

Title: DPMC Industrial Health Work Practice
Guideline For Inorganic Lead and/or
Chromate Exposure Potential

Reviewed By: Maintenance North
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Industrial Hygiene

Developed: 4/84
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Application: DPMC Complex
abrasive blasting operations

A. Introduction

The abrasive blasting of lead/chromate coated surfaces is to be minimized wherever practical. Although lead/chromate surface coatings have not been applied on equipment since 1975, and chromates since 1982, maintenance personnel may encounter it in the field. Lead/chromate coatings on equipment and pipeways that have been previously coated with a lead/chromate primer may have to be cleaned by either wet or dry blasting. If mechanical damage to the coating occurs causing the substrate to start rusting, spot mechanical surface preparation (no abrasive blasting) is all that is required. After surface preparation, a lead/chromate free aluminum epoxy mastic primer is applied. To control inhalation of airborne particulate, coated equipment and pipeways should be high pressure water blasted instead of abrasive blasted wherever possible. As a guideline abrasive blasting of a coated surface should only be done if 33% of the surface has rusted through the coating. New steel should always be abrasive blasted for mill scale removal and profile. All jobs that can be transported to the blasting yard should be done there. Unless prior authorization from Health and Safety is obtained, abrasive blasting of storage tanks is to be done with a silica free material.

Thermal cutting of lead/chromate coated equipment should be done only after the area of repair has been wet abrasive blasted 18" on each side of the cutting line. This 36" wet abrasive blasted band will reduce airborne particulate and will not damage the remaining coating because of the heat affected zone. Special precautions are required when dry blasting is performed.

Health Hazard Precautions When Abrasive Blasting Or Thermal Cutting Is Performed

Repetitive exposure to dust and fume generated by abrasive blasting and thermal cutting of lead/chromate coated surfaces represents a potential health hazard. "Exposure" includes the inhalation of airborne particulate and ingestion of lead/chromate or contaminated substances. Exposure from the abrasive blasting of lead/chromate surfaces can result in excessive exposure up to 50 feet downwind of the job site.

When the abrasive blasting or thermal cutting of such surfaces cannot be avoided the following health and safety guidelines apply.

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B. Respiratory Protection

1. NIOSH approved air-supplied sandblast hoods are to be used for all abrasive blasting. Ancillary personnel involved in abrasive blasting operations are to wear high efficiency air-purifying respirators.
2. The thermal cutting of coated surfaces (not previously blasted) requires the use of air-supplied respirators (low pressure airline type).
3. Respirators are to be cleaned prior to reuse by either the Shell Respirator Center or the contractor.

C. Breathing Air-Supplied by Portable Compressors

Compressors are to meet the following minimum requirements:

1. Exhaust stacks off engine to be at least 4 feet high (separation from air intake).
2. Compressor is to be located upwind of work activity. Compressor may have to be relocated if wind changes.
3. A particulate filter is to be maintained in-line between compressor and mask. Periodic filter changing is required.
4. Measurements for carbon monoxide are to be made at least weekly unless an in-line carbon monoxide analyzer is used. Measurements should be documented and maintain on file for future reference. Carbon monoxide levels above 10 ppm require corrective action to be taken.

D. Protective Work Clothing

1. On days when abrasive blasting or lead burning is performed, clean protective work clothing is to be worn.
 - a. Outer street clothing are to be protected from contamination. Cloth coveralls, slicker suits, or disposable coveralls may be used.
 - b. Work shoes may be permitted to be worn providing any outer contamination is removed daily by brushing.
2. Protective work clothing is to be removed at the completion of the work shift.
 - a. Potentially contaminated coveralls are to be disposed of or placed in a closed container and laundered by a qualified outside service.
 - b. Bags or containers of contaminated clothing are to be labeled as being contaminated with inorganic lead and/or chromium dust.

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E. Hygiene Practices

- 1) On days when abrasive blasting or burning is performed, employees are to wash at breaks and at the end of the shift.
- 2) A suitable hand and face washing facility including towels and soap is to be provided and used.
- 3) Tobacco and food are to be stored and consumed away from the potentially contaminated work area. Food or tobacco should not be carried in the pockets of potentially contaminated coveralls.

F. Training

- h. All employees engaged in abrasive blasting lead/chromate contaminated equipment are to receive at least annual training.

Training shall include:

- a. The health hazards associated with lead/chromate.
- b. Possible routes of entry.
Ingestion
Inhalation
- c. Proper use of respiratory protection.
- d. The importance of washing prior to handling foodstuffs.
- e. Location of air compressor.

G. Exposure Monitoring

Shell employees working in the potential exposure zone during the cutting or removal of lead or chromate may have to be monitored. Measured exposure levels exceed the OSHA limit for either lead or water-insoluble hexavalent chromium are required to be reported to Corporate Medical by Industrial Hygiene. Industrial Hygiene should be notified of jobs which are expected to last more than one workshift.

H. Contractors

Shell is responsible for informing contractors of any potential hazards (of which it is reasonably aware) associated with lead/chromate-based coatings. ~~Contractors are expected to utilize procedures which provide appropriate protection for their employees when involved with application/removal of these coatings.~~

~~Any requirement of the OSHA Lead Standard that apply to the application/removal of lead-based coatings are the responsibility of the contractor.~~ Upon request, Shell will supply guidance to the contractor in meeting these requirements.

I. Environmental

Residues from abrasive-blasting of lead/chromate-based coatings will be disposed of on-site; Environmental Operations is to be contacted.