

GOOD PRACTICES FOR REAL TIME DUST MONITORING

This sheet provides advice/info on how to implement real time dust monitoring and Helmet-CAM in order to assess sources of (respirable) dust from installations and/or to the employees. This is not a routine monitoring tool. It is a helpful tool to be used for investigational purposes to identify sources of dust emissions and to help prioritise resources for dust control. This can encourage similar technologies to be developed, implemented and added to this good practice guide.

ACCESS

Restrict access to the work area to authorised personnel only.

DESIGN AND EQUIPMENT

A data logging Aerosol Monitor is used to provide real-time results and gravimetric validation of the aerosol in the air of the workplace and around the installations. It can be run in a fixed location, tripod mounted or hand-held, or on the belt of the employee. Fig 1.

An action CAM is used to make videos during the assessments of workplace. The camera is typically mounted on a hard hat. When making assessment of the exposure to the employee, the video provides visualisation of the worker's practices. Fig 2.

Software is used to compile/merge the real time measurement dust concentrations from the aerosol monitor with the video. Free software that can be used is EVADE, which is recognised/certified by OSHA. Fig 3.

Real time dust measurement concentrations (fixed location around dust source at installation) and real time measurements indicative of exposure to the employee, can be used to assess the sources of dust.

The following are some helpful suggestions for implementing the real-time data logging aerosol monitor for (respirable) dust sampling:

- Inform workers of the monitoring strategy to facilitate co-operation. Inform them on the results post monitoring.
- Record adequate description during measurement, including: date, job function, worker's name, work activities/task and working practices, protective equipment worn, control measures in place (or not), production process, (mineral) product produced, tonnage rate, dust extraction type, ventilation, etc. Record the weather and any misting, suppression systems in place.

- It may be helpful to make comparison of the measured airborne concentrations against occupational exposure limits. Remember that while the equipment is capable of measuring different dust fractions (including the respirable fraction) it does not analyse for the type of dust (e.g. crystalline silica), also consider the sensitivity of the equipment used, when making OEL comparisons.



Fig 1



Fig 2

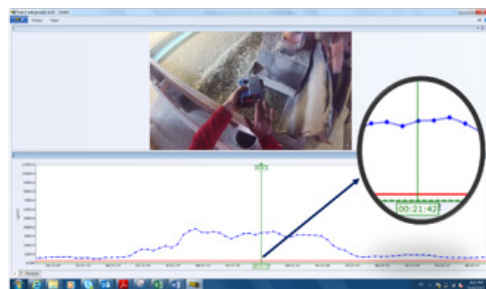


Fig 3

✂ MAINTENANCE

- Ensure dust measuring equipment is maintained as advised by the supplier/installer in efficient working order and in good repair.
- Keep the measuring equipment clean to prevent contamination.
- It may be necessary to replace the filter in the aerosol monitor to ensure a correct flow.
- Replace consumables (batteries etc.) in accordance with the manufacturer's recommendations.

🔍 EXAMINATION AND TESTING

- Visually check the measuring equipment before and after each use for signs of damage.
- Zero the real-time data logging aerosol monitor prior to each use.
- Have measuring equipment serviced regularly, in accordance with manufacturers' recommendations.
- 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.

👤 TRAINING

- Provide employees with training on:
 - using real time dust concentration measurements to investigate in detail personal dust monitoring results;
 - dust exposure prevention;
 - checking if control measures are working and how to use them;
 - when and how to use any respiratory protective equipment provided;
 - what to do if something goes wrong.
- Refer to task guidance sheet **2.3.4** and part 1 of the Good Practice Guide.

👁 SUPERVISION

- Archive the data in a dedicated database.
- Share and comment on the results of the real time dust concentration measurements with the workforce.
- Form teams including workers from production, maintenance, engineering and HS for follow up and support of the program.
- Decisions should be taken on actions to improve the identified dust hot spots.
- Repeat measurements after improvements are implemented in order to check their effectiveness.



PERSONAL PROTECTIVE EQUIPMENT

- Refer to task guidance sheet **2.1.15**, of NEPSI Good Practice Guide, 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.
- Personnel taking measurements in the workplace should set a good example by wearing respiratory protective equipment in the required areas.
- 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

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|---|---|---|
| <input type="checkbox"/> Undertake pre work inspection checks of all equipment for functionality, prior to and after use. | <input type="checkbox"/> Regularly check the correct operation of the equipment during the measurement. | <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"/> Ensure that devices are fully re-charged prior to commencing each assessment. | <input type="checkbox"/> Keep a detailed work activity log observed during the measurement assessment. | |

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.