

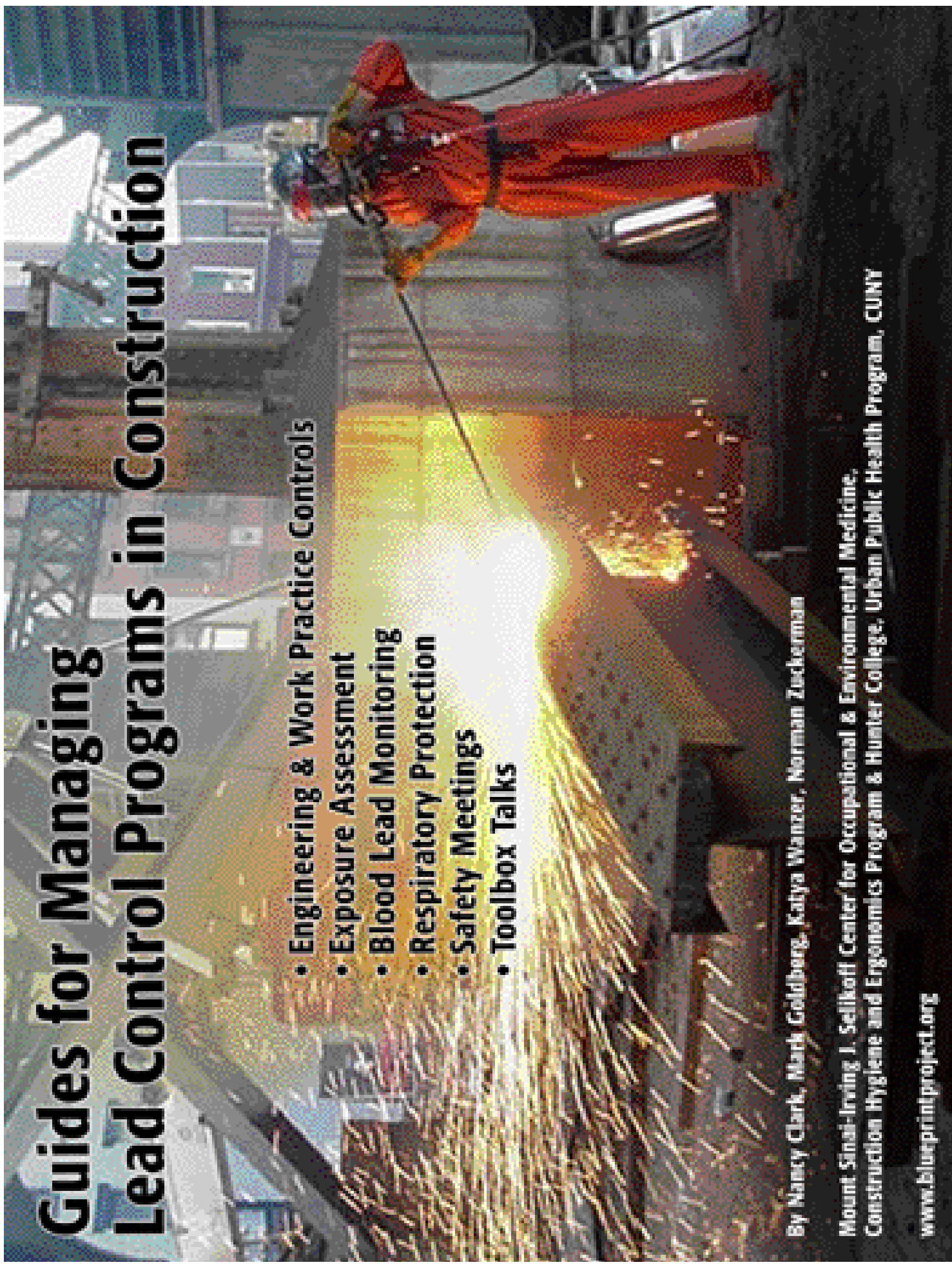
Guides for Managing Lead Control Programs in Construction

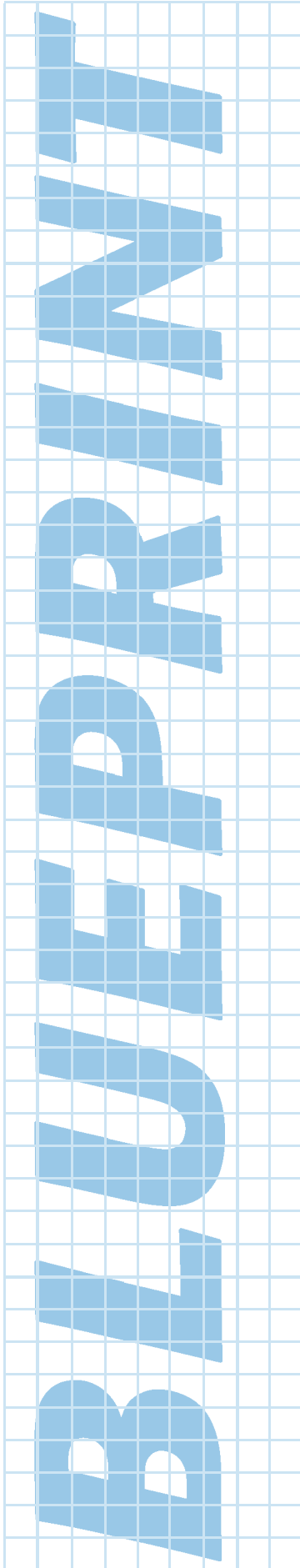
- Engineering & Work Practice Controls
- Exposure Assessment
- Blood Lead Monitoring
- Respiratory Protection
- Safety Meetings
- Toolbox Talks

By Nancy Clark, Mark Goldberg, Katya Wanzer, Norman Zuckerman

Mount Sinai-Irving J. Selikoff Center for Occupational & Environmental Medicine,
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www.blueprintproject.org





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Introduction

Guides for Managing Lead Control Programs in Construction

The Blueprint Guides are designed to aid construction managers in planning, implementing and integrating health hazard control programs for lead into the day-to-day operations of infrastructure rehabilitation projects. They are designed with the following principles in mind:

- Reliance on occupational health best practices
- Incorporation of health hazard control into the project from beginning to end
- Compatibility with current OSHA standards and owner specifications
- Integration of training and experience of labor into managing controls

This binder contains a series of individual “how-to” guides for managing major elements of lead control programs, e.g. respirators, exposure assessment. Each individual guide begins with step-by-step instructions and explanatory notes on planning, implementing and evaluating key program components, followed by sections containing checklists, sample forms, and useful topical information.

How to use the guides

Interdependence of the guides

Each guide is arranged in a logical fashion that follows the sequencing of events at a “typical” infrastructure rehabilitation site. At the same time, activities in one guide often depend upon the completion of tasks outlined in another guide and therefore refer the user to specific sections of other guides whenever necessary or helpful. For instance, selecting the correct respirators, described in the guide on managing a respiratory protection program, depends upon results of exposure assessment, described in the guide for managing that activity.

Using the guides

Every attempt is made to explain terms that might be unfamiliar to the user. Step-by-step instructions are accompanied by hints and suggestions on how to proceed through the sometimes seemingly complex requirements of health hazard control. The checklists and sample forms can be copied and used as is, or they can be modified to fit site-specific conditions.

Assignment of personnel

It is suggested that a manager be appointed to oversee the program activities described in each guide, e.g. lead program manager, respirator program manager. The idea is not to create an abundance of program managers, but to emphasize a fundamental principle of program management: someone must be in charge of daily program activities and be accountable for the program’s

implementation. It is up to the company to select the individual or individuals according to company policies; indeed one person may wear all the hats. Of course, a person who manages one or all aspects of a lead program must be knowledgeable about lead hazards and have decision-making authority within the management structure at the site.

What the guides are not

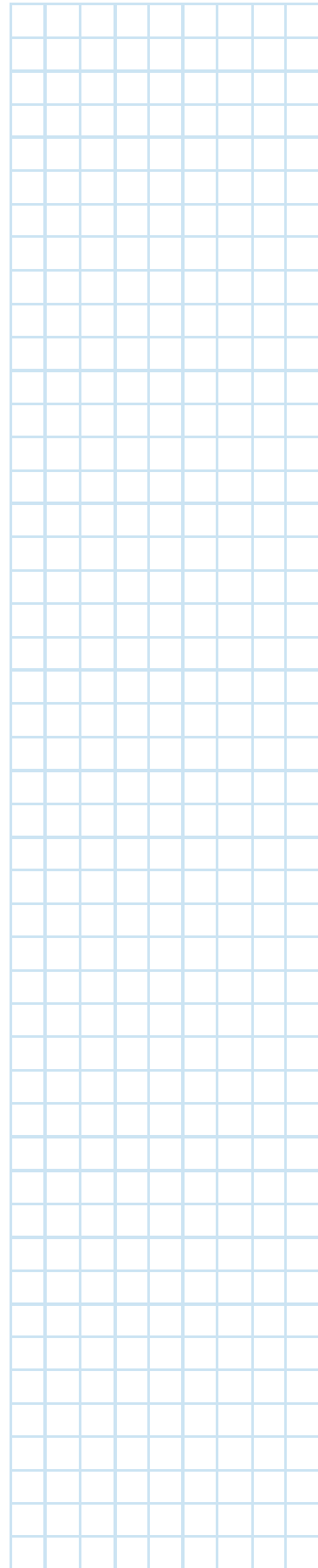
The guides are not a substitute for understanding and implementing the OSHA Lead Exposure in Construction standard. In short, the guides do not include all components of a lead program or cover all OSHA requirements. We have focused on those components of hazard control that we think offer the greatest challenge to construction managers: exposure assessment, respiratory protection, engineering and work practice controls, blood lead monitoring, safety meetings, & toolbox talks. While these are crucial to protecting workers and complying with OSHA, there are additional, important requirements not addressed in the guides. For instance, although worker training is a key element of implementing many of the requirements of the OSHA standard and is mentioned in several of the guides, there is no specific guide on worker training. Similarly, while there is a guide for managing control programs, there is none for writing a compliance program. In the future, such guides might be produced if users express an interest or need.

The guides are not a program. They include pointers on how to plan and implement health hazard control programs, but do not substitute for a program. It is also important to note that the guides are not training curricula, although they can be used in conjunction with training. As stated above, companies need to refer to OSHA standards and compliance directives for a comprehensive list of requirements.

Use of the guides is no guarantee that a health hazard control program will be managed effectively. That depends much more upon the commitment to health and safety of the company from top management down. Effective management is a reflection of the training of the individual selected to manage the program, and their ability to successfully implement the program at the site.

In Summary

The guides represent the distillation of practical experience of many individuals, organizations and companies. They have been reviewed and revised a number of times. Nonetheless, this is an ongoing process. Because construction companies and sites are so varied, it is difficult, if not impossible, to reflect the needs of every construction manager and worker in one document, or to provide definitive advice on how to manage health hazard controls. We expect that the guides will be adapted to company management structures and that the reader or user will offer comments and any ideas on how the guides can be improved. While focused on infrastructure projects, we believe the guides can be easily adapted to other construction environments and to other hazards.





Questions or comments?

Please contact us at the Construction Hygiene and Ergonomic Program 212-241-7573, or via email at contactus@blueprintproject.org

Guide for Managing Engineering & Work Practice Controls for Lead

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Overview

Why institute an engineering and work practice control program?

- Worker exposure can be reduced or eliminated by:
 - engineering controls, such as a process change (e.g. mechanical dismantling of steel structures instead of torch cutting or using tools fitted with a vacuum attachment).
 - work practice controls (e.g. removing paint before using an oxyacetylene torch).
 - a combination of engineering and work practice controls.
- The OSHA Lead in Construction Standard requires that:
 - contractors use engineering and work practice controls to reduce exposure to the lowest practical level.
 - all lead disturbing tasks and selected controls are documented in a written compliance program.
- Owners may require a lead control program be included in project submittal documents.

Overview of the Tasks

1. Planning

- a) Select a Lead Program Manager
- b) Identify lead disturbing tasks
- c) Select control methods
- d) Develop a lead compliance program

2. Writing a site specific program

3. Implementing

- a) Managing the control plan
- b) Making the control plan work

4. Evaluating

- a) Assess effectiveness of controls

– This Guide will elaborate on these tasks –



Engineering and Work Practice Control Project Timetable



Owner issues bid documents with specifications for worker protection from lead.



Bid awarded; contract includes provisions for lead control plan. Contractor develops initial compliance program.



Project starts. Interim controls in place; contractor develops site-specific lead health & safety program; engineering and work practice controls in place.



Owner and contractor Lead Program Manager (LPM) review blood lead and air monitoring results. Lead Competent Person makes frequent and regular site inspections.



Contractor assesses effectiveness of controls and tries other strategies if necessary. Updates compliance program.



Project complete. LPM reviews effectiveness of controls. Owner modifies specifications for future projects, if necessary.

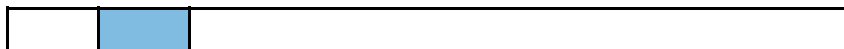


Planning

Planning the engineering and work practice control program is part and parcel of project planning. A timeline for the planning stage looks something like this:



Owner issues bid documents with specifications for worker protection from lead.



Bid awarded; contract includes provisions for lead control plan. Contractor develops initial OSHA compliance program.

Who is responsible for planning

- Can be any of the following:
 - Project planners
 - Managers
 - Company health and safety officer
 - Lead Program Manager (LPM)
 - Lead Competent Person
 - Union superintendent

What plans need to be made

- Assign a LPM/competent person to organize and run the program (usually assigned by central office or project manager)
- Identify lead disturbing tasks
- Select one or several control options for each task. See the Lead Control Selection Chart below
 - On most rehabilitation projects a combination of controls may be necessary. For instance, abrasive blasting might be used for paint removal in areas where mechanical removal is not effective.
 - When selecting controls consider site-specific factors and schedules. For instance: chemical strippers must be left to work for a specified amount of time before they are removed; some chemical strippers may not be effective in cold weather.
- Prepare a Compliance Program

SECTION

1

Instituting an engineering and work practice control program goes to the heart of how the work is done. Such a program must be integrated into day-to-day operations. For instance, if paint is to be removed from beams before they are torch cut, paint removal must be scheduled before torch cutting and be reflected in the project timeline.

The OSHA Lead Standard requires that a “competent person” make frequent and regular inspections of job sites, materials, and equipment. It makes sense that the LPM is the competent person.

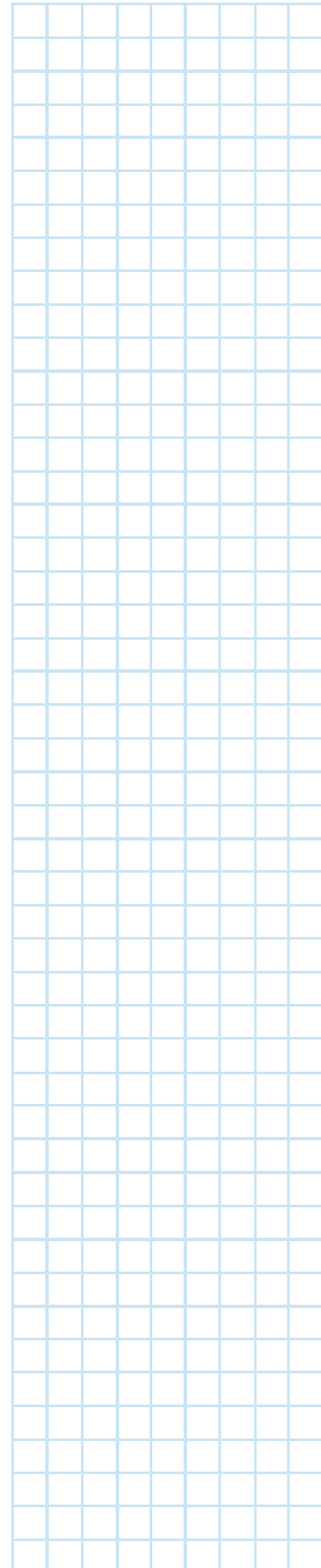
OSHA defines a lead competent person as an individual that can identify lead hazards in the work place and has the authority to take corrective action.

When to plan

- Selection of lead controls should be included in project design phase
- OSHA requires that the compliance program be in place before lead disturbing activities begin

Lead Controls Selection Chart

Task	Control Options
Torch Cutting	<ul style="list-style-type: none">• Remove paint before torch cutting• Substitute mechanical disassembling when feasible• Use hydraulic/pneumatic shears or chop saw when applicable• Distancing
Rivet Busting	<ul style="list-style-type: none">• Remove paint before rivet busting• Encapsulate paint• Clean surfaces and surrounding areas with HEPA vacuums
Surface Preparation	<ul style="list-style-type: none">• Remove paint• Use vacuum shrouded tools• Clean surfaces and surrounding areas with HEPA vacuums
Installation Activities	<ul style="list-style-type: none">• Clean surfaces and surrounding areas with HEPA vacuum• Remove paint before using pneumatic tools which may spread the dust• Use vacuum shrouded tools



Writing a Site Specific Compliance Program

The compliance program describes the engineering and work practice controls used at the site and includes records of compliance activities. The written program should include:

- **Introduction:** Project description, scope and schedule of work, location.
- **Personnel:** Project Manager, Lead Program Manager and/or Lead Competent Person, industrial hygienist.
- **Lead-emitting activities:** Describe tasks, equipment, materials used, work crew.
- **Engineering and work practice controls:** Describe type of control, equipment, use and maintenance procedures. Include rationale for selecting each control and alternative technologies considered.
- **Personal air monitoring results:** Provide industrial hygiene reports and air sampling results for lead disturbing activities. Refer to the Guide for Managing Exposure Assessment
- **Schedule:** Provide timetable for implementing compliance program.
- **Interim controls:** Describe respiratory protection and other controls that will be used for each task. Refer to the Guide for Managing Respiratory Protection
- **Hygiene procedures:** Describe protective clothing and equipment, housekeeping, clean areas, showers, and hand washing stations.
- **Worker rotation schedule:** (if applicable).
- **Notification procedures:** Informing other employers on site regarding potential exposure risks.

Attach the following programs and records:

- **Respirator Program:** Provide written program and identify program administrator, include respirator selected for each task, records for training, fit testing, and medical clearance.
- **Training & Information:** Training schedule, topics and records.
- **Medical Surveillance Program:** Include blood lead monitoring schedule and results.
- **Medical Removal Procedures:** Include lead-free work assignments, medical evaluations and return to work criteria.

SECTION

2

Information on controls is available from a variety of sources - see the Resources List

The written Compliance Program must be revised and updated periodically to reflect the current status of the program

Implementing

Managing the Control Plan

Each of the activities listed below requires periodic inspection of controls and site tours by the LPM. A timeline for control implementation looks something like this:



Project starts. Interim controls in place; contractor develops site-specific lead health & safety program; engineering and work practice controls in place.



Owner and contractor LPM review blood lead and air monitoring results. Lead competent person makes frequent and periodic site inspections.

Making the control plan work:

- Check that control equipment and supplies are on site before lead disturbing tasks begin.
- Train workers and supervisors on how to use control equipment.
- Check that tasks such as paint removal have been performed on schedule and properly.
- Inspect site frequently to ensure that controls are:
 - present at the location where the tasks will be conducted on any given day
 - in operating order
 - being used when they should be
 - being used properly (provide for additional training if necessary)
 - effective (that is controlling dust emissions)

Section 5 contains brief descriptions of commonly used controls for steel-structure rehabilitation.

Section 6 contains Checklists that can be used by the LPM or Lead Competent Person when conducting daily inspections of the site, as required by OSHA.

SECTION 3

Selecting a control is the first step in protecting workers from lead - making it work is the second. A control program must be closely managed to be effective. For each control selected, the LPM should consider exposure factors, work procedures and should evaluate the effectiveness of the control. Weekly toolbox talks are a good time to review the use of new tools or controls.

Caution: Lead disturbing activities in an enclosed or confined space may greatly increase exposure.

Evaluating

Evaluating the control program is an ongoing activity as shown in the time line below.



Contractor assesses effectiveness of controls and tries other strategies if necessary. Updates compliance program.



Project complete. LPM reviews effectiveness of controls. Owner modifies specifications for future projects, if necessary.

There are 3 ways to evaluate whether the control program is working:

- Site inspections of the controls – use Checklists in Section 6
- Monitoring worker exposure to airborne lead dust or fume while a control is being used (see Guide for Managing Exposure Assessment).
- Blood lead monitoring (see Guide for Managing Blood Lead Monitoring).

If the evaluation indicates a potential problem with a control check these possibilities:

- Control is not appropriate for the job. Seek an alternate control.
- Control is not functioning properly.
- Workers are not using control properly.

Upon completion of the project, it is advisable to prepare a final effectiveness report for future projects.

Infosheets

Commonly Used Controls

Distancing

Alternative Demolition Options

Paint Removal: Chemical Stripping

Paint Removal: Power Tools

Encapsulation

HEPA Vacuum

SECTION

5

Distancing

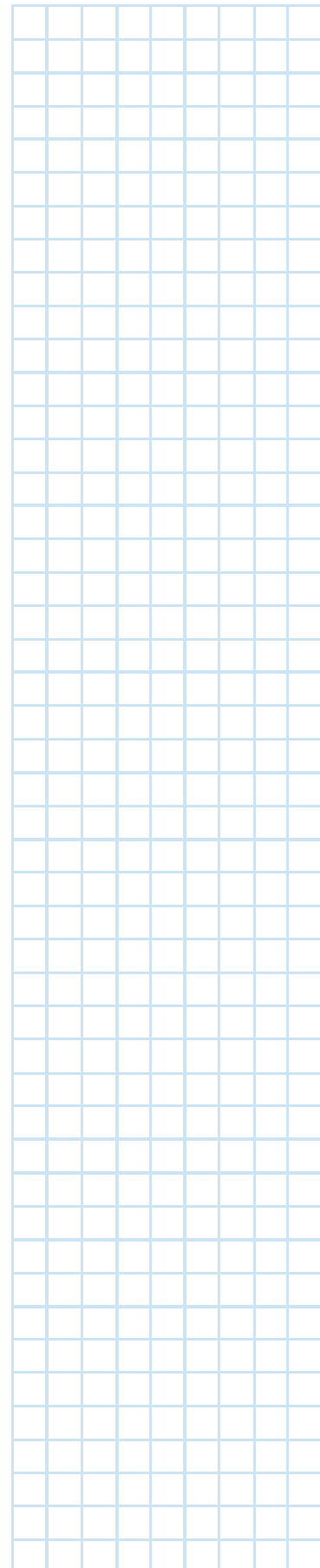


Distancing is a work practice control where the worker "distances" the point of lead emissions from his/her breathing zone: for example an ironworker standing upwind during torch cutting. Distancing is also achieved by using a long demolition torch (up to 6' in length) that positions the worker's breathing zone further away from the cut.

Work procedures:

- Maintain body position upwind.
- Use demolition (long) torch whenever possible.
- Monitor this control very carefully and be sure that appropriate air-supplied respirators are used.

Potential Problems	Possible Solutions
Change in wind direction or work position may change exposure	Don adequate respiratory protection
May expose workers downwind of torch cutting	All workers in vicinity must use adequate respiratory protection Burners and those working in vicinity should be monitored for exposure



Alternative Demolition Options for Structural Steel Projects



Mechanical removal of steel is an alternative to torch cutting. Steel members are disassembled by reversing installation procedures - removing rivets and bolts first and then uninstalling steel beams. Also, chop saws, hydraulic shears, or metal cutters can be used.

Work Procedures:

- Remove or encapsulate paint in areas where steel will be cut or unbolted.
- When cutting, stay in the center of cut lines that have been stripped or encapsulated with protective tape.
- Saw cutting operations work best on flat surfaces with good access. Train personnel in proper operating and safety practices.

Potential Problems	Possible Solutions
Disassembly slower than torch cutting	Schedule should reflect time required for safe demolition activities
Chop saw, shears not effective on thicker metal	Chop saws good only for thinner gauge metal. For thicker metal, use hydraulic shears or torches if necessary
Ergonomic issues, e.g. work position with saw	Conduct toolbox talks to review proper use Avoid using tool in awkward positions
Safety issues: chop saw	Machine guarding, never use with guard blocked in open position. Use proper PPE (e.g. eye protection) Use only as per manufacturers instructions Ensure all workers are trained in proper use; provide periodic review during toolbox talks.

Paint Removal: Chemical Stripping

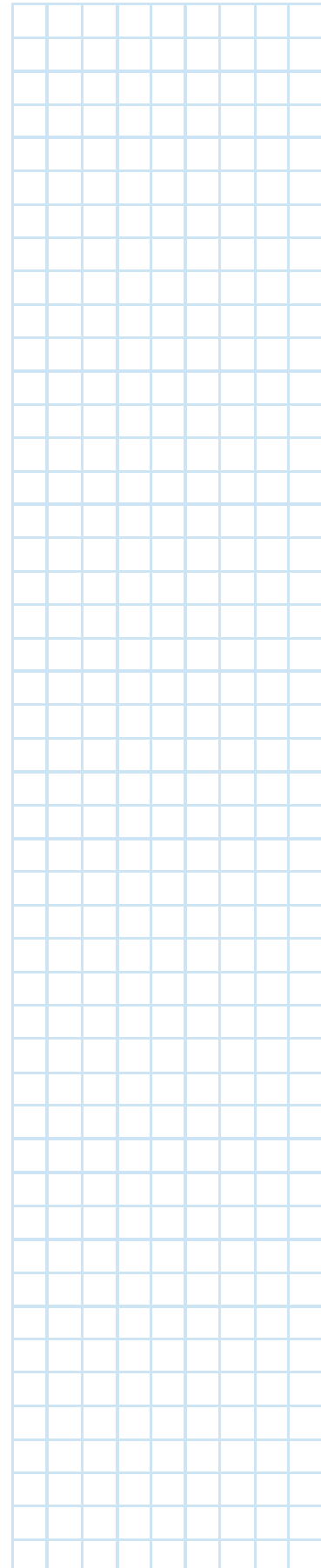


Stripper is applied to steel surface and left in place for 1-24 hours. Paint and stripper are scraped off and residues are wiped away. Some strippers require neutralization.

Work procedures:

- Layout cut lines and areas to be treated at least 4" on all sides of the cut. Wider strips are even better.
- Coordinate location and stripping of cut lines with demolition cut requirements.
- Cut lines should match front and back side of steel.
- Inspect work prior to demolition activities to ensure that cut lines are prepared
- Train personnel in proper operating and safety practices

Potential Problems	Possible Solutions
Worker exposure to caustic chemicals	Train workers Use proper PPE Review MSDS before using Contact manufacturer if there are any questions (manufacturers contact information included in MSDS)
Scheduling	Initial schedule should reflect time required for safe application and removal May not be applicable in all circumstances e.g. weather, manpower



Paint Removal: Power Tools



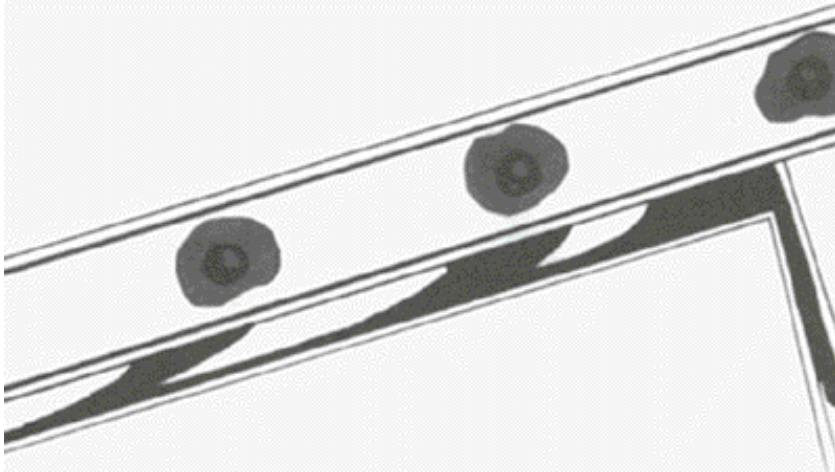
Lead paint is removed with power tools equipped with dust collectors prior to other lead-emitting activities. Small lead particles are collected by a HEPA vacuum system as they are released by the tools.

Work Procedures:

- Layout cut lines and areas to be treated at least 4" on all sides of the cut. Wider strips are even better.
- Select appropriate tool based on type of surface to be treated.
- Follow manufacturer's instructions for the tools.
- Keep tool shroud flush with the surface for effective results.
- Coordinate paint removal with demolition cut locations and other requirements of ironwork.
- Inspect work prior to demolition activities to ensure that paint is removed as specified.

Potential Problems	Possible Solutions
Workers may be exposed to elevated lead levels if HEPA tools not operated properly	Train workers Consult manufacturer or vendor for information and/or help with worker training classes
Incomplete removal of painted surfaces. Difficulty cleaning irregular surfaces	Consult manufacturer or vendor for information e.g. special attachments for corners and/or help with worker training classes Equipment must be maintained properly e.g. replace worn parts, seals, needles in needle gun etc May need to consider alternative paint removal technique. Additional training in using control; toolbox talk

Encapsulation

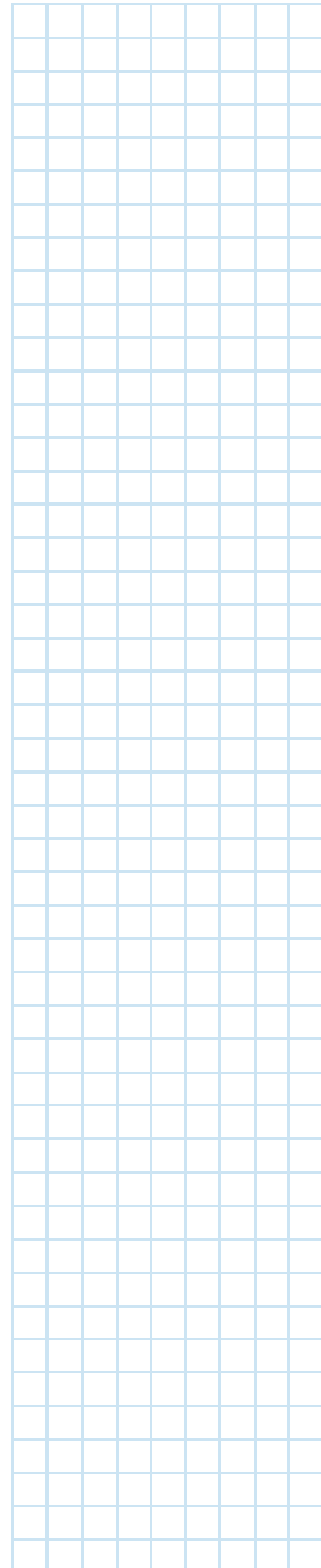


Rivet heads and steel members are treated with an elastomeric coating (plastic dip) prior to rivet busting. Duct tape has been used as an encapsulant for sawcutting. In either case, the coating or tape holds the paint together and reduces dust generation at point of impact.

Work procedures:

- Coordinate encapsulation with demolition activities.
- Application of encapsulant may be weather dependent.

Potential Problems	Possible Solutions
Encapsulation is not a control for torch cutting or welding. Heat from sawing or torch cutting may ignite encapsulant causing fire and/or release of toxic vapors	Use different controls for different operations
May become brittle and break into small respirable dust particles	Use different encapsulant Adopt alternate control technology





HEPA Vacuum



HEPA vacuum is used for:

- Keeping work areas clear of debris and dust that can become airborne during work activities.

Potential Problems	Possible Solutions
Vacuum line clogs up and/or vacuuming ineffective	Use vacuum for smaller size debris and paint chips only, a shovel should be used for larger pieces that may clog the vacuum Maintain adequate vacuum capacity Operate vacuum according to manufacturer instructions, make sure HEPA vacuum capacity adequate for the intended operation Use prefilters to extend the service life of HEPA filters
Ergonomic problems, e.g. bending, squatting	Use wide mouthed and rigid pole attachments to reduce stooping and bending
Potential exposure hazard during vacuum bag disposal	Train personnel in proper operating and safety practices

Checklists

Suggestion on using checklists: since these lists are short, they can be made smaller and placed or pasted into small field notebooks. For instance, Checklist 1 could be miniaturized - see example at end of checklists. They can also be programmed onto a PDA (Personal Digital Assistant).

CHECKLIST 1. SITE INSPECTION (for all controls)

	Y/N	Problem noted (describe)	Problem fixed (describe)
Controls are:			
Available at work location			
In operating order			
Used when they should be			
Used properly (workers trained in their use)			
Effective in controlling dust emissions			
Location and cleaning of cut lines coordinated with demolition requirements			

CHECKLIST 2. CLEANING UP DEBRIS WITH HEPA VACUUM

	Y/N	Problem noted (describe)	Problem fixed (describe)
Vacuum is operated as per manufacturer's instructions			
Large pieces of debris have been picked up with shovel prior to use of vacuum (so that vacuum doesn't get clogged).			
Adequate vacuum capacity maintained			
Prefilters in place			
Wide mouthed attachments and rigid wands in use. Workers able to operate vacuum without stooping over			
Collection bags in place, bags disposed of properly			

CHECKLIST 3. Paint Removal Chemical Stripper/Shrouded Tool

	Y/N	Problem noted (describe)	Problem fixed (describe)
(For chemical stripping) workers applying and removing stripper use appropriate PPE			
(For vacuum shrouded tools) shroud maintained close to surface			
Shroud effective in controlling visible dust emissions			
Area cleaned at least 4" on either side of the cut line			
Cut lines matching front and back side of steel			
After cleaning is lead paint visible on surface, how much?			

MINIATURIZED CHECKLIST 1. SITE INSPECTION (for all controls)

	Y/N	Problem noted (describe)	Problem fixed (describe)
Controls are:			
Available at work location			
In operating order			
Used when they should be			
Used properly (workers trained in their use)			
Effective in controlling dust emissions			
Location and cleaning of cut lines coordinated with demolition requirements			

Guide for Managing Blood Lead Monitoring

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- When to Plan
- Who Does the Planning
- What Plans Need to be Made
- Blood Lead Monitoring Timetable

Section 2: Implementing.....B-5

- Managing the Screening

Section 3: Managing & Responding to Results.....B-7

- Managing the Results
- Responding to Elevated Results

Section 4: Infosheets, Sample Forms, & Further Information.....B-9

- Infosheet 1: Questions to Ask When Hiring a Medical Service
- Infosheet 2: Information to Provide the Medical Testing Service About the Project

Table 1: Blood Lead Level Triggers

- Sample Recordkeeping Form
- Sample Blood Lead Monitoring Results Form
- Sample Blood Lead Monitoring Results Graph



Overview

Blood Lead Monitoring (BLM) measures the quantity of lead a worker has absorbed into the blood stream.

Why perform Blood Lead Monitoring (BLM)?

- It is required by OSHA
- Required by some owner specifications
- Elevated blood lead levels signal an increased health risk to workers
- An increase in blood lead levels over time can be an indicator of a problem with engineering and work practice controls and/or respirator use.

Overview of the Tasks

1. Planning

- a) Designate a Lead Program Manager
- b) Identify all potentially exposed workers
- c) Hire a medical service to perform BLM
- d) Establish schedule for testing

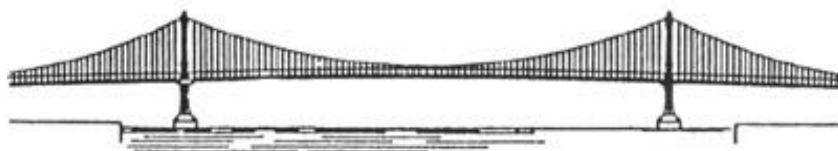
2. Implementing

- a) Establish sanitary area for the testing
- b) Organize BLM with supervisors, foreman and workers
- c) Provide information to medical service

3. Managing and Responding to Results

- a) Review the results of BLM
- b) Respond to elevated results
- c) Provide results to workers
- d) Maintain records of results

– This Guide will elaborate on these tasks –



Planning

When to plan

- Before workers begin lead disturbing tasks at the site

Who does the planning

- Corporate safety office (where applicable) or management at the site begins the planning and chooses the Lead Program Manager (LPM).
 - The LPM needs to be trained in lead hazards and their control Resources (G-1).

What plans need to be made

- Identify workers performing lead disturbing tasks or who work in an area where these tasks are being or might be performed
- Hire a medical service that provides BLM – See Infosheet 1: Questions to Ask When Hiring a Medical Service (B-11)
- Establish a screening schedule
 - beginning of work day
 - same time of the month
 - preferably not after holidays or weekends
- Develop a procedure for BLM for new hires
- Set up spreadsheet to keep records of BLM results - Use Sample Recordkeeping Form (B-17)
- Plan for potential elevations in Blood Lead Levels – Read Section 3: Managing & Responding to Results
- Establish monitoring timetable – refer to Blood Lead Monitoring Timetable below for more specific information

Blood Lead Monitoring Timetable

Test number	OSHA	NYCDOT* Specs
1 (Baseline)	Within 48 hours of exposure	Prior to exposure
2-4	Every other month for the first 6 months if exposure level is above the airborne Action Level of 30 mcg/m ³ *	Every month
5 and thereafter	Every 6 months – or every two months for any individual(s) at or above 40 mcg/dl† see Table 1: Blood Lead Level Triggers	Every month
At end of job or when worker leaves the job	Not required	Required

*New York City Department of Transportation - an example of local owner specifications.

*mcg/m³=micrograms/cubic meter

†mcg/dl= micrograms/deciliter of blood

Implementing

Organizing BLM is an important activity. The goal is to help the medical service do the best possible job with the least disruption to the project. The following is an outline of the tasks of the LPM in implementing blood lead monitoring and a few pointers on how to do it.

- Establish sanitary area for screening (if it is to be conducted on site and service has no mobile testing vehicle).
 - Use the field office.
 - Ensure that wash up stations are available (workers may need to clean up before blood can be drawn).

- Organize BLM with supervisors, foreman and workers
 - Figure out with medical service how many workers can efficiently be tested in a given time frame to ensure that the screening is executed with minimum disruption to medical team, workers and productivity.
 - Give one person responsibility for organizing the flow of crews especially at complex work sites.
 - Notify workers and foremen of BLM date and time as soon as possible prior to screening.

- Provide necessary information to medical service before screening
 - See Infosheet 2: Information to Provide the Medical Testing Service About the Project (B-13)



SECTION 2

Managing & Responding To Results

After the results are received from the medical service, the LPM has responsibilities for reviewing and responding to results, informing workers and keeping records. The following is an overview of these activities.

Managing the Results

- Review BLM results
 - Enter the results into a spreadsheet – use Sample Recordkeeping Form (B-17)
 - Compare results to trigger levels – See Table 1: Blood Lead Level Triggers (B-15)
 - Compare results to prior screenings. Look for trends within individuals and groups, for instance workers engaged in torch cutting activities.
 - Initiate response if necessary – see next page “Responding to Elevated Results”.
- Provide results, in writing, to each employee within 5 days of receiving them
 - Use the Sample Blood Lead Monitoring Results Form (B-19)
 - Distribute during weekly toolbox talk or with paycheck
 - Maintain confidentiality when returning results to workers
- Comply with legal notifications (e.g. Local/State Department of Transportation, Department of Health, Local/State Lead Registry)
 - Make sure that any information that can identify an individual (last name, SS#) be given only when legally necessary
- Maintain Records of the Results
 - Employers must maintain employee’s medical records for the length of their employment plus 30 years
- Plan a safety meeting/toolbox talk to explain and discuss results. Ask medical service if they would attend safety meeting/toolbox talk to explain results.

SECTION 3

Note: BLM results are usually measured in micrograms of lead per deciliter of blood (mcg/dl). The OSHA standard also requires that blood samples be analyzed for either zinc protoporphyrin (ZPP) or free erythrocyte protoporphyrin (FEP). There are no OSHA trigger levels for ZPP/FEP.

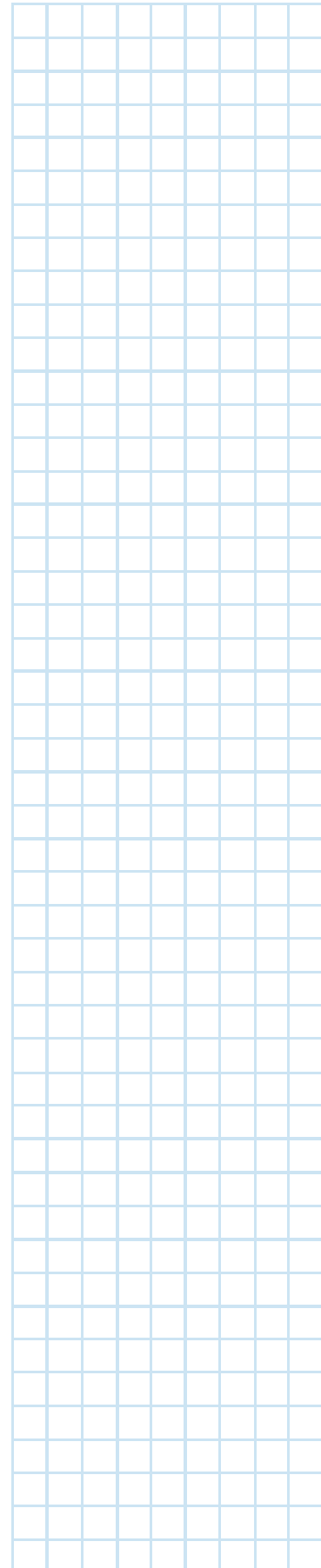
Graphing workers’ results over a period of time helps them visualize their levels - See Sample Graph (B-21).

Although OSHA states that employers need not maintain records for employees working less than one year as long as they are given their medical records when they leave the company, it is advisable to keep them.

Responding to Elevated Results

Elevated Blood Lead Levels indicate a problem with engineering and work practice controls or with respiratory protection. Consult the Guides for Managing Engineering & Work Practice Controls, Exposure Assessment and Respiratory Protection for further guidance on troubleshooting. The following points summarize the main steps to be taken:

- Check out the control equipment to ensure that it is being used and functioning correctly.
- Talk to the workers, ask them:
 - if they are familiar with the controls
 - if they think that controls are working properly
 - if they have any suggestions for improving existing controls
 - if they use the controls and, if not, why not
 - what they do when the equipment isn't working properly
- Hold a safety meeting with managers and a toolbox talk with workers about the controls. It is possible that the controls are not suited to the particular application. If so, an investigation of other possible control options is in order.
- Ensure that the types of respirators worn by the workers are sufficiently protective and are being used correctly.
- Review hygiene facilities and housekeeping.



Infosheets, Sample Forms & Further Information

Infosheet 1: Questions to Ask When Hiring a Medical Service
Infosheet 2: Information to Provide the Medical Testing Service About the Project

Table 1: Blood Lead Level Triggers

Sample Recordkeeping Form
Sample Blood Lead Monitoring Results Form
Sample Blood Lead Monitoring Results Graph



Infosheet 1: Questions to Ask When Hiring a Medical Service

- Procedures are supervised by a physician familiar with provisions of the OSHA Lead in Construction Standard (preferred)
- Capability of providing follow up medical evaluations (preferred)
- Capability of performing blood tests on site (preferred)
- Capability of providing service at nights or weekends (if necessary)
- Service is well staffed and capable of completing the BLM on all of the workers in the allotted time (preferred)
- Lab analysis performed in OSHA approved facility (required)
- Results provided in a timely fashion
- Results can be transmitted to you electronically
- Capability of keeping records
- Cost per person/what is the cost for testing only one or two workers

Infosheet 2: Information to Provide the Medical Testing Service About the Project

- Start date for initial screening
- Frequency of screenings
- Duration of project
- Approximate number of workers to be tested per screening
- Location of screening, how to get there
- Description of space where testing will be conducted, including provision for privacy, wash-up stations, size, electrical outlet availability
- Site contact person and telephone number

Table 1: Blood Lead Level (BLL) Triggers

BLL Trigger (mcg/dl)	OSHA	NYCDOT* Specs
25 mcg/dl for at least 2 workers	N/A	IH Intervention
Increase 10 mcg/dl for any worker in consecutive screenings	N/A	IH Intervention
40 mcg/dl	<p>Make medical exam available (at least annually).</p> <p>Inform worker of medical removal protection rights.</p> <p>Continue blood lead testing every 2 months until two consecutive test results below 40 mcg/dl.</p>	<p>Make medical exam available (at least annually).</p> <p>Inform worker of medical removal protection rights.</p> <p>Retrain worker.</p>
50 mcg/dl (first test)	Not required	Retest within 2 weeks
50 mcg/dl (second test)	Medical removal	Medical removal

* An example of local specifications. Check requirements in your area.

SAMPLE RECORDKEEPING FORM

Last Name	First Name	D.O.B.	Date	BLL (mcg/dl)	ZPP/FEP (mcg/dl)	

SAMPLE BLOOD LEAD MONITORING RESULTS FORM

Employee name _____ **Date of Test** _____

BLL mcg/dl _____

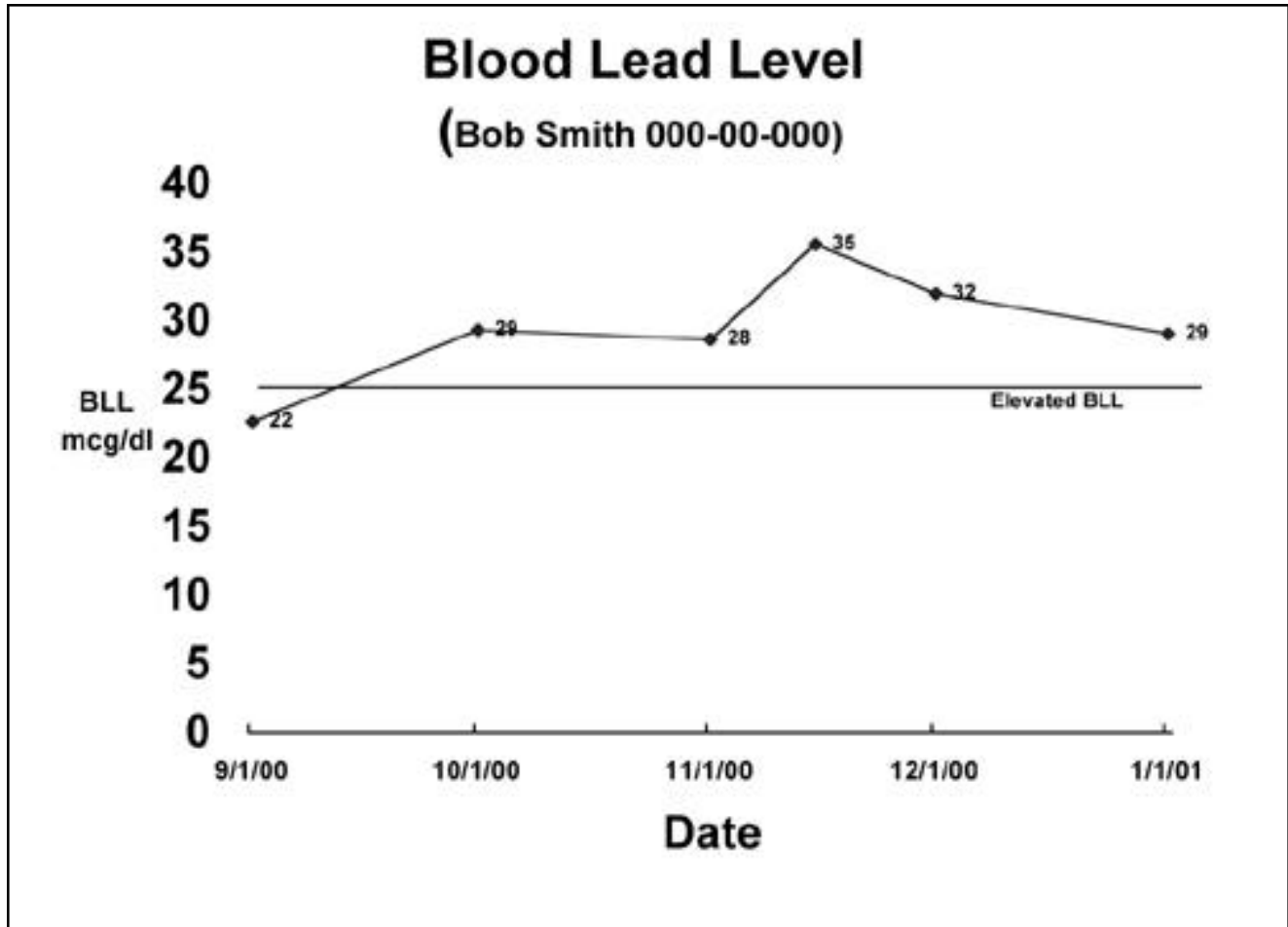
ZPP/FEP mcg/dl _____

Medical Service _____

Blood lead results are usually given as micrograms of lead per deciliter of blood (mcg/dl). The blood lead level (BLL) reflects the amount of lead an individual has absorbed during the two weeks or so before the blood test was performed. It tells us very little about the lead absorption before that time. Average BLLs for adults in major urban areas are less than 10 mcg/dl.

FEP (sometimes called ZPP) shows us how much lead has been absorbed during the 90 - 120 or so days before the test, but tells us very little about exposure during the most recent two weeks. FEP levels below 35 are considered normal. The FEP level usually does not increase unless the blood lead level rises above 50 mcg/dl.

SAMPLE BLOOD LEAD MONITORING RESULTS GRAPH



This type of graph can be generated from your record keeping spreadsheet.

Guide for Managing Exposure Assessment for Lead

Overview.....C-2

Section 1: Planning.....C-3

- When to Plan
- Who Does the Planning
- What Plans Need to be Made

Section 2: Implementing.....C-5

- Suggestion Box: When to Schedule Monitoring

Section 3: Managing & Responding to Results.....C-7

- Managing the Results
- Responding to Elevated Results

Section 4: Infosheets, Sample Forms, & Further Information.....C-9

Infosheet 1: Hiring an Industrial Hygiene Consultant
Infosheet 2: Project Information for the IH

Checklist 1: Reporting Results to Workers

Table 1: Air Monitoring Action Trigger Levels

Sample Recordkeeping Form
Sample Air Monitoring Results Reporting Form (Individual)
Sample Air Monitoring Results Reporting Form (Group)



Overview

Exposure assessment, or monitoring, measures workers' exposure to airborne contaminants during the performance of their jobs.

Why perform monitoring?

- It is required by OSHA
- Required by some owner specifications
- The exposure level determines what has to be done to protect workers, including:
 - the need for engineering controls
 - the effectiveness of engineering controls
 - the type of respirators required on the job
 - the need for blood lead monitoring

Overview of the Tasks

1. Planning

- a) Designate a Lead Program Manager (LPM)
- b) Identify lead generating tasks
- c) Hire IH consultant

2. Implementing

- a) Select tasks to be monitored
- b) Schedule monitoring
- c) Prepare personnel for monitoring
- d) Organize day of monitoring

3. Managing and Responding to Results

- a) Review IH report and results of monitoring
- b) Respond to elevated results
- c) Provide results to workers
- d) Maintain records of results

– This Guide will elaborate on these tasks –



Planning

When to plan

- At the same time the project is being planned
- No later than during job mobilization
- If job has started, or lead disturbing tasks have begun, plan fast to do what has to be done!

Who does the planning

- Corporate safety office or management at the site begins the planning and appoints the Lead Program Manager (LPM) who assists in project planning.
 - LPM should be trained in lead hazards and their control

What plans need to be made

- Identify tasks/trades with potential for generating lead dust and fume.
 - LPM needs to be familiar with scope of work throughout the course of the project since tasks or intensity of work often vary during the life of the project.
- Hire an Industrial Hygiene (IH) Consultant – See Infosheet 1 (C-11)
- Supply IH consultant with information to help him/her gain an understanding of the project – See Infosheet 2 (C-13)
 - To do their job well, they will have to have a sense of such items as the scope of work, the tasks being performed, and the number of workers engaged in these tasks.
 - In the meantime: OSHA requires that employees must be protected with respirators as soon as lead disturbing work begins. Refer to 1.3.b “OSHA Presumed Exposure Level for Selected Tasks” (D4-Guide for Managing a Respiratory Protection Program)

SECTION

1

Selecting an IH you can work with is important. The IH provides information that determines the level of worker protection. OSHA or the owner may review this information at any time. Also, the IH can help interpret the OSHA standard.

Implementing

The IH performs the monitoring; the LPM organizes things so that the IH can do the job with the least disruption to the project.

Select tasks to be monitored

- Review all lead generating tasks
- Conduct walkthrough of site with IH
 - Make sure IH sees all lead tasks
 - Orient IH to safety issues at site

Schedule monitoring – See Suggestion Box on the next page

- Determine work schedule with project manager
- Select day when activities are going to be representative of an average workday
- Call IH consultant and schedule

Prepare personnel for monitoring

- Arrange with site supervisor/foreman the day before - the fewer surprises the better
- Inform workers and unions that monitoring is taking place
 - A toolbox talk on what to expect and an explanation of monitoring the week before is suggested

Organize the day of monitoring

- Review sampling plan with IH
 - Ensure all tasks and highest exposures are selected
 - Ensure IH has access to site and workers
 - Review with IH tasks/locations/workers to be monitored
 - Accompany IH to sampling locations
 - Introduce IH to workers and supervisors

Summarize day with IH

- Meet with IH at end of work shift for a quick review of the day's activities. Ask if there were any problems that could affect results or any situations in need of immediate response.

SECTION 2

The LPM has a detailed knowledge of the site (exposures/tasks). His job is to communicate relevant information to the IH so he/she can do the best possible job.

Suggestion Box: When to Schedule Monitoring

At a minimum, follow OSHA's monitoring schedule:

- Beginning of job (to make an initial determination)
- At least every six months if exposure is between the action level (AL) of 30 micrograms (30 mcg/m³) and the permissible exposure level (PEL) of 50 micrograms (50 mcg/m³)
- At least every three months if exposure is above the PEL

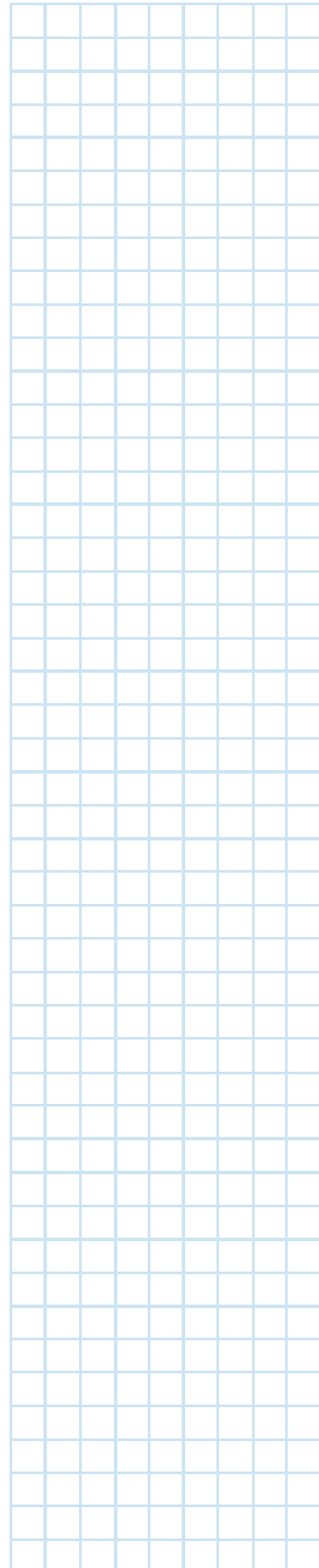
Any major variation in the work process can reduce or increase exposure levels. Remonitor whenever changes occur.

- New tasks and/or tools are introduced
- Crew size increases
- Work configuration changes significantly (enclosure, confined area)
- Increase in number of hours worked

Even with the best intentions, things go wrong. Here are some scheduling pitfalls that managers have to deal with:

- Monitoring cannot be conducted as planned due to such factors as:
 - Weather
 - Change in work plans for the day
 - Equipment breakdown
- Monitoring begins but cannot be finished because of above
- A worker who is being monitored is assigned to another task
- Work is unusually light and it is difficult to get a representative sample

If such things happen, reschedule as soon as possible



Managing & Responding To Results

The LPM has responsibilities for reviewing the IH's report, informing workers and keeping records. These tasks are described below.

Managing the Results

Review IH report and results of monitoring.

- Compare results to OSHA Action Level (AL) and Permissible Exposure Level (PEL) – See Table 1 Air Monitoring Action Trigger Levels on page C-17
- Review IH recommendations
- Initiate response if necessary – See Responding to Elevated Results, on next page.

Provide results in writing to each monitored workers within 5 days of receipt of results.

- See Sample Air Monitoring Results Reporting Form (Individual) C-21
- Distribute during weekly toolbox talk or with paychecks

Provide results to all workers potentially exposed to lead.

- See Air Monitoring Results Reporting Form (Group) C-23
- Post prominently in change room or distribute to workers
- See Checklist 1: Reporting Results to Workers (C-15)
 - Attach to front of group results file folder
- Prepare and schedule a toolbox talk to review the results

Maintain records of results

- Use Sample Recordkeeping Form (C-19)

SECTION 3

Responding to Elevated Results

Monitoring results above the PEL might indicate a problem with engineering and work practice controls. Consult the Guide for Managing Engineering & Work Practice Controls for further guidance on troubleshooting. The following points summarize the main steps to be taken:

- Make sure there are controls in place
- Check out the equipment to make sure it is functioning.
- Talk to the workers, to find out if:
 - engineering controls are working properly
 - they are familiar with the equipment
 - they have any suggestions for improving existing controls
 - they use the controls and, if not, why not
 - what they do when the equipment isn't working properly
- Hold a safety meeting with managers and a toolbox talk with workers about the controls.
- Investigate with them if the controls are suited to the site and the particular application. An investigation of other controls may be in order.
- If problems are found and corrected, reschedule monitoring.
- Given the measured exposure, ensure that the types of respirators worn by the workers are sufficiently protective and are being used properly.

OSHA requires that the way to protect workers from exposure to lead is first by engineering and work practice controls. If the controls employed are state-of-the art, and the monitoring results show workers are exposed above the PEL, then the controls must be supplemented with respiratory protection.

Infosheets, Sample Forms & Further Information

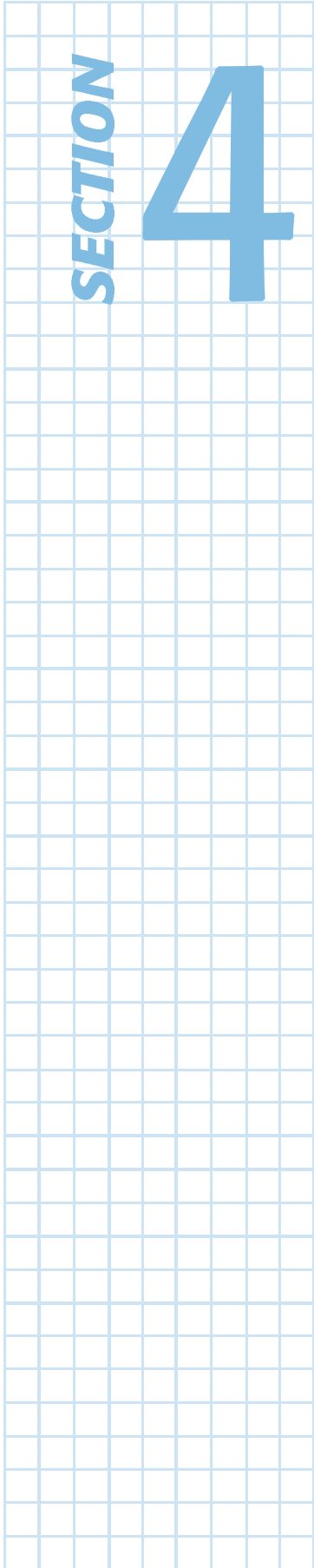
Infosheet 1: Hiring an Industrial Hygiene Consultant
Infosheet 2: Project Information for the IH

Checklist 1: Reporting Results to Workers

Table 1: Air Monitoring Action Trigger Levels

Sample Recordkeeping Form

Sample Air Monitoring Results Reporting Form (Individual)
Sample Air Monitoring Results Reporting Form (Group)



Infosheet 1: Hiring an Industrial Hygiene Consultant

- IH consultant has construction experience (preferable)
- IH consultant has a supervisory Certified Industrial Hygienist (CIH) (preferable)
- Sample analyzed by accredited laboratory (necessary)
- Request sample report
 - Is it well written (do you understand it)?
 - Are results presented as 8-hour time weighted averages? (they should be)
- Compare costs to those of several other consultants
- Is the turn-around time for reporting results acceptable?

The information gathered from different consultants can be used to choose the best one

Infosheet 2: Project Information for the IH

- Scope of work lead generating tasks
- Approximate project timetable
- Approximate number of workers engaged in lead generating tasks
- Trades and tasks of workers, focusing on lead generating tasks
- Location of project and accessibility
- Description of controls used (engineering, administrative, respirators)
- Copy of Respiratory Protection Program
- Details on site safety hazards
- Site contact person and phone number

It is recommended that the LPM have this information ready at hand when speaking with the consultant

CHECKLIST 1: REPORTING RESULTS TO WORKERS

	<input checked="" type="checkbox"/>
Results reviewed then copied to recordkeeping table or spreadsheet	<input type="checkbox"/>
Results copied into form for reporting to workers and dated (Group and Individual reporting form)	<input type="checkbox"/>
Individual results given to monitored workers	<input type="checkbox"/>
<ul style="list-style-type: none">• Group form posted in area where all workers can view them or <ul style="list-style-type: none">• Group form handed out to all workers	<input type="checkbox"/>
	<input type="checkbox"/>

TABLE 1: OSHA AIR MONITORING ACTION TRIGGER LEVELS*

If initial air monitoring results are:

Less than the AL, then:

- Not required to repeat monitoring unless there is a change in equipment, process, controls, task or personnel

Greater than the AL but less than the PEL initial determination, then as per the OSHA standard, employers are required to conduct:

- Blood lead monitoring
- Worker training in lead
- Representative monitoring

Greater than PEL, then:

- Implement entire standard

Greater than PEL (subsequent monitoring), then:

- Use section 'Responding to Elevated Results' on page C-8

*** Note: there are parts of the OSHA standard that do not depend upon air sampling results, for instance, housekeeping. Refer to the standard for more information.**

SAMPLE RECORDKEEPING FORM

First Name	Last Name	Monitoring Date	Tasks	Results 8-hr TWA (mcg/m ³)	Exceed the PEL (Y/N)	Workers given results (Y/N)	Action Taken

**AIR MONITORING RESULTS REPORTING FORM
(Individual)**

This report presents your results for personal air monitoring for lead exposure conducted on ___/___/___

Contractor's Name _____

Employee name _____ Work Site/Location _____

Description of engineering /administrative controls at the site _____

Job Description _____

Monitoring Result _____

PEL Exceeded (Circle One) Yes / No

These results represent exposure levels during the time and date the task was performed and the conditions present at the time the monitoring occurred. The Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) for lead represents the highest level of lead dust or fume to which a worker should be exposed to over an 8-hour work-shift. If exposure exceeds the PEL employers must supplement engineering controls with proper respiratory protection.

The OSHA PEL 8-hour TWA for lead is 50 micrograms/m³ (50 mcg/m³)

**AIR MONITORING RESULTS REPORTING FORM
(Group)**

This report presents results for personal air monitoring for lead exposure conducted on ___/___/___

Contractor's Name _____

Employee name _____ Work Site/Location _____

Description of engineering /administrative controls at the site _____

Monitor Worker	Job Description/ Location	Monitoring Results 8-hour TWA mcg/m³	PEL Exceeded? Y/N
#1			
#2			
#3			
#4			
#5			
#6			

These results represent exposure levels during the time and date the task was performed and the conditions present at the time the monitoring occurred. The Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) for lead represents the highest level of lead dust or fume to which a worker should be exposed to over an 8-hour work-shift. If exposure exceeds the PEL employers must supplement engineering controls with proper respiratory protection.

The OSHA PEL 8-hour TWA for lead is 50 micrograms/m³ (50 mcg/m³)

Guide for Managing a Respiratory Protection Program for Lead

- Overview.....D-2
- Section 1: Planning for Respirator Use.....D-3
 - 1.1 Appointing a Respirator Program Manager
 - 1.2 Writing a Site Specific Respirator Program
 - 1.3 Selecting the Right Respirator for the Task
- Section 2: Mobilizing at the Work Site.....D-9
 - 2.1 Medical Evaluations
 - 2.2 Training
 - 2.3 Fit Testing
 - 2.4 Ordering Respirators and Supplies
- Section 3: Day-to-Day Practices.....D-17
 - 3.1 Managing Respirator Use
 - 3.2 Maintaining Respirators
- Section 4: Records & Evaluation.....D-21
 - 4.1 Recordkeeping
 - 4.2 Evaluating the Site Specific Program
- Section 5: Checklists, Sample Forms
& Further Information.....D-23
 - Sample Site-Specific Respiratory Protection Program
 - Sample Respirator Selection Worksheet
 - Infosheet 1: Information to Gather When Hiring a Medical Service
 - Job/Task Information Form for PLHCP
 - Medical Evaluation Questionnaire (English)
 - Medical Evaluation Questionnaire (Spanish)
 - Employee Instructions for Filling Out Respirator MEQ
 - Checklist 1: Suggested Respirator Training Topics
 - Respirator Fit Test Record
 - Checklist 2: Respirator Supplies
 - Infosheet 2: Respirator Use Practices
 - Sample Record Summary Spreadsheet
 - Checklist 3: Evaluation of Site-Specific Respirator Program



Overview

This guide outlines the steps for planning and managing a respirator protection program for workers exposed to lead dust or fume during construction activities. It covers all the components of a respirator program as required by OSHA. The guide will be helpful to anyone with respirator program responsibilities; it can be used in its entirety or by section.

Why do you need a respirator protection program?

- It is required by OSHA whenever respirators are used.
- Respirators must be used when engineering and work practice controls fail to reduce lead exposure below the Permissible Exposure Limit (PEL).

Overview of the Tasks

1. Planning

- a) Appoint a respirator program manager
- b) Write a site specific respirator program
- c) Select the right respirator for each lead generating activity

2. Mobilizing

- a) Set up medical clearance evaluations
- b) Train respirator users and supervisors
- c) Make sure the respirator fits correctly
- d) Order respirators and supplies

3. Day-to-Day Practices

- a) Manage respirator use
- b) Maintain respirators

4. Records and Evaluation

- a) Maintain records of respirator program activities
- b) Evaluate respirator program regularly

– This Guide will elaborate on these tasks –

Note: The most labor-intensive tasks are found in Sections 1 & 2. Once you get through the planning and mobilizing phases, you will be in good shape to manage the use of respirators at your site, maintain records, and conduct periodic program evaluations.



Planning for Respirator Use

There are three major tasks in setting up a respirator program:

- 1.1** Appointing a respirator program manager
- 1.2** Writing a site specific respirator program
- 1.3** Selecting the right respirator for each lead generating task

1.1 Appointing a Respirator Program Manager (RPM)

- Appointed by higher management
 - Position can be assigned to a site safety officer, project engineer, or other competent construction manager
- RPM must be qualified by training and/or experience with the respirators used at the site
 - Arrange respirator training if needed (see Resource List).
- A qualified worker can be assigned day-to-day program tasks such as:
 - fit testing
 - training
 - maintenance/cleaning
 - assisting in program evaluation

1.2 Writing a site specific respirator program

- Program can be written by RPM, company safety officer or IH consultant
- The Program can be adapted from:
 - company-wide program
 - previous project
 - OSHA model program
 - commercially available program
- The Program must address the following items:
 - respirator selection
 - medical evaluation
 - use of respirators
 - training
 - fit testing
 - maintenance
 - record keeping
 - evaluation

SECTION

1

The respirator program needs to be in place before workers use respirators for the first time. Like any other construction activity, using respirators will go a lot smoother if time and effort are put in upfront to plan and mobilize.

- The Program must be site specific. It must address the use of respiratory protection under the conditions present at the site.
 - The site-specific program is an open-ended document that is updated as respirator needs change at the site.
 - The Sample Program in Section 5, D-25, represents the program updated after exposure monitoring and respirator selection have been completed. You can adapt this sample program to your site's conditions and needs.

1.3 Selecting the right respirator for the task

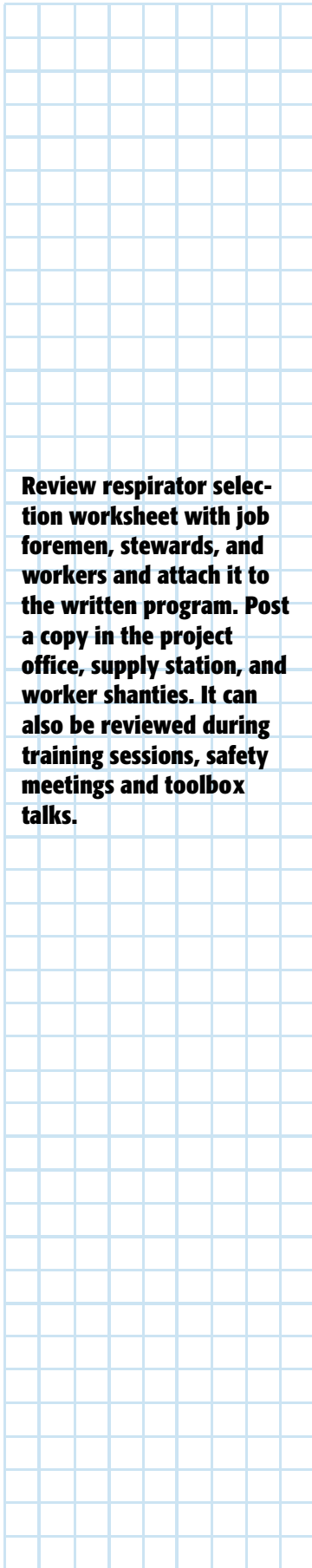
1.3.a. Selecting a respirator before monitoring results are known:

OSHA requires that workers be protected by respirators as soon as lead disturbing tasks are performed. To select the right respirator, OSHA provides presumed exposure levels for each task – see 1.3.b below. After the presumed exposure level is found, use Table 1, D-6 to select the required respirator. For additional information, refer to the OSHA standard.

1.3.b. OSHA Presumed Exposure Level for Selected Tasks

- Less than 500 mcg/m³
 - Manual demolition
 - Power tool cleaning with dust collection systems
 - Dry manual sanding
 - Dry manual scraping
- Between 500 and 2,500 mcg/m³
 - Movement and removal of the abrasive blasting enclosure
 - Rivet busting
 - Power tool cleaning without dust collection systems
 - Cleanup of dry expendable abrasive blasting jobs
 - Lead burning
 - Using lead-containing mortar
- > 2,500 mcg/m³
 - Abrasive blasting
 - Welding
 - Oxy-acetylene torch cutting

It is recommended that the program and records be kept together in a loose-leaf binder

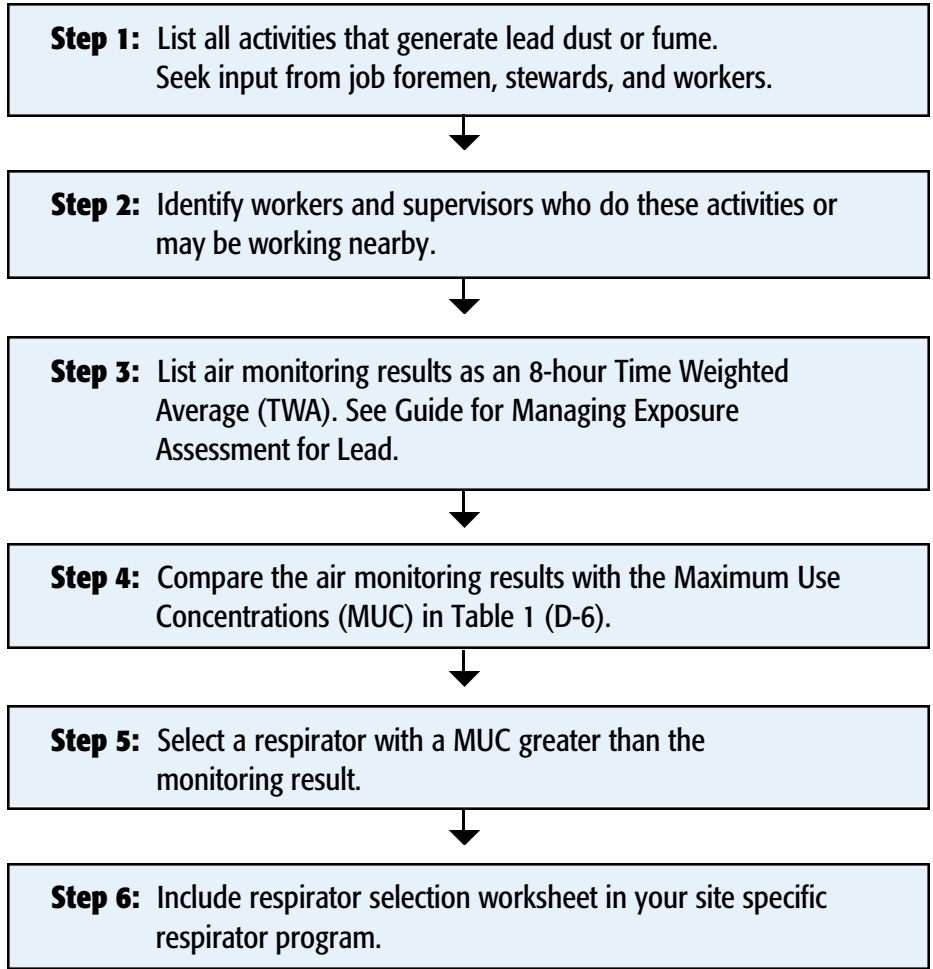


Review respirator selection worksheet with job foremen, stewards, and workers and attach it to the written program. Post a copy in the project office, supply station, and worker shanties. It can also be reviewed during training sessions, safety meetings and toolbox talks.

1.3.c. Selecting a respirator after monitoring results are known:

- Use the Respirator Selection Flow Chart below to select the correct respirator for each activity. An example of a completed worksheet follows on the next page.
- Complete the blank Worksheet in Section 5 (D-35).

Respirator Selection Flow



**Table 1: Respirator Maximum Use Concentrations MUC for Lead
(see 'MUC Information' Box Below)**

MUC	Respirator type
500 mcg/m ³	Half-face air purifying respirator (APR) with 100 series filters *
2,500 mcg/m ³	#Full-face air purifying respirator with 100 series filters or Tight fitting powered air purifying respirator (PAPR) or Atmosphere supplying airline respirator in constant supply mode
50,000 mcg/m ³	Airline respirator in pressure demand mode

Refer to OSHA letters of interpretation regarding MUC of specific loose-fitting type-CE respirators (blasting hood/helmet).

* N/R/P-100 designation indicates resistance to oil. N=not oil resistant/ R=oil resistant / P=oil proof.

Must be quantitatively fit tested.

MUC Information Box

MUC = PEL x APF

- PEL is the Permissible Exposure Limit
- APF is the Assigned Protection Factor, a number assigned by NIOSH representing the minimum protection factor of a particular type respirator when used correctly
- For Lead
 - PEL = 50 mcg/m³
 - APF of a 1/2 face APR = 10
 - MUC = 10 x 50 mcg/m³

Therefore the MUC for a 1/2 face APR = 500 mcg/m³.



Filled Out Sample Respirator Selection Worksheet

Step 1: Activity	Step 2: Exposed Workers	Step 3: Air Monitoring Results mcg/m³	Step 4: MUC mcg/m³	Step 5: Respirator Selected
Rivet busting	Iron Workers/ Laborers	225	500	Half face APR P100 Filters
Torch cutting	Iron Workers	1,235	2,500	Atmosphere supplying airline respirator in constant supply mode

Mobilizing at the Worksite

Once the initial planning has been completed, it is time to mobilize people and equipment. Mobilization requires additional planning, coordination and paperwork.

Before a worker can use a respirator on-site the following activities must be completed:

- 2.1** Medical evaluation
- 2.2** Training
- 2.3** Fit testing
- 2.4** Ordering respirators and supplies

2.1 Medical evaluation

2.1.a. Medical evaluation is done by a physician or licensed health care professional (referred to as the PLHCP), who is responsible for:

- Reviewing the OSHA Respirator Medical Evaluation Questionnaire (MEQ)
- Making a medical determination of fitness to wear a respirator
- Recommending any follow-up evaluation
- Communicating result to employer/workers

2.1.b. Hiring a medical service

- Find a PLHCP to provide medical evaluations for respirator users.
 - Use Infosheet 1: Information to Gather when Hiring a Medical Service (D-37).
- Provide the PLHCP with a copy of the company respirator program and a completed Job/Task Information Form (D-39).

Tip for finding a medical service

Ask industrial hygiene consultants, unions, or industry associations for referrals for medical services. Also check the Association of Occupational and Environmental Clinics for local services at www.aoec.org

SECTION 2

Workers need to be medically evaluated before being fit tested and trained. The last two activities can be conducted at the same time.

Medical evaluations are required by OSHA and conducted in order to determine if using a respirator will place a burden on a worker's health, resulting in an increase risk of illness, injury or death.

2.1.c. Administering the medical evaluation

Medical evaluations can be administered in one of three ways:

The MEQ is completed on-site and reviewed off site by the PLHCP. See flow chart below: Preparing MEQs On-Site.

- Any positive answer to a question must be followed up by a medical “consultation” or exam. The consultation can be as simple as a phone call from the PLHCP to the worker.
- The PLHCP makes a determination of fitness for respirator use or recommends follow-up evaluation.

The MEQ is completed and reviewed on-site under the supervision of the PLHCP.

- Again, any positive response to any question must be followed up by a medical consultation or exam.
- The PLHCP makes a medical determination or recommends follow-up evaluation.

The PLHCP conducts a medical exam either on-site or at their facility.

- The PLHCP determines the contents of the medical exam. There are no specific medical procedures or tests required by OSHA. (i.e. pulmonary function tests are not required by OSHA but may be ordered by the PLHCP).
- The PLHCP does not have to use the OSHA MEQ but must obtain the medical history information contained in it.
- The PLHCP makes a medical determination or recommends follow-up evaluation.

Medical evaluations must be completed during the normal work day or at a time convenient to the employee

The employer pays for the cost of the medical evaluation.

Supervisors, foremen, or other company managers are not allowed to see or hear employees' answers to the questionnaires.

Often it is easiest to contact workers at the job site as long as confidentiality can be maintained.

English and Spanish versions of the MEQ can be found in Section 5 (D-41/D-49).

Preparing MEQs On-Site

Step 1: Provide each worker being evaluated an MEQ, the form "Employee Instructions For Filling Out Respirator MEQ" (D-57), and an envelope with their name on it (addressed to the medical service).



Step 2: Read out loud the "Employee Instructions for Filling Out Respirator MEQ".



Step 3: Have employee provide a contact phone number and time in case the PLHCP needs to speak with them.



Step 4: Provide employees with the telephone number of the medical service so they can contact the PLHCP if they have any questions.



Step 5: Provide a private area where employees can fill out questionnaires confidentially.



Step 6: Ask employees if they need a translator or someone to read the questionnaire to them.



Step 7: Instruct employees to place the completed questionnaire inside the envelope, seal it and return it to you.



Step 8: Deliver the completed questionnaires to the medical service.

2.1.d. Plan for special needs or potential problems

Refer to Table 2 below for dealing with common problems that arise in completing the MEQ

Table 2: Troubleshooting

Problem	Solution
Follow-up evaluation recommended by PLHCP	Contract with local medical service for follow-up (consultations, tests, or physical examinations).
New hires.	Develop plan with medical service to accommodate new hires in a timely manner.
Worker says they have been previously medically cleared to wear a respirator.	Clearance may be accepted if <ol style="list-style-type: none">1. it is current2. work conditions are approximately the same as when the certificate was issued3. there has been no change in worker's health status.
Employee is cleared only for PAPR by the PLHCP.	Provide fit testing and training for PAPR.
PLHCP has difficulty contacting workers for consultation.	Consultations can be performed by telephone at the job site, if confidentiality can be maintained
Employee is not medically cleared for respirator use.	Provide employee with task not requiring a respirator.
Worker reports problems related to respirator use.	Have worker describe problem. Check respirator fit and usage. Provide additional training if necessary. If the problem is medical, it might be necessary to readminister MEQ.



The trainer should be knowledgeable about site conditions and the type of respirators used.

Workers have to demonstrate to the trainer or supervisor that they know how to use their respirators properly. You can use an oral or written evaluation to do this.

2.2 Training

- Establish a training timetable. Conduct respirator training:
 - before workers use a respirator for the first time
 - if workplace conditions change
 - whenever problems are noted (e.g., workers not wearing respirators when required)
 - annually
- Select person to do the training. This person can be any of the following individuals:
 - the RPM
 - a safety officer
 - a union trainer
 - a knowledgeable foreman, steward, or worker
 - an IH consultant
- Select a quiet, comfortable area in which to conduct the training.
- Prior to training, review the training materials to ensure that they:
 - are site specific - dealing with the conditions at the site
 - include a review of respirator use
 - are understandable to all workers – language and words that they know
- Refer to Checklist 1: Suggested Respirator Training Topics (D-59)
- The box below contains suggestions for training activities and discussions

Training Tips

Adults learn best when training is related to what they do and involves hands-on experience. Try these training activities:

- Pass out respirators so users can examine them.
- Ask workers to do positive and negative pressure seal checks.
- Ask another worker to check that the respirator is on correctly.
- Pass out a selection of defective respirators (wrong cartridges, worn or missing parts, dirty, etc.) and ask workers to identify defect.
- Promote lively question and answer sessions. Use questions like: Why do workers take off their respirators? Do you think that the respirator protects you? When do you change the filters? Do the lead filters protect you from chemicals? Find solutions to problems that come up.
- Use Checklist 1: Suggested Respirator Training Topics (D-59). Pass it out to one or more workers and ask them to check off each topic during the session. Review at end of the session.

2.3 Making sure the respirator fits

2.3.a. Scheduling fit testing:

- After workers have been medically cleared
- Before respirators are worn for the first time
- Repeat fit testing:
 - yearly
 - whenever workers are assigned a different respirator brand or model
 - when the worker has a physical change which might effect fit, like an obvious weight gain or loss
 - if the worker, supervisor, RPM, or PLHCP requests it

2.3.b. Select person to do the fit testing:

- Fit testing can be done by any of the following
 - the RPM
 - an industrial hygienist or safety professional
 - respirator manufacturer representative
 - trained worker specialist
- The person must be familiar with the respirators used at the site and be able to follow the OSHA fit testing instructions.

2.3.c. Choose either a qualitative or quantitative fit test method:

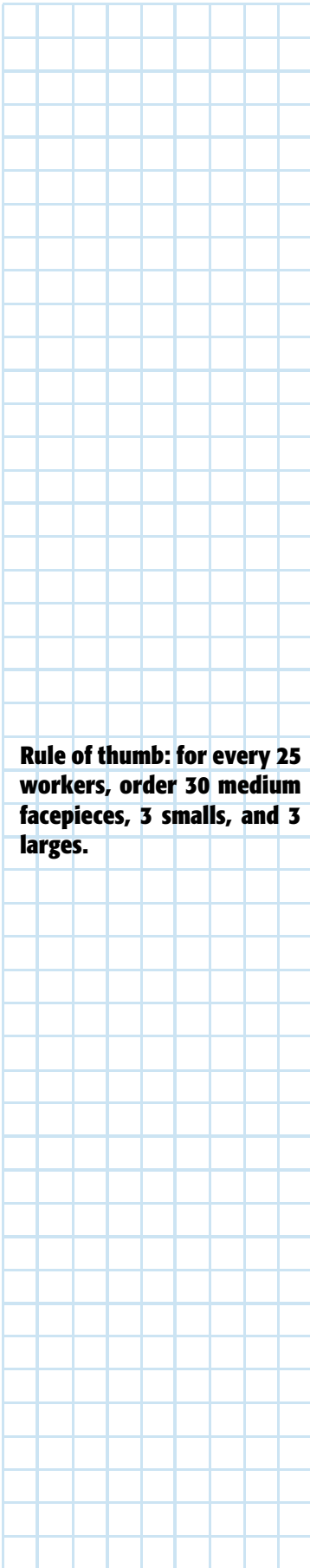
- Qualitative fit testing
 - this method relies on a worker's sense of smell, sense of taste or the irritation of mucus membranes to detect leaks into the facepiece.
 - a qualitative fit test kit can be ordered from many respirator manufacturers and safety equipment suppliers (see Resource List).
 - Table 3 below summarizes important information on qualitative fit tests.
 - refer to the OSHA Respiratory Protection Standard, 1910.134, Appendix A, for detailed instructions on fit testing.
 - use the Respirator Fit Test Record in Section 5 (D-61).
- Quantitative fit testing
 - requires special equipment.
 - is used for certain type respirators (SCBA/FF) when exposure levels are more than 10 times the PEL. For more information see OSHA's Small Entity Compliance Guide (see Resource List). consult an industrial hygienist or safety professional if you select this method.

Fit testing matches each worker with a respirator facepiece that fits comfortably on the face without leaking. Any leaks into the mask allow contaminated air to be inhaled.

Respirator facepieces come in a variety of brands, models, and sizes to fit most people. Beware: there is no one-size-fits-all respirator model!

Fit testing offers workers a chance to practice correct respirator usage as well as an opportunity to select a comfortable model.

Tight-fitting Atmosphere Supplying Respirators and PAPRs have to be fit tested in the negative pressure mode.



Rule of thumb: for every 25 workers, order 30 medium facepieces, 3 smalls, and 3 larges.

Table 3: Qualitative Fit Test Information

Fit Test Agent	Filter/Cartridge	Response
Saccharin	100 series filter*	taste—sweet (voluntary response)
Bitrex	100 series filter*	taste—bitter (voluntary response)
Irritant smoke	100 series filter*	nose and throat irritation (involuntary response; need well-ventilated space)
Banana oil	Organic vapor filter	smell (voluntary response)

*N/R/P-100 designation indicate resistance to oil.
N=not oil resistant/ R= oil resistant / P=oil proof

2.4 Ordering Respirators and Supplies

- Order respirators
 - one respirator for each worker
 - more than one brand may be necessary to fit all workers
 - maintain sufficient stock to replace and repair respirators as needed
- Order filters
 - The right filter for lead exposure is a 100 series (HEPA) filter (N/R/P). This filter can also be used with all fit test agents except banana oil which require organic vapor cartridges.
 - Whichever filters or cartridges you use, make sure that they match the facepiece (same manufacturer/model respirator)
- See Checklist 2: Respirator Supplies (D-63)

Note: these are guidelines for half-mask air-purifying respirators (APR). To order supplies for other types of respirators and masks, check with a local vendor or manufacturer.

Day-to-Day Practices

This section includes guidance on:

3.1 Managing respirator use

3.2 Maintaining respirators

3.1 Managing respirator use

- Post Infosheet 2: Respirator Use Practices (D-65) in the office, the shanty and at the supply station.
- Field supervisors, foremen and workers are responsible for making sure that respirators are used when necessary and that they are maintained and worn correctly.
 - Have a protocol in place for dealing with workers who do not wear respirators when required.
- Apply the respirator program uniformly and consistently: assure that all supervisory personnel and site visitors wear respirators in areas where they may be exposed to lead.
- Discuss problems that arise in the field during management safety meetings and weekly worker toolbox talks.
- As part of regular required evaluation, the RPM should make periodic audits of the site and note any problems.

Refer to Table 4 on next page, Troubleshooting Respirator Problems.

SECTION

3

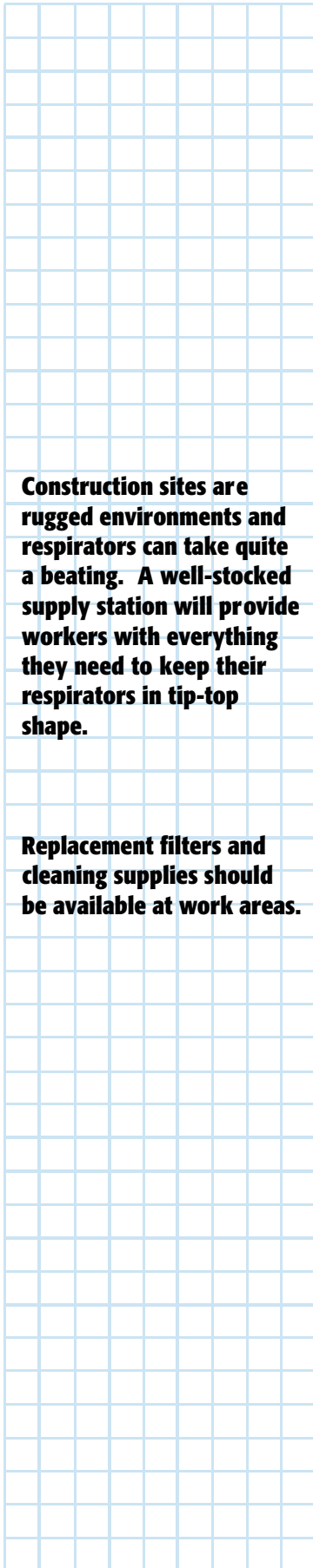
It's simple – if workers wear respirators, they're protected from lead. If they don't – they're not.

Wearing respirators for extended periods of time is uncomfortable and interferes with communication. When possible, adopt practices to ease respirator use, such as short breaks away from exposure, alternating work that requires respirators with other activities.

Table 4: Troubleshooting Respirator Problems

Problem	Solution
Filters don't fit on facepiece.	Make sure to order the correct filters for each type facepiece used on site. Never force or tape the wrong filter (e.g. from different brand respirator) onto the mask.
Respirators getting dirty on job site when not in use	Make sure workers have storage containers, e.g. plastic bags, rigid plastic storages containers. Replace as necessary.
No running water in work areas for cleaning respirators.	Use respirator sanitary wipes to clean up masks during work shifts. Follow manufacturer's cleaning instructions. Provide adequate wash-up stations.
Eyeglasses interfere with fit of full-face respirator.	Use spectacle kit available from respirator manufacturer.
Full-face (FF) respirator lens fogs up.	Use defogging solution available from manufacturer or supplier. Order a FF respirator with oral-nasal mask or substitute with a PAPR or atmosphere supplying respirator.
Difficult to communicate with others.	Consider using respirators with speaking aids; consult with manufacturer. Adopt hand signals when appropriate.
Respirator is hot and uncomfortable.	Provide non-contaminated, cool-off area where workers can remove respirator to wash face. Consider changing style of respirator for a lighter model, or PAPR.
Respirators are frequently torn or worn-out.	Replace and repair as needed. Talk to supplier regarding different make or model respirator.
Respirator is missing inlet or exhaust valve covers.	Keep an adequate supply of spare parts on hand. Encourage workers to inspect and maintain their respirators.
Workers exposed to particulates and organic vapors.	Consult with respirator manufacturer about using combination cartridges.
Employee requests a respirator	Supply worker with respirator as per the OSHA Standard for Lead in Construction.





Construction sites are rugged environments and respirators can take quite a beating. A well-stocked supply station will provide workers with everything they need to keep their respirators in tip-top shape.

Replacement filters and cleaning supplies should be available at work areas.

3.2 Maintaining respirators

On large jobs assign a trained individual to take care of respirators.

- This person (a.k.a. Respirator Technician) is responsible for inspecting, repairing, maintaining supplies, and cleaning respirators.
 - Candidates for the job could be a trained apprentice or journeyman.
- On smaller jobs, workers can do these things for themselves as long as the RPM keeps an adequate stock of respirator supplies and the workers are trained in maintenance procedures recommended by the manufacturer. See Checklist 2: Respirator Supplies (D-63), for suggestions. Quantities needed will vary based on size of workforce and duration of project.

Records & Evaluation

This section reviews:

- 4.1** Recordkeeping
- 4.2** Evaluating the site specific program

4.1 Recordkeeping

- Records can be kept by RPM or delegated to office staff.
- The following records should be maintained
 - respiratory medical clearance
 - fit test results
 - training rosters
- Records should be kept in alphabetical order in a file folder or loose-leaf binder together with the site-specific program.
- Keep a Record Summary Spreadsheet (D-67) of individual worker records. This can be done electronically or manually and should be maintained with the site-specific program. This summary spreadsheet can be designed to alert you to scheduling needs such as:
 - training
 - fit testing
 - medical evaluation
 - annual follow-ups

4.2 Evaluating site-specific program

- The program is evaluated to:
 - ensure that it is working effectively
 - identify areas for improvement
- The components of program evaluation are:
 - reviewing the written guidelines and conducting site audits to assure proper implementation
 - consulting with workers and supervisors about respirator usage
- Program evaluation is conducted by the RPM with help from the company's safety person or an IH consultant.
- Evaluation frequency is determined by the RPM based on exposure levels and complexity of respirator program.
- Conduct the evaluation by walking around the site, observing respirator use, asking questions, and talking to the workers, foremen, and shop stewards.
- Ongoing assessment of factors such as respirator fit, selection, proper use under site conditions, and maintenance.
- Use the Checklist 3: Evaluation of Site Specific Respirator Program (D-69).

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4

Records are kept:

To document respirator activities

To evaluate the overall effectiveness of the program

Because OSHA requires respirator program records and may review them during an inspection

Write up problems identified during assessments along with plans on how to correct them. Keep this information with other program records.

Checklists, Sample Forms & Further Information

Sample Site Specific Respiratory Protection Program

Sample Respirator Selection Worksheet

Infosheet 1: Information to Gather When Hiring a Medical Service

Job/Task Information Form for PLHCP

Medical Evaluation Questionnaire (English)

Medical Evaluation Questionnaire (Spanish)

Employee Instructions for Filling Out Respirator MEQ

Checklist 1: Suggested Respirator Training Topics

Respirator Fit Test Record

Checklist 2: Respirator Supplies

Infosheet 2: Respirator Use Practices

Sample Respirator Records Summary

Checklist 3: Evaluation of Site-Specific Respirator Program

SECTION

5

**Respiratory Protection Program for Lead
Sand City Construction Co., Inc.**

**Gotham City Railway Main Terminal Building
Historical Restoration, contract # NCS-7833
January 1, 2000 – June 30, 2001**

Table of Contents

- 1.0** Purpose
- 2.0** Scope and Application
 - 2.1** Voluntary Use
- 3.0** Responsibilities
 - 3.1** Program Administrators
 - 3.2** Supervisors
 - 3.3** Employees
- 4.0** Program Elements
 - 4.1** Selection Procedures
 - 4.2** Hazard Assessment
 - 4.3** Medical Evaluation
 - 4.4** Fit Testing
 - 4.5** Respirator Use
 - 4.6** Emergency Procedures
 - 4.7** Cleaning, Maintenance, Change Out Schedule, Storage, Defective Respirators
 - 4.8** Training
- 5.0** Program Evaluation
- 6.0** Documentation and Recordkeeping

The Model Respiratory Protection Program is for demonstration purposes only. It is based on the Sample Respiratory Protection Program located in Appendix iv of the OSHA Small Entity Compliance Guide. All names and companies are fictitious.

1.0 Purpose

Sand City Construction Co., Inc. has been contracted to complete the Gotham City Railway Main Terminal Building Historical Restoration, contract # NCS-7833.

Sand City Construction has determined that during the course of this project some employees will be exposed to lead dust and fume during routine operations. The purpose of this program is to ensure that Sand City Construction employees are protected from exposure to lead.

Whenever feasible engineering controls, such as substitution, or the use of tools equipped with Local Exhaust Ventilation (LEV) will be used to reduce exposure. When engineering controls cannot be used, or have not successfully reduced the hazard sufficiently, respirators will be employed.

2.0 Scope and Application

This program applies to all Sand City Construction employees who are required to wear respirators during normal work operations. Work processes requiring the use of respirators are listed in Section 4.2 Table 1. Work activities covered by this program include the use of: rivet busters, oxyacetylene torches, grinders, and any other tool/task emitting lead dust or fume. Project management will assure that changes in work operations are evaluated for hazardous exposures and proper respirator selection.

Employees participating in the respiratory protection program do so at no cost to themselves. Any expense associated with training, medical evaluations and respiratory protection equipment will be borne by the company.

2.1 Voluntary Use

Any employee who voluntarily chooses to wear one of the respirators selected when a respirator is not required will be subject to the provisions of this section.

Sand City Construction will approve requests for voluntary respirator use on a case-by-case basis. Voluntary use of a respirator may be granted if such use will not jeopardize the health or safety of the worker. The Program Administrator will provide all employees who voluntarily choose to wear a respirator a copy of Appendix D of the of the OSHA respirator standard 1910.134 which details the requirements for voluntary use.

Voluntary users are subject to the medical evaluation, cleaning, maintenance, inspection and storage elements of this program. Fit testing and training are not required but highly recommended. To date, no workers have requested respirators where not required.

Employees voluntarily wearing filtering facepieces (dust masks) are not subject to the provisions of this program.

3.0 Responsibilities

3.1 Program Administrator

The Program Administrator is responsible for administering the respiratory protection program. The responsibilities of the Program Administrator include:

- Identifying work areas, processes and tasks that require respiratory protection.
- Selecting respirators.
- Monitoring respirator use to ensure they are used correctly.
- Arranging for and/or conducting respirator training.
- Providing for proper storage and maintenance of respirator equipment in accordance with the provisions of this program.
- Arranging for and/or conducting fit testing.
- Administrating the medical surveillance program.
- Keeping records.
- Periodically evaluating the program.
- Updating the program when required.

The Respirator Program Administrator for Sand City Construction at the Gotham City Railway Main Terminal Building Historical Restoration Project is John Freeman, Telephone number (917) 666-7876.

The Program Administrator may appoint additional personnel to assist him/her in administrating the program. At this site John Franklin is responsible for respirator maintenance.

3.2 Supervisors

Supervisors are responsible for ensuring that the respiratory protection program is implemented in their work areas. In addition to being knowledgeable about the program, supervisors must also ensure that the program is understood and followed by the employees they supervise. Duties of the supervisor include:

- Ensuring the availability of appropriate respirators and accessories.
- Being aware of tasks requiring the use of respiratory protection.
- Enforcing the proper use of respiratory protection when necessary.
- Ensuring that respirators are properly cleaned, maintained, and stored according to the respiratory protection plan.
- Ensuring that respirators fit well and do not cause discomfort.
- Coordinating with the Program Administrator on how to address respiratory hazards or other concerns regarding the program.

3.3 Employees

Each employee has the responsibility to wear his or her respirator when and where required and in the manner in which they were trained. Employees must also:

- Care for and maintain their respirators as instructed, and store them in a clean sanitary location.
- Inform their supervisor if the respirator no longer fits well, and request a new one that fits properly.
- Inform their supervisor or the Program Administrator of any respiratory hazards that they feel are not adequately addressed in the workplace and of any other concerns that they have regarding the program.

4.0 Program Elements

4.1 Selection Procedures

The Program Administrator has selected respirators for the site based on respiratory hazards that workers are potentially exposed to and in accordance with all OSHA standards.

Workers are given a choice of 3M model 7500 or Survivair 7000 series 1/2 face air purifying respirator, each available in 3 sizes (small, medium and large). A copy of the manufacturers instructions for using each type respirator is attached to this program.

The Program Administrator has reviewed the hazard evaluation for each operation, process, or work area where airborne contaminants may be present. All work activities that crush, cut, grind, burn or generate dust or fume were evaluated for hazardous exposures. Procedures for respirator selection included:

- Inventory of hazardous substances used or produced at the project site.
- Review of work activities to determine where potential exposures to hazardous substances may occur. This review was conducted by considering the scope of work, by surveying the workplace, and by talking with employees and supervisors.
 - Initial respirator selection for lead exposed workers will be based on OSHA presumed exposure levels, Lead In Construction; Interim Final Rule, 29 CFR 1926.62

Exposure assessment (personal air monitoring) at this location was conducted by:
Quality Industrial Hygiene Inc.
55 Sullivan Place, Brooklyn, NY 11225
Telephone number 718-889-4532/ 1-800-654-0987

The results of the current exposure monitoring and respirator selections are listed in Table 1 in Section 4.2. Exposure monitoring reports are retained in the Program Manager's office.

- 4.1(a)** Only respirators approved by the National Institute of Occupational Safety and Health (NIOSH) have been selected for use at this site. All respirators shall be used in accordance with the terms of that certification. All filters, cartridges, and canisters are labeled with the appropriate NIOSH approval label. The label must not be removed or defaced while it is in use.

Respirators selected for use at this site have a maximum use concentration equal to or greater than the air monitoring results for a particular work activity.

4.2 Hazard Assessment

The Program Administrator will revise and update the hazard assessment as needed, for example if there is a change in a work process that may potentially affect exposure levels. If an employee feels that respiratory protection is needed during a particular activity, they have been informed that they should notify their supervisor or the Program Administrator. The Program Administrator will evaluate the potential hazard and arrange for outside assistance as needed. If it is determined that respiratory protection is necessary, all other elements of this program will be in effect for those tasks and this program will be updated accordingly.

Table 1: Results of Exposure Assessment and Respirator Selection for Lead Gotham City Railway Main Terminal Building Restoration Project

Activity	Exposed Workers	Air Monitoring 8-hour TWA (mg/m³)	Maximum Use Concentration	Step 4: Respirator Selector
Rivet busting	Iron Workers	285 mcg/m ³	500 mcg/m ³	1/2-face APR
Grinding	Iron Worker/ Laborer	205 mcg/m ³	500 mcg/m ³	1/2-face APR
Paint removal via hand scraping	Painters	40 mcg/m ³	500 mcg/m ³	1/2-face APR
Torch cutting	Iron workers	950 mcg/m ³	2,500 mcg/m ³	Atmosphere supplying airline respirator in constant supply mode
Clean up	Iron Workers	35 mcg/m ³	500 mcg/m ³	1/2-face APR

4.3 Medical Evaluation

4.3(a) Employees who are either required to wear a respirator on this job, or who choose to wear one voluntarily, must be medically cleared for respirator use by a physician or licensed health care professional (PLHCP) before being permitted to do so on this job. Any employee refusing the medical evaluation will not be allowed to work in an area requiring respirator use.

4.3(b) The Gotham City Occupational Medicine Clinic has been selected to conduct respirator medical clearance evaluations for Sand City Construction:

Gotham City Occupational Medicine Clinic
 55 Sullivan Place, Brooklyn, NY 11225
 Telephone number: 718-987-0090

Procedures for the medical evaluation are as follows:

- The medical evaluation is conducted using the questionnaire provided in Appendix C of the OSHA Respiratory Protection Standard. The Program Administrator has to provide a copy of this questionnaire to all employees requiring medical evaluations.
- To the extent feasible, the company provides translators and/or readers to assist employees who are unable to read the questionnaire.
- All affected employees are given a copy of the medical questionnaire to fill out, along with a stamped envelope addressed to the Gotham City Occupational Medicine Clinic.

- Employees are permitted to fill out the questionnaire on company time.
- Follow-up medical exams are granted to employees as required by the standard, and/or as deemed necessary by the Gotham City Occupational Medicine Clinic.
- All employees are granted the opportunity to speak with the physician about their medical evaluation, if they so request.

The Program Administrator has provided the Gotham City Occupational Medicine Clinic with a copy of this program, a copy of the OSHA Respiratory Protection Standard, and a list of hazardous substances by work area. For each employee requiring a medical evaluation, the Clinic has been provided with the following information:

- Work area or job title.
- Proposed respirator type.
- Length of time employee will be required to wear a respirator.
- Expected physical work load (light, moderate, or heavy).
- Potential temperature and humidity extremes.
- Any additional protective clothing required.

Any employee required for medical reasons to wear a powered air purifying respirator (PAPR) will be provided with a powered APR. To date, this has not been necessary.

Any employee who has received clearance and begun to wear a respirator, will be provided with additional medical evaluation under the following circumstances:

- Employee reports signs and/or symptoms related to their ability to use a respirator, such as shortness of breath, dizziness, chest pains, or wheezing.
- The Gotham City Occupational Medicine Clinic physician or supervisor informs the Program Administrator that the employee needs to be reevaluated.
- Information from this program, including observations made during fit testing and program evaluation, indicates a need for reevaluation.
- A change occurs in workplace conditions that may result in an increased physiological burden on the employee.

A list of Sand City Construction employees currently included in medical surveillance is provided in Section 6.0 Table 2.

All examinations and questionnaires are to remain confidential between the employee and the physician.

4.4 Fit Testing

All employees required to wear a respirator are fit tested:

- Prior to initial use of a tight fitting facepiece respirator.
- Annually.
- When there are changes in the employee's physical condition that could affect respiratory fit (obvious change in body weight, facial scarring, etc).

New employees will be fit tested when they begin work in an area requiring respirators.

Employees voluntarily wearing 1/2-face APRs may be fit tested upon request.

Employees are fit tested with the make, model, and size of respirator that they actually wear. Employees are provided with several models and sizes of respirators so that they may find the best fit.

Fit testing of positive pressure respirators will be conducted in the negative pressure mode.

All fit tests follow the protocol in the OSHA Respiratory Protection Standard 1910.134, Appendix A. All 1/2-face APRs are qualitatively fit tested. Full-face respirators are quantitatively fit tested when used to a protection factor exceeding 10x the OSHA Permissible Exposure Level for lead. To date, this has not been necessary.

4.5 Respirator Use

Employees are trained to use their respirators whenever performing tasks listed in Table 1 or any other tasks specified by the Program Administrator. All use is in accordance with this program and with the training received by workers. A respirator shall not be used in a manner for which it is not certified by NIOSH or by its manufacturer.

All employees will conduct user seal checks each time they wear their respirator.

All employees are permitted to leave the work area to go to a clean area to maintain their respirator for the following reasons:

- To clean their respirator if the respirator is impeding their ability to work.
- To relieve skin irritation.
- To change filters/cartridges or to replace parts.
- To repair respirator malfunctions.

Employees are informed that they should notify their supervisor before leaving the work area.

Employees are trained that respirators must be worn so that a good facepiece-to-face seal is maintained.

- Employees are not permitted to wear tight-fitting respirators if they have any condition, such as facial scars, facial hair, jewelry, or missing dentures, that prevents them from achieving a good seal.
- Employees are not permitted to wear headphones, jewelry, or other articles that may interfere with the facepiece-to-face seal.

4.6 Emergency Procedures

At this site there are no work areas or processes identified to date as having foreseeable work related emergencies requiring respiratory protection. Sand City Construction employees are not trained as emergency responders, and are not authorized to act in such a manner.

4.6(a) Respirator Malfunction

For any malfunction (e.g., such as breakthrough, leakage, or a malfunctioning valve), the respirator wearer informs his or her supervisor and then proceeds to the designated clean area to maintain the respirator. The supervisor ensures that the employee receives the needed parts to repair the respirator, or is provided with a new respirator.

4.7 Cleaning, Maintenance, Filter Change Out Schedule and Storage

Respirators are inspected for defects, cleaned, disinfected, and maintained on a regular basis by the individual worker or the designated respirator program assistant. At this site John Franklin is responsible for respirator maintenance.

4.7(a) Cleaning

A designated respirator cleaning station is located in the employee locker room. The Program Administrator ensures an adequate supply of appropriate cleaning and disinfecting material at the cleaning station. If supplies are low, employees are informed that they should contact their supervisor, the Program Administrator, or respirator program assistant.

The following procedure is to be used when cleaning and disinfecting respirators:

- Disassemble respirator, remove any filters, canisters, or cartridges.
- Wash the facepiece and parts in a mild detergent with warm water. Do not use organic solvents.
- Rinse completely in clean warm water.
- Wipe the respirator with disinfectant wipes to kill germs.
- Air dry in a clean area.
- Reassemble the respirator and replace any defective parts.
- Place in a clean, dry plastic bag or other airtight container.
- Respirators issued for the exclusive use of an employee shall be cleaned as often as necessary.
- Atmosphere supplying respirators are to be cleaned and disinfected after each use

Sanitary wipes for cleaning respirators in the field are available in the supply station and gang boxes in each work location.

4.7(b) Maintenance

Respirators are to be properly maintained at all times in order to ensure that they function properly and adequately protect the employee. Maintenance involves a thorough visual inspection for cleanliness and defects. Worn or deteriorated parts will be replaced prior to use. No components will be replaced or repairs made beyond those recommended by the manufacturer.

The following items will be checked when inspecting respirators:

- Facepiece: cracks, tears, or holes
- Facemask distortion
- Cracked or loose lenses/faceshield
- Headstraps: breaks or tears, broken buckles
- Residue, dirt cracks or tears in valve material
- Filters/cartridges, the right one for the hazard, cracked or excessively dirty
- Gaskets and housings for cracks or dents

4.7(c) Change Out Schedules

Employees wearing air purifying respirators with 100 series filters are informed that they

should change the filter cartridges on their respirators when they are difficult to breathe through, excessively dirty or damaged.

4.7(d) Storage

Respirators are stored in a clean, dry area, and in accordance with the manufacturer's recommendations. Each employee cleans and inspects his/her own air-purifying respirator in accordance with this program and stores their respirator after drying in a dry plastic bag or rigid container with a tight fitting lid.

4.7(e) Defective Respirators

Respirators that are defective are taken out of service immediately. If, during an inspection, an employee discovers a defect in a respirator, he/she will inform their supervisor. Supervisors give all defective respirators to the Program Administrator or his/her assistant for repair or disposal.

4.8 Training

4.8(a) Training Topics:

- OSHA Respiratory Protection Standard Program.
- Sand City Construction's Respiratory Protection Program.
- Worker and supervisor responsibilities under the program.
- Respiratory hazards encountered at this site and their health effects.
- How a respirator works including limitations of selected respirator.
- Respirator selection.
- Respirator use including inspecting for defects.
- Respirator donning and user seal (fit) checks.
- Fit testing, explanation of fit test exercises.
- Emergency use procedures, if deemed necessary.
- Cleaning, maintenance and storage procedures.
- When to change filters, where to get new filters and/or replacement parts.
- Medical signs and symptoms limiting the effective use of respirators.

Employees will be retrained annually or as needed, for example if there is a change in work process or type of respirator required.

5.0 Program Evaluation

The Program Administrator or his/her assistant conducts evaluations periodically of the workplace to ensure the effectiveness of the respirator program. The evaluations include consultations with employees and their supervisors, site inspections, air monitoring and a review of records. The Program Administrator corrects any problems identified during these evaluations.

6.0 Documentation and Recordkeeping

A written copy of this program and the OSHA standard is kept in the Program Administrator's Office and is available to all employees who wish to review it. Other records on file include: training rosters and materials, fit test results, and medical clearance certificates. These records will be updated as new employees are trained, or as existing employees receive refresher training, or as new fit tests are conducted.

The Program Administrator also maintains copies of the medical records for all employees covered under the respirator program. The completed medical questionnaire and the physician's documented findings are confidential and will remain at Gotham City Occupational Medicine Clinic. The company will retain only the physician's written recommendation regarding each employee's ability to wear a respirator. Personnel respirator records are summarized in Table 2.

Table 2: Personnel Respirator Records

Last Name	First Name	Respirator type and size	Medical Certificate Date	Fit Test Date	Training Date
Jones	Robert	3M -model 7500 1/2 face APR (M)	03/01/00	03/04/00 02/12/01	03/04/00 02/12/01
Bidofsky	Paul	Survivair - 7000 1/2 face APR (M)	03/01/00	03/04/00 02/12/01	03/04/00 02/12/01
Ramos	Jose	Survivair - 7000 1/2 face APR (M)	03/01/00	03/04/00 02/12/01	03/04/00 02/12/01
Schwartz	Harvey	3M -model 7500 1/2 face APR (M)	03/01/00	03/04/00 02/12/01	03/04/00 02/12/01

SAMPLE RESPIRATOR SELECTION WORKSHEET

Step 1: Activity												
Step 2: Exposed Workers												
Step 3: Air Monitoring Results (mcg/m ³)												
Step 5: Maximum Use Construction (mcg/m ³)												
Step 5: Respirator Selected												

Infosheet 1: Information to Gather When Hiring a Medical Service

- Is service familiar with the medical evaluation requirements in the OSHA Lead In Construction Standard (strongly recommended)
- Is it familiar with construction work (recommended)
- Is it familiar with occupational medicine (recommended)
- Can it provide language translations (recommended if necessary)
- Determine where and how service will administer MEQs – see Section 2 for choices
- Is it capable of providing follow-up medical consultations if needed either in person or by phone or both (recommended)
- Establish how long it takes to get medical determination back from the medical service
- Is service capable of providing storage of MEQ records? (Records must be kept for thirty years after retirement)
- Determine the costs of the initial evaluation, follow-up exams, record storage

Job/Task Information Form for PLHCP

Please provide the following information about respirator users, site working conditions, potential exposures, and respirator selection. Also provide a copy of the company's current respirator program.

1. Company Name _____ **Date** _____

Respirator Program Manager _____ Phone _____

Address _____

2. Description of work tasks requiring respirators e.g. torch cutting

3. How often are respirators being worn by employees?

hours per day _____ days per week _____ escape/rescue only _____

4. Potential Exposures: (check all that apply)

___ lead

___ asbestos

___ silica

___ methylene chloride

___ solvents, paints, lacquers

___ oxygen deficiency

other(s) _____

5. Work Effort:

___ light (sitting, standing) ___ moderate (walking, pushing, lifting)

___ heavy (pick and shovel work, heavy lifting)

6. Site Conditions:

___ extreme heat or cold

___ outdoors

___ confined spaces

___ elevated work

___ other _____

___ protective clothing/equipment (other than respirator) Please list: _____

7. Please attach a copy of the company's respirator program.

8. Please complete the chart below for workers who will be assigned a respirator (check all that apply).

Name	Date of Birth	Respirator	Facepiece
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____
		APR ____ PAPR ____ SAR ____ SCBA ____	1/2 ____ full ____ hood/helmet ____

Notes:

APR - Air purifying respirator

PAPR - Power air purifying respirator

SAR - Supplied air respirator (air line)

SCBA - Self-contained breathing apparatus

1/2 - Half face respirator

full - Full face respirator

hood/helmet - covers nose, mouth, head and neck and may cover portions of the shoulders and torso

OSHA Respirator Medical Evaluation Questionnaire

To the employee: Can you read English (check one): Yes No

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date: _____
2. Last name: _____ First name: _____
3. Age (to nearest year): _____
4. Sex (check one): Male Female
5. Height: _____ft. _____in.
6. Weight: _____lbs.
7. Job title: _____
8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include area code): (____) _____
9. The best time to reach you at this number _____
10. Has your employer told you how to contact the health care professional who will review this questionnaire (check one): Yes No
11. Check the type of respirator you will use (you can check more than one category):
 - a. _____ Disposable respirator N, R, or P (filter-mask, non-cartridge type only).
 - b. _____ Other (for example, half or full-facepiece, powered-air purifying, supplied-air, self-contained breathing apparatus).
12. Have you ever worn a respirator in the past: Yes No
If "yes," what type(s): _____

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

- | | | |
|--|-----|----|
| 1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: | Yes | No |
| 2. Have you ever had any of the following conditions? | | |
| a. Seizures: | Yes | No |
| b. Diabetes (sugar disease): | Yes | No |
| c. Allergic reactions that interfere with your breathing: | Yes | No |
| d. Claustrophobia (fear of closed-in places): | Yes | No |
| e. Trouble smelling odors: | Yes | No |
| 3. Have you ever had any of the following pulmonary or lung problems? | | |
| a. Asbestosis: | Yes | No |
| b. Asthma: | Yes | No |
| c. Chronic bronchitis: | Yes | No |
| d. Emphysema: | Yes | No |
| e. Pneumonia: | Yes | No |
| f. Tuberculosis: | Yes | No |
| g. Silicosis: | Yes | No |
| h. Pneumothorax (collapsed lung): | Yes | No |
| i. Lung cancer: | Yes | No |
| j. Broken ribs: | Yes | No |
| k. Any chest injuries or surgeries: | Yes | No |
| l. Any other lung problem that you've been told about: | Yes | No |
| 4. Do you currently have any of the following symptoms of pulmonary or lung illness? | | |
| a. Shortness of breath: | Yes | No |
| b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: | Yes | No |
| c. Shortness of breath when walking with other people at an ordinary pace on level ground: | Yes | No |
| d. Have to stop for breath when walking at your own pace on level ground: | Yes | No |
| e. Shortness of breath when washing or dressing yourself: | Yes | No |
| f. Shortness of breath that interferes with your job: | Yes | No |
| g. Coughing that produces phlegm (thick sputum): | Yes | No |
| h. Coughing that wakes you early in the morning: | Yes | No |
| i. Coughing that occurs mostly when you are lying down: | Yes | No |
| j. Coughing up blood in the last month: | Yes | No |
| k. Wheezing: | Yes | No |
| l. Wheezing that interferes with your job: | Yes | No |
| m. Chest pain when you breathe deeply: | Yes | No |
| n. Any other symptoms that may be related to lung problems: | Yes | No |

5. Have you **ever had** any of the following cardiovascular or heart problems?
- | | | |
|---|-----|----|
| a. Heart attack: | Yes | No |
| b. Stroke: | Yes | No |
| c. Angina: | Yes | No |
| d. Heart failure: | Yes | No |
| e. Swelling in your legs or feet (not caused by walking): | Yes | No |
| f. Heart arrhythmia (heart beating irregularly): | Yes | No |
| g. High blood pressure: | Yes | No |
| h. Any other heart problem that you've been told about: | Yes | No |
6. Have you **ever had** any of the following cardiovascular or heart symptoms?
- | | | |
|---|-----|----|
| a. Frequent pain or tightness in your chest: | Yes | No |
| b. Pain or tightness in your chest during physical activity: | Yes | No |
| c. Pain or tightness in your chest that interferes with your job: | Yes | No |
| d. In the past two years, have you noticed your heart skipping or missing a beat: | Yes | No |
| e. Heartburn or indigestion that is not related to eating: | Yes | No |
| f. Any other symptoms that you think may be related to heart or circulation problems: | Yes | No |
7. Do you **currently** take medication for any of the following problems?
- | | | |
|--------------------------------|-----|----|
| a. Breathing or lung problems: | Yes | No |
| b. Heart trouble: | Yes | No |
| c. Blood pressure: | Yes | No |
| d. Seizures: | Yes | No |
8. If you've used a respirator, have you **ever had** any of the following problems?
(If you've never used a respirator, check the following space and go to question 9:)
- | | | |
|---|-----|----|
| a. Eye irritation: | Yes | No |
| b. Skin allergies or rashes: | Yes | No |
| c. Anxiety: | Yes | No |
| d. General weakness or fatigue: | Yes | No |
| e. Any other problem that interferes with your use of a respirator: | Yes | No |
9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire:
- | | | |
|--|-----|----|
| | Yes | No |
|--|-----|----|

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

- | | | |
|--|-----|----|
| 10. Have you ever lost vision in either eye (temporarily or permanently): | Yes | No |
| 11. Do you currently have any of the following vision problems? | | |
| a. Wear contact lenses: | Yes | No |
| b. Wear glasses: | Yes | No |
| c. Color blind: | Yes | No |
| d. Any other eye or vision problem: | Yes | No |
| 12. Have you ever had an injury to your ears, including a broken eardrum: | Yes | No |
| 13. Do you currently have any of the following hearing problems? | | |
| a. Difficulty hearing: | Yes | No |
| b. Wear a hearing aid: | Yes | No |
| c. Any other hearing or ear problem: | Yes | No |
| 14. Have you ever had a back injury: | Yes | No |
| 15. Do you currently have any of the following musculoskeletal problems? | | |
| a. Weakness in any of your arms, hands, legs, or feet: | Yes | No |
| b. Back pain: | Yes | No |
| c. Difficulty fully moving your arms and legs: | Yes | No |
| d. Pain or stiffness when you lean forward or backward at the waist: | Yes | No |
| e. Difficulty fully moving your head up or down: | Yes | No |
| f. Difficulty fully moving your head side to side: | Yes | No |
| g. Difficulty bending at your knees: | Yes | No |
| h. Difficulty squatting to the ground: | Yes | No |
| i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: | Yes | No |
| j. Any other muscle or skeletal problem that interferes with using a respirator: | Yes | No |

Part B: Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. Describe the work you'll be doing while you're using your respirator:

2. Will you be using any of the following items with your respirator?

- | | | |
|--|-----|----|
| a. HEPA Filters (pink, red): | Yes | No |
| b. Canisters (for example, gas masks): | Yes | No |
| c. Cartridges: | Yes | No |

3. How often are you expected to use the respirator (circle "yes" or "no" for all answers that apply to you)?:

- | | | |
|--|-----|----|
| a. Escape only (no rescue): | Yes | No |
| b. Emergency rescue only: | Yes | No |
| c. Less than 5 hours <i>per week</i> : | Yes | No |
| d. Less than 2 hours <i>per day</i> : | Yes | No |
| e. 2 to 4 hours <i>per day</i> : | Yes | No |
| f. Over 4 hours <i>per day</i> : | Yes | No |

4. During the period you are using the respirator, is your work effort:

- | | | |
|---|-----|----|
| a. Light: [e.g., sitting while typing or writing; performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.] | Yes | No |
|---|-----|----|

If "yes," how long does this period last during the average shift: _____ hrs. _____ mins.

- | | | |
|---|-----|----|
| b. Moderate: [e.g., sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, or assembling a moderate load (about 35 lbs.) at trunk level; walking; pushing a wheelbarrow with heavy load (about 100 lbs.) on a level surface.] | Yes | No |
|---|-----|----|

If "yes," how long does this period last during the average shift: _____ hrs. _____ mins.

- | | | |
|---|-----|----|
| c. Heavy: [e.g., lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8° grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).] | Yes | No |
|---|-----|----|

If "yes," how long does this period last during the average shift: _____ hrs. _____ mins.

5. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: Yes No

If "yes," describe this protective clothing and/or equipment:

6. Describe any special or hazardous conditions you might encounter when you're using your respirator (e.g., confined spaces, life-threatening gases):

7. List the hazardous substances that you work with while wearing a respirator:

8. Describe any special responsibilities you'll have while using your respirator that may affect the safety and well-being of others (e.g. rescue, security):

9. Have you ever worked with any of the materials, or under any of the conditions, listed below:

- | | | |
|-------------------------------------|-----|----|
| a. Asbestos: | Yes | No |
| b. Silica (e.g. in sandblasting): | Yes | No |
| c. Beryllium: | Yes | No |
| d. Tungsten/cobalt: | Yes | No |
| e. Aluminum: | Yes | No |
| f. Coal (for example, mining): | Yes | No |
| g. Iron: | Yes | No |
| h. Dusty environments: | Yes | No |
| i. Tin: | Yes | No |
| j. Solvents (e.g. paints, lacquers) | Yes | No |
| k. Any other hazardous exposures: | Yes | No |

If "yes," describe these exposures:

10. At home have you been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or had skin contact with hazardous chemicals: Yes No

If "yes," name the chemicals if you know them:

11. List any second jobs or side businesses you have:

12. Have you been in the military services? Yes No
If "yes," were you exposed to biological or chemical agents (either in training or combat): Yes No

13. Have you ever worked on a HAZMAT team? Yes No

Cuestionario de Evaluación Médica Obligado por OSHA
(Administración de Seguridad y Salud Ocupacional)
Parte 29 CFR 1910.134 Obligatorio para la protección del sistema respiratorio

Marque con un círculo para indicar sus respuestas a cada pregunta

Para el empleado: ¿Puede usted leer? (circule uno) Sí No

Su empleador debe dejarlo responder estas preguntas durante horas de trabajo o en el momento y lugar que sea conveniente para usted. Para mantener este cuestionario confidencial, su empleador o supervisor no debe ver ni revisar sus respuestas. Su empleador debe informarle a quién dar o cómo enviar este cuestionario al profesional de salud que lo va a revisar.

Parte A. Sección 1. (Obligatorio). La siguiente información debe ser provista por cada empleado que ha sido seleccionado para usar cualquier tipo de respirador (escriba claro por favor).

1. Fecha: _____

2. Nombre: _____

APELLIDO

NOMBRE

3. Edad: _____

4. Sexo (circule uno) Masculino o Femenino

5. Altura: _____ pies _____ pulgadas

6. Peso: _____ libras

7. Su ocupación, título o tipo de trabajo: _____

8. Número de teléfono donde le puede llamar un profesional de salud con licencia que revisará este cuestionario (incluya el área): _____

9. Indique la hora más conveniente para llamarle a este número: _____

10. ¿Le ha informado su empleador cómo comunicarse con el profesional de salud con licencia que va a revisar este cuestionario (circule una respuesta)? Sí No

11. Anote el tipo de equipo respiratorio que va a utilizar (puede anotar más de una categoría)

a. _____ Respirador desechable de clase N, R o P (por ejemplo: respirador de filtro mecánico, respirador sin cartucho).

b. _____ Otros tipos (respirador de media cara o cara completa, purificador de aire accionado por un motor, máscara con manguera con soplador (PAPR), máscara con manguera sin soplador (SAPR), aparato personal de auto-respiración (SCBA)

12. ¿Ha usado algún tipo de respirador?	Sí	No
---	----	----

Si ha usado equipo protector respiratorio, qué tipo(s) ha utilizado:

Parte A. Sección 2. (Obligatorio): Las preguntas del 1 al 9 deben ser contestadas por cada empleado que fue seleccionado para usar cualquier tipo de respirador. Marque con un círculo para indicar sus respuestas.

1. ¿Fuma tabaco actualmente, o ha fumado tabaco durante el último mes?	Sí	No
--	----	----

2. ¿Ha tenido algunas de las siguientes condiciones médicas?

- | | | |
|---|----|----|
| a. Convulsiones | Sí | No |
| b. Diabetes (azúcar en la sangre) | Sí | No |
| c. Reacciones alérgicas que no lo dejan respirar | Sí | No |
| d. Claustrofobia | Sí | No |
| e. Dificultad para oler excepto cuando ha cogido un resfriado | Sí | No |

3. ¿Ha tenido alguno de los siguientes problemas pulmonares?

- | | | |
|--|----|----|
| a. Asbestosis | Sí | No |
| b. Asma | Sí | No |
| c. Bronquitis crónica | Sí | No |
| d. Enfisema | Sí | No |
| e. Pulmonía | Sí | No |
| f. Tuberculosis | Sí | No |
| g. Silicosis | Sí | No |
| h. Neumotorax (pulmón colapsado) | Sí | No |
| i. Cáncer en los pulmones | Sí | No |
| j. Costillas quebradas | Sí | No |
| k. Lesión o cirugía en el pecho | Sí | No |
| l. Algún otro problema de los pulmones que le haya dicho su médico | Sí | No |

4. ¿Tiene actualmente alguno de los siguientes síntomas o enfermedades en los pulmones?

- | | | |
|--|----|----|
| a. Respiración dificultosa | Sí | No |
| b. Respiración dificultosa cuando camina rápido sobre terreno plano o subiendo una colina | Sí | No |
| c. Respiración dificultosa cuando camina normalmente con otras personas sobre terreno plano | Sí | No |
| d. Cuando camina normalmente en terreno plano ¿siente que tiene que detenerse para coger aire? | Sí | No |

e.	Respiración dificultosa cuando se está bañando o vistiendo	Sí	No
f.	Respiración dificultosa que le impide trabajar	Sí	No
g.	Tos con flema	Sí	No
h.	Tos que lo despierta temprano en la mañana	Sí	No
i.	Tos que ocurre mayormente cuando está acostado	Sí	No
j.	¿Ha tosido sangre en el último mes?	Sí	No
k.	Respiración dificultosa y con ruido	Sí	No
l.	Respiración dificultosa y con ruido que le impide trabajar	Sí	No
m.	Dolor en el pecho cuando respira profundamente	Sí	No
n.	Otros síntomas que cree usted están relacionados a los pulmones	Sí	No
5. ¿Ha tenido algunos de los siguientes problemas con el corazón?			
a.	Ataque cardíaco	Sí	No
b.	Ataque cerebrovascular	Sí	No
c.	Angina de pecho	Sí	No
d.	Insuficiencia cardíaca	Sí	No
e.	Hinchazón en las piernas o pies (que no sea por caminar)	Sí	No
f.	Latidos irregulares del corazón	Sí	No
g.	Presión alta	Sí	No
h.	Algún otro problema con el corazón	Sí	No
6. ¿Ha tenido algunos de los siguientes síntomas cardiacos?			
a.	Dolor de pecho frecuente o pecho apretado	Sí	No
b.	Dolor o pecho apretado durante actividad física	Sí	No
c.	Dolor o pecho apretado que no lo deja trabajar normalmente	Sí	No
d.	En los últimos dos años ha notado que su corazón late irregularmente	Sí	No
e.	Dolor en el pecho o indigestión que no es relacionado a la comida	Sí	No
f.	Algunos otros síntomas que usted piensa son causados por problemas del corazón o de la circulación	Sí	No
7. ¿Está tomando medicinas por alguno de los siguientes problemas?			
a.	Problemas pulmonares		
b.	Problemas del corazón		
c.	Presión alta		
d.	Convulsiones		

8. Si ud. ha usado un respirador ¿ha tenido alguna vez alguno de los siguientes problemas? (si no ha usado un respirador deje esta pregunta en blanco y continúe con la pregunta 9).

- | | | | |
|----|--|----|----|
| a. | Irritación de los ojos | Sí | No |
| b. | Alergias del cutis o salpullido | Sí | No |
| c. | Ansiedad que ocurre solamente cuando usa el respirador | Sí | No |
| d. | Debilidad, falta de vigor o fatiga desacostumbrada | Sí | No |
| e. | Algún otro problema que le impida utilizar su respirador | Sí | No |

9. ¿Le gustaría hablar con el profesional de salud que va a revisar sus respuestas? Sí No

Las preguntas de la 10 a la 15 deben ser contestadas por los empleados seleccionados para usar un respirador purificador de aire de cara completa con filtros o un aparato personal de auto-respiración?

10. ¿Ha perdido la vista en cualquiera de sus ojos (temporalmente o permanente)? Sí No

11. ¿Actualmente tiene algunos de los siguientes problemas con su vista? Sí No

- | | | | |
|----|---|----|----|
| a. | Usa lentes de contacto | Sí | No |
| b. | Usa lentes | Sí | No |
| c. | Daltonismo (dificultad para distinguir colores) | Sí | No |
| d. | Algún problema con los ojos o la vista | Sí | No |

12. ¿Se ha hecho alguna vez daño en los oídos, como romperse el tímpano? Sí No

13. ¿Tiene actualmente alguno de los siguientes problemas para oír?

- | | | | |
|----|---|----|----|
| a. | Dificultad para oír | Sí | No |
| b. | Usa un aparato para oír | Sí | No |
| c. | ¿Tiene algún otro problema con los oídos o de audición? | Sí | No |

14. ¿Se ha lesionado alguna vez la espalda?

15. ¿Tiene alguno de los siguientes problemas óseos o musculares?

- | | | | |
|----|--|----|----|
| a. | Debilidad en los brazos, manos, piernas o pies | Sí | No |
| b. | Dolor de espalda | Sí | No |
| c. | Dificultad para mover sus brazos y piernas completamente | Sí | No |
| d. | Dolor o rigidez cuando se inclina para adelante o para atrás | Sí | No |

e.	Dificultad para mover la cabeza para arriba o para abajo completamente	Sí	No
f.	Dificultad para mover la cabeza de lado a lado	Sí	No
g.	Dificultad para agacharse doblando las rodillas	Sí	No
h.	Dificultad para agacharse hasta tocar el piso	Sí	No
i.	Dificultad para subir escaleras cargando más de 25 libras	Sí	No
j.	Algún problema muscular o con sus huesos que le impida usar un respirador	Sí	No

Parte B. Las siguientes preguntas pueden ser agregadas al cuestionario a discreción del profesional de salud con licencia del estado.

- | | | | |
|----|--|----|----|
| 1. | ¿Está trabajando en alturas arriba de 5.000 pies o en sitios que tienen menos oxígeno de lo normal? | Sí | No |
| | Si la respuesta es "sí", ¿se ha sentido mareado o ha tenido dificultad para respirar, palpitations o cualquier otro síntoma que no tiene cuando no está trabajando en estas condiciones? | Sí | No |
| 2. | ¿En el trabajo o en su casa ha estado expuesto a solventes o contaminantes peligrosos en el aire (como por ejemplo humos, neblina o polvos) o ha entrado su piel en contacto con sustancias químicas peligrosas? | Sí | No |

Escriba las sustancias o productos químicos a los que ha estado expuesto, si sabe cuáles son:

- | | | | |
|----|---|----|----|
| 3. | ¿Ha trabajado con los siguientes materiales o las condiciones anotadas abajo? | | |
| a. | Asbesto | Sí | No |
| b. | Sílice (limpieza con chorro de arena) | Sí | No |
| c. | Tungsteno/cobalto (pulverizado o soldadura) | Sí | No |
| d. | Berilio | Sí | No |
| e. | Aluminio | Sí | No |
| f. | Carbón de piedra (minando) | Sí | No |
| g. | Hierro | Sí | No |
| h. | Estaño | Sí | No |
| i. | Ambiente polvoriento | Sí | No |
| j. | Solventes | Sí | No |
| k. | Algún otra sustancia o material peligroso | Sí | No |

Describa las exposiciones peligrosas

4. ¿Tiene usted otro trabajo o un negocio aparte de éste?

5. ¿En qué ha trabajado antes?

6. ¿Qué le gusta hacer en su tiempo libre?

7. ¿Hizo servicio militar?

Sí No

Si la respuesta es "sí" ¿ha estado expuesto a agentes químicos o biológicos durante el entrenamiento o combate?

Sí No

8. ¿Alguna vez ha trabajado en un equipo de HAZMAT (equipo de respuesta de emergencia a incidentes de materiales peligrosos)

Sí No

9. ¿Está tomando alguna medicina que no haya mencionado en este cuestionario (tales como remedios caseros o medicinas que compra sin receta médica)?

Sí No

10. ¿Va a usar algunas de las siguientes partes con su respirador?

Sí No

a. Filtros HEPA (filtro de alta eficiencia que remueve partículas tóxicas en la atmósfera)

Sí No

b. Canastillo (por ejemplo, máscara para gas)

Sí No

c. Cartuchos

Sí No

11. ¿Cuántas veces espera usar un respirador?

a. Para salir de peligro solamente (no rescates)

Sí No

b. Rescates de emergencia solamente

Sí No

c. Menos de 5 horas por semana

Sí No

d. Menos de 2 horas por día

Sí No

e. 2 a 4 horas por día

Sí No

f. Más de 4 horas por día

Sí No

12. ¿Durante el tiempo que tiene puesto el respirador su trabajo es...?
- | | | |
|---|----|----|
| a. Ligero (menos de 200 kcal por hora) | Sí | No |
| Si la respuesta es "sí", cuánto tiempo dura la obra ____ horas ____ minutos | | |
| <i>Ejemplos de trabajos ligeros: estar sentado escribiendo, escribir a máquina, diseñar, trabajar en la línea de montaje, o manejar de pie un taladro o máquinas</i> | | |
| b. Moderado (200-350 kcal por hora) | Sí | No |
| Si la respuesta es "sí" cuánto tiempo dura en promedio por jornada ____ horas ____ minutos | | |
| <i>Ejemplos de trabajo moderado: estar sentado clavando o archivando, manejar un camión o autobús en tráfico pesado, estar de pie taladrando, clavando, trabajando en la línea de montaje o transfiriendo una carga (de 35 libras) a la altura de la cintura; caminar sobre terreno plano a 2 millas por hora o bajar a 3 millas por hora; empujar una carretilla con una carga pesada (de 100 libras) sobre terreno plano.</i> | | |
| c. Pesado (más de 350 kcal por hora): | | |
| Si la respuesta es "sí" cuánto tiempo dura en promedio por jornada ____ horas ____ minutos | | |
| <i>Ejemplos de trabajo pesado: levantar cargas pesadas (más de 50 libras) desde el piso hasta la altura de la cintura o los hombros; trabajar cargando o descargando; traspalear; estar de pie trabajando de albañil o partiendo moldes; subir a 2 millas por hora; subir escaleras con una carga pesada (más de 50 libras).</i> | | |

13. ¿Va a estar usando ropa o equipo de protección cuando use el respirador? Sí No

Si la respuesta es "sí" describa qué va a estar usando

14. ¿Va a estar trabajando en condiciones calurosas? Sí No
(temperatura de más de 77 grados F)?

15. ¿Va a estar trabajando en condiciones húmedas? Sí No

16. Describa el tipo de trabajo que va a estar haciendo cuando use el respirador

17. Describa cualquier situación especial o peligrosa que pueda encontrar cuando esté usando el respirador (por ejemplo, espacios encerrados, gases que lo pueden matar, etc.)

18. Provea la siguiente información, si la sabe, por cada sustancia tóxica a la que vaya a estar expuesto cuando esté usando el respirador (o respiradores):

Nombre de la primera sustancia tóxica_____

Máximo nivel de exposición por jornada de trabajo_____

Tiempo de exposición por jornada_____

Nombre de la segunda sustancia tóxica_____

Máximo nivel de exposición por jornada de trabajo_____

Tiempo de exposición por jornada_____

Nombre de la tercera sustancia tóxica_____

Máximo nivel de exposición por jornada de trabajo_____

Tiempo de exposición por jornada_____

Nombre de cualquier sustancia tóxica a la que vaya a estar expuesto cuando tenga puesto el respirador_____

19. Describa alguna responsabilidad especial que vaya a tener cuando tenga puesto el respirador (o respiradores) que pueda afectar la seguridad o la vida de otros (por ejemplo, rescate, seguridad).

EMPLOYEE INSTRUCTIONS FOR FILLING OUT RESPIRATOR MEDICAL EVALUATION QUESTIONNAIRE (MEQ)

Attached is a medical evaluation questionnaire for you to fill out. The OSHA standard requires that any employee who wears a respirator must be medically evaluated to ensure the safety and health of the employee. Your answers to this questionnaire will be kept confidential. Your employer does not have the right to view your answers.

A physician or licensed health care professional (PLHCP) will review the questionnaire. If you have any questions about the questionnaire or concerns about respirator use and your health, you can call the PLHCP _____ at (_____) -- (_____)

**It is essential that you answer every question.
If you need assistance, please contact the PLHCP listed above.**

If the PLHCP has any questions for you, s/he must be able to contact you. It is important that you include your home phone number and a time that you can be reached at home.

If you answer "yes" to any of the questions, please include any comments you might think important in helping the doctor evaluate your answers. (For example, if you have ever had pneumonia, note how long ago, or if you have high blood pressure, note if you are seeing a physician or taking medication to control it.) You can make notes near the question or on the back of the last page of this questionnaire.

The PLHCP may determine that a physical examination is necessary in order to better assess your ability to use a respirator. If so, your employer is required to provide you with a confidential medical examination at no cost to you.

The PLHCP will send a letter to you and your employer indicating if you are cleared for respirator use.

Thank you for your cooperation.

INSTRUCCIONES PARA LLENAR EL CUESTIONARIO DE EVALUACIÓN MÉDICA DE EMPLEADOS QUE USAN RESPIRADORES

Adjunto encontrará un cuestionario de evaluación médica para que lo llene. La norma de OSHA exige que cualquier empleado que vaya a utilizar un respirador, pase por una valoración médica para asegurar su salud y su seguridad. Las respuestas que dé en el cuestionario son confidenciales. Su empleador no tiene derecho de ver sus respuestas.

Un médico o un profesional médico autorizado (en inglés PLHCP) va a revisar el cuestionario. Si tiene alguna pregunta sobre el cuestionario o alguna inquietud sobre el uso del respirador y su salud, puede llamar al PLHCP

_____ al teléfono (_____) - _____.

Es muy importante que conteste todas las preguntas.
Si necesita ayuda, llame al PLHCP que se nombra arriba.

Si el PLHCP tiene alguna pregunta para usted, debe poder contactarlo. Es muy importante que incluya su número de teléfono y una hora a la que se le pueda llamar a su casa.


Si responde que “sí” a cualquiera de las preguntas, le agradeceríamos que nos dijera cualquier cosa que considere importante para ayudarle al médico a evaluar sus respuestas. (Por ejemplo, si le ha dado neumonía, diga hace cuánto tiempo le dió, o si tiene presión alta, diga si su médico se la está tratando o si está tomando medicamentos para la presión). Puede escribir notas cerca de la pregunta o en la parte de atrás de la última página de este cuestionario.

Es posible que el PLHCP determine que es necesario que usted se haga un examen físico para poder valorar mejor si usted puede usar un respirador. De ser así, su empleador deberá proporcionarle un examen médico confidencial sin costo para usted.

Si el PLHCP considera que usted está en capacidad de utilizar el respirador, le enviará una carta a usted y a su empleador para notificarle.

Muchas gracias por su cooperación.

Checklist 1: Suggested Respirator Training Topics

Topic	
General requirements of OSHA Respiratory Protection Standard	
Company respirator program; supervisor and worker responsibilities	
Lead hazards on site; specify tools and tasks *	
Health effects of lead exposure *	
Respirator selection (why respirators are necessary), which respirators are required for each task	
Limitation and capabilities of selected respirator type	
How the respirator works, including type of filter, how to put it on, and how to inspect it for defects; sealing surfaces, valves, straps, cartridges and filters	
Positive and negative pressure seal checks	
Review fit testing and brief explanation of exercises	
Cleaning, storage, maintenance, procedures and supplies	
Emergency procedures: what to do if respirator fails, leaks, or causes skin irritation	
How to maintain a good fit - facial hair policies, eyeglasses or any other personal protective equipment	
When to change filters and where to get new filters and parts	
Medical signs or symptoms that may effect respirator use; shortness of breath, dizziness	

* Lead hazard awareness training topics

Respirator Fit Test Record

Employee Information

Name: _____ Date of Birth: _____

Home Address: _____

Employer Information

Employer: _____ Site: _____

Address: _____

Fit Test Information

Test Date: _____ Test method:(circle) Qualitative/Quantitative Test givers name: _____

1. Respirator: Brand: _____ Model # : _____ Size: _____

2. Respirator: Brand: _____ Model # : _____ Size: _____

Sensitivity check: how many sprays (10) (20) (30)

Preliminary Procedures	✓
Clean shaven	
Positive/Negative face seal check	

Fit Test Exercises (<i>one minute each</i>)	✓
Normal breathing	
Deep breathing	
Turn head side to side	
Moving head up and down	
Talking	
Jogging in place	
Normal breathing	

Pass Fit Test	Fail Fit Test

Employee Signature

Checklist 2: Respirator Supplies

Item	<input checked="" type="checkbox"/>
Spare respirator facepieces in various sizes (small, medium, large)	
Replacement 100 series (HEPA) filters (N/R/P)*: keep 2-4 week supply on hand	
Spare parts: valves, valve covers, straps	
Cleaning and sanitizing solutions, mild soaps, diluted disinfectant	
Respirator cleaning wipes for use in the field	
Respirator storage containers: heavy duty, ziplock bags or rigid plastic containers	

*N/R/P -100 designation indicate resistance to oil. N=not oil resistant /R = oil resistant /P=oil proof

Infosheet 2: Respirator Use Practices

- Use a respirator when performing any lead generating activity or if you are in an area where other workers are generating lead dust or fume
- Remain clean shaven when using a respirator.
- Inspect the respirator before each use. Do not use a defective respirator.
- Do positive and negative pressure seal checks every time you put on your respirator – at the beginning of the shift and after each break.
- Use P-100 (HEPA) filters. They're color-coded purple, pink, or red. Know where to get replacement filters.
- Change filters when they are difficult to breathe through, dirty, or damaged and in accordance with change-out schedule in the program.
- Keep your respirator clean.
- Store your respirator in a clean place when not in use.

Emergencies: If you detect leakage into the mask or skin irritation, leave the work area and deal with the problem.


Limitations: Respirators with P-100 filters will not protect you from solvents, paints, adhesives, other chemicals or in a low oxygen environment

Display this sheet where workers can easily see it.

SAMPLE RESPIRATOR RECORDS SUMMARY

Training Date												
Fit Test Date												
Medical Clearance Date												
Respirator Type/Size												
Date of Birth												
First Name												
Last Name												

Checklist 3: Evaluation of Site-Specific Respirator Program

Item		
Have any new lead tasks been added to project? Have exposures been evaluated?		
Are new employees receiving medical evaluation/fit testing /training in a timely manner?		
Selection	Have respirators been selected for these new tasks?	
	Ask workers if respirators:	
	• are comfortable	
	• are compatible with other personal protective equipment	
	• Interfere with vision or communication	
Medical Clearance	Have all wearers been medically cleared to use respirators?	
	Have arrangements been made to complete outstanding evaluations?	
Training	Have all wearers been trained in respirator use in the past year?	
	Have arrangements been made to complete outstanding training?	
	Is training site specific?	
Fit Testing	Have all wearers been fit tested in the past year?	
	Have plans been made to complete outstanding fit tests?	
Respirator Use	Are workers using their respirators when needed?	
	Are they wearing them correctly?	
Storage & Maintenance	Are respirators being properly cleaned, stored and maintained?	
	Are cleaning supplies available?	
	Are convenient and clean storage facilities available?	
Does the written program reflect changes to the program?		

Guide for Managing Safety Meetings for Lead Hazards

Overview.....E-2

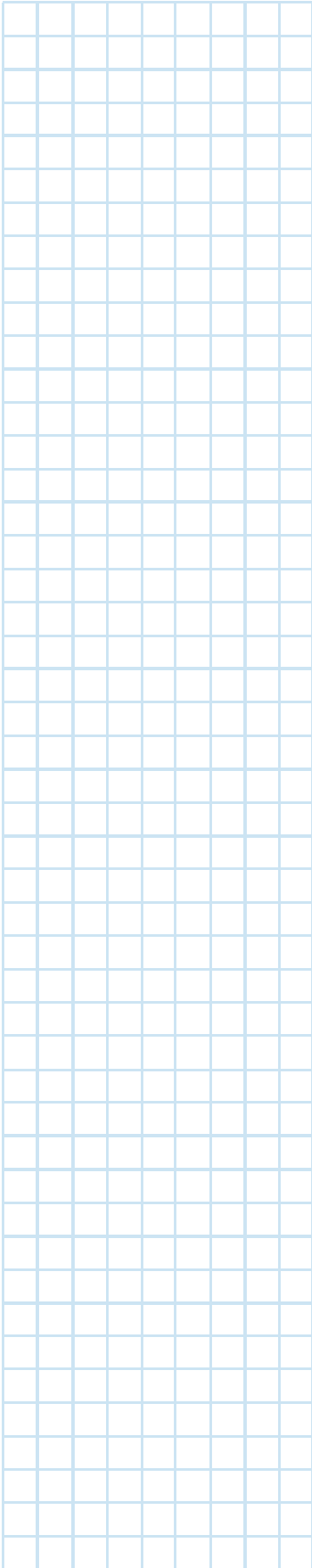
Section 1: Planning.....E-3

- Who Plans the Weekly Safety Meeting
- Who Attends Safety Meetings
- What Information Will be Covered
- When Are Safety Meetings Scheduled
- How to Write a Safety Meeting Agenda

Section 2: Running the Meetings.....E-5

- Responsibilities of the Chair
- Taking Minutes

Section 3: Sample Agenda Worksheet.....E-7



Overview

This guide describes how to organize and run safety meetings at construction projects. Although it is one of the lead guides, it presents a general approach that can be used for most worksite safety and health issues.

Why have Safety Meetings

- Bring people together to review current and up-coming lead safety issues on the site.
- Maintain good communications.
- Increase awareness of potential hazards.
- Solve problems.

At some sites, safety meetings are formalized as safety and health committees.

- Health and safety committees, often with a labor-management structure, are effective ways of maintaining management's commitment and labor's involvement in site safety and health.
- Safety meetings and committees also fulfill some OSHA requirements for accident prevention programs and are common requirements on OSHA Partnership Projects and Voluntary Protection Programs (VPP) sites.

The most successful safety meetings:

- Are attended by both management and labor/supervisors, safety officer, foremen and shop stewards
- Are held regularly
- Follow an agenda
- Reinforce best health and safety practices
- Pinpoint problems and assign corrective actions
- Promote communication throughout the site
- Keep track of progress

Overview of the Guide

1. Planning safety meetings

- a) Assign a chairperson
- b) Decide who should attend
- c) Set up a schedule
- d) Write an agenda

2. Running the Meetings

- a) Designate action items
- b) Address follow-up items
- c) Take minutes

– This Guide will elaborate on these tasks –



Planning

Who plans the weekly safety meeting

- Assign a safety chairperson to plan each safety meeting, write an agenda, and run the meeting.
- Make sure the chair is familiar with work activities and the health and safety issues related to the work.
- The chair can be the same person each week or meeting members can take turns running the meetings.

Who attends safety meetings

- People from each work area and trade
- The project manager, project engineer, safety officer, subcontractor representatives, supervisors, foremen and shop stewards
- People from areas or operations affected by the meeting topic.

What information will be covered in a safety meeting

- Action items: potential safety and health issues related to current or upcoming operations
- Outstanding safety issues
- Safety inspection reports
- Injury or accident reports & near misses
- Complaints/concerns
- Toolbox talks topics
- Follow-up items
- Feedback from weekly toolbox talks

When are safety meetings scheduled

- Set a regular day and time for safety meetings.
- Pick a time that is convenient for meeting members.
- Hold once a week, or less frequently, depending on the nature of the project.
- Keep meetings brief – 15 to 30 minutes.

SECTION

1

Safety committees and meetings help project management involve supervisors, subcontractors, and workers in controlling lead hazards at the site.

Successful safety meetings rely on solid commitment from management and labor.

How to write a safety meeting agenda

- An agenda is a brief outline of the topics to be discussed at the meeting.
- The meeting chair is usually responsible for writing up the agenda and using it to keep the meeting on track.
- The agenda contains:
 - action items
 - follow-up actions
 - weekly toolbox talk topics
 - new business
 - announcements.

Action items are health and safety issues that need follow-up. Action items should be first on the agenda and described by the chair or by someone knowledgeable about the issue. It's important that each action item be assigned to someone with a time frame to complete it.

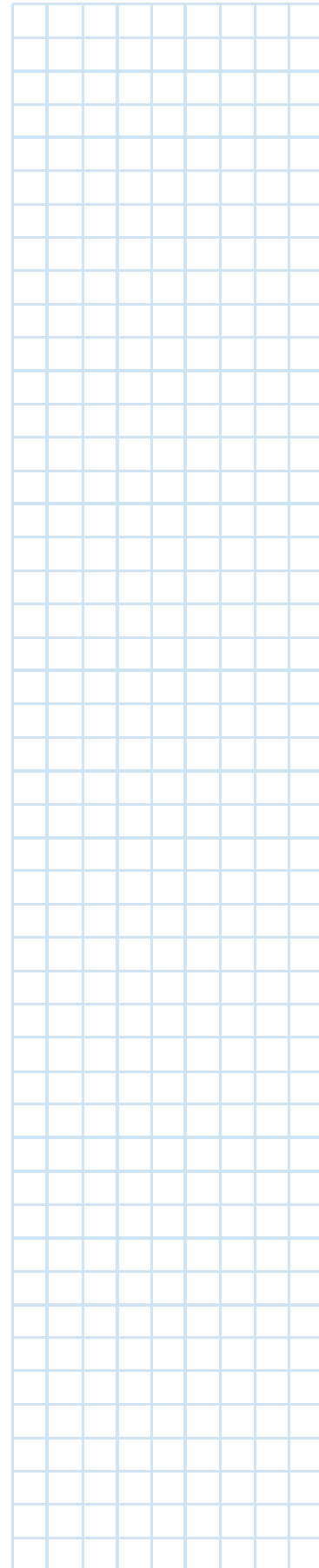
- Use the Safety Meeting Agenda Worksheet in Section 3.

Follow-up actions are responses to the action items and include the person(s) responsible for the follow-up and a date when the follow-up will be completed.

Weekly toolbox topics can be distributed and discussed briefly. Many projects coordinate toolbox topics with current operations or potential problems, for example, a toolbox talk on lead exposure during steel demolition.

Safety Meeting Planning Checklist

Item	Comments	<input checked="" type="checkbox"/>
Select the chair	Rotate between labor and management representatives; or assign a permanent chair	
Assign meeting members	Assign supervisors, foremen, subcontractors, and shop stewards to the safety meetings. Make sure that all project sectors are represented.	
Make an agenda	Use the agenda worksheet. Make copies for the meeting.	
Pick a time	Establish a regular day and time for the meeting.	
Pick a location	Use a space that is quiet and away from distracting activities. Meeting participants should be able to hear, ask questions, and participate in discussions.	



Running the Meeting

Responsibilities of the Chair:

- Making sure that everyone has the agenda and any other materials needed for the meeting.
- Assigning someone to take meeting minutes.
- Calling the meeting to order on time.
- Following the agenda, keeping the meeting on track and resolving issues as they arise.
- Assuring that each action item is briefly discussed and someone is assigned to follow up for the next meeting.

Taking Minutes:

Meeting minutes should be taken to track progress of the safety program and keep track of action items and follow up. Meeting minutes should be brief and simple. Include the following:

- Meeting date/time
- Attendees (attach sign up sheet)
- Chair
- Action items: list
- Follow up actions: who, what, when
- Attach inspection and injury reports
- Toolbox topics
- New business

The Safety Meeting Agenda Worksheet can also be used to record the minutes of the meeting.

Safety Meeting Tips

- Encourage participation from all members of the group.
- Never make fun of any one and treat all comments seriously.
- Respond to all legitimate complaints and make a point to follow up.
- Safety meetings are a way to resolve issues and maintain good communication on the site. They are not meant to be gripe sessions.

SECTION 2

Members should eliminate distractions during the meeting, e.g. phone calls, other business

Sample Safety Meeting Agenda Worksheet

SAFETY MEETING AGENDA WORKSHEET

Meeting date/time: 09/25/03	Meeting Chair: J. Brown
List action items	Follow-up actions; who; when
New Business	
Review Toolbox Talk for the Week	
Announcements	

Guide for Managing Toolbox Talks for Lead Hazards

Overview.....F-2

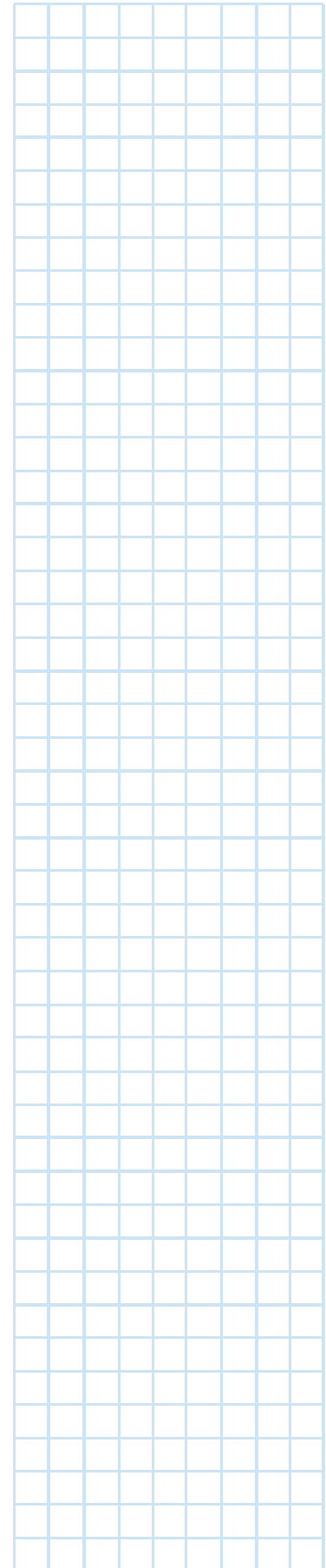
Section 1: Planning Toolbox Talks.....F-3

- Who Plans the Toolbox Talks
- What to Plan
- When to Hold Toolbox Talks

Section 2: Conducting the Toolbox Talks.....F-5

Section 3: Topics and Worksheets.....F-7

- Health Effects of Lead
- Engineering and Work Practice Controls
- Air Purifying Respirators
- Blood Lead Monitoring
- Monitoring for Lead Exposure



Overview

Toolbox Talks are a good and effective ways to communicate safe work practices for lead generating activities and to reinforce jobsite training. OSHA requires construction employers to have hazard communication and accident prevention programs that include worker training on hazard awareness and controls. The Lead in Construction Standard also requires that workers receive training in the contents of the lead standard and lead hazard awareness training. Toolbox Talks help satisfy these requirements.

The most successful Toolbox Talks:

- Make the topic site specific
- Use actual examples from the site to illustrate the topic
- Involve workers in a brief discussion about the topic
- Reinforce best safety and health practices

Overview of the Guide

1. Planning Toolbox Talks

2. Conducting Toolbox Talks

3. Toolbox Talks Topics and Worksheets

- Health Effects of Lead Exposure
- Engineering and Work Practice Controls
- Air Purifying Respirators
- Blood Lead Monitoring
- Monitoring for Lead Exposure

– This Guide will elaborate on these tasks –



Planning

Who plans the Toolbox Talks

- Health & Safety Committee
- Company Health & Safety Department
- Site Health & Safety Officer

What to Plan

Planning the Toolbox Talk is straightforward. Remember the most important aspects of Toolbox Talks are selecting a topic related to current work activities and involving workers in a brief discussion.

- Do a quick inspection and focus on site conditions that illustrate the topic.
- Use the Planning Checklist below.
- See the Toolbox Talks for Lead worksheets in Section 3.
- Use these worksheets to prepare for each individual topic.
- Handout copies of the completed worksheet during the talk.

When to hold toolbox talks

- Meetings are generally held weekly but may be held more frequently, if necessary
- The meetings are brief – 5 to 15 minutes.

Planning Checklist

Item	Comments	<input checked="" type="checkbox"/>
Select the topic	Make sure it relates to the site; review site activities and conditions	<input type="checkbox"/>
Prepare a Handout	Use the worksheets in Section 3 as examples. Add site specific activities and concerns to illustrate the topic, and discussion questions.	<input type="checkbox"/>
Pick a Time	Establish a regular day and time, usually at the beginning of the shift.	<input type="checkbox"/>
Pick a Location	Use a space that is quiet and away from distracting activities. Workers should be able to hear, ask questions, and participate in discussions.	<input type="checkbox"/>
Inform Workers the Day Before	Time, place, topic	<input type="checkbox"/>
Language	Be sure that all Toolbox Talks are given in words and a language that workers can understand. Use translators if needed.	<input type="checkbox"/>

SECTION

1

Toolbox Talks are required on many projects. They help workers keep up-to-date about work operations and related hazards.

Taking time to plan the Toolbox Talk results in maintaining good communication and reinforcing safe work practices.

Conducting Toolbox Talks

Who should conduct the Toolbox Talks?

- Supervisors, foremen, and union stewards are the best people to help plan and deliver Toolbox Talks.
- At times, others with a particular expertise or interest, like the company safety officer, project staff, insurance representative, or industrial hygienist may be recruited to lead a talk.

Use the completed worksheet for the talk. Read it directly or use the highlighted points as discussion starters. It's a matter of style. Some people are more comfortable reading the sheet and others like to use their own words. Use the filled in worksheet for a handout and encourage workers to participate. Be prepared to follow up on issues that arise. See the Toolbox Talk Tips below.

Toolbox Talks Tips

- Adults learn best when the topic:
 - relates to what they do
 - gives them a chance to discuss the issues.
 - allows them to use what they have learned.
- Back up the Toolbox Talk with questions. Ask the group questions about the topic and conditions at the site. Give people a chance to answer.
- Ask about personal experience. What are the conditions at this site? Has this issue come up at other sites? How were any problems fixed?
- Encourage participation from the group but don't let a single person dominate. Wait till he/she catches their breath, say "Thank You" and move on.
- Never make fun of any one and treat all comments seriously.
- Respond to all legitimate complaints and make a point to follow up.
- If you don't know an answer - say so - make a note of the question and follow up.
- Allow a little time for general discussion, e.g. accidents or near misses. This is not a gripe session.

SECTION 2

Topics and Worksheets

This section contains five worksheets for Lead Toolbox Talks. Each worksheet contains general information on the topic, places to fill in site specific information, and suggested discussion questions. A suggested schedule for giving each topic is listed in the chart below. Keep in mind that Toolbox Talks are intended as updates and reminders – not as a replacement for training. All of these topics should be covered in the initial lead orientation training.

Topic	Schedule
Health Effects of Lead Exposure	Before lead work begins; repeat as needed
Engineering and Work Practice Controls	As controls are introduced at site; repeated as needed
Air Purifying Respirators	Before respirators used; repeat as required
Blood Lead Monitoring	Before Blood Lead Monitoring and again when results are reported
Monitoring Air for Lead Exposure	Before and after air monitoring is done

A vertical graphic on the right side of the page. It features a light blue grid background. The word "SECTION" is written vertically in a bold, blue, sans-serif font. To its right is a large, blue, stylized number "3".

SECTION 3

TOOLBOX TALK WORKSHEET: HEALTH EFFECTS OF LEAD EXPOSURE

You get lead into your body by breathing it in or by swallowing it. Lead particles do not go through the skin, but if lead dust is on your hands it can be accidentally swallowed while eating, drinking, or smoking.

Lead is hazardous when it gets into the bloodstream where it can move around the body. High exposures over a short period of time or lower exposures spread out over longer time periods can cause lead poisoning. Lead can damage the brain and nervous system, kidneys, and reproductive systems. Lead also contributes to high blood pressure. Most of the absorbed lead is eventually stored in the bones where it may stay for decades. Under certain conditions, the lead stored in the bone may leach slowly into the bloodstream.

The early effects of lead poisoning are not specific and resemble the flu symptoms. Short term and long term effects of lead overexposure are listed below.

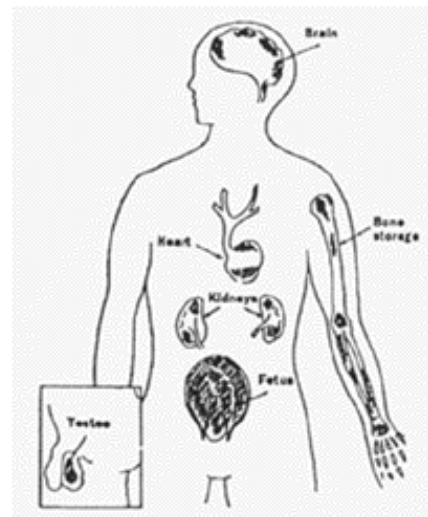
Lead poisoning is preventable. Many of the health problems caused by lead exposure are reversible if exposure is eliminated or reduced.

SHORT TERM EFFECTS

- stomach cramps
- poor appetite
- irritability/anxiety
- fatigue
- muscle or joint pain
- weakness
- headache
- numbness
- constipation
- sleep problems
- impotence/loss of sex drive

LONG TERM EFFECTS

- high blood pressure
- nerve disorders
- brain damage
- kidney damage
- reproductive damage
- birth defects



Group Question: Do you know anybody who has ever suffered from lead poisoning? Please describe what happened. If you have had symptoms of lead poisoning, what were they?

TOOLBOX TALK WORKSHEET: ENGINEERING & WORK PRACTICE CONTROLS

Engineering and work practice controls are required to minimize lead exposure. A compliance program must be written by the employer to describe controls used on each job. Common engineering and work practice controls include:

- removal of paint before torch cutting, grinding, rivet busting, or other lead-emitting tasks
- vacuum shrouded power tools - grinders, scalers, needle guns
- vacuum blasters for spot paint removal
- chemical paint strippers
- power saws and shears for dismantling steel instead of torches
- cleaning work area with HEPA vacuums
- wet methods to reduce dust



Contractors must evaluate the effectiveness of controls and make changes when air monitoring or blood lead levels increase.

HEPA (high efficiency particulate air filter) vacuums collect very tiny lead particles without exhausting them back into the air. They should be used to clean the work area and to remove dust from clothing before leaving the work area. Regular shop vacuums should never be used.

Group question: How is dust lead and fume controlled on this site?

List dust control methods and where they are required (For example: Paint removal before torch cutting)

If there is a dust control method for your work use it. If your work requires a respirator, wear it.

Group question: Does anyone have any questions or comments about lead exposure or control methods at the site?

Toolbox Talk Worksheet: Air Purifying Respirators

Respirators must be used whenever engineering and work practice controls fail to reduce the lead level below the PEL or before an exposure assessment has been completed. Employers are responsible for supplying properly selected and fitted respirators.

Respirators should be put on before entering the work area and should only be removed in a clean area. Fit testing is done at the beginning of the job and every year thereafter. The employer must set up a respirator program which includes:

- Written program
- Respirator Program Manager
- Proper selection of respirators
- Medical evaluation for all users
- Training – annual
- Fit Testing – annual
- Regular inspection, cleaning, maintenance
- NIOSH approved respirator
- Frequent evaluation of the program

For some construction activities, employers can provide workers with an air purifying respirator (APR) to reduce exposure. This type of respirator has a protection factor of 10 and can be used when the lead levels are below 500 mcg/m³. APRs come with filter and/or chemical cartridges that are labeled and color coded. HEPA filters which are purple or pink are used to protect against lead. If workers are exposed to solvents or other chemicals, they may need a different type of cartridge. Combination cartridges are available if workers are exposed to both dust and chemical vapors.

FILTER AND CHEMICAL CARTRIDGE COLOR CODES

Purple or Pink	HEPA filter (P-100 Series) For dust, mist, fume, lead, asbestos
Black	Organic vapor For solvents, strippers, paint removers
Yellow	Organic vapor plus acid gases For solvents and acids

Group question: What jobs do you need to wear respirators for?

List lead jobs at this site that require a respirator (Example: scaling: half-face respirator)	

Respirator Reminders

- Always wear your respirator when doing lead work or working near others who are.
- Check the facepiece seal each time you put on the respirator. Do positive and negative pressure checks.
- Make sure you use P-100 filters (the pink or purple ones). Get replacement filters and other spare parts from: _____.
- Change your filters whenever it is hard to breathe through them or if they are dirty or damaged.
- Keep your respirator clean. Wash it with warm soap and water and let it air dry. In the field, use respirator wipes. Each foreman has some at each gang box or respirator cleaning area.
- Store your respirator in a clean container when you are not using it. Sturdy plastic bags or rigid containers are best.
- Be clean shaven – this keeps a good seal between the face and the mask.
- If you have any problem with your respirator, report to your supervisor and get it fixed. Go to a clean area before you take off your respirator.
- Never wear a dust mask when doing lead tasks!

Group question? Does anyone have any questions or comments about respirators?

Toolbox Talk Worksheet: Blood Lead Monitoring

All workers exposed to the action level for even one day must have blood lead level (BLL) and either zinc protoporphyrin (ZPP) or free erythrocyte protoporphyrin (FEP) tests. A blood lead test is a good indicator of lead exposure in the previous 2-3 weeks. The ZPP/FEP can indicate high lead exposure over the previous 2-3 months. OSHA requires that blood tests be taken every two months, but many occupational physicians recommend that blood tests be repeated monthly.

INTERPRETING BLOOD TEST RESULTS

Test results are given in micrograms of lead per deciliter of blood (mcg/dl). Normal blood lead levels in urban areas are below 10 mcg/dl. Levels above normal indicate exposure to lead as follows:

- < 10 mcg/dl - background
- 10 - 25 mcg/dl - elevated
- 26-49 mcg/dl - high exposure
- 50 mcg/dl - medical removal

The FEP or ZPP level is considered normal if it is below 35 mcg/dl. Usually the ZPP does not exceed 35 mcg/dl unless the BLL has been greater than 50 mcg/dl in the previous 2-3 months.

Remember, these levels are for adults. Children are much more vulnerable to the effects of lead. Children may be exposed if workers bring home lead dust on shoes or clothing. This is the main reason why work clothes and protective equipment should stay on the job.

Group question? Have any of you had blood lead tests? Please describe the tests. What did the results tell you about your exposure?

Toolbox Talk Worksheet: Monitoring for Lead Exposure



Air monitoring is the best way to evaluate worker exposure to lead dust and fume. We will be doing air monitoring for the different tasks at this site from time to time.

- Air monitoring equipment includes a small air pump, tubing, and a filter.
- An industrial hygienist (IH) clips the pump to your belt and positions the filter on your upper chest. This is called a breathing zone sample.
- If the IH asks you to wear the pump, it is important to cooperate.
- The IH will advise you to work normally and will periodically check the pump. Sometimes the IH will change the filter.
- If the pump interferes with your work or the pump malfunctions, let the IH know.

The IH for this project is: _____

The first air monitoring date is: _____

These activities will be monitored: _____

Group questions: Has anyone here ever worn an air monitoring pump? Can you tell the group what it was like?

Air monitoring results.

- At the end of the shift, the IH will send the filter to a special laboratory.
- The lab will measure how much lead is on the filter.
- These results will be compared to the exposure limits for lead.
- The results will be used to pick controls for the activity and to make sure that the right respirator is used.
- The lab usually takes about 1-2 weeks to do the measurement and send the results.
- Monitored workers will receive results within 5 days of receipt by company from IH consultant
- We will post the results and go over them in a Toolbox meeting when we get them.

Group question: Does anyone have any questions or comments about air monitoring on the site?

List activities at this site that may expose workers to lead dust:

(For example: chipping or drilling rock or concrete; sawing or grinding concrete and masonry; crushing rock or concrete)

Resource List

The following list represents a sampling of information available on select topics presented in the Guides. It is not a definitive list, but if the user of the Guides cannot find the appropriate information, these web sites can be useful as a jump off point for further inquiries.

The listing of private companies should not be construed as an endorsement of those companies or their products. Such resources are meant only as a limited directory of products and services available in the marketplace.

General Information on Lead and Silica

OSHA has many publications that are useful for general background on lead and silica hazards and programs:

- Crystalline silica related publications
<http://www.osha-slc.gov/SLTC/silicacrystalline/index.html>
- Lead publications <http://www.osha-slc.gov/SLTC/lead/index.html>
- Program highlights for various OSHA programs, including the Lead in Construction Standard (6 pages)
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FACT_SHEETS&p_id=161

The Washington State Department of Labor and Industries Safety & Health Assessment & Research for Prevention (SHARP) publish a variety of information including information on lead exposure

<http://www.lni.wa.gov/sharp/publications.htm#Lead>

eLCOSH (The Electronic Library of Construction Occupational Safety and Health) provides information from a wide range of sources, in English, Spanish and other languages, for anyone interested in improving safety and [health on the job for construction workers](http://www.cdc.gov/elcosh/index.html). <http://www.cdc.gov/elcosh/index.html>

Workers Compensation Board of British Columbia, Canada

<http://construction.healthandsafetycentre.org/s/Home.asp>

Training

Although there was no Guide on training, the need was mentioned throughout. Training on occupational health hazards, respirators, lead and silica health hazard controls are available in most parts of the country.

OSHA Office of Training & Education Training Resources:

http://www.osha.gov/fso/ote/training/training_resources.html

OSHA Training Institutes (OTI) Education Centers:

http://www.osha.gov/fso/ote/training/edcenters/edcenter_contact.html

NIOSH provides training through its Educational Resource Centers (ERCs) located around the U.S. ERCs provide classes on topics such as lead, respirators, construction safety and industrial hygiene.

<http://www.niosh-erc.org/>

Also available at 1-800-35 NIOSH.

Local organizations can often times be a resource for worker training classes. In New York City the Greater New York Safety Council offers free training classes on a variety of topics including respirators.

<http://www.emergencycorps.com/WCA092003.pdf>

The Society for Protective Coatings (SSPC) is one of the leading organizations for coatings for steel structures, including lead paint. Their web site has a variety of information services including control options and lead paint abatement classes for supervisors and competent persons. <http://www.sspc.org/training/default.html>

Industrial Hygiene Services

The American Industrial Hygiene Association (AIHA) listing of local state chapters most of which have a list of consultant members, including web sites, telephone numbers and specialties:

<http://www.aiha.org/LocalSections/html/isontheweb-state.htm>

AIHA consultants list by location and/or specialty

<http://www.aiha.org/ConsultantsConsumers/html/consultantslist.asp>

For links to International occupational health and safety sites: <http://www.ohs.com.au/Sites/index.htm>

Medical Services

Association of Occupational and Environmental Clinics www.aoc.org

New York State occupational health clinics <http://www.health.state.ny.us/nysdoh/environ/occupate.htm>

New Jersey Department of Health and Senior Services (NJDOHSS) provides a list of occupational physicians (New Jersey) <http://www.state.nj.us/health/eoh/survweb/oemdlst.htm>

Look to your local state DOH for similar listings.

Respirators

OSHA's Small Entity Compliance Guide for the Revised Respiratory Protection Program provides a wealth of information on the new standard in a readable format <http://www.osha.gov/Publications/secgrev-current.pdf>

Washington State Department of Labor offers listings of several respirator manufacturers addresses and web sites <http://www.lni.wa.gov/wisha/p-ts/RespiratoryProtection/resp-man.htm>

Respirator manufacturers offer training classes and a great deal of informational material:

- 3M <http://www.3m.com/market/safety/ohes2/>
- Bullard <http://www.bullard.com/products/Resp/>
- Moldex <http://www.moldex.com/trainingresources.htm> offers train the trainer classes

Equipment Distributors

National Safety Company located in Washington State a local distributor

<http://www.nationalsafetyinc.com/index.htm>

Lab Safety offers a full line of safety products www.labsafety.com

American EHS offers a line of safety products and training classes <http://www.healthsafety.com/>

Lead/Silica Abatement Contractors/Equipment

The Industrial Bluebook has a search engine for regional listings of lead paint testing/removal/abatement contractors

<http://www.thebluebook.com/>

Lead/silica abatement systems

- Pentex systems scabblers, wall walker, surface preparation system <http://www.pentekusa.com/index.html>
- Trelawny Surface Preparation Equipment, equipment manufacturer vacuum shrouded tools, HEPA vacuums <http://www.trelawnyonline.com/home/>
- CS United power tool manufacturer, vacuum shrouded masonry tools, HEPA vacuum <http://www.csunitec.com/masonry/masonrytools.html>

Toolbox Talks

The Center to Protect Workers Rights (CPWR) web site includes hazard alerts in English and Spanish,

<http://www.cpwr.com/Hazardalert.htm>

eLCOSH has training materials on many construction safety topics in English, Spanish and Creole

<http://www.cdc.gov/elcosh/docs/training/materials.html>

Labor Occupational Health Program, School of Public Health, University of California, Berkeley has downloadable tailgate trainings forms.

http://socrates.berkeley.edu/~lohp/Publications/Tailgate_Training/tailgate_training.html

NIOSH produces informative pamphlets on a variety of topics that can be accessed electronically or directly from NIOSH. The information can be adapted to toolbox talks.

- for instance Preventing Silicosis in Construction Workers <http://www.cdc.gov/niosh/consilic.html>
- Procedures for cleaning 1/2 face APRs <http://www.cdc.gov/niosh/respcln.html>
- Preventing Lead Poisoning in Construction Workers <http://www.cdc.gov/niosh/91-116.html>