

Bristol Hackspace

Fire Risk Assessment

2005-06-26

Assessors:

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Caveats

Liability of the assessors

This assessment was done on a best endeavours basis by unpaid volunteers with limited experience of fire risk assessment.

The assessment is advisory.

- It does not reduce the responsibility for safe working by those carrying out any activity.
- It must not be interpreted as either an instruction or authorisation to act in an unsafe manner.
- The assessors do not accept liability for accidents caused by errors or omissions.

Limited scope

The full range of Hackspace activities are not not known. Individuals must assess the risk of any activity not covered in this document, before doing it.

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Recommendation:

Set up a risk assessment section on the Wiki and add a section to the Hackspace Manual stating: "Read the risk assessment for any work you plan to do or equipment you want to use. If there isn't one, get the relevant hazard sheets, write one, and circulate for comment before starting work."

Common to both areas

Building Alarm

Its not clear;

- if the building alarm alerts the emergency services,
- how to inform other building occupants if it is set off by mistake, or
- how to determine if it is safe to re-enter the building.

Recommendations

Get a copy of the building evacuation plan or enough information about the system to infer it.

Write Emergency Exit notice and display it in suitable locations in G10 & G11

Internal paths

Exit paths are not clear so could be blocked by large projects.

Recommendation: Mark the main exit paths with floor tape.

Fire Extinguishers

Not present at the audit but have been ordered.

They will be fitted to the wall to the right of the entry doors (going out) in each room.

Fire extinguisher training is being arranged.

People affected

If a fire occurs Members and visitors in the room will be at significant risk of injury or death due to toxic fume in G11 and dust explosion in G10. There is a low risk to other building occupants if they respond to the fire alarm as the building is of brick construction and has adequate fire exits.

If the alarm sounds All building occupants will lose productive work time.

False alarms will lead to building occupants ignoring the fire alarm.

G11

G11 Entry Door

The Main entry door is not a fire exit and the key is not in an obvious location. People will tend to use this door in an emergency and could become trapped.

Sources of Ignition

- 2 Wall mounted Heaters could overheat if material is stacked against them
- Faulty or overheating electrical equipment including projects. The use of extension leads and clutter on the work surfaces makes it difficult for the last person out to check that everything is turned off. Inconsistent labelling makes it difficult to identify equipment to be left switched on.

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- Soldering Iron and hot air iron on the electronic assembly bench.
- Extruder and heated bed on the 3D printer, flammable solvent are used to clean parts of this item and are probably used while it is hot.
- Soldering Oven
- Cooking equipment: Microwave, Kettle, Bread maker.
- Wax melting equipment in Gareth's area.
- Heated Press

Combustible material

- Waste material in and around the waste bins. Cardboard boxes were left near the bins.
- Plastic and cardboard behind and on top of the Hack Kids cupboards
- Cardboard and plastic packaging:
 - At the end of the electronic assembly area, probably associated with historic computer equipment.
 - Around the cooking equipment. Its not clear if the large plastic spools are rubbish or material for a project.
 - Around the surplus components
- Cycle tyres in the Hack donations bin
- Solvents above the bookshelf including litre quantities of Isopropyl alcohol.

There were no hazard sheets for the materials and no obvious method to prevent incompatible materials being stored together e.g. oxidising agents next to inflammable materials.

- Hairspray on the window ledge by the 3D printer
- Books
- Cables and plastic components. Difficult to ignite but produce thick and probably harmful smoke if they do.
- Sofa - This does not appear to have fire resistant labels and probably contains polyurethane foam so would generate toxic smoke if ignited.
- Fibreglass kit on the equipment shelves.

Recommendations

- Organise working parties to do the work.
- Action: Matt Venn
- Buy and fit a break glass container and fix it near the front door where it can't be reached by breaking the exterior glass.
 - Put a notice on the Door stating that it is not a fire exit with an arrow indicating the location of the emergency key.
 - Buy two waste bins, preferably wheelie bins, Put usage labels on them compatible with the the two building bins.
 - Put a large notice on the wall by the bins showing the location of the building bins and the return path for people without an entry token, with instructions including
 - if the lid won't close, empty the bin.
 - If it won't fit the bin take it to the building bins,
 - if it's glass take it home.
 - Use the G10 coloured labels to identify projects
 - If possible move sheet materials to the G10 sheet material store.
 - Use a similar system of time limited coloured labels to identify plugs and equipment to be left turned on.

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- Agree a clean bench policy with named locations for equipment so it is disconnected and put away after use.
 - Set up a last out checklist that includes an instruction to check everything is turned off.
 - Fix extension leads to walls and desks so plugs are visible fitting long leads if necessary to remove the need for daisy chained extension leads. Mark the positions of these extension leads on a chart and include it with the last out checklist.
 - Set up a flammable materials store in a metal cupboard.
 - Get hazardous material sheets and file them in an expanded Safety file on the bookshelf.
 - Add a requirement to the Hackspace manual for members to bring in and file hazard sheets for any new material. The sheets should be filed folder, and the wiki, with a suitable note about where and what it is used for, and with the material, The intention is that it should be easy for another member to identify the hazard if there is an incident e.g. spill, when the owner is absent.
 - Dispose of the Sofa and check other furniture for unacceptable flammability
 - Distribute the large boxes of electronic components to other Hackspaces.

G10

Sources of Ignition

- Sparks from non flameproof motors on power tools and machines. This probably applies to all of the motors in the workshop.
 - Sparks from the grinding wheel, sanding metal on the belt sander and use of an angle grinder on metal.
 - The laser cutter.
 - Blunt woodworking tool bits and very bad workshop practice.
 - Use of the CNC mills on inappropriate materials e.g. Magnesium and lithium alloys
 - Heater in the bubble etch tank. Heated plastic tanks of liquid have caused many fires in the Printed circuit board manufacturing industry because people don't recognise the fire hazard associated with a tank of liquid.
 - Resin catalysts, there appear to be at least 3 off two part resin (paint, varnish, adhesive, casting and fibreglass resin) systems associated with current projects in G10.
 - Batteries and chargers. batteries are usually left on charge overnight.

Combustible material

- Wood Dust and sawdust on the floor most horizontal surfaces and in extraction filters.

Wood dust is both flammable and explosive

Quote from HSE doc "Safe collection of wood waste: Prevention of fire and explosion"

<http://www.hse.gov.uk/pubns/wis32.pdf>

"You should assume that all wood waste is potentially explosive, unless a dust explosion test 1 demonstrates it is not. Wood waste usually has a dust Explosion risk where the mean particle size is less than 200 microns, and

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where as little as 10% of the mixture contains dust less than 80 microns in size. Only weak explosions are likely where the mean particle size exceeds 200 micron”

- Wood and wood based material
- Plastic material
- Polythene project boxes
- Polystyrene blocks
- Some resins and solvent

Recommendations

- Implement the recommendations in the G10 improvement workshops
- Action John Willis
- Add to the Hackspace Manual
- don't leave machines running unattended
- clean work area policy
- don't use wood dust extractors for metalwork
- don't use significant quantities of flammable solvents including but not limited to;
- Paint spraying
 - cleaning parts
 - fiberglass.
- Prepare a last out checklist and hang it on the door.
 - Label plugs to be left on e.g. battery chargers with the “leave on” labels
- recommended for G11
- Install the recommended electrical sockets and remove daisy chained extension leads.
 - Add fire hazards to machine inductions
 - Buy a suitably filtered vacuum cleaner for general floor cleaning
 - Put emptying instruction by the bin
 - Consider the need for a flammable materials store
 - Set up a location for hazard sheets.