Important: This Risk Assessment Form is a sample only. Each school must conduct its own risk assessment, taking into account all relevant local factors and conditions. Please consult your local OH&S Officer and procedures.

RACI NSW SCHOOLS TITRATION COMPETITION
LABORATORY RISK ASSESSMENT

PROJECT
Staff/Students Present: Accompanying teachers, Laboratory Technicians, Visiting high-school students for RACI NSW Schools Titration Competition, accompanying parents.
Supervisors at Venue: Venue Supervisor, Venue Laboratory Staff, Teachers, Members of RACI NSW Chemical Education Group (possibly)
Venue & Location: Project Title: RACI NSW Schools Titration Competition

Briefly outline the procedure for this project/experiment:
Students carry out a series of acid–base titrations that they have previously practised at their high schools. See competition instructions for detailed methodology.

LEGAL OBLIGATIONS
The NSW OHS Act 2000 and OHS Regulation 2001 (Chapter 2) requires identification of all foreseeable hazards in the workplace, assessment of the risks that these hazards pose to health and safety and the elimination or control of these risks.

SUMMARY OF RISK ASSESSMENT
Physical Hazards - Yes Electrical Hazards - No Outdoor/Farm Hazards - No
Chemical Hazards - Yes Biological Hazards - No Field Work Hazards - No
Radiation Hazards - No

DISSEMINATION OF RISK ASSESSMENT
It is imperative that copies of this form be distributed to relevant personnel, such as teaching staff involved in the project and laboratory supervisors.
Has a copy of this form been disseminated to all relevant personnel? YES / NO

DECLARATION
We the undersigned declare that this Laboratory Risk Assessment is an accurate estimation of the risk undertaken.

School Competition Supervisor/s: Date:
Head of School/ Principal: Date:

Signature: Date: 1 of 5
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### RISK ASSESSMENT FOR PHYSICAL HAZARDS

Physical hazards relate to the equipment and processes that you use and include heat, cold, noise, dust, machinery, manual handling, power tools, working at heights, electrical equipment, vacuum and pressure equipment, ignition sources, projectiles, fire/explosion etc.

Are there **Standard Operating Procedures** available for any of the identified physical hazards? No

<table>
<thead>
<tr>
<th>Physical Hazard</th>
<th>Risk (Harm)</th>
<th>Risk Rating (R)</th>
<th>Risk Control Measures</th>
<th>Risk Rating (R)</th>
<th>Trained in Control Measure Y/N/NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chipped or broken glassware</td>
<td>Students may scratch or cut themselves</td>
<td>C I I I</td>
<td>1. Technical staff check glassware as it is being laid out on the benches; 2. Students are advised what to do if they encounter any broken or chipped glassware; 3. Students are advised to take care that they do not strike glassware on hard surfaces. 4. Appropriate first aid is available.</td>
<td>D I I</td>
<td></td>
</tr>
<tr>
<td>Liquid spills on the floor</td>
<td>Staff or students may slip and fall. Chemical spills present a hazard to staff or students who are wearing open shoes.</td>
<td>C I I I</td>
<td>1. Students are told to be vigilant for any spill-spills and tell laboratory staff if any occur; 2. Laboratory staff are also vigilant, and mop up spills immediately. 3. Closed shoes must be worn in the laboratory.</td>
<td>C I V</td>
<td></td>
</tr>
<tr>
<td>Student bags and cases</td>
<td>Trip hazard</td>
<td>C I I I</td>
<td>Students are instructed to leave bags to the side of the laboratory. Staff ensure no obstruction to corridors.</td>
<td>C I V</td>
<td></td>
</tr>
</tbody>
</table>

Signature: ____________________________ Date: ____________________________ 2 of 5
### RISK ASSESSMENT FOR CHEMICAL HAZARDS

<table>
<thead>
<tr>
<th>Chemical Hazard</th>
<th>Qty and Conc.</th>
<th>Specific procedure for spill, leak or emergency</th>
<th>Risk (Harm)</th>
<th>Risk Rating (R)</th>
<th>Risk Control Measures</th>
<th>Risk Rating (R)</th>
<th>Trained in Control Measure Y/N/NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide solution</td>
<td>1000 mL; 0.1 M</td>
<td>Mop up small spills using absorbent paper and wearing gloves; neutralise larger spills with dilute acetic acid</td>
<td>May be harmful if swallowed. May cause irritation. Avoid breathing vapours. Use with adequate ventilation. Avoid contact with eyes, skin, and clothes. Wash thoroughly after handling.</td>
<td>B II 3</td>
<td>Refer to MSDS*</td>
<td>B IV 4</td>
<td></td>
</tr>
<tr>
<td>Hydrochloric acid solution</td>
<td>500 mL; 0.1 M</td>
<td>Mop up small spills using absorbent paper and wearing gloves; neutralise larger spills with sodium bicarbonate</td>
<td>May be harmful if swallowed. May cause irritation. Avoid breathing vapours. Use with adequate ventilation. Avoid contact with eyes, skin, and clothes. Wash thoroughly after handling.</td>
<td>B II 2</td>
<td>Refer to MSDS*</td>
<td>B IV 4</td>
<td></td>
</tr>
<tr>
<td>Acetic acid solution</td>
<td>500 mL; 0.1 M</td>
<td>Mop up small spills using absorbent paper and wearing gloves; neutralise larger spills with sodium bicarbonate</td>
<td>May be harmful if swallowed. May cause irritation. Avoid breathing vapours. Use with adequate ventilation. Avoid contact with eyes, skin, and clothes. Wash thoroughly after handling.</td>
<td>B II 2</td>
<td>Refer to MSDS*</td>
<td>B IV 4</td>
<td></td>
</tr>
<tr>
<td>Phenolphthalein in 50% ethanol/water solution</td>
<td>20 mL; 0.5%</td>
<td>Mop up spills using absorbent paper and wearing gloves.</td>
<td>Flammable; harmful if swallowed.</td>
<td>C IV 5</td>
<td>Refer to MSDS*</td>
<td>C IV 5</td>
<td></td>
</tr>
</tbody>
</table>

* Material Safety Data Sheet

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**Signature:**

**Date:**

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3 of 5
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APPENDIX 1

Explanatory Notes

1. The **Risk Rating** ($R_1$ and $R_2$) is determined using the Risk Assessment Table in Appendix 2.

   For each hazard, *using the Risk Assessment Table*, record the outcomes or adverse consequences (AC) – i.e. how severely could it harm someone if they are exposed to that hazard? The worst-case scenario is considered. In the column ‘AC’, recorded are A, B, C or D as follows:
   - **A** fatality, etc
   - **B** long-term illness, etc
   - **C** medical attention, etc
   - **D** first aid needed, etc

   Then the probability (P) or likelihood of each consequence occurring. In the column ‘P’, is recorded I, II, III, or IV as follows:
   - **I** very likely
   - **II** likely
   - **III** unlikely
   - **IV** rare

   Using the Risk Assessment table, determine the Risk Rating for each hazard, and record the priority for action (T, M, or L) in the column ‘R’. The risk rating number, from 1 – 6, indicates the level of priority i.e. it shows how important it is to do something about the hazard:
   - **T** Top priority 1 & 2
   - **M** Medium priority 3 & 4
   - **L** Low priority 5 & 6

   The priority rating for medium and low priority hazards is reduced to the lowest possible number (risk) before proceeding. Laboratory environments are inherently potentially dangerous and there will always be a level of risk associated with the work undertaken. **You will need to make a judgement as to whether the level of risk is acceptable to your school given a defined set of circumstances.**

   $R_1$ refers to the Risk Rating **before** risk control measures have been determined.

2. **$R_2$** refers to the Risk Rating **after** control measures have been determined and implemented.

3. All staff and students involved in the procedure must be satisfactorily **trained in control measure by teachers at the school**. Such measures include personal protective equipment (e.g. gloves, safety glasses, laboratory coat, fully enclosed shoes).
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**APPENDIX 2**

**How dangerous is the hazard you’ve found?** For each risk associated with a hazard think about:
1. How severe are the adverse consequences or outcomes (AC) if exposed?
2. How likely is it to occur?

<table>
<thead>
<tr>
<th>PROBABILITY (or likelihood)</th>
<th>I Very likely</th>
<th>II Likely</th>
<th>III Unlikely</th>
<th>IV Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Could happen any time</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Could happen sometime</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Could happen but very rarely</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Could happen but probably never will</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

**CONCLUSIONS**

- **A** Fatality or permanent disability, or property or environmental damage over $50,000
- **B** Long term illness or serious injury, or property or environmental damage between $5,000 and $50,000
- **C** Medical attention and several days off work, or property or environmental damage between $500 and $5,000
- **D** First aid needed, or property or environmental damage up to $500

The numbers below show you how important it its to do something, and the action to take:

1 & 2 **Top Priority (T)** Eliminate or isolate the hazard immediately. Must fix the cause(s) immediately.
3 & 4 **Medium Priority (M)** Must reduce the risk to the lowest possible level using hierarchy of control measures.
5 & 6 **Low Priority (L)** Reduce the risk further if possible, and manage by routine procedures

Signature:  
Date: