will house the Green Institute as well as several other green companies. The Green Institute continues to grow and promote sustainable wage living within a green community.

Deconstruction Services is one of the programs of the Green Institute. The two main goals of the program are to create living wage jobs for residents of the Phillips Neighborhood and to reduce the waste stream by salvaging reusable building materials and adding them to the ReUse Center inventory. The program has been in operation since autumn 1997, and at present employs two work crews and an administrative staff totaling approximately fifteen people. Work crews enter homes and buildings scheduled for demolition or remodel and remove reusable building materials. The process is essentially construction in reverse.

A culture of health and safety is difficult to develop at Deconstruction Services. Both the workplace and the workforce are highly variable. Job sites change as often as daily, so it is difficult to identify workplace hazards from a representative perspective. In essence, each site must be

evaluated individually. The workforce is dynamic and often is made up of individuals with a wide range of experience. Those with some work experience in the construction field can be set in their ways, and those without experience can lose sight of safety in their focus on learning job skills. In addition, the members of the workforce belong to a community in which personal safety outside of the workplace is a higher priority. All of these issues make it difficult to develop and implement effective health and safety programs in the Deconstruction Services workplace.

A prior NPCR research assistantship resulted in a definition of deconstruction, the establishment of Employee Right to Know (ERTK) documents, the creation of some Standard Operating Procedures (SOP), and the beginning of safety training programs. The identification of a need for continued assistance with safety issues and the possibility of employee lead exposure by the first assistantship required the inception of this project.

The use of lead, both socially and occupationally, has been common for centuries. It wasn't regulated in the United States workplace until the 1978 when the Occupational Safety and Health Administration (OSHA) promulgated a standard. The construction industry was left out until the 1992 OSHA Lead in Construction standard (29 CFR 1926.62). The standard came about when OSHA began to assume that significant exposures to lead could result from construction activities such as manual demolition and abrasive blasting of lead painted materials. Deconstruction Services recognizes that lead may be a problem on work sites that contain lead painted materials. Since Deconstruction Services employs members of a community that experiences elevated lead levels in its residents due to a depressed economy and an aging housing stock, they take conservative precautions to not exacerbate the problem.

Exposure to lead can cause a large variety of health problems. Individuals with elevated lead levels in their blood can experience gastrointestinal problems, nerve damage resulting in a condition commonly called "wrist drop", behavior changes, and reproduction problems (EPA, 1998). Lead related illnesses are especially a problem in children because they have increased susceptibility (Pueschel, 1996). This concern for employee health and the health of their families coupled with the desire to comply with governmental standards requires the implementation of a lead program at Deconstruction Services.

Methods

Methods for the development of health and safety documents and procedures for Deconstruction Services included an evaluation of the workplace, an exposure assessment for lead including some initial environmental sampling, and a review of standards. These activities led to the development of safety documents for Deconstruction Services as well as recommendations for further actions.

The evaluation of the workplace was accomplished through job site walkthroughs, employee interviews, and reviews of the existing safety program. Job site walkthroughs included observations of working conditions and work practices, making notes about typical hazards and unique hazards, and participation in deconstruction activities. Employee interviews, especially with the program director and the current safety officer, included gathering information about prioritizing concerns, current practices and future goals. A review of the existing safety program included reading documents, going over standard operating procedures and identifying previous training employees have received.

The exposure assessment for lead was the first cycle in a step by step cyclic procedure for identifying and controlling workplace hazards. Job task observations, evaluation of the amount of work time spent on certain tasks, classification of job tasks as high or low lead exposure, and initial exposure monitoring provide a large body of information for use in the development of lead programs.

Environmental sampling included the collection of two personal whole shift samples and one surface wipe sample at a site that was suspected to contain lead paint, but tested negative with a lead test kit. The personal air samples were collected using personal sampling pumps operating at a two liter per minute (LPM) flow rate connected to 35 mm cassettes holding mixed cellulose ester (MCE) filters. The filters were analyzed at Braun Intertec by graphite furnace method for lead content. Results were reported as air concentrations in micrograms per cubic meter of air ($\mu g/m^3$). The wipe sample was collected using a sanitary wet wipe to collect dust accumulated on a windowsill. A 3.5 by 5.5 inch area was wiped clean using an S shaped wiping technique. The sample was analyzed at Braun Intertec for lead content, and results were reported as total micrograms. This report was used to calculate the surface lead concentration in micrograms per square foot ($\mu g/ft^2$).

The standards review included reading of standards and their accompanying literature in order to produce documents for the Deconstruction Services program that are both protective to employees and compliant with standards. This was done based on priorities established with the safety officer. A review of the OSHA Lead in Construction standard resulted in lead programs. A review of the new OSHA Respiratory Protection standard resulted in the drafting of a Respiratory Protection Program. Review of accident response literature resulted in the creation of accident response and investigation programs. A review of worker compensation information and rate calculations resulted in a method to track accident rates.

All of the methods of research and study used during this assistantship were selected and used based on the assessment of the prioritized needs of Deconstruction Services.

Results

Research conducted during this appointment resulted in the drafting of several health and safety documents for Deconstruction Services. Summaries of those documents are included here along with initial sampling results.

The Deconstruction Services Lead Program includes a set of standard operating procedures and a training program. The SOP outlines proper work practice, personal protective equipment use, housekeeping, and personal hygiene procedures to protect the employees at Deconstruction Services from exposure to lead. The document is found in Appendix A of this report. The lead-training program is designed to provide employees with information about the standards, health hazards and procedures of the SOP. The training program is set up as a power point presentation with detailed notes pages so that the presenter has limited preparation time.

The Deconstruction Services Respiratory Protection Program was designed in accordance with the new OSHA respiratory protection standard (29 CFR 1910.134). The purpose of the program is to protect employees from respiratory hazards encountered in the workplace. The program outlines the responsibilities of participants, types and proper uses of respirators distributed by Deconstruction Services, medical evaluation procedures for participants including fit testing, cleaning and storage methods for respirators, and training in relation to respiratory protection. A copy of this document is included in Appendix B of this report.

During the progress of these two main aspects of the project, several other safety issues were addressed in order to meet the prioritized needs of Deconstruction Services. Assistance on

the writing of a grant proposal resulted in an award for the purchase of equipment necessary to implement the lead SOP. A safety walkthrough program was extended and implemented in an effort to get the employees involved in solving on site safety problems. It was also a priority to address procedures for accident situations. An accident response tree was created to provide an easy to follow flow chart for handling emergency situations on job sites. An accident investigation report form was created to assure that accidents are properly documented in the event that medical treatment is necessary at a later date. These two documents are found in Appendix C of this report. Finally, a spreadsheet for keeping up to date accident rates was created. This tracking is useful as an incentive as well as a way to stay abreast of worker's compensation rates.

A small number of environmental samples were taken to begin getting an idea of lead exposures on job sites. Results of this sampling are presented below in Tables 1 and 2. It is useful to compare the results with standards and recommendations. OSHA sets a permissible exposure level (PEL) for lead in air of 50 $\mu g/m^3$ that is not to be exceeded at any time. They also use an action level of 30 $\mu g/m^3$ to indicate the need for a workplace lead program. Both of these standards are time-weighted averages, meaning that exposures are averaged over the entire workday. The Department of Housing and Urban Development (HUD) provides a recommendation of 200 $\mu g/ft^2$ for surface lead levels used to determine the need for lead abatement in residential buildings. This is a living space standard, so it is a conservative goal for workplace lead levels.

Table 1: Personal Air Sampling Results

Sample Number	Address of Sampling Site	Is Lead suspected to be present?	Result of test for lead	Lead level (micrograms/m^3)	Total Dust level (mg/m^3)	Comments
3/11-01	319 Goodrich Ave W St. Paul	yes	negative	<3.1	2.3	trim decon, floor decon,denailing
3/11-02	319 Goodrich Ave W St. Paul	yes	negative	4.2	2.1	trim decon, floor decon,denailing
field blank				<2.0	0.01	

Table 2: Wipe Sampling Results

Sample Number	Address of Sampling Site	Is Lead suspected to be present?	Result of test for lead	Lead found (micrograms)	Lead Concentration (micrograms/ft^2)	Comments
3/11-03	319 Goodrich Ave W St. Paul	yes	negative	92	742	window sill in dining room,
field blank	319 Goodrich Ave W St. Paul			<6.3		

These numbers represent lead levels on a typical deconstruction site that was suspected to contain lead, but tested negative using the lead test kit. No sites testing positive were encountered during the duration of the assistantship. The results indicate that even though lead tests were negative, lead had accumulated in dust to create surface levels higher than expected.

Discussion

The nature of deconstruction work provides limitations to the design and implementation of safety programs. Job sites and workforces are dynamic and variable. Safety hazards change from job site to job site and the understanding of these hazards is different for each employee. It also takes time to establish and implement safety programs and an even longer time to create a culture of health and safety.

Further study of the lead exposure situation is necessary to create an even better lead program for Deconstruction Services. The program included here is a very conservative approach to the problem. Further sampling may provide enough information to loosen strict procedures relating to protective equipment resulting in increased employee comfort and decreased program costs. All further sampling should be personal sampling for both task-based and whole shift durations on job sites testing positive for lead. This sampling will provide a clearer characterization of workplace exposures. The samples taken indicate that lead may be present in dust on job sites that don't test positive for lead. Even though this lead is not likely to be disturbed enough to result in significant air concentrations, it may accumulate on skin and clothing. This hazard will not be detected using this sampling procedure. It is necessary to always maintain diligent personal hygiene practices to ensure that lead is not inadvertently ingested.

Lead exposures are essentially the basis for the respiratory protection program. Better characterization of lead exposure may also result in easier administration of this program.

Deconstruction is a hazardous job. Deconstruction Services is unique in that it is a training program. This is both a benefit and a hardship for the establishment of a safety program. A training program has the opportunity to instill safe practices in employees at the beginning of their career, but the training process creates its own hazards. Inexperienced employees are especially vulnerable to safety hazards because they are often unaware or underaware of them. An aggressive, innovative safety program is necessary at Deconstruction Services to provide employees with comprehensive training as well as a safe work environment.

The Deconstruction Services program offers a unique opportunity to use a variety of resources and experiences to strive for excellence in safety. It is a small non-profit employer with a diverse workforce and unique funding opportunities. They also have access to contributions from student interns to their working environment. Deconstruction Services has the responsibility to use these resources to continue to develop and foster a rich health and safety culture.

Conclusions and Recommendations

The documents and safety programs created as a result of this assistantship can effectively and conservatively protect Deconstruction Services employees from the safety hazards of highest priority. The lead program conservatively evaluates and controls workplace exposure to lead. The following list of recommendations summarizes approaches to be used to continue to pursue the long-term health and safety goals of Deconstruction Services.

5. Continue to characterize employee lead exposure. This can be accomplished by implementing the lead program included in this report and continuing the exposure assessment cycle by conducting further personal sampling on lead containing sites. Sampling procedures would include both whole shift and task based personal samples. Three days of sampling taking two samples each day would provide enough whole shift information to make decisions about future actions.
6. Actively implement the programs developed during the assistantship. By actively working with the safety programs already written for Deconstruction Services, employees will begin to be comfortable with the culture of safety and become active members of a safe workplace.

7. Evaluate training programs. Establish a training schedule and training program for both newly hired employees and those who have been with the program for a length of time. Safety issues should be addressed with training at least annually.
8. Continue to use research assistants and interns to assist the safety officer with addressing safety issues that appear next on the priority list.

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Appendix A

Deconstruction Services
Standard Operating Procedures for Lead

The Occupational Safety and Health Administration (OSHA) Lead in Construction Standard (29 CFR 1926.62) requires that any workplace experiencing lead exposures above an action level of 30 micrograms per cubic meter of air ($\mu g/m^3$) implement a lead protection program. OSHA assumes that manual demolition results in airborne lead concentrations somewhere between 50 and 500 $\mu g/m^3$. Environmental exposure monitoring has shown that significant exposure can occur on deconstruction sites. Deconstruction Services assumes that its employees can be exposed to lead above the required levels on sites which test positive for lead. Therefore, this document contains standard procedures used to conservatively protect employees that are exposed to the hazard.

Hazard Determination

Hazard Determination is done on a site by site basis. On older, residential sites, a visual inspection by a qualified individual identifies painted surfaces that may be disturbed during the deconstruction process. The qualified individual, someone who has had formal lead inspector training, tests all layers of paint on these surfaces using a lead test kit. A bright, obvious posting listing all lead containing materials found on a site is posted near the entrance.

Work Practice Controls

Employees working on lead sites take care to prevent the release of lead into the air. Leads painted materials with heavy dust accumulated on them are wet wiped of wet mopped to prevent dust disturbance or vacuumed with a HEPA vac before they are removed. During deconstruction, cleaning, sweeping and shoveling processes on lead sites, employees wear personal protective equipment including respiratory protection.

Personal Protective Equipment (PPE)

Any time employees are involved in the deconstruction of leaded materials or cleaning activities on leaded sites they wear gloves, paper suits, and respiratory protection. All employees are issued a respirator and are provided proper training for its use upon hire. Appropriate, disposable work clothing and gloves are provided on site by Deconstruction Services. The use of this equipment is enforced on all sites determined to have lead present.

Respirators are inspected and cleaned during a monthly coordinated effort to ensure that they are in proper working condition and that lead-containing dust does not accumulate inside the face piece. Deconstruction Services provides cleaning wipes and recommends that employees clean their respirators after each use. Cleaning and maintenance procedures are addressed in detail in the Deconstruction Services Respiratory Protection Program. Protective clothing is disposed of at the site in order to prevent accumulation of lead dust in vehicles and are replaced at least once a week. In the instance that the lead job lasts less than one week, the paper suits are disposed of upon completion of the job.

Housekeeping

Housekeeping on sites contaminated with lead is important, especially in areas where there may be customers present. These areas should be kept dust free by HEPA vacuuming.

Deconstruction services rarely sells lead painted materials on site, but when it happens, sales procedures include appropriate customer warning and notification.

Sweeping, shoveling and brushing techniques are avoided and replaced with HEPA vacuuming for all pick up of dust and debris. All lead contaminated clothing and vacuum bags are labeled and disposed of properly.

Personal Hygiene

Employees are aware of the health hazards associated with lead. They have received lead training and have read the Deconstruction Services Employee Right to Know document. It is their responsibility to help protect themselves from exposure. They should use protective equipment properly to ensure that they are not carrying lead dust out of the site into their personal environment. Employees are not to eat or drink in areas contaminated with lead. They are to wash their hands and face before eating, drinking or smoking on the work site in order to prevent inadvertent ingestion of lead that has accumulated on their skin. Water, soap and disposable towels are available on all work sites, and hand washing is enforced before breaks and at the end of the workday. On sites where running water is unavailable, a water cooler will be carried to the site. When arriving at home, shoes and any clothing that may be contaminated should be removed before entering living spaces and should be cleaned separately from other household laundry.

Medical Surveillance

Upon hire, employees have an initial blood lead level determined at no cost to them. Follow up will be provided for any employee with levels above 40 μg/dl. This follow up will include testing every two months until the employee has a blood lead level below 40 μg/dl on two consecutive tests. Any worker having a blood lead level above 40 μg/dl on consecutive tests will be limited to working only on sites without lead until their blood lead levels are no longer higher than recommendations.

Training

Employees receive training about the lead standard, lead hazard at Deconstruction Services, PPE use, personal hygiene and health effects. This training is provided at hire and annually thereafter to make sure the information is refreshed and up to date.

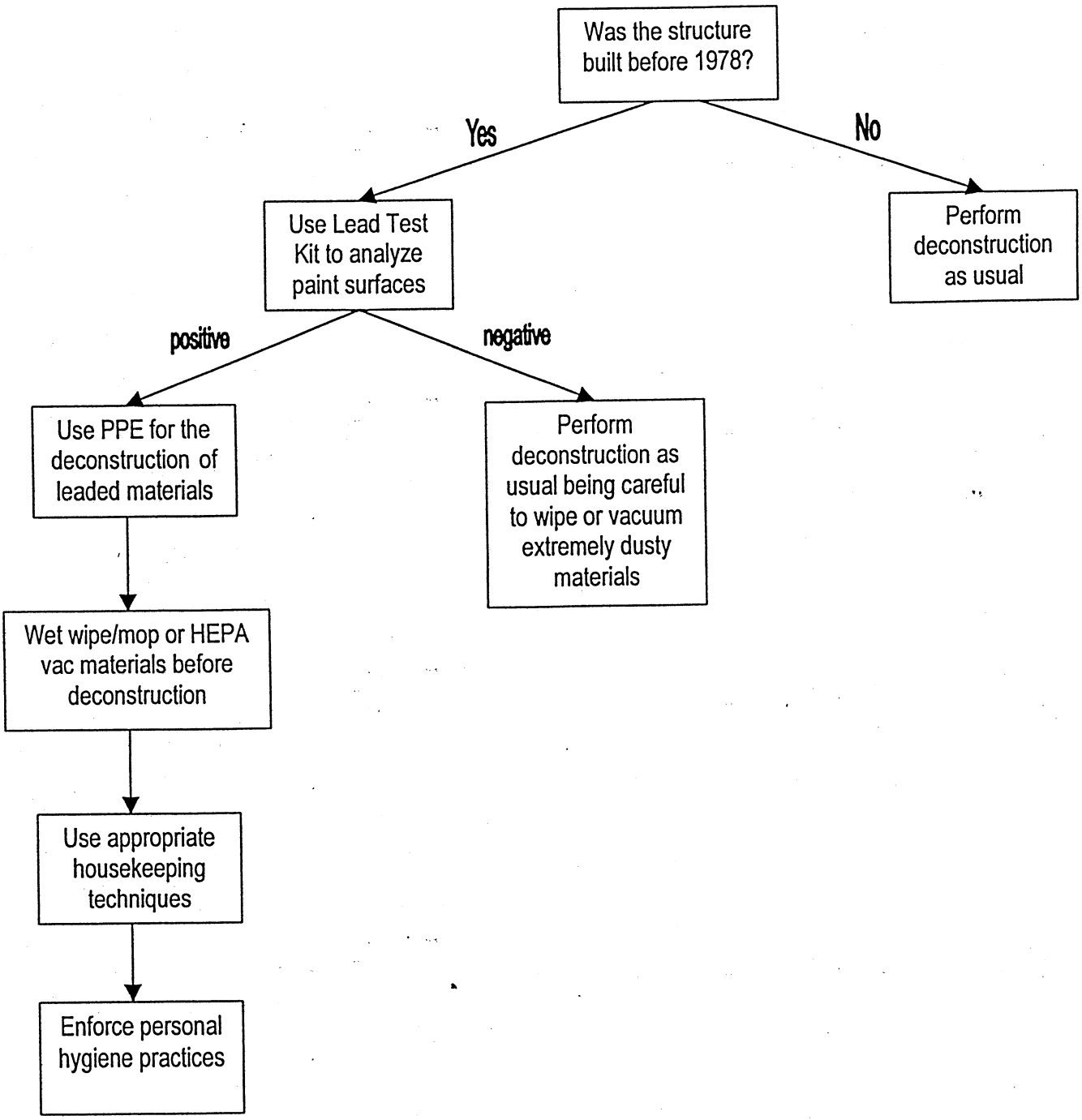
Signs

Warning signs are posted for all lead containing materials on Deconstruction Services work sites in a very visible location.

Recordkeeping

The safety officer at Deconstruction Services maintains up to date records of training, monitoring and medical surveillance.

Hazard Determination for Lead



Appendix B

Deconstruction Services
Respiratory Protection Program

Purpose
Deconstruction is the physical removal of building materials that are suitable for reuse or recycle. Deconstruction Services, a program of the Green Institute, has determined that employees are exposed to hazards including lead and nuisance dust on some work sites. This program ensures that all Deconstruction Services employees are protected from these respiratory hazards.

Because of the nature of deconstruction work, engineering controls are not practical and respirator use is necessary for the protection of employees. Because it is possible for all Deconstruction Services employees to be present on hazardous work sites, every employee is included in this program. Work processes and work sites requiring respirator use are included in the Respirator Use section of the program.

Scope and Application
All employees are likely to participate in hazardous activities on some work sites. Therefore, all Deconstruction Services employees must be enrolled in this Respiratory Protection Program.

Since all employees participate in the respiratory protection program, voluntary use of respirators in situations where respirators are not required is allowed and medical evaluation and training extends to include these situations as well.

Employees are required to participate in the respiratory protection program, so they do so at no cost to them. All training, medical evaluation, and respiratory protection equipment is paid for by the Green Institute and Deconstruction Services.

Participant Responsibilities
Program Administrator:
The Respiratory Protection Program Administrator is responsible for the administration, evaluation, and upkeep of the entire program. Deconstruction Services appoints the acting safety officer as the program administrator. Currently, these duties apply to
_____.

They include:
- Evaluating work site hazards and determine respirator requirements
- Selecting appropriate respiratory protection equipment for the company and for the worksite
- Investigating and evaluating any new hazards that may have respiratory health concerns and making recommendations about protection needs
- Providing appropriate information for the health care professional identified below and administering the medical surveillance program
- Conducting fit testing

- Maintaining cleaning supplies and the cleaning area
- Maintaining respirator stock (including ordering, storage and disposal)
- Providing and/or arranging training programs
- Conducting annual program evaluations and completing program updates as needed
- Maintaining current copy of written program as well as training, fit test, and medical records

Crew leaders:
In addition to being knowledgeable about the program requirements for their own protection, crew leaders also need to ensure that the program is understood and followed by their crewmembers. In order to do so, they must:

- Be aware of conditions and tasks that require respirator use
- Enforce respirator use when necessary
- Ensure compliance with the program regarding cleaning, storage and inspection
- Consult with the program administrator regarding concerns about the program

Employees:
Each employee has the responsibility to wear his or her respirator on work sites that require the use of respiratory protection. They must also:

- Clean and maintain their respirator and store it properly
- Carry their respirator to all work sites
- Use their respirator when required in accordance with their training
- Report any problems with respirators or the program to crew leader and/or the program administrator

Respirator Selection
Exposure monitoring for lead during high-risk activities has warranted the use of respirators on work sites determined to have lead present in paint and/or dust or largely dusty environments. A standard issue respirator, the MSA ComfoClassic half-facepiece air-purifying respirator (APR) with P100 particulate cartridge (part No. 814922) has been selected based on this hazard assessment. This respirator is designed to protect the employee against lead, lead in dust, and other nuisance dusts on the work site. The respirator is equipped with high efficiency particulate air (HEPA) filters, which protect the employee from 99.97% of all particulate aerosols. Both the respirator and the cartridge are approved by the National Institute for Occupational Safety and Health (NIOSH).

Upon hire and following training, every Deconstruction Services employee is issued this standard respirator for their personal use. In the event that this respirator does not fit the employee properly, the safety supply company specially fits them with an appropriate respirator model.

One full-face piece respirator is available to selected and trained employees for use in hazardous working environments. The required use of this respirator is determined on a situational basis.

In addition, filtering facepiece respirators, or dust masks, are available upon the program administrator's approval for use in environments that do not require the use of the half-face respirator but may still be uncomfortable. The NIOSH approved dust masks are 3M model 8210, which have a N95 protection rating. This means that they provide at least 95% filtration efficiency against solid and liquid aerosols that do not contain oil.

Deconstruction is a dynamic field. Any time new potential for hazardous work site conditions arises, the program administrator will evaluate the hazard (seeking help as needed) and report the results. If respiratory protection is needed, the type of hazard and work activity will be added to the respiratory protection program.

TABLE 1: Types and use of respirators at Deconstruction Services

Respirator	Processes used for
Filtering facepiece or dust mask (3M model 8210)	By crew leader recommendation in dusty situations such as handling insulation, sweeping, deconing sheetrock, cutting treated lumber.
Half facepiece air-purifying respirator with HEPA cartridges. (MSA ComfoClassic with part no. 814922)	Required for lead paint, mold and animal waste sites. Also used for sampling potential asbestos containing material by certified asbestos inspector.
Full facepiece air-purifying respirator	For use in small areas with concentrated hazards (i.e. attics with blown in insulation)

Medical Evaluation

Respirator use causes increased medical burden, so Deconstruction Services employees are required to undergo a medical evaluation to ensure their ability to use a respirator. Employees who refuse this medical evaluation or who are medically unable to use respirators are not allowed to work on work sites that require respirator use.

_____ or another licensed health care professional at _____ conducts medical evaluations. The procedure is as follows:

- Employees fill out the confidential questionnaire found in Appendix C of the OSHA respiratory standard on company time. A stamped envelope is provided to the employee for mailing the form to the clinic. The questionnaires are kept with this respiratory protection program.
- Employees requiring assistance receive help reading/understanding the questionnaire or are sent directly to the physician for medical evaluation.
- Follow-up exams are granted to employees who are referred by the evaluating physician upon review of the questionnaire.
- Further medical evaluations are granted if the employee experiences signs and/or symptoms related to his or her ability to use a respirator or the physician requests a reevaluation.

The content of the medical evaluations is confidential and employees have the opportunity to speak with clinic personnel about their personal results. Deconstruction Services provides the clinic with a copy of the respiratory protection program and the OSHA standard along with any other relevant information about workplace conditions (i.e. temperature extremes, other PPE, types of respirators). The clinic provides Deconstruction Services with a written recommendation about the ability of each employee to use a respirator.

In the event that an employee requires a positive pressure respirator, the use of a powered air-purifying respirator can be researched and considered.

Fit Testing

Fit testing is required for all employees upon issuance of the APR and annually thereafter. The test is performed while the employee is wearing his or her issued respirator. It may also be necessary to perform fit tests if there are changes in an employee's physical condition such as weight loss or gain, dental work, scarring, or cosmetic changes.

The program administrator will conduct qualitative fit testing (QLFT) following the Saccharin Solution Aerosol or the Irritant Smoke protocol in Appendix A of the respiratory protection standard.

Respirator Use

Respiratory protection is required for all employees working at sites determined to have significant lead (by lead test swab) and/or dust (by visual inspection) hazard. Deconstruction activities vary widely. The table below is designed to be updated frequently and includes some common worksite activities that require respirator use. Respirator use is not limited to activities outlined in Table 2. The program administrator or crew leader may require use on a situational basis.

- Use of the MSA ComfoClassic is required in areas described above and in the table below. Employees are expected to use the respirators in accordance with training and are to wear them for the duration of the time they spend in the required areas.
- Employees are to conduct seal checks in accordance with the training each time they wear the respirator. The seal cannot be broken while the employee is in an area requiring respirator use. The procedure for the seal check is found in Appendix B of this program.
- Employees are allowed to leave respirator-required areas to conduct respirator maintenance as needed. Crew leaders need to be made aware of these situations.
- Facial hair and beards that interfere with the respirator face piece seal are prohibited. In addition, the employee should also ensure that the use of other forms of PPE (i.e. safety glasses) does not interfere with the seal.
- In the event the seal is broken, both the respirator and the face of the employee should be washed thoroughly and the source of failure fixed before using the respirator again.

Deconstruction Services employees will never be in Immediately Dangerous to Life and Health (IDLH) environments.

TABLE 2: Respirator use for deconstruction activities

Deconstruction Activity	**Full facepiece respirator**	**Half facepiece respirator**	**Filtering facepiece (dust masks)**
Attic with blown in insulation	X	X	
Kicking down ceilings from within attic with blown in insulation	X	X	
Handling rolled insulation		X	X
Deconning plaster walls		X	X
Deconning sheetrock walls			X
Removing trim or other misc. materials containing lead paint		X	
Working in areas with mold contamination		X	
Working in areas contaminated with animal feces		X	
Dusty situations (i.e. pulling down soffit from older houses)			X
Cutting green treated lumber		X	
Sweeping/shoveling debris (i.e. plaster, insulation, wood dust)		X	X
Sampling potential ACM		X	

Cleaning, Storage, Maintenance, and Change Schedules

Cleaning

- The APRs issued to each employee are cleaned as often as necessary to keep them dust free and comfortable. A coordinated cleaning effort occurs monthly. Wipes are provided and it is recommended that employees clean their respirators after each use.
- The full-facepiece respirator is cleaned before use by any employee.
- The following procedure is used for cleaning and disinfection:
  - Disassemble respirator (remove cartridges)
  - Wash the face piece and it's parts in warm water and mild detergent
  - Rinse completely in warm water
  - Wipe with disinfectant (70% isopropyl alcohol wipes)
  - Air dry in clean area
  - Reassemble
  - The program administrator maintains cleaning supplies and cleaning area.

Storage

Deconstruction Services' surplus supplies of respirators are stored in their original packaging at the main offices located in the ReUse Center.

Employees store their own respirators in sealed plastic bags and carry them with them to and from work sites. Each plastic bag is marked so that its owner can identify it. All respirators are kept clean and dry between each use.

Inspection and Maintenance

Diligent inspection and maintenance ensures that respirators are doing an adequate job of protecting employees. Respirators are inspected monthly during a coordinated effort. The following checklist is used to ensure thorough inspections:

Facepiece

- Are there cracks, tears or holes?
- Is the rubber pliable, is it distorted?
- Are the lenses/shields intact?

Head straps

- Are they broken or tearing?
- Are the buckles intact?

Valves

- Are they free of dirt and residue?
- Are they free of cracks and tears?

Cartridges

- Is the colored label intact and readable?
- Is the cartridge dented or damaged?

Employees can perform this inspection during work shifts if necessary as long as they leave the respirator requiring area. In the event that an employee finds a defect in his or her respirator, the program administrator is consulted and he or she determines whether to repair or replace all or

part of the respirator. He or she is responsible for disposing of old respirators and ensuring that they are not misused in the interim (i.e. do not leave broken respirators sitting out on a desk).

Change Schedules
The only cartridge used by Deconstruction Services employees is the P100 for protection against dust and other particulate. These cartridges are replaced when the employee first begins to experience difficulty breathing (resistance) while wearing the respirator.

Training
Training on respirator use, maintenance and standards is provided or arranged by the program administrator. This training occurs upon entrance into the respiratory protection program and annually thereafter. It includes face to face communication of the following information:

- The Deconstruction Services Respiratory Protection Program
- The OSHA Respiratory Protection Standard
- The nature and health effects of lead and dust, as well as any other identified respiratory hazards
- Guidelines for the use of respirators, including inspection procedures
- Respirator limitations and capabilities
- Instruction on putting on, wearing, and seal checking the APRs
- Fit tests
- Maintenance and storage of the APRs
- Medical aspects of respirator use

Employees demonstrate their knowledge of these concepts through demonstration and practice of their acquired skills. Documentation of this training is kept for each employee including type of respirator.

Program Evaluation
The program administrator conducts evaluations of the program to ensure that is implemented and effective. This includes observing and talking with employees about all aspects of the program, noting problems and making corrections and updates to the program.

Recordkeeping
The program administrator maintains a current copy of all parts of the Respiratory Protection Program. He or she also maintains training records, fit test record and medical evaluation recommendations making sure that updates are made promptly. Records will be on file in the Deconstruction Services offices for 30 years. Documentation forms for training and fit testing are found in Appendix C of this program.

Appendix A: Fit Test Procedure

A. Fit Testing Procedures--General Requirements

The employer shall conduct fit testing using the following procedures. The requirements in this appendix apply to all OSHA- accepted fit test methods, both QLFT and QNFT.

1. The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.

2. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, because it is only a review.

3. The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.

4. The test subject shall be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit.

5. The more acceptable facepieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in the following item A.6. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.

6. Assessment of comfort shall include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:

(a) Position of the mask on the nose

(b) Room for eye protection

(c) Room to talk

(d) Position of mask on face and cheeks

7. The following criteria shall be used to help determine the adequacy of the respirator fit:

(a) Chin properly placed;

(b) Adequate strap tension, not overly tightened;

(c) Fit across nose bridge;

(d) Respirator of proper size to span distance from nose to chin;

(e) Tendency of respirator to slip;

(f) Self-observation in mirror to evaluate fit and respirator position.

8. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks described in Appendix B-1 of this section or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in Appendix B- 1. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and retested if the test subject fails the user seal check tests.

9. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.

10. If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.

11. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.

12. Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.

13. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit.

14. Test Exercises. (a) The following test exercises are to be performed for all fit testing methods prescribed in this appendix, except for the CNP method. A separate fit testing exercise regimen is contained in the CNP protocol. The test subject shall perform exercises, in the test environment, in the following manner:

(1) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.

(2) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.

(3) Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.

(4) Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).

(5) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.

Rainbow Passage

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

(6) Grimace. The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT)

(7) Bending over. The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.

(8) Normal breathing. Same as exercise (1).

(b) Each test exercise shall be performed for one minute except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

B. Qualitative Fit Test (QLFT) Protocols

1. General

(a) The employer shall ensure that persons administering QLFT are able to prepare test solutions, calibrate equipment and perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order.

(b) The employer shall ensure that QLFT equipment is kept clean and well maintained so as to operate within the parameters for which it was designed.

5. Irritant Smoke (Stannic Chloride) Protocol

This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

(a) General Requirements and Precautions

(1) The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).

(2) Only stannic chloride smoke tubes shall be used for this protocol.

(3) No form of test enclosure or hood for the test subject shall be used.

(4) The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor shall take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject.

(5) The fit test shall be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the build-up of irritant smoke in the general atmosphere.

(b) Sensitivity Screening Check

The person to be tested must demonstrate his or her ability to detect a weak concentration of the irritant smoke.

(1) The test operator shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb. The test operator shall cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.

(2) The test operator shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his/her eyes closed while the test is performed.

(3) The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine if he/she can detect the irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he/she can detect it.

(c) Irritant Smoke Fit Test Procedure

(1) The person being fit tested shall don the respirator without assistance, and perform the required user seal check(s).

(2) The test subject shall be instructed to keep his/her eyes closed.

(3) The test operator shall direct the stream of irritant smoke from the smoke tube toward the faceseal area of the test subject, using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the facepiece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within six inches of the respirator.

(4) If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.

(5) The exercises identified in section I.A. 14. of this appendix shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator at a distance of six inches.

(6) If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being retested must repeat the entire sensitivity check and fit test procedure.

(7) Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a second sensitivity screening check, with the smoke from the same smoke tube used during the fit test, once the respirator has been removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.

(8) If a response is produced during this second sensitivity check, then the fit test is passed

2. Saccharin Solution Aerosol Protocol

The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Taste threshold screening. The saccharin taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of saccharin.

(1) During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movements of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.

(2) The test enclosure shall have a 3/4-inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(3) The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his/her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a sweet taste.

(4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. The nozzle is directed away from the nose and mouth of the person. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(5) The threshold check solution is prepared by dissolving 0.83 gram of sodium saccharin USP in 100 ml of warm water. It can be prepared by putting 1 ml of the fit test solution (see (b)(5) below) in 100 ml of distilled water.

(6) To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully expand.

(7) Ten squeezes are repeated rapidly and then the test subject is asked whether the saccharin can be tasted. If the test subject reports tasting the sweet taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

(8) If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

(9) If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

(10) The test conductor will take note of the number of squeezes required to solicit a taste response.

(11) If the saccharin is not tasted after 30 squeezes (step 10), the test subject is unable to taste saccharin and may not perform the saccharin fit test.

Note to paragraph 3. (a): If the test subject eats or drinks something sweet before the screening test, he/she may be unable to taste the weak saccharin solution.

(12) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(13) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

(14) The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least each morning and afternoon or at least every four hours.

(b) Saccharin solution aerosol fit test procedure.

(1) The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

(2) The fit test uses the same enclosure described in 3. (a) above.

(3) The test subject shall don the enclosure while wearing the respirator selected in section I. A. of this appendix. The respirator shall be properly adjusted and equipped with a particulate filter(s).

(4) A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(5) The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 ml of warm water.

(6) As before, the test subject shall breathe through the slightly open mouth with tongue extended, and report if he/she tastes the sweet taste of saccharin.

(7) The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of saccharin fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test. A minimum of 10 squeezes is required.

(8) After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.

(9) Every 30 seconds the aerosol concentration shall be replenished using one half the original number of squeezes used initially (e.g., 5, 10 or 15).

(10) The test subject shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected. If the test subject does not report tasting the saccharin, the test is passed.

(11) If the taste of saccharin is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

(12) Since the nebulizer has a tendency to clog during use, the test operator must make periodic checks of the nebulizer to ensure that it is not clogged. If clogging is found at the end of the test session, the test is invalid.

Appendix B: Seal Check Procedure

The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. Either the positive and negative pressure checks listed in this appendix, or the respirator manufacturer's recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

I. Facepiece Positive and/or Negative Pressure Checks

A. Positive pressure check. Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

B. Negative pressure check. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

II. Manufacturer's Recommended User Seal Check Procedures

The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.

Appendix C: Documentation Form

Respiratory Protection Program

Training, Fit Testing and Medical Evaluation Documentation

_____ _____

employee name date of hire

Training

Enter date training was conducted on the line provided.

_____ Deconstruction Services Respiratory Protection Program
_____ OSHA Respiratory Protection Standard
_____ Health Effects of the possible respiratory hazards (lead, dust)
_____ Respirator use, cleaning, inspection, maintenance, and storage
_____ Respirator limitations and capabilities
_____ Putting on, wearing, and seal checking the respirator
_____ Fit Test procedure
_____ Medical aspects of respirator use

Fit Test

Respirator: make_____ Date_____
model_____
style_____
size_____

Medical Evaluation

The employee indicated above has been determined able to use the respirator specified above by _____. See attached approval.

If no, explain:

_____
_____
_____

Signatures

Signing below indicates that the employee has received and understood the training and fit testing required by the Respiratory Protection Program.

_____ _____

employee signature date

_____ _____

safety officer signature date

Annual Respiratory Protection Program Training Sign In

_____

Date

_____	_____
_____	_____
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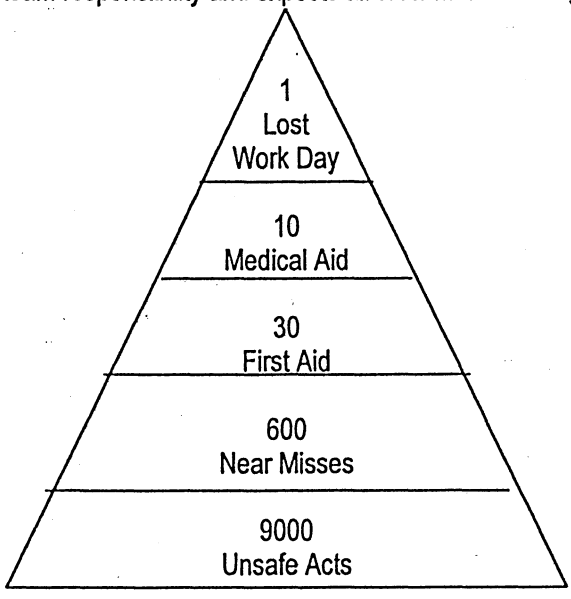
_____	_____
_____	_____

Appendix C

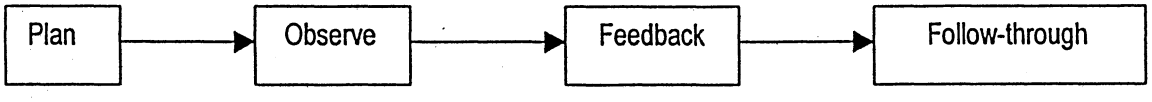
Deconstruction Services
Safety Walkthrough Program

Nothing we do at Deconstruction Services is worth getting hurt. Every injury is preventable. Deconstruction Services recognizes the prevention of injuries on the job site as a team responsibility and expects all crew members to gain experience in recognizing and evaluating safety hazards.



The goal of the Safety Walkthrough Program is to identify job site hazards and minimize the number of unsafe acts occurring. By targeting the problem at the base of the pyramid, we are more likely to prevent the occurrence of recordable injury.

A successful safety walkthrough follows these four steps:



All members of the Deconstruction Crew participate in the safety walkthrough. Responsibilities of crewmembers include:

Crew Leader:

- Select a crewmember or leader to be responsible for the safety walkthroughs each month.
- Maintain a supply of walkthrough report forms.

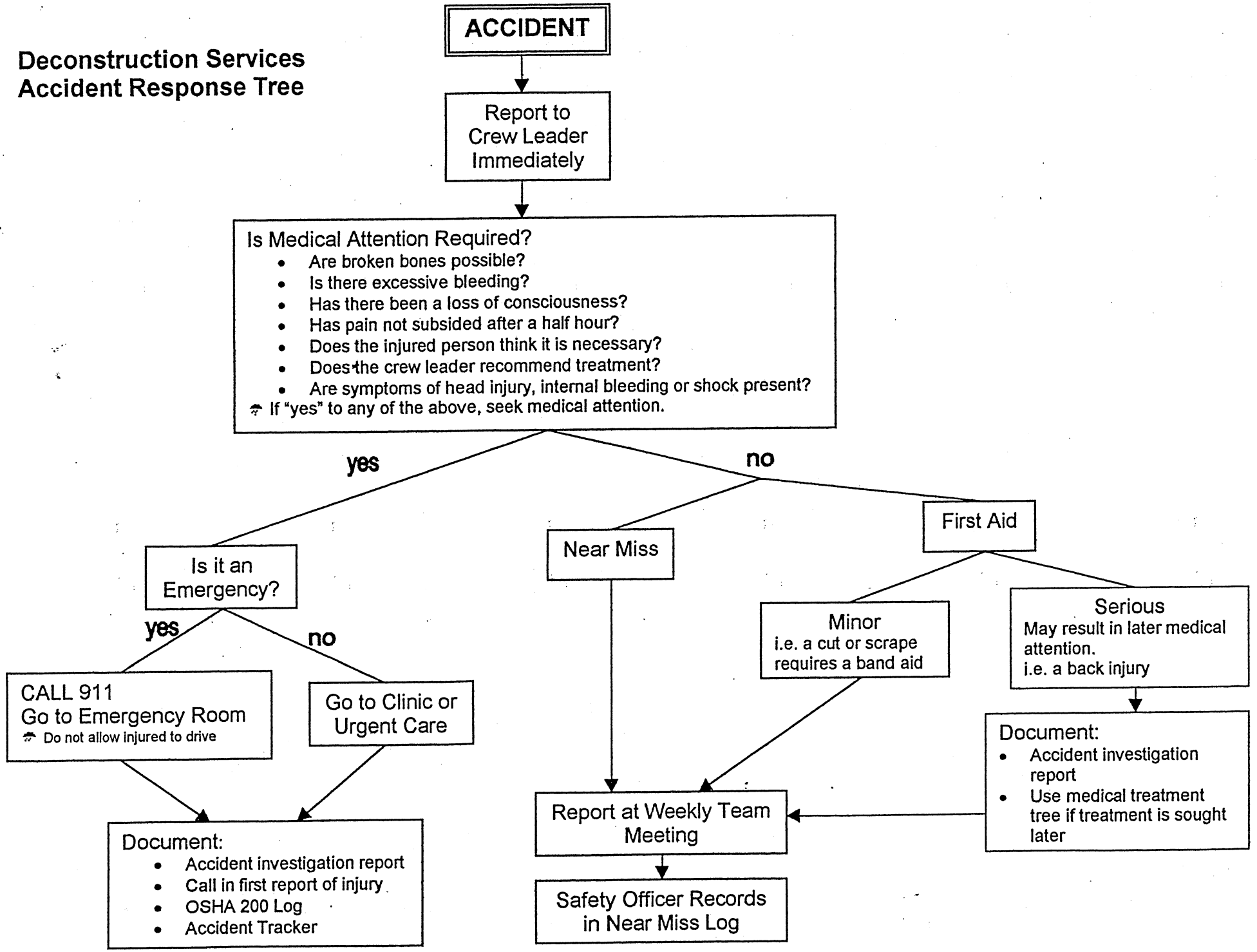
Crew Member Selected for Walkthrough Duty:

- Initiate and perform the safety walkthrough once a week during his/her assigned month.
- **PLAN** – Organize a logical approach for the walkthrough that is site specific.
- **OBSERVE** – Recognize and record on the walkthrough report form all safety problems present on the job site.
- **FEEDBACK** – Facilitate a group walkthrough, pointing out problems and brainstorming solutions. Add any newly recognized problems to the list.
- **FOLLOW-THROUGH** – Assign or ask for volunteers to carry out the solutions determined during the walkthrough and ensure that they are checked off on the form as they are completed.
- Have all crewmembers sign the completed form.
- Submit walkthrough report to safety officer at the end of each week.

Participating Crew Member:

- Participate in the review of the walkthrough report.
- Contribute newly recognized problems and ideas for solutions.
- Volunteer to and follow-through on carrying out solutions to the problems.
- Sign the completed safety walkthrough report.

Deconstruction Services
Accident Response Tree



The Green Institute
Deconstruction Services

Accident Investigation Report

The aim of this report is to identify causes of jobsite accidents to aid in the prevention of future incidents. This report is to be thoroughly filled out by the crew leader within 24 hours of any accident resulting in first aid which may require later medical treatment and/or medical treatment. Upon its completion, the safety officer should file it.

Employee Information

Name_____
Job Title_____
Length of service in job_____Number of previous accidents_____

Accident Information

Date of incident_____ Date notified_____ Time of incident_____
Describe the injury (including body part):

Select type of injury:
- ☐ Medical Treatment
- ☐ First aid
- ☐ Other_____

Address of site where accident occurred:
_____
_____

Working: **Alone** or **With Crew**

Direct supervision: **Yes** or **No**

Describe in detail the accident and the events leading up to it (include names and comments of witnesses):

Identify accident causes:

Unsafe acts:

Unsafe conditions:

Identify corrective actions (outline prevention actions that have been or will be taken):

Signatures

Those signed below have read and understand the information included in this report.

_____
Crew Leader Date

_____
Safety Officer Date

Work Plan for Winter Quarter 1999 RA -- Diana Wolf

Hours	Activity	Description	Follow-up
30	Background reading and research		This probably took more like 40 hours
	Lead/Dust Testing		This took the majority of my time
2	Review OSHA Regulations	review Anne's information, review the OSHA documents, investigate nuisance dust regulations	
20	Define testing scenarios	talk over what we want to find and where, explore upcoming jobs for testing opportunities, (this may include reuse center as Fay suggested)	
20	Air and Wipe sampling	acquire necessary equipment, personal air samples over workshifts on representative employees, do wipe sampling to accompany air samples, analyze for both lead and total dust at lab	Opportunity for this did not arise. This procedure was replaced with a job task observation data collection task
8	Summarize and report	create a list of recommendations and standard operating procedures for lead and nuisance dust in Decon workplace and present as written report (Plan B)	
?	Follow up if possible	implement recommendations and do some follow up sampling if time allows	Time and opportunity did not allow for this
	Standard Operating Procedures		This took more time than was expected but was a very useful learning experience
1	Generate list	create a list of what is needed based on existing documents, Bob/Julie/Anne recommendations	
	Respiratory Protection Program		
20	Background reading and research	review OSHA regulation and guidelines for small business	WOW--lots of info
40	Development of program	create a respiratory protection program for decon following OSHA guidelines and taking relevant hazards into account	This is a huge endeavor and involved a significant amount of time and research.
40	Other priority documents	create SOP's based on agreed upon priority as time allows	Worked on accident investigation, response, and tracking of rates. Lead SOP was written. Safety walkthrough program was created.
	Training		Began to address this before the end of my appointment
5	Definitions	extend Anne's guidelines for what is needed for: existing employees, new hires, annual refreshers	
40	Development of priority programs	create written training programs based on SOP's and priority	Lead training program was written and Respiratory training is included in the program.
10	Implementing and testing	try training programs during staff meetings and make adjustments if possible	Time did not allow
	Accident Occurrence Update		Spent extra time here to get a tracking and calculation spreadsheet in working order
1	Update Spreadsheet	gather new data and enter in existing spreadsheet, rerun calculations	
1	Evaluation	draw conclusions about accident rates and make recommendations	
20	**Final Report Writing**	create a document for CURA and DeConstruction that is useful from both a research and practical standpoint	Yeah! A successful project!