Section 26 Brieser Construction SH&E Manual

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The purpose of this section is to describe the process by which Brieser Construction Company will implement the industrial hygiene program. Health hazards are chemical, physical (such as noise and heat stress), ergonomic or biologic hazards that can cause an occupational illness. For the purpose of this section, an occupational illness is, as defined by OSHA, considered to be "any abnormal condition or disorder, other than one resulting from an occupational injury, caused by factors associated with employment.

Industrial Hygiene

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PURPOSE

Brieser Construction Company is committed to providing every employee with a work environment free from recognized occupational health and safety hazards. In support of this commitment, we administer a comprehensive industrial hygiene program geared to anticipate, recognize, evaluate, and control potential health hazards in our workplace and on our jobsites

The purpose of this section is to describe the process by which Brieser Construction Company will implement the industrial hygiene program. Health hazards are chemical, physical (such as noise and heat stress), ergonomic or biologic hazards that can cause an occupational illness. For the purpose of this section, an occupational illness is, as defined by OSHA, considered to be "any abnormal condition or disorder, other than one resulting from an occupational injury, caused by factors associated with employment."

Brieser Construction Company's industrial hygiene program is designed to:

- Systematically evaluate the degree of employee exposure to health hazards on the job;
- Evaluate the need for and effectiveness of control measures;
- Identify tasks or processes that could be the source of peak exposures;
- Evaluate the impact of change (such as procedural, equipment, material & tools) on employee exposures; Ergonomic equipment will be used to improve workplace conditions such as anti-vibration gloves for handling tools such as jackhammers, employee rotation to reduce exposures, proper lighting and control of temperature, and other ergonomic devices as deemed appropriate.
- Evaluate work tasks to control fatigue are analyzed and evaluated periodically.
- Evaluate conformance with established occupational exposure limits.

SCOPE

This section applies to all Brieser Construction Co affiliates. Any subcontractors working for us will be expected to have equally as effective programs in place or we may elect to include them at some sites under this program.

The following job tasks (Table 1) are common to Brieser Construction and will be assessed for exposures either by a Qualitative/Quantitative assessment.

Table 1

General Category	Job Task	Agent	Exposure Information Substance
Concrete	Concrete Cutting (Wet & Dry)	Acoustics, Portland Cement Dust, Ergonomics, Exhaust Fumes	Noise, Inhalable Dust, Respirable Silica, Carbon Monoxide, Vibrations
	Concrete Chipping/Demolition	Acoustics, Portland Cement Dust, Ergonomics, Exhaust Fumes	Noise, Inhalable Dust, Respirable Silica, Carbon Monoxide, Vibrations
	Compacting	Acoustics, Portland Cement Dust, Ergonomics, Exhaust Fumes	Noise, Inhalable Dust, Respirable Silica, Carbon Monoxide, Vibrations
	Pouring/Setting	Portland Cement	pH-Skin
	Power Finishing	Exhaust Fumes	Carbon Monoxide
Excavation	Hammer attachment for machine on bedrock	Acoustics, Dust, Ergonomics, Exhaust Fumes	Noise, Muskuloskeletal Diseases, Total/Respirable & Silica, Carbon Monoxide
	Digging-Refineries/Chem Plants	Acoustics,Dust,Ergonomics, Exhaust Fumes, Impacted Soils	Noise, Nusaince Dust, Muskuloskeletal Diseases, Carbon Monoxide, BTEX-Benzene, Ethylbenzene,Toluene,Xylene
Metalwork	Arc Welding	Welding Fumes, Nonionizing Radiation	*Metals, UV radiation, (CrVI Stainless Steel)
	Tig Welding	Welding Fumes, Nonionizing Radiation	*Metals, UV, (CrVI Stainless Steel)
	Mig Welding	Welding Fumes, Nonionizing Radiation	*Metals, UV, (CrVI Stainless Steel)
	Torch Cutting	Fumes, Nonionizing Radiation	*Metals, UV, (CrVI Stainless Steel)
	Grinding	Grinding Fumes	(CrVI Stainless Steel)
Woodworking	Cutting	Wood Dusts	Respirable Dust (Western Red Cedar A1 Carcinogen and a Sensitizer)
	Sanding	Wood Dusts	Respirable Dust (Western Red Cedar A1 Carcinogen and a Sensitizer)
Demolition	Demolition/Renovation, Gut Rehab, partial structual or nonstructural	Lead based paint, Asbestos,Exhaust Fumes,Acoustics,Welding/Cutting/Grinding fumes, Dust	Lead, Asbestos, Carbon Monoxide, *Metals, UV, CrVI Stainless Steel, *Metals

*Metal Profile:	Antimony	0.9µg
	Beryllium	0.15µg, 0.0075µg
	Cadmium	0.15µg, 0.015µg
	Chromium	3.0µg
	Cobalt	0.45µg, 0.045µg
	Copper	0.3µg
	Iron Oxide	11µg
	Lead	0.38µg, 0.075µg
	Manganese	0.15µg
	Molybdenum	0.15µg,0.075µg
	Nickel	0.3µg, 0.15µg
	Vanadium	0.45µg
	Zinc Oxide	2.8µg

HAZARD RECOGNITION

As a part of the overall health hazard surveillance process, the Safety Manager, who is a qualified Industrial Hygienist by way of training and experience, assisted by the jobsite Supervisor will complete an initial identification (baseline health hazard assessment) of the potential health hazards anticipated at each jobsite based on the scope of work to be completed. Brieser Construction Company will provide the resources of a professional certified industrial hygienist (a CIH certified in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene) on a contract basis to provide technical support and consultation as needed to complete the baseline health hazard survey.

Specified Brieser Construction personnel will complete the baseline assessment by:

- Reviewing the chemical/hazardous material inventory and related Material Safety Data Sheets (refer to Section 6 Hazard Communication Program);
- Understanding the health effects, exposure limits toxicity and routes of entry for hazardous chemicals as reported in the SDS.
- Surveying potential health hazards on the jobsite of routine and non-routine tasks;
- Observing jobsite work processes and employee work practices;
- Estimating employee exposure levels based on the documentation of previous sampling results or screening sampling using direct reading instruments (such as detector tubes or a sound level meter);
- Reviewing hazards associated with non-routine tasks;
- Reviewing medical records;
- Following-up on employee complaints;
- Documenting the process.

This initial evaluation, or screening, forms the basis for determining if more detailed sampling (exposure monitoring) is needed. Brieser Construction Company has adopted the more stringent of the OSHA Permissible Exposure Limit (PEL) or American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) as the internal exposure standard against which employee exposures to chemical hazards will be evaluated. If the initial evaluation indicates employee exposures may exist at levels greater than 50% of the Brieser

Construction internal exposure standard (or above a specific OSHA Action Level), then additional air sampling/exposure monitoring will be performed if historical data is unavailable.

However, additional air sampling/exposure monitoring may not be done if adequate documentation is available through historical sample records (data) collected from previous jobsites. That historical data will be used as a baseline when it can be demonstrated that the sampling was conducted under worksite conditions closely resembling the processes, type of material, control methods, work processes, and environmental conditions prevailing under current jobsite operations. Historical data will be reviewed and updated as deemed necessary by the Safety Manager but no less frequent than annually.

If operations, equipment or materials being used on a jobsite vary significantly from an established hazard assessment, a new hazard analysis will be completed. It will be conducted prior to beginning the associated task to ensure adequate controls are in place and air sampling is provided as necessary.

HAZARD EVALUATION

The Hazard Evaluation process consists of two major components, a qualitative assessment and a quantitative assessment. The American Industrial Hygiene Associations' Qualitative Exposure Assessment Process will be used as a guide for this part of the program. The OSHA Technical Manual and NIOSH Sampling Guides will be used as guides for conducting quantitative assessments.

These assessments will be summarized and provided to field personnel as part of their IH hazard awareness training and to assist them in conducting a pre-job safety analysis and documented on Brieser Constructions Co. Total Safety Task Instruction form.

Qualitative Assessments

The qualitative assessment will follow these basic steps:

- A listing of all significant tasks is compiled by the site including specifics like frequency, task duration, and conditions.
- Potential chemicals involved are listed for each task.
- An appropriate number of people are interviewed about each task and field observations made as needed.
- Work tasks may be grouped into similar exposure groups.
- Exposure groups are rated on the basis of exposure potential and chemical/physical hazards to develop a risk matrix to identify high risk vs. low risk task activities.
- A list of work tasks at our job sites is found in Table 1.

- A copy of completed qualitative assessments with their rating is in Appendix A.
- On an annual basis as part of this program review. The lists of tasks will be reviewed by work sites to verify they remain accurate.
- At least every three years each activity will be reassessed as part of a revalidation process.
    - Reassessments will include a review of past monitoring data from the specific work site as well similar data from other locations
    - The activities and chemical lists will be re-verified as accurate.
    - A representative number of personnel will be interviewed to ensure condition have not changed from the past evaluation.
    - Any changes found will be made to the assessment documentation and utilized as part of planning for the next monitoring cycle.

As a part of the overall health hazard surveillance process, the Safety Manager, who is a qualified Industrial Hygienist by way of training and experience, assisted by the jobsite Supervisor will complete an initial identification (baseline health hazard assessment) of the potential health hazards anticipated at each jobsite based on the scope of work to be completed. These tasks and associated health hazards are listed in Table 1. Brieser Construction Company will provide the resources of a professional Certified Industrial Hygienist (a CIH certified in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene) on a contract basis to provide technical support and consultation as needed to complete the baseline health hazard survey.

Specified Brieser Construction personnel will complete the baseline assessment by:

- Reviewing the chemical/hazardous material inventory and related Material Safety Data Sheets (refer to Section 6 Hazard Communication Program);
- Understanding the health effects, exposure limits toxicity and routes of entry for hazardous chemicals as reported in the MSDS.
- Surveying potential health hazards on the jobsite of routine and non-routine tasks;
- Observing jobsite work processes and employee work practices;
- Estimating employee exposure levels based on the documentation of previous sampling results or screening sampling using direct reading instruments (such as detector tubes or a sound level meter);
- Reviewing hazards associated with non-routine tasks;

- Reviewing medical records;
- Following-up on employee complaints;
- Documenting the process.

This initial evaluation, or screening, forms the basis for determining if more detailed sampling (exposure monitoring) is needed. Brieser Construction Company has adopted the more stringent of the OSHA Permissible Exposure Limit (PEL) or American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) as the internal exposure standard against which employee exposures to chemical hazards will be evaluated. If the initial evaluation indicates employee exposures may exist at levels greater than 50% of the Brieser Construction internal exposure standard (or above a specific OSHA Action Level), then a quantitative assessment or additional air sampling/exposure monitoring will be performed if historical data is unavailable.

However, additional air sampling/exposure monitoring may not be done if adequate documentation is available through historical sample records (data) collected from previous jobsites. That historical data will be used as a baseline when it can be demonstrated that the sampling was conducted under worksite conditions closely resembling the processes, type of material, control methods, work processes, and environmental conditions prevailing under current jobsite operations. Historical data will be reviewed and updated as deemed necessary by the Safety Manager but no less frequent than annually.

If operations, equipment or materials being used on a jobsite vary significantly from an established hazard assessment, a new hazard analysis will be completed. It will be conducted prior to beginning the associated task to ensure adequate controls are in place and air sampling is provided as necessary.

Once the job evaluation is completed the significant chemical and physical hazards should be listed and a qualitative exposure range assigned (this is without regard to respirator use). Any PPE or other controls in use should be noted. Generally the exposure ranges used are:

- Nil – no more than perhaps a slight trace exposure
- < 10% - while there is some exposure it is expected to normally be below 10% of applicable limits
- 10-50% - expected to normally be 10-50% of applicable limits
- 50-100% - expected to normally be 50-100% of applicable limits
- 1-5x - expected to normally be 1-5x the applicable limits
- 5-10x - expected to normally be 5-10x the applicable limits
- 10-50x - expected to normally be 10-50x the applicable limits
- 50-100 - expected to normally be 50-100x the applicable limits

- >100x - expected to normally be >100x the applicable limits

Quantitative Assessments

The exposure monitoring portion of the exposure assessment process is used to verify the qualitative exposure assessment rating and ensure personnel are adequately protected from potentially hazardous exposures. Monitoring will consist of both an annual plan as well as unplanned monitoring for non-typical activities that may come up during the year, changes in conditions, or if there is a much higher frequency of those activities.

The Safety Manager/Industrial Hygienist will train the jobsite Supervisor or a site Safety Coordinator as a monitoring technician to conduct air sampling/exposure monitoring. It will be performed under the direction of an industrial hygienist (CIH) available to provide technical support and consultative resource under contract to Brieser Construction. Sampling and analysis methods used will be in accordance with nationally recognized procedures. An American Industrial Hygiene Association (AIHA) accredited laboratory will be used to analyze all samples. (Whenever possible, the NIOSH Manual of Analytical Methods will be used to define the sampling and analytical procedures used).

Initial employee exposure monitoring will target the most highly exposed employee or group of employees (those at greatest risk) based on the initial assessment. If monitoring of the employee or employee groups at greatest risk indicates exposure levels to be above the Brieser Construction internal exposure standard, then a larger, representative sample of other employees potentially exposed to the agent should also be monitored. If monitoring of the "maximum at risk" employee (or group of employees) shows exposure levels to be below the Brieser Construction internal exposure standard, then it is reasonable to assume other employee exposure levels are also below the relevant exposure limit.

Whenever possible, Brieser Construction will perform personal exposure monitoring to characterize employee exposure levels. For personal exposure monitoring, air samples will be collected and analyzed or other monitoring data will be obtained using dosimeter devices attached to the person. Examples of this are: (1) collection of breathing zone air samples with sampling media clipped to the employee's collar, and (2) audio dosimetry (refer to Section 21 Hearing Conservation) performed with an electronic dosimeter microphone clipped to the employee's collar. Exposure monitoring will be designed to measure employee's time-weighted average exposure and, where applicable, short-term, task specific or ceiling exposure to the hazard. Full shift personal samples shall be representative of the employees regular, daily exposure to agents listed in Table 1.

Personal exposure monitoring will be repeated for each task/operation at least annually for exposures to those health hazards found to exceed the Brieser Construction internal exposure

standard. However, if specific OSHA standards (such as lead) require more frequent exposure monitoring based on exposure levels measured, Brieser's sampling protocol will be adjusted to be in compliance with the OSHA requirement.

Brieser Construction will provide additional air sampling/exposure monitoring if:

- Employees have complained of signs of illness;
- Exposures incidents or near-misses have occurred;
- Controls were implemented and their effectiveness needs to be evaluated;
- Recommended by Brieser Construction's consulting CIH.

Brieser Construction uses the results of air sampling/exposure monitoring to identify areas for additional, more-in-depth study, to select hazard controls, and to document that existing controls are adequate.

Brieser Construction will maintain documentation of air sampling/exposure monitoring results including a description of the work process, controls in place, sampling exposure calculations, duration, route and frequency of exposure, name of employee sampled, time of sampling, sampling and analytical method, and total number of potentially exposed employees for no less than a period of 30 years after termination. Sampling results are communicated to employees. Employees will be notified within OSHA time frames or if there is no mandated time frame within 2 weeks of receipt of the results.

If samples are collected at a host site results will be provided to the site Industrial Hygienist or Safety contact. These will be sent out no more than 30 days after receipt of the results or as soon as practical if levels exceed the exposure limits used by the site (ACGIH TLV's or OSHA PEL's)

Control measures will be recommended based on monitoring results using the 95% confidence level (see ACGIH)

HAZARD CONTROL

Within Brieser Construction Company, controls related to industrial hygiene exposures are designed and implemented according to the following hierarchy of control.

Engineering Controls: The most preferred control option is to eliminate the exposure risk by changing the process/chemical or substituting a process/chemical that does not pose a hazard. Other engineering controls, implemented to reduce the concentration or intensity of an agent,

include ventilation, isolation, and/or enclosure of hazardous agents. If exposure risks cannot be eliminated or substituted, engineering controls are the preferred method of controlling chemical/physical/biological agent exposure hazards.

Administrative/Work Practice Controls: These exposure controls are typically used as short-term (interim) controls to reduce the duration of exposure while implementing engineering controls. Administrative methods limit daily exposures by manipulating the work schedule or work habits. Job rotation is an example of an administrative control. Work practice controls can include employee training, workplace rules, safety and health practices, personal hygiene, housekeeping and maintenance.

Personal Protective Equipment: Personal protective equipment (PPE) represents the least preferred control method, and can include anything from gloves to respirators. Brieser Construction recognizes that PPE does not affect the concentration/intensity or duration of exposure, but only provides a barrier between the agent and the employee. For this reason, Brieser Construction will strive for engineering and/or administrative/work practice controls whenever feasible and practical, recognizing though that in the construction industry, the nature of operations and tasks may result in increased reliance on personal protective equipment. PPE will be used in conjunction with engineering and administrative controls. For additional information, also refer to Section 7 Respiratory Protection Program and Section 21 Hearing Conservation.

Training

Based on our assessments (Qualitative or Quantitative) the following health hazards will require a minimum awareness level of training before beginning work on any of the tasks listed in Table 1. They are:

1. Asbestos Awareness-(Conducted at Three Rivers Manufacturing Training Center & Orientation II)
2. Lead Awareness- Refinery -(Conducted at Three Rivers Manufacturing Training Center & Orientation II)
3. Welding, Cutting and Grinding Health Hazards of *Metals Awareness-(Conducted during Orientation II)
4. Hydrogen Sulfide Awareness- Refinery -(Conducted at Three Rivers Manufacturing Training Center & Orientation I & II and Brieser SH&E manual section 37)
5. Hearing Conservation- (Conducted during Orientation II)
6. Silica Awareness-(Conducted during Orientation I)
7. Silica Supervisor –(Conducted during Orientation II)
8. Carbon Monoxide -(Conducted during Orientation II)
9. Benzene-(Conducted at Three Rivers Manufacturing Training Center & Orientation II and Brieser SH&E manual section 36)

Safe Drinking Water Procedures

Portable Water Coolers

To ensure employees of safe drinking water on the job site, certain steps need to be taken. The job site foreman should pick out 1 or 2 people to do the job of providing potable water to the job site.

1. Water coolers need to be cleaned on a daily bases. Items required for cleaning the coolers are

2. Scrub brush that is marked for cleaning the outside of the containers only.

3. Long handled scrub brush that is marked for cleaning the inside of the containers only.

4. Test tube brush

5. Powered baking soda (Arm & Hammer)

6. Potable water

7. Diluted bleach solution (200 PPM): Into (1) gallon of potable water, carefully mix one half ounce of household bleach (Clorox or any similar 5.25% sodium hypochlorite solution in water). Always use caution when mixing acids and water.

To start the cleaning procedure:

A. Wash hands and arms thoroughly with soap and water. Rinse thoroughly and dry.

B. Hose off the inside and outside of the container.

C. Thoroughly scrub the outside of the container with a mild detergent such as dishwashing detergent. (Do not use this brush for any other purpose.) Thoroughly rinse the outside with potable water.

D. Open the container and sprinkle 1 to 2 ounces of dry baking soda into the inside followed with enough potable water to make a loose paste mixture. Thoroughly scrub inside the container with a long handled brush. (Do not use this brush for any other purpose.)

E. Thoroughly clean inside the spigot with the test tube brush. (Do not use this brush for any other purpose.)

F. Thoroughly rinse the inside using potable water. Rinse spigot by opening.

G. Disinfect inside the container with the bleach solution for no less than one minute. (Switch about a quart of the solution inside the container so that all surfaces are contacted. Let stand for one minute.) Allow a portion of the solution to drain through the spigot.

H. Thoroughly rinse the inside with potable water.

I. A diluted baking soda rinse can be used at this point to neutralize any excess chlorine taste in the water. Use about a teaspoon of baking soda in one gallon of water. Rinse again with potable water.

Fill the water cooler with fresh potable water and ice. Then use duct tape to seal the lid shut, date it and identify the contents. Be sure to have a receptacle for cup dispensing and also a receptacle for throwing away used cups. This should be done every day at the beginning of the shift and it should be refilled as needed throughout the day.

Water handlers shall maintain a high level of personal hygiene. This includes clean work clothes, skin, fingernails, hair and mustaches.

Bottled Water Coolers

A. Use bottled water coolers only for water from vendor filled containers and no other liquid (this also strictly prohibits things like Squencher).
B. Store bottles and bottle coolers away from potential contamination.
C. Inspect bottles and bottle coolers when refilling to ensure cleanliness.
D. Do not refill vendor water bottles.
E. Use the water guard devices on the bottle stands (small inner nozzle that pops into the bottle and has a dust filter).
    - Do not remove the bottle cap, only the small paper tab on top.
    - When the bottle is placed on the cooler an insert in the cooler will pop out the inner plastic tab.
    - As water is drained out air enters the bottle through a filter keeping dust and debris out. This prevents any contamination from entering the water you drink. If the entire cap is removed when the bottle is placed on the cooler the air filter will become water logged and will not allow air in. The filter must be replaced to fix the cooler.