GOOD PRACTICES FOR MANUFACTURING OF STONE BY FABRICATORS: WATER-INTEGRATED MACHINERY TOOLS AT THE FABRICATION PLANT

This task guidance sheet provides good practice guidance for processing (e.g., cutting, grinding and shaping) slabs containing crystalline silica using water-integrated CNC (Computer Numerical Control) machines, manual saw and manual tools. Use of this equipment significantly reduces the level of respirable crystalline silica.

ACCESS

Restrict access to the work area to authorised personnel only.

GENERAL

- Dry cutting, grinding or polishing stone surfaces (e.g., engineered stone, natural stone or porcelain) generate very high respirable crystalline silica levels. Properly designed water-integrated tools and machinery significantly reduce the level of respirable crystalline silica and should therefore be used for all fabrication processes.
- It is also advisable to use water curtains as a measure to reduce or eliminate the dust.

CNC MACHINES

- CNC (Computer Numerical Control) machining, is a manufacturing process in which pre-programmed computer software dictates the movement of factory tools and machinery. These machines are used for automatic initial cutting of slabs.
- Use CNC machines such as waterjet cutters and automated sawing machines.
- Keep CNC safety doors closed to prevent dust dispersal and to distance the operator from the dust source.

MANUAL TOOLS

These tools are used for manual fabrication processes (e.g., drilling, cutting and polishing slabs) after initial cutting. When working with manual tools the fabricator is very close to the dust source. Therefore:

- Use only water-integrated manual tools. If it is not possible to use water-integrated tools at the installation site, follow the instructions in task guidance sheet **2.2.36**, Installation of Countertops.
- Control water spray using guards or plastic flaps.
- Set air and water pressure to achieve minimum dust generation.
- Use a half face respirator with P3 filter.

MANUAL SAWS

Even when equipped with water integration, manual saws used for automatic initial cutting of slabs (e.g., bridge saws) are less recommended because:

- the operator is close to the dust source.
- there are no safety doors.
- they are less accurate and slower than CNCs.
- worker exposure to respirable crystalline silica is generally higher than with CNCs.

When working with manual saws always use a half face respirator with P3 filter.

EXAMINATION AND TESTING

- Visually check the equipment and water supply for signs of damage before every use.
- Make sure that the equipment and water supply operates correctly.
- Keep records of inspections for a suitable period of time which complies with national laws (minimum five years).
- Put in place measures to control the risk of bacterial growth within water sources used across site, focusing most on systems where water droplets will be generated.

SUPERVISION

- Have a system to check that control measures are in place and that they are being followed. Refer to task guidance sheet **2.3.3**.
- Employers should make sure that employees have all the means to perform the checklist given on the following page.

CLEANING AND HOUSEKEEPING

- Clean the equipment regularly according to the recommendations of the manufacturer.
- Clean slabs, floor and equipment (e.g., CNCs or manual saw) with low pressure wet hosing or wet sweeping.
- Change the water regularly if you have a closed water system (e.g., at the end of the day).
- Clean dry spillage with HEPA vacuum cleaning systems.
- **Do not clean up with a dry brush or using compressed air.**

TRAINING

- Give your employees information regarding the health effects associated with respirable crystalline silica.
- Provide employees with training on dust exposure prevention; checking controls are working and using them; when and how to use any respiratory protective equipment provided; and what to do if something goes wrong. Refer to task guidance sheet **2.3.4** and part 1 of the Good Practice Guide.

PERSONAL PROTECTIVE EQUIPMENT

- Refer to task guidance sheet **2.1.15** dedicated to personal protective equipment and to task guidance sheet **2.2.37** dedicated to Respiratory protective equipment for the slab industry.
- Water-integrated rotating tools generate respirable crystalline silica-contaminated water mist, which may be dispersed and inhaled. For this reason, respiratory protective equipment may be necessary even when using water-integrated tools.
- Indicate areas where personal protective equipment must be worn.
- Use disposable masks with P3 filters near CNC machines that are water-connected to exhaust ventilation systems, or half face respirators with P3 filters when fabricating with manual saws and wet manual tools in the fabrication plant or at the installation site.
- Risk assessment must be carried out to determine whether existing controls are adequate. If necessary, respiratory protective equipment (with the appropriate protection factor) should be provided and worn.
- Provide storage facilities to keep personal protective equipment clean when not in use.
- Replace respiratory protective equipment at intervals recommended by the supplier.

EMPLOYEE CHECKLIST

- ☐ Make sure the room is well ventilated and any water system is switched on and working.
- ☐ Use water-integrated machinery and tools to reduce the level of respirable crystalline silica.
- ☐ Don't use dry tools! Dry fabrication generates very high levels of respirable crystalline silica.
- ☐ Clean up spills straight away. Use vacuum or wet cleaning methods. Dispose of spills immediately.
- ☐ Look for signs of damage, wear or poor operation of any equipment used. If you find any problems, tell your supervisor.
- ☐ If you think there is a problem with your water system, ensure additional control measures are taken to reduce exposure to respirable crystalline silica while the problem persists.
- ☐ Use, maintain and store any respiratory protective equipment provided in accordance with instructions.
- ☐ Use appropriate respiratory protective equipment even when using wet machinery and tools.
- ☐ Check and implement the measures of controlling the risk of bacterial growth within water sources used across site, focusing most on systems where water droplets will be generated

This guidance sheet is aimed at employers to help them comply with the requirements of workplace health and safety legislation, by controlling exposure to respirable crystalline silica.

Following the key points of this task guidance sheet will help reduce exposure.

Depending on the specific circumstances of each case, it may not be necessary to apply all of the control measures identified in this sheet in order to minimise exposure to respirable crystalline silica. i.e. to apply appropriate protection and prevention measures. This document should also be made available to persons who may be exposed to respirable crystalline silica in the workplace, in order that they may make the best use of the control measures which are implemented.

This sheet forms part of the Good Practices Guide on silica dust prevention, which is aimed specifically at the control of personal exposure to respirable crystalline silica in the workplace.