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I. PURPOSE

The purpose of this Silica Dust Safety Program is to provide the hazards associated with silica dust and outline the steps to take to ensure employees who work with, or around silica are not exposed to hazardous levels of silica dust; and to provide procedures for common silica related work duties to minimize exposure in accordance with the OSHA Air Contaminants standard (29 CFR 1910.1000).

II. SCOPE

This program and procedures apply in its entirety to all Gallant Builders LLC (Gallant) projects unless a variance is granted by the Gallant Safety Director.

III. INTRODUCTION

Crystalline silica is a basic component of soil, sand, granite and many other minerals. Quartz is the most common form of crystalline silica. All materials containing silica can result in the presence of respirable silica particles when chipping, cutting, drilling or grinding takes place.

Silica exposure occurs through inhalation of silica containing particles and occurs through many construction and general industry methods. The most severe exposures generally occur during abrasive blasting with sand to remove paint and rust from bridges, tanks, concrete structures and other surfaces.

Other activities that may result in sever silica exposure include jack hammering, rock/well drilling, concrete mixing, concrete drilling, brick and concrete cutting/sawing, tuck pointing and tunneling operations. Exposure to excessive silica dust over long periods of time can result in silicosis.

This Silica Dust Safety Program applies to all Gallant projects and employees who are expected to be exposed to silica dust through the methods outlined above; or through other means, which are determined by their supervisor.

IV. RESPONSIBILITIES

Environmental Health & Safety (EHS)

The Gallant Safety Director provides program oversight and consultation to Gallant Superintendent's regarding potential risks, exposure prevention and training relating to silica dust exposures.

Conduct building/material assessments for silica containing materials and perform employee silica hazard assessments/monitoring upon request.

Ensure the applicable components of the Silica Dust Safety Program are available to all affected employees.

Provide applicable training to employees expected to work in, or with, building materials where there is a

potential risk for silica exposure.

SUPERINTENDENTS AND SUBCONTRACTOR FOREMAN
Gallant Superintendents and subcontractor foreman who supervise personnel with responsibilities to work in areas where there is a risk of exposure to silica dust, must ensure employees are properly trained on the applicable contents of the Silica Dust Safety Program and are provided appropriate personal protective equipment (PPE) when conducting such work.

AUTHORIZED PERSON
Employees working in areas where there is an identified risk of silica dust exposure must be properly trained on all applicable elements of the Silica Dust Safety Program; and be provided and utilize the appropriate PPE for the task being performed.

V. DEFINITIONS

The following definitions are provided to allow for a better understanding of the Silica Dust Safety Program.

Authorized Person - An employee who has received proper training and exposure monitoring to safely work with silica containing materials.

Crystalline Silica - Naturally occurring component in earth soils, sand, granite and many other minerals resulting in many building materials containing silica.

Exposure Assessment -The initial determination to find if any employee may be exposed to lead at or above the permissible exposure level. Until the assessment is completed, employees shall take all the precautions necessary to maintain exposures below the PEL.

HEPA - High Efficiency Particulate Air. A filtering system capable of trapping and retaining at least 99.97% of all particles of 0.3 micron in diameter and larger.

Permissible Exposure Limit (PEL) - the OSHA limit for silica dust exposure. It is set at 50µg/m3, averaged over an 8-hour workday, as a TWA.

Silica Containing Material - Any material, which has the potential to contain silica at levels, which may pose a hazard to employees when the material is manipulated to create airborne particles

Silicosis - A lung disease caused by inhalation of silica dust. Silica dust can cause fluid buildup and scar tissue in the lungs that cuts down the ability for the lungs to fully function. The disease is not curable, but can be prevented through the use of protective systems.

VI. MATERIAL ASSESSMENT

Any time there is a potential for silica containing materials to be involved in a project, sources of silica must be assessed prior to disturbing. The Gallant Safety Director or an authorized contractor can perform

building material assessments to determine silica content in materials.

Crystalline silica occurs naturally in the earth's crust and is a basic component of sand, concrete, brick, asphalt, granite, some blasting grit and wall spackling materials.

Employees can be exposed to silica when conducting activities such as

- Abrasive blasting
- Jack hammering
- Concrete crushing
- Hoe ramming
- Rock drilling
- Mixing of concrete or grout
- Concrete drilling
- Sawing concrete or bricks
- Chipping or scarifying concrete
- Rock crushing
- Moving/dumping piles of concrete, rock or sand
- Demolition of concrete or brick
- Using coatings containing silica
- Removing coatings containing silica

If airborne silica is expected to be generated during the project, Gallant EHS shall be contacted to conduct exposure monitoring and ensure all safety precautions are followed to minimize exposure to airborne silica dust.

VII. EXPOSURE MONITORING

INITIAL EXPOSURE MONITORING:
Employees expected to come in contact/work with silica containing materials where there is a risk of exposure through inhalation of dust should develop an exposure monitoring program.

Initial exposure monitoring should be conducted by Gallant EHS to quantitatively evaluate the exposure to airborne silica.

Exposure monitoring should be conducted on any employee exposed to airborne silica dust as levels may vary based on job duty within a project. For example, the employee performing concrete cutting vs an employee providing supervision during the work.

PERIODIC EXPOSURE MONITORING
Whenever silica exposure levels are greater than, or equal to the Permissible Exposure Level (50µg/m3), periodic exposure monitoring is required. It is the responsibility of the affected subcontractor to work with Gallant EHS and develop a periodic exposure monitoring schedule.

The frequency of exposure monitoring should be as follows:

MEASURED CONCENTRATION:

MONITORING FREQUENCY:

Permissible Exposure Level – 50 µg/m3 Annual

Exposure monitoring is not required by every employee at risk of airborne lead exposure. Enough sampling must be done to enable the employee's exposure level to be reasonably represented.

TERMINATION OF EXPOSURE MONITORING:
Periodic exposure monitoring may be discontinued if results from two consecutive sampling periods taken at least 7 days apart show that employee exposure is below the PEL.

SAMPLING METHODS
Personal exposure monitoring will be conducted using an approved NIOSH method. Monitoring records shall include the following.

The date, number, duration, location and results of each of the samples taken, including a description of the sampling procedure used to determine representative employee exposure where applicable.

- A description of the sampling and analytical methods used.
- The type of respiratory protective devices, if any.
- Name and job classification of the employee monitored.
- Any environmental variables that could affect the measurement of the employee exposure.

REPORTING OF EXPOSURE MONITORING RESULTS
Gallant EHS will notify the superintendent/supervisor of exposure monitoring results within as soon as the final laboratory analysis is completed. The superintendent/supervisor must provide this information to the affected employee(s) within 5 working days.

If levels are measured during the exposure monitoring exceeding the PEL, the EHS report will include steps and controls to reduce exposure to below the PEL.

Follow up exposure monitoring may be necessary if engineering or administrative controls are put in place to reduce hazardous exposures.

VIII. EXPOSURE CONTROL

Project planning

Prior to projects taking place Gallant EHS reviews planning documents to account for potential exposures to hazardous materials, including silica.

Gallant EHS can conduct material assessments to make determinations if there are any silica containing materials, which may be impacted by the project.

During the planning process, any silica containing materials are addressed and methods for exposure

control are provided prior to work beginning.

If silica containing materials are to be disturbed during the project, the appropriate exposure control methods will be recommended by Gallant EHS.

ADMINISTRATIVE / ENGINEERING CONTROLS
Where silica exposures at or above the Permissible Exposure Limit have been documented, or are expected, the appropriate engineering or administrative controls will be implemented, where feasible.

Follow-up exposure monitoring may be necessary when administrative or engineering exposure controls are utilized.

TYPICAL CONTROLS MAY INVOLVE:

- Substituting non-silica containing materials for use while abrasive blasting
- Alternative methods such as pre ordering grout already mixed instead of on-site mixing in bulk
- Local exhaust ventilation
- General ventilation
- Vacuum methods with HEPA filters
- Distance
- Dust control products
- Containment
- Use of water to keep dust down
- General work practices such as good housekeeping, worker rotation, development of specific SOPs to minimize exposure

PERSONAL PROTECTIVE EQUIPMENT (PPE)
In addition to administrative/engineering controls, employees may be required to wear specific PPE during the disturbance of silica containing materials and/or when airborne silica is present. The level of protection will depend on the task being conducted and the tools being utilized to complete the task.

RECOMMENDED PPE WILL TYPICALLY INCLUDE:

- Respiratory Protection
- Disposable or reusable work clothing to keep from spreading the dust or bringing the dust home
- Leather gloves
- Safety glasses or goggles
- Face shield
- Boot covers or rubber boots

The following table provides recommended respiratory protection levels based on the measured or anticipated exposure levels:

Respirator	Protection Factor	Typical Silica Activity
N95	Less than 50 µg/m3	- Used on voluntary basis to control low exposures
Half-face with HEPA filters	50 – 500 µg/m3	- Housekeeping (wet method) - Saw cutting (wet method) - Drilling concrete (wet method) - Power tools with dust collection - Equipment operating with open cab
Full-face with HEPA filters	500 – 5,000 µg/m3	- Chipping concrete - Jack Hammering - Power tools without dust collection - Mixing grout in bulk - Vacuum abrasive blasting
SCBA	Above 5,000 µg/m3	- Abrasive blasting

IX. HOUSEKEEPING & HYGIENE FACILITIES

In areas where silica containing dust may be present, all surfaces must be maintained free from accumulations of dust to minimize potential silica exposure. Dust and other silica containing debris must be removed from the work area as soon as possible.

Acceptable method of silica dust removal includes the use of HEPA vacuum or wet methods such as wet mopping.

Unacceptable methods of silica dust removal include dry sweeping, vacuum cleaners, shop vacuums, and compressed air.

Follow all recommended procedures and utilize recommended PPE during silica containing debris cleanup activities.

Where silica containing materials are used, impacted, or being removed; the following requirements must be met.

- PPE should be removed upon work completion and disposed of after each use.
- Employees must wash hands and are recommended to shower prior to leaving work.
- Ensure contaminated PPE, including footwear is not worn outside the work areas.

X. MEDICAL SURVEILLANCE

Employees exposed to silica levels above the Permissible Exposure Limit (50 µg/m3), or any employee working with silica who develops signs/symptoms of excessive exposure, should be enrolled in the Medical Surveillance Program.

All medical surveillance will be performed by a licensed healthcare provider and results must be provided the affected employee and their supervisor within 15 days of the assessment.

The medical surveillance program consists of baseline examination and chest X-ray.

Employees enrolled in the medical surveillance program should be examined annually to track any changes as a result to exposure to silica dust.

XI. TRAINING AND RECORDKEEPING

Hazard Communication training is required by all Gallant employees and should be conducted initially upon hiring. Additional information by contacting Gallant EHS.

Silica Awareness Training is available from Gallant EHS and must be offered to affected employees prior to working with silica and annually thereafter.

Silica awareness training should include the following:

- Information about the potential health effects and symptoms of exposure to respirable silica
- Safety data sheets for silica, quartz, and applicable products containing silica
- The purpose and set up of regulated areas to mark the boundaries of work areas containing silica dust
- The use of engineering controls, work practices, good housekeeping and PPE to control exposure to silica
- Use and care of PPE
- Expected exposures to silica dust
- Exposure monitoring process
- Respiratory protection training, medical clearance, and quantitative fit testing is required under the Respiratory Protection Program. Contac Gallant EHS for additional information regarding enrollment in the program.
- The supervisor is required to maintain all training, medical surveillance, and exposure monitoring results.

XII. SIGNAGE

In areas where exposure to silica dust may exceed the PEL the following type of signage must be in place to warn employee of hazards.