



## WISHA Regional Directive 95-1

**WRD 95-1****SUBJECT: Washington Administrative Code (WAC) 296-155-176, Lead Exposure in Construction--Inspection and Compliance Procedures**

I. Purpose: This WISHA Regional Directive (WRD) provides uniform inspection and compliance guidance for Lead Exposure in Construction, WAC 296-155-176, that became effective December 10, 1993.

II. Background: On May 4, 1993, OSHA published in the Federal Register, Volume 58, Number 84, an Interim Final Rule for Lead in Construction (29 CFR 1926.62) which revised its existing lead rule applicable to the construction industry (29 CFR 1926.55). OSHA was required to take action under the Housing and Community Development Act of 1992 (42 U.S.C. 4853). OSHA was required to adopt an interim final standard in a 6-month period and, therefore, was not constrained to follow the Section 6(b) rulemaking procedure (i.e., proposal, comment period, hearing) of the Occupational Safety and Health Act of 1970. The state adopted the federal standard substantially identical as WAC 296-155-176, Lead, into Safety Standards for Construction Work. WAC 296-155-176 was effective December 10, 1993.

III. Organization of WRD: Compliance guidance is set forth in this WRD. Additional information and clarifications are provided as follows:

Appendix A - Inspection Guidance and Citation Policy.

Appendix B - Exposure Calculation and Compliance Purpose.

Appendix C - Requirements Triggered by Air Lead Levels.

Appendix D - Medical Surveillance Flowchart.

Appendix E - Summary and Explanation of the Standard.

IV. Application: Inspections to assess compliance with WAC 296-155-176 must be conducted by a Compliance Safety and Health Officer (CSHO) appropriately trained in conducting inspections in the construction industry (e.g., thoroughly familiar with all effective provisions of WAC 296-155-176 and with the guidelines in this WRD. Citations issued for violations of WAC 296-155-176 must be reviewed by the supervisory industrial hygienist.

NOTE: This document should be used by Consultation staff to provide employer guidance and procedures for compliance with the Lead Standard.

A. Compliance Procedures. Guidelines for determining if the employer is in compliance with the standard, and for classifying and grouping violations, are presented in Appendix A of this WRD. (See the Operations Manual Chapter VIII.)

1. In cases where deviations from the recommended guidelines for classifying and grouping of violations seems to be warranted, the regional office shall inform the Safety and Health Compliance Section. The reasons for the deviations shall be noted in the case file.

2. In areas where this WRD differs from the WISHA Technical Manual and/or the Operations Manual, then this WRD (in that it presents a special instruction limited to lead exposures in construction) takes precedence.

B. Biological Monitoring. If biological testing of exposed employees is determined to be necessary for WISHA to document a violation of WAC 296-155-176, the regional office shall arrange for medical support through the Associate Medical Director for Occupational Safety and Health in the Office of the Medical Director, Research and Information Service, the Public Health Service, or the local hospital/health department. The Assistant Director for Consultation and Compliance Services will work with the Assistant Attorney General in coordinating and in assisting the regional office in the handling of these cases.

C. Interface with Other Standards. The recordkeeping requirements for recording cases to the OSHA 200 log and a supplementary record, under WAC 296-27, apply in certain lead exposure situations.

1. Cases requiring an entry to the log would include blood test levels greater than or equal to 50  $\mu\text{g}/\text{dl}$  whole blood, employee symptoms of lead poisoning or medical removals.

2. The Lead in Construction Standard does not remove any obligations of the employer to comply with the Hazardous Waste Operations and Emergency Response Standard, Chapter 296-62 WAC, Part P, and/or the Hazard Communication Standard, Chapter 296-62 WAC, Part C.

D. Referrals to Other Federal Agencies. Several federal and state agencies have authority and responsibility for specific lead activities, such as those mandated under the Housing and Community Development Act of 1992 (42 U.S.C. 4853).

For example:

Under the direction of the Environmental Protection Agency, state departments of health and

environment regulate aspects of lead-based paint abatement, including training and certification of abatement contractors and employees and the use of containment.

Under the direction of the Department of Housing and Urban Development (HUD), contractors working for public housing authorities must be in compliance with HUD guidelines for lead-based paint abatement.

Under the direction of the Federal Highway Administration, state highway agencies must take steps to integrate existing health and safety regulations into contract specifications.

Where the CSHO observes conditions which may fall within these agencies' jurisdictions, appropriate referrals and coordination of enforcement activities shall be ensured.

E. Safety and Health Protection for the CSHO. The CSHO must comply with all safety and health rules and practices at the job site and use the appropriate protective clothing and equipment required by WISHA standards or by the employer for the protection of employees. If the employer's provisions for employee protection does not meet the requirements of WISHA standards then the CSHO must comply with WISHA standards. Where CSHOs have potential for being or have been exposed to lead in excess of the action level (AL), initial medical surveillance (blood test) for analysis of blood lead and zinc protoporphyrin (ZPP) levels must be made available by the department. The provision of blood tests will be coordinated with the Internal Safety and Health Section.

V. Action: WISHA regional administrators and staff shall use the guidelines in this WRD to ensure uniform enforcement of Lead Exposure in Construction, WAC 296-155-176. The Assistant Director for Consultation and Compliance Services will provide support as necessary to assist the regional administrators and staff.

VI. Effective Date: This WRD is effective February 1, 1995, and will remain in effect until canceled.

## Appendix A

### Inspection Guidance and Citation Policy

### WAC 296-155-17603-Scope and Application

All occupational exposure to lead occurring in the course of construction work, including maintenance associated with construction work is covered by WAC 296-155-176. "Construction work" shall mean and include all or any part of excavation, construction, erection, alteration, repair, demolition, and dismantling, of buildings and other structures and all operations in connection therewith; the excavation, construction, alteration and repair of sewers, trenches,

caissons, conduits, pipe lines, road and all operations pertaining thereto; the moving of buildings and other structures, and to the construction, alteration, repair, or removal of wharfs, docks, bridges, culverts, trestles, piers, abutments or any other construction, alteration, repair or removal work related thereto [WAC 296-155-012(6)].

Construction work covered by WAC 296-155-176 includes any repair or renovation activities or other activities that disturb in place lead-containing materials (LCM) (e.g., steel structure renovation and repair).

For all occupational exposure to lead occurring in the course of construction work, the standard does not specify a minimum amount or concentration of lead that triggers a determination that lead is present and the potential for occupational exposure exists. However, if the employer has appropriately tested all potential sources of lead (e.g., tested all layers of paints and coatings that may be disturbed) utilizing a valid detection method for the presence of lead and found no detectable levels of lead, the standard does not apply.

NOTE: Until further guidance is sent to the field, the supervisor should be contacted if the CSHO needs guidance concerning valid test methods.

The lead-based paint hazard reduction activities defined in Title IV of the Housing and Community Development Act of 1992, including controls and abatement are also covered by this standard. These activities are defined in the OSHA Act as follows:

**ABATEMENT** - The term "abatement" means any set of measures designed to permanently eliminate lead-based paint hazards in accordance with standards established by the Director under this title. Such terms include:

The removal of lead-based paint and lead-contaminated dust, the permanent containment or encapsulation of lead-based paint, the replacement of lead-painted surfaces or fixtures, and the removal or covering of lead soils; and

all preparation, cleanup, disposal, and post abatement clearance testing activities associated with such measures.

**INTERIM CONTROLS** - The term "interim controls" means a set of measures designed to reduce temporarily human exposure to lead-based paint hazards, including specialized cleaning, repairs, maintenance, painting, temporary containment, ongoing monitoring of lead-based paint hazards or potential hazards and the establishment and operation of management and resident education programs.

All such activities (with the exception of the establishment and operation of management and resident education programs) conducted as part of an employer's lead abatement program, or

lead operations and maintenance program that implements specific interim controls, are covered by WAC 296-155-176.

## WAC 296-155-17607-Permissible exposure limit

### Subsection (3)

The standard permits the use of respiratory protection and the adjustment of employee exposure based on the assigned protection factor of the respiratory protection to achieve compliance with the permissible exposure limit (PEL) only if the employer has complied with WAC 296-155-17611(1), engineering and work practice controls and WAC 296-155-17613, respiratory protection. (See Appendix B for guidance on exposure calculation for compliance with WAC 296-155-17607(3)).

## CITATION POLICY

When the calculated time weighted average (TWA) after taking into account the protection factor of the respirator still exceeds the PEL, a citation for violation of WAC 296-155-17607(1) or 296-155-17607(2) shall be issued. WAC 296-155-17607(3) is explanatory in nature and shall not be cited. Note that the employer is also in violation of WAC 296-155-17613(2)(a) as well as WAC 296-155-17607(1) or 296-155-17607(2). The TWA documented for citation shall be calculated without the use of the protection factor of the respirator.

## WAC 296-155-17609-Exposure assessment

Compliance with WAC 296-155-17609 was to have been accomplished by February 10, 1994.

### WAC 296-155-17609(1)

The employer must initially determine if any employees may be exposed at or above the action level (AL) of 30  $\mu\text{g}/\text{m}^3$  measured at an 8-hour TWA. The employer must conduct initial exposure assessments of all work places and operations where lead or lead-containing materials are being used, disturbed, or removed. Exposure assessments must meet the requirements of WAC 296-155-17609(1)(b)-(d).

WAC 296-155-17609(1)(b) defines employee exposure as that exposure that would occur if the employee were not wearing a respirator. All exposure assessments must be made in accordance with WAC 296-155-17609(1)(b).

Air samples collected inside of a respirator (i.e., Type CE, abrasive blast respirator with hood/helmet) do not meet the requirement of WAC 296-155-17609(1)(b) and shall not be used for determining compliance to the PEL, although such samples may be useful in evaluating the

respiratory protection program.

Air samples must be collected outside of this type of respirator (Type CE) as near as practical to the employee's breathing zone (nose and mouth) for determining compliance to the PEL.

#### WAC 296-155-17609(2)

The employer must implement mandatory employee protective measures prior to and during the exposure assessment of tasks presumed to generate lead exposures greater than the PEL in accordance with the requirements of WAC 296-155-17609(2)(e). These control measures for the tasks identified under WAC 296-155-17609(2)(a)-(d) are consistent with the requirements of WAC 296-155-17613, 296-155-17615, 296-155-17619(2) and 296-155-17619(5), 296-155-17621(1)(a), 296-155-17625(1)(a), and 296-155-(2)(b).

The level of respiratory protection can only be reduced when the employer demonstrates that the actual employee exposures are below the interim respiratory protection trigger levels.

The compliance safety and health officer (CSHO) shall review the written compliance program, training records, exposure monitoring records, and biological monitoring records, where available, to determine whether the employer has assessed employee exposures and if interim control measures are being implemented in accordance with WAC 296-155-17609(2)(e).

#### WAC 296-155-17609(2)(a)(i)

For the purposes of complying with the requirements of this section, demolition refers to dismantling, razing, or wrecking activities, and to demolition activities during rehabilitation, repair, or remodeling where structural members of the structure are not removed. This definition is based on the American National Standards Institute (ANSI) A10.6-1990 standard which defines "demolition" as dismantling, razing, or wrecking any fixed building or structure or any part thereof.

NOTE: Manual sanding and manual scraping, as listed in WAC 296-155-17609(2) refers to dry sanding and dry scraping. Where wet methods are used, the employer may base the protection provided on the results of the initial exposure assessment, without having to provide interim protection.

#### WAC 296-155-17609(3)

Objective or historical data can be used to satisfy the requirement for an initial exposure determination, except that for tasks covered by WAC 296-155-17609(2), actual employee exposure monitoring results or historical data (i.e., actual employee monitoring data obtained within the last 12 months) must be used since WAC 296-155-17609(3)(d)(ii) prohibits use of

objective data for exposure assessment for these tasks. The employer must have the data and must have performed an exposure assessment using this data. The historic work data must be of sufficient quality to permit the employer to forego conducting the initial monitoring stipulated under WAC 296-155-17609(3)(a).

In accordance with WAC 296-155-17609(3)(c), in order for historic work data to eliminate the employer's obligation to conduct the initial or periodic monitoring, the data must provide the levels of exposures to lead that employees receive during work operations conducted under workplace conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used and prevailing during the current work operations, or represent the highest level of exposure in accordance with WAC 296-155-17609(3)(b). This means that all factors which could significantly affect variation between historic and current conditions must be identified and assessed by the employer as part of the initial determination.

In determining whether the historic data is sufficiently similar to current conditions as required by WAC 296-155-17609(3)(c), the historic data shall meet these specific conditions, which was listed in the preamble of Federal Register, Volume 58, Number 84, dated May 4, 1993, on page 26599. These conditions are as follows:

The data upon which employee exposure assessments are based are scientifically sound and collected using methods that are sufficiently accurate and precise.

The processes and work practices in use when the historical data were obtained are essentially the same as those to be used during the job for which initial monitoring will not be performed.

The characteristics of the lead containing material being handled when the historical data were obtained are essentially the same as those on the job for which initial monitoring will not be performed.

Environmental conditions prevailing when the historical data were obtained are essentially the same as for the job which initial monitoring will not be performed.

With respect to the conditions listed above, the CSHO shall evaluate the following:

The state of deterioration of the LCM, then and now.

The amount or concentration of lead in the LCM, then and now.

Engineering controls and work practices used (e.g., work area dimensions, ventilation positioning and airflow, crew size, tools and application or removal methods, containment, wet methods, duration of the work shift).

Employee training and supervision with respect to the use of work practices and personal protective equipment, then and now.

If the state of such variable factors was not noted at the time the historic work data was collected, then it is unknown whether the data would reflect current exposures, and the data may not be substituted for initial monitoring. [In that instance, or if the CSHO determines that significant differences exist between the historical and current conditions which could cause the employee's current exposure to be underestimated, a violation of WAC 296-155-17609(3)(a) exists.

If the employer is relying on monitoring data obtained on projects conducted by other employers or data were obtained more than 12 months before, but no significant differences exist and the historical data would otherwise be an acceptable substitute, a de minimis violation would exist.

WAC 296-155-17609(6)

Initial determinations and/or subsequent determinations that reveal employee exposures to be below the action level remove the employer's obligation to continue exposure monitoring, except if the conditions in WAC 296-155-17609(7) that require additional monitoring exist.

WAC 296-155-17609(8)

WAC 296-155-17609(8)(a) requires the employer to notify the exposed employee of the results within 5 working days after completion of the exposure assessment. This shall be interpreted as meaning within 5 working days from the employer's receipt of the monitoring results or the analysis of the objective or historical data.

To verify whether the employer is complying with the requirements of WAC 296-155-17609, the CSHO shall interview the employer, the competent person, employees, and employee representatives to determine if any exposure assessments were conducted.

The CSHO must review exposure assessment records such as current or historical air monitoring data, objective data, material safety data sheets or any other data that documents the existence of a lead hazard, and verify if the exposure assessment records were appropriately applied to each exposure assessment.

The CSHO shall determine how the employer notifies the employees of the results of their exposure assessment and must verify if the employee notifications are given within the required time.

## CITATION POLICY

Violations of any of the provisions under WAC 296-155-17609 shall normally be cited as serious.

Where the employer has not made initial determinations of employee exposures, the CSHO shall cite WAC 296-155-17609(1)(a) and group with WAC 296-155-17609(1)(c) for a representative sample of each job classification for each violation. If a job classification requires more than one representative sample, all of these occurrences shall be combined for each violation.

Where the employer is in violation of the requirements of WAC 296-155-17609(2)(e) while performing tasks covered under WAC 296-155-17609(2)(a) through (d), the CSHO shall cite each specific requirement of WAC 296-155-17609(2)(e) and group with the corresponding provision of WAC 296-155-17613, 296-155-17615, 296-155-17619(2) and 296-155-17619(5), 296-155-17621(1)(a), 296-155-17625(1)(a), and 296-155-17625(2)(c) as referenced in WAC 296-155-17609(2)(a).

When citing violations of WAC 296-155-17609(8), the CSHO shall consider treating the violation as de minimis where an employer has rarely delayed notification beyond the deadline. An other-than-serious violation may be considered when exposure results are below the action level and notification has been delayed beyond 5 days.

### WAC 296-155-17611-Methods of compliance

Compliance with WAC 296-155-17611(1) was to have been accomplished no later than April 10, 1994. Compliance with all the other requirements of WAC 296-155-17611 was to have been accomplished by February 10, 1994.

The employer is required to use all feasible engineering and work practice controls, including administrative controls, before relying on respiratory protection to achieve compliance with the PEL under WAC 296-155-17607(3).

### WAC 296-155-17611(1)

Engineering controls: The CSHO shall evaluate the feasibility of additional engineering controls on a case-by-case basis. Feasibility shall be determined on the basis of factors including, but not limited to, site conditions, the scale of the job and the effectiveness of the method in completing the planned job. If it is determined that a particular engineering or administrative control not already implemented is feasible, the control shall be identified as an appropriate abatement method.

It may be useful to consult the Preamble, in the Federal Register, Volume 58, Number 84, dated May 4, 1994, Table 5, "Analysis of Engineering Controls and Respirators Needed to Achieve Compliance with the 50 æg/m<sup>3</sup> PEL," or to consult with the supervisor for guidance.

EXAMPLE: The CSHO is evaluating a highway bridge renovation where abrasive blasting is being conducted in full containment to determine feasible engineering controls. As indicated in Table 5, it is technologically feasible for the employer to use mechanical dilution ventilation for the enclosure operations. In addition, HEPA vacuums and wetting agents are feasible controls for this type of project. (In this instance, it would not be considered feasible to substitute local exhaust ventilation or shrouded tools for abrasive blasting methods already in use.)

Work practice controls: Work practice controls shall be evaluated on a case-by-case basis and in conjunction with engineering controls.

Respiratory controls: Where engineering and work practice controls have been implemented to reduce exposure to the lowest feasible level but exposures still exceed the PEL, respiratory protection that complies with WAC 296-155-17613 shall also be used to protect employees.

#### WAC 296-155-17611(2)

The CSHO shall review the employer's written compliance program. It must be available at the work site, and implemented prior to the start of the job. The employer may elect to provide a written plan that is unique to each work site, but this is not required as long as the elements required by WAC 296-155-17611(2)(b) are specific to the conditions at the job site.

The CSHO shall evaluate the plan to determine whether it contains the required elements and also that it requires evaluation by a competent person.

The CSHO shall evaluate the plan to determine whether the employer has designated specific employee job responsibilities, particularly those of the competent person with respect to the specific means that are employed to achieve compliance.

The written program shall be revised and updated at least every 6 months. This revision includes a review of the entire program, with appropriate changes made to reflect the current status of the project.

The CSHO shall identify the exposing employers whose employees have potential exposure to lead, and contact them to determine whether the creating employer has adequately notified them of the hazard, and whether all affected employees have been informed. (See the Operations Manual, Chapter X, F.)

#### WAC 296-155-17611(2)(c)

At the start of the inspection, the CSHO shall identify the competent person (CP) and, if appropriate, include the CP on the walkaround and other phases of the onsite inspection.

The CSHO shall interview the CP to determine his or her qualifications (experience, training, and credentials) relevant to lead hazards and specific CP activities, responsibilities, and authority as designated by the employer in the written compliance program.

Unless the employer has provided for that element of the written compliance program (e.g., site characterization and analysis, ventilation design, performing sampling) through other means, the CP's duties include identifying lead hazards and taking corrective action. For example this may include:

- Determine prior to the performance of the job whether lead is present in the work place,
- Ensure the adequacy of any employee monitoring data and exposure assessments,
- Ensure that all employees wear required protective work clothing (PWC) and personal protective equipment (PPE) and are trained in and use appropriate exposure control methods,
- Ensure that proper hygiene facilities are provided and that employees are trained and use those facilities,
- Ensure that engineering controls are designed, operated and maintained properly,
- Demarcate lead work areas, and
- Take effective measures to reduce lead hazards.

The CSHO shall identify the extent and frequency of the CP's inspections and determine whether the inspections are actually conducted.

The CSHO shall establish how inspection findings are recorded and reported and whether the identified deficiencies are corrected in a timely and consistent fashion.

WAC 296-155-17611(3)

The CSHO shall review the employer's evaluation of mechanical ventilation performance. The employer's evaluation must include, but is not limited to, personal monitoring data, documentation of ventilation specifications and checks by the employer or competent person to assure performance, a written maintenance procedure as part of the written compliance

program and the implemented schedule for maintenance by qualified personnel to verify the performance of any mechanical ventilation. Where possible, the CSHO shall collect ventilation measurements to verify the effectiveness of the mechanical ventilation.

#### WAC 296-155-17611(4)

The CSHO shall evaluate the job rotation schedule to verify compliance with WAC 296-155-17611(4). The information specified in WAC 296-155-17611(4) and WAC 296-155-17611(2)(b)(vii) must be part of the written compliance program if administrative controls involving job rotation are used.

#### WAC 296-155-17611(4)(b)

The employer is required to have exposure data that accurately represents the cumulative eight hour TWA exposure for each rotated employee. The CSHO shall evaluate these data and those data from the sampling required under WAC 296-155-17609(3)(a) to determine if the rotation is effective in adequately reducing employee exposure.

#### CITATION POLICY

An employer shall be cited for a violation of WAC 296-155-17611(1) when engineering and work practice controls, including administrative controls, have not been implemented in accordance with WAC 296-155-17611(1).

Where the employer's implementation of respiratory protection as required under WAC 296-155-17611(1) does not maintain or reduce employee exposure to or below the PEL, the CSHO shall cite as serious each violation of WAC 296-155-17611(1) and group with WAC 296-155-17607(1). Note that the employer is in violation of WAC 296-155-17613(2)(a) as well.

**EXAMPLE 1:** In an abrasive blasting operation where some engineering and work practice controls are implemented (as above), and the employer relies upon an adequate respiratory protection program to further reduce employee exposure to or below the PEL; if, with all such controls being utilized and accounting for the protection factor of the respirator, the employees are still overexposed, then a violation of WAC 296-155-17611(1) exists if it can be shown that additional feasible alternative engineering and/or work practice/administrative controls could have been implemented to reduce employee exposure.

**EXAMPLE 2:** If during a torch-cutting operation an employee is overexposed to lead fumes without the use of engineering controls, regardless of the use of respiratory protection, a violation of WAC 296-155-17611(1) exists because the employer did not implement available feasible engineering controls such as local exhaust ventilation and work practices such as stripping back lead-containing coating.

If an employee is exposed above the PEL and the employer does not have a written compliance program, violations shall be cited as serious and WAC 296-155-17611(2) and WAC 296-155-17607(1) shall not be grouped. If the compliance program is substantially in effect and only minor deficiencies are found, then violations are to be cited as other-than-serious. If compliance programs have major flaws, such as requirements of WAC 296-155-17611(2)(b) that are not addressed, violations shall be cited as serious and combined with citations of the missing elements of items 296-155-17611(2)(b)(i) through (viii). However, the employer shall not be penalized more than if the employer had no program.

A violation exists where the compliance program does not describe specific arrangements (designate contacts and communication procedures). Where there is actual bystander employee exposure, the creating employer shall be cited for violation and the citation issued in accordance with the Operations Manual, Chapter X, F.2.

Violations of WAC 296-155-17611(2)(c) exist when:

No CP has been appointed,

The CP is not capable of investigating and identifying lead sources, hazards and appropriate control measures,

The CP does not inspect on a regular basis, or frequently enough to effect a consistent level of lead hazard control.

Violations of WAC 296-155-17611(3) shall be considered serious and shall be grouped with WAC 296-155-17611(2)(b)(ii) and WAC 296-155-17611(2)(c) where appropriate.

Violations of WAC 296-155-17611(4) shall be considered serious or other-than-serious depending on the degree of deficiency. If controls are not in writing, WAC 296-155-17611(2)(b)(vii) will be cited using the same guidelines.

Violations of WAC 296-155-17611(5) shall be considered serious and grouped with other appropriate sections or standards. For example, if employees are observed dry sweeping instead of vacuuming, WAC 296-155-17611(5) may be grouped with WAC 296-155-17611(2)(c), WAC 296-155-17611(1) and/or WAC 296-155-17617(3). In the case of torch cutting, WAC 296-155-17611(5) may be grouped with WAC 296-155-420(3).

WAC 296-155-17613-Respiratory protection

Compliance with WAC 296-155-17613 was to have been accomplished no later than February 10, 1994.

## WAC 296-155-17613(1)

The respirators that employees use must have been provided by the employer at no cost to the employees. The employer must ensure that use of respirators comply with WAC 296-155-17613(3).

## WAC 296-155-17613(2)

In selecting the appropriate respiratory protection, the employer must refer to WAC 296-155-17613(2), Table 1 for selection guidance.

Table 1 assigns a higher protection factor (PF) to full-facepiece air-purifying respirators (PAPR) with a loose-fitting hood or helmet (25). This is because the PAPR's PF is in part based on the lack of a tight face seal. Tight-fitting PAPR's are given a higher PF (50).

The CSHO shall check the respirator manufacturer's product literature, examine the respirator and observe its use in making a determination as to whether a PAPR is loose or tight-fitting.

NOTE: For abrasive blasting operations, there are two types of Type CE abrasive blast respirators. These respirators have an assigned PF of 25 and 2000. Under the requirements of WAC 296-155-17609(2), the abrasive blast respirator with a PF of 2000 must be used during the exposure assessment as an interim control. Presently, the market availability of an abrasive blast respirator with a PF of 2000 and integral head protection is limited, which could impact on the employer's ability to fully comply with WAC 296-155-17609(2)

Where market availability is limited, as an alternative method of evaluating compliance, the CSHO shall make a determination that the employer is making reasonable and timely effort to protect the employees. The following considerations shall be taken into account in determining whether the employer has taken sufficient steps to protect employees:

Review the purchase invoices to document that the employer has, in a timely fashion, been (and continues) pursuing purchase of the required abrasive blast respirators,

Make an evaluation of the effectiveness of the engineering and work practice controls; and

Determine if the employer has taken additional steps to monitor the employee's health such as increasing the frequency of biological monitoring to determine if the employees have been adequately protected.

These steps will be necessary as a method of evaluating appropriate abatement.

### WAC 296-155-17613(3)

The employer is required to ensure that an employee who must wear a respirator in accordance with WAC 296-155-17613(1) is properly fitted and qualified for respirator use. WAC 296-155-17613(3)(b) requires that the fit test, whether qualitative or quantitative, shall be in accordance with WAC 296-155-17656, Appendix D.

NOTE: Qualitative fit tests are allowed only for testing the fit of negative pressure half-mask respirators where they are permitted to be worn.

The CSHO shall review the employer's fit test records to determine if employees using respirators were fit tested for the respirators they are using. Also, an evaluation of the fit test methods shall be conducted to determine if the appropriate fit test methods are being employed.

### WAC 296-155-17613(4)

The CSHO shall check to determine if there is a respirator program in place and if the program is in accordance with Chapter 296-62 WAC, Part E.

### CITATION POLICY

Elements of WAC 296-155-17613 may be grouped together, however violations of WAC 296-155-17613 shall not be grouped with violations of WAC 296-155-17607. Violations of any of the provisions under WAC 296-155-17613 shall be cited as serious.

### WAC 296-155-17615-Protective work clothing and equipment

The CSHO shall determine compliance with WAC 296-155-17615 by:

Interviewing employees, competent persons, employees, and employee representatives.

Observing work procedures and practices, including implementation of the written compliance program.

Reviewing employer's exposure assessment data and/or performing air monitoring to determine:

If the PEL is exceeded and if protective work clothing (PWC) and personal protective equipment (PPE) are required, and

The required frequency of cleaning and replacing PWC and PPE. Protective work clothing must be provided weekly, unless the exposure levels exceed 200 æg/m<sup>3</sup> Then the PWC must be provide daily.

#### WAC 296-155-17615(1)

Protective work clothing must prevent lead from contacting employees' work or street clothes, undergarments, or skin, whenever WAC 296-155-17615 applies.

The employer is not obligated under this standard to provide general work clothes to employees, but is responsible for providing PWC. Similarly, if shoes are provided, they do not necessarily need to be safety shoes and defined by the ANSI Z-41 series, unless foot protection is required by the safety hazards at the work site. If shoes are not considered PWC, they must be covered and protected by shoe covers that prevent contamination.

If work clothes and shoes are intended to protect the employee's body from contamination, they are to be provided by the employer. Disposable PWC which are frequently ripped or fall apart under normal use would not be considered "appropriate protective work clothing."

Where employees are providing or paying for their own PWC and such clothing is required, a violation exists.

The employer is required to comply with WAC 296-155-17615 during assessment of exposure under WAC 296-155-17609(2)(e)(ii). Where employees are performing tasks covered by WAC 296-155-17609(2) and an exposure assessment has not been performed, PWC shall be provided and used.

#### WAC 296-155-17615(2)(c)

PWC which has been rendered inappropriate (e.g., when employer-provided shoes develop holes or split seams) must be promptly repaired or replaced by the employer, at no cost to the employee. Effective protection against contamination of employees' skin, hair, and garments must be maintained at all times.

#### WAC 296-155-17615(2)(e)

PWC is to be stored in a closed container at the end of the work shift until such time as it shall be cleaned, laundered, or disposed of in accordance with WAC 296-155-17615(2)(b).

#### WAC 296-155-17615(2)(f)

Laundering/cleaning of work clothes that are used as PWC shall be provided by the employer.

Protective work clothing must be stored in the change area per WAC 296-155-17619(2)(b) and may not be sent home with the employee for cleaning per WAC 296-155-17619(2)(c).

#### WAC 296-155-17615(2)(h)

WAC 296-155-17615(2)(h) prohibits the removal of lead from protective clothing and equipment by any means that would disperse lead into the air. However, a violation of WAC 296-155-17615(2)(h) inside an abrasive blasting enclosure or other containment shall be considered as de minimis, where the employer has provided employees with adequate respiratory protection and mechanical ventilation is being used. A violation of WAC 296-24-650 may exist.

#### CITATION POLICY

Where employees are performing tasks specified in WAC 296-155-17609(2) and an exposure assessment has not been performed, and PWC is not provided or used a violation exists. This violation shall be cited as serious and grouped with WAC 296-155-17609(2)(e)(ii).

Violations of all other sections of WAC 296-155-17615 shall be cited as serious.

Grouping: Sections of WAC 296-155-17615 shall not be grouped with other sections of this standard except WAC 296-155-17609(2)(e)(ii). Within WAC 296-155-17615, sections may be grouped together and cited as one serious violation.

#### WAC 296-155-17617-Housekeeping

The CSHO shall evaluate the employer's housekeeping through review of the written compliance program, implementation of program and observed work practices. When a determination has been made that an employer could reduce contamination of surfaces from occupational sources, wipe or bulk samples are taken to provide evidence that the surface contamination is, in fact, lead.

#### WAC 296-155-17617(5)

WAC 296-155-17617(5) prohibits cleaning with compressed air as a housekeeping practice unless effective exhaust ventilation is in use. However, certain circumstances may exist where cleaning using this technique is necessary.

EXAMPLE: When cleaning the seams of containment walls prior to striking the enclosure movement to a new location, vacuum techniques may not be adequate to remove lead dust from the crimps in the seams and the dust could be spread if it is not cleared prior to movement of the enclosure. In this instance, the exhaust ventilation used during blasting must

be in operation while employees clean with compressed air.

NOTE: WAC 296-155-020 requires that containers be provided for the collection and separation waste and other refuse, and that these containers be covered where disposing of hazardous or harmful material is involved. Employers shall provide covered containers, or perform suitable bagging (such as double bagging) for lead-containing or lead-contaminated refuse and waste materials. Violations of WAC 296-155-020 shall be cited as serious.

## CITATION POLICY

Violations of WAC 296-155-17617(5) shall be cited as serious.

### WAC 296-155-17619-Hygiene facilities and practices

This section, WAC 296-155-17619, requires employers to provide hygiene facilities and stresses that employers shall ensure employee compliance with basic hygiene practices.

The CSHO shall evaluate the effectiveness of employers hygiene facilities and practices through review of the written compliance program, implementation of the program and observed practices.

The CSHO shall conduct appropriate wipe and air samples where the cleanliness of the change areas, storage facilities, and/or lunchrooms/eating areas is in question

In determining whether an employer has maintained surfaces of hygiene facilities free from contamination, WISHA recommends the use of HUD's recommended level for acceptable decontamination of 200 æg/ft<sup>2</sup> for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. WISHA would not expect that surfaces should be any cleaner than this level.

### WAC 296-155-17619(2)(a)

The CSHO shall determine if clean change areas equipped with acceptable storage facilities are available for all employees performing tasks covered by WAC 296-155-17609(2), at least until the assessment of exposure is complete. If employees are exposed to lead above the PEL, then change areas are still required.

### WAC 296-155-17619(3)(a)

The CSHO shall determine the feasibility of shower facilities on a case-by-case basis using factors including, but not limited to the following:

Location;

Availability of acceptable water supply;

Climate; and

Duration of the job.

WAC 296-155-17619(4)(b)

To evaluate employer compliance with WAC 296-155-17619(4)(b), the CSHO shall use methods including, but not limited to the following:

Observe work practices (such as frequency of table cleaning, hand and face washing, and removal of contaminated PPE);

Conduct employee interviews (re: work practices, indications of elevated blood lead levels, training, enforcement, etc.);

Note physical location of lunchroom facilities or eating areas relative to work area; and

Take wipe samples from surfaces that will be contacted by employees.

WAC 296-155-17619(5)(a)

WAC 296-155-140(2) states that: The employer shall provide adequate washing facilities for employees engaged in the application of paints, coating, . . . , or in other operations where contaminants may be harmful to the employees. Such facilities shall be in near proximity to the work site and shall be so equipped as to enable employees to remove such substances. This requirement shall be enforced regardless of the levels of airborne lead (or other toxic contaminant), if the potential for employee exposure via direct contact exists.

NOTE: WAC 296-155-17619(5) applies to all employers covered by WAC 296-155-176, regardless of the employee's exposure level. All other provisions of WAC 296-155-17619 apply to employers who have employees exposed to airborne lead above the PEL, without regard to the use of respirators.

## CITATION POLICY

Where applicable, any violation of WAC 296-155-17619 may be grouped with violations of WAC 296-155-17611(5) and classified according to the Operations Manual, Chapter X.

Violations of WAC 296-155-17619(1) may be cited as serious or other-than-serious depending on the degree of the deficiency. Where appropriate, these may be grouped with violations of WAC 296-155-17615(2)(d).

Violations of WAC 296-155-17619(2) shall be cited as serious and may be grouped with violations of WAC 296-155-17615(2)(d) where appropriate.

Violations of WAC 296-155-17619(3) shall be cited as serious.

Violations of WAC 296-155-17619(4) may be cited as serious or other-than-serious depending on the degree of the deficiency. Where appropriate, violations may be grouped with violations of WAC 296-155-17619(1).

Violations of WAC 296-155-17619(5)(a) shall normally be considered serious when sampling shows employee exposure above the PEL and other-than-serious when sampling shows employee exposure at or below the PEL. Where appropriate, violations of WAC 296-155-17619(5)(a) may be grouped with violations of WAC 296-155-140 and classified according to the Operations Manual, Chapter X.

#### WAC 296-155-17621-Medical surveillance

To evaluate employer compliance with these provisions, the CSHO may use methods including, but not limited to the following:

Interview the employer and employees, and when necessary the healthcare professional administering the medical provisions;

Review the medical records required to be maintained by the employer;

Review individual medical records.

NOTE: Access to these records may only be gained by signed employee consent or with a medical access order. CSHOs considering a review of specific medical records shall refer to 296-62 WAC, Part B as well as WRD 89-5 for guidance in safeguarding employee privacy rights and shall consult with the supervisor and the safety and health compliance section in the proper interpretation of those records.

Evaluation points for all requirements of the medical surveillance program include:

Were all eligible employees included in the program?

Were all required tests and examinations performed at the required intervals?

Did the employer take all actions mandated by the standard when tests or exams triggered an obligation?

Were the appropriate records generated, maintained and provided to the appropriate people?

WAC 296-155-17621(1)(a)

Any employee exposed to airborne lead concentrations at or above the action level on any day must be provided initial medical surveillance (blood test) for analysis of blood lead and zinc protoporphyrin (ZPP) levels. For compliance, WISHA recommends that initial medical surveillance be made available prior to assignment but no later than reasonably prompt after the employee has had an exposure above the action level. Citations shall be issued where the employer has not made available initial medical surveillance reasonably prompt. WISHA considers 48 hours an appropriate measure of reasonable promptness.

WAC 296-155-17621(1)(b)

Employees with an exposure at or below the action level (AL) for more than 30 days in any consecutive 12 months must be provided coverage in the medical surveillance program required under WAC 296-155-17621(2) and (3). The medical surveillance program consists of periodic biological monitoring and a medical examination. The employer is required to make available annual medical examinations to employees for whom a blood sampling test conducted at any time during the preceding 12 months indicates a blood lead level at or above 40 æg/dl, even if the elevated blood lead level occurred prior to employment with the current employer.

WAC 296-155-17621(2)

The CSHO shall confirm that employees entitled to periodic blood tests for blood lead and ZPP levels are provided those tests as specified in the standard.

Also, any employee with a blood lead test result at or above 50 æg/dl must be provided a follow-up blood test within two weeks after the employer receives the results.

WISHA has determined that the Free Erythrocyte Protoporphyrin (FEP) test is comparable to the ZPP test for determining lead toxicity. Where an employer uses the FEP test for the ZPP test, the CSHO shall treat the violation as de minimis.

WAC 296-155-17621(2)(b)

The requirement to conduct a follow-up test applies to any test results, including the results of initial medical surveillance.

#### WAC 296-155-17621(2)(c)

The CSHO shall confirm that blood tests are performed by an OSHA approved laboratory. Reference the OSHA Computerized Information System (OCIS) listing for "Blood Lead Laboratories."

#### WAC 296-155-17621(3)

The CSHO shall confirm that employees entitled to medical examinations and consultations are provided them as specified in the standard.

#### WAC 296-155-17621(3)(b)

The content of the examinations may be confirmed by reviewing the information provided by the employer to the physician and by interviewing the employees and the physician.

#### WAC 296-155-17621(4)

The CSHO shall conduct private interviews with selected employees to confirm that prophylactic chelation is not performed to keep blood lead levels down and that if it is ever performed for medical reasons, all provisions of WAC 296-155-17621(4)(b) are followed.

### CITATION POLICY

Any violation of WAC 296-155-17621 shall be cited serious, even if airborne exposures to lead are between the action level and the PEL. Elements of WAC 296-155-17621 can be grouped when citing violations.

#### WAC 296-155-17623-Medical removal protection

Compliance with the medical removal protection (MRP) aspects of the standard can only be determined after review of the employer's medical surveillance program, as described in WAC 296-155-17621.

#### WAC 296-155-17623(1)(a)

Unlike the general industry standard for lead, the lead in construction standard, WAC 296-155-176, requires that a result of 50 æg/dl or more on two consecutive blood lead tests requires

temporary medical removal of the employee and compensation with medical removal protection benefits (MRPB). Employers are not permitted to average blood lead test results to determine eligibility for medical removal.

If the results of an employee's initial medical surveillance (blood lead test) is at or above 50 æg/dl, and the results of a follow-up test is also at or above 50 æg/dl, then the employee must be removed in accordance with WAC 296-155-17623.

#### WAC 296-155-17623(1)(b)

Employees may qualify for MRP benefits due to elevated blood lead levels or a final medical determination of detected medical condition that places the employee at increased risk of material impairment from exposure to lead. Both types of medical records are to be reviewed.

NOTE: An employee who has 30 or fewer days of exposure at or above the action level would only be removed for elevated blood lead levels and not pursuant to final medical determination, because the medical examinations and consultations required by WAC 296-155-17623 would only be required to be made available to employees exposed for more than 30 days at or above the action level.

The CSHO shall document each instance in which a worker should have been removed and then refer to the following sources to ensure that removal did take place:

The employer's medical removal records required by WAC 296-155-17629(3);

Air sampling data for the area(s) to which employee(s) were removed, showing exposure levels below the action level;

Medical records showing that appropriate medical surveillance was provided during removal periods;

Interviews with employees.

MRP shall be initiated immediately after the employer is informed of events triggering medical removal under the requirements of the standard.

Generally, with respect to the duration of MRP benefits, the maximum is 18 months or the duration of the job from which the employee has been removed, whichever comes first. The duration of the job would be defined by the specifics of the affected employee's hiring agreement. Whether the job has ended or not, may be determined by reviewing the job specifications and the status of the project.

The CSHO must interview some employees covered by medical surveillance, the employer, and possibly other employees to determine the specifics of any agreement, and the nature of the employer's hiring practices. For example, if an employee is hired to perform sandblasting while a specific bridge is under renovation, MRP would be required to be provided only until all the sandblasting work on that bridge is completed. If an employee has been hired by a contractor as a sandblaster on a continuing basis, working on several projects at the determination of the employer, then MRP would be provided until the employee is returned to his or her former job status, for up to 18 months.

If an employee has been terminated while on (or eligible for) MRP, the CSHO must determine whether this action may have prematurely terminated the provision of benefits, violating the standard. If any employees have subsequently been assigned to replace or perform tasks previously performed by the terminated employee, this shall be documented in the case file and may serve as the basis for a citation if MRP benefits were not provided for the duration of his or her former job.

#### WAC 296-155-17623(2)

In determining compliance with the MRP benefits provisions the CSHO may use information sources such as, but not limited to the following:

Employer/employee interviews; records required under WAC 296-155-17629(3);

Collective bargaining agreements;

Copies of pay stubs;

Other payroll, duty roster and personnel records;

Any formally established company procedures for MRP;

Current or past union grievances filed on the issue, including awards or settlement agreements; and

Information on union/management negotiations on implementation of MRP.

Employees removed under MRP are entitled to the same earnings, seniority and other rights and benefits they would have received if they had not been removed. Earnings include base wage plus any overtime, shift differentials, incentives, and other compensation they would have received had they not been removed.

## CITATION POLICY

Any violation of WAC 296-155-17623 shall be cited as serious.

WAC 296-155-17625-Employee information and training

WAC 296-155-17625(1)

Although WAC 296-155-17625(1) references Part C of Chapter 296-62 WAC and requires that all employees covered by the "Lead Exposure in Construction" standard receive hazard communication training, the Hazard Communication standard, 296-62 WAC, Part C, would not normally cover employees subject to lead exposure generated from lead-containing materials (LCM) already in place on the job. Employees exposed to such hazards are covered by WAC 296-155-100 and WAC 296-155-110 which requires that the employer instruct each employee in the recognition and avoidance of unsafe conditions and in the regulations applicable to his or her work environment in order to control or eliminate any hazards or other exposures to illness or injury.

Under this provision, the employer is required to instruct employees exposed to lead in the hazards of lead and in the requirements of the "Lead Exposure in Construction" standard even if the exposure does not exceed the action level. This instruction need not be as comprehensive as any of the training provided under WAC 296-155-17625(2).

An effective employee training program provided under WAC 296-155-17625 must include the elements listed in WAC 296-155-17625(2) and be specific as to the job conditions. A generic training program can be used but must be modified to address site-specific issues such as what operations have exposures greater than the AL, engineering controls, work practices, PPE associated with specific job assignments, and the medical surveillance program.

WAC 296-155-17625(1)(a)

The CSHO shall determine if employees exposed to lead below the action level are receiving appropriate information and training as required under 296-62 WAC, Part C. This includes the requirements for material safety data sheets, warning signs and labels, and information and training.

WAC 296-155-17625(1)(b)

The CSHO shall determine if employees exposed to lead at or above the action level on any day, or to lead compounds that may cause eye or skin irritation are provided training in accordance with WAC 296-155-17625(2). The trainer must be able to address site-specific issues and demonstrate expertise in the area of lead hazards and their control. The CSHO shall

verify this based on the completion of specialized courses, degree programs or work experience.

#### WAC 296-155-17625(2)

This training is in addition to the other requirements under Chapter 296-62 WAC, Part C and applies when employee exposure is at or above the action level, without regard to the use of respiratory protection. The training must cover the areas specified in WAC 296-155-17625(2) and be presented in a manner that is appropriate to the employees' education, literacy level and language.

#### CITATION POLICY

If employees exposed to lead have not received appropriate training, citations will be issued under the applicable portions of Chapter 296-62 WAC, Part C if the LCM was not pre-existing (i. e., was introduced into the work site as part of a current job), or WAC 296-155-110 and/or WAC 296-155-110 if the LCM is in-place (e.g., lead-containing paints and coatings, lead solder on existing plumbing). Deficiencies shall be classified as serious. DO NOT CITE WAC 296-155-17625(1)(a) for violations of Chapter 296-62 WAC, Part C.

Deficiencies of WAC 296-155-17625(1)(b) shall be cited when employee exposure is at or above the action level or there is employee exposure to irritating lead compounds such as lead azide. They may be grouped with violations of WAC 296-62-05415 and WAC 296-155-17625 (2) where appropriate. Violations shall be classified as serious.

Violations of WAC 296-155-17625(3) shall be classified as serious or other-than-serious depending on the degree of deficiency.

#### WAC 296-155-17627-Signs

##### WAC 296-155-17627(2)(a)

When the employer has work areas where employee exposures exceed the PEL, warning signs shall be posted in each work area. The CSHO shall inspect the warning signs demarcating the lead work area.

The signs must be illuminated, cleaned, maintained and positioned as to be easily visible from all routinely used approaches to the lead work area and obvious both to the trained lead employee or an bystanders.

#### CITATION POLICY

If the signs have not been posted in areas where airborne concentrations of lead exceeding the PEL have been measured or if the required wording is not used, a serious violation of WAC 296-155-17627(2)(a) exists.

The CSHO shall consider a violation de minimis if the wording is not as required but similar in meaning and import. De minimis shall be considered if only a few signs are affected and posting is otherwise adequate.

Generally, other-than-serious citations under WAC 296-155-17627(2)(b) for poorly maintained or poorly illuminated signs will be issued, unless the legend is totally illegible, in which case it shall be cited serious.

### WAC 296-155-17629-Recordkeeping

Compliance with WAC 296-155-17629 was to have been accomplished by February 10, 1994. As a minimum:

The CSHO shall review the employer's records to determine if the employer is in compliance with WAC 296-155-17629, which requires that the employer establish a recordkeeping system, accurately maintain the records for the prescribed amount of time, make the records available upon request, and allow for proper transfer and disposition of the records. The CSHO shall interview employees to determine if they can review or obtain any of these records.

The CSHO shall review the exposure assessment, medical surveillance, medical removal, and objective data records to determine if the recorded information meets the requirements of WAC 296-155-17629(1) through (4).

### APPENDIX B

Computation of the TWA Concentration for the Duration of the Work Shift When Respiratory Protection is Permissibly Used to Comply with the PEL.

Applicability: Document the engineering, work practice and administrative controls used by the employer to lower airborne concentrations of lead under paragraph WAC 296-155-17611(1). Verify compliance with all requirements of WAC 296-155-17613 Respiratory protection.

If all requirements of paragraphs WAC 296-155-17611(1) and WAC 296-155-17613 are not met, the employer is not permitted to use the exception in WAC 296-155-17607(3) without regard to the protection factor of the respirators.

If the requirements of WAC 296-155-17611(1) and WAC 296-155-17613 appear to be met, the following information is needed:

Concentration of airborne lead while respirators are worn;

Concentration of airborne lead while respirators are not worn, if applicable; and

The protection factor assigned in Table 1 to the respirator worn while sampling was performed.

Formula: Where X = Total hours in the shift (value must be at least 8).

$[(C1)(T1)+...(Cn)(Tn)]$  = Sum of the product of sample results and time sampled when employee was not wearing a respirator.

$[(CR1)(TR1)+...(CRn)(TRn)]$  = Sum of the product of sample results and time sampled when employee was wearing a respirator.

PF = Protection factor listed in Table 1 of WAC 296-155-17613.

$$\text{X-hour TWA} = \frac{[(C1)(T1)+...(Cn)(Tn)] + \frac{[(CR1)(TR1) + ... (CRn)(TRn)]}{PF}}{X}$$

Example: Sample A was collected over 4 hours while the employee was wearing a half-mask air purifying respirator with high efficiency particulate filters. Sample B was collected over 4.5 hours while the employee was not wearing a respirator. The work shift was 9 hours long; zero exposure was assumed for the 1/2 hour at the end of the shift when the employee showered.

Sample A result: 110  $\mu\text{g}/\text{m}^3$

Sample B result: 80  $\mu\text{g}/\text{m}^3$

Using the formula:

$$\text{TWA} = \frac{(0 \mu\text{g}/\text{m}^3) (0.5 \text{ hrs}) + (80 \mu\text{g}/\text{m}^3) (4.5 \text{ hrs}) + [(110 \mu\text{g}/\text{m}^3)/10] (4 \text{ hrs})}{9}$$

The 9-hour TWA for this employee was 45  $\mu\text{g}/\text{m}^3$ . The adjusted PEL for a 9-hour shift is 44  $\mu\text{g}/\text{m}^3$ . The 95 percent confidence limits must still be calculated to determine noncompliance.

APPENDIX C - REFER TO THE HARD COPY

APPENDIX D - REFER TO THE HARD COPY

## APPENDIX E

### Summary and Explanation of the Standard

#### Purpose

The purpose of the standard is to provide a level of protection to workers exposed to lead in construction equivalent to that afforded other lead workers under WISHA's general occupational health standard WAC 296-62-07521. Provisions derived from the general industry standard and incorporated into this standard include the following paragraphs of this rule:

WAC 296-155-17605 Definitions;

WAC 296-155-17607, Permissible exposure limit;

WAC 296-155-17609(1), 296-155-17609(3), 296-155-17609(4), 296-155-17609(5), 296-155-17609(6), 296-155-17609(7), 296-155-17609(8), Exposure assessment;

WAC 296-155-17611(2) and 296-155-17611(4), Methods of compliance;

WAC 296-155-17613, Respiratory protection;

WAC 296-155-17615 Protective work clothing and equipment;

WAC 296-155-17617(1), 296-155-17617(2), 296-155-17617(3), 296-155-17617(4), Housekeeping;

WAC 296-155-17619(1), 296-155-17619(2), Hygiene facilities and practices;

WAC 296-155-17621(1)(b) through (d), and 296-155-17621(2)(a)(ii) and 296-155-17621(2)(a)(iii),

WAC 296-155-17621(2)(b) through (d),

WAC 296-155-17621(3) and 296-155-17621(4) Medical surveillance;

WAC 296-155-17623(1)(b) through (e) and 296-155-17623(2), Medical removal protection;

WAC 296-155-17625(1)(b) and 296-155-17625(1)(c) and subsection 296-155-17625(2), 296-155-17625(3), Information and

training; WAC 296-155-17627, Signs,

WAC 296-155-17629(1), 296-155-17629(2), 296-155-17629(3), 296-155-17629(5), 296-155-17629(6), Recordkeeping; and

WAC 296-155-17631, Observation of monitoring.

WAC 296-155-17603 - Scope

The lead standard for the construction industry applies to all occupational exposure to lead in all construction work in which lead, in any amount, is present in an occupationally related context.

Construction work is defined in WAC 296-155-012(6).

WAC 296-155-17605 - Definitions

Action Level means an airborne concentration of lead of 30  $\mu\text{g}/\text{m}^3$  of air calculated as an 8-hour time weighted average. Action levels are important because their use permits employers to concentrate their resources on those employees and workplace conditions with the potential for high lead exposures.

Competent Person means a person who is capable of identifying hazards and has authorization to take corrective measures to eliminate them. Compliance programs required to be developed by employers under WAC 296-155-17611 of this section must provide for inspections of job sites, materials, and equipment to be made by the "competent person" to achieve the duties of the competent person set forth in the definition.

WAC 296-155-17607 - Permissible Exposure Limit

The employer is required to assure that no employee is exposed to lead at concentrations in excess of the PEL of fifty micrograms of lead per cubic meter of air (50  $\mu\text{g}/\text{m}^3$ ). [WAC 296-155-17607(1)]. The PEL is an eight-hour average of exposure for any work day. If respiratory protection is permissibly being used to comply with this limit, the employee needs to wear the respirator only for a period of time that, when averaged with periods of time the respirator is not used, will result in a TWA exposure to or below the PEL [WAC 296-155-17607(3)].

The standard contains a formula by which adjustments to the permissible exposure limit can be made in the case of overtime. For example, if an employee is exposed to lead for 10 hours, the permissible limit as a 10 hour average, would be 400/10 or 40  $\mu\text{g}/\text{m}^3$  [WAC 296-155-17607(2)].

## WAC 296-155-17609 - Exposure Assessment

Each employer who has a workplace or work operation covered by this standard is required to determine if any employee may be exposed to lead at or above the action level of 30  $\mu\text{g}/\text{m}^3$  as an 8-hour TWA [WAC 296-155-17609(2)(a)].

If objective data, demonstrating that under any expected conditions of use a particular product or material containing lead or a specific process, operation or activity involving lead cannot result in employee exposure to lead at or above the action level during processing, use, or handling, are being relied upon by the employer in lieu of implementing initial monitoring, the employer must establish and maintain a record documenting the nature and relevancy of the objective data [WAC 296-155-17609(3)(d)]. Certain specific tasks, the high exposure or "trigger tasks," are treated differently, however.

Where historical measurements of airborne lead are being used to satisfy the initial exposure assessment requirement, such monitoring data must have been obtained from projects conducted by the employer within the past 12 months under conditions which, in all relevant and significant respects, are essentially the same as the current project [WAC 296-155-17609(3)(c)].

The initial monitoring requirement only requires monitoring of a representative sample of the employees believed to have the highest exposure levels [WAC 296-155-17609(3)(b)]. If any employee is determined by the initial monitoring to be at or above the action level, then full-scale representative monitoring for all exposed employees is required as set-forth in WAC 296-155-17609(4) [WAC 296-155-17609(4)(a)].

All exposure monitoring performed pursuant to this section must consist of personal breathing zone samples (see WISHA Technical Manual) which are representative of the monitored employee's regular, daily exposure to lead over a full shift and which must consist of at least one sample for each job classification in each work area either for each shift or for the shift with the highest exposure level [WAC 296-155-17609(1)(c)].

The purposes served by air sampling for employee exposure include: Determination of the extent of exposure at the worksite, prevention of employee overexposure, identification of the sources of exposure to lead, collection of exposure data so that the employer can select the proper control methods to be used, and evaluation of the effectiveness of selected controls. Monitoring further enables employers to notify employees of their exposure levels, as required by RCW 49.17.220(3) of the WISH Act.

The results of initial and periodic monitoring determine whether subsequent monitoring is necessary. Monitoring also determines whether other protective provisions of the standard need to be implemented.

If the initial determination or subsequent determination reveals employee exposure to be at or above the action level, but at or below the PEL, the employer is required to perform monitoring at least every 6 months [WAC 296-155-17609(6)(b)]. If the initial determination reveals that employee exposure is above the PEL, the employer must perform monitoring at least quarterly [WAC 296-155-17609(6)(c)].

Within 5 working days after completion of the exposure assessment, the employer is required to notify each employee in writing of the results which represent that employee's exposure [WAC 296-155-17609(8)(a)]. In addition, whenever the results indicate exposure at or above the PEL, the employer shall include in the written notice a statement that the employee's exposure was at or above that level and a description of the corrective action taken or to be taken to reduce exposure to below that level [WAC 296-155-17609(8)(b)].

WISHA is aware that in many instances in the construction industry the exposure assessment required under this standard will not be completed until after lead operations have begun or even ended. The need for interim protective measures, including provision of respirators, protective clothing and equipment, hygiene facilities, training, and biological monitoring, is presumed for three groups of lead-related tasks/operations (high exposure or "trigger tasks") [WAC 296-155-17609(5)].

The list of high exposure lead-related tasks/operations that have been developed by OSHA are based on available exposure data provided by a firm contracted to perform an assessment of lead exposure levels encountered in the construction industry, and on recommendations of both the Society for Occupational and Environmental Health (SOEH) and the Lead Workgroup of the Department of Labor Advisory Committee on Construction Safety and Health (ACCSH). The tasks are grouped by the presumed degree of overexposure to lead and, therefore, are differentiated by the type of respirator to be provided. One group of tasks/operations presumes employee exposures above the PEL, but not so high as to require the employer to provide the employee with more than the least protective, allowable respirator (e.g., a respirator with a protection factor of 10) [WAC 296-155-17609(2)(a)]. The second task group presumes employee exposure above 500  $\mu\text{g}/\text{m}^3$  and requires the employer to provide the employee with a respirator with a protection factor of at least 25 [WAC 296-155-17609(2)(c)]. The third task group presumes very high exposures to lead (in excess of 2500  $\mu\text{g}/\text{m}^3$ ) and, therefore, requires the employer to provide the employee with a respirator permitted by the standard for use during that exposure condition (e.g., a respirator with a protection factor above 50) [WAC 296-155-17609(2)(d)].

The tasks identified as requiring interim worker protection are:

Group 1:

manual scraping and sanding

manual demolition of structures

heat-gun applications

power tool with dust collection systems

spray painting with lead-based paint

Group 2:

lead burning

using lead-containing mortar

power tool cleaning without dust collection systems

rivet busting

cleanup activities where dry expendable abrasives are used

movement and removal of abrasive blasting enclosures

Group 3:

abrasive blasting

welding, cutting and burning on steel structures

WAC 296-155-17611 - Method of Compliance

The standard requires employers to institute engineering and work practice controls to the extent feasible to reduce exposures to or below the PEL. WISHA thus continues to maintain its preference for engineering and work practice controls [WAC 296-155-17611(2)].

The standard has a requirement for the development and implementation of a written compliance plan prior to the commencement of the job where employee exposure to lead, without respect to respiratory protection, will be in excess of the PEL [WAC 296-155-17611(2)(a)]. These written plans must be furnished upon request for examination and copying to affected employees and their designated representatives and to representatives of the Director [WAC 296-155-17611(2)(d)]. The plans must be revised and updated periodically at least

every 6 months [WAC 296-155-17611(2)(e)]. When administrative controls are used to lower employee exposure, a rotation schedule is to be kept and followed and made a part of the written compliance plan [WAC 296-155-17611(4)].

### WAC 296-155-17613 - Respiratory Protection

The standard requires that respirators be used whenever the concentration of lead is at or above the PEL, in work situations where engineering and work practice controls are not sufficient to reduce exposures to or below the PEL, or whenever an employee requests a respirator. Also, as stated under WAC 296-155-17609, respirators must be used when performing certain listed high exposure or "trigger tasks" prior to the completion of the initial assessment [WAC 296-155-17613(1)].

WISHA has required employers to provide powered, air purifying (positive pressure) respirators (PAPR) to employees who request one, so long as they will provide adequate protection against the hazard for which a respirator is worn [WAC 296-155-17613(2)(b)]. This requirement is intended as an incentive to employee respirator use by minimizing the discomfort associated with long-term negative pressure respirators.

Respirators must be provided at no cost to the employee [WAC 296-155-17613(1)]. Selection of respirators must be from Table I of the standard; however, the employer may always select a respirator providing greater protection than is required by the standard [WAC 296-155-17613(2)(a)]. All respirators must be approved by MSHA or NIOSH [WAC 296-155-17613(2)(c)].

The employer is also required to assure that the respirator facepieces fit properly and exhibit minimum facepiece leakage [WAC 296-155-17613(3)(a)]. Employers are required to perform either quantitative or qualitative face fit tests at the time of initial fitting and at least every six months thereafter for each employee wearing negative pressure respirators. The qualitative fit tests may be used only for testing the fit of half-mask respirators where they are permitted to be worn, and must be conducted in accordance with Appendix D [WAC 296-155-17613(3)(b)].

### WAC 296-155-17615-Protective Clothing and Equipment

The employer is required to provide, at no cost to employees, protective clothing and equipment that are appropriate for the hazard. Such clothing and equipment is necessary in order to protect employees from lead compounds which may cause skin or eye irritation (e.g., lead arsenate, lead azide). For employees who are exposed to lead above the PEL, employer-provided clothing assures that clothing, shoes, and equipment on which lead dust can accumulate during the work shift are not worn home. Protective clothing and equipment must also be provided to employees performing high exposure "trigger tasks" during initial exposure assessment [WAC 296-155-17615(2)].

Clean work clothing is required to be provided at least weekly to employees whose exposure levels are above the PEL and daily when exposure is above 200  $\mu\text{g}/\text{m}^3$  as an 8-hour TWA [WAC 296-155-17615(2)(a)]. The employer is required to provide for the cleaning, laundering, or disposal of protective clothing and equipment and must repair or replace required protective clothing and equipment as needed to maintain effectiveness [WAC 296-155-17615(2)(b) and 296-155-17615(2)(c)]. The employer must assure that all protective clothing is removed at the completion of a work shift [WAC 296-155-17615(2)(d)].

#### WAC 296-155-17617-Housekeeping

WISHA's view is that as rigorous a housekeeping program as practicable is necessary in many jobs to keep airborne lead levels below permissible limits. This requires a regular housekeeping schedule adapted to exposure conditions at a particular site [WAC 296-155-17617(1)]. Vacuuming is considered to be the most reliable method of cleaning surfaces on which dust accumulates, but equally effective methods may be used, such as wet floor scrubbers [WAC 296-155-17617(2)]. Where vacuuming methods are selected, the vacuums must be equipped with HEPA filters [WAC 296-155-17617(4)]. Blowing with compressed air is generally prohibited as a cleaning method [WAC 296-155-17617(5)].

#### WAC 296-155-17619-Hygiene Facilities

The employer must provide adequate shower facilities, if feasible; clean areas for changing clothes; and eating areas for employees who have exposure above the PEL [WAC 296-155-17619(2) through (4)]. Change areas must be provided for employees performing high exposure "trigger tasks" during initial exposure assessment [WAC 296-155-17619(2)]. Handwashing facilities are to be provided for all employees occupationally exposed to lead in accordance with WAC 296-155-140 [WAC 296-155-17619(5)(a)].

Employers must assure that employees use the facilities as required by the standard as well as observe prohibitions on the use of tobacco, food, and cosmetics in contaminated areas. Separate storage facilities in change areas for street and work clothing, to prevent cross-contamination between the two, must be provided [WAC 296-155-17619(2)(b)]. Employers must assure that employees exposed to lead during their work shift shower before leaving the workplace, where showers are provided, and do not leave wearing protective work clothing or equipment [WAC 296-155-17619(3)(b) and 296-155-17619(2)(c)].

#### WAC 296-155-17621-Medical Surveillance

The medical surveillance provisions are part of this standard's comprehensive approach to prevention of lead-related disease. Its purpose is to supplement the standard's primary mechanisms of disease prevention, the elimination or reduction of airborne concentrations of lead and sources of ingestion, by facilitating the early detection of medical effects associated

with exposure to lead.

All medical examinations and procedures are to be performed by or under the supervision of a licensed physician and are to be provided without cost to employees at a reasonable time and place [WAC 296-155-17621(1)(c) and 296-155-17621(1)(d)].

The medical surveillance provisions contemplate two phases of medical surveillance; one is initial medical surveillance, the other is a medical surveillance program [WAC 296-155-17621(1)(a) and 296-155-17621(1)(b)]. Initial medical surveillance consists of biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin levels. It is required to be provided to employees occupationally exposed to airborne concentrations of lead on any one day at or above the action level as well as to employees performing high exposure "trigger tasks" during initial exposure assessment [WAC 296-155-17621(1)(a); WAC 296-155-17609(2)(e)].

If an employee's airborne lead exposure is at or above the action level for more than 30 days a year, the employer shall provide a medical surveillance program to the employee consisting of routine monitoring of an employee's blood lead and ZPP levels [WAC 296-155-17621(2)(b)]. If a routine and follow-up blood test for blood lead exceed the removal criteria of 50  $\mu\text{g}/\text{dl}$ , then the employee must be removed from exposure to airborne lead that exceeds the action level [WAC 296-155-17623(1)(a)]. Employees must be notified by the employer in writing of their blood lead levels within five working days after the receipt of biological monitoring results [WAC 296-155-17621(2)(d)].

The employer's obligation to provide a full medical surveillance program to an employee, including annual medical exams, is triggered by a determination that the employee's blood lead level exceeds 40  $\mu\text{g}/\text{dl}$  if the employee's airborne exposure is or may be at or above the action level for more than 30 days a year.

The required examination includes a work history and medical history; a physical examination; blood pressure measurement; determinations of blood lead level (PbB), hematocrit, hemoglobin, peripheral smear morphology and red cell indices; levels of zinc protoporphyrin (ZPP), routine urinalysis (specific gravity, sugar, protein determinations, and microscopic examination), blood urea nitrogen (BUN), and serum creatinine (S-Creat) [WAC 296-155-17621(3)(b)(i) through (v)].

Medical consultations are required to be provided upon notification by an employee (1) that the employee has developed symptoms commonly associated with lead-related disease, (2) that the employee desires advice concerning the effects of lead on reproductive capacity, or is pregnant, and (3) that the employee has demonstrated difficulty in breathing during fit testing or use of a respirator [WAC 296-155-17621(3)(a)(ii)]. The content and frequency of these examinations is to be at the discretion of the physician. Upon request of an employee, a

pregnancy test or male fertility test must be provided [WAC 296-155-17621(3)(b)].

The medical surveillance provisions of the final standard contain a multiple physician review mechanism which gives workers an opportunity to obtain a second and possibly third opinion regarding the medical determinations made pursuant to the standard. An employee may designate a second physician to review any findings, determinations or recommendations of an initial physician chosen by the employer [WAC 296-155-17621(3)(c)(i)]. Efforts are to be made to resolve any disagreement which may arise between the two physicians [WAC 296-155-17621(3)(c)(iii)]. Should they be unable to agree, a third physician they jointly select will resolve the disagreement [WAC 296-155-17621(3)(c)(iv)]. It is expected that the third physician will consult with the two prior physicians, and upon request, the employer must supply the same information to the third physician given to the initial physicians [WAC 296-155-17621(3)(c)(iv)(A); WAC 296-155-17621(3)(d)].

WISHA's reasons for the provision of this review process are twofold: first, to broaden and strengthen the basis for medical determinations in situations where a worker questions the results of the initial examination or consultation provided by the employer; and second, to assure employee confidence in the soundness of medical determinations made pursuant to the standard. Employers must bear the expense of the multiple physician review mechanism where it is used. The standard contains no more limitation upon an employee's choice of a second physician than it places on an employer's choice of the initial physician.

The standard prohibits prophylactic chelation of any employee because chelation can be a potentially harmful treatment [WAC 296-155-17621(4)(a)].

#### WAC 296-155-17623-Medical Removal Protection

The employer is required to remove an employee from work having an exposure to lead at or above the action level on each occasion that a periodic and a follow-up blood sampling test indicate that the employee's blood lead level is at or above 50  $\mu\text{g}/\text{dl}$  [WAC 296-155-17623(1)(a)]. The employer must also remove an employee from work having an exposure to lead at or above the action level on each occasion that a final medical determination results in a medical finding, determination, or opinion that the employee has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to lead.

For an employee removed from exposure to lead at or above the action level due to a blood lead level at or above 50  $\mu\text{g}/\text{dl}$  the employer may return that employee to former job status when two consecutive blood sampling tests indicate that the employee's blood level is at or below 40  $\mu\text{g}/\text{dl}$  [WAC 296-155-17623(1)(c)(i)(A)]. For an employee removed from exposure to lead due to a final medical determination, the employee must be returned when a subsequent final medical determination results in a medical finding, determination, or opinion that the employee no longer has a detected medical condition which places the employee at

increased risk of material impairment of health from exposure to lead [WAC 296-155-17623(1)(c)(i)(B)].

The requirement that an employer return an employee to his or her former job status is not intended to expand upon or restrict any rights an employee has or would have had, absent temporary medical removal, to a specific job classification or position under the terms of a collective bargaining agreement [WAC 296-155-17623(1)(c)(ii)].

If a removed employee files a claim for workers' compensation payments for a lead-related disability, then the employer must continue to provide medical removal protection benefits pending disposition of the claim [WAC 296-155-17623(2)(d)].

Where an employer, although not required by this section to do so, removes an employee from exposure to lead or otherwise places limitations on an employee due to the effects of lead exposure on the employee's medical condition, the employee is entitled to full medical removal protection benefits [WAC 296-155-17623(2)(f)].

Medical removal protection benefits continue for up to eighteen (18) months or as long as the job the employee was removed from continues, whichever comes first [WAC 296-155-17623(2)(a) and 296-155-17623(2)(b)].

#### WAC 296-155-17625-Employee Information and Training

The standard requires the employer to provide an information and training program for all employees exposed to lead at or above the action level or are subject to exposure to lead compounds which may cause skin or eye irritation (e.g. lead arsenate, lead oxide) WAC 296-155-17625(1)(b)]. The employee must be apprised of the specific hazards associated with his work environment, protective measures which can be taken, and rights under the standard [WAC 296-155-17625(2)].

Training must include the following:

the content of the standard and its appendices

the specific nature of the operations which could result in exposure to lead above the action level

the purpose, proper selection, fitting, use, and limitation of respirators

the purpose and a description of the medical surveillance program, and the medical removal protection program

the engineering controls and work practices associated with the employee's job assignment, including training of employees to follow relevant good work practices described in Appendix B of this section

the contents of any compliance plan in effect

instructions to employees that chelating agents should not be routinely used to remove lead from their bodies

the employee's right of access to records under 296-62 WAC, Part B [WAC 296-155-17625(2)(a)].

The employer is required to make available to all affected employees a copy of this standard and its appendices [WAC 296-155-17625(3)].

### WAC 296-155-17627-Signs

Sign posting, as well as periodic training, is needed to adequately inform employees of the presence of high levels of lead and the possible need to utilize respirators and other protective equipment. Signs are to be illuminated and cleaned as necessary [WAC 296-155-17627(2)(b)].

Phrases to be placed on the sign include "Warning", "Lead Work Area", "Poison" and "No Smoking or Eating" [WAC 296-155-17627(2)(a)].

### WAC 296-155-17629-Recordkeeping

The standard requires records of all exposure monitoring, and other data used in conducting the employee exposure assessment, including objective data, to be established and maintained [WAC 296-155-17629(1) and 296-155-17629(4)]. The records must include the name and job classification of employees monitored, details of the sampling and analytic techniques, results, and type of respiratory protection worn [WAC 296-155-17629(1)(b)]. These records must be kept for 30 years [WAC 296-155-17629(1)(c) and 296-155-17629(4)(b)].

The standard also requires employers to establish and maintain records of medical surveillance (biological monitoring and medical examination results) [WAC 296-155-17629(2)(a)]. These records must include the names of employees, the physician's written opinion, exposure data provided to the physician and any employee medical complaints associated with lead exposure [WAC 296-155-17629(2)(b)]. In addition, the employer is required to keep, or must assure that the examining physician keeps, a record of the results of medical examinations, a description of laboratory procedures and a copy of the results of biological monitoring [WAC 296-155-17629(2)(c)]. These records must be kept for at least the duration of employment

plus 30 years, except that medical records of employees who have worked for less than one (1) year for the employer need not be retained beyond the term of employment if they are provided to the employee upon termination of employment [WAC 296-155-17629(2)(d)].

The employer must establish and maintain an accurate record for each employee removed from current exposure to lead. The record is to contain four entries each time an employee is removed: the employee's name and social security number; the dates of removal and return; a brief explanation of how each removal was or is being accomplished; and whether or not the reason for the removal was an elevated blood lead level [WAC 296-155-17629(3)(a) and 296-155-17629(3)(b)]. Medical removal records are to be maintained for at least the duration of employment [WAC 296-155-17629(3)(c)].

Records are to be transferred to a successor employer whenever the employer ceases to do business [WAC 296-155-17629(6)(a)].

#### WAC 296-155-17631-Observation of Monitoring

The standard requires that employers provide employees or their representatives with the opportunity to observe monitoring of employee exposures to lead [WAC 296-155-17631(1)]. Observers are entitled to an explanation of the measurement procedure, to observe all steps related to the measurement procedure, and to record the results obtained [WAC 296-155-17631(2)(b)].

#### Effective Date

The effective date of the standard is December 10, 1993.

#### WAC 296-155-17650-Appendices

The appendices are intended to be purely informational and, unless otherwise expressly stated in this section, are not intended to create any additional obligations. Appendix D provides mandatory procedures for fit testing of respirators.

#### WAC 296-155-17635-Startup Dates

All requirements of the standard, except for engineering controls specified in WAC 296-155-17611(1) of the standard, must be complied with as soon as possible, but no later than 60 days from the effective date of this section (by February 9, 1994) [WAC 296-155-17635(2)]. Feasible engineering controls specified under paragraph WAC 296-155-17611(1) shall also be implemented as soon as possible, but no later than 120 days from the effective date of this section (by April 9, 1994) [WAC 296-155-17635(2)].