

Controlling Construction dust with on-tool extraction



This guidance offers advice on choosing, using, and maintaining on-tool extraction for controlling construction dust.

Some of the most common construction jobs create high dust levels. These jobs often involve the use of power tools like cut-off saws, grinders, breakers, and sanders.

PCBUs have a duty to eliminate, or use controls to minimise, worker exposure to the hazard of and risks from construction dust. There's also a duty for upstream PCBUs to ensure the equipment they design, manufacture, import, or supply is safe for the user.

RISKS PRESENTED BY CONSTRUCTION DUST

Regularly breathing construction dust can cause diseases like lung cancer, asthma, chronic obstructive pulmonary disease (COPD - which includes emphysema and other breathing difficulties), and silicosis.

A WorkSafe study in 2015, together with data from international studies, suggests that urgent action is required to reduce respirable dust and silica exposure in the New Zealand construction industry.¹ On-tool extraction is an effective control for dust and will minimise the risks to health.

HOW TO CHOOSE ON-TOOL EXTRACTION

On-tool extraction is a type of local exhaust ventilation (LEV) system which is fitted directly onto the tool. The system consists of several individual parts - the tool, captor hood, extraction unit, and hoses. Each part plays a role in establishing how effective the system is and the level of control it gives. Manufacturers/suppliers provide complete systems but some parts (especially extraction units) can be used with other tool makes and models.

It is important to choose parts that are compatible, or the dust may be poorly controlled. Make sure the system is right for the particular task and the method of work. Involve workers in the selection process.

TOOLS AND ACCESSORIES

Limit the amount of dust created by choosing appropriate tools and accessories. For example, choose sanding blocks/pads or grinding discs with enough holes to allow the dust to be extracted through them.

CAPTOR HOOD

The hood is the most important part of the LEV system. It is often manufactured as part of the power tool but can also be retro-fitted to existing equipment.

The hood captures the dust as it is produced.

¹ *Exposure to silica dust in the construction industry in the Canterbury rebuild: A pilot study.*

HOW TO CHOOSE THE RIGHT ONE

Poor design or damage to the hood will significantly affect the control of dust. Check that the hood:

- > is designed for the tool and the work that you are going to do (seek guidance from the manufacturer or supplier)
- > sits as closely as possible to the work surface when in use, as dust will escape through any gaps between the two
- > is easy to use and does not interfere with the work unnecessarily.

EXTRACTION UNIT

The extraction unit is like an industrial vacuum. It is a portable unit and an important part of the LEV system.

The extraction unit removes the dust from the captor hood, filters it, and stores it for safe disposal. Selecting the correct extraction unit is key to achieving this successfully.

HOW TO CHOOSE THE RIGHT ONE

You can use extraction units interchangeably on some tools but the specification of the unit must be suitable for the tool and the task:

- > It is important that the extraction unit is suitable for the toxicity level and hazardous nature of the dust being extracted. Construction material manufacturers can advise whether the materials used in their products produce dust classified either L (Low), M (Medium), H (High) Class, or non-hazardous.
 - **L Class** - dust representing a low risk.
 - **M Class** - dust representing a medium risk.
 - **H Class** - dust representing a high risk.
- > Extraction units conforming to the above classifications provide effective and certified extraction and containment of hazardous dusts. They will feature special labelling, operators' manuals, and where applicable, low air flow alarms and additional features for dust containment and disposal.
- > It is not appropriate to use a general commercial or domestic vacuum cleaner simply fitted with a HEPA (High Efficiency Particulate Air) filter if extracting hazardous dusts.

- > Check that the unit creates and maintains enough air suction to cope with the amount of dust the work will create (manufacturers/suppliers can advise). It needs to remove the dust as fast as it is created.
- > Lots of fine dust can quickly clog filters. Choose units with pre-filters, built-in 'back-flushing' filter cleaning mechanisms, or similar devices.
- > Identify how often the unit will need emptying.
- > Check the waste capacity is right for the work.

INTERCONNECTING HOSES

The interconnecting hoses connect the captor hood to the extraction unit.

HOW TO CHOOSE THE RIGHT ONE

Check that the hose:

- > is the right construction, diameter and length for the work and the extraction unit
- > fits securely to both hood and unit.

HOW TO USE ON-TOOL EXTRACTION CORRECTLY

Just providing the right equipment is not enough to control dust risks. The equipment must be operated correctly and be properly maintained. That means you should pay particular attention to each stage.

BEFORE USE

PROVIDE TRAINING

Workers must have the right information, training, instruction, or supervision before using on-tool extraction. This includes information on:

- > selecting the right on-tool system
- > pre-use checks
- > ongoing maintenance
- > how to use the system correctly
- > other controls that may be needed (eg respiratory protective equipment) and how to use them
- > common faults, how to spot them, and the action to take
- > what to do if there is a problem.

DURING USE

FOLLOW INSTRUCTIONS ON USE

Make sure you apply the system to the work in the correct way. Focus on:

- > checking it is in good working order (not damaged) before work starts
- > having sufficient consumables on hand, including filters, filter bags, and disposal bags
- > following the agreed methods of work
- > using the equipment in the right way; follow manufacturer's instructions
- > ensuring the captor hood is as close as possible to the work surface
- > ensuring the tubing has a good connection to both the captor hood and extraction unit; use an adaptor if needed, not tape
- > emptying the extraction unit regularly
 - use the correct disposable waste bags if available
 - seal and place in the right waste container
 - do not empty these bags to recycle them if they are designed as single use
 - if the containment is re-fillable, ensure dust exposure is controlled when emptying them
- > cleaning the equipment regularly (eg wipe down daily). Do not let dust build up on working parts.

HOW TO MAINTAIN ON-TOOL EXTRACTION

REGULAR CHECKS/MAINTENANCE

Ensure that the system works properly every time. Carry out formal maintenance checks at least once a week. You may have to do this more frequently if there is a high risk of the equipment being damaged. Concentrate on:

- > damage to parts of the system such as the hood or ducting. Repair or replace damaged parts straight away
- > maintaining the extraction unit's flow of air
 - follow the manufacturer's instructions
 - check that the airflow indicator and any built-in cleaning mechanism work properly
 - replace filters when needed
- > replacing worn cutting discs.

INSPECTION AND TESTING

Equipment needs proper servicing and testing to make sure that it remains effective over a long period.

A thorough examination and test (TE_{XT}) is a detailed and systematic examination that ensures the equipment can continue to perform as intended. A competent person should carry out a TE_{XT} at least every 14 months. You might need more frequent testing if regular wear and tear could limit the effectiveness of the system more quickly.

If you own an on-tool extraction system, you will need to plan TE_{XT}s and keep a suitable record to show they've been done. If you are hiring equipment, check with the hire company whether it has been appropriately tested.

CORDLESS TOOLS

The general principles of the above standards also apply to cordless tools with integrated filtered extraction devices. However, these units do not fall under the L, M, or H classification system, so their suitability should be checked with the manufacturer before using to extract hazardous dusts.

REFERENCES

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