

Appendix 6/17

Minutes of the 19th meeting of the ALG Technical Working Group, 17 October 2017

Abrasive Blasting Removal Systems

Appendices are attached to Technical Working Group minutes when the nature and extent of discussions (or the complexity of the subject) warrants further explanation and clarification. The following is a summary of the discussions and conclusions on the above topic.

This updated Appendix on Wet Blasting Removal Systems contains a modification to the sampling strategy for personal monitoring and some other minor amendments. The original Appendix, issued in 2015, should be discarded.

Introduction

There are instances where stubborn residues of asbestos containing materials (ACMs) remain due to previous poor or incomplete removal. These residues would have been managed in place. However on occasions it may become necessary to remove the materials eg where there is an increased risk of disturbance due to maintenance or refurbishment activities.

ACMs are typically removed using low dust emission methods such as manual removal with hand tools along with wet injection or spray wetting. These methods comply with legal requirements to minimise worker exposure and to prevent the spread of dust. However, in certain circumstances it may be necessary to adopt more abrasive methods to remove ACMs. This appendix provides guidance on the use of abrasive blasting systems. There are a variety of commercially available systems which all use blasting media such as garnet. In addition there are other “wet” type systems which use ice for blasting and there are also dry ice systems.

Application

Abrasive blasting methods should not be the first choice of removal method. This method of removal should only be considered as a secondary technique where

stubborn/residual asbestos materials are involved and the time, effort and risks of using other methods are not reasonably practicable.

The use of any abrasive blasting system must be fully justified and all the associated risks addressed. Other health and safety risks may include manual handling, noise, vibration and “work at height”. It is the licensed contractor who should determine the appropriate method of asbestos removal. The client can be involved in the decision but it is the licensed contractor who must justify the use.

Inappropriate or unjustified use of abrasive blasting methods must be avoided. The licensed contractor will need to provide supporting evidence to justify use and also clearly specify where the method will be used. There needs to be a robust system in place to guard against misuse. Operatives will need to be fully trained and competent to use the equipment.

Issues

There are several other issues which arise from use of abrasive blasting systems:

- Elevated noise levels frequently in excess of 87dB(A).
- Elevated airborne asbestos fibre levels, up to 20f/ml but typically levels of 4-10f/ml are generated.
- Difficulties with personal exposure monitoring when using phase contrast microscopy techniques. Dust loading on filters can lead to occluded (overloaded) filters plus blasting technique can produce very fine fibres.
- Breaches of the enclosure sheeting due to the blasting action. These breaches may be virtually invisible to the eye but are sufficient to allow the very fine blasting media and fibres to penetrate outside of the enclosure.
- Blockage of filters within negative pressure units (NPU) and respirators from moisture generated by abrasive blasting systems leading to reduced extraction performance and reduced protection respectively.
- High levels of carbon dioxide produced by dry ice blasting systems.

Use

The most likely uses of abrasive blasting systems are as follows:

- (i) The removal of stubborn asbestos residues left over from previous poor asbestos removal works.

- (ii) The removal of a thin coating of insulation/fire proofing attached to a concrete ceiling where complete removal using hand tools/manual methods is virtually impossible (e.g. due to residues trapped in pitted or imperfect surfaces).

In all situations, however, the bulk of the ACM should be removed by conventional manual methods (eg use of hand tools and low pressure spraying) as far as is reasonably practicable before attempting to use abrasive blasting techniques. There will clearly be a judgement call (supported with evidence) on when to stop the conventional method and move to the abrasive blasting technique.

Blasting systems are available in a variety of sizes. The difference in size generally relates to the capacity of the pot which holds the blasting media. Smaller systems can be used continuously for 2-3 hours without the need to replenish the blasting media whilst larger systems can operate for much longer periods before replenishing the media.

Some systems also include the facility to add fibre suppressant to the blasting media in addition to the usual water/blasting media mix. The systems also allow the proportion of water to be adjusted.

Personal Monitoring

Frequent personal monitoring should be carried out where abrasive blasting is employed. However, the nature of the removal method creates several challenges for the monitoring and analysis.

Significant amounts of non-asbestos dust can be generated during abrasive blasting which may result in occluded sampling filters causing difficulties for analysis. The sampling strategy should consider the following:

- Collect a series of short-term samples at a flow rate at or below 1 l/minute and calculate the time weighted average.
- If PCM analysis is going to be attempted, the filter should be cut in half before mounting half filters for PCM analysis so that indirect preparation and / or fibre discrimination can be performed if required.
- Consider analysing “overloaded filters” using an indirect method of preparation of the filter (more details in version 2 of the Analyst Guide HSG248 Appendix 4).

It is important that the personal monitoring carried out covers the use of the blasting equipment. The actual period of use of the blasting equipment during sampling should be recorded.

Controls

Where an abrasive blasting method is going to be considered, it should be trialled first (ie a pilot exercise under very strict conditions) to ensure controls are adequate. The control regime for removal of ACMs using abrasive blasting systems should include:

- Access to the enclosure during removal/use is only permitted to essential and minimal persons.
- The abrasive blasting system should not be used at the same time as other removal equipment in the enclosure.
- Abrasive systems using fibre suppressant as part of the blasting media should be used.
- Operatives should share the use of the system at the workface to reduce manual handling.
- Operatives should conduct regular clean-up in the enclosure eg using an airless spray system, shovelling and a wet vacuum cleaner.
- Personal monitoring should be in place (see above). The monitoring will provide data on airborne fibre levels generated by the method being used.
- The NPU should be fitted with a protective filter for the moisture (eg air water vapour separator filter (or equivalent) for wet blasting systems).
- The enclosure should be double sheeted for additional protection.
- Suitable hearing protection as established in a noise risk assessment.
- Air-fed RPE incorporating a dust filter should be used. The RPE should satisfy the relevant requirements for dual purpose masks ie EN 136 plus EN 143 for filters and relevant standard for air-fed (eg EN 139 for older models or EN14593 for newer post 2005 models) and demand BA (EN 14594 for newer post 2005 models) or constant flow BA.

General

- For each new use of blasting equipment, the media to be used will need to be determined along with appropriate pressure setting and moisture content.
- The operating conditions need to be optimised to reduce the noise levels generated.
- The performance of the NPU should be monitored during the work eg at the start of and periodically (eg hourly) during each shift. The frequency and method for monitoring NPUs should be included within the plan of work. The air flow

rate should not fall below the minimum requirements set out in the Approved Code of Practice i.e. 1000m³/hr (or 8acph for enclosures >120m³ in volume).

- Where a dry ice system is used, the extraction units must be capable of removing the volume of carbon dioxide produced within sufficient time to prevent harm to those within the enclosure. This requirement will form part of the risk assessment and a separate calculation for sufficient ventilation of the enclosure.
- Planned use of abrasive blasting techniques must be included within the ASB5 notification. The use of these techniques will be open to challenge from the enforcement authority.