

## Risk Identification –Drawdio

This assessment considers any hazards specific to the activity greater than every day hazards such as slipping, tripping or falling on stairs, trapping fingers in doors and cuts and bruises which are inherent in all environments.

Provider	<b>STEM TEAM East</b>		
Activity Description	The Drawdio-electronic pencil		
Who will be exposed to the hazards	Supervising adults and school pupils		
Hazard	Severity and Likelihood.	Control measures	Risk rating after control measures applied.
		<p><b>Existing Control measures</b></p> <p>Copy of risk assessment and notes on working with soldering irons and batteries will be sent to the school for the attention of the pupils working on this project.</p> <p>Teachers should select the pupil for the activity taking into consideration whether any pupil has a known allergy or any potential risk of working with solder.</p> <p>Leaded and Lead free solder will be used</p> <p>The supervision will be 1 adult to 8 pupils.</p> <p>The pupils are all yr 9+ so selected for the level of complexity and manual dexterity needed.</p> <p>The operation of the pencil involves currents of the order of microAmps passing through the body. This level of current is negligible and the kit has been produced commercially and available for sale. There is no need for the pupil to operate the pencil and the battery in normal handling will present the same risk . 1.5V batteries are used</p> <p><a href="http://www.allaboutcircuits.com/vol_1/chpt_3/5.html">http://www.allaboutcircuits.com/vol_1/chpt_3/5.html</a></p> <p><b>If the skin is dry it will offer more resistance. The resistance of the human body ranges from about 100 ohms if the body is soaked with salt water to about 5000,000 ohms if the skin is very dry. If we touch the two electrodes of a battery with dry fingers, completing the circuit from one hand to the other, we can expect to offer a resistance of a bout 100,000 ohms. We usually cannot feel 12 volts if we do this, though a 24 volts just barely tingles. If our skin is moist, however, 24 volts can be</b></p>	



#### Housekeeping

An untidy area, especially with paper and plastics on it, increases the risk of causing an accident with the hot iron.

#### **Reducing Risk**

#### High Temperatures

Soldering irons must be used with a suitable station which has a suitable holster to rest the iron in when not immediately needed. The holster must protect users from the hot iron.

When using an iron there is a temptation to continue looking at the work when picking it from the holster and replacing it. This can lead to dropping it and picking it up by the wrong end which means users should make a conscious effort to look what they are doing with the iron at all times.

Avoid looking over the work too closely as this increases the risk of the hot iron touching the face and of inhaling fumes. Instead ensure the work area is well illuminated and using a magnifier if necessary. The magnifier will not only keep allow the operator to be further from the work but also put a barrier between them and the hot iron. Illuminated magnifiers are available to purchase.

#### Fumes

For casual occasional soldering fumes will not present a significant hazard and no special precautions are necessary to avoid them.

Where soldering is a frequent activity by one person or by several in a relatively confined area fumes should be removed either by an effective extractor for the whole area or by local extraction and filtering at the station. A lab coat may be worn to prevent contamination of clothes from fumes but if the concentration of fumes is high enough for this to be of concern there will also be a significant risk from inhalation and an extractor should be employed.

- **Solid solder**

Normal hygiene procedures should be observed while soldering and immediately afterwards. No food or drink should be allowed at the soldering station and hands should be well washed before eating or performing other tasks. The use of disposable gloves may be considered and these should be available.

- **Body strain**

Take regular breaks from the work station to rest the body and eyes. Ensure that the body posture is changed and you are not performing similarly close work during the rest breaks.

- **Housekeeping**

Keep the work area uncluttered with only necessary items close to the iron. Paper, such as that with the wiring diagram on it, and plastics, such as enclosures for circuit boards, should be kept away from the immediate vicinity if possible.

Do not leave the iron switched on when taking a rest break or after the work is finished.