Technology: Risk Assessment Title: **CNC Controlled Routers** OCTOBER2015

**This is a generic Risk Assessment that must be modified to suit your place of work**. The Risk Assessment modifications should take into consideration the activity, age/stage/pupil ability, department/working environment and the experience of the teacher in charge. If Control Measures Required as described are implemented the risk is reduced to an acceptable level for mainstream students.

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| **Identify the Hazards** | **Who is at Risk?** | **What is the Harm?** | **Activity Taking Place** | **Control Measures Required** | **Additional Information** |
| Employees and learners should be made aware of the following hazards.  1. Contact With Cutters  2. Hand, Hair or  Clothing Entanglement  3. Ejected Cutters  4. Inhalation of Dust  5. Finger Trapping  6. Body Crushing  7. Heavy Objects Falling  8. Electric Shock  9. Sharp Edges  10. Inadvertent Starting  11. Pushing Operator  12. Slipping  13. Manual Handling  14. Unauthorised Use | Technology teachers, technicians and pupils  Technology teachers, technicians and pupils  Technology teachers, technicians and pupils  Technology teachers, technicians and pupils  Technology teachers, technicians and pupils  Technology teachers, technicians and pupils  Technology teachers, technicians and pupils  Technology teachers, technicians and pupils  Technology teachers, technicians and pupils  Technology teachers, technicians and pupils  Technology teachers, technicians and pupils  Technology teachers, technicians and pupils  Technology teachers, technicians and pupils  User | **Contact with revolving cutters can present a hazard to fingers and hands.**  **Long hair, loose clothing etc, can become entangled with rotating cutters or arbors.**  **Broken cutters, waste, work pieces etc, can be violently ejected.**  **Wood dust can be inhaled and affect respiratory system.**  **Closing movement between parts, under power feed, can result in finger trapping.**  **Closing movement between the table and fixed structures can result in body crushing.**  **Heavy objects such as vices and jigs or fixtures can fall from the table.**  **CNC routing machines can present an electric shock hazard.**  **Sharp edges on cutters, work pieces and swarf can cause cuts.**  **Inadvertent starting of the machine can present a hazard.**  **Lack of space around the machine can lead to the operator being pushed by passers-by.**  **Slippery floor surfaces or loose items around the machine can cause slips that result in contact with moving parts.**  **Manual handling of heavy equipment such as vices and index fixtures can present a hazard.**  **Unauthorised use.** | CNC cutting materials  CNC cutting materials  CNC cutting materials  CNC cutting materials  CNC cutting materials  CNC cutting materials  CNC cutting materials  CNC cutting materials  CNC cutting materials  CNC cutting materials  CNC cutting materials  CNC cutting materials  CNC cutting materials  CNC cutting materials | CNC machines generally have the same risks associated with them as their manual equivalents. However, they are usually safer in operation because most CNC machines used in education are fully enclosed, with opening doors that are interlocked in such a way that the machine stops if the door is opened whilst the machine is operating under computer control.  The manufacturer’s specific instructions for the particular machine being used should be followed at all times.  Guards should be used to prevent access to dangerous in-running nips on the pulleys or gearwheels. Cutters should be guarded while in motion to prevent access. Ends of rotating arbors should be fitted with guards to prevent entanglement.  Long hair and loose clothing should be secured so as to not come into contact with moving parts. Jewellery should be removed.  Gloves should not be worn when using this machine.  Suitable eye protection PPE should be used while operating the machine if the machine is not totally enclosed, when changing internal settings and materials and also when cleaning the machine.  The work piece should be properly secured.  LEV must be provided to prevent the inhalation of wood dust if being used.  Hands should be kept away from the table while it is traversing under power in manual mode to minimise the risk of trapping fingers.  Suitable implements should be used to remove waste, to avoid hand contact.  The CNC Controlled Router must be placed in a location with sufficient surrounding space that maximum movements of the machine can be made, and space is still available for the operator.  Where not enclosed, CNC routing machines should be fitted with a space of at least 500mm between the machine table at the extreme ends of its travel and any fixed object.  Objects which are considered heavy should be stored and used whilst minimising risk to the user and others in the craft room. Best practice is to have an individual storage box with carry handles where the object(s) are kept when not in use rather than being left on tables, shelves or the floor.  Substantial footwear should be worn.  Any problems or damage to electric cabling should be reported immediately for repair and the machine locked off.  The machine should be included in a planned maintenance programme that should include electrical safety inspections and tests.  A brush to remove swarf whilst the machine is idle is best practice to avoid hand contact. Care should be taken when fixing/removing work pieces and also fixing cutters.  The cutters should be stopped when positioning the work piece, clearing waste, measuring or gauging.  The machine should be electrically isolated or the computer programme should be stopped before any internal mechanisms are adjusted.  There should be sufficient space around the machine to prevent the operator from being accidently pushed by passers-by.  The floor surface should not be slippery and should be kept free of loose items.  All waste items should have an allocated disposal area to encourage tidy work.  Measures should be implemented to minimise the risks associated with lifting heavy items (e.g. use of lifting aids, team lifts, and correct lifting techniques).  The CNC Controlled Router should be locked and switched to off whenever the machine is not in use. | Reference BS 4163:2014  Manufacturer’s instructions and guidelines must be read through and retained before using this machine.  Eye protection PPE should conform to BS EN 166:2002  Where an effective LEV is not in place and required, a dust mask conforming to BS EN 149:2001+A1:2009 class FFP3 should be used.  Closing of guard doors should be completed carefully.  The risk of electric shock is reduced by good maintenance and the use of double insulated machines.  Swarf should not be allowed to build up and be safely removed at regular intervals.  Markings on the floor can be used to zone an area for the machine operator.  Daily housekeeping should keep a craft room area tidy and reduce slipping risk.  Manual handling tasks associated with moving heavy work pieces, vices and jigs and fixtures can be beyond the physical capability of some persons.  Only competent Technology teachers and technicians should possess the key to operate the machine. |
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