

JAGUAR ENERGY SERVICES, LLC 310 N Parkerson Ave Crowley, LA 70526	Cadmium
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Section 55.0 CADMIUM

A. Purpose

The purpose of this procedure is to protect **JAGUAR ENERGY SERVICES, LLC** personnel and the general public from exposure to Cadmium and Cadmium Compounds.

1. This procedure is mandated by the Occupational Safety and Health Administration (OSHA) in both 29 CFR 1910.1027 and 29 CFR 1926.63.

B. Scope

This section applies to all **JAGUAR ENERGY SERVICES, LLC** personnel that has the potential of being exposed to cadmium and cadmium compounds, in all forms.

C. Responsibilities

1. The President or his designee responsible for ensuring that employees have completed the training required by this procedure.
 - (a) Additional responsibilities include:
 - (i) The implementation of this Policy.
 - (ii) Documentation of completion by each employee.
 - (iii) Take corrective actions on all violations or suspected violations of this procedure.
 - (iv) Ensuring that this procedure is followed in work done at a client's or **JAGUAR ENERGY SERVICES, LLC** location.
 - (v) Ensuring that proper records are maintained on all work performed where Cadmium and Cadmium Compounds are present.
 - (vi) For reviewing and revising the procedure as required.
2. The Safety Director is responsible for aiding in the implementation of this Procedure.
 - (a) Additional responsibilities include:
 - (i) Keeping the president informed of any incidents related to this Procedure.
 - (ii) Providing appropriate safety equipment to **JAGUAR ENERGY SERVICES, LLC** personnel.
 - (iii) Investigating all employee concerns regarding Cadmium and Cadmium Compounds on **JAGUAR ENERGY SERVICES, LLC** or client's premises.
 - (iv) Reviewing current technical information available on Cadmium and Cadmium Compounds.

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- (v) Maintaining medical surveillance records on personnel working with Cadmium and Cadmium Compounds.
 - (i) The Assistant Secretary of Labor, affected employees and designated employees' representatives shall have access to this program.
 - (vi) Investigating all employee concerns regarding Cadmium and Cadmium Compounds on **JAGUAR ENERGY SERVICES, LLC** or client premises.
 - (vii) Informing the President of any suspected or newly identified sources of Cadmium and Cadmium Compounds at **JAGUAR ENERGY SERVICES, LLC** or client's premises.
- 3. The Supervisor is responsible for providing assistance in the implementation of this policy.
 - (a) Additional responsibilities include:
 - (i) Informing the Safety Director of any incidents involving benzene.
 - (ii) Informing the Safety Director of any suspected or newly identified sources of Cadmium and Cadmium Compounds at **JAGUAR ENERGY SERVICES, LLC** or client's premises.
 - (iii) Ensuring that all employees are informed of any suspected or newly identified sources of Cadmium and Cadmium Compounds on **JAGUAR ENERGY SERVICES, LLC** or client's premises.
 - (iv) Making suggestions to management for ways to improve this Policy.
 - (v) Adhering to the rules and guidelines in this procedure.
- 4. **JAGUAR ENERGY SERVICES, LLC** personnel are responsible for recognizing and anticipating all job hazards that could involve the exposure Cadmium and Cadmium Compounds to **JAGUAR ENERGY SERVICES, LLC** personnel, client personnel, the general public or impact the environment.
 - (a) Additional responsibilities include
 - (i) Completing the training required by this procedure.
 - (ii) Adhering to the rules and guidelines in this procedure.
 - (iii) Reporting to their supervisor any suspected or newly identified sources of Cadmium and

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Cadmium Compounds on **JAGUAR ENERGY SERVICES, LLC** or client's premises.

D. Procedure

It is **JAGUAR ENERGY SERVICES, LLC**'s intent not to work their personnel in areas that they might be exposed to cadmium, but in the event they were exposed the following procedures will be applied.

1. **Permissible Exposure Limit (PEL)**
JAGUAR ENERGY SERVICES, LLC will assure that no employee is exposed to an airborne concentration of cadmium in excess of five (5) micrograms per cubic meter ($5\mu\text{g}/\text{m}^3$), calculated as an eight hour time - weighted average exposure (TWA).
 - (a) When ventilation is used to control exposure, measurements that demonstrate the effectiveness of the system in controlling exposure, such as capture velocity, or static pressure, or duct velocity will be made as necessary to maintain its effectiveness.
 - (b) Measurements of the system's effectiveness in controlling exposure will be made as necessary within five (5) working days of any change in production, process, or control that might result in a significant increase in employee exposure to cadmium.
2. **JAGUAR ENERGY SERVICES, LLC** will develop and implement a written plan for dealing with emergency situations involving substantial releases of airborne cadmium.
 - (a) The plan shall include provisions for appropriate respirator and personal protective equipment (PPE) use.
 - (b) Employees who are not deemed to be essential in correcting the emergency situation shall be restricted from the area and normal operation shall be halted in that area until abatement of the emergency.
3. If an employee is exposed to airborne cadmium above the PEL or where eye or skin irritation is associated with cadmium exposure at any level, **JAGUAR ENERGY SERVICES, LLC** will provide, at no cost to the employee the appropriate protective work clothing and equipment.
 - (a) Protective work clothing and equipment includes but is not limited to:
 - (i) Coveralls or similar full-body work clothing;
 - (ii) Gloves, head coverings, and boots or foot coverings; and
 - (iii) Face shields, vented goggles, or other appropriate equipment complying with 29 CFR 1910.133.
4. **Recirculation of air**

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If air from exhaust ventilation is recirculated into the workplace, the system shall have a high efficiency filter (HEPA) and be monitored to assure effectiveness.

- (a) Procedures will be developed and implemented to minimize exposure to cadmium when maintenance of ventilation systems and filter change is being conducted.

5. Permissible Exposure Limit (PEL)

JAGUAR ENERGY SERVICES, LLC will assure that no employee is exposed to an airborne concentration of cadmium in excess of five (5) micrograms per cubic meter ($5\mu\text{g}/\text{m}^3$), calculated as an eight hour time - weighted average exposure (TWA).

6. Exposure Monitoring

JAGUAR ENERGY SERVICES, LLC will determine if any employee may be exposed to cadmium at or above the action level if cadmium or cadmium products are known or suspected to be encountered, during work activities.

- (a) Determinations of employee exposure will be made from breathing zone air samples that affect the monitored employee's regular, daily 8 - hour TWA exposure to cadmium.
- (b) Eight - hour TWA exposures will be determined for each employee on the basis of one or more personal breathing zone air samples reflecting full shift exposure on each shift, for each job classification, in each work area.
- (c) Where several employees perform the same job tasks, in the same job classification, on the same shift, in the same work area, and the length, duration, and level of cadmium exposures are similar, **JAGUAR ENERGY SERVICES, LLC** will sample a representative fraction of the employees instead of all employees.
- (d) In representative sampling, **JAGUAR ENERGY SERVICES, LLC** will sample the employee(s) expected to have the highest cadmium exposures.
- (e) Wherever monitoring results indicate that employee exposure exceeds the PEL, **JAGUAR ENERGY SERVICES, LLC** will include in the written notice a statement that the PEL has been exceeded and a description of the corrective action being taken by the employer to reduce employee exposure to at or below the PEL.

7. Regulated Areas

JAGUAR ENERGY SERVICES, LLC will establish a cadmium regulated area wherever an employee's exposure to airborne concentrations of cadmium is, or can reasonably be expected to be, in excess of the permissible exposure limit (PEL).

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- (a) Access to regulated areas shall be limited to authorized persons.
- 8. Action Level**
At 2.5 micrograms per cubic meter (2.5ug/m³) of air as an 8 - hour time - weighted average (TWA), a written compliance program shall be implemented when the PEL is exceeded.
- 9. Provision of Respirators**
Each person entering a regulated area shall be supplied with and required to use a respirator appropriate for use in a cadmium regulated area.
- 10. Prohibited Activities**
JAGUAR ENERGY SERVICES, LLC will assure that while employees are in regulated areas they do not:
 - (a) Eat
 - (b) Drink
 - (c) Smoke
 - (d) Chew tobacco or gum
 - (e) Apply cosmetics
 - (f) Carry or store any products associated with these activities into regulated areas.
- 11. Compliance Program**
Where the PEL is exceeded, **JAGUAR ENERGY SERVICES, LLC** will establish and implement a written compliance program to reduce employee exposure to or below the PEL by means of engineering and work practice controls.
 - (a) To the extent that engineering and work practice controls cannot reduce exposures at or below the PEL, **JAGUAR ENERGY SERVICES, LLC** will include in the written compliance program the use of appropriate respiratory protection in order to achieve compliance with the PEL.
 - (b) Written compliance programs shall include at least the following:
 - (i) A description of each operation in which cadmium is emitted
 - (ii) Machinery used
 - (iii) Material processed
 - (iv) Controls in place
 - (v) Crew size
 - (vi) Employee job responsibilities
 - (vii) Operating procedures
 - (viii) Maintenance practices
 - (ix) A description of the specific means that will be employed to achieve compliance.
 - (x) A report of the technology considered in meeting the PEL

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- (xi) Air monitoring data that document the sources of cadmium emissions
- (xii) A detailed schedule for implementation of the program, including documentation such as:
 - (i) Copies of purchase orders for equipment, etc.
 - (ii) A work practice program.
 - (iii) A written plan for emergency situations.
 - (iv) Any other relevant information.
- (c) Written compliance programs will be reviewed and updated at least annually, or more often if necessary, to reflect any changes in the employer's compliance status.
- (d) The written compliance program must be provided for examination and copying upon request of:
 - (i) Affected employees
 - (ii) Their designated representatives
 - (iii) The Assistant Secretary of Labor
 - (iv) Any other pertinent federal, state, or local official.

12. **Respiratory Protection**

Respirators shall be used in the following circumstances to comply with 29 CFR 1910.134:

- (a) Where exposure levels exceed the PEL, during the time period necessary to install or implement feasible engineering and work practice controls.
- (b) In those maintenance and repair activities and during those brief or intermittent operations where exposures exceed the PEL and engineering and work practice controls are not feasible or are not required.
- (c) In regulated areas as previously explained in this section.
- (d) Where **JAGUAR ENERGY SERVICES, LLC** has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL.
- (e) In emergencies
 - (i) Wherever the employee(s) who are exposed to cadmium at or above the action level requests a respirator.
- (f) Where respirators are required, **JAGUAR ENERGY SERVICES, LLC** will provide them at no cost to the employee and shall assure that they are used properly.

13. **Respirator Selection**

Where respirators are required, **JAGUAR ENERGY SERVICES, LLC** will select and provide the appropriate respirator.

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- (a) **JAGUAR ENERGY SERVICES, LLC** will select respirators from among those jointly approved as acceptable protection against cadmium dust, fumes and mist by the Mine Safety and Health Administration (MSHA) and by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR, part 11.
14. **Respirator Program**
Where respiratory protection is required, **JAGUAR ENERGY SERVICES, LLC** will institute a respiratory protection program in accordance with 29 CFR 1910.134.
- (a) Employees shall be permitted to leave the regulated area in order to change filter cartridges, replace the respirator, wash his/her face, or wash the facepiece when necessary.
15. **Respirator Fit Testing**
JAGUAR ENERGY SERVICES, LLC will assure that the respirator issued to the employee is fitted properly and exhibits the least possible facepiece leakage.
- (a) **JAGUAR ENERGY SERVICES, LLC** will utilize either qualitative or quantitative fit testing in order to assure a proper fit.
- (i) Fit testing shall be accomplished in accordance with 29 CFR 1910.134.
16. **Medical Surveillance**
JAGUAR ENERGY SERVICES, LLC will institute a medical surveillance program for all employees who are or may be exposed to cadmium at or above the action level unless **JAGUAR ENERGY SERVICES, LLC** determines that the employee is not, and will not be, exposed at or above the action level on 30 or more days per year (twelve consecutive months); and,
- (a) **JAGUAR ENERGY SERVICES, LLC** shall also institute a medical surveillance program for all employees who might previously have been exposed to cadmium at or above the action level by **JAGUAR ENERGY SERVICES, LLC**, unless **JAGUAR ENERGY SERVICES, LLC** demonstrates that the employee did not work for them in jobs with exposure to cadmium for an aggregated total of more than 60 months.
- (b) In order to determine an employee's fitness for using a respirator, **JAGUAR ENERGY SERVICES, LLC** will require the employee to take a medical examination.
- (c) The employer shall assure that all medical examinations and procedures required are performed by, or under the supervision of a licensed physician, who has read and is familiar with the health effects of cadmium exposure, the

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regulatory requirements of 29 CFR 1910.1027, the protocol for sample handling and laboratory selection.

- (i) These examinations shall be provided at no cost to the employee at a time and place that is convenient to the employee.

17. Warning Signs

Warning signs shall be provided and displayed in regulated areas.

- (a) In addition, warning signs shall be posted at all approaches to regulated areas.
- (b) Warning signs shall bear the following information:

**CAUTION
CADMIUM
CANCER HAZARD
CAN CAUSE LUNG AND KIDNEY DISEASE
AUTHORIZED PERSONNEL ONLY
RESPIRATORS REQUIRED IN THIS AREA**

- (a) The employer shall ensure that all signs are illuminated, cleaned and maintained as necessary so that the legend is readily visible.

- 2. **JAGUAR ENERGY SERVICES, LLC** will develop and implement a site specific maintenance program to minimize employee exposure to cadmium when performing maintenance on ventilation systems and changing filters.
- 3. **JAGUAR ENERGY SERVICES, LLC** will develop a written plan for dealing with emergency situations involving the substantial releases of cadmium.
 - (a) This program will address the use of respirators and PPE.
- 4. **Recordkeeping**
JAGUAR ENERGY SERVICES, LLC will establish and keep an accurate record of all air monitoring for cadmium in the workplace.
 - (a) **JAGUAR ENERGY SERVICES, LLC** will maintain this record for at least thirty (30) years, in accordance with 29 CFR 1910.20.

B. Training Requirements

JAGUAR ENERGY SERVICES, LLC will institute a training program for all personnel who are potentially exposed to cadmium, assure employee participation, and maintain a record of program contents.

- 1. **JAGUAR ENERGY SERVICES, LLC** will make the training program understandable to the employee and shall assure that each employee is informed of the following:
 - (a) The health hazards associated with cadmium exposure.
 - (b) The quantity, location, manner of use, release, and storage of cadmium in the workplace.

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- (c) The specific nature of the operations that could result in the exposure to cadmium, especially exposures above the PEL.
- (d) The engineering controls and work practices associated with the employee's job assignment.
- (e) The measures employees can take to protect themselves from exposure to cadmium, including:
 - (i) Modification of such habits as smoking and personal hygiene.
 - (ii) Specific procedures the employer has implemented to protect employees from cadmium such as:
 - (i) Appropriate work practices
 - (ii) Emergency procedures
 - (iii) The provision of personal protective equipment
 - (iv) The purpose, proper selection, fitting, proper use, and limitations of respirators and protective clothing
 - (v) The purpose and a description of the medical surveillance program.
 - (vi) The contents of 29 CFR 1910.1027 (4)(iii) and its appendices.
 - (vii) The employee's rights of access to records under 29 CFR 1910.20(e) and (g).
- (f) **JAGUAR ENERGY SERVICES, LLC** will certify that the training has been conducted by preparing a record that includes the following:
 - (i) Identity of employee trained.
 - (ii) The signature of the person who conducted the training.
 - (iii) Date of the training.
 - (iv) Training records must be maintained for a period of one (1) year.

C. Training Frequency

- 1. **JAGUAR ENERGY SERVICES, LLC** personnel will be trained according to the following schedule:
 - (a) Prior to or at the time of initial assignment to a job involving potential exposure to cadmium.
 - (b) Annually thereafter.

D. Definitions

- 1. **PEL** means Permissible Exposure Limit
- 2. **TWA** means time - weighted average exposure.
- 3. **MSHA** means the Mine Safety and Health Administration

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4. **NIOSH** means the National Institute for Occupational Safety and Health.