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WOOD DUST IN EDUCATIONAL WOODWORKING ENVIRONMENTS



WOOD DUST IN EDUCATIONAL WOODWORKING ENVIRONMENTS

Understanding the Risks, Controlling Exposure and Promoting Safer Working Practices in Design & Technology Classrooms

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Disclaimer

Every reasonable effort has been made to ensure that the information contained in this publication is accurate and reflects relevant legislation, Health and Safety Executive (HSE) guidance and recognised good practice at the time of publication.

This book is intended to provide educational information and practical guidance on the hazards associated with wood dust and the measures used to prevent or adequately control exposure in educational woodworking environments.

It does not replace the requirement for schools, employers and other dutyholders to undertake suitable and sufficient risk assessments, comply with the Control of Substances Hazardous to Health Regulations (COSHH), or meet any other applicable health and safety obligations.

The suitability and effectiveness of dust-control measures, including Local Exhaust Ventilation (LEV), depend on the specific materials, processes, machinery, working practices and workshop conditions. Such measures should be assessed, maintained and, where required, examined and tested by appropriately competent persons.

Legislation, standards and official guidance may be amended after publication. Readers should therefore consult the latest relevant HSE publications and seek competent professional advice where necessary.

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Teach dust control as part of the skill - not as an optional extra.

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Foreword

Wood Dust in Educational Woodworking Environments

Design & Technology education provides young people with valuable practical skills, creativity, confidence and an understanding of materials, tools and manufacturing processes. For many pupils, the school workshop is their first introduction to woodworking machinery, hand tools and the working practices they may later encounter in industry.

It is also where their understanding of health and safety begins.

Woodworking is an important part of practical education, but it produces wood dust, a hazardous substance that can cause serious and sometimes irreversible harm to health. Exposure to wood dust is associated with respiratory irritation, occupational asthma and, in the case of hardwood dust, cancers of the nasal cavity and paranasal sinuses.

These risks are well established. So too are the principles of preventing and controlling exposure.

Yet the presence of extraction equipment does not, by itself, demonstrate that wood dust is being adequately controlled. Effective control depends on suitable equipment, correct design and positioning, proper use, regular maintenance, and evidence that extraction is capturing dust where it is generated.

This applies not only to woodworking machinery but also to activities such as hand sanding, which may be carried out by several pupils simultaneously. The fact that a process is manual does not mean that the dust it produces is harmless or that exposure should be accepted without considering effective control measures.

Teach dust control as part of the skill - not as an optional extra.

This principle lies at the heart of the guide.

When pupils learn to use a bandsaw, circular saw, disc sander or sanding block, they should also learn how the dust generated by that activity can be controlled. Understanding why extraction is needed, recognising what effective capture looks like and knowing when a control is not working should become part of their practical competence.

Schools have an important opportunity to shape the expectations of the next generation of workers.

Pupils who experience effective dust control throughout their education are more likely to recognise its importance when they enter employment. They should leave the classroom understanding that protecting respiratory health is not separate from good workmanship; it is part of working competently and responsibly.

This does not mean that every woodworking activity requires the same solution. Effective control must be appropriate to the material, process, equipment and circumstances. For example, downdraught sanding benches can provide a useful means of controlling dust from hand sanding, but their performance depends on the work being carried out within the effective capture area and without obstructing the extraction surface.

The aim should always be to select and demonstrate controls that work in practice, rather than relying on equipment simply because it has been installed or switched on.

Raising standards through knowledge and practical action

This guide has been developed to help teachers, technicians, school leaders, cleaning staff and those responsible for Local Exhaust Ventilation (LEV) better understand the risks from wood dust and the measures needed to control them.

It explains where wood dust comes from, how it spreads, who may be exposed and why effective extraction, appropriate housekeeping, maintenance, inspection and testing are essential.

It also highlights the importance of managing settled dust. Dust deposited on benches, floors, machinery and other surfaces can become airborne again when disturbed. Effective housekeeping, including the use of suitable industrial vacuum equipment rather than dry sweeping or compressed air, is therefore an important part of exposure control.

The guide is intended to encourage informed questions and practical improvements:

- Is wood dust being captured effectively at the point where it is generated?
- Are the control measures suitable for the actual activity being undertaken?
- Are extraction systems maintained, checked and thoroughly examined and tested as required?
- Are pupils and staff taught to recognise effective dust control and identify when something is wrong?
- Are cleaning and maintenance activities carried out without unnecessarily exposing others to dust?

These questions should be part of everyday workshop management, not matters considered only when an inspection is due.

Building a healthier future

The purpose of this publication is not to discourage woodworking in schools. It is to support its continued delivery in an environment where occupational health receives the same attention as machine safety, supervision and practical achievement.

By introducing pupils to effective dust control from the outset, schools can help establish safer habits, higher expectations and a better understanding of the standards they should encounter throughout their working lives.

Good woodworking education should teach pupils not only how to make something well, but how to make it safely, with effective control of the hazards created along the way.

That is the standard this guide seeks to promote.

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CHAPTER

1 Understanding Hardwood, Softwood and Wood Dust







Wood is one of the most widely used materials in Design and Technology (D&T) classrooms. Students work with a variety of natural timbers and manufactured wood-based products, using hand tools and woodworking machinery to cut, shape, drill and sand materials.

Understanding the different types of wood, the materials used in educational workshops and the dust they produce is an important first step in recognising the potential risks to health, including respiratory, chemical and fire hazards.

KEY MESSAGE:

Wood dust is not only a respiratory hazard. When sufficiently fine dust is dispersed in air at an appropriate concentration and encounters an ignition source, it can create a fire or explosion hazard.

Chapter 1

Understanding Hardwood, Softwood and Wood Dust

1.1 Introduction

Wood is one of the most widely used materials in Design and Technology (D&T) classrooms. Students work with a variety of natural timbers and manufactured wood-based products, using hand tools and woodworking machinery to cut, shape, drill and sand materials.

While woodworking provides valuable educational opportunities, these activities can release wood dust into the surrounding air. Understanding the different types of wood and the dust they produce is an important first step in recognising the potential risks to respiratory health.

1.2 What Is the Difference Between Hardwood and Softwood?

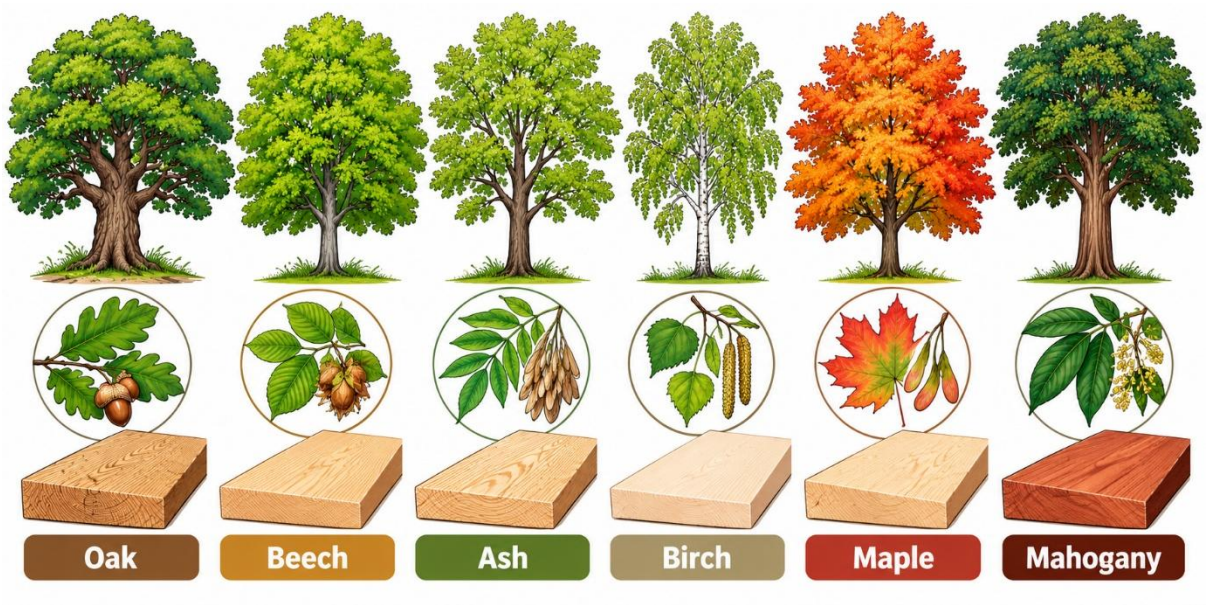
Wood is generally classified into two main categories: **hardwood and softwood**.

These classifications refer to the botanical origins of the trees rather than the actual hardness or density of the timber.

Hardwoods

Hardwoods generally come from broad-leaved trees (angiosperms), many of which lose their leaves during autumn.

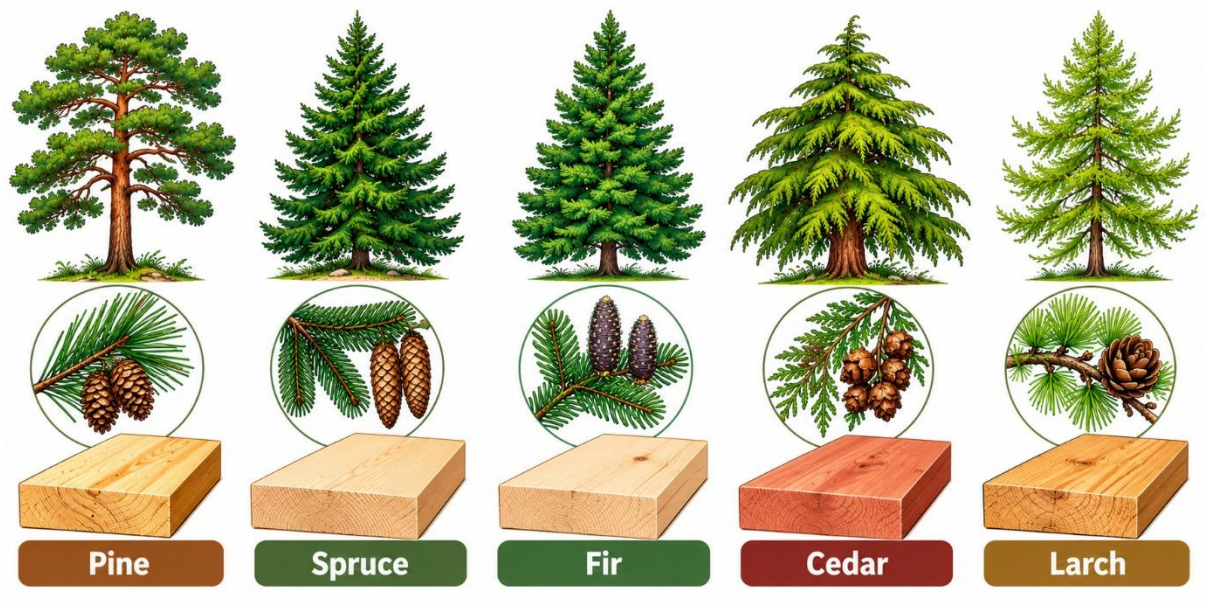
Examples include:



Softwoods

Softwoods come from coniferous trees (gymnosperms), which typically have needles or scale-like leaves.

Examples include:



Despite their names, some hardwoods are relatively soft, while some softwoods can be comparatively hard.

Both categories are commonly encountered in educational woodworking environments.

1.3 Manufactured Wood-Based Materials

D&T workshops also use manufactured wood-based products, including:

- Medium Density Fibreboard (MDF)
- Plywood
- Chipboard and particleboard
- Hardboard
- Oriented Strand Board (OSB)

These products may contain hardwood, softwood or a combination of wood fibres, particles and veneers, together with adhesives and other additives.

Machining and sanding these materials can generate significant quantities of fine airborne dust. Depending on the material and process, additional chemical hazards may also need consideration.

Important: Manufactured boards should not be assumed to be safer simply because they are not solid timber.

1.4 Formaldehyde and Adhesives in Manufactured Wood Boards

Manufactured boards such as MDF, chipboard and plywood are made by bonding wood fibres, particles or veneers together. Many products use synthetic resin adhesives, some of which are manufactured using formaldehyde.

What is formaldehyde?

Formaldehyde is a colourless gas used in the manufacture of certain adhesives and resins. Common binders include urea-formaldehyde (UF), particularly in boards intended for dry conditions, and melamine-urea-formaldehyde (MUF) or phenol-formaldehyde (PF) in some other products. Not all

boards use formaldehyde-based adhesives; alternative binders and no-added-formaldehyde products are also available.

How might exposure occur?

Some boards can release small quantities of formaldehyde gas into the surrounding air, a process sometimes called off gassing. Machining or sanding boards may also release wood dust together with small amounts of formaldehyde and resin-related material. The amount released varies with the board formulation, emission rating, age, temperature and working process. HSE notes that free-formaldehyde levels associated with machining compliant low-emission MDF are generally thought to be low.

Why does this matter for health?

Formaldehyde can irritate the eyes, nose and throat and may cause respiratory symptoms. It is also recognised as a carcinogenic hazard. This is a separate issue from the risks caused by inhaling wood dust: dust is particulate matter, whereas formaldehyde is a gas. Controls and measurements suitable for wood dust do not automatically demonstrate that formaldehyde exposure is adequately controlled.

What should schools consider?

Schools should identify the types of manufactured boards being used, consult relevant supplier information and consider low-emission or no-added-formaldehyde alternatives where suitable. Effective dust extraction is essential during machining and sanding; appropriate general ventilation and, where indicated by the COSHH assessment, further evaluation of formaldehyde exposure may also be needed. Low-emission boards still produce hazardous wood dust when worked.

KEY MESSAGE: Manufactured wood boards may present two distinct inhalation hazards - airborne wood dust and, depending on the adhesive and product, formaldehyde gas. Both should be considered in the COSHH assessment.

1.5 What Is Wood Dust?

Wood dust consists of small particles released when wood or wood-based materials are cut, machined, drilled, sanded or otherwise disturbed.

The size and quantity of particles produced depend on the material, the woodworking process, the equipment used and the effectiveness of dust-control measures.

Larger particles and wood chips generally settle more quickly onto surrounding surfaces. Smaller particles can remain suspended in the air and may be inhaled by people working in or entering the workshop.

Airborne dust is particularly important because it may spread beyond the immediate woodworking activity, exposing people who are not directly operating the equipment.

1.6 Why Does Particle Size Matter?

Not all wood dust behaves in the same way.

Larger particles tend to settle relatively quickly, while smaller particles can remain airborne for longer and travel with air currents.

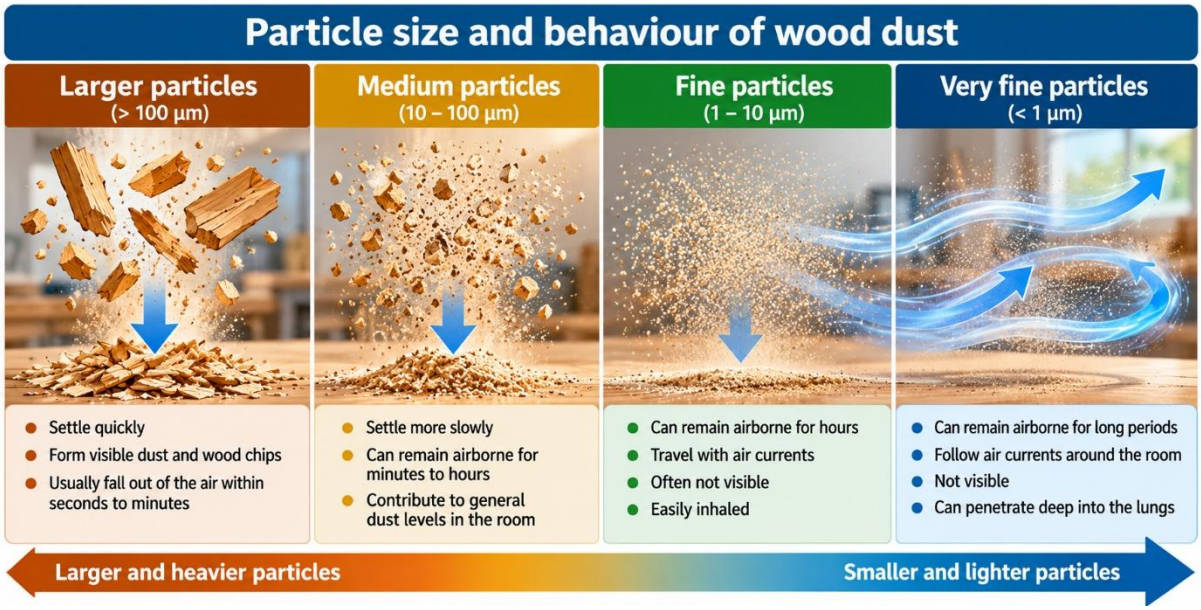
In occupational hygiene, airborne particles are commonly considered in terms of inhalable and respirable fractions.

- **Inhalable dust** refers to particles that can enter the nose and mouth during breathing. These particles are particularly relevant when considering the effects of wood dust on the upper respiratory tract.

- **Respirable dust** refers to the smaller fraction of airborne particles capable of penetrating into the gas-exchange region of the lungs.

The distinction is important because different particle sizes may deposit in different regions of the respiratory system.

A workshop may therefore contain airborne dust even when no obvious dust cloud is visible.



1.7 Wood Dust: Fire and Explosion Hazards

In addition to presenting a respiratory health hazard, wood dust is combustible and can create a fire or explosion risk under certain conditions.

Solid timber will burn when exposed to sufficient heat. However, when wood is reduced to fine particles, its behaviour can change considerably.

Fine wood dust has a much greater surface area relative to its mass, allowing it to burn more rapidly than a solid piece of timber.

Where sufficiently fine wood dust becomes dispersed in the air at a suitable concentration, it can form a potentially explosive dust cloud.

If that cloud encounters an effective ignition source, rapid combustion may occur, producing a sudden increase in pressure.

The risk depends on several factors, including:

- **Particle size:** Finer particles generally ignite and burn more readily.
- **Dust concentration:** An explosive dust cloud requires a sufficient concentration of combustible dust in the air.
- **Ignition sources:** Sparks, hot surfaces, electrical faults and frictional heating may provide ignition.

- **Confinement:** Enclosed equipment, ductwork and dust collectors can allow pressure to build during an explosion.
- **Dust accumulation:** Settled dust can contribute to fire hazards and may form a dust cloud if disturbed.

1.8 Why Is This Relevant to D&T Classrooms?

The risk of a dust explosion in an ordinary classroom atmosphere will generally differ from that within enclosed extraction equipment.

Wood-dust extraction systems, filters, dust collectors and ductwork can contain combustible dust and may present particular fire and explosion hazards.

Consequently, the design, installation and maintenance of wood-dust extraction systems should consider both respiratory exposure control and the potential for fire or explosion.

The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) may apply where combustible wood dust could create a dangerous explosive atmosphere. A suitable assessment should determine what precautions are necessary.

CHAPTER

2 Wood Dust and Respiratory Health

Woodworking activities can release fine wood dust into the air, and this dust may be inhaled by students, teachers, technicians, cleaners and others entering the workshop.

Understanding how wood dust enters and affects the respiratory system is essential for recognising the potential health risks and the importance of effective control measures.



RESPIRATORY IRRITATION

Wood dust can irritate the nose, throat and airways, causing coughing and breathing difficulties.



OCCUPATIONAL ASTHMA

Some people may develop work-related asthma, with symptoms that can persist even after exposure ends.



SINONASAL CANCER

Long-term exposure to hardwood dust is associated with an increased risk of cancers of the nose and nasal sinuses.

KEY MESSAGE:

Breathing in wood dust can cause respiratory irritation, occupational asthma and cancers of the nose and nasal sinuses. Fine airborne dust may be inhaled even when it is not visible.

Chapter 2

Wood Dust and Respiratory Health

Understanding what happens when wood dust is inhaled and the potential consequences for health.

2.1 Introduction

As discussed in Chapter 1, both hardwood and softwood dust present recognised hazards to respiratory health.

When wood is cut, machined or sanded, small particles are released into the surrounding air. Some settle quickly onto surfaces, while others can remain airborne and be inhaled by people working in or occupying the workshop.

Breathing in wood dust can cause a range of health problems, from irritation of the nose and throat to occupational asthma and cancers of the nose and nasal sinuses.

The effects depend on several factors, including the nature of the dust, the concentration in the air, the frequency and duration of exposure, and individual susceptibility.

Importantly, the absence of visible dust does not necessarily mean that the air is free from harmful particles.

This chapter explains how wood dust enters the respiratory system, the health effects associated with exposure and why effective dust control is essential in educational woodworking environments.

2.2 How Does Wood Dust Enter the Body?

The respiratory system allows oxygen to enter the body and carbon dioxide to be removed. However, breathing can also introduce airborne particles, including wood dust.

When dust is inhaled, particles may deposit in different parts of the respiratory system depending on their size, shape and other characteristics.

The main areas of concern are:

- **Nose and nasal passages:** Larger inhaled particles may become trapped within the nose, where they can cause irritation and contribute to exposure of nasal tissues.
- **Throat and upper airways:** Deposited particles can irritate the lining of the respiratory tract.
- **Bronchi and smaller airways:** Particles reaching these regions may contribute to inflammation and asthma-related symptoms.
- **Deep lung regions:** The smallest particles may penetrate further into the lungs.

The body has natural defence mechanisms, including nasal filtration, mucus and tiny hair-like structures known as cilia, which help remove inhaled material.

However, these mechanisms do not eliminate the health risks associated with repeated or excessive exposure to wood dust.

Inhalable and respirable dust

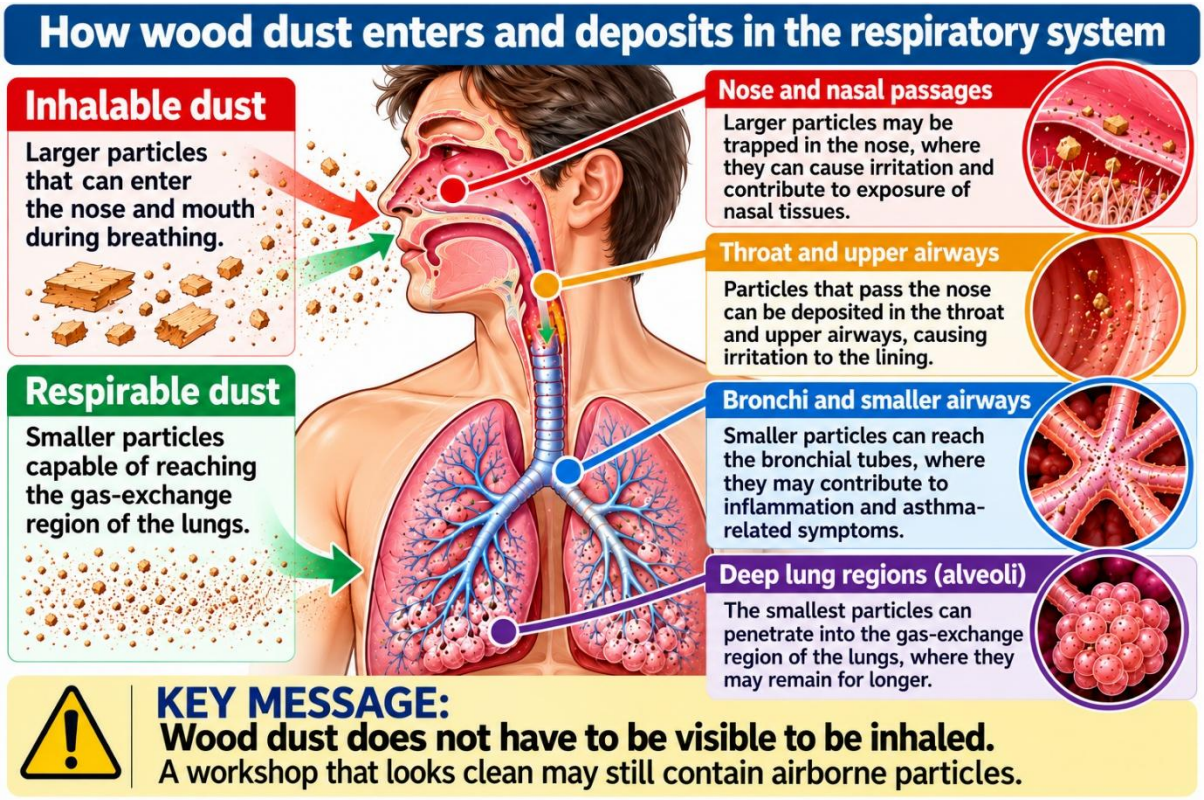
Occupational Hygienists distinguish between different fractions of airborne dust.

- **Inhalable dust** is the fraction that can enter the nose and mouth during breathing. This is particularly important when assessing wood-dust exposure because of the established effects on the nose and upper respiratory tract.

- **Respirable dust** is the smaller fraction capable of reaching the gas-exchange region of the lungs.

These terms describe where particles may penetrate within the respiratory system; they should not be confused with what is or is not visible to the naked eye.

For wood dust, the UK Workplace Exposure Limits are expressed in terms of the inhalable fraction.



2.3 Occupational Asthma

One of the most important respiratory diseases associated with wood-dust exposure is occupational asthma.

Occupational asthma is a condition in which exposure to substances at work causes asthma to develop.

Both hardwood and softwood dust can cause occupational asthma.

In some individuals, repeated exposure can lead to sensitisation, where the respiratory system becomes unusually responsive to a particular substance.

Once sensitisation has developed, subsequent exposure to even relatively small amounts of the substance may trigger symptoms.

What are the symptoms?

Common symptoms include:

- Wheezing or a whistling sound when breathing.
- Coughing, particularly during or following woodworking activities.
- Chest tightness or discomfort.
- Shortness of breath.
- Symptoms that improve away from the workplace and return when exposure resumes.

Symptoms may develop gradually and are not always immediately recognised as being work-related.

Why is occupational asthma serious?

Occupational asthma can have long-term consequences. If exposure continues after symptoms develop, the condition may worsen and become persistent.

Early recognition and prompt investigation are therefore essential.

Teachers, Technicians and Cleaning Staff who repeatedly work in dusty environments may have opportunities for exposure over many years.

Students can also experience respiratory symptoms during woodworking activities, although their exposure patterns are generally different from those of full-time employees.

IMPORTANT: Anyone experiencing wheezing, chest tightness or breathing difficulties associated with woodworking activities should report their symptoms and seek appropriate medical advice.

2.4 Wood Dust and Cancer of the Nose and Nasal Sinuses

One of the most serious long-term health risks associated with occupational wood-dust exposure is cancer of the nose and nasal sinuses.

The nasal cavity is the space inside the nose through which air passes during breathing. The paranasal sinuses are air-filled spaces within the bones surrounding the nose.

Together, these structures are referred to as the sinonasal region.

What does the scientific evidence show?

The International Agency for Research on Cancer (IARC) classifies wood dust as **Group 1 — carcinogenic to humans**.

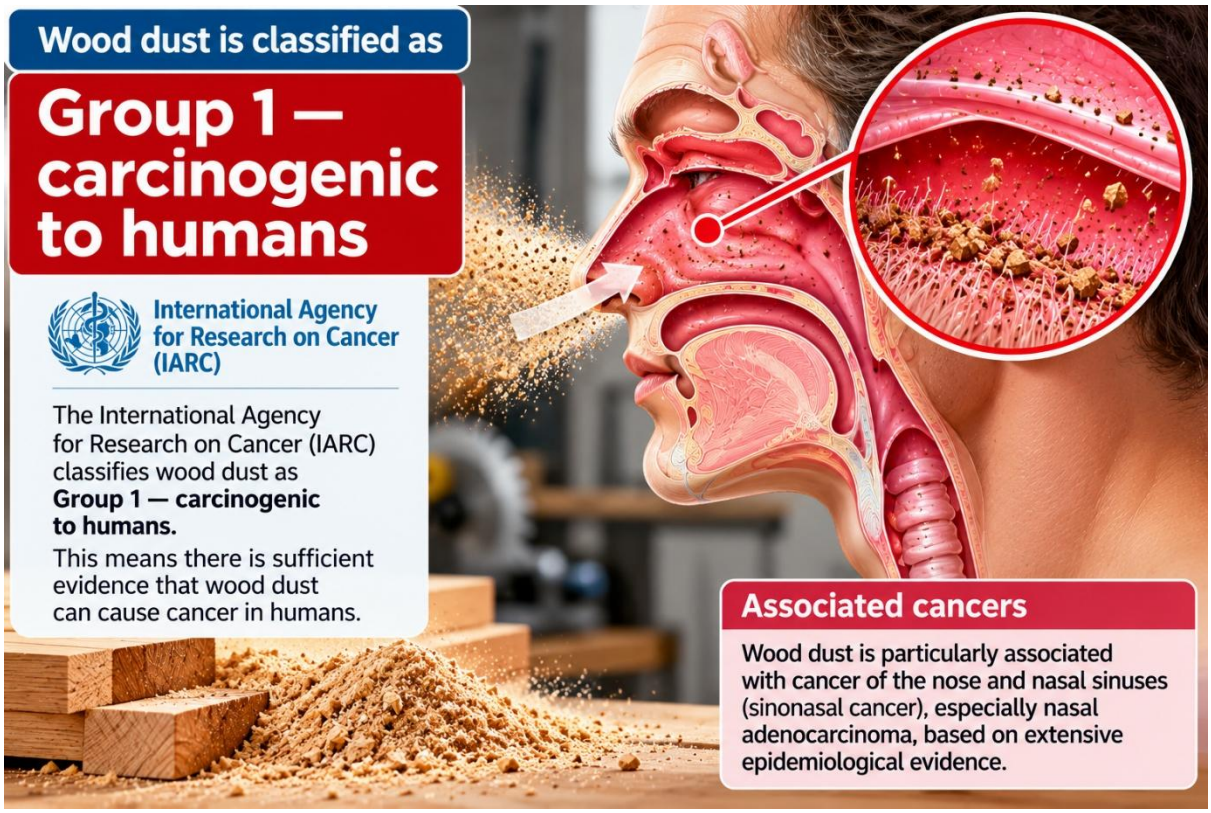
This means there is sufficient evidence that wood dust can cause cancer in humans.

The association is particularly strong for a type of cancer known as nasal adenocarcinoma, especially among workers historically exposed to hardwood dust in furniture and cabinet manufacturing.

The Industrial Injuries Advisory Council (IIAC), in its 2017 report *Nasal Carcinoma and Occupational Exposure to Wood Dust*, reviewed extensive epidemiological evidence linking occupational wood-dust exposure with sinonasal cancer.

The evidence includes studies of furniture makers, cabinet makers, carpenters, joiners and other wood-processing workers.

Although much of the research relates to substantial occupational exposures over extended periods, it provides an important scientific basis for controlling wood dust in all workplaces, including educational workshops.



Does softwood dust cause cancer?

The strongest historical evidence for nasal adenocarcinoma relates to hardwood dust.

However, the IIAC review also discusses studies reporting increased sinonasal cancer risks in workers exposed to softwood dust.

Consequently, softwood dust should not be regarded as harmless, and both hardwood and softwood dust require effective exposure control.

Why is this relevant to D&T classrooms?

The risk of developing occupational cancer is influenced by exposure circumstances, including the intensity and duration of exposure.

A student attending occasional woodworking lessons will generally have a different exposure history from a technician working in the same environment every day for many years.

However, the evidence does not establish that occasional exposure is automatically safe, nor does it provide a reliable numerical estimate of cancer risk for individual school students.

The practical objective should be to prevent or adequately control exposure, rather than attempting to identify an acceptable amount of avoidable dust.

2.5 Irritation of the Respiratory System

Wood dust can also cause irritation of the nose, throat and respiratory tract.

These effects may occur during or shortly after dusty activities and can include:

- Sneezing and nasal irritation.
- A blocked or runny nose.
- Sore or irritated throat.
- Coughing.
- Eye irritation.
- General respiratory discomfort.

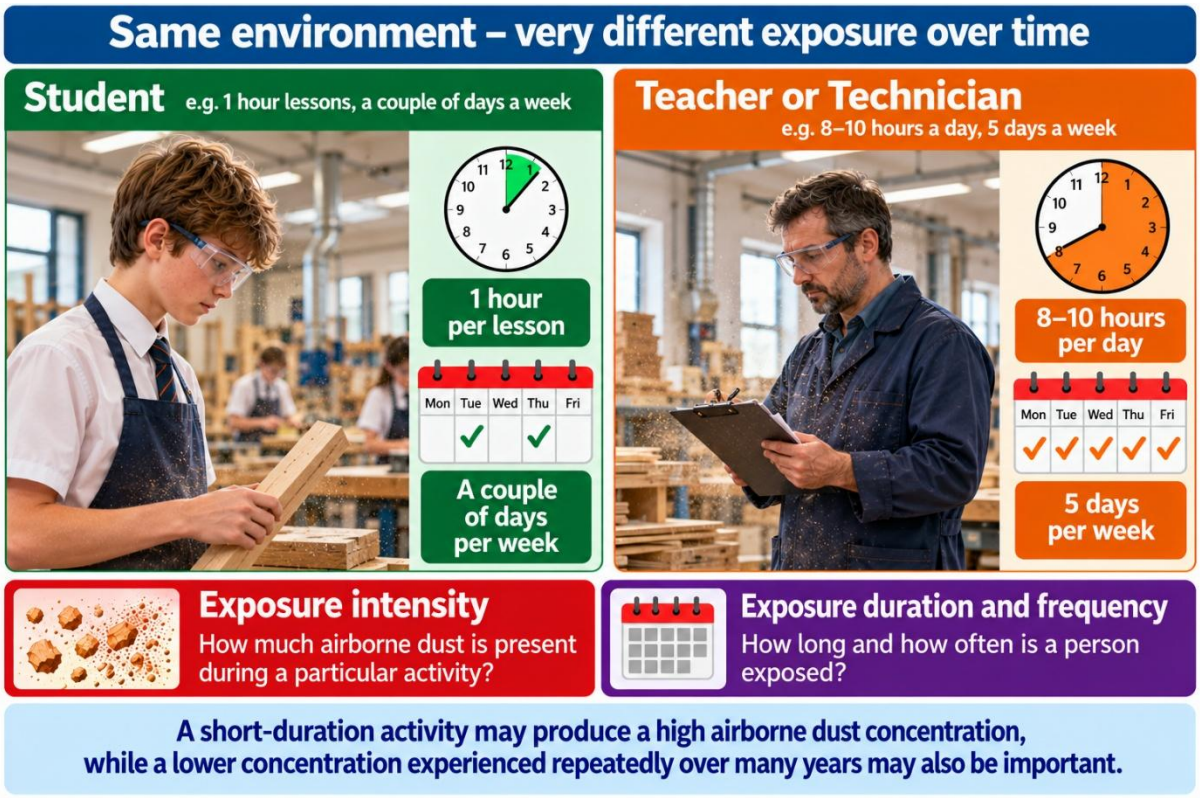
Some wood species contain naturally occurring substances that may contribute to irritation or allergic responses.

These effects should not be dismissed simply because they appear less serious than occupational asthma or cancer.

Repeated irritation may indicate that dust is escaping into the workplace atmosphere and that existing controls require investigation.

2.6 Why Does Repeated Exposure Matter?

Exposure to wood dust is not necessarily limited to a single woodworking activity.



In a D&T classroom, dust may be generated by several students working simultaneously, by a technician preparing materials or by cleaning activities that disturb previously settled dust.

A teacher may spend several hours each day supervising lessons, even though they rarely operate machinery themselves.

Similarly, cleaning staff may enter the room after lessons have finished and disturb dust that has accumulated throughout the day.

This creates two important exposure considerations.

1. **Exposure intensity:** How much airborne dust is present during a particular activity?
2. **Exposure duration and frequency:** How long and how often is a person exposed?

The risk of developing serious, potentially irreversible respiratory diseases generally increases with greater exposure to wood dust over time.

For example, a student attending woodworking lessons for one or two hours a week is likely to have a lower cumulative exposure, and therefore a lower associated risk, than a teacher or technician spending 8–10 hours a day, five days a week, in the same environment.

The longer and more frequently someone is exposed to airborne wood dust, particularly where dust controls are inadequate, the greater their potential risk of developing long-term respiratory health problems.

2.7 Why Individual Susceptibility Matters

Not everyone responds to wood-dust exposure in the same way.

Some people may be more susceptible to respiratory irritation or may have existing respiratory conditions, such as asthma.

Others may develop sensitisation following occupational exposure.

A person who has not experienced symptoms previously should not assume that continued exposure is without risk.

Equally, the absence of reported symptoms within a workshop does not demonstrate that dust exposure is adequately controlled.

Risk assessments should consider relevant individual circumstances while ensuring that effective engineering and working-practice controls protect everyone using the environment.

2.8 Recognising Early Warning Signs

Respiratory symptoms may provide an early indication that exposure controls are inadequate.

Particular attention should be given to symptoms that:

- Develop or worsen during woodworking activities.
- Improve during weekends or school holidays.
- Return when the person re-enters the workshop.
- Affect more than one person using the same room.
- Occur alongside visible dust escape, poor extraction or excessive dust accumulation.

Where symptoms suggest a possible work-related respiratory condition, the situation should be investigated promptly and appropriate occupational health or medical advice obtained.

For employees exposed to wood dust, suitable health surveillance may be required under COSHH where the relevant criteria are met. This is particularly important in relation to occupational asthma.

Health surveillance does not replace the need to prevent or adequately control exposure.

CHAPTER

3 Who May Be Exposed to Wood Dust?

Wood dust is not only produced by students operating woodworking machinery. A range of people may be exposed in D&T classrooms, depending on the activities undertaken, the duration and frequency of exposure, and the effectiveness of control measures.

Understanding who may be exposed is essential for identifying risks, implementing appropriate controls and protecting the respiratory health of everyone who works in, or enters, the woodworking environment.



STUDENTS

During practical woodworking activities and when in the workshop environment.



TEACHERS

During teaching, supervision and preparation of practical activities.



TECHNICIANS

During preparation, machining, maintenance and material handling.



CLEANERS

When cleaning the workshop and other areas where dust may have settled.



CONTRACTORS

During installation, maintenance and inspection of equipment and extraction systems.



VISITORS

Including inspectors, parents and others who may enter the workshop.

KEY MESSAGE:

A wide range of people may be exposed to wood dust in D&T classrooms, not just those operating woodworking machinery. Risk depends on the activities undertaken, the duration and frequency of exposure, and the effectiveness of control measures.

CHAPTER 3

Who Is at Risk from Wood Dust?

Understanding who may be exposed and why some people face greater risks than others.

3.1 Introduction

Wood dust does not only affect the person cutting, machining or sanding wood. Once released into the air, dust can spread throughout a D&T classroom, potentially exposing everyone occupying the space.

Students, teachers, technicians and cleaners may all inhale airborne wood dust, even when they are not directly involved in woodworking activities.

However, **not everyone experiences the same level of exposure or risk**.

The likelihood of developing respiratory health problems depends on several factors, including:

- **Duration:** How long someone spends in the workshop.
- **Frequency:** How often they are exposed to wood dust.
- **Dust concentration:** How much airborne dust is present.
- **Activities:** Whether they generate dust themselves or are exposed to dust produced by others.
- **Control measures:** How effectively wood dust is captured, contained and removed.

These differences are particularly important in educational environments, where students may attend woodworking lessons for only a few hours each week, while teachers and technicians may spend most of their working day in the same classroom.

Understanding these exposure patterns is an important part of identifying who may be at risk and determining where effective dust-control measures are needed.

3.2 Students - Generally Shorter Exposure Periods

Students typically spend less time in woodworking classrooms than teaching and technical staff.

For example, a student may attend one or two woodworking lessons each week, with each lesson lasting approximately one hour.

Where woodworking activities are limited and effective dust controls are in place, their cumulative exposure is likely to be relatively low compared with someone working in the same environment throughout the week.

However, exposure can increase considerably depending on the activities being undertaken.

When might students experience greater exposure?

- Hand sanding wood without effective dust extraction.
- Using woodworking machinery where extraction is inadequate or not switched on.
- Working alongside several other students generating dust simultaneously.

- Occupying a classroom where airborne dust from previous activities has not been adequately controlled.
- Disturbing dust that has accumulated on benches, equipment and other surfaces.
- Working in areas where dust is carried by air currents from nearby activities.

Class size is also important. In a classroom containing 25–30 students, several woodworking activities may take place simultaneously.

Even where individual students generate relatively small quantities of dust, the combined activities may increase the amount released into the classroom atmosphere.

A student does not necessarily need to be sanding or machining wood to inhale dust generated by others.

What does this mean for risk?

Students will generally have shorter exposure periods than full-time teaching or technical staff. Consequently, where airborne dust concentrations are comparable, their cumulative exposure will usually be lower.

Nevertheless, shorter exposure does not mean that respiratory health risks can be ignored.

3.3 Teachers - Repeated Exposure Throughout the Working Week

Teachers may be exposed to wood dust more frequently and for longer periods than the students they supervise.

A D&T teacher might spend much of the working day in the same workshop, teaching several classes and supervising a wide range of practical activities.

For example, a teacher spending 8 hours a day, five days a week, in a woodworking environment could occupy that space for approximately 40 hours each week.

Over a school year, this represents a substantially greater potential exposure duration than that of an individual student attending occasional lessons.

Why might teachers be at greater risk?

Teachers do not necessarily need to operate woodworking machinery to be exposed.

Their exposure may arise from:

- Supervising students who are cutting, machining and sanding wood.
- Moving between different workstations where dust is being generated.
- Spending prolonged periods in classrooms with ineffective extraction.
- Remaining in the workshop while airborne dust from previous activities is still present.
- Disturbing dust deposited on workbenches, equipment and teaching surfaces.
- Repeatedly occupying workshops where housekeeping is poor.

The greatest concern is where dust is regularly released into the classroom atmosphere and remains inadequately controlled.

The importance of repeated exposure

Where teachers and students experience similar airborne dust concentrations, the teacher's substantially longer occupancy may result in greater cumulative exposure.

Repeated exposure over many years can increase the potential for serious occupational respiratory disease, particularly where effective controls are absent or inadequate.

This is why the assessment of wood-dust exposure should consider the teacher's entire working pattern, rather than focusing only on individual woodworking activities.

3.4 Technicians - Frequent and Potentially Intensive Exposure

D&T technicians often undertake activities that generate significant quantities of wood dust.

Their responsibilities may include preparing materials, cutting timber and manufactured boards, operating woodworking machinery, maintaining equipment and managing workshop facilities.

Unlike students, who may undertake woodworking for relatively short periods, technicians can perform dust-generating tasks repeatedly throughout the working week.

Activities that may increase exposure

- Cutting and machining timber and manufactured boards.
- Using bandsaws, circular saws, sanders and other woodworking machinery.
- Preparing materials for several classes.
- Sanding or finishing wooden components.
- Emptying dust-collection equipment.
- Cleaning machinery and surrounding work areas.
- Maintaining extraction equipment or investigating blockages.
- Working near machinery where dust extraction is ineffective.

Technicians may experience both **direct exposure**, from their own woodworking activities, and **indirect exposure**, from dust generated elsewhere in the workshop.

Why might technicians face greater risks?

A technician may spend 8–10 hours a day in woodworking areas, with some of that time involving activities that produce substantial airborne dust.

Where dust-control measures are ineffective, this combination of frequent dust generation and prolonged exposure can result in a greater potential for respiratory harm.

Technicians may also encounter concentrated dust during tasks such as emptying collection containers, disturbing accumulated deposits or carrying out maintenance.

These activities require particular consideration because dust that has already been collected or deposited can become airborne again.

3.5 Cleaning Staff - Exposure That Is Easily Overlooked

Cleaning staff are an important group to consider when assessing wood-dust exposure.

Although cleaners may not undertake woodworking activities themselves, they can be exposed to dust that has accumulated during lessons and workshop operations.

Wood dust can settle on floors, benches, machinery, shelving and other surfaces throughout the day.

If these deposits are disturbed during cleaning, particles can become airborne and enter the breathing zone of the person carrying out the work.

Why can cleaning create significant exposure?

Traditional dry sweeping with a broom can disturb settled wood dust, releasing particles back into the surrounding air.

Other potentially hazardous practices include:

- Brushing dust from benches and machinery.
- Using compressed air to blow dust from surfaces.
- Emptying dust containers without suitable precautions.
- Cleaning heavily contaminated areas.
- Disturbing dust accumulated beneath machinery or on elevated surfaces.

These activities may produce substantial short-term airborne dust concentrations, even when woodworking machinery is switched off.#

How can the risk be reduced?



Suitable dust-controlled cleaning methods should be used.

For example, a properly selected and maintained industrial vacuum cleaner suitable for wood dust, normally Class M, can help remove deposits without dispersing them into the classroom atmosphere.

Suitable damp-cleaning methods may also be appropriate for certain surfaces and tasks.

Cleaning staff should receive clear instructions and appropriate training so that they understand why dry sweeping and compressed-air cleaning are unsuitable methods of controlling wood dust.

KEY MESSAGE: Cleaning staff may be exposed to significant concentrations of airborne wood dust if accumulated deposits are disturbed. Effective cleaning methods are therefore an essential part of respiratory protection.

3.6 Other People Who May Be Exposed

Although students, teachers, technicians and cleaners are the main groups considered in this guide, other people may enter woodworking environments.

These can include:

- Maintenance engineers and contractors.
- LEV engineers and examiners.
- Caretakers and premises staff.
- Visiting teachers and support staff.
- Other school employees and visitors.

Their exposure will depend on the work being undertaken, the condition of the workshop and the amount of time spent within the environment.

Particular attention may be required when maintenance activities disturb accumulated dust or involve opening contaminated extraction equipment.

3.7 Comparing Exposure Between Different Groups

The following table illustrates how exposure patterns may vary between people using a typical D&T woodworking classroom.

These are examples rather than fixed risk classifications. Actual exposure will depend on airborne dust concentrations, activities and the effectiveness of existing controls.

Group	Typical exposure pattern	Potential exposure concern
Students	Short lessons, perhaps 1–2 hours per week	Variable. Often lower cumulative exposure, but dusty activities can create significant short-term exposure.
Teachers	Repeated occupancy, potentially 8 hours per day, 5 days per week	Potentially high cumulative exposure where classroom dust is poorly controlled.
Technicians	Frequent woodworking and material preparation, potentially 8–10 hours per day	Potentially high exposure due to regular dust-generating activities and prolonged occupancy.
Cleaners	Shorter cleaning periods, often after lessons	Potentially high short-term exposure where sweeping or other activities disturb settled dust.
Contractors and visitors	Occasional or task-specific attendance	Variable, depending on activities, duration and workshop conditions.

An important distinction. Time spent in a workshop is not necessarily the same as time exposed to airborne wood dust.

For example, a teacher occupying a well-controlled workshop for eight hours may experience less exposure than someone carrying out a short but very dusty activity without effective extraction.

However, where airborne dust is present throughout the working day, longer and more frequent occupancy can substantially increase cumulative exposure.

The objective is therefore to understand both the concentration of airborne dust and how long and how frequently each person may inhale it.

3.8 Why Is This Important for Risk Assessment?

A suitable COSHH risk assessment should consider everyone who may be exposed, not just the person operating woodworking machinery.

This means considering the classroom as a whole, including:

- The number of people occupying the room.
- The activities being undertaken simultaneously.
- The duration and frequency of occupancy.
- The location of dust-generating equipment.
- The effectiveness of Local Exhaust Ventilation.
- The accumulation and disturbance of settled dust.
- The cleaning and maintenance arrangements.

It is particularly important to recognise that an LEV system installed on woodworking machinery may control dust from that machine without necessarily controlling dust generated by hand sanding, cleaning or other activities elsewhere in the classroom.or this reason, the effectiveness of individual extraction systems and the overall control of airborne dust within the classroom should both be considered.

CHAPTER

4 How Wood Dust Is Generated in D&T Classrooms



A wide range of practical woodworking activities can release wood dust into the air. The quantity and size of particles produced depend on the material, the process, the equipment used and the effectiveness of dust-control measures.

Understanding how wood dust is generated during different activities helps identify the risks and select appropriate control measures.

CUTTING

Sawing operations can produce significant quantities of wood dust, including fine airborne particles.

DRILLING

Drilling generates wood dust and chips. The size and quantity depend on the drill size, speed and material.

MACHINING

Operations such as planing, routing and moulding can release fine dust, particularly from hardwoods and wood-based materials.

SANDING

Sanding produces large amounts of fine dust that can remain suspended in the air and may be inhaled.

HAND SANDING

Even small manual tasks can generate significant amounts of fine dust, often without effective extraction.

KEY MESSAGE:

Many woodworking activities can generate wood dust, from cutting and drilling to machining and sanding. The quantity and size of particles vary, and fine dust can remain in the air and be inhaled even when it is not visible.

CHAPTER 4

Where Does Wood Dust Come From and How Does It Spread?

Understanding dust-generating activities, airborne exposure and the importance of effective dust control.

4.1 Introduction

Wood dust is generated during many everyday activities in Design and Technology (D&T) classrooms. Cutting, machining, drilling and sanding wood can all release particles into the surrounding air.

However, the amount of dust produced, how it behaves and where it travels can vary considerably depending on the activity.

Some woodworking processes produce larger chips and shavings that settle relatively quickly. Others, particularly sanding, can generate fine particles that remain airborne and may be inhaled by people throughout the classroom.

Importantly, wood dust does not always remain close to the person or machine producing it.

Air movement, ineffective extraction, poor housekeeping and the disturbance of settled dust can all contribute to the spread of airborne particles.

Understanding these exposure pathways is essential when designing, assessing and maintaining effective dust-control measures.

4.2 Woodworking Machinery - A Major Source of Dust

Woodworking machinery is an important source of airborne dust in educational workshops.

The amount and characteristics of dust generated depend on the machine, the cutting process, the material being worked and the effectiveness of extraction.

Bandsaws



Bandsaws are commonly used for cutting timber and manufactured boards.

The moving blade generates sawdust as it passes through the material. Some dust falls beneath the table, while other particles may be carried by the blade or released around the cutting area.

Effective extraction should be provided at suitable collection points, taking account of where dust is generated and how it moves.

Potential exposure concern: Dust escaping around the blade, beneath the table or from inadequately extracted machine enclosures.

Circular Saws

Circular saws can generate substantial quantities of sawdust during cutting operations.

The rotating blade can project particles at speed, making the location and design of extraction points particularly important.



Depending on the machine design, dust may be generated both above and below the workpiece.

Potential exposure concern: Dust escaping from the cutting zone, particularly where extraction arrangements are inadequate or poorly positioned.

Disc and Belt Sanders

Machine sanding can produce considerable quantities of fine airborne wood dust.



Unlike sawing, which may generate a mixture of chips and dust, sanding removes material through abrasion, producing particles that can readily become airborne.

The movement of the abrasive surface can also influence the direction in which dust is released.

Potential exposure concern: Fine dust escaping from the sanding area, especially where extraction does not adequately capture dust at the point of generation.

Other Woodworking Machinery

Additional sources may include:

- Woodworking lathes.
- Pillar drills.
- Routing machines.
- Planers and thicknessers.
- Scroll saws and powered fretsaws.
- CNC Cutting machines.
- Other cutting, shaping and finishing equipment.

Not all machines produce the same quantity of airborne dust, and some generate predominantly larger chips or shavings.

Nevertheless, each activity should be assessed to determine whether hazardous airborne dust is produced and what controls are required.

4.3 Hand Sanding - An Easily Overlooked Source

Hand sanding is a common activity in D&T classrooms, particularly when students are finishing wooden projects.

Because it does not involve powered machinery, hand sanding may be perceived as a relatively low-risk activity.



However, the abrasive action can release fine wood-dust particles directly into the student's breathing zone.

Unlike many woodworking machines, hand sanding may take place at ordinary classroom workbenches without dedicated dust extraction.

Why can hand sanding be a problem?

Consider a classroom containing 30 students.

If several students are hand sanding simultaneously, each may generate relatively small amounts of dust. However, the combined activities can increase the quantity of airborne dust released into the classroom.

Students working nearby, together with the teacher supervising the lesson, may also be exposed.

The amount of dust generated will depend on the material, the abrasive used, the sanding technique and the duration of the activity.

What should be considered?

- How many students are sanding at the same time?
- Are suitable extracted sanding stations or on-tool extraction available?
- Is sanding taking place close to the student's breathing zone?
- Is dust accumulating on workbenches?
- Are other people working nearby?
- Is dust being disturbed when projects and equipment are moved?

4.4 Manufactured Boards - MDF, Plywood and Chipboard

Manufactured wood-based materials are widely used in educational workshops.

These include Medium Density Fibreboard (MDF), plywood, chipboard, hardboard and other engineered wood products.

Machining and sanding these materials can release airborne wood dust.

MDF, in particular, can produce substantial quantities of fine dust during machining and sanding.

Depending on the product and process, manufactured boards may also contain adhesives or other substances requiring consideration under COSHH.

Why is this important?

A technician preparing large quantities of MDF or other board materials for several classes may undertake repeated cutting and machining activities.

Similarly, students sanding manufactured boards may release dust directly into the classroom atmosphere.

The risk assessment should therefore consider both the wood-dust hazard and any additional substances relevant to the particular material.

4.5 What Happens When LEV Is Ineffective?

Local Exhaust Ventilation (LEV) is designed to capture airborne contaminants as close as practicable to where they are generated.

In woodworking classrooms, LEV commonly serves machines such as bandsaws, circular saws, sanders and other dust-producing equipment.

However, extraction systems can become ineffective for several reasons.

Common causes include:

- **Extraction not switched on.** A machine may be operated without its associated extraction system running, allowing dust to escape into the workshop.
- **Poor hood design or positioning.** The extraction arrangement may not adequately capture dust where it is generated.
- **Insufficient airflow.** Inadequate airflow may reduce the ability of the system to capture and transport dust effectively.
- **Blocked ductwork.** Accumulated dust, chips and offcuts can restrict airflow and reduce extraction performance.
- **Damaged or disconnected ducting.** Leaks, damaged flexible connections or disconnected hoses may reduce performance and release dust.
- **Inadequate maintenance.** Filters, fans, ductwork and dust-collection equipment may deteriorate or become obstructed.
- **Simultaneous machine operation.** Where several machines share a common extraction system, the system must be capable of maintaining adequate performance under the intended operating conditions.

Why does this matter?

An extraction fan may be running, and air may be moving through the ductwork, while significant quantities of dust continue to escape at the machine.

This is why simply confirming that an extraction system operates is not sufficient evidence that exposure is adequately controlled.

4.6 Recirculating Dust Extraction - What Could Go Wrong?

Some woodworking extraction systems filter collected air before returning it to the workshop.

These are known as recirculating systems.

Where recirculation is used, the effectiveness and integrity of the filtration system are particularly important.

Potential problems include:

- Damaged or incorrectly fitted filters.
- Inadequate filtration for the dust being collected.
- Leaks around filter seals or housings.
- Poor maintenance.
- Filter damage during cleaning or replacement.
- Faults that allow contaminated air to bypass the filters.

If contaminated air passes through or around ineffective filters, wood dust may be returned to the classroom atmosphere.

This can create an exposure pathway affecting people throughout the room, rather than only those working near the original dust source.

Recirculation arrangements must therefore be assessed against applicable HSE guidance, including the suitability of filtration, system integrity, maintenance and the hazards of the substances being handled.

4.7 Settled Dust - A Hidden Source of Exposure

Not all wood dust remains airborne.

Particles eventually settle onto workbenches, machinery, floors, shelving, window ledges and other surfaces.

Over time, these deposits can accumulate, particularly where extraction or housekeeping is inadequate.

Although settled dust is not being inhaled while it remains undisturbed, it can become airborne again.

This process is known as **resuspension**.

How can settled dust become airborne?

- People walking through dusty areas.
- Moving equipment and materials.
- Brushing dust from benches.
- Dry sweeping.
- Using compressed air.
- Disturbing dust during maintenance.
- Air movement from fans, heaters, doors or windows.

Why is this important?

A classroom may appear relatively free from airborne dust during a quiet period, yet contain significant deposits on surrounding surfaces.

When these deposits are disturbed, people may inhale dust generated during activities that do not involve woodworking machinery at all.

4.8 Cleaning Activities - When Dust Becomes Airborne Again

Cleaning is essential to maintaining a safe woodworking environment.

However, unsuitable cleaning methods can create additional exposure.

- **Dry Sweeping**
    - Sweeping with a broom can disturb fine wood dust and release it back into the air.
    - This may expose the cleaner and other people occupying the workshop.
- **Compressed Air**
    - Using compressed air to blow dust from machinery, benches or clothing can disperse particles into the surrounding atmosphere.

- This practice should not be used as a routine wood-dust cleaning method.

- **Emptying Dust Containers.**
  - Dust-collection bags, bins and vacuum containers may contain substantial quantities of collected wood dust.
  - Emptying or changing these containers without suitable precautions can release concentrated dust into the breathing zone.

Suitable Cleaning Methods



Dust should normally be removed using appropriate dust-controlled methods, such as a suitable Class M industrial vacuum cleaner, or damp-cleaning methods where appropriate.

Cleaning arrangements should be planned, and cleaning staff should understand the hazards associated with disturbing settled wood dust.

4.9 Air Movement - How Dust Travels Around the Classroom

Air movement can influence where airborne wood dust travels after it has been generated.

Potential sources include:

- Open doors and windows.
- Heating systems.
- Ventilation supply air.
- Portable fans.
- Air movement caused by people.
- Air discharged from extraction equipment.
- Draughts between adjoining rooms.

These air movements can transport dust away from the original source.

They may also interfere with the capture performance of LEV systems, particularly where cross-draughts pass through the area in which dust is being generated.

Example: A Busy Classroom

Imagine a classroom where several students are sanding wooden projects.

A nearby door is open, and warm air from a heater is circulating through the room.

Dust released during sanding may be carried away from the workbench, potentially exposing other students and the teacher.

If settled dust is also present, air movement and classroom activities may contribute to its redistribution.

This illustrates why dust-control arrangements should consider the wider classroom environment, rather than focusing solely on individual machines.

4.10 Direct and Indirect Exposure

When assessing wood-dust exposure, it is useful to distinguish between two common exposure pathways.

Direct Exposure

Direct exposure occurs when a person inhales dust generated by their own activity.

Examples include:

- A student hand sanding a wooden project.
- A technician operating a sanding machine.
- A cleaner disturbing dust while emptying a collection container.

Indirect Exposure

Indirect exposure occurs when a person inhales dust generated by someone else's activity or from contamination elsewhere in the workshop.

Examples include:

- A teacher supervising several students who are sanding.
- A student working near a poorly extracted machine.
- A technician occupying a classroom where other woodworking activities are taking place.
- A cleaner entering a workshop containing airborne dust from previous activities.

These pathways can occur simultaneously. A person may generate dust through their own work while also inhaling dust released elsewhere in the room.

4.11 What Should LEV Engineers, Practitioners and Occupational Hygienists Look For?

Understanding where dust is generated and how it spreads is essential when assessing the effectiveness of existing control measures.

An LEV examination or workplace exposure assessment should consider the equipment and the activities taking place around it.

Important questions include:

- Where is dust generated during normal operation?
- Is dust visibly escaping from the machine or work area?
- Are extraction hoods positioned appropriately?
- Is sufficient airflow available under normal operating conditions?
- Are several machines operating simultaneously?
- Are there dust-generating activities without suitable extraction?
- Is dust accumulating on surrounding surfaces?
- Could air movement interfere with dust capture?

- Are recirculating filtration systems suitable and properly maintained?
- Are cleaning and maintenance activities creating additional exposure?

These observations can help identify shortcomings that may not be apparent from airflow measurements alone.

A thorough examination and test of an LEV system and an occupational hygiene exposure assessment serve different purposes. Both may provide valuable evidence when evaluating whether wood dust is adequately controlled.

CHAPTER

5 Controlling Wood Dust in D&T Classrooms



A combination of control measures is required to reduce exposure to wood dust in D&T classrooms. These include effective local exhaust ventilation, good housekeeping, safe working practices and appropriate personal protective equipment where necessary.

Understanding how these controls work together is essential for creating a safer and healthier woodworking environment.

LOCAL EXHAUST VENTILATION (LEV)

Captures wood dust at or close to the source, before it can enter the breathing zone.

GOOD HOUSEKEEPING

Regular and effective cleaning helps prevent accumulation and reduces the risk of dust being re-suspended into the air.

SAFE WORKING PRACTICES

Using correct techniques and equipment helps minimise the amount of dust generated.

PERSONAL PROTECTIVE EQUIPMENT

RPE may be required for certain tasks, such as hand sanding or where other controls do not adequately reduce exposure.

INSPECTION, TESTING AND MAINTENANCE

Keeps control measures working effectively and helps ensure ongoing protection.

KEY MESSAGE:

A combination of effective control measures, including local exhaust ventilation, good housekeeping, safe working practices and, where necessary, personal protective equipment, is required to reduce exposure to wood dust in D&T classrooms.

CHAPTER 5

Reducing the Risks from Wood Dust

Practical measures to prevent exposure and protect respiratory health in D&T classrooms.

5.1 Introduction

Previous chapters have explained how wood dust is generated, how it spreads through a classroom and the potential consequences of breathing it in.

The good news is that **exposure to wood dust can be significantly reduced through effective control measures and good working practices.**

The aim is not simply to remove visible dust from the classroom, but to prevent harmful airborne particles from being inhaled in the first place.

This requires a combination of approaches, including reducing dust generation, capturing dust at source, maintaining clean working environments and ensuring that everyone understands how to work safely.

Under the Control of Substances Hazardous to Health Regulations (COSHH), employers must prevent exposure to hazardous substances where reasonably practicable or, where prevention is not reasonably practicable, ensure that exposure is adequately controlled.

For wood dust, which presents both respiratory sensitisation and cancer hazards, exposure should be reduced as low as reasonably practicable.

5.2 The Hierarchy of Control - Where Should We Start?

The hierarchy of control provides a structured approach to reducing exposure to hazardous substances.

It encourages consideration of the most effective control measures first, rather than relying immediately on personal protective equipment.

In woodworking classrooms, this means considering whether dust can be avoided, reduced or captured before it enters the breathing zone.

1. Elimination - Can the Dusty Activity Be Avoided?

The most effective way to prevent exposure is to eliminate the activity generating the dust.

In D&T classrooms, completely eliminating woodworking dust is unlikely to be practical, but individual activities may be avoided or reduced.

Examples include:

- Using pre-cut materials where appropriate.
- Selecting components that require less machining.
- Avoiding unnecessary sanding.
- Purchasing materials in suitable sizes to reduce preparation work.

2. Substitution - Can a Less Dusty Method Be Used?

Where an activity cannot be eliminated, consider whether it can be undertaken using a method that generates less airborne dust.

Examples include:

- Using sharp, well-maintained cutting tools.
- Choosing appropriate machining methods rather than unnecessary abrasive finishing.
- Selecting materials and processes that reduce dust generation where practical.

Substitution should not introduce additional hazards or compromise the educational objectives of the activity.



3. Engineering Controls - Capture Dust at Source

Engineering controls are particularly important in woodworking environments.

Local Exhaust Ventilation (LEV) is designed to capture dust as close as practicable to where it is generated, preventing it from spreading into the surrounding atmosphere.

Suitable extraction may be required for woodworking machinery, powered sanding equipment and designated hand-sanding activities.

4. Administrative Controls - Improve Working Practices

Administrative controls help reduce exposure through suitable procedures, supervision, training and organisation.

Examples include:

- Limiting unnecessary simultaneous dust-generating activities.
- Ensuring extraction is switched on before machining begins.
- Keeping extraction hoods and openings unobstructed.
- Reporting damaged or ineffective extraction.
- Establishing suitable cleaning arrangements.
- Restricting access during particularly dusty maintenance activities.

Administrative controls support engineering controls but should not be used as a substitute for effective dust capture.

5. Respiratory Protective Equipment (RPE)

Where exposure cannot be adequately controlled by other measures alone, suitable RPE may be required.

RPE is the last line of defence and must not be treated as a replacement for effective extraction or other reasonably practicable control measures.

5.3 Reducing Dust Generation in the Classroom

One of the simplest ways to reduce airborne wood dust is to consider how much dust is generated during normal teaching activities.

D&T classrooms often contain several students undertaking practical tasks simultaneously.

While each activity may produce a relatively small quantity of dust, the combined effect can increase the amount released into the classroom.

Planning Practical Activities

Teachers and technicians can reduce unnecessary dust generation by considering:

- Whether every student needs to undertake the same dusty activity simultaneously.
- Whether components can be prepared in advance using suitably extracted machinery.
- Whether alternative working methods can reduce sanding.
- Whether designated dust-controlled workstations are available.
- Whether the workshop is suitable for the number and type of activities planned.

For example, a class of 30 students undertaking hand sanding simultaneously may create a greater airborne dust challenge than a smaller number using properly extracted sanding stations.

However, limiting the number of students sanding should be regarded as a supplementary measure, not a replacement for effective extraction.

The Importance of Good Workshop Planning

Effective planning can help reduce unnecessary exposure without limiting the educational value of woodworking.

Teachers and technicians should understand which activities generate the most dust and ensure that suitable controls are available before work begins.

5.4 Local Exhaust Ventilation - Capturing Dust at Source

Local Exhaust Ventilation is one of the most important engineering controls used to manage wood dust in educational workshops.

LEV works by capturing dust close to where it is generated and transporting it through ductwork to suitable collection or filtration equipment.

When properly designed, installed, operated and maintained, LEV can significantly reduce the amount of wood dust released into the workplace atmosphere.

What Does Effective LEV Look Like?

An effective system should:

- Capture dust at or close to the point where it is generated.
- Maintain adequate airflow under the intended operating conditions.
- Prevent dust escaping into the surrounding classroom as far as reasonably practicable.
- Be suitable for the machinery and materials being used.
- Be straightforward for teachers and technicians to operate correctly.
- Be regularly checked, maintained and thoroughly examined and tested.

Why Is Switching It On Not Enough?

An extraction fan may be running while dust continues to escape from the machine.

Possible reasons include poor hood design, insufficient airflow, blocked ductwork, damaged connections or incorrect use.

Consequently, the presence of extraction equipment should not be taken as proof that exposure is adequately controlled.

Teachers and technicians should be familiar with the expected performance of their extraction systems and know how to recognise and report potential problems.

What About Recirculating Systems?

Some extraction systems return filtered air to the classroom.

Where this occurs, suitable filtration and effective system integrity are essential to prevent hazardous dust from being returned to the occupied space.

Recirculation should only be used where it is appropriate for the contaminants involved and the system can meet the relevant requirements for adequate control.

The detailed design, performance, filtration, commissioning and testing requirements for LEV systems are examined in Chapter 6.

5.5 Controlling Hand Sanding

Hand sanding deserves particular attention because it is a common activity in educational woodworking.

Students may use abrasive paper or sanding blocks to smooth and finish wooden components.

Although hand sanding does not involve powered machinery, it can still release fine wood dust directly into the student's breathing zone.

Where several students sand simultaneously, the combined dust generation may affect the wider classroom.

How Can Exposure Be Reduced?

Suitable measures include:

- Using purpose-designed extracted sanding benches or workstations.
- Using suitable on-tool extraction where appropriate.
- Reducing unnecessary sanding through improved preparation and cutting.
- Planning activities to avoid excessive simultaneous dust generation.
- Ensuring workbenches are cleaned using suitable dust-controlled methods.
- Providing appropriate instruction and supervision.

What Should Be Avoided?

Students should not brush accumulated dust from workpieces or blow dust from surfaces.

Dust should be removed using suitable cleaning equipment or methods that minimise airborne release.

Where extraction is provided, students should understand how to use it correctly and why it is important.

5.6 Good Housekeeping - Keeping Dust Under Control

Good housekeeping is an essential part of controlling wood-dust exposure.

Even where effective LEV is installed, some dust may settle onto workbenches, machinery, floors and other surfaces.

If these deposits are allowed to accumulate, they can become airborne again when disturbed.

This creates a secondary source of exposure that may affect students, teachers, technicians and cleaning staff.

Why Does Cleaning Matter?

Dust that has settled on a surface is not necessarily dust that has been safely controlled.

Walking, moving equipment, brushing and unsuitable cleaning methods can disturb accumulated deposits and release particles into the air.

Regular and effective cleaning helps prevent this accumulation.

Suitable Cleaning Methods

A suitable industrial vacuum cleaner, normally **Class M for wood dust**, should be used where appropriate.

The vacuum should be selected for the task, maintained in good condition and fitted with suitable dust-collection and filtration arrangements.

Damp-cleaning methods may also be appropriate for certain surfaces, provided they are compatible with the materials and equipment being cleaned.

Cleaning Methods to Avoid

- **Dry sweeping:** Brooms can disturb fine dust and release it back into the atmosphere.
- **Compressed air:** Blowing dust from benches, machinery or clothing can disperse hazardous particles.
- **Dry brushing:** Brushing accumulated dust from surfaces may create additional airborne exposure.

These methods should not be used as routine wood-dust cleaning practices.

Cleaning Frequency

Cleaning arrangements should reflect the amount of dust generated and the level of workshop activity.

Heavily used workshops may require cleaning during the day as well as at the end of lessons.

Particular attention should be given to areas where dust accumulates, including beneath machinery, around extraction connections and on elevated surfaces.

5.7 Safe Working Practices - Everyone Has a Role

Effective dust control depends on more than engineering equipment. The way people use the workshop, operate machinery and respond to problems can significantly influence exposure.

Teachers

Teachers should:

- Plan activities to minimise unnecessary dust generation.
- Ensure appropriate extraction is available and used.
- Supervise students in correct working practices.
- Recognise and report ineffective extraction.
- Avoid allowing significant dust accumulation.
- Ensure students understand why wood dust must be controlled.

Technicians

Technicians should:

- Use suitable extraction when preparing materials.
- Check that equipment and extraction are operating correctly.
- Report defects and arrange appropriate maintenance.
- Use suitable methods when cleaning machinery.
- Avoid disturbing collected dust unnecessarily.
- Follow safe procedures when emptying dust-collection equipment.

Cleaning Staff

Cleaning staff should:

- Use suitable dust-controlled cleaning equipment.
- Avoid dry sweeping and compressed-air cleaning.
- Follow agreed cleaning procedures.
- Report excessive dust accumulation.
- Receive appropriate instruction and training.
- Understand the potential respiratory risks associated with wood dust.

LEV Engineers and Practitioners

LEV professionals should:

- Ensure systems are suitable for the intended woodworking activities.
- Consider dust capture under realistic operating conditions.
- Identify shortcomings that may allow dust to escape.
- Provide clear operating and maintenance information.
- Communicate findings and recommended improvements in language that workshop staff can understand.

Occupational Hygienists

Occupational Hygienists can support effective control by assessing exposure pathways, evaluating the adequacy of control measures and undertaking suitable exposure monitoring where necessary.

Their findings can help establish whether dust exposure is being adequately controlled across the wider classroom, rather than at individual machines alone.

5.8 Respiratory Protective Equipment - When Might It Be Needed?

Respiratory Protective Equipment (RPE) may be required where other control measures cannot adequately control exposure on their own, including certain maintenance, cleaning or exceptional tasks.

However, RPE should not be used as a substitute for effective engineering controls.

Important Considerations

Where RPE is required, it must be:

- Suitable for the wood-dust hazard and anticipated exposure.
- Capable of providing the required level of protection.
- Compatible with other protective equipment.
- Properly fitted to the wearer.

- Maintained, stored and used correctly.

Tight-fitting RPE requires appropriate face-fit testing, and users must be clean-shaven in the area of the face seal.

Training and supervision are also necessary.

For students, the priority should be to ensure that practical activities are adequately controlled through suitable equipment and working methods, rather than routinely relying on respiratory protection.

5.9 Recognising When Dust Controls Are Not Working

One of the most important aspects of preventing exposure is recognising when existing control measures may have failed.

Warning signs can include:

- Visible dust escaping from machinery.
- Dust collecting rapidly around extracted equipment.
- Unusual changes in extraction noise or performance.
- Blocked or damaged extraction connections.
- Excessive dust accumulating on workbenches or floors.
- Dust escaping from collection equipment or filters.
- Complaints of irritation, coughing or other respiratory symptoms.
- Evidence that cleaning activities are dispersing dust.

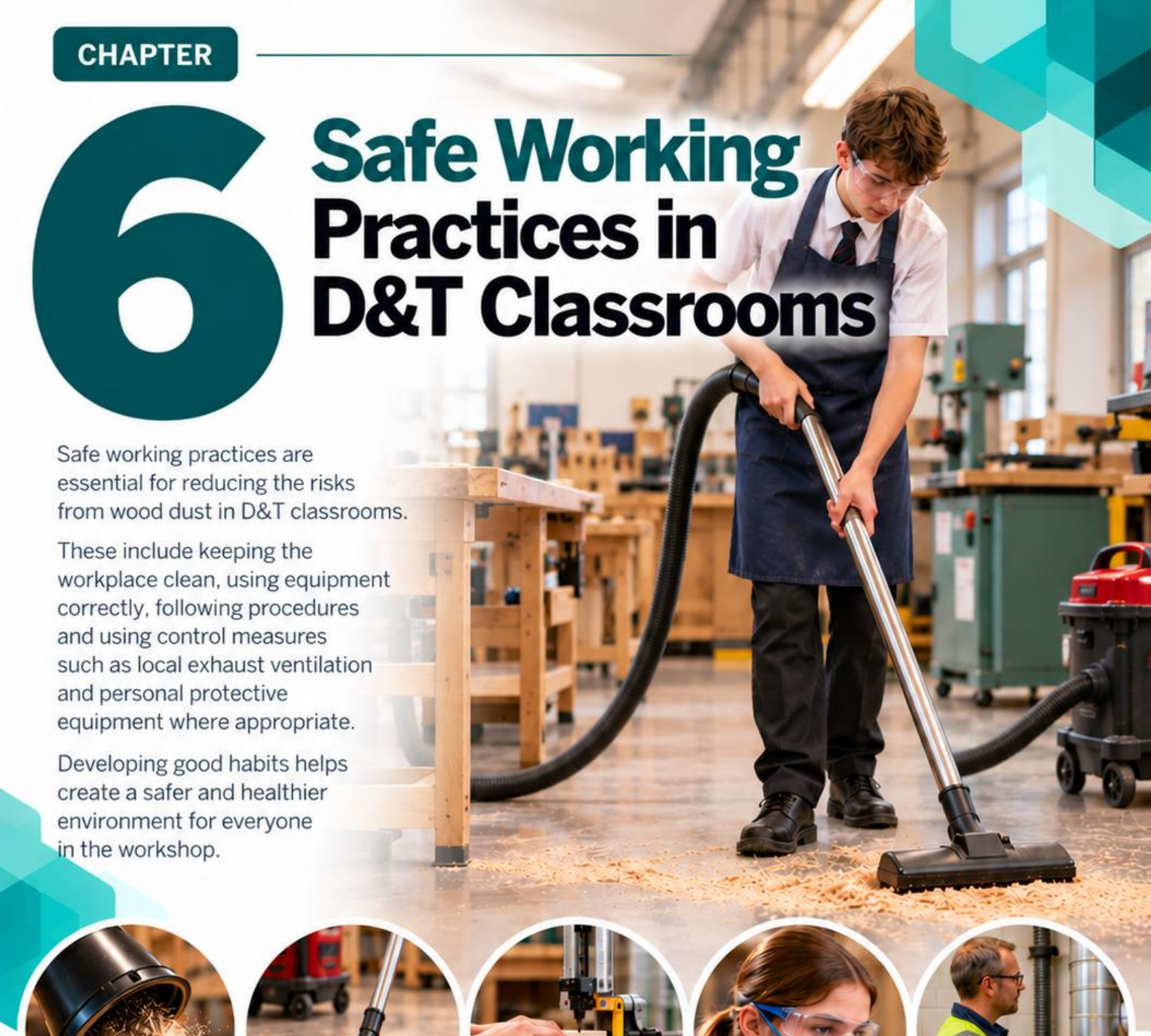
These signs should prompt investigation.

However, **the absence of visible dust or respiratory symptoms does not prove that exposure is adequately controlled**.

Where a problem is identified, affected activities should not continue until appropriate controls have been restored and their effectiveness confirmed.

CHAPTER

6 Safe Working Practices in D&T Classrooms



Safe working practices are essential for reducing the risks from wood dust in D&T classrooms.

These include keeping the workplace clean, using equipment correctly, following procedures and using control measures such as local exhaust ventilation and personal protective equipment where appropriate.

Developing good habits helps create a safer and healthier environment for everyone in the workshop.

USE EXTRACTION SYSTEMS

Use local exhaust ventilation (LEV) to capture wood dust at the source before it enters the air.

KEEP THE WORKPLACE CLEAN

Regularly clean equipment and surfaces to prevent the build-up of wood dust. Use suitable methods such as a vacuum cleaning rather than dry sweeping.

USE EQUIPMENT CORRECTLY

Follow instructions, use guards and safety features, and apply dust-control measures when using woodworking equipment.

USE PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate RPE where other control measures do not adequately reduce exposure to wood dust.

INSPECT AND MAINTAIN

Regularly check and maintain extraction systems, equipment and filters to ensure they continue to work effectively.

KEY MESSAGE:

Good working practices, including effective extraction, regular cleaning, correct use of equipment and appropriate personal protective equipment, are essential for reducing exposure to wood dust in D&T classrooms.

CHAPTER 6

Local Exhaust Ventilation - Is It Working Effectively?

Understanding the performance, examination, testing and maintenance of wood-dust extraction systems in D&T classrooms.

6.1 Introduction

Local Exhaust Ventilation (LEV) is one of the most important methods of controlling airborne wood dust in Design and Technology classrooms.

When correctly designed, installed, operated and maintained, LEV captures dust close to where it is generated, helping prevent it from spreading into the classroom and being inhaled by students, teachers, technicians and other staff.

However, the presence of an extraction system does not automatically mean that exposure is adequately controlled.

An extraction fan may be running, air may be flowing through the ductwork and dust may be collecting in a filter or collection bag, yet significant quantities of fine dust could still be escaping into the workshop.

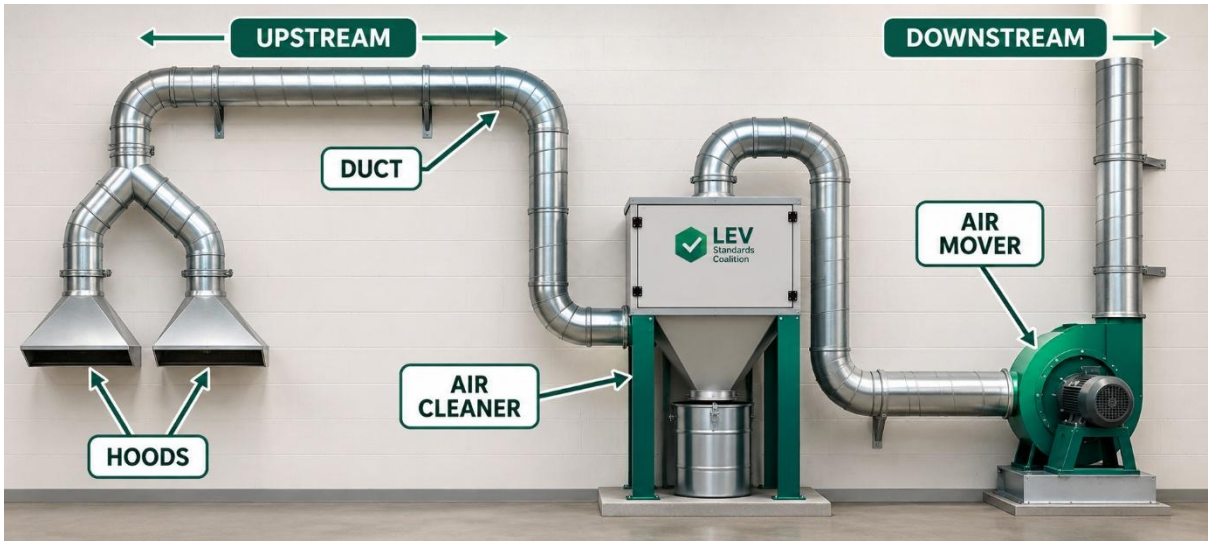
This is why LEV performance must be assessed in relation to its primary purpose: **capturing and controlling hazardous airborne dust before people breathe it in.**

This chapter explains how LEV systems work, how their effectiveness should be assessed and why routine maintenance and competent examination are essential.

6.2 How Does an LEV System Work?

A typical woodworking LEV system consists of several interconnected components.

Each component has an important role in capturing, transporting and removing dust from the workplace atmosphere.



Extraction Hood

The hood is the part of the system positioned at or around the point where dust is generated.

Its purpose is to capture airborne particles before they disperse into the surrounding environment.

Hoods may be built into woodworking machinery or provided as separate extraction attachments.

The design and position of the hood are particularly important because dust must be captured in the direction it naturally travels during the woodworking process.

Ductwork

Ductwork transports the dust-laden air from the extraction hood towards the collection or filtration equipment.

Ducts must be appropriately sized and arranged to maintain sufficient air velocity to transport the collected material.

Poorly designed ductwork, excessive resistance or insufficient transport velocity can allow dust and chips to accumulate, potentially restricting airflow and reducing system performance.

Fan (Airmover)

The fan creates the pressure difference required to move air through the extraction system.

Its performance must be sufficient to overcome the resistance of the hoods, ductwork, filters and other components under the intended operating conditions.

Dust Collection and Filtration (Air Cleaner)

Wood dust and chips are separated from the extracted air using suitable collection equipment and filters.

The type of equipment will depend on the system design, the materials being handled and whether the filtered air is discharged outdoors or returned to the building.

Air Discharge or Recirculation

Once the dust has been separated, the extracted air may be discharged to a suitable outdoor location or, where justified and appropriately controlled, recirculated.

Where recirculation is used, filtration performance, system integrity and the consequences of filter failure require particular attention.

6.3 Effective Dust Capture - The Most Important Consideration

The effectiveness of LEV depends on its ability to capture dust where it is generated.

This is particularly important in woodworking because dust may be released at speed by rotating blades, abrasive surfaces and other moving machine components.

Dust does not necessarily travel towards an extraction opening simply because air is being drawn into it.

Hood Position and Design

A hood must be suitable for the process and positioned to intercept dust effectively.

For example, a woodworking machine may release dust in more than one direction or from more than one location.

An extraction arrangement serving only one part of the machine may therefore leave another dust-release point inadequately controlled.

The arrangement must also be compatible with machine guarding and safe operation. Dust control must never compromise the safety features of woodworking equipment.

Airflow and Capture

Sufficient airflow must be provided to capture dust under normal working conditions.

However, airflow alone is not the complete answer.

A poorly positioned hood may fail to capture dust even when a substantial volume of air is being extracted.

Conversely, a well-designed hood positioned close to the source may achieve effective capture with a more appropriate airflow requirement.

The Influence of Machine Operation

LEV should be assessed while the woodworking process is taking place, where it is safe and practicable to do so.

This helps establish whether the extraction arrangement controls dust during the activities for which it was designed.

For example, a system may appear to perform adequately when a machine is idle but allow dust to escape during cutting or sanding.

6.4 Individual and Centralised Extraction Systems

D&T workshops may use different types of wood-dust extraction systems.

Individual Machine Extractors

Some machines are connected to dedicated extraction units.

These may be relatively straightforward to operate and maintain, but their performance still depends on suitable airflow, filtration, hose arrangements and correct use.

Portable or dedicated extraction units must be selected for the particular machine and dust hazard.

Centralised Extraction Systems

Larger workshops may have several woodworking machines connected to a common ductwork system.

A central fan and dust collector serve multiple extraction points.

These systems require particular attention to the number of machines operating simultaneously.

For example, a system designed to serve two machines may not maintain adequate airflow if four machines are operated together without appropriate system capacity or controls.

Dampers and Blast Gates

Some systems use dampers or blast gates to control which extraction branches are open.

Incorrect damper positions can affect the distribution of airflow throughout the system.

Where manual controls are provided, staff must understand how they should be operated.

Airflow indicators can help users recognise whether suitable extraction performance is available.

Recirculating Systems

Recirculating systems return filtered air to the occupied environment.

These systems require particular care because ineffective filtration or leakage could allow collected wood dust to re-enter the classroom.

The suitability of recirculation must be established as part of the system design and COSHH assessment, with appropriate attention to filtration efficiency, integrity, maintenance and foreseeable faults.

6.5 How Can We Tell Whether LEV Is Working?

By undertaking annual Thorough Examination and Test in compliance with Regulation 9 of CoSHH (Refer to 6.6 Thorough Examination and Testing). Determining whether LEV is effective requires more than checking that the fan starts.

Several types of evidence may be used together.

Visual Observation

Observing the machine during normal operation may reveal visible dust escaping from the cutting or sanding area.

Accumulation around the machine can also suggest that dust is not being adequately captured.

However, fine airborne particles may be difficult to see under normal lighting conditions.

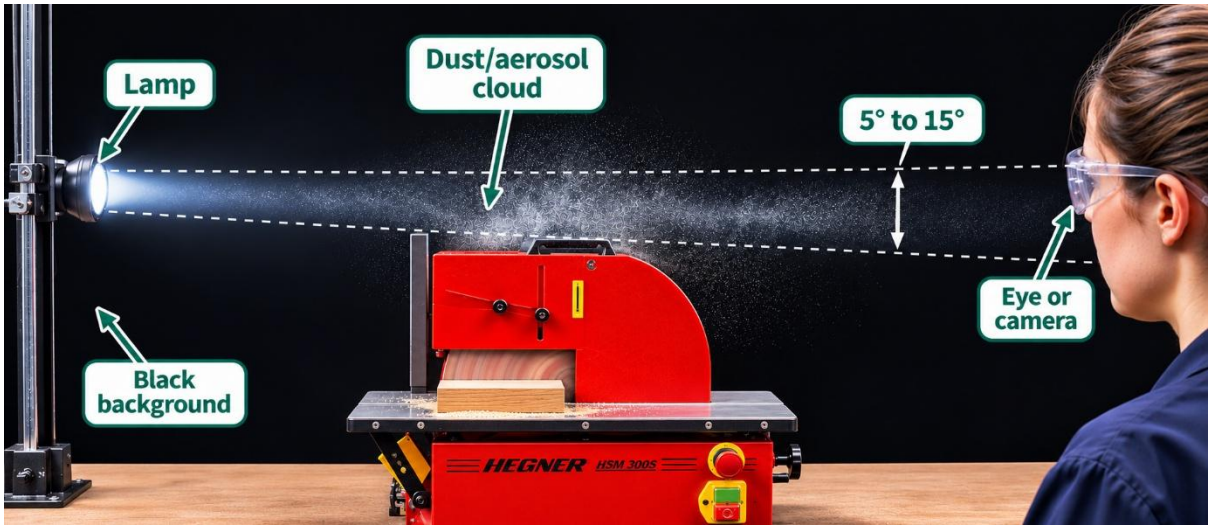
The absence of visible dust should therefore not be interpreted as proof that the system is effective.

Dust-Lamp Techniques

A suitable dust lamp can help reveal airborne dust that would otherwise be difficult to see.

When used correctly, it can be particularly useful for identifying the direction in which dust escapes and for comparing capture performance before and after improvements.

Dust lamps provide qualitative evidence of dust movement and control effectiveness. They do not directly measure personal exposure concentrations.



Airflow Measurements

LEV examiners may measure:

- Air velocity.
- Volume flow rate.
- Static pressure.
- Pressure differences across relevant components.
- Other performance parameters appropriate to the system.

These measurements help establish whether the system is operating in accordance with its intended performance.

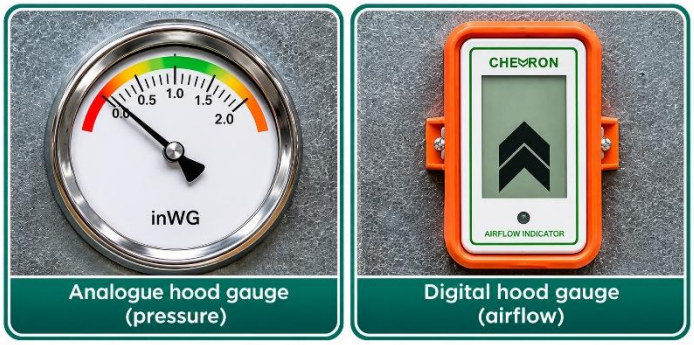
However, they must be interpreted alongside hood design, process conditions and evidence of effective capture.

Airflow Indicators

Suitable airflow indicators provide a practical way for workshop users to recognise changes in extraction performance.

An indicator should clearly show whether the required operating condition is being achieved.

Simple visual tell-tales, such as pieces of paper attached near an extraction opening, should not be relied upon as evidence of adequate LEV performance.



6.6 Thorough Examination and Testing (TExT)

Under the Control of Substances Hazardous to Health Regulations, LEV systems used to control wood dust must be maintained in efficient working order and subjected to periodic thorough examination and testing by a competent person.

For typical woodworking LEV systems, the **maximum interval between statutory thorough examinations and tests is 14 months**.

More frequent examination may be necessary where operating conditions, wear or deterioration could cause performance to decline sooner.

The 14-month requirement is a maximum interval, not a recommended maintenance schedule.

What Is the Purpose of TExT?

A thorough examination and test is intended to establish whether the LEV system continues to achieve its required operating performance and contribute effectively to the control of exposure.

It should identify defects, deterioration or other shortcomings that may prevent the system from performing as intended.

What Should Be Examined?

Depending on the type and complexity of the system, examination may include:

- The condition and suitability of extraction hoods.
- Hood positions and connections.
- Ductwork condition and integrity.
- Airflow and pressure measurements.
- Fan operation.
- Filter and dust-collection arrangements.
- Dampers and airflow indicators.
- Evidence of blockages, leakage or deterioration.
- Dust capture during representative machine operation.
- Comparison with commissioning data and required performance standards.

A competent examiner should select suitable examination and testing methods for the particular system.

Why Are Commissioning Records Important?

When an LEV system is first installed, it should be commissioned to establish that it meets the intended performance requirements.

Commissioning information provides a reference against which subsequent examinations can be compared.

Without suitable original performance information, it may be difficult to establish whether the system has deteriorated or whether it was ever capable of adequately controlling the dust hazard.

Where adequate reference information is unavailable, competent assessment may be needed to establish appropriate performance criteria.

What Should the Report Tell the School?

The report should communicate:

- Which system and extraction points were examined.
- What was inspected and tested.
- The relevant performance measurements.
- The performance criteria used.
- Whether the system is achieving its intended performance.
- Any defects or limitations identified.
- The remedial action required.
- The priority of those actions.

The report should be sufficiently clear for the school to understand what action is necessary.

6.7 Understanding the Results of an LEV Examination

LEV examination reports may contain technical measurements and terminology that are unfamiliar to teaching and premises staff.

It is important that the findings are explained clearly.

A System That Meets Its Performance Criteria

Where a system meets its established performance criteria and demonstrates effective dust capture under the assessed conditions, this provides useful evidence that the extraction is functioning as intended.

However, the result applies to the system and operating conditions examined.

It does not automatically establish that all airborne wood-dust exposure throughout the classroom is adequately controlled.

A System With Defects

An examiner may identify reduced airflow, damaged ductwork, poor hood positioning, ineffective filtration or other shortcomings.

The significance of these findings depends on their effect on dust control.

Some defects may require immediate action because they substantially compromise protection.

Others may require planned corrective work, provided adequate control can be maintained in the meantime.

What If the Report Says the System Has Passed?

A satisfactory examination result is useful, but it should not be treated as a guarantee that every woodworking activity is safe.

For example, an LEV system may adequately control dust from a bandsaw while students elsewhere in the classroom undertake uncontrolled hand sanding.

Similarly, the examination may not represent every possible combination of machines operating simultaneously.

The COSHH assessment must therefore consider the wider classroom environment as well as the individual extraction systems.

6.8 Routine Checks and Maintenance

Statutory thorough examination and testing is only one part of maintaining effective LEV.

Performance can deteriorate between examinations.

For this reason, routine checks and planned maintenance are essential.

Checks Before Use

Teachers and technicians should be able to recognise whether extraction is operating as expected.

Suitable checks may include:

- Confirming the extraction system is switched on.
- Checking relevant airflow indicators.
- Confirming dampers are correctly positioned.
- Looking for obvious damage to hoses and connections.
- Checking that extraction openings are unobstructed.
- Identifying unusual noise or changes in performance.
- Reporting any signs of dust escaping.

These checks should be appropriate to the equipment and supported by clear operating instructions.

Planned Maintenance

Maintenance requirements will depend on the system design and manufacturer's recommendations.

Typical activities may include:

- Inspecting and replacing damaged hoses.
- Checking ductwork and connections.
- Removing blockages using safe procedures.
- Inspecting filters and seals.
- Maintaining fan and motor assemblies.

- Checking dampers and control devices.
- Emptying dust collectors safely.
- Confirming that airflow indicators remain functional.

Maintenance involving collected wood dust must be planned to minimise exposure.

Maintenance Records

Schools should maintain appropriate records of inspections, maintenance, repairs and faults.

These records can help identify recurring problems and provide useful information to the competent LEV examiner.

6.9 When an Extraction System Is Not Working Properly

If an extraction system is ineffective, continuing to operate the associated woodworking machinery may expose people to hazardous wood dust.

Warning signs include:

- Visible dust escaping from the machine.
- A failed or abnormal airflow indicator reading.
- Blocked or disconnected extraction hoses.
- Damaged filters or collection equipment.
- Dust leaking from ductwork.
- Significant changes in extraction noise.
- Rapid dust accumulation around machinery.
- An unsatisfactory examination report identifying inadequate control.

What Should Happen?

Where extraction is suspected to be ineffective, the affected dust-generating activity should be stopped or restricted until the problem has been assessed and adequate control is restored.

The fault should be reported through the school's established procedures.

A competent person should investigate the cause and arrange suitable corrective action.

Where repairs or modifications may affect performance, appropriate checks or testing should confirm that effective control has been restored before normal operation resumes.

Who Is Responsible?

The employer or other dutyholder responsible for the workplace must ensure that suitable control measures are provided, maintained and used.

Teachers and technicians play an important role in recognising and reporting faults.

LEV contractors and examiners provide specialist advice and technical findings, but their involvement does not transfer the employer's responsibility for controlling exposure.

6.10 LEV Testing and Personal Exposure Monitoring - What Is the Difference?

LEV performance testing and occupational exposure monitoring are closely related, but they answer different questions.

LEV Performance Testing

LEV examination and testing asks:

Is the extraction system performing as intended and effectively controlling dust at the source?

It focuses on the engineering system, including hoods, airflow, ductwork, filtration and capture performance.

Personal Exposure Monitoring

Personal exposure monitoring asks:

How much airborne wood dust is a person actually breathing during their work?

Occupational hygienists may use personal sampling equipment to measure airborne wood-dust concentrations over a representative period.

The results can help assess exposure against the relevant Workplace Exposure Limit (WEL) and evaluate the effectiveness of control measures.

UK Workplace Exposure Limits

The current HSE limits for wood dust are *(Correct as of October 2026):*

Type of wood dust	8-hour time-weighted average WEL
Hardwood dust	**3 mg/m³**
Softwood dust	**5 mg/m³**
Mixtures of hardwood and softwood dust	**3 mg/m³**, applying to the total wood dust in the mixture

These limits are not safe exposure targets.

Because wood dust can cause occupational asthma and hardwood dust can cause cancer, exposure must also be reduced to as low a level as is reasonably practicable.

Why Might Both Assessments Be Needed?

Consider a D&T classroom with several woodworking machines connected to a central extraction system.

A competent LEV examiner may establish that the extraction system is performing satisfactorily at the machines examined.

However, a teacher could still be exposed to airborne wood dust generated by uncontrolled hand sanding, cleaning activities or other sources.

Personal exposure monitoring may help determine whether these wider activities are contributing to significant exposure.

Conversely, personal sampling results alone may not identify which part of an extraction system is defective.

The two approaches therefore provide different, complementary information.

6.11 Health Surveillance - An Additional Safeguard

Effective extraction and exposure control remain the primary means of preventing wood-dust-related respiratory disease.

However, suitable health surveillance is also important for employees who may be exposed to wood dust.

Because wood dust can cause occupational asthma, health surveillance can help identify early signs of work-related respiratory problems.

The arrangements should be determined through the COSHH assessment and appropriate occupational health advice.

For relevant employees, surveillance may include respiratory questionnaires and lung-function testing, with follow-up where necessary.

Teachers and technicians who regularly work in woodworking environments may need particular consideration.

Health surveillance is not a substitute for adequate dust control.

If symptoms or surveillance findings suggest that workplace exposure may be causing harm, the employer should investigate and review the effectiveness of the existing control measures.

APPENDIX

Supporting Documents and Resources



This appendix provides practical documents and reference information to support the management of wood dust in D&T classrooms.

It includes a risk assessment template, a log book, a housekeeping checklist, references and an index to help you find key topics quickly.



RISK ASSESSMENT

A template to help you identify hazards, assess the risks from wood dust and record suitable control measures.



LOG BOOK

A record to help monitor key activities and controls, such as LEV checks, servicing, maintenance and any actions taken.

HOUSEKEEPING CHECKLIST

A practical checklist to help ensure work areas, equipment and the wider classroom are kept clean and free from accumulated wood dust.

REFERENCES

Key legislation, HSE guidance and other useful sources of information that support the control of wood dust in educational settings.

INDEX

An alphabetical index to help you quickly find information on key topics throughout the guide.

KEY MESSAGE:

These supporting documents and resources help you to assess, control, monitor and review the risks from wood dust, and to quickly find further information when needed.

APPENDIX A

Wood Dust Risk Assessment

Design & Technology Woodworking Classroom and Saw Room

COSHH Regulations 6 and 7 — Assessment and Control of Exposure to Wood Dust

1. Assessment details

Item	Details
School / establishment	
Department	
Areas assessed	
Assessment completed by	
Date of assessment	
Review date	
Responsible person	
LEV examination report reference	

Purpose: Identify where wood dust is generated, who may be exposed, how exposure can be prevented or adequately controlled, and what actions are necessary to protect pupils, teachers, technicians, cleaners and others.

MODEL TEMPLATE: Check against actual machines, materials, layout, extraction arrangements and working practices before adoption.

2. What are the hazards?

Wood dust is hazardous under COSHH. Exposure can cause eye, nose and throat irritation, respiratory effects and occupational asthma. Hardwood dust is associated with cancers of the nasal cavity and paranasal sinuses. Manufactured boards may present additional substance hazards from adhesives or coatings.

Substance	UK 8-hour WEL
Hardwood dust	3 mg/m³
Softwood dust	5 mg/m³
Mixtures of hardwood and softwood dust	3 mg/m³

Workplace Exposure Limits are legal limits, not control targets. Exposure must be prevented where reasonably practicable or adequately controlled. Wood dust deposits may also create fire risks; consider these in the fire risk assessment.

3. Who could be exposed?

Person	Possible exposure
Pupils	Sawing, sanding, drilling, shaping and nearby dusty work
D&T teachers	Demonstrations, supervision and repeated exposure
Technicians	Cutting, preparation, cleaning and maintenance
Cleaning staff	Disturbance of settled dust on floors, benches and equipment
Contractors / maintenance	Machines, ducts, filters and dust collection equipment
Visitors / other staff	Entering areas with airborne or resuspended dust

4. Risk assessment and control measures

For each line, mark Yes (effective), No (action needed), or N/A (not applicable). Record all deficiencies in the action plan.

A. Woodworking classroom

Hazard / activity	Required control measures	Check
Hand sanding	Minimise unnecessary sanding; use suitable methods and effective dust control where reasonably practicable.	☐ Yes ☐ No ☐ N/A
Cutting and shaping	Use suitable machinery with effective point-of-generation dust extraction, guards and controls.	☐ Yes ☐ No ☐ N/A
Several pupils working	Assess combined dust generation and control effectiveness during normal class use.	☐ Yes ☐ No ☐ N/A
Dust escaping from machines	Check extraction before use; stop work and report ineffective extraction.	☐ Yes ☐ No ☐ N/A
Dust on benches	Vacuum settled dust regularly; prevent accumulation between lessons.	☐ Yes ☐ No ☐ N/A
Cleaning floors	Use suitable M-class or higher-rated industrial vacuum; avoid dry sweeping and compressed air.	☐ Yes ☐ No ☐ N/A
Dusty offcuts and waste	Contain waste and avoid handling that disperses dust.	☐ Yes ☐ No ☐ N/A
Pupil instruction	Teach dust hazards, extraction use and reporting of faults.	☐ Yes ☐ No ☐ N/A

B. Saw room and machine workshop

Hazard / activity	Required control measures	Check
Narrow bandsaw	Provide effective extraction at relevant dust-generation points.	☐ Yes ☐ No ☐ N/A
Circular / table saw	Provide suitable extraction above and/or below table as required by design; maintain guarding.	☐ Yes ☐ No ☐ N/A
Disc sander	Provide effective extraction near sanding disc and dust-generating area.	☐ Yes ☐ No ☐ N/A
Other woodworking machines	Assess each machine for dust generation, extraction and safe operation.	☐ Yes ☐ No ☐ N/A
Machine dust leaks	Inspect gaps, damaged connections, blockages and deposits.	☐ Yes ☐ No ☐ N/A
Dust beneath machines	Include inaccessible areas in planned cleaning with safe isolation.	☐ Yes ☐ No ☐ N/A

Saw room access	Restrict access to authorised trained persons.	☐ Yes ☐ No ☐ N/A
Dusty waste removal	Empty collectors safely and minimise dust release.	☐ Yes ☐ No ☐ N/A

C. Local Exhaust Ventilation (LEV)

Hazard / activity	Required control measures	Check
Suitable LEV	Provide effective LEV where needed to achieve adequate exposure control.	☐ Yes ☐ No ☐ N/A
Capture at source	Position hoods to capture dust before it spreads.	☐ Yes ☐ No ☐ N/A
Pre-use checks	Confirm extraction is on, connected, unobstructed and working effectively.	☐ Yes ☐ No ☐ N/A
Airflow indicators	Check indicators against established acceptable ranges, where fitted.	☐ Yes ☐ No ☐ N/A
Thorough examination and testing	Competent-person TExT at least every 14 months, or more often where required.	☐ Yes ☐ No ☐ N/A
Examination records	Retain statutory LEV examination records for at least five years.	☐ Yes ☐ No ☐ N/A
Defects	Record and rectify defects; stop affected processes if adequate control cannot be maintained.	☐ Yes ☐ No ☐ N/A
Routine maintenance	Maintain hoods, ducts, filters, fans, seals and collectors to a planned schedule.	☐ Yes ☐ No ☐ N/A
Filter / collector management	Prevent leaks, overfilling and dust release during servicing.	☐ Yes ☐ No ☐ N/A
Evidence of control	Consider commissioning records, TExT reports, capture checks and exposure monitoring as needed.	☐ Yes ☐ No ☐ N/A

Important: Running LEV does not necessarily mean dust is adequately captured. Statutory testing does not replace routine checks or maintenance.

D. Housekeeping and settled wood dust

Hazard / activity	Required control measures	Check
Dust on floors	Vacuum at intervals suited to the amount of dust produced.	☐ Yes ☐ No ☐ N/A
Dust on benches and ledges	Include horizontal and less visible surfaces in cleaning plans.	☐ Yes ☐ No ☐ N/A
Dry sweeping	Do not routinely dry sweep wood dust.	☐ Yes ☐ No ☐ N/A
Compressed air	Do not blow dust from machinery, clothing or surfaces.	☐ Yes ☐ No ☐ N/A
Unsuitable vacuum	Use a suitable maintained M-class or higher-rated industrial vacuum as assessed.	☐ Yes ☐ No ☐ N/A

Vacuum emptying	Empty according to instructions, minimising exposure.	☐ Yes ☐ No ☐ N/A
Cleaning staff	Provide appropriate information, training, equipment and protection.	☐ Yes ☐ No ☐ N/A

E. Management, training and health protection

Hazard / activity	Required control measures	Check
Staff training	Train teachers, technicians and cleaners in dust hazards and controls.	☐ Yes ☐ No ☐ N/A
Pupil supervision	Ensure appropriate supervision and safe working procedures.	☐ Yes ☐ No ☐ N/A
Respiratory protective equipment	Select suitable RPE where needed; face-fit test tight-fitting masks. Do not substitute RPE for practicable engineering controls.	☐ Yes ☐ No ☐ N/A
Health surveillance	Determine need for COSHH health surveillance for relevant staff exposure and asthma risk.	☐ Yes ☐ No ☐ N/A
Exposure monitoring	Obtain competent hygiene assessment or personal monitoring where needed to demonstrate control.	☐ Yes ☐ No ☐ N/A
Review	Reassess after changes to materials, machines, extraction or evidence of control failure.	☐ Yes ☐ No ☐ N/A

5. Cleaning schedule

Area / item	Suggested frequency	Responsible person
Benches / work areas	After dusty activities / before next class as needed	
Floors / accessible surfaces	End of session or more often as necessary	
Around machines	After use; isolate safely when required	
Behind / beneath machines	Planned periodic deep cleaning	
Shelves / high ledges	Planned periodic cleaning based on inspection	
Vacuum bin / filters	As capacity and manufacturer instructions require	
LEV collector / filters	As operating conditions and maintenance instructions require	

Cleaning rule: Use effective vacuum extraction rather than dry sweeping, brushing or compressed air that disperses settled dust.

6. LEV inspection, testing and maintenance record

Item	Completed	Next due	Responsible person
Routine user checks			
Scheduled LEV maintenance			
Statutory thorough examination and test			
Defects rectified and effectiveness verified			
Collector / filter maintenance			
Exposure monitoring (if required)			

Latest LEV report reference: _____

Outstanding defects: _____

Are all relevant processes adequately controlled? ☐ Yes ☐ No ☐ Uncertain

Where adequate control cannot be demonstrated, affected activities must not continue without effective alternative protective measures.

7. Corrective action plan

Action required	Priority	Responsible	Target date	Verified

Priority: Immediate - stop or restrict uncontrolled work; High — rectify significant deficiency promptly; Routine - scheduled improvement where controls remain adequate.

8. Final assessment and authorisation

☐ Exposure is prevented or adequately controlled, with supporting evidence.

☐ Further action is required before some activities can continue.

☐ Further investigation or exposure assessment is necessary.

Supporting documents checked

☐ Machine-specific assessments and safe operating procedures

☐ Current LEV TExT report and maintenance records

☐ LEV operating instructions and defect records

☐ Cleaning arrangements and training records

☐ Exposure monitoring and health surveillance arrangements, where applicable

Assessor: _____ Signature: _____

Date: _____ Authorised by: _____

Next review date: _____

Review sooner if machinery, materials, room use, extraction or cleaning changes; LEV fails; monitoring shows inadequate control; or a dust-related health concern arises.

KEY MESSAGE

Wood dust must be controlled at source and must not be allowed to accumulate. A clean-looking workshop is not necessarily a safe workshop, and running extraction is not necessarily effective. Effective control requires suitable LEV, checks, statutory testing, maintenance, vacuum cleaning, training and evidence of adequate control.

Scope note: This COSHH template does not replace machine-specific assessments of blade contact, entanglement, kickback, noise, electrical safety and other physical hazards.

Appendix B

LEV & Housekeeping Logbook

Quick daily checks • Weekly cleaning • Faults and maintenance • Statutory LEV testing

School / department	Room(s) / location

Use this log alongside Appendix A (COSHH wood dust risk assessment), machine instructions and the LEV operating manual. Copy the blank record pages as often as needed.

How to use this logbook

- Before dusty work: confirm extraction is connected, running and appears to capture dust effectively.
- After dusty work: check for settled dust and arrange suitable vacuum cleaning.
- Mark each check ✓ satisfactory, ✗ fault/action required, or N/A. Record any ✗ on the fault/action sheet.
- If dust control is ineffective, stop or restrict the affected operation until adequate control is restored.
- A daily tick does not replace statutory LEV thorough examination and testing (TExT).

1. Daily workshop check — copy each week

Week beginning: _____ Area: _____ Checked by: _____

Check item	Mon	Tue	Wed	Thu	Fri
LEV switched on / connected before use					
Extraction visibly effective at machines					
Hoods / hoses unobstructed and intact					
Airflow indicator within normal range (if fitted)					
Dust collector not full / no visible leaks					
Benches and floors free of significant deposits					
Dust removed by suitable M-class vacuum					
No dry sweeping / compressed-air cleaning					
Faults reported and logged					

Initials / time: Mon _____ Tue _____ Wed _____ Thu _____ Fri _____

Notes / action references:

_____

_____

2. Housekeeping and cleaning record

Area: _____ Month: _____

Cleaning method: suitable industrial dust vacuum; do not dry sweep or blow wood dust with compressed air.

Date / time	Area / task completed	Vacuum / equipment check	Completed by	Issue / action ref.

Suggested cleaning tasks

☐ Workbenches, floors and accessible surfaces after dusty work as needed

☐ Machine tables, bases and surrounding floor areas

☐ Offcut bins and dusty waste containers

☐ Behind/beneath machinery and high ledges on a planned deep-clean schedule

☐ Vacuum filter, seals and container condition checked as instructed

Frequency must reflect actual dust generation and the COSHH assessment; the above is not a fixed legal schedule.

3. LEV user checks / periodic maintenance

Date	System / machine	Check or work completed	Result / follow-up	Initials

4. Defect and corrective-action log

Use for failed extraction, dust leaks, damaged hoses, excessive settled dust, faulty vacuums and overdue maintenance.

Ref. / date	Fault / location	Immediate action / machine stopped?	Owner / due date	Closed / verified

Do not restart affected dusty work merely because a fault has been reported. Confirm adequate control before restarting.

5. Statutory LEV examination and testing (TExT)

LEV must be thoroughly examined and tested by a competent person at least every 14 months (or more frequently where specified). Retain statutory examination records for at least five years.

LEV system / ID	Last TExT date	Next due	Report reference / location	Defects closed?

6. Monthly supervisor review

Review question	Response
Daily and cleaning logs completed?	☐ Yes ☐ No
Outstanding defects / restrictions reviewed?	☐ Yes ☐ No
LEV TExT in date and reports available?	☐ Yes ☐ No
Maintenance and filter changes up to date?	☐ Yes ☐ No
Additional training or exposure assessment needed?	☐ Yes ☐ No

Actions / comments:

_____

Reviewed by: _____ Date: _____ Next review: _____

IMPORTANT: This is a record of checks, not proof that exposure is adequately controlled. Refer to the COSHH assessment and obtain competent advice or exposure monitoring where effectiveness is uncertain.

References

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Legislation and COSHH

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2. Health and Safety Executive (HSE) (2013). Control of substances hazardous to health: The Control of Substances Hazardous to Health Regulations 2002. Approved Code of Practice and guidance. L5, sixth edition.

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3. HSE (2020). EH40/2005 Workplace exposure limits. January 2020 edition.

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   https://www.hse.gov.uk/pubns/wis23.htm

5. HSE. Wood dust (woodworking topic guidance). Includes UK hardwood and softwood dust exposure limits and practical controls.

   https://www.hse.gov.uk/woodworking/wooddust.htm

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   https://www.hse.gov.uk/coshh/industry/woodworking.htm

8. HSE. Frequently asked questions: Woodworking. Includes MDF, formaldehyde, dust control and cleaning advice.

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15. International Agency for Research on Cancer (IARC) (1995). Wood Dust and Formaldehyde. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 62. Lyon: IARC.

    https://publications.iarc.who.int/80

16. Industrial Injuries Advisory Council (IIAC) (2017). Nasal Carcinoma and Occupational Exposure to Wood Dust. Cm 9499. London: Department for Work and Pensions.

    https://www.gov.uk/government/publications/nasal-carcinoma-and-occupational-exposure-to-wood-dust-iiac-report

Editorial notes

For the M-Class vacuum-cleaner recommendation, cite references 4 and 6. For statutory LEV thorough examination and testing, cite regulation 9 in reference 1 alongside HSG258 (reference 9). For workplace exposure limits, cite EH40 (reference 3), not a fixed numerical value without checking the current edition.

This list distinguishes binding legislation from HSE guidance and scientific evidence. Check links, publication editions and any subsequent regulatory amendments again before final publication.

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Volunteers are Wanted

To get involved, please contact:
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