Clearheart Construction Co., Inc.

Benzene

29 CFR 1910.1028, Benzene
29 CFR 1910.1028, Appendix A Substance safety data sheet, Benzene
29 CFR 1910.1028, Appendix B Substance technical guidelines, Benzene
29 CFR 1910.1028, Appendix C Medical surveillance guidelines for Benzene
29 CFR 1910.1028, Appendix D Sampling and analytical methods for Benzene monitoring and measurement procedures
T8 CCR 5218, Benzene

Benzene

The provisions of this program apply only when our employees have the possibility of occupational exposures to benzene [Chemical Abstracts Service Registry No. 71-43-2] over the PEL which is:

1. Time-weighted average limit (TWA): an airborne concentration of benzene in excess of one part of benzene per million parts of air (1 ppm) as an 8-hour time-weighted average.
2. Short-term exposure limit (STEL): an airborne concentration of benzene in excess of five (5) ppm as averaged over any 15 minute period.

Note: The benzene standard (1910.1028) applies to all occupational exposures to benzene **except** some subsegments of industry where exposures are consistently under the Action Level (i.e. distribution and sale of fuels, sealed containers and pipelines, coke production, **oil and gas drilling and production**, **natural gas processing**, and the percentage exclusion for liquid mixtures).

For the above excepted subsegments, the benzene limits in 29 CFR 1910.1000 Table Z-2 apply, specifically, 10 ppm TWA. Also, exposures shall not exceed 25 ppm (ceiling) with the following exception: exposures may exceed 25 ppm, but not more than 50 ppm (peak), for a single time period up to 10 minutes for an 8-hour shift.

This written Benzene Program will be made available to the Assistant Secretary, the Director, affected employees and designated employees.

Engineering and Work Practice Controls:

Engineering controls and work practice controls will be established, and used, to reduce and maintain employee exposure to benzene at or below the permissible exposure limits.

Engineering Controls:

1. Enclosing chemical processes involving benzene.
2. Using local exhaust ventilation for benzene that may be harmful with a single exposure.
3. Using general ventilation for benzene to control exposures to skin and eyes.
4. Establishing regulated areas using tape and signage (or any other manner) to minimize the number of employees exposed to benzene within the regulated area. Access to regulated areas is limited to authorized employees only.

   Signage posted at entrances to regulated areas will bear the following legend:

DANGER
BENZENE
CANCER HAZARD
FLAMMABLE - NO SMOKING
AUTHORIZED PERSONNEL ONLY
RESPIRATOR REQUIRED

Work Practice Controls:

1. Monitor airborne concentrations of benzene.
2. Use engineering controls if concentrations exceed recommended exposure levels.
3. Ensure eye wash facilities and/or showers are readily available.
4. Wash or shower if skin comes in contact with benzene.
5. Do not take contaminated clothing home.
6. Do not eat, drink, or smoke in areas where benzene is being handled, processed, or stored.
7. Wash hands before eating, drinking or smoking.
8. Wash at the end of each shift.

If the above controls are not sufficient to reduce employee exposure to or below the PELs, they will be used to reduce employee exposure to the lowest levels achievable and then be supplemented by the use of respiratory protection.

Exposure Monitoring:

Representative 8-hour TWA employee exposures will be determined on the basis of one sample or more breathing air zone samples representing the full shift exposure for each job classification in each work area.

If a process can reasonably be expected to fall under STEL, 15 minute employee breathing zone samples will be measured at these operations.

Note: All STEL operations will be performed in a regulated area until it is determined that the airborne exposures to benzene are less than five (5) ppm as averaged over any 15 minute period.

Periodic monitoring and monitoring frequency:

If the above monitoring reveals employee exposure at or above the action level but at or below the TWA, the monitoring for each affected employee will be performed at least every year.

If the above monitoring reveals employee exposure above the TWA, the monitoring for each affected employee will be performed at least every six (6) months.

Note: The monitoring schedule may be altered from every six months to annually for any employee for whom two consecutive measurements taken at least 7 days apart indicate that the employee exposure has decreased to the TWA or below, but is at or above the action level.

Monitoring for the STEL shall be repeated as necessary to evaluate exposures of employees subject to short term exposures.

Termination of monitoring:

If the initial monitoring reveals employee exposure to be below the action level, monitoring may be discontinued for that employee except when there has been a change in the production, process, control equipment, personnel or work practices which may result in new or additional exposures to benzene, or when there is reason to suspect a change which may result in new or additional exposures.

Note: Of course, whenever spills, leaks, ruptures or other breakdowns occur that may lead to employee exposure, exposure monitoring, using area or personal sampling, will be performed after the cleanup of the spill or repair of the leak, rupture or other breakdown to ensure that exposures have returned to the level that existed prior to the incident.

Within 15 working days after the receipt of the results of any monitoring each affected employee will be given the results either individually in writing or by posting the results in a location that is accessible to employees.

Whenever the PELs are exceeded, the written notification above will contain the corrective action being taken to reduce the employee exposure to or below the PEL.

Using Exposure Monitoring Results to Schedule Controls:

This Benzene Program will be reviewed and revised to reflect the most recent exposure monitoring data and we will use the most recent benzene employee exposure monitoring to implement engineering and work practice controls.

1. Below the Action Level [airborne concentration of 0.5 ppm calculated as an 8-hour-time-weighted average].
    a. No action required.
2. Above the Action Level [0.5 ppm] and below the PEL [(1 ppm) as an 8-hour time-weighted average]. While Training and Information is provided at the time of initial assignment to a work area where benzene is present, at the Action Level, the below Information and Training is required at least annually after the initial training. This includes:
    a. Benzene Hazard Information Training with specific information on benzene. in accordance with 29 CFR 1910.1200(h)(1) and (2).
    b. An explanation of 29 CFR 1910.1028, Benzene, with Appendices A & B which are readily available.
    c. A description of our medical surveillance program and an explanation of the information contained in 29 CFR 1910.1028, Appendix C Medical surveillance guidelines for Benzene.
3. Time-weighted average limit (TWA): an airborne concentration of benzene in excess of one part of benzene per million parts of air (1 ppm) as an 8-hour time-weighted average.
    a. All engineering and work practice controls will be implemented.
    b. Medical Surveillance Program will be initiated.
    c. Respirator protection required.
    d. PPE, including protective clothing and equipment to prevent eye contact and limit dermal exposure will be supplied at no cost to each affected employee and its use will be required.
4. Short-term exposure limit (STEL): an airborne concentration of benzene in excess of five (5) ppm as averaged over any 15 minute period.
    a. All engineering and work practice controls will be implemented.

b. Medical Surveillance Program will be initiated.

c. Respirator protection required.

d. PPE, including protective clothing and equipment to prevent eye contact and limit dermal exposure will be supplied at no cost to each affected employee and its use will be required.

Respiratory Protection:

Respiratory protection is required where benzene exposure is above the PEL. This includes the below three (3) scenarios:

1. Time necessary to implement engineering controls or work practices.
2. When engineering and work practices are not feasible.
3. During emergencies.

Respiratory protection will be in compliance with our respiratory protection program, found in Section III of this Manual. Our respiratory protection program is established in accordance with **29 CFR 1910.134.** It should be noted that only the following sections of 29 CFR 1910.134 apply to benzene:

§1910.134(b) through (d) (except (d)(1)(iii), (d)(3)(iii)(b)(1) and (2)), and

§1910.134(f) through (m)

Respirator Selection:

No employee will be exposed to Benzene at concentration levels greater than 1 ppm averaged over an 8 hour time period.

Respirators will be selected according to airborne concentrations of benzene as well as conditions of use. 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. This work area surveillance is one of the factors used in establishing **"condition of use"** for use in respirator selection.

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 the 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 Benzene	Required Respirator
Not in excess of 10 ppm	Half mask, air purifying respirator equipped with organic vapor cartridge.
Not in excess of 50 ppm	1. Full facepiece respirator equipped with organic vapor cartridge. 2. Full facepiece gas mask with chin style canister.
Not in excess of 100 ppm	Full facepiece powered air-purifying respirator with organic vapor canister
Not In excess of 1000 ppm	Supplied air respirator with full facepiece in positive-pressure mode.
Greater than 1000 ppm or unknown concentration	1. Self-contained breathing apparatus with full facepiece in positive pressure mode. 2. Full facepiece positive pressure supplied air respirator with auxiliary self-contained air supply.
Escape	1. Any organic vapor gas mask. 2. Any self-contained breathing apparatus with full facepiece..
Firefighting	Full facepiece, self-contained breathing apparatus operated in positive pressure mode.

Ensure that canisters used with non-powered air-purifying respirators have a minimum service life of four hours when tested at 150 ppm benzene at a flow rate of 64 liters per minute (LPM), a temperature of 25 [deg]C, and a relative humidity of 85%; for canisters used with tight-fitting or loose-fitting powered air-purifying respirators, the flow rates for testing must be 115 LPM and 170 LPM, respectively.

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.

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).

BENZENE

RECORDKEEPING

Below is an overview of recordkeeping requirements that pertain to benzene exposures:

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 benzene 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

A medical surveillance program will be initiated and provided for employees:

1. who are or may be exposed to benzene at or above the action level for 30 or more days per year.

2. who are or may be exposed to benzene at or above the PELs 10 or more days per year.
3. who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard [April, 1998] when employed by our company.

Our Safety Program Administrator will ensure that all medical examinations and procedures are performed by or under the supervision of a licensed physician and that all laboratory tests are conducted by an accredited laboratory.

Our Safety Program Administrator will ensure persons other than licensed physicians who administer the pulmonary function testing required by this section shall complete a training course in spirometry sponsored by an appropriate governmental, academic or professional institution.

Our Safety Program Administrator will ensure that all examinations and procedures are provided without cost to the employee and at a reasonable time and place.

The physician who supervises the medical examinations will be provided a copy of 29 CFR 1910.1028 - Benzene, with all Appendices.

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 benzene.

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 benzene.

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 Benzene 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

We may use objective data, such as measurements from brief period measuring devices, to determine where STEL monitoring is needed. Objective data are information demonstrating that a particular product or material containing Benzene or a specific process, operation, or activity involving Benzene 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 Benzene 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