

September 2014



# Working with Lead



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# Regulatory Requirements

- OSHA references lead and specifies the requirements in 1910 standards and in 1926 standards.
- CenturyLink in 2013 was cited by MN OSHA using the 1910 standards for lead.
- 29 CFR 1910.1025 – “Lead”
- (c)(1) - The employer shall assure that no employee is exposed to lead at concentrations greater than  $50\text{mg}/\text{m}^3$  (PEL) averaged over an 8 hour period (TWA)
- (d)(1)(i) - Employee exposure – defined as that exposure that would occur if an employee were not wearing a respirator

# Regulatory Requirements

- (d)(1)(ii) - Employer must collect a full shift of personal samples, representative of monitored employee's regular, daily exposure to lead
- (d)(2) - Employer must determine if any employee may be exposed to lead at or above the action level
- (d)(4)(i) – If positive determination is made where the possibility of an employee exposure is at or above the action level, the employer will conduct monitoring representative of each employee who is exposed to lead
- (d)(5) – If negative determination is made where no employee exposure is at or above action level, the employer will make written record of it, to include date, location within the worksite, employee name and who was monitored

# Regulatory Requirements

- (d)(8) – The employer must, within 15 working days, notify each affected employee of monitoring results either individually in writing or by posting the results in an appropriate location accessible to the employee
- (e)(1)(i) – Where an employee is exposed to lead above the permissible exposure limit for more than 30 days per year, the employer shall implement engineering and work practice controls (including administrative controls) to reduce and maintain employee exposure

# Regulatory Requirements

- (e)(2) – Where engineering and work practice controls do not reduce employee exposure to below the permissible exposure level, the employer shall supplement these controls with respirators
- (e)(3)(i) – Each employer shall establish and implement a written compliance program to reduce exposures to or below the permissible exposure limit
- (e)(3)(iv) – Written programs must be revised and updated annually to remain current



# Regulatory Requirements-Elements of a program

- (e)(3)(ii) - Written program must have the following elements:
  - Description of each operation in which lead is emitted
  - What technology was used to determine need for this program
  - Air monitoring data to document the source of emissions
  - What engineering controls are used
  - What work practice controls are used
  - What administrative controls are used
  - What respirators are provided
  - Other relevant information

# Regulatory Requirements-Engineering Controls

- Mechanical ventilation – (e)(4)

- Capture velocity
- Duct velocity
- Static pressure
- Measure effectiveness when production/process changes



- Recirculation of air

- HEPA filter with backup filter
- Controls to monitor concentration of lead in return air



# Regulatory Requirements-Administrative Controls

- e(5) Administrative Controls can be used as a means to limit the TWA exposure to lead the employer must
  - (e)(5)(i) Name or identification number of each affected employee;
  - (e)(5)(ii) Duration and exposure levels at each job or work station where each affected employee is located;
  - (e)(5)(iii) Any other information which may be useful in assessing the reliability of administrative controls to reduce exposure to lead

# Regulatory Requirements-Respirators

- f(1) For employees who use respirators required by this section, the employer must provide each employee an appropriate respirator that complies with the requirements of this paragraph. Respirators must be used during:
  - f(1)(i) Periods necessary to install or implement engineering or work-practice controls
  - f(1)(ii) Work operations for which engineering and work-practice controls are not sufficient to reduce employee exposures to or below the permissible exposure limit.
  - F(1)(iii) Periods when an employee requests a respirator



# Regulatory Requirements-PPE

- (g) Protective work clothing
  - Coveralls or full-body work clothing
  - Gloves, hats and shoes or disposable shoe coverlets
  - Face shields or vented goggles
  - Tyvek



# Regulatory Requirements

Employer shall repair/replace all equipment to maintain its effectiveness.

Employer shall clean, launder or dispose of any damaged or contaminated clothing or equipment.



# Regulatory Requirements-Housekeeping

- (h) All surfaces shall be maintained as free as practical from accumulations of lead



# Regulatory Requirements Other

- (i) Hygiene Facilities
- (i) (1) The employer shall assure that in areas where employees are exposed to lead above the PEL, without regard to the use of respirators, food or beverage is not present or consumed, tobacco products are not present or used, and cosmetics are not applied, except in change rooms, lunchrooms, and showers required under paragraphs (i)(2) - through (i)(4) of this section

# CenturyLink Lead Issue- Background

An employee going through a child adoption process had to complete a physical. As part of the physical, blood was drawn and it was determined that the that the employee had elevated levels of lead. The employee lived in one State and worked in MN so it was referred to the State of MN OSHA for investigation.

# MN OSHA Investigation

- The State OSHA interviewed the employee
- Conducted site visits at some of the CTL locations
- Asked to conduct sampling while employee conducted utility hole work in a manhole.
  - Employees were using a legacy Company Practice
    - Minimum use of Personal Protective Equipment (gloves, N-95 (not fit tested), safety glasses, work boots and normal work clothes)
    - No use of lead entrapment compound
    - Use of pneumatic hammer and power tools to remove lead cable
    - No previous exposure assessment by the Legacy Company using these methods in a Utility Hole.



# MN OSHA Sampling Results

Sample Number	Concentration	TWA	Units						
17478	1,622	75	micro grams per cubic meter of air						
17482	200	51	micro grams per cubic meter of air						

# CenturyLink Initial Response

- Immediately issued a directive to cease the use of pneumatic tools and torches when conducting maintenance and repair of lead cable
- Required all employees who work with lead to complete a review of training to include the mandatory use of PPE, tyvek coveralls, leather work gloves, nitrile gloves
- Conducted a detail review of all Legacy Company Methods and Procedures for working with lead
- Standardized Company Methods and Procedures for Working with lead cable.
- Initiated exposure assessment and monitoring

# MN OSHA Citation

Citation 01 Item 001a

Type of Violation: **Serious**

29 CFR 1910.1025(c)(1): Employee(s) were exposed to lead at concentrations greater than fifty micrograms per cubic meter of air averaged over an eight hour period:

April 26, 2013, an employee working in an underground vault removing a lead sleeve was exposed to an 8-hr TWA level of airborne lead of 76 micrograms per cubic meter. Effective engineering, administrative or respiratory controls were not in place to reduce exposures below the permissible exposure limit of 50 micrograms per cubic meter.

# MN OSHA CITATION

Citation 01 Item 001a

Type of Violation: **Serious**

29 CFR 1910.1025(c)(1): Employee(s) were exposed to lead at concentrations greater than fifty micrograms per cubic meter of air averaged over an eight hour period:

April 26, 2013, an employee working in an underground vault removing a lead sleeve was exposed to an 8-hr TWA level of airborne lead of 76 micrograms per cubic meter. Effective engineering, administrative or respiratory controls were not in place to reduce exposures below the permissible exposure limit of 50 micrograms per cubic meter.

# MN OSHA CITATION

## Citation 01 Item 002 Type of Violation: **Serious**

29 CFR 1910.1025(d)(2): An initial determination was not made to determine if any employee may be exposed to lead at or above the action level:

The employer had not monitored employee exposure to lead when a lead sleeve, used to protect the spliced connections, was removed in an underground vault. The employer had monitored other processes, such as removing lead sheathed cable in May 1987, May 1994, June 1994, and August 1994.

**Abatement Guidelines:** The employer must conduct initial monitoring for lead. Monitoring shall consist of full-shift personal samples, representative of employees' regular, daily exposure to lead. Periodic monitoring shall be conducted according to the schedule outlined below.

# MN OSHA CITATION

## **Citation 01 Item 003 Type of Violation: **Serious****

29 CFR 1910.1025(f)(2)(i): A respiratory protection program was not implemented in accordance with 29 CFR 1910.134(b) through (d) (except (d)(1)(iii)), and (f) through (m):

The employer provided filtering face piece respirators to the employees but had not implemented a respiratory protection program. On April 26, 2013, an employee working in an underground vault removing a lead sleeve used to protect cable splices was exposed to an 8-hr TWA lead dose of 76 micrograms per cubic meter of air.

**Abatement Guidelines:** Establish and implement a written respiratory protection program with worksite-specific procedures. The program shall include the following provisions where applicable:

1. Procedures for selecting respirators for use in the workplace;
2. Medical evaluations of employees required to use respirators;
3. Fit testing procedures for tight-fitting respirators;
4. Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations;
5. Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators;
6. Procedures to ensure adequate air quantity, and flow of breathing air for atmosphere-supplying respirators;
7. Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations;
8. Training of employees in the proper use of respirators, including putting on and removing them, any limitations on their use, and their maintenance; and
9. Procedures for regularly evaluating the effectiveness of the program.

# MN OSHA Citation

## Citation 01 Item 004 Type of Violation: **Serious**

29 CFR 1910.1025(g)(1): Appropriate protective work clothing and equipment were not used when employee(s) were exposed to lead above the permissible exposure limit (PEL), without regard to the use of respirators, or where the possibility of skin or eye irritation existed:

On April 26, 2013, employees were noted not wearing protective work clothing over their usual work clothing when replacing the lead sleeve in a vault. One employee that day had an 8-hour TWA airborne lead exposure of 76 micrograms per cubic meter.



# MN OSHA Citation

## Citation 01 Item 005 Type of Violation: **Serious**

29 CFR 1910.1025(g)(2)(ii): The employer did not provide for the cleaning, laundering, or disposal of protective clothing and equipment against lead:

On April 26, 2013, employees replacing a lead sleeve in a vault were exposed to airborne lead and wore their work clothing home after working in a lead environment. No provision was made by the employer for cleaning and laundering of employee work clothing that had been exposed to lead.



# MN OSHA Citation

Citation 01 Item 006 Type of Violation: **Serious**

29 CFR 1910.1025(g)(2)(vi): Persons who clean or launder protective clothing or equipment were not informed, in writing, of the potentially harmful effects of exposure to lead:

The persons laundering lead contaminated work clothing were not informed in writing of the potentially harmful effects of exposure to lead.

# MN OSHA Citation

Citation 01 Item 007 Type of Violation: **Serious**

29 CFR 1910.1025(i)(2)(i): Clean change rooms were not provided for employees exposed to lead in excess of the permissible exposure limit (PEL), without regard to the use of respirators:

Clean change rooms were not provided for an employee exposed to lead in excess of the permissible exposure limit.

# CenturyLink Methods and Procedures

## PERSONAL HYGIENE

Lead can enter the body by inhaling lead-containing dust or fumes, or by ingesting particles containing lead. Ingestion usually occurs as a result of poor personal hygiene practices such as not washing hands after handling lead products. The following procedures must always be followed when performing any lead related work to ensure personal safety:

- Food, beverages and tobacco products must be stored away from all lead work areas.
- Consumption of food, beverages and tobacco products is prohibited within the immediate work area.
- Remove all contaminated protective clothing items prior to exiting the immediate work area.
- Employees must wash their hands with soap and water or use a hand cleaner, immediately after contact with lead, and prior to eating, drinking or smoking.
- Water coolers, thermos or vacuum bottles are to be stored on the truck, away from possible airborne particles.
- DO NOT put hands, pencils or other items that may be contaminated into the mouth.
- DO NOT touch lips or nostrils with hands or other contaminated articles.
- DO NOT rub face with contaminated gloves or sleeves of work clothing

# CenturyLink Methods and Procedures

Administrative controls minimize hazards in the work place by providing administrative procedures to be followed in daily operations. Selection of administrative controls will be dependent on the task performed and can be found in Appendix A, Environmental Health & Safety Procedures for Working on Lead Sheathed Cable. Administrative controls for working on lead containing materials include:

- Minimizing the number of lead related tasks performed per day.
- Ensure awareness of lead cable exposure and hazards through education and training.

# CenturyLink Methods and Procedures

Engineering controls are designed to minimize hazards in the work place and are the first option that should be implemented.

Selection of engineering controls will be dependent on the task performed and the location of the task. Specified Engineering Controls are found in Appendix A, Environmental Health & Safety Procedures for Working on Lead Sheathed Cable. Examples of engineering controls for work on lead-containing materials consist of:

- Ventilation

- Placement of air ducts to blow dust/fumes away from the breathing zone (e.g., manhole blower)

## PERSONAL PROTECTIVE EQUIPMENT (PPE) CONTROLS

Protective work clothing is required for all lead work.

Required protective clothing includes:

- hard hat
- disposable coveralls
- disposable vinyl or leather work gloves
- safety glasses, face shields or vented goggles (selection of which will depend on the specific task and the associated eye hazard)
- disposable shoe coverlets are optional, but recommended
- Voluntary Written Respiratory Protection Program

# CenturyLink Methods and Procedures

Lead contaminated clothing is not to be worn in a vehicle or home. Disposable clothing should be placed in a plastic bag, tied and disposed of with the general refuse.

If leather work gloves are used for lead work they must be dedicated for lead work operations only and stored in a labeled plastic bag when not in use

Work boots (if not covered with disposable coverlets) and tools used during lead work operations must be wiped with a soapy rag upon completion of the job. The rag should be placed in a plastic bag and tied before disposing of with the general refuse.

# CenturyLink Methods and Procedures

An employee can request respiratory protection even when air monitoring demonstrates that airborne levels are below the PEL. However, prior to being issued a respirator, the employee must be medically qualified and trained to wear respiratory protection. Contact EH&S to setup respiratory training and medical qualification for employees.

Performing lead work procedures in accordance with this practice will not require the use of respiratory protection. However, any deviation from these procedures will require the use of respiratory protection.



# CenturyLink Exposure Assessment

Worked with Regional Management Teams and Conducted exposure assessments in three areas to add to the exposure assessments that were completed in the Legacy CenturyLink Southern Operations based on the newly implemented methods and procedures.

The exposure assessments based on the new methods and procedures revealed no employees exceeded the Action Level or Permissible Exposure Limit.

Established a Mandatory on-line Training Program for all employees who worked with lead.



Thank-you! Are there any  
Questions?