CITY OF SACRAMENTO REGULATORY COMPLIANCE PROGRAM
TOPIC: LEAD EXPOSURE CONTROL PROGRAM
EFFECTIVE DATE: 01/04/10
REVISED 1/18
SUPERSEDES: N/A
SECTION: RCP #13

PURPOSE

In accordance with California Code of Regulations (CCR) Title 8, Sections 1532.1 and 5198, this program provides procedures to minimize occupational exposure to lead. It is the intent of the City of Sacramento (City) to maintain work environments that control all worker exposures to less than the permissible exposure limit.

This program applies to all City employees, volunteers and students (workers) who may be exposed to lead in the workplace and specifically to workers at the following facilities.

The Northern California Public Safety Training Joint Powers Authority (JPA) Firing Range Complex located at 5428 Patrol Road, McClellan, CA includes:

1. A sixteen lane, semi-enclosed small arms range;

2. Two outdoor ranges for shotguns, small arms, and rifles; and

3. A live fire shoot house.

The JPA ranges are used by City Police Officers and Law Enforcement Training Academy students.

The South Area Corporation Yard located at 5720 24th Street, Sacramento, CA includes paint, carpentry and other trades shops which employee facility maintenance workers. Facility maintenance workers perform work in City owned facilities throughout Sacramento.

1. Exposure Assessment

Each operation with potential for worker exposure will be monitored to make an initial determination if workers are exposed to lead at or above the action level or permissible exposure limit. The initial determination will be based upon monitoring of a representative sample of workers exposed to the highest concentrations of lead. Air sampling procedures are included as Attachment A.

1. Negative Initial Determination: If workers are exposed to airborne lead concentrations less than the action level, no further testing is required. Additional exposure monitoring is required if there are changes in production, equipment, process, control or personnel that may result in new or increased worker exposures to lead;

2. Positive Initial Determination: If initial monitoring reveals worker exposure at or above the action level but no greater than the permissible exposure level, monitoring will be repeated at least every six months until two consecutive measurements taken seven days apart are at or below the action level;

3. PEL Exceeded: If initial monitoring reveals worker exposure above the PEL, monitoring will be repeated quarterly until at least two consecutive measurements taken seven days apart are at or below the PEL:

    a. Surface wipe samples will be collected periodically in firing range facilities to verify that cleaning procedures are effective. Acceptable levels for lead dust are less than 400 micrograms per square foot for the range and 40 micrograms per square foot in the common areas behind the firing line;

    b. Cleanliness in general work areas and break rooms will be maintained at less than 200 micrograms of lead per square foot;

    c. Workers will be notified in writing of the results of exposure monitoring that represents their exposure within five working days after the City's receipt of results.

2. Control Measures

a. Procedures for cleaning firing range areas are included in Attachment B. Procedures for building maintenance and renovation are included in Attachment C;

b. Signs will be posted in firing range areas stating the hazards of lead exposure and that there is a potential for exposure. Signs will be posted recommending washing face and hands after range use and advising *No Food, No Drinks, No Smoking, and No Tobacco Products*;

c. Lead free frangible rounds will be used inside the live fire shoot house;

d. The bullet trap dust collection system must be operational at all times during operation of the JPA semi-enclosed range.

3. Personal Protective Equipment

Respiratory protection will be provided if engineering and work practice controls are not sufficient to reduce exposures below the PEL, there are periods of unknown exposure while conducting assessment or a worker requests a respirator. If workers are exposed to lead above the PEL or the possibility of skin or eye irritation exists, appropriate protective work clothing and equipment will be provided. Protective equipment may include but is not limited to coveralls, gloves, hats, shoes, shoe covers, face shields and eye protection. Protective clothing and equipment will be handled, cleaned, laundered, disposed of and replaced as needed to contain and control exposure to lead.

4. Medical Surveillance

a. The City will provide medical surveillance for workers who are exposed at or above the action level for more than 30 days in any 12 consecutive months. All medical examinations will be conducted under the supervision of a licensed physician, in compliance with Cal-OSHA requirements, at no cost to the worker and according to the following schedule;

1. Blood lead and zinc protoporphrin sampling and analysis shall be offered every six months. If blood lead level is at or above 40 mg/100g of whole blood, follow-up testing will be offered within two weeks of the employee's receipt of their results. Blood sampling and analysis will be offered every two months until two consecutive samples indicate blood lead level is below 40 mg/100g of whole blood;

2. Annual medical exams will be offered to workers whose blood test, conducted any time during the preceding 12 months, indicated a blood lead level at or above 40 mg/100g of whole blood;

3. Workers with a blood lead level at or above 40 mg/100g of whole blood will be notified in writing with in five working days after the City's receipt of biological monitoring results.

5. Training

a. Employees and supervisors who conduct lead related construction, renovation or maintenance work in public buildings must be trained by a provider accredited and certified by the CA Department of Health Services. Other workers with potential for exposure to lead will be provided training which includes an explanation of:

   1. Workplace lead regulations and specific operations that could result in exposure;

   2. Permissible exposure limit and action level for lead;

   3. Health effects of lead and medical monitoring requirements including information on chelating agents;

   4. Job-specific work practices, cleaning procedures and use of engineering controls;

   5. Selection, use, fitting and limitations of respirators and personal protective equipment;

   6. Contents of the City of Sacramento's Lead Exposure Control Program;

   7. Proper disposable of contaminated material; and

   8. Employee rights to obtain exposure and medical records.

b. Potentially affected workers will be provided initial training prior to assignment of job duties. Refresher training will be provided annually for workers who are subject to lead exposure at or above the action level or who have the possibility of skin or eye irritation due to lead exposure.

6. Recordkeeping

a. The City maintains records of all exposure monitoring activities including negative exposure assessments. These records include the following:

   1. Exposure monitoring data and information pertaining to variable worksite conditions will be documented on the log provided in Attachment A;

2. Medical surveillance records including worker medical history and medical examination results will be maintained at the facility conducting the medical monitoring. Results of biological monitoring will be maintained in the City's non-industrial medical files;

3. Medical removal information for a worker due to exposure to lead will be documented in the City's non-industrial medical files. This information will include each date a worker was removed, date the worker returned to duty, the cause of removal and statements explaining how the removal was handled;

4. Objective exposure data can be obtained from material testing or industry wide studies and may include information that documents a particular product, material, procedure, operation or activity cannot release lead dust or fumes above the action level. Objective data used to assess exposure will be documented in the Risk Management Division's material testing inventory.

b. All records shall be made available upon request to affected workers, former workers or his or her designated representative. The records will be maintained for at least 40 years or for the duration of employment plus 20 years whichever is longer.

Definitions
Attachment A

Action Level
Eight-hour time weighted exposure of 30 micrograms of airborne lead per cubic meter of air.

Permissible Exposure Limit (PEL)
Eight-hour time weighted exposure of 50 micrograms of airborne lead per cubic meter of air.

Air Monitoring Procedures – Lead Exposure (Attachment B)

1. Perform personal monitoring for each type of worker task with a potential lead exposure.

2. Prior to the monitoring, calibrate the Elf Escort pump with the Dry-Cal at the desired airflow rate [1]. The pump should be calibrated monthly. Calibrate with the sampling media in line.

3. The airflow rate should be set at either 1.5 or 3 liters per minute (lpm). For 4-8 hours of air monitoring, set the flow rate at 1.5 lpm. For less than 4 hours of air monitoring, set the flow rate at 3 lpm unless a high lead exposure is expected (above 100 ug/m3) in which case use 1.5 lpm.

4. Charge the pump overnight (14-16 hours).

Sampling Procedures

1. Label two cassettes (37mm, 0.8 micron MCE filter) with unique sample numbers. Use one for the monitoring and the second for the field blank (control).

2. Remove the end plugs from both cassettes. For the control cassette, reattach the end plugs with the red on the inlet and the blue on the outlet (opposite the way they were before plug removal). Place the control cassette and end plugs for the other cassette in a sealed Ziploc bag.

3. Attach the other cassette to the Elf Escort air pump tubing using the line coupler. The line coupler is connected to the outlet of the cassette, which had the red cap on it (spoke- wheel pattern and marked "outlet"). The inlet side is marked "inlet" and has the blue cap on it. To prevent the cassette from disconnecting from the coupler during monitoring, tape the outlet end of the cassette to the tubing. Do not turn on the pump until it is deployed on the worker.

4. Place the air pump on the worker's belt. Provide a belt (or make one with duct tape) if the worker does not have a belt. Run the tubing from the pump, behind the worker's back, and clip the cassette end in the worker' breathing zone (e.g. shirt collar). Clip or tape the tubing on the worker's back to keep it secure. Orient the cassette face down.

5. Turn the pump on, note the time. Observe the digital readout on the pump. It should stabilize on the preset airflow. If it does not, the cassette may be set too tight on the line coupler or the tubing bent.

6. On the "Air Sampling Log", record the sample number, worker name, job title, description of work and respirator (if any), the pump number, the pump flow rate, the calibrated flow rate and the start time. On the bottom of the log there are fields to record additional information and the sample number of the control.

7. Check the pump for proper operation periodically throughout the shift (at least every two hours). Make sure the pump flow rate is correct and the tubing is secured.

[1] The Dry Cal itself, should be calibrated annually with traceability to the National Institute for Standards and Technology.

8. Ask the worker if they would like the pump removed for breaks. If it is removed, turn the pump off and note the stop time and restart time on the log. The pumps can be left on and running for breaks since this is part of the shift.

9. Remove the pump for lunch. Note the stop time and restart time on the log.

10. Turn the pump off at the end of the shift and note the stop time on the log. Remove the sampling train from the worker. Place the end caps on the cassette (red inlet and blue outlet) and place in the sealed Ziploc bag with the control.

11. Calculate the total time that the pump ran and record on the log. Calculate the air volume (calibrated flow rate times time) and record on the log.

12. Complete the chain of custody. Request air analysis for lead by NIOSH Method 7082 (flame AA). Be sure to sign and note the date and time of drop at the express mail service or at the lab. If you use a mail service (do not drop off at the lab) the air bill becomes part of the chain-of-custody.

Notes:

If the filter loading is heavy, it may be necessary to change the cassette several times during the shift. Note each of these as new samples numbers with separate start and stop times and air volumes. If this is done, a calculated time-weighted average concentration will be needed to determine the full-shift exposure.

On the log, note any unusual conditions, engineering controls and different work practices that might reduce exposure levels.

The referenced method for this procedure is NIOSH Method 7082.

Prepared by John Sacco, Certified Industrial Hygienist, Earthshine Consulting, 11/09

Air Sampling Log
(Attachment A)

Project: _____ Date: _____

Sampling Performed By: _____

Sample #	Description/ Name/Position & Respirator Type	Pump #	Pump Flow Rate	Calb. Flow Rate	Time On	Time Off	Total Min.	Air Volume

Work Location	Activity	Ventilation	Comments

Control Samples: _____

Firing Range – Lead Cleaning Guidelines (Attachment B)

Enclosed firing ranges require frequent cleaning. Walls, floors, ceilings and bullet traps must be cleaned regularly to prevent lead dust from becoming an airborne inhalation hazard to people using the range.

It is essential to use appropriate methods to clean the firing range.

Cleaning Guidelines

DO NOT DRY SWEEP

1. Vacuuming is the preferred method for cleaning work areas. Shoveling, wet sweeping or brushing may be used only when vacuuming or an equally effective method has been found ineffective.

2. Use a vacuum cleaner equipped with a high efficiency particulate air (HEPA) filter to remove lead-contaminated dust.

3. Compressed air may not be used to clean surfaces that may be contaminated with lead.

4. Wear appropriate work clothing, gloves, shoes and an approved respirator if the need for respiratory protection is indicated by exposure monitoring.

Semi- Enclosed Firing Ranges

1. Wear disposable "Tyvek" suit and gloves. A respirator with HEPA filters is required, unless exposure assessment of cleaning methods has documented that respiratory protection is not necessary.

2. Use a HEPA vacuum to clean the floor and walls.
   After vacuuming, use a pressure washer to spray down floor and walls. Start at the firing line and work toward the bullet trap. Use a squeegee to push excess water toward bullet trap.

Brass Casings and Bullet Traps

1. Wear disposable gloves when collecting brass casings. Do not dry sweep. Store brass casings in a covered metal container.

2. Empty buckets containing lead fragments into approved metal containers wearing the same personal protective equipment used to clean the firing range.

3. Mining of rubber bullet traps will be performed by a qualified contractor only.

Common Areas

1. Wear disposable gloves.

2. Wipe all horizontal surfaces using wet cloths.

3. Bag wipes for proper disposal as contaminated waste.

4. Use a disposable "Swiffer" type dust mop or HEPA vacuum to clean the floor.

Waste Disposal

Store lead fragments, dust, vacuum filters and contaminated cleaning wipes, mops and personal protective equipment in accordance with the California Dept. of Toxic Substances Control regulations for disposal by a contractor approved by the Risk Management Division.

Brass shell casings will be stored in closed containers for recycling by and approved contractor.

Facilities Maintenance – Lead Paint Guidelines (Attachment C)

Interior paints and primers manufactured prior to 1978 often contain lead. Industrial and exterior paints and coatings are not regulated and must be considered suspect for containing lead. Disturbance of surfaces coated with materials containing lead may create an airborne inhalation hazard for workers.

It is essential to use appropriate methods when conducting building renovation and maintenance activities.

Renovation and Maintenance Guidelines

1. Buildings constructed prior to 1978 and all exterior and industrial coated surfaces must be tested for lead content prior to conducting any work in which painted or coated surfaces will be demolished, sanded, scraped, cut, drilled, welded, blasted, heated or treated in any manner which generates airborne dust or fumes.

2. Initial screening of surfaces shall use bulk sampling and will include each unique surface that may contain lead. Sampling will be conducted by City staff or contract personnel trained in lead sampling procedures. Samples will be analyzed for any detectable amount of lead by a qualified laboratory.

3. Risk Management Environmental Health and Safety (EH&S) staff compile lead testing data into a City-wide inventory. If lead testing is conducted by non-EH&S personnel, copies of the laboratory reports must be forwarded to EH&S to ensure accuracy of the lead materials inventory.

4. Persons responsible for sampling will notify the City representative overseeing in-house or contract work of all lead testing results.

5. If no lead is detected, no further action is necessary. City personnel can perform renovation and maintenance work as needed.

6. If lead is detected, work must be performed by a qualified contractor or qualified City workers. City workers must follow a work plan and use work practices approved by EH&S staff.

7. A Cal-OSHA pre-job notification is required for disturbance of more than 100 square or lineal feet of material containing 0.5% lead or greater.