

GOOD PRACTICES FOR BAG EMPTYING – SMALL BAGS

This sheet provides advice on emptying of small bags of products containing crystalline silica in a production unit, particularly those containing dry materials.

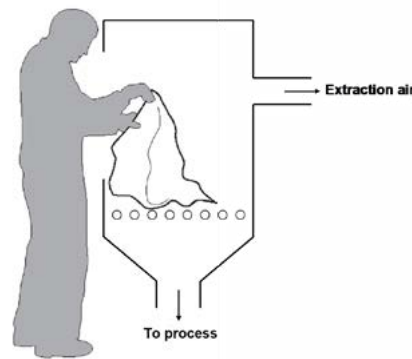
ACCESS

Restrict access to the work area to authorised personnel only.

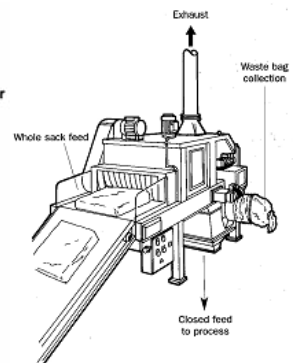
DESIGN AND EQUIPMENT

- Ensure bag emptying equipment is fit for purpose.
- Enclose the bag emptying equipment as much as possible and keep it under negative pressure by using a local exhaust ventilation system – refer to task guidance sheet **2.1.13**.
- For small bags, the use of automatic or semi-automatic bag dumping stations is recommended for emptying the bags.
- Ensure workers tip the bag contents gently – never dump them. Bags should be emptied with the open end facing away.
- Bag crushing creates a lot of dust. Workers should roll up empty bags within the extraction zone.
- In order to dispose of empty bags without creating dust, drop them into a large plastic sack supported and held open by a metal frame. When it is full, seal the sack and dispose of it in a suitable waste skip. **DO NOT let the waste sack overflow.** Alternatively, use a compactor equipped with a dust extraction system or which is fully enclosed.
- Bag emptying equipment should be connected to a suitable dust arrestment system (e.g. bag filter/cyclone). A permanent dust extraction system is preferred, though a stand-alone mobile unit is acceptable.
- Bag emptying equipment should be designed for easy access to all parts for maintenance, unblocking and cleaning. Access panels should be interlocked or have trip devices where necessary to prevent persons accessing dangerous parts of machinery.

- Consider providing mechanical/pneumatic assistance with bag handling.
- Where possible keep bag emptying equipment away from doors, windows and walkways to prevent draughts affecting the performance of dust extraction systems.
- Provide a clean air supply to the workroom to replace extracted air.



Manual Bag Emptying



Automated Bag Emptying

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.

GUIDANCE FOR EMPLOYERS ON CONTROLLING EXPOSURE TO RCS IN THE WORKPLACE

 **EXAMINATION AND TESTING**

- Visually check the cleaning equipment for signs of damage at least once per week 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 dust suppression and/or extraction equipment from the supplier. Keep this information to compare with future test results.
- 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.
- Deal with spills immediately.
- **DO NOT clean up with a dry brush or using compressed air.**
- Use vacuum or wet cleaning methods.

 **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 ventilation system is working properly. Make sure the dust extraction system is switched on and is working correctly before starting work. | <input type="checkbox"/> If you think there is a problem with your dust control equipment, ensure additional control measures are taken to reduce exposure to respirable crystalline silica dust while the problem persists. | <input type="checkbox"/> Use handling aids when available. | <input type="checkbox"/> Use, maintain and store any respiratory protective equipment provided in accordance with instructions. |
| <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"/> Clear up spills straight away. Use vacuum or wet cleaning methods. | <input type="checkbox"/> 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. |
| | | <input type="checkbox"/> Clean up work rooms using vacuum or wet cleaning techniques. | |

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 during small bag emptying 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.

GOOD PRACTICES FOR BAG EMPTYING – BULK BAGS

This sheet provides advice on how to empty bulk bags (big bags) of products containing crystalline silica in a production unit, particularly those containing dry materials.

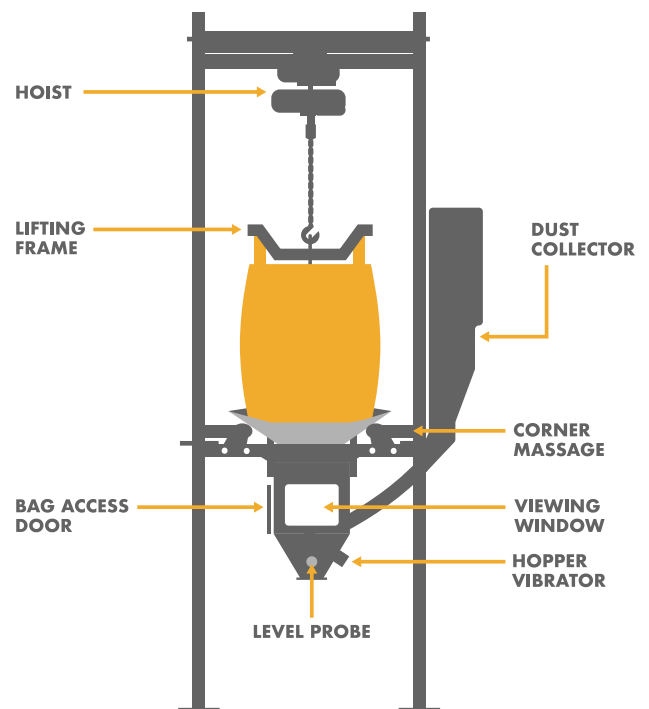
ACCESS

Restrict access to the work area to authorised personnel only.

DESIGN AND EQUIPMENT

- Ensure bag emptying equipment is fit for purpose.
- Enclose the bag emptying equipment as much as possible and keep it under negative pressure by using a local exhaust ventilation system – refer to task guidance sheet **2.1.13**.
- **Manual bag cutting is not recommended without the use of personal protective equipment.**
- For single trip bulk bags without inner liner, use bag emptying equipment featuring pyramidal cutting knives and a rubber membrane to seal off the bag bottom.
- For multiple trip bulk bags, a discharge system with vibrator plate should be used and this should be equipped with local exhaust ventilation.
- Where multiple trip bulk bags are used, which have inner liners, special dust-free outlet connection systems are available which have double ring seals and fully enclosed product discharge.
- In order to dispose of empty bags without creating dust, do not manually compress the empty bags. Instead, drop them into a large plastic sack supported and held open by a metal frame. When it is full, seal the sack and dispose of it in a suitable waste skip. **DO NOT let the waste sack overflow.** Alternatively, use a compactor equipped with a dust extraction system or which is fully enclosed.
- Bag emptying equipment should be connected to a suitable dust arrestment system (e.g. bag filter/cyclone)
- Bag emptying equipment should be designed for easy access to all parts for maintenance, unblocking and cleaning. Access panels should be interlocked or have trip devices where necessary to prevent persons accessing dangerous parts of machinery.

- Consider providing mechanical/pneumatic assistance with bag handling.
- Where possible keep bag emptying equipment away from doors, windows and walkways to prevent draughts affecting the performance of dust extraction systems.
- Provide a clean air supply to the workroom to replace extracted air.



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 cleaning equipment for signs of damage at least once per week 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 dust suppression and/or extraction equipment from the supplier. Keep this information to compare with future test results.
- 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.
- Deal with spills immediately.
- **DO NOT clean up with a dry brush or using compressed air.**
- Use vacuum or wet cleaning methods.

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 sheets **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 ventilation system is working properly. Make sure the dust extraction system is switched on and is working correctly before starting work. | <input type="checkbox"/> If you think there is a problem with your dust control equipment, ensure additional control measures are taken to reduce exposure to respirable crystalline silica dust while the problem persists. | <input type="checkbox"/> Clear up spills straight away. Use vacuum or wet cleaning methods. | <input type="checkbox"/> 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. |
| <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 handling aids when available. | <input type="checkbox"/> Clean up control rooms using vacuum or wet cleaning techniques. | |
| | | <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 during bulk bag emptying 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.

GOOD PRACTICES FOR BULK ROAD TANKER LOADING

This activity covers bulk loading operations for road tanker transport of products containing crystalline silica, particularly those containing dry materials.

ACCESS

Restrict access to the work area to authorised personnel only.

DESIGN AND EQUIPMENT

- Ensure the loading equipment is adequate and well maintained.
- Provide a loading bellow chute capable of extracting enough air to keep the loading point under negative pressure.
- The loading bellow should be connected to a suitable dust extraction system (e.g. a bag filter/cyclone).
- Make arrangements to discharge the air, which is displaced during loading of bulk products, so that it can not escape from the vessel.
- Provide where possible closed and depressurised transport equipment with adequate de-dusting equipment.
- Where possible, incline de-dusting ducts so as to avoid settling of dust. Ensure minimal internal wear on ducts by selecting wear resistant materials, using adequate duct dimensions and by avoiding sharp bends.
- Design ducts with appropriate internal diameter (increasing as one approaches the de-dusting system) in order to maintain adequate transport velocities and to prevent settling of dust.
- Try to avoid leakages as much as possible.
- Control cabins should have their own clean air supply, or may be fitted with forced air filtration.



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 cleaning equipment for signs of damage at least once per week 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.
- Keep records of inspections for a suitable period of time which complies with national laws (minimum five years).
- Put in place measures of controlling 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.

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 loading equipment is working properly. Make sure the dust extraction system is switched on and is working. | <input type="checkbox"/> If you think there is a problem with your dust control equipment, ensure additional control measures are taken to reduce exposure to respirable crystalline silica dust while the problem persists. | <input type="checkbox"/> Clear up spills straight away. Use vacuum or wet cleaning methods. | <input type="checkbox"/> 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. |
| <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 handling aids when available. | <input type="checkbox"/> Clean up any control cabin using vacuum or wet cleaning methods. | |
| | | <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 during bulk loading operations for road tanker transport.

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.

GOOD PRACTICES FOR BULK LOADING

This activity covers bulk loading operations for road (except road tankers), rail and water transport of crystalline silica containing materials particularly dry materials.

Task guidance sheet **2.2.3a** offers advice on loading of road tankers.

ACCESS

Restrict access to the work area to authorised personnel only.

DESIGN AND EQUIPMENT

- Ensure that all loading equipment is fit for purpose and well maintained.
- Appropriate techniques may include the use of conveyors, screw feeds, grabs, bucket elevators, hoppers, chutes and fill pipes.
- Enclose conveyors, chutes etc. as much as possible.
- Minimise the speed of descent of the material:
 - Minimise falling distances – design chutes etc. so that the material cascades. i.e. several short descents rather than one big one.
 - Install baffles inside long fill pipes.
 - Minimise slope angles in chutes, fill pipes etc.
- **DO NOT load flour products in the open air; enclosed systems must be used.**
- Loading facilities should be sheltered to prevent dust being generated by the wind, whilst also providing a good standard of through-ventilation.
- Control cabins should be well-sealed and have their own clean air supply. Where necessary, they should be equipped with forced air filtration and maintained under positive pressure.
- CCTV systems can be used to reduce the need for operators to visit dusty areas.
- See task guidance sheet **2.2.3a** entitled “Bulk Road Tanker Loading” for advice on loading of road tankers.

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 cleaning equipment for signs of damage at least once per week 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 ventilation equipment from the supplier. Keep this information to compare it with future test results.
- Keep records of inspections for a suitable period of time which complies with national laws (minimum five years).
- Put in place measures of controlling 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.
- Deal with spills immediately.
- **DO NOT clean up with a dry brush or using compressed air.**
- Use vacuum or wet cleaning methods.

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.
- Ensure that transport operators are provided with copies of loading procedures and training as necessary.

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.
- Indicate the need for respiratory protective equipment to be worn using appropriate pictogram signs.
- 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 loading equipment is working properly. | <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"/> Clear up spills straight away. Use vacuum or wet cleaning methods. | <input type="checkbox"/> 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. |
| <input type="checkbox"/> Make sure the ventilation system is switched on and is working. | <input type="checkbox"/> If you think there is a problem with your dust control equipment, ensure additional control measures are taken to reduce exposure to | <input type="checkbox"/> Use, maintain and store any respiratory protective equipment provided in accordance with instructions. | |
| <input type="checkbox"/> Wear respiratory protective equipment (e.g. a dust mask) in areas where this has been deemed necessary. | | | |

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 during bulk loading operations for road (except road tankers), railway and ship transport.

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.

GOOD PRACTICES FOR BULK ROAD TANKER UNLOADING (BLOWING OFF)

This activity covers the discharge of silica sand and flour products from a road tanker into a storage silo, particularly dry materials.

ACCESS

Restrict access to the work area to authorised personnel only.

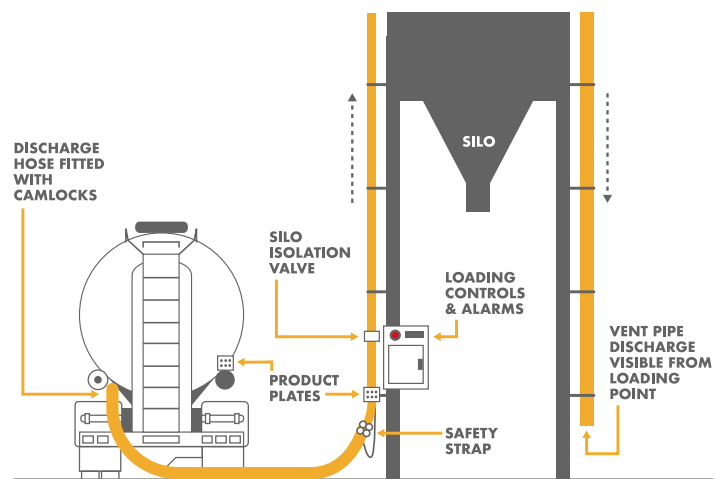
DESIGN AND EQUIPMENT

Road Tanker

- Limit the discharge rate to the design capacity of the receiving silo and dust extraction unit. Offloading pressures should be agreed with the silo operator.
- Tanker offloading pipes, connectors and seals must be designed to withstand the high air pressures and abrasion associated with blowing operations.
- Note that there will be a surge of air pressure as the last sand/flour is blown into a silo. Hence the need for constant supervision of offloading operations.

Customer silo

- Storage silos should be purchased only from reputable suppliers.
- Appropriate engineering design methods should be employed to ensure adequate structural strength.
- Engineering controls must be employed to prevent over-pressurisation of the silo while it is being filled. Ensure that the silos are equipped with pressure relief devices and high level alarms. They must also have dust extraction systems to remove and clean the displaced air.
- Silo dust extraction units must be fitted with filters that are appropriate to the particle size range of the product.
- Offloading pressures should be agreed with the tanker operator.
- Note that flour products have varying bulk density. Put in place procedures to ensure that silos are not overfilled.
- Silos should be equipped with a dust extraction system to prevent the emission of dust from the silo during tanker offloading.



- Pipework and ductwork should be designed to minimise shock losses (caused by bends, constrictions etc.); to minimise dead spots where material may accumulate and to facilitate easy clearing of blockages.
- Silo connection points should be located as close as possible to the delivery tanker parking area. This will eliminate the need for long lengths of flexible hose.
- Safe means of access should be provided to those parts of the silo requiring inspection and maintenance.

MAINTENANCE

- Maintain pipes/hoses, connectors and seals in good condition to reduce the likelihood of dust escaping during blowing operations.
- Dust extraction systems on silos must be maintained in accordance with manufacturers' instructions.

EXAMINATION AND TESTING

- A competent person should test the performance of dust extraction systems at least annually.
- Tanker drivers should check the condition of pipes/hoses and seals daily and obtain replacements as necessary.
- Any faults with the pipes/hoses/connectors and silo dust extraction systems must be reported as soon as possible so that remedial action can be taken.
- Put in place measures of controlling the risk of bacterial growth within water sources used across site, focusing most on systems where water droplets will be generated.

CLEANING AND HOUSEKEEPING

- The tanker offloading area should be kept clean and tidy.
- Clean your workplace on a regular basis.
- Deal with spills immediately.
- **DO NOT clean up with a dry brush or using compressed air.**
- Use vacuum or wet cleaning methods.

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

- Ensure procedures are in place to prevent overfilling of silos.
- Have a system to check that dust 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 check the effectiveness of control measures.
- Respiratory protective equipment (with the appropriate protection factor) may need to be worn when disconnecting the offloading pipe at the back of the tanker, when remedying any escape of dust or in the event control measures fail.
- Provide storage facilities to keep personal protective equipment clean when not in use. Replace this equipment at intervals recommended by suppliers.

EMPLOYEE CHECKLIST

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|--|--|--|---|
| <input type="checkbox"/> Tanker drivers must supervise their offloading operations at all times. | <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"/> Clean up spillages of sand and flour immediately, using wet cleaning methods. | <input type="checkbox"/> Use, maintain and store any respiratory protective equipment provided in accordance with instructions. |
| <input type="checkbox"/> Agree offloading pressures with the customer. | <input type="checkbox"/> If you think there is a problem with your dust control equipment, ensure additional control measures are taken to reduce exposure to respirable crystalline silica dust while the problem persists. | <input type="checkbox"/> Wear a dust mask when it is necessary to enter dusty areas in order to rectify any escape of dust, or in the event other control measures fail. | <input type="checkbox"/> 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. |
| <input type="checkbox"/> Check the condition of pipes, hoses and connectors daily. | | | |

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 advice on how to minimise the release of airborne dust when blowing off a road tanker of silica sand or flour.

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.

GOOD PRACTICES FOR BULK UNLOADING

This activity covers bulk unloading operations for road (except road tankers), rail and water transport of crystalline silica containing materials, particularly dry materials. Sheet **2.2.4a** offers advice on unloading of road tankers.

ACCESS

Restrict access to the work area to authorised personnel only.

DESIGN AND EQUIPMENT

- Ensure that all unloading equipment is fit for purpose and well maintained.
- When discharging dry products, install dust extraction systems in areas where dust may be emitted into the workplace air.
- Consider isolating the discharge area and keeping it under negative pressure. Alternatively, provide control rooms which are sealed and kept under positive pressure.
- The truck driver should remain in the cab of the truck during unloading with the doors and windows closed. Where possible, a HEPA filter should be incorporated in the cab's HVAC system.
- Design the size and shape of receiving hoppers so that they are appropriate to the capacity of the road haulage vehicles, rail wagons, grabs etc feeding them.
- Prepare offloading procedures. Ensure that hoppers and discharge areas are clearly labelled with their contents.
- **DO NOT discharge flour products in the open air; enclosed systems must be used.**
- See task guidance sheet **2.2.4a** entitled "Bulk Road Tanker Unloading" for advice on blowing off dry products from road tankers.

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 cleaning equipment for signs of damage at least once per week 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 dust extraction equipment from the supplier. Keep this information to compare it with future test results.
- 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.
- Deal with spills immediately.
- **DO NOT clean up with a dry brush or using compressed air.**
- Use vacuum or wet cleaning methods.

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.

- Ensure that delivery drivers are provided with copies of offloading procedures and training on these as necessary.

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.
- Indicate the need for respiratory protective equipment to be worn using appropriate pictogram signs.
- 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 unloading equipment is working properly. | <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"/> Clear up spills straight away. Use vacuum or wet cleaning methods. | <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 the dust extraction system is switched on and is working. | <input type="checkbox"/> If you think there is a problem with your dust control equipment, ensure additional control measures are taken to reduce exposure to | <input type="checkbox"/> Use, maintain and store any respiratory protective equipment provided in accordance with instructions. | |
| <input type="checkbox"/> Wear respiratory protective equipment (e.g. a dust mask) in areas where this has been deemed necessary. | | | |

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 during bulk unloading 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.

GOOD PRACTICES FOR CRUSHING OF MINERALS/RAW MATERIALS

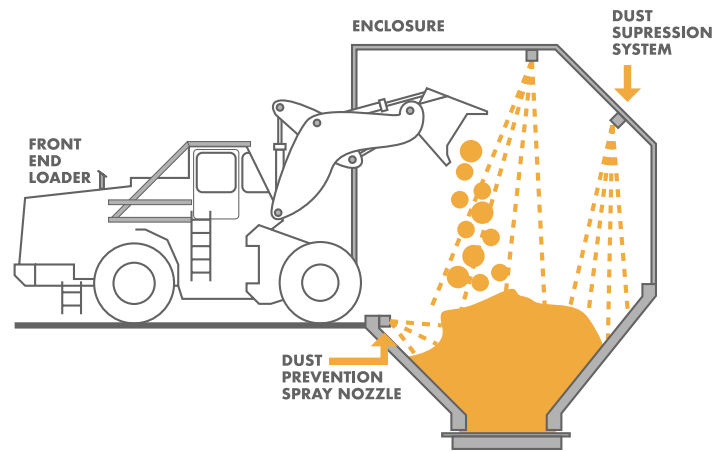
Large quantities of airborne dust may be generated when minerals containing crystalline silica are fractured during crushing operations.

ACCESS

Restrict access to the work area to authorised personnel only. This will help to protect people from the airborne dust hazard and from other hazards associated with crushing e.g. noise and ejected particles.

DESIGN AND EQUIPMENT

- Control of dust at source should be via enclosure of the process, plus water sprays and/or exhaust ventilation.
- The use of water sprays may not be suitable in all cases, depending on the material/process and also the weather conditions. If necessary to keep the material dry, then enclosure and exhaust ventilation may provide the best option.
- When material is fed by a wheel loader or dumper, flexible strip curtains will help to enclose the crusher loading point.
- Machine controls should be located well away from sources of airborne dust generation.
- If it is necessary for someone to constantly supervise the operation of a crusher, then an enclosed, sealed cab should be provided.
- The use of CCTV systems will enable operators to check the operation of the crusher without being exposed to high dust levels.
- Operator's cabs (control rooms) should be physically separated from dusty areas and fed with clean fresh air, supplied under positive pressure. Alternatively, cabs should be fitted with air conditioning, equipped with an air filter that is designed to withstand a high loading of respirable dust particles.
- In order for the positive pressure supply or air conditioning system to provide the greatest protection from dust exposure, the doors and windows of the cab must be kept closed at all times while the crusher is in operation.
- Timing of crushing operations, to coincide with the wetter seasons of the year, will help to reduce airborne dust generation. Consideration should also be given to the use of water sprays to suppress dust.
- Location of a crusher outdoors will result in better ventilation, thus reducing airborne dust concentrations.
- If a crusher is located inside a building, then a good standard of through ventilation will be required to control dust levels.



MAINTENANCE

- Maintain the cab air conditioning system as advised by the supplier, in effective and efficient working order.
- The air conditioning filter should be changed at the interval (in terms of hours of machine operation) advised by the manufacturer.
- 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.

EXAMINATION AND TESTING

- Exhaust ventilation systems should be subject to regular examination and testing of their performance according to manufacturer's recommendations and legal requirements.
- Crusher operators should check the condition of the cab air conditioning filter as recommended by manufacturers.
- Any faults with the air conditioning/filtration system must be reported as soon as possible so that remedial action can be taken.
- 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

- A build up of fine dust on the internal surfaces of the operator's cab might suggest a problem with the air conditioning system.
- Preference should be given to the use of vacuum or wet cleaning methods. Avoid using a dry brush when cleaning the internal surfaces of the operator's cab.

TRAINING

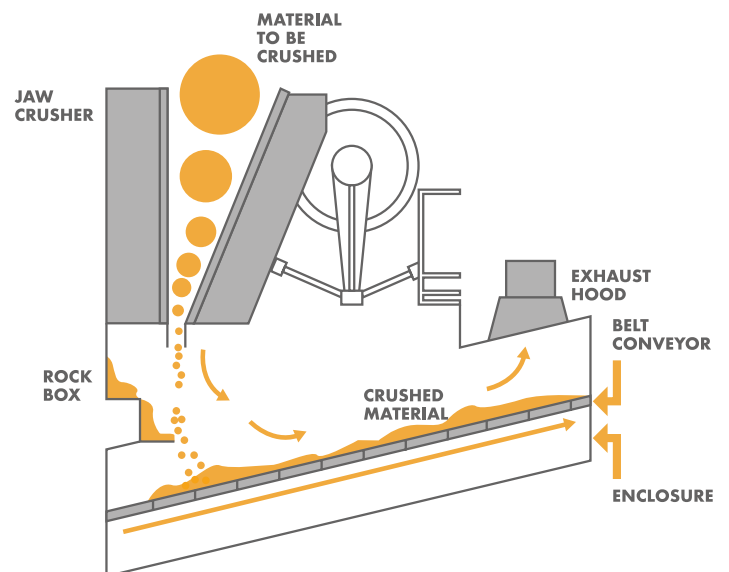
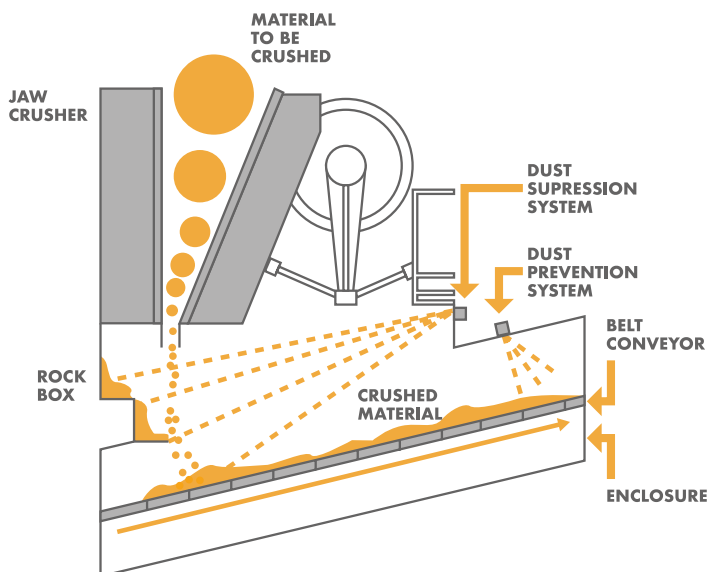
- Give your employees information on the health effects associated with respirable crystalline silica dust.
- Provide employees with training on: dust exposure prevention; checking controls are working and using them; when and how to use any respiratory protective equipment provided and what to do if 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 check the effectiveness of control measures.
- 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

- Make sure the water sprays and/or exhaust ventilation system are working.
- Keep the cab or control room doors and windows closed at all times when the crusher is in operation.
- Check the condition of the air conditioning filter once a week.
- Keep records of all safety checks on a daily check sheet.
- Look for signs of dust build up on the surfaces of the cab. This may be a sign that the air filter is in poor condition.
- If you think there is a problem with your dust control equipment, ensure additional control measures are taken to reduce exposure to respirable crystalline silica dust while the problem persists.
- Keep the interior of the cab clean.
- Wear a dust mask when it is necessary to enter dusty areas in order to manually split large boulders, during routine plant checks and during maintenance work.
- 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 advice on the use of a crusher to break down boulders of quarried material into smaller lumps.

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.