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CARE GUIDANCE

RECOMMENDATIONS ON BEST PRACTICE

LEVEL 3

Assembly Operations

ASSEMBLY OPERATIONS

INTRODUCTION

This is a level 3 document in the ECFIA CARE Guidance series and should always be read in conjunction with the level 1 document "Working with HTIW – Effective Risk Management".

This document focuses on ways to reduce airborne fibrous dust concentrations when carrying out assembly operations. Assembly operations are defined as small scale operations carried out in industrial facilities away from the final installation site.

WHAT IS THE CARE PROGRAMME?

ECFIA's Controlled And Reduced Exposure (CARE) Programme is an important part of the Product Stewardship Programme. It allows employers to proactively minimize fibrous dust exposure and thus protect workers' health.

WHAT ARE THE CARE GUIDANCE DOCUMENTS?

These documents form a comprehensive library of information on the safe handling and use of HTIW products. They have been written by industry experts and are designed to give customers of ECFIA members helpful information to put in place effective controls to minimise exposure to airborne fibres. This series of documents will progressively grow as new documents are produced.

Level 1 guidance document: "Working with HTIW - Effective risk management"
Level 2 guidance documents: Risk management measures applicable to HTIW
Level 3 guidance documents: Examples of specific applications

WHAT ARE ASSEMBLY OPERATIONS?

Assembly operations fall into two distinct categories - high energy and low energy, reflecting the amount of dust released during the operation.

Low energy processes include:

- Assembly of previously processed furnace components
- Laminating and foiling blankets
- Changing gaskets in appliances or equipment

Examples of high-energy processes include:

- Any assembly operation that involves use of hand tools
- Handling and packaging of products

In all cases it must be borne in mind that dust levels are also dependent on the size and number of pieces handled, the machinery being used, and the controls already in place.

POTENTIAL CONTROL MEASURES

There are various options for control measures in assembly operations. The fact that assembly operations are carried out in the same facility on a regular basis means that it is possible and practicable to install controls. All extraction system options should be discussed with a competent ventilation engineer to determine the optimum solution for dust control. In addition, all systems will only work effectively if they are kept in a good state of repair and maintenance, e.g. ensuring the filters are cleaned regularly. This is covered in the level 2 CARE Guidance document "LEV".

One possible approach is to install a portable extraction system. This is ideal where a flexible solution is required. An example is in fig. 1:

If a portable dust extraction system is used, the collection bag / bin must be emptied on a regular basis to ensure the system works efficiently.

Fig. 1: Portable Extraction System

Where the assembly operation is a bench-top process, then a partial enclosure should be considered; used in combination with a down-draught table this has been demonstrated to be an effective option at some sites.

Fig. 3 & 4: Down-draught Table

For larger assembly operations, where installation of a partial enclosure is impractical, alternative measures should be considered. One such solution would be use of a hood with sufficient capture velocity to remove the fibrous dust; this would have to be combined with worker training to ensure the hood is placed as close as possible to the source of the contaminant, as capture hoods are only truly effective a short distance from the source.

Fig. 5: Capture Hood

Finally, where tools are used as part of the assembly process, then extraction can be installed on to the tool itself. This is discussed in further detail in the level 3 CARE guidance document "Powered hand tools". Alternatively, a small hood with a high face velocity (i.e. a low volume, high velocity system) can prove to be an effective and very efficient solution.

Effective exposure control measures consist of a mixture of engineering controls and work practices, therefore the following measures should be taken in combination with the engineering controls detailed above:

- High standards of housekeeping should be maintained to prevent the disturbance of dust. Best practice is to use a HEPA filtered vacuum cleaner or wet sweepers/scrubbers, as dry sweeping can disturb dust.
- Even with engineering controls in place, workers' exposure to fibrous dust should be monitored on a regular basis to determine if the controls are effective. ECFIA can offer specialist advice and support on this aspect.
- All workers should be trained in the use of engineering controls to ensure they are used in the most effective manner. In the case of LEV, this should cover:
  - The parts of the LEV system and their function
  - How the LEV system should be used
  - How to recognise a damaged part
  - Simple checks that the LEV system is delivering its design performance and effectively controlling emissions and exposure

It is recommended that all training is documented and a signed document kept on the employee's file to prove they have received and understood the training. This is covered in the level 2 CARE Guidance document "Training".

All LEV systems should be checked on a regular basis by a competent LEV engineer to ensure they are working effectively. Records of servicing should be maintained.

SUMMARY

Assembly operations can involve both high and low energy activities. However exposure in both cases are dependent on the same criteria: HITW product type/nature, size of the assembly piece, quantity of HTIW product used, type of equipment/tools used and available control measures. All of these factors will affect the level of exposure and should be considered before assembly activities are carried out.

FURTHER INFORMATION

CARE Guidance Documents

Level 2: "Local Exhaust Ventilation (LEV) Systems for High Temperature Insulation Wool (HTIW)"
Level 3: "Waste Disposal"
Level 3: "Removal of HITW materials"
Level 3: "Installation of HITW materials"
Level 3: "Use of Powered Hand tools"

Links:

- www.guidance.ecfia.eu
- www.hse.gov.uk/coshh
- www.baua.de
- www.inrs.fr *

**** see document:*** *Refractory ceramic fibre insulation and thermal protection in an industrial environment: „Fibres céramiques réfractaires isolation et protection thermique en milieu industriel, ED 6085", April 2011*