Record of a risk assessment

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| **Task:**Run commissioning tests of the large cryo-vessel for the SBND Quality Assurance tests. The aim is to reduce the temperature inside of the vessel (using cold nitrogen gas supplied by LN2 dewars) to 100K slowly over a few hour period. |

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| Department  | Physics | Assessment ID  |  |
| Assessor | Dr. Dominic Brailsford | Date of assessment | 20/02/2017 |
| Authorised by | Dr. Jaroslaw Nowak | Review date | 26/02/2017 |

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| **Step 1** **List significant hazards** | **Step 2** **who might be harmed** | **Step 3** **determine appropriate controls** | **Step 4** **make it happen** |
| **Cold burns to skin and eyes in the case of exposure.** | Academic StaffUndergraduate StudentsPostgraduate StudentsPassers-by not involved in the test | **Isolate**- The area will be cordoned off to prevent exposure to those not participating in the experiment. The LN2 will be contained in120 L pressure dewars (totalling 360 L) filled by technicians at BOC.**Control**- The vessel and dewars are insulated to reduce the risk of cold burns.**PPE**-Full PPE including eye protection and closed toe shoes will be worn at all times.**Discipline-** Only Ian Mercer and Dominic Brailsford will operate the dewars. All other personnel involved in the test will stand well away from the dewars during operation | **Procedures-** PPE will be worn at all times and due care and attention will be taken whilst running the experiment and transporting the LN2.**Training-** Everyone working on the experiments will be instructed about how to safely operate the experimental apparatus in the presence of LN2. **Supervision-** Dominic Brailsford and Ian Mercer will be supervising the experiment at all times. Jaroslaw Nowak will have to approve all changes to the procedure. |
| **Asphyxiation.**  | Academic StaffUndergraduate StudentsPostgraduate StudentsPassers-by not involved in the test | **Reduce**- The test will be done in the Science and Technology building warehouse to minimise Oxygen depletion.**Control**- Personal O2 monitors will be present at all times and in the event of an alarm the area will be evacuated. | **Procedures-** O2 monitors will be present at all times and checked regularly.**Training-** Everyone working on the experiments will be instructed about the safe method of work and what to do in the event of a low Oxygen alarm. **Supervision-** Dr.Dominic Brailsford and Ian Mercer will be supervising the experiment at all times. |

**Step 5** – remember to include a review date

**Guidance**

**When to use this form**

Use this form to assess any significant risks associated with the task that is to be undertaken and where no specific hazard based guidance has been produced by the University.

Before you start to fill in this form you must check to see if any guidance exists for the hazards associated with the task. You can do this by looking at the A-Z on the Safety Office website or asking your Area Safety Officer. Do not use this form if there is specific guidance listed in the A to Z (such as for chemicals or Ionising Radiation).

**Step 1**

A hazard is anything that might cause harm to an individual for example heavy loads, electricity, working at height, fire etc. Think about the task you are assessing and list all the hazards which are foreseeable. This step is about identifying any hazards, the subsequent steps in the process are about assessing and controlling the ‘risk’ (the likelihood of harm being caused and its severity).

You do not need to include hazards from everyday life (unless the work activity increases the risk) – for example you would not normally need to assess the risk of using stairs in the workplace, but if you had a task which involved moving a lot of equipment between floors you would need to consider the best way to do this. Neither do you need to formally record controls around insignificant risks. A “significant risk” is one which could result in harm which any reasonable person would appreciate and take steps to guard against. Once you have determined the hazards associated with the task list them in the step 1 column.

Please contact your Area Safety Officer or co-ordinator for advice if you are unclear as to what you need to include in your assessment

**Step 2**

List persons at risk of harm – for example the person carrying out the task, other people in the vicinity, ancillary or support staff. You must also consider any individuals or groups of people who are particularly at risk with respect to the hazard you are considering. For example young people, new or expectant mothers or staff or students with specific disabilities which make them more vulnerable to the hazards associated with the task.

**Step 3**

You need to determine ‘reasonably practicable’ controls around the hazards you have identified. ‘Reasonably’ in this context means that you should balance the level of risk and the measures needed to control it in terms of time, money, or trouble. The controls you determine should not be grossly disproportionate with respect to the level of risk. To determine the appropriate controls you should apply a hierarchy of controls (see below).

**Using the hierarchy of Controls**

If you are not familiar with how to use a hierarchy of controls please contact your Area Safety Officer or refer to the Moodle Risk Assessment course.

For some hazards such as ionising radiation and the use of chemicals in the workplace, there are specific worksheets available to help you determine appropriate controls. If your hazards do not have a specific worksheet, apply the ERICPD hierarchy;

* Eliminate – can the hazard be eliminated from the task
* Reduce – can the hazard be reduced (do it less often, substitute with an alternative)
* Isolate – is there a way to completely isolate the human from the hazard
* Control – can you use engineering controls to reduce the level of risk to the individual
* PPE – would personal protective equipment reduce the risk
* Discipline – working methods, training, supervision

Remember – the lower you on the hierarchy the more prone your controls are to fail. Taking account of the significance of the hazard you are considering, is the position of your controls on the hierarchy appropriate? Are your controls consistent with those employed where this hazard is encountered elsewhere?

**Step 4**

The output of your risk assessment must be incorporated into a Safe System of Work (SSoW) in order that people are protected. A SSoW has three components (procedures, training and supervision) which lock together to provide a safe working environment. You should consider how your controls influence each of these elements. Identify specific individuals who will ensure each of these elements is made to work.

**Constructing a Safe System of Work**

Carrying out a risk assessment protects no one. It is the development and robust implementation of a safe system of work which gives us a safe working environment.

* **Operating procedure**

Your controls need to be stipulated in the operating protocols – these protocols will need to be written down if the task is complex and performing it incorrectly could result in injury. Consider producing a front sheet for your procedure summarising any important safety-critical steps.

* **Training**

Some kind of training will be needed in order to ensure that controls are properly utilised. This will range from a simple one-off verbal instruction to formal training sessions with associated training records and mandatory refresher training. You will need to make a judgement as to what is appropriate in your case.

* **Supervision**

Some element of managerial supervision may be appropriate. Again this will sit within a range from first time (one-off) eyes on, to the mandatory presence of a supervisor whenever the task is undertaken.

**Step 5**

You MUST review your risk assessment when any significant changes are made to the task or within 3 years if the task does not change in that time. Remember to include a review date on the first page.