Silica, Lead, Asbestos
Inhalation, Ingestion and Absorption Hazards

(rev 7-2017, 12-2018)

23.1 PURPOSE

To insure control measures are in place to protect employees who may be exposed to any hazardous contaminants in their work areas that might exceed the permissible exposure limits established by OSHA for that contaminant.

23.2 GENERAL

Personnel involved with operations and maintenance activities in areas subject to high levels of hazardous contaminants including silica, lead, and asbestos may become exposed to levels in excess of the Permissible Exposure Limit (PEL)

23.2.1 An exposure monitoring assessment, objective data, and/or Table 1 for silica will be reviewed when the PEL can reasonably be expected to be exceeded. Exposure assessments may be supplied by the client and/or determined by T.A. Woods Company. Information will be updated as necessary.

23.2.2 Information gathered by clients from such evaluations will be provided to T.A. Woods Company.

23.3 METHODS OF CONTROL

23.3.1 Airborne contaminants created through installation, maintenance, service or housekeeping tasks will be mediated through the hierarchy of engineering controls, work practices, and PPE.

23.3.2 Work areas where concentrations can reasonably be expected to exceed the PEL. will be defined as regulated areas and should be demarcated through the use of signage and barriers.

23.3.3 No personnel will be directed to work in any area subject to elevated levels of contaminants without the use of engineering controls and/or administrative controls, and/or PPE

23.3.4 Upon receipt of pertinent monitoring results, objective data, or other as approved by OSHA, a determination should be made as to the extent of controls necessary including PPE necessary to protect the workers and accomplish the tasks safely.

23.3.5 Employees cannot eat, drink, smoke, chew gum or apply make-up in a controlled areas.

23.4 PERSONAL PROTECTIVE EQUIPMENT (PPE)

23.4.1 Employees will be medically evaluated, fit tested and trained in accordance with 29CFR 1910.134 and T.A. Woods Company's Respiratory Protection Program, prior to issue and use of respirators.

23.4.2 Protective clothing including disposables will be provided as necessary.

23.4.3 Eye and hand protection are mandated for all tasks. Other PPE will be assigned as necessary.

23.5 PERSONAL HYGIENE

23.5.1 All employees will wash their hands and face prior to breaks and meals.

23.5.2 If required, employees will shower at the end of the work shift.

23.5.3 Disposable clothing must be bagged and disposed of properly.

23.5.4 Respirators will be maintained in accordance with manufacturer's instructions.

23.6 SILICA

The purpose of this plan is to identify and control exposure of T.A. Woods Company employees to respirable crystalline silica dust in accordance with 29 CFR 1926.1153.

23.6.1 Compliance with silica standards are initiated with Competent Person assessing silica generated tasks inclusive of tasks, tools and housekeeping.

23.6.2 An initial risk assessment will be conducted for all work-related tasks where employees may experience Silica exposure. This includes employees engaged in Silica-generating tasks, employees in the vicinity of Silica-generating tasks by others, and housekeeping tasks that may disturb Silica.

The assessment will be based on exposure without the use of controls. For tasks and/or areas where exposure may reasonably be expected to reach or exceed the Action Level, steps must be taken to protect employees.

a. Exposure Limits
The standard requires employee exposure to be maintained below the PEL. Where, after instituting feasible engineering controls and work practices, exposure remains above the PEL, respiratory protection is required.

Silica Generating Tasks – Controls

i. Task Assessment

For each Silica-generating task, where exposure may be at or above the Action Level, engineering controls and/or work practices must be in place. When not sufficient to reduce exposure, then in addition suitable respiratory protection must be instituted.

Three methods of assessing exposure for each task will be reviewed and 1 (one) method will be specified on the Exposure Control Plan along with associated support documents.

I. Table 1 of the Silica standard: a list of tasks and associated controls which, if fully and properly implemented, are deemed to maintain exposure below the PEL without further assessment noting in some instances controls include respiratory protection.

II. Performance Option: use of any combination of air monitoring data or Objective Data sufficient to accurately characterize employee exposure. Objective Data must reflect the same or higher exposure potential as the task being

performed. Objective Data documentation must specify its source, base material worked on, test protocol, and results, a description of the task being performed, and any other relevant information.

III. Scheduled Monitoring Option: personal breathing zone air samples that establish exposure for a "shift + task + work area". Representative sampling is permitted noting sampling is performed on the highest exposure employee(s). Test records will contain date of measurement, the task, sampling and analytical methods, identity of laboratory performing analysis, PPE worn by employees tested, and the name of the employee. Testing frequency shall be performed as follows:

1. If initial monitoring indicates employee exposure below Action Level, monitoring may be discontinued for those employees whose exposures are represented by such monitoring.

2. Where the most recent exposure monitoring indicates employee exposures are at or above Action Level but at or below PEL, the monitoring will be repeated within six months of the most recent monitoring. Note that if exposure is above PEL, additional controls must be implemented to reduce exposure below PEL.

3. Where the most recent exposure monitoring indicates employee exposures are above PEL, the monitoring shall be repeated within three months of the most recent monitoring. In addition, controls must be implemented to reduce exposure below the PEL

4. Where the most recent (non-initial) exposure monitoring indicates that employee exposures are below the Action Level, the monitoring will be repeated within six months of the most recent monitoring until two consecutive measurements, taken seven or more days apart are below the Action Level, at which time monitoring may be discontinued for those employees whose exposures are represented by such monitoring.

23.6.3 Written Exposure Control Plan (ECP) will be in place to identify potential sources of employee exposure to respirable crystalline silica dust (silica) generating and/or disbursement tasks.

The ECP will specify appropriate controls including engineering, work practices, and the use of PPE where exposure may exceed PEL

Exposure Control Plan design must include: company name, Competent Person, description of tasks, control description, housekeeping, and procedures for restricting access to work area. *See Appendix A*

Objective Data supplied by the manufacturer will be included with the Exposure Control Plan. Objective data will be specific to tool manufacturer (noting in most cases this will be for tools with built-in extraction systems or retrofitted with extraction and vacuum systems not Table 1 compliant). This Objective Data supporting compliance will be a component of the ECP.

If utilizing Scheduled Monitoring Option, all associated data must be included in the ECP.

If **Table 1** as cited in the Exposure Control Plan, all components of engineering and work practices and PPE must be followed to be complaint. Documents supporting compliance will be a component of the ECP. As of June 2017, TAW will abide by Table 1 compliance as a general guideline. Alternative controls must be approved by TAW Safety/HR.

Respiratory Protection selection and use will comply with T.A. Woods Company's Respiratory Protection policy.

For Silica exposures up to ten time the PEL, an APF10 respirator with a NIOSH N95 filter rating shall be used. For Silica exposure between ten and twenty times the PEL, an APF 25 respirator with NIOSH N100 filter rating will be used.

Frequency of Respirator Use – Tracking
A roster will be maintained of the total number of days, regardless of duration of use per day, each employee is required to wear a respirator during a 12-month period. *See Appendix C*

23.6.4 Medical Surveillance
An assessment will be made as to the frequency of an employee's N95 respirator use. If the employee is expected to wear or does wear a N95 respirator for a period of 30 days within a year's time, a medical examination will be made available at no cost. A medical examination

will continue to be offered at least every three years or more frequently if recommended by a physician or other licensed health care professional to each employee who continued to meet the thirty-day respirator limit.

a. Medical examination requirements:
   - Medical and work history
   - Physical examination
   - Chest x-ray
   - Pulmonary function test
   - Testing for latent tuberculosis
   - Other tests deemed appropriate by PLHCP

b. Documents provided by T.A. Woods Company:
   - Copy of the Silica standards
   - Description of employee's duties as related to silica exposure
   - Description of employee's levels of silica exposure
   - Description of PPE to be used by employee and length of time previously and anticipated use
   - Information from previous medical examinations

c. PLHCP's medical report to employee and company:
   - Explanation to the employee the results of the medical examination and a written medical report
     within 30 days of the examination to include: statement of the results of the medical exam, recommended limitations on use of respirators;
     recommended limitations on Silica exposure;
     if chest x-ray is classified as 1/0 or higher or if referral to a specialist is otherwise deemed.
   - T.A. Woods Company will obtain a written medical opinion by the PLHCP and provide the employee a copy within 30 days of the medical examination to include: date of the examination, statement that examination has met the requirements of the standard; recommendations on limitations of respirator use; if the employee provides written authorization recommended limitations on Silica exposure and/or statement if employee should be examined by a specialist.

   - Specialist will be made available to an employee within 30 days of the receipt of the medical opinion if referred by PLHCP.

23.6.5 Task List

Generalized tasks list:

- Cutting or slicing using handheld saws or grinders
- Core drilling using rig mounted and handheld drill and saws
- Drilling using handheld and stand-mounted drills including impact and rotary hammer drills
- Breaking, chipping, chiseling using jackhammer and powered chipping tool
- Excavating and grading

Specialized tasks should not be performed before consulting the Competent Person

General housekeeping tasks will be completed using engineering controls and work practices implemented to minimize Silica exposure.

These include:

- Minimize accumulation of residual dust through periodic clean up with HEPA filtered vacuum or wet sweeping. Do not dry sweep.
- Do not used compressed air to clean clothing or other surfaces.
- Clean up immediately after water-based activities (ex wet coring) while slurry is wet to avoid secondary Silica exposure from dry slurry. Disposal of slurry is in accordance with local or site requirements.
- Use vacuums with disposable liners which can e tied off and disposed.
- Leave exposed clothing at the work site.

Additional Requirements for tasks performed indoors or enclosed areas will require the utilization of exhaust as needed to minimize accumulation of airborne dust. For tasks performed utilizing wet dust suppression method, apply water at flow rates sufficient to
Minimize the release of visible dust

23.6.6 Bystander Exposure considered when a bystander-employee is not engaged in a Silica-generating task, but will be working in the vicinity of the task, or in a location where visible Silica dust is present, employee should be instructed to consult with their supervisor or Competent Person. Very-short term exposure such as walking through an area or retrieving equipment, etc.) is exempt.

a. Competent Person and/or supervisor will identify the company Silica-generating task and exposure. If the task is being performed in accordance with the ECP and associated exposure is below the PEL

(without a respirator), no additional action is required. The bystander-employee should work an abbreviated work schedule if done so by exposed employees. If the exposure is above the PEL, for the engaged employee, the Competent Person will address as necessary by:

- Providing the Bystander-employee with a comparable Respirator
- Remove the Bystander-employee from the area during Silica generating tasks
- If data is available to accurately assess the exposure, determine the period of time the Bystander-employee can Remain in the area without exceeding PEL.

3rd Party generated Silica Exposure entails the Supervisor/Competent Person consulting with the 3rd party, host employer, general contractor, and/or owner to determine if the task is being performed in a manner which keeps exposures below the
PEL without a respirator. If exposure is above the PEL, the supervisor/Competent Person will:

- Provide the Bystander with a comparable respirator
- Remove they Bystander from the area while Silica-generating tasks are being performed
- If the 3rd party provides data to accurately assess the exposure, determine the period of time the Bystander can remain in the area without exceeding the PEL.

23.6.7. Compliance Roles

Competent Person must be designated based on knowledge and ability to fulfill responsibilities included in the written Exposure Control Plan. The Competent Person is a T.A. Woods employee, normally in a supervisory role, who is capable of identifying existing and foreseeable silica hazards and who has absolute authority to take prompt corrective measures to minimize or eliminate hazards.

Competent Person's responsibilities include:

-Identifying bystander exposure and notification
-Restriction of access to areas of silica exposure
-Recognition and evaluation of tasks and work areas where exposure over the PEL may occur
-Implementation of controls including engineering, administrative, PPE, barricading and similar

Supervisors who in most cases will serves as Competent Person will have knowledge of the Silica standards. Supervisors will ensure all employees are trained in the proper use of controls.

Employees are responsible for understanding the written Exposure Control Plan, basic standards, and applicable Safety Data Sheets, and fully and properly implementing all control requirements as contained in the ECP. Employees will immediately notify their supervisor and/or Competent Person, if different, if they have reason to believe excess is silica exposure is occurring or experience signs or symptoms of silica-related illness.

23.6.7 **Training** of employees on silica exposure in compliance with the OSHA Hazard Communication standard, 29 CFR 1910.1200 will take place. Training will ensure the employee can demonstrate an understanding of the following:

- Health hazards associated with exposure
- Specific tasks and/or areas in the workplace where exposure may occur
- Specific controls implemented to protect from expose

23.7 LEAD

The purpose of this plan is to identify and control exposure of T.A. Woods Company employees to Lead.

23.7.1 Specifications will be reviewed prior to the start of work. Information from the host employer, general contractor, or owner will be assessed to determine if Lead Containing Materials (LCM) are present.

23.7.2 The Competent Person, who normally will be the Supervisor, will conduct an initial risk assessment for work-related tasks and areas where employees may experience Lead exposure. Successive assessments will be conducted as necessary.

The assessment will be based on exposure without the use of controls. For tasks and/or areas where exposure may reasonably be expected to reach or exceed Action Level, controls will be implemented.

23.7.3 If LCM are detected or the possibility of LCM exists, work will cease until testing is conducted and results determine if PEL is exceeded.

23.7.4 **Written Exposure Control Plan (ECP)** will be in place to Identify potential sources of exposure to Lead through inhalation, absorption, or ingestion.

The ECP will specify appropriate controls including engineering, work practices, and the use of PPE where exposure exceeds PEL.

Exposure Control Plan design will include:
Company name, Competent Person, description of tasks, control description, housekeeping and procedures for restricting access to work area. *See Exhibit A.*

23.7.5 Medical Surveillance

If an employee is exposed to LCM, an initial medical evaluation may be conducted at the cost to T.A. Woods Company. As deemed necessary by a PLHCP, successive medical evaluations will be conducted.

23.7.6 Compliance Roles

Competent Person must be designated based on knowledge and ability to fulfill responsibilities included in the written Exposure Control Plan. The Competent Person is a T.A. Woods Company employee in a supervisory role, who is capable of identifying existing and foreseeable Lead hazards and who has absolute authority to take prompt and corrective measures to minimize or eliminate hazards.

Supervisor who is most cases will serve as the Competent Person will have knowledge of Lead exposure. Supervisors will ensure all employees are trained in the proper use of controls.

Employees are responsible for understanding the Exposure Control Plan, basic standards, and applicable Safety Data Sheets, and fully implanting all control requirements as contained in the ECP. Employees will immediately notify their supervisor and/or Competent Person, if different, if they have reason to believe Lead exposure is probably or has taken place.

23.7.7 Training of employees on lead exposure in compliance with the OSHA Hazard Communication standard, will take place. Training will ensure employees can demonstrate an understanding of the following:

- Health hazards associated with exposure
- Specific tasks and/or areas in the workplace where exposure may occur
- Specific controls implemented to protect from exposure

23.8 ASBESTOS

The purpose of this plan is to identify and control exposure of T.A. Woods Company employees to Asbestos exposure.

23.8.1 Specifications will be reviewed prior to start of work. Information from the host employer, general contractor, and owner will be assessed to determine the presence of Asbestos Containing Materials (ACM).

23.8.2 The Competent Person, who normally will be the Supervisor, will conduct an initial assessment for all work-related tasks and work areas where employees may experience Asbestos exposure. Successive assessments will be conducted as necessary.

The assessment will be based on exposure with the use of controls. For tasks and/or areas where exposure may reasonably be expected to read or exceed Action Level, steps will be taken to protect employees.

23.8.3 If ACM are detected or the possibility of ACM exists, all work will cease until testing is conducted and results reviewed to determine If PEL will be exceeded.

Licensed or certified abatement personnel will remediate the work area prior to onset or return to work tasks. Written reports will be maintained to support remediation of ACM.

23.8.4 Written Exposure Control Plan (ECP) will be in place to identify potential sources of employee exposure to Asbestos through inhalation or ingestion.

The ECP will specify appropriate controls including engineering, work practices, and the use of PPE where exposure exceeds the PEL.

Exposure Control Plan design will include:
See earlier reference in Silica and Lead. *See Exhibit A.*

23.8.5 Medical Surveillance
If an employee is exposed to ACM, an initial medical evaluation may be conducted at the cost to T.A. Woods Company. As deemed necessary by a PLHCP, successive medical evaluations will be conducted.

23.8.6 Compliance Roles

Competent Person must be designated based on knowledge and ability to fulfill responsibilities included in the written Exposure Control Plan. The Competent Person is a T.A. Woods Company employee in a supervisory role, who is capable of identifying

existing and foreseeable Asbestos hazards and who has absolute authority to take prompt and corrective measures to minimize or eliminate hazards.

Supervisor who in most cases will serve as Competent Person will have knowledge of Asbestos. Supervisors will ensure all employees are trained in the proper use of controls.

Employees are responsible for understanding the written Exposure Control Plan, basic standards, and applicable Safety Data Sheets, and fully implementing all control requirements as contained in the ECP. Employees will immediately notify their supervisor and/or Competent Person, if different, if they have reason to believe Asbestos exposure is probably or has taken place.

23.8.7 Training of employees on Asbestos exposure in compliance with the OSHA Hazard Communication standard will take place. Training will ensure employees can demonstrate an understanding of the following:

- Health hazards associated with exposure
- Specific tasks and/or areas in the workplace where exposure may occur
- Specific controls implemented to protect from exposure