Clearheart Construction Co., Inc.

Hexavalent Chromium

29 CFR 1910.1026, Chromium (VI)

Chromium (VI)

For clarification, chromium (VI) is also identified as hexavalent chromium or Cr(VI).

The provisions of this program apply only when our employees have the possibility of exposure to a material containing chromium or a specific process, operation, or activity involving release of dusts, fumes, or mists of hexavalent chromium in concentrations at or above 0.5 µ/m³ averaged over an 8 hour time period under expected conditions of use.

Through the use of administrative, engineering controls, and, if necessary PPE including respiratory protection will ensure no employee is exposed in excess of the PEL of 5.0 µ/m³ averaged over an 8 hour time period (TWA).

When working within or around a petrochemical facility, the possibility exists for airborne concentrations of hexavalent chromium. Unless our personnel are generating hexavalent chromium [welding stainless steel, for example], the facility for which we are working will inform our Safety Program Administrator of the potential hexavalent chromium hazards.

Our Safety Program Administrator is:

Exposure determination.

If our workplace or work operation is covered by 29 CFR 1910.1026, the Safety Program Administrator will determine the 8-hour TWA exposure for each employee exposed to chromium(VI). This determination will be made using the scheduled monitoring option.

Scheduled monitoring option.

1. Initial monitoring will be performed to determine the 8-hour TWA exposure for each employee on the basis of a sufficient number of personal breathing zone air samples to accurately characterize full shift exposure on each shift, for each job classification, in each work area. If it is decided to do representative sampling instead of sampling all employees in order to meet this requirement, the employees sampled will be those with those expected to have the highest chromium(VI) exposures.
2. If initial monitoring indicates that employee exposures are below the action level **[action level means a concentration of airborne chromium(VI) of 2.5 micrograms per cubic meter of air (2.5**

µg/m3) calculated as an 8-hour time-weighted average(TWA)],.monitoring will be discontinued for these employees.

3. If monitoring reveals employee exposures to be at or above the action level, periodic monitoring will be performed at least every six months.
4. If monitoring reveals employee exposures to be above the PEL, periodic monitoring will be performed at least every three months.
5. If periodic monitoring indicates that employee exposures are below the action level, and the result is confirmed by the result of another monitoring taken at least seven days later, the monitoring will be discontinued for those employees whose exposures are represented by such monitoring.
6. Additional monitoring will be performed when there has been any change in the production process, raw materials, equipment, personnel, work practices, or control methods that may result in new or additional exposures to hexavalent chromium, or when there is any reason to believe that new or additional exposures have occurred.

If monitoring indicates that our employees do, in fact, fall under the requirements of 29 CFR 1910.1026, then prior to assignment, the safety program administrator will ensure that the below items are addressed:

1. **Training**

   Health Hazards: All affected employees will be instructed by a competent person in the health hazards associated with hexavalent chromium exposure.

   Per The National Institute for Occupational Safety and Health (NIOSH), all Chromium (VI) **[hexavalent chromium]** compounds are deemed to be potential occupational carcinogens. An increased risk of lung cancer has been demonstrated in workers exposed to hexavalent chromium compounds.

   In addition to cancer, other adverse health effects associated with hexavalent chromium are:

   1. dermal irritation
   2. skin ulceration
   3. allergic contact dermatitis
   4. occupational asthma
   5. nasal irritation and ulceration
   6. perforated nasal septa
   7. rhinitis

8. nosebleed
9. respiratory irritation
10. nasal cancer
11. sinus cancer,
12. eye irritation and damage
13. perforated eardrums
14. kidney damage
15. liver damage
16. pulmonary congestion and edema
17. epigastric pain
18. erosion and discoloration of the teeth

Location and Manner of Use: All affected employees will be instructed by a competent person the location and process that is causing hexavalent chromium release into the atmosphere

Engineering and Work Practice Controls: If feasible, engineering and work practice controls will be used to reduce and maintain employee exposure to chromium (VI) to or below the PEL. These would include modifying a process or procedure to reduce release as well as ventillation. If these controls cannot reduce employee exposures below the PEL, they will be used to reduce exposures to the lowest possible level and employee protection will be supplemented by the use of respiratory protection.

Work practice controls and engineering controls would also include maintaining surfaces as free as possible from the accumulation of hexavalent chromium using wet wiping and HEPA filtered vacuums.

If it can demonstrated that a process or task does not result in any employee exposure to chromium (VI) above the PEL for 30 or more days per year, the requirement to implement engineering and work practice controls to achieve the PEL does not apply to that process or task.

Administrative controls such as rotating employees to achieve compliance with the PEL is prohibited.

Establishment of Regulated Areas. A regulated area will be established when an employee's exposure to airborne concentrations of hexavalent chromium is, or can reasonably be expected to be, in excess of the PEL.

These areas will be demarcated from the rest of the workplace by signage and caution tape that clearly establishes and alerts employees of the boundaries of the regulated area.

Access to the regulated are will be limited to authorized persons:

1. Authorized employees whose work duties require presence in the regulated area.
2. Any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring procedures.
3. Any person authorized by the Occupational Safety and Health Act or regulations issued under it to be in a regulated area.

The Safety Program Administrator will document that each employee can demonstrate knowledge of the following:

1. The contents of 29 CFR 1910.1026
2. The purpose and a description of the medical surveillance program

The Safety Program Administrator will make a copy of t29 CFR 1910.1026 readily available without cost to all affected employees.

CHROMIUM (VI)

RECORDKEEPING

Below is an overview of recordkeeping requirements that pertain to Chromium (VI) abatement activities:

Exposure Assessment

An accurate record will be established and maintained of all monitoring and other data used in conducting employee exposure assessments if any employee may be exposed to Chromium (VI) at or above the action level.

a. Exposure monitoring records will include:

   1. the date(s), number, duration, location and results of each of the samples taken if any, including a description of the sampling procedure used to determine representative employee exposure where applicable;

   2. a description of the sampling and analytical methods used and evidence of their accuracy;

   3. the type of respiratory protective devices worn, if any;

4. the name, social security number, and job classification of the employee monitored and of all other employees whose exposure the measurement is intended to represent; and

5. the environmental variables that could affect the measurement of employee exposure.

b. Monitoring and other exposure records will be maintained for 30 years.

Medical Surveillance

An accurate medical record will be established and maintained for each employee subject to medical surveillance.

a. This record will include:

1. the name, social security number, and description of the duties of the employee;

2. a copy of the physician's written opinions;

3. results of any airborne exposure monitoring done on or for that employee and provided to the physician; and

4. any employee medical complaints related to exposure to Chromium (VI).

The Safety Program Administrator will keep, or assure that the examining physician keeps, the following medical records:

a. a copy of the medical examination results including medical and work history required of those employees within a medical surveillance program.

b. a description of the laboratory procedures and a copy of any standards or guidelines used to interpret the test results or references to that information;

c. a copy of the results of biological monitoring.

Medical records will be maintained for a period of 30 years.

Medical Removals

An accurate record will be established and maintained for each employee removed from current exposure to Chromium (VI).

a. Each record shall include:

1. the name and social security number of the employee;

2. the date of each occasion that the employee was removed from current exposure to Chromium (VI) as well as the corresponding

date on which the employee was returned to his or her former job status; and

3. a brief explanation of how each removal was or is being accomplished.

This record (Medical Removal) will be maintained for at least the duration of an employee's employment.

Objective Data for Exemption from Requirement for Initial Monitoring

Objective data are information demonstrating that a particular product or material containing Chromium (VI) or a specific process, operation, or activity involving Chromium (VI) cannot release dust or fumes in concentrations at or above the action level under any expected conditions of use. Objective data can be obtained from an industry-wide study or from laboratory product test results from manufacturers of Chromium (VI) containing products or materials. The data that we use from an industry-wide survey must be obtained under workplace conditions closely resembling the processes, types of material, control methods, work practices and environmental conditions in the employer's current operations.

The record of the objective data relied upon will be maintained for at least 30 years.

Availability

All records required to be maintained will be made available, upon request, to affected employees, former employees, and their designated representatives, and to the Assistant Secretary and the Director for examination and copying.

Training records

All employee training records will be maintained for one (1) year beyond the last date of employment of each employee.

Transfer of medical records

Should we cease to do business, the successor employer shall receive and retain all the above medical records.

Should we cease to do business and there is no successor employer to receive and retain the above medical records, they shall be transmitted to the Director.

At the expiration of the retention period for the above medical records, the Safety Program Administrator will notify the Director at least 3 months prior to the disposal of such records and shall transmit those records to the Director if he requests them within that period.

Clearheart Construction Co., Inc.

RESPIRATORY PROTECTION PROGRAM FOR HEXAVALENT CHROMIUM

OVERVIEW

The best respiratory protection one can have is clean, breathable air. Engineering controls are our first line of defense against contaminated or oxygen deficient air. These controls include, but are not limited to, using measures such as enclosure or confinement to keep atmospheric hazards away from employees, general or local ventilation to exhaust hazardous atmospheres, and/or substitution of less toxic materials to avoid hazardous atmospheres in the first place. When effective engineering controls are not feasible, or during the time frame they are being instituted, appropriate respirators will be used.

Where any employee is exposed to Hexavalent Chromium above the PEL for more than 30 days per year, engineering, administrative, and work practice controls will be implemented to reduce and maintain employee exposure to Hexavalent Chromium to the PEL of 5.0 μ/m^3. If this goal is infeasible, exposure will be reduced to the lowest possible level.

Note: With the use of appropriate respirators and other PPE, there is no actual employee personal exposure.

Note: In the event that an operation in which Hexavalent Chromium is emitted, a program will be create that identifies:

- **a. the machinery used, material processed, controls in place, crews size, employee job responsibilities, operation procedures and maintenance practices.**
- **b. a description of the specific mean that will be employed to achieve compliance including engineering plans and studies used to determine methods selected for controlling exposure to Hexavalent Chromium.**
- **c. a report of the technology considered in meeting the permissible exposure limit.**
- **d. air monitoring data which documents the source of the Hexavalent Chromium emissions.**
- **e. a detailed schedule for implementation of the program.**
- **f. a work practice program.**
- **g. an administrative control schedule.**
- **h. other relevant information.**

The concept of respiratory protection is quite simple. Certain types of atmospheric hazards are merely particles that can be filtered out of the air through the use of an air-purifying respirator. Air-purifying respirators force the harmful particles into a filter specifically designed for the hazard(s) where they are trapped or absorbed. The air reaching the employee's lungs is essentially free of the hazard.

a. If the action of inhalation causes the ambient air to be sucked through the filter, the respirator is considered a negative pressure respirator.

b. If the ambient air is forced through the respirator filter (with a blower, for example), the respirator is considered a positive pressure respirator.

A respirator that removes harmful contaminants **is of no value** in an oxygen deficient (less than 19.5% oxygen) or oxygen enriched (more 23.5 % oxygen) atmosphere.

An atmosphere-supplying respirator will be used in oxygen deficient atmospheres or in atmospheres where a filter cannot reduce the particulate hazard to an acceptable level. This type of respirator provides clean , breathable air from a source independent of the ambient atmosphere. Different types of respirators provide different levels of protection. **Never** may an air-purifying respirator be substituted for a required atmosphere-supplying respirator.

While the concept is simple, unfortunately, respiratory protection is, at times, more complicated than it first appears. Because of the variety and severity of respiratory hazards, the types of respirators and their limitations, the methods for fitting and testing, and, most importantly, the detrimental ramifications of respirator misuse, this respiratory protection program is required.

Proper respirator selection and use can prevent occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays and vapors. In atmospheres that are immediately dangerous to life or health, proper respirator selection and use will save your life.

When required, employees will be supplied appropriate respirators and all incidental costs associated with respirator use (fit testing, repair parts, filters, medical examinations, cleaning supplies, etc.) will be borne by:

PROGRAM ADMINISTRATOR

Our Respiratory Protection Program Administrator is:

The program administrator will keep abreast of developments in the respiratory protection field and ensure that our personnel are provided safe respiratory working conditions.

Additionally, the program administrator will:

a. measure, estimate, or review data on the concentration of airborne contaminants in the work area prior to respirator selection.

b. select the appropriate type of respirator that will provide adequate protection from the airborne contaminants or provide clean, breathable air.

c. maintain applicable records including:

1. fit test records.
2. medical records.
3. inspection records.
4. evaluation records.
5. training records.

DEFINITIONS

There are a number of terms and phrases, not used in ordinary everyday life, which must be understood by affected employees.

Air-purifying respirator: a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Atmosphere-supplying respirator: a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

Canister or cartridge: a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

Demand respirator: an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

Emergency situation: any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

Employee exposure: exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

End-of-service-life indicator (ESLI): a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

Escape-only respirator: a respirator intended to be used only for emergency exit.

Filter or air-purifying element: a component used in respirators to remove solid or liquid aerosols from the inspired air.

Filtering facepiece (dust mask): a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

Fit factor: a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit test: the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

Helmet: a rigid respiratory inlet covering that also provides head protection against impact and penetration.

High efficiency particulate air (HEPA) filter: a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

Hood: a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

Immediately dangerous to life or health (IDLH): an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Loose-fitting facepiece: a respiratory inlet covering that is designed to form a partial seal with the face.

Negative pressure respirator (tight fitting): a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Oxygen deficient atmosphere: an atmosphere with an oxygen content below 19.5% by volume.

Physician or other licensed health care professional (PLHCP): an individual whose legally permitted scope of practice allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required medical evaluation.

Positive pressure respirator: a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

Powered air-purifying respirator (PAPR): an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Pressure demand respirator: a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

Qualitative fit test (QLFT): a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative fit test (QNFT): an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respiratory inlet covering: that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.

Self-contained breathing apparatus (SCBA): an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

Service life: the period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.

Supplied-air respirator (SAR) or airline respirator: an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

Tight-fitting facepiece: a respiratory inlet covering that forms a complete seal with the face.

User seal check: an action conducted by the respirator user to determine if the respirator is properly sealed to the face.

RESPIRATOR SELECTION/AREA SURVEILLANCE

RESPIRATOR SELECTION

No employee will be exposed to Hexavalent Chromium at concentration levels greater than 5.0 µ/m³ averaged over an 8 hour time period.

Respirators will be selected on the basis of hazards to which the employee will be exposed. Using an inappropriate respirator is just as bad, if not worse, than using no respirator at all because it can evoke a false sense of security while offering no protection to the hazard at hand.

All respirators will be NIOSH approved.

Work area surveillance will be made by the Program Administrator taking into consideration the actual work area conditions, the degree of exposure and employee stress.

Respirator selection will take into consideration the air quality; the contaminant; the amount of the contaminant; the time exposure to that contaminant; and the work area surveillance.

In oxygen-deficient atmospheres as well as atmospheres in which the respiratory hazard exposure cannot be determined (Immediately Dangerous to Life or Health atmospheres), one of the below respirators will be used:

a. A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or

b. A combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

Note: Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

Generally, but not always, atmospheres work areas that require respiratory protection are not IDLH and in these cases respirator selection offers more options. The respirator selected will be adequate to protect the health of the employee and ensure compliance with all other OSHA statutory and regulatory requirements under routine and reasonably foreseeable emergency situations. Of course, the respirator selected will be appropriate for the chemical state and physical form of the contaminant.

For protection against gases and vapors, the respirator provided will be:

a. atmosphere-supplying.

b. air-purifying, provided that:

   1. it is equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant; or

2. if there is no ESLI appropriate for conditions in respiratory hazard area, a change schedule for canisters and cartridges will be used that is based on objective data that will ensure that canisters and cartridges are changed before the end of their service life.

The Program Administrator will rely on past experience and cartridge manufacturer recommendations. If the competent person on site or any respirator user notices that breathing becomes more strained, the change schedule will be modified.

For protection against particulates, the respirator provided will be:

a. atmosphere-supplying; or

b. air-purifying equipped with a filter certified by NIOSH under 30 CFR part 11 like a HEPA filter; or

Note: Filters manufactured under 30 CFR part 11 standards may continued to be used, however, as of July 10, 1998, other than PAPR's , they are not to be purchased. Only 42 CFR part 84 type filters will be used.

c. air-purifying equipped with a filter certified for particulates by NIOSH under 42 CFR part 84; or

Note: These respirators and filters, other than PAPR's are identified on the packaging with numbers that take the form: TC-84A-XXX.

a. Filters will have an "N", "R", or "P" designation followed by "100", "99" or "95".
Examples: N100 or R99

1. **"N" indicates the filter is for any solid or non-oil containing particulate contaminant.**
2. **"R" indicates the filter is for any particulate contaminant.**
If used for an oil containing particulate, a one shift use limit applies.
3. **"P" indicates the filter may be used with any particulate contaminant.**

b. The number indicates the filter efficiency -- the higher the number, the more efficient.
100 = 99.97% efficiency; 99 = 99% efficiency; and 95 = 95% efficiency.

d. air-purifying equipped with any filter certified for particulates by NIOSH for contaminants consisting primarily of particles with mass median aerodynamic diameters (MMAD) of at least 2 micrometers.

Often, the permissible exposure limit (PEL) and suggested respirator is listed on an MSDS. Published exposure limits for the contaminant at hand will assist in determining respirator selection.

The Program Administrator will select respirators based on:

a. the nature of the hazardous operation or process.

b. the type of respiratory hazard including permissible exposure limits.

c. the period of time for which respiratory protection must be worn.

d. the activities of workers in the hazardous area.

e. the respirator's characteristics, capabilities, and limitations.

Airborne Concentration of Hexavalent Chromium or Condition of Use	Required Respirator
Not in excess of 50 mg/m³	Half mask, air purifying respirator equipped with high efficiency filters. [2] [3]
Not in excess of 250 mg/m³	Full facepiece, air purifying respirator with high efficiency filters. [3]
Not in excess of 250 mg/m³	(1) Any powered, air purifying respirator with high efficiency filters [3] or (2) Half-mask supplied air respirator operated in positive pressure mode.
In excess of 250 mg/m³	Supplied-air respirators with full facepiece, hood, helmet, or suit operated in positive pressure mode.
Greater than 100 mg/m³, unknown concentration or fire fighting	Full facepiece, self-contained breathing apparatus operated in positive pressure mode.

For air purifying respirators, any 42 CFR 84 NIOSH approved particulate filter will do, but the type of facepiece--half mask or full face mask—depends on the exposure level.

For a PEL of 5 micrograms per cubic meter, a half mask respirator equipped with a NIOSH approved filter will be good up to an exposure level of 50 micrograms per cubic meter (Maximum Use Concentration) and a full face mask respirator equipped with a NIOSH approved filter will be good up to 250 micrograms per cubic meter (Maximum Use Concentration), as long as the full face mask respirator is quantitatively fit tested (up to 50 micrograms per cubic meter if the full face mask is qualitatively fit-tested).

The 42CFR84 filter for the air purifying respirator may be the N, R, or P type with 95,99, or 99.97% efficiency. The filter type depends on likelihood of oil present in the air—N is only for situations where oil is not likely to be present, but R and P can be used when oil is present (difference between R and P filters is how long they can be used in the presence of oil).

PARTICULATE RESPIRATOR SELECTION

Prior to respirator selection, the following factors must be known:

a. The identify and concentration of the particulates in the workplace air.

b. The permissible exposure limit (PEL), the NIOSH recommended exposure limit (REL) or other occupational exposure limit.

c. The hazard ratio (HR). The (HR) is obtained by dividing the airborne particulate concentration by the exposure limit.

d. The assigned protection factor (APF) for the type of respirator to be used. The (APF) is the minimum anticipated level of protection provided by each type of respirator worn in accordance with an adequate respiratory protection program. For example, an (APF) of 10 means that the respirator should reduce the airborne concentration of a particulate by a factor of 10 (or to 10% of the workplace concentration).

e. The immediately dangerous to lift or health (IDLH) concentration, including oxygen deficiency.

The (APF) should be greater that the (HR) and multiplying the occupational exposure limit by the APF give the maximum workplace concentration in which the respirator may be used.

All filters will have a 99.97% efficiency rating indicated by the number 100.

Employees may opt to use a PAPR, even if not required, at no cost to the employee.

SERVICE LIFE OF FILTERS

If the selected filters have an end-of-service-life indicator (ESLI), the filters will be used until the indicator shows that it is time to be replaced.

In the absence of an ESLI, the following is our policy of service life of filters:

All HEPA filters manufactured under 30 CFR part 11 (for PAPR's) will be replaced at least daily (once each work shift) or if breathing resistance becomes excessive or if the filter suffers physical damage (tears, holes, etc.) If PAPR filters become available under 42 CFR part 84 standards, they will be used and fall under the below schedule:

All filters will be replaced whenever they are damaged, soiled, or causing noticeably increased breathing resistance.

N-series filters may be used and reused subject only to considerations of hygiene, damage, and increased breathing resistance. If the competent person determines the workplace to be exceptionally dirty, the filters will be changed each work shift.

R-series filter will be changed every work shift if oil is present. If oil is not present, they be used and reused subject only to considerations of hygiene, damage, and increased breathing resistance. If the competent person determines the workplace to be exceptionally dirty, the filters will be changed each work shift.

P-series filters will be used and reused in accordance with the manufacturer's time-use limitations when oil aerosols are present. P-series filters can be used and reused subject only to consideration of hygiene, damage, and increased breathing resistance if oil aerosols are not present.

RESPIRATOR FIT TEST

There are various protocols for fit testing respirators and they can be found in Appendix A, 29 CFR 1910.134. One of the four qualitative protocols listed below will be used:

Protocol/Fit Test Procedure	Appendix A to 29 CFR 1910.134
a. Isoamyl Acetate	Paragraph B2
Fit Test Procedure	Paragraph B2(b)
b. Saccharin Solution Aerosol	Paragraph B3
Fit Test Procedure	Paragraph B3(b)
c. BitrexTM Solution Aerosol	Paragraph B4
Fit Test Procedure	Paragraph B4(b)
d. Irritant Smoke (Stannic Chloride)	Paragraph B5
Fit Test Procedure	Paragraph B5(c)

The purpose of fit testing is to ensure that the respirator selected will actually do the job for which it was intended. Different manufacturers make different sizes of each model. Fit testing, following the OSHA approved protocols, will ensure that the specific make, model and size is appropriate for the user. An employee may only use the specific respirator(s) on which he/she has passed a fit test.

Eye glasses and contact lenses pose special problems when dealing with respirators. Contact lenses will not be worn during the fit test or during respirator use. Normal eye glasses, while they do not interfere with the skin to facepiece seal of a ½ face respirator, will prevent a proper seal on a full face respirator and thus will not be worn. If glasses are needed, special adapters can be provided to hold lenses within the respirator.

Upon successful completion of respirator fit testing, a Record of Respirator Fit Test form will be completed and maintained with the employee's records. Only the latest fit test record need be retained. The Respirator Fit Test will be repeated at least annually or when:

a. a different respirator facepiece (size, style, model or make) is used.

b. there has been a weight change of at least 20 pounds.

c. there has been significant facial scarring in the area of the face-piece seal.

d. there has been significant dental changes; i.e., multiple extractions without prosthesis or acquiring dentures.

e. reconstructive or cosmetic surgery.

f. any other condition that may interfere with facepiece sealing.

As explained in the protocols, the fit tests shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface. Further, there shall not be mustaches that are so long as to interfere with the inlet or exhaust valves in the respirator. Of course, these requirements apply not only to fit testing procedures, they apply to actual on the job use where the seal between face and respirator must be maintained.

USER SEAL CHECK

A user seal check, performed in accordance with the manufacturer's instructions or Appendix B-1 to 29 CFR 1910.134 will be made prior to each use by the wearer of a tight-fitting respirator.

A user seal check is solely for respiratory protection of the employee and without this check there is no way of knowing if the selected respirator is actually working. Failure to perform a seal check may result in the use of a respirator which is of little or no value.

HAZARD COMMUNICATION & EMERGENCY PROCEDURES

One would not be wearing a respirator in the first place if there were not some detrimental health consequences of non-use. Often, these consequences are chronic (long term) and immediately unnoticeable.

If respirator failure would Hexavalent Chromium to noticeable physical or mental impairment, two employees will be assigned in the same area and in view of each other. If one employee presents symptoms of physical or mental distress, the second employee will remove the first employee from the area. If there is not an immediate, total recovery, the affected employee will be provided medical care by emergency responders.

In the event work is being performed in an IDLH atmosphere, a safety harness and safety lines will be used so that the employee may be pulled to safety. Suitable rescue equipment will be available and a standby man or men with suitable self-contained breathing apparatus shall be at the nearest fresh air base for emergency rescue.

All personnel should be aware of the appropriate MSDS for the products they are working with, and particular attention should be given to health hazards, both acute and chronic; symptoms of overexposure; first aid measures; emergency procedures; and exposure limits.

WORK AREA SURVEILLANCE

The competent person at the work area where respirator use is required will maintain appropriate surveillance of work area conditions and degree of employee exposure or stress. When there is a change in work area conditions or degree of employee exposure or stress that may affect

respirator effectiveness, the Program Administrator or competent person will reevaluate the continued effectiveness of the respirator.

Employees are to leave the respirator use area:

a. to wash their faces and respirator facepieces as necessary to prevent eye or skin irritation associated with respirator use.

b. if they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece.

c. to replace the respirator or the filter, cartridge, or canister elements.

Defective respirators will be repaired or replaced before returning to the respirator use area.

AIR QUALITY

Atmosphere-supplying respirators, depending on the type (supplied-air or SCBA) use compressed air, compressed oxygen, liquid air or liquid oxygen. Compressed and liquid oxygen must meet the requirements of the United States Pharmacopoeia for medical or breathing oxygen. Compressed breathing air must meet the requirements of Grade "D" breathing air including: oxygen content (v/v) of 19.5-23.5%; hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less; carbon monoxide content of 10 ppm or less; carbon dioxide content of 1,000 ppm or less; and lack of noticeable odor. Compressed oxygen shall not be used in supplied-air respirators or open circuit self-contained breathing apparatus that have previously used compressed air. Oxygen must never be used with air line respirators.

Breathing air may be supplied to respirators from cylinders or air compressors. If cylinders are used, they will be tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part 178).

If a compressor is used for supplying breathable air by way of air line hoses to a respirator mask, it is a Type "C" system. The hose couplings used on these systems must not be compatible with any other gas systems. Breathable air -- not pure oxygen -- is used in these systems. All safety and standby devices will be maintained in working order such as alarms to warn of compressor failure or overheating. Compressors will be located so that contaminated air does not enter the system and suitable in-line filters will be installed. A receiver of sufficient capacity to enable the respirator wearer to escape from a contaminated atmosphere in the event of a compressor failure shall be in place. If an oil lubricated system is used, it shall have a high temperature and carbon monoxide alarm.

Additionally, the competent person will ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration accords with the following specifications:

a. oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution.

The competent person will ensure that cylinders used to supply breathing air to respirators meet the following requirements:

a. cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part 173 and part 178);

b. cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air; and

c. the moisture content in the cylinder does not exceed a dew point of
- 50 deg.F (-45.6 deg.C) at 1 atmosphere pressure.

d. compressors used to supply breathing air to respirators are constructed and situated so as to:

1. prevent entry of contaminated air into the air-supply system;

2. minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F (5.56 deg.C) below the ambient temperature;

3. have suitable in-line air-purifying sorbent beds and filters to further ensure breathing air quality. Sorbent beds and filters shall be maintained and replaced or refurbished periodically following the manufacturer's instructions.

e. have a tag containing the most recent change date and the signature of the person authorized by the employer to perform the change. The tag shall be maintained at the compressor.

For compressors that are not oil-lubricated, the competent person will ensure that carbon monoxide levels in the breathing air do not exceed 10 ppm.

For oil-lubricated compressors, the competent person will use a high temperature or carbon monoxide alarm, or both, to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply will be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm.

CLEANING; INSPECTION; AND MAINTENANCE

Respirators issued for the exclusive use of one worker will be cleaned and disinfected after each day's use or more often, if necessary. A respirator used by more than one person will be cleaned and disinfected after each use by the employee who used it. Cleaning should be done using the manufacturer's recommendations or the guidelines in Appendix B-2 to 29 CFR 1910.134 (immediately following this program). Remove or protect the filters/cartridges before cleaning because moisture can defeat the effectiveness of a filter. During cleaning, an inspection of the respirator will be made to ensure it retains its original effectiveness. Valves, straps, canisters, elasticity, facepieces, if applicable, will be inspected per the manufacturer's instructions. Defective parts will be replaced before reuse.

Employees who use respirators will be instructed in the replacement of parts as allowed by the manufacturer (such as valves and straps). Respirators that require a higher level of repair will be returned to the manufacturer. All replacement parts will be of the same manufacture as the respirator and all replacement parts will be NIOSH approved. Maintenance will be limited to replacing parts (straps, filters, valves, etc.) allowed by the manufacturer. Only respirators in 100% working order will be used.

Cleaning supplies and replacement parts will be provided at no cost. In the event a respirator is not used for thirty (30) days, it will be inspected by a competent person. Particular attention will be paid to SCBA apparatus and Type "C" connections. SCBA apparatus shall be inspected monthly and air and oxygen cylinders will be fully charged according to the manufacturer's instructions. All warning devices will be checked to ensure they are properly functioning.

MAINTENANCE OF EMERGENCY/UNASSIGNED RESPIRATORS

Emergency and unassigned respirators (respirators used by more than one person) will be cleaned and inspected for defects every thirty (30) days and after each use. Particular attention will be given to the elasticity of the respirator and ensuring that the respirator is defect free. Only the latest record of this inspection will be maintained. A tag showing the name of inspector, the date, and condition of the respirators will be attached to the respirator.

STORAGE OF RESPIRATORS

Respirators will be stored in a convenient, clean, and sanitary location in such a manner as to protect them from dust, heat, sunlight, extreme cold, excessive moisture, and damaging chemicals. On a job site, a plastic bag can help protect a respirator from dust and moisture. Respirators will not be stored in lockers or tool boxes unless they are in cases or cartons.

Respirators will be stored with the facepiece and exhalation valve resting in a normal position. This will also prevent the soft, pliable material of which respirators are made from setting in an abnormal position, changing shape, and reducing face to mask seal.

PROGRAM EVALUATION

This Program will be evaluated on a continual basis and updated if the need arises. Reasons for upgrading would include new atmospheric hazards; new respiratory protection equipment; new or altered work procedures; the introduction of new engineering controls; the failure of employees to follow standard operating procedures.

Often, the effects of breathing contaminated atmospheres are chronic in nature and thus some employees may tend to become lax in using their respirators properly. Supervisors must be on alert for this tendency.

Employees must realize that they must use the provided respiratory protection in accordance with the instructions and training received.

TRAINING

Training will be given by a competent person, prior to use, to ensure each affected employee can demonstrate knowledge of at least the following:

a. why a respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator.
b. what the limitations and capabilities of the respirator are.
c. how to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions.
d. how to inspect, put on and remove, use, and check the seals.
e. the procedures for maintenance and storage of the respirator.
f. how to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.

Retraining will be given annually and when:

a. changes in the workplace or the type of respirator render previous training obsolete.
b. inadequacies in the employee's knowledge or use of the respirator indicates that the employee lacks the required understanding or skill.
c. a situation arises in which retraining appears necessary to ensure safe respirator use.

PROJECT #: _____

AIR MONITORING REPORT
HEXAVALENT CHROMIUM

DATE: _____

SAMPLE I.D.	SAMPLE TYPE	WORKER'S NAME	SOCIAL SECURITY NUMBER	LOCATION	ACTIVITY	RESPIRATOR TYPE

ANALYTICAL INFORMATION

SAMPLE I.D.	PUMP NUMBER	CALIB. BEGINNING	FLOW END	RATE (L/min) AVERAGE	START TIME	STOP TIME	DURATION (MINUTES)	VOLUME (Liters)

Comments:

_____

SAMPLE TYPE		ACTIVITY		RESPIRATOR
PRS=personal	BGD=background	REM=removal	PREP=site prep	HM=half mask
ENV=environmental	CL=clearance	CLN=clean-up	IC-inside cont.	FF=full face
HEX=HEPA exhaust	FC=final clearance	BGLO=bag load out	OC=outside cont.	APR=air purifying resp.
				SA=supplied air

Note: Sampling media used in 37mm 0.8µ MCE filter unless otherwise noted.

SAMPLED BY: _____
ANALYZED BY: _____
REVIEWED BY: _____
APPROVED BY: _____

Clearheart Construction Co., Inc.

MEDICAL SURVEILLANCE PROGRAM

This Medical Surveillance Program is vital to the health and safety of our employees who may have exposure to Hexavalent Chromium. Medical surveillance will be provided at no cost to the employee and at a reasonable time and place. It is applicable to those employees who:

1. Who are or may be occupationally exposed to Hexavalent Chromium at or above the action level for 30 or more days a year;
2. Experiencing signs or symptoms of the adverse health effects associated with Hexavalent Chromium exposure; or
3. Exposed in an emergency.

All medical examinations and procedures required by this section will be performed by or under the supervision of a PLHCP at the following frequency:

1. Within 30 days after initial assignment, unless the employee has received a Hexavalent Chromium related medical examination that meets the requirements of this paragraph within the last twelve months;
2. Annually;
3. Within 30 days after a PLHCP's written medical opinion recommends an additional examination;
4. Whenever an employee shows signs or symptoms of the adverse health effects associated with hexavalent chromium exposure;
5. Within 30 days after exposure during an emergency which results in an uncontrolled release of Hexavalent Chromium; or
6. At the termination of employment, unless the last examination that satisfied the requirements of paragraph (k) of this section was less than six months prior to the date of termination.

A medical examination consists of:

1. A medical and work history, with emphasis on: Past, present, and anticipated future exposure to Hexavalent Chromium; any history of respiratory system dysfunction; any history of asthma, dermatitis, skin ulceration, or nasal septum perforation; and smoking status and history;
2. A physical examination of the skin and respiratory tract; and
3. Any additional tests deemed appropriate by the examining PLHCP.

The examining PLHCP will be provided a copy of this 29 CFR 1910.1026. as well as:

1. A description of the affected employee's former, current, and anticipated duties as they relate to the employee's occupational exposure to Hexavalent Chromium;
2. The employee's former, current, and anticipated levels of occupational exposure to Hexavalent Chromium;
3. A description of any personal protective equipment used or to be used by the employee, including when and for how long the employee has used that equipment; and
4. Information from records of employment-related medical examinations previously provided to the affected employee, currently within the control of the employer.

The PLHCP's will provide a written medical opinion within 30 days of each examination to the Hexavalent Chromium Safety Program Administrator. This opinion will contain:

1. The PLHCP's opinion as to whether the employee has any detected medical condition(s) that would place the employee at increased risk of material impairment to health from further exposure to Hexavalent Chromium;
2. Any recommended limitations upon the employee's exposure to Hexavalent Chromium or upon the use of personal protective equipment such as respirators;
3. A statement that the PLHCP has explained to the employee the results of the medical examination, including any medical conditions related to Hexavalent Chromium exposure that require further evaluation or treatment, and any special provisions for use of protective clothing or equipment.

The PLHCP shall not reveal to any person, except the employee specific findings or diagnoses unrelated to occupational exposure to Hexavalent Chromium.

The safety program administrator will give the employee a copy of the PLHCP's written medical opinion to the examined employee within two weeks after receiving it.

Clearheart Construction Co., Inc.

WORKER ACKNOWLEDGMENT

EMPLOYEE USE OF SECOND MEDICAL OPINION

If the employee uses the physician selected by our company, the employee may select a second physician to review any findings, determinations, or recommendations of the initial physician and to conduct such examinations, consultations, and laboratory tests as the second physician deems necessary to facilitate this review. We will promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician conducts a medical examination. We condition our participation in, and payment for, the multiple physician review upon the employee doing the following within 15 days of receipt of the foregoing notification, or receipt of the initial physician's written opinion, which ever is later: The employee must, within the time frame above, inform the safety program administrator that he/she intends to seek a second opinion; the employee must take the initial steps to make an appointment with the second physician.

I have read and understand the above statement.

- ☐ I elect to accept the original physicians findings for the physical examination/test results dated: _____.
- ☐ I elect to seek a second medical opinion on the original physician's findings for the physical examination/test results dated: _____.

EMPLOYEE SIGNATURE: _____

DATE: _____

WITNESS SIGNATURE: _____

DATE: _____

Clearheart Construction Co., Inc.

HEXAVALENT CHROMIUM WORK OPERATIONS & ABATEMENT PROCEDURES WITHIN AN ENCLOSURE

DATE: _____

PROJECT NUMBER: _____

PROJECT NAME: _____

_____

PROJECT ADDRESS: _____
(Street Address)

_____
(City/State)

[NOTE: Below listed are our standard operating procedures. Should this project required specific methods or procedures due to contract specifications, special conditions, or local law (which do not conflict with OSHA/EPA standards), those changes will be noted on the last page of this document.]

Hexavalent Chromium abatement and work procedures will include, at a minimum, the steps noted below. Often, more stringent procedures are employed due to conditions encountered on specific projects as well as differing job specifications and requirements.

ADMINISTRATIVE PROCEDURES

As a matter of policy, we will not use administrative procedures as a means to reduce an employee's time weighted average (TWA) exposure to Hexavalent Chromium. Specifically, in the interest of our employees' health, we will not expose workers to even minimum amounts of Hexavalent Chromium exposure over short periods of time to circumvent the more stringent requirements of engineering controls.

ENGINEERING CONTROLS

There are eight primary steps involved in the engineering controls for the Hexavalent Chromium abatement process. These steps, overseen by a Competent Person, are applicable to work within a containment area.

1. Set up the enclosure.

Before setting up the enclosure, all movable objects such as chairs, desks, rugs, light fixtures, etc., will be removed to prevent them from becoming contaminated with Hexavalent Chromium dust. Objects that cannot be removed from the enclosure will be covered with two (2) layers of 6 mil polyethylene sheeting that is securely taped with duct tape to form an air tight seal. A minimum of two (2) layers of 4 mil polyethylene will be placed on the walls and a minimum of two (2) layers of 6 mil polyethylene will placed on the floors. The following warning shall be posted where exposure to Hexavalent Chromium is above the PEL:

WARNING
HEXAVALENT CHROMIUM WORK AREA
POISON
NO SMOKING OR EATING

These signs shall be illuminated or cleaned as necessary so that the legend is clearly visible.

2. Ensure the integrity of the enclosure.

The enclosure will be inspected before Hexavalent Chromium removal begins and prior to each work shift throughout the entire period work is being conducted in the enclosure. This is accomplished best by running a hand over all seams in the plastic enclosure to ensure that no seams are ripped and the tape is securely in place.

3. Control entry to and exit from the enclosure.

The competent person should ensure that all unauthorized personnel do not enter the enclosure and that all employees and other personnel who enter the enclosure have the proper protective clothing and equipment. The competent person will also ensure that all employees and other personnel who enter the enclosure use the hygiene facilities and observe the proper decontamination procedures.

4. Supervise all employees exposure monitoring.

Air monitoring will be performed in accordance with the Air and Wipe Sampling Plan.

5. Ensure the use of protective clothing and equipment.

All costs associated with personal protective equipment will be borne by: Clearheart Construction Co., Inc.

Respiratory equipment will be worn in accordance with our Respiratory Protection Program. Further, all employees will wear appropriate protective clothing and equipment that protects contamination of the worker and his/her garments such as, but not limited to: disposable Tyvek suits (or similar full body clothing); gloves, hats, and shoes or boots or disposable shoe coverlets; and face shields, vented goggles, or other appropriate equipment. Containers of contaminated protective or equipment shall be labeled as follows:

CAUTION:
CLOTHING CONTAMINATED WITH HEXAVALENT CHROMIUM
DO NOT REMOVE DUST BY BLOWING OR SHAKING.
DISPOSE OF HEXAVALENT CHROMIUM CONTAMINATED WASH WATER IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, OR FEDERAL REGULATIONS.

6. Ensure that employees are trained in the use of engineering controls, work practices, and personal protective equipment.

Proper work practices are necessary during Hexavalent Chromium abatement or work to ensure that the Hexavalent Chromium dust concentration inside the enclosure remains as low as possible. One of the most important work practices is to wet the surfaces of Hexavalent Chromium coated material before it is disturbed and throughout the removal activity. After the Hexavalent Chromium coated material is thoroughly wetted with water and a wetting agent, it should be removed starting at the farthest point from the AFD.

After completing gross removal, all surfaces from which Hexavalent Chromium materials have been removed shall be wet washed with a solution of trisodium phosphate (1 ounce of 5 percent trisodium phosphate to each gallon of water) and HEPA vacuumed.

Bagging Hexavalent Chromium and Hexavalent Chromium contaminated waste material in two (2) 6 mil bags or drums promptly after its removal is another work practice control that is effective in reducing the airborne concentration of Hexavalent Chromium dust within the enclosure. Good housekeeping practices will be employed during Hexavalent Chromium abatement and work projects. Floors will be cleaned, when possible, by HEPA vacuuming or other methods which prevent the likelihood or Hexavalent Chromium

becoming airborne. Dry sweeping is strictly forbidden. Wet sweeping will only be used if HEPA vacuuming is impossible. High pressure air will not be used unless it is used in conjunction with a ventilation system designed to capture the airborne dust.

7. Ensure the use of hygiene facilities and the observance of proper decontamination procedures.

A decontamination enclosure unit that consists of a shower chamber, an equipment room, and a clean room will be installed in conjunction with the enclosed work area. This unit will be used by all persons who enter the enclosure to prevent cross-contamination of work and street clothing. All employees will shower upon exit.

Within the enclosure (or any place Hexavalent Chromium is present at any measurable level), food and beverages will not be consumed, tobacco products will not be used, and cosmetics will not be applied. Eating area will be provided that are as free as practicable from Hexavalent Chromium contamination and the are readily accessible to employees.

Hygiene facilities will be available.

8. Ensure that engineering controls are functioning properly.

The Supervisor or Foreman on all Hexavalent Chromium abatement projects shall be a Competent Person. He/she will assign specific job tasks to individual workers during each work shift and he/she shall be responsible for their supervision and ensuring that all engineering controls are maintained.

All machines will be plugged into GFCI's, fitted with HEPA filtered exhausts (if applicable) and decontaminated after use.

All waste will be containerized, labeled and transported in accordance with all local, state and federal regulations.

Clearheart Construction Co., Inc.

CERTIFICATE OF SAFETY TRAINING

(Instructor Name)	(Date)
(PRINT NAME)	(SIGNATURE)

I Certify the above listed personnel have received hexavalent chromium training as outlined in our Safety Program. Training was conducted by a competent person. Further I certify that each employee can demonstrate knowledge of the following:

1. The contents of 29 CFR 1910.1026
2. The purpose and a description of the medical surveillance program

_____

Safety Program Administrator