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| Risk Assessment | | | | | |
| **PROCEDURE:**   * Complete risk assessment in consultation with PI/Supervisor and technical staff as appropriate. * Risk assessment checked and signed by PI/Supervisor * A copy or scan of the signed document to be given to the lab technician, School Safety Adviser and PI/Supervisor.   **NOTES:**   * No laboratory work is to commence without a risk assessment signed by the PI/Supervisor. * The risk assessment must be reviewed when any changes are made to the equipment, materials, procedure or personnel. * Technical staff can stop work if no risk assessment is in place or if, in their opinion, there is a risk to safety. * Examples of how to complete this form are available at [www.hse.gov.uk/risk/casestudies/](http://www.hse.gov.uk/risk/casestudies/) | | | | | |
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| **Project name:** | EX3502 Separation processes 1 – Laboratory assessment | | | | |
| **Location of work:** | FN049 and Chemical teaching lab | | | | |
| **Principal Investigator/Supervisor:** | Dr Marcus Bannerman | | Signed: | | Date:21/02/2017 |
| **Assessment Prepared by:** | Dr Marcus Bannerman | | Signed: | | Date:21/02/2017 |
| **Outline description of the work:** | As part of the EX3502 lab, undergraduate students will carry out experiments on the GUNT CE600 and CE400 units. The lab procedure is attached. | | | | |
| **Names of persons carrying out the work:** | Marcus Bannerman, demonstrators, technicians, and undergraduate students. | | | | |

| **What are the hazards?** | **Who might be harmed and how?** | **What are you already doing?** | **Do you need to do anything else to manage this risk?** | **Action by whom?** | **Action by when?** | **Done** |
| --- | --- | --- | --- | --- | --- | --- |
| Risk of burns on CE600 | Operators of the CE600 might come into contact with the apparatus accidentally. | Locations which become hot are marked clearly and are covered with insulation where practical. Operation of the equipment and hot areas are highlighted at the start of each lab session to the operators. | No |  |  |  |
| Rotating parts on CE400 | The fan on the refridgeration plant of the CE400 is in continuous operation which may harm operators if hair or fingers are inserted. | The fan has a guard to prevent operators approaching it and is out of the usual areas of operation. Operators are warned of its operation at the start of the lab. | No |  |  |  |
| Electrical components on CE400/CE600 and use of liquids. | Within the control cabinets for the equipment are a range of high and low voltage devices which may shock users if wet. | Cabinets containing high voltage parts are locked shut and only opened by the lab coordinator. Electrical work is only performed by a qualified technician. Water drainage is carefully monitored to ensure there are no leaks | No |  |  |  |
| Risk of scalding on CE600 | The CE600 contains boiling liquids which may scald the operators | Operators are not permitted to drain the evaporator containing the boiling liquids. Valves have safety locks to ensure accidental opening is unlikely. System is drained only once it has reached safe temperatures. | No |  |  |  |
| Risk of explosion | The CE600 apparatus has isopropyl alcohol which is flammable. | At no point is the ignition temperature of the chemicals reached. Concentrations of IPA is low generally, except at the reflux drum. Here the temperature is low and volumes are small. Vapours are contained using the condenser, which is significantly oversized for this purpose and is in operation during and after the lab. | No |  |  |  |
| Overcrowding or lack of supervision | Any of the above might apply or be exacerbated by this. | The number of students is limited to 5 students per piece of process equipment. A demonstrator is present for each piece of process equipment, as well as the lecturer and the technical staff. |  |  |  |  |
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