**Student Safety Sheets**

**Phosphoric(V) acid**

*also known as* orthophosphoric acid

<table>
<thead>
<tr>
<th>Substance</th>
<th>Hazard</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentrated phosphoric(V) acid (If 2.6 M or more) Usually sold as 85% w/w (about 9 M)</td>
<td>CORROSIVE</td>
<td>DANGER: cause severe skin burns and eye damage. For a 15-minute exposure, the concentration of phosphoric acid vapour in the atmosphere should not exceed 2.0 mg m(^{-3}). It reacts violently, becoming very hot, when mixed with water. It decomposes if heated strongly, forming toxic oxides of phosphorus. This includes phosphoric acid used in most descaling and rust treatments.</td>
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<tr>
<td>Moderately-concentrated phosphoric(V) acid (If less than 2.6 M nut 1.0 M or more)</td>
<td>IRRITANT</td>
<td>WARNING: irritating to eyes and skin.</td>
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<tr>
<td>Dilute phosphoric(V) acid (If less than 1.0 M)</td>
<td>LOW HAZARD</td>
<td>May still cause harm in the eyes or in a cut. This includes acid used in cola drinks, etc. Over long periods of time, the acid may attack teeth.</td>
</tr>
</tbody>
</table>

**Typical control measures to reduce risk**

- Use the lowest concentration possible.
- Use the smallest volume possible.
- Wear eye protection for all but the most-dilute solutions; goggles for concentrated acids.
- Wear protective gloves if anything more than tiny amounts of concentrated acid is handled.
- Add the concentrated acid slowly to cold water when diluting, never the reverse; stir frequently to ensure good mixing.

**Assessing the risks**

- **What are the details of the activity to be undertaken? What are the hazards?**
- **What is the chance of something going wrong?**
  eg, hazardous products are formed in reactions with the acid or corrosive fumes are produced if concentrated acid is over-heated.
- **How serious would it be if something did go wrong?**
  eg, the skin and eyes can be seriously burned if not treated quickly.
- **How can the risk(s) be controlled for this activity?**
  eg, can it be done safely? Does the procedure need to be altered? Should goggles or safety spectacles be worn?

**Emergency action**

- **In the eye** Flood the eye with gently-running tap water for 10 minutes. Consult a medic.
- **Swallowed** Do no more than wash out the mouth with drinking water. Do not induce vomiting. Consult a medic.
- **Spilt on the skin or clothing** Remove contaminated clothing. Especially with concentrated acid, quickly use a dry cloth or paper towel to wipe as much liquid as possible off the skin. Then drench the skin with plenty of water. If a large area is affected or blistering occurs, consult a medic.
- **Spilt on the floor, bench, etc** Wipe up small amounts with a damp cloth and rinse it well. For larger amounts, and especially for (moderately) concentrated acid, cover with mineral absorbent (eg, cat litter) and scoop into a bucket. Neutralise with sodium carbonate. Rinse with plenty of water.