

GOOD PRACTICES FOR GRINDING OF MINERALS/RAW MATERIALS

This sheet gives guidance on dry grinding operations for products containing crystalline silica.

ACCESS

Restrict access to the work area to authorised personnel only.

DESIGN AND EQUIPMENT

- Ensure the grinding installation is fit for purpose and that it is well maintained.
- Use wet milling processes wherever possible, rather than dry grinding operations. This will greatly reduce airborne dust generation.
- Enclose grinding installations as much as possible and install them in well-ventilated buildings.
- Where necessary to prevent the escape of dust, grinding installations should be connected to a suitable dust extraction system, which is capable of extracting enough air to keep the relevant parts of the installation under negative pressure.
- Make arrangements for the dust-free discharge of the product from the grinding mill to other process equipment. Transfer points and subsequent plant should also be connected to a dust extraction system where necessary to prevent the escape of dust.
- Note that some parts of the system will operate at pressures above atmospheric. Provide good seals between different parts of the installation.
- Ensure all equipment is easily accessible for maintenance work.
- Provide ducts with sufficient inclination to avoid settling of product.
- Ensure minimal internal wear of ducts by using ones of adequate diameter; by selecting wear resistant materials and by avoiding sharp bends. Alumina is a good material to use to line ducts that are subject to high wear.
- Control rooms should have their own clean air supply and they should be physically separated from dusty areas. Where necessary they should be fitted with forced air filtration and maintained under positive pressure to prevent the ingress of dusty air.
- Put in place control systems to avoid overloading the grinding mills.

- Where possible, provide automated sampling, particle size analysis, telemetry and CCTV systems to reduce the amount of time operators need to spend in dusty/noisy areas.



MAINTENANCE

- Ensure equipment used in the task is maintained as advised by the supplier/installer in efficient working order and in good repair.
- Replace consumables (filters etc.) in accordance with the manufacturer's recommendations.

EXAMINATION AND TESTING

- Visually check the equipment at least once per week for signs of damage or, if it is in constant use, check it more frequently. If used infrequently, then check it before each use.
- Obtain information on the design performance of the dust suppression and/or extraction equipment from the supplier. Keep this information to compare with future test results.
- Have the extraction equipment examined and tested against its performance standard at least once each year.
- 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.

CLEANING AND HOUSEKEEPING

- Clean your workplace on a regular basis.
- **DO NOT clean up with a dry brush or using compressed air.**
- Use vacuum or wet cleaning methods.
- Develop written safe working procedures for dealing with large spillages of dusty material.

TRAINING

- Give your employees information on the health effects associated with respirable crystalline silica dust.
- 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.

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 below.

PERSONAL PROTECTIVE EQUIPMENT

- Refer to task guidance sheet **2.1.15** dedicated to Personal Protective Equipment.
- 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 its suppliers.

EMPLOYEE CHECKLIST

- | | | | |
|--|---|---|---|
| <input type="checkbox"/> Make sure the grinding installation is working properly. | <input type="checkbox"/> Dust clouds may suggest a problem with the system. Investigate them immediately. | <input type="checkbox"/> Clear up spills straight away. Use vacuum or wet cleaning methods. Dispose of spills safely. | <input type="checkbox"/> Check and implement the measures to control the risk of bacterial growth within water sources used across site, focusing most on systems where water droplets will be generated. |
| <input type="checkbox"/> Make sure all dust extraction systems are switched on and working correctly before starting work. | <input type="checkbox"/> If you think there is a problem with the plant or with your dust control equipment, ensure additional control measures are taken to reduce exposure to respirable crystalline silica while the problem persists. | <input type="checkbox"/> Clean up control rooms using vacuum or wet cleaning techniques. | |
| <input type="checkbox"/> Look for signs of damage, wear or poor operation of any equipment used. If you find any problems, tell your supervisor. | | <input type="checkbox"/> Use, maintain and store any respiratory protective equipment provided in accordance with instructions. | |

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. Specifically, this sheet provides good practice advice on dust control for grinding operations.

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 dust in the workplace.