

# lechyd a Diogelwch – Health and Safety

## CHEMICAL SAFETY – SAFE DISPOSAL OF CHEMICAL WASTE

This Information Sheet provides guidance on how to dispose of chemicals safely in order to protect both people and the environment.

### General Information

Unless stored and disposed of properly, hazardous chemical waste poses risk to both humans and the environment. Bangor University is committed to taking all necessary steps to prevent pollution of the environment, to comply with all relevant legislation and minimise its environmental impacts.



Never assume you can just throw chemical waste down the sink with lots of water to dilute it or in the general waste bin. Many chemicals require specialist disposal and the University has specific contractors to undertake this task. However, the University **depends** on all chemical users to identify all chemical waste requiring specialist disposal.

### Identifying Special Waste

The Hazardous Waste Regulations 2005 outline strict requirements with regards to the disposal of certain hazardous wastes.

To decide if chemical wastes produced during experiments require specialist disposal you should refer to the European Waste Catalogue. This Catalogue contains '*absolute entries*' which define wastes that are always considered to be special waste and '*mirror entries*', wastes that are only classed as special if the concentration of the dangerous substance is above a specific concentration. **HOWEVER**, this Catalogue is an extremely complex document and the following is designed to simplify the process:

### Remember



- Always try to segregate organic and inorganic chemicals.
- Keep chlorinated organic liquids and non-chlorinated organic chemicals separate.
- Keep strong acids and strong alkalis separate.
- Keep flammable and oxidising chemicals separate.
- Always think about what was in an empty container before re-using it. Even if it has been washed, it may contain residues that are incompatible with the new chemical leading to fire, explosion or production of toxic gases.
- **NEVER** use Winchesters that have contained concentrated or fuming sulphuric acid for any other chemical.
- Use vented containers if you think there could be a risk of a build up of pressure.

HAZARD SYMBOL	RISK PHRASES	CONSIGN AS HAZARDOUS WASTE IF:	COMMENTS
EXPLOSIVE 	R1 – R6	<ul style="list-style-type: none"> <li>Always consign as hazardous waste</li> </ul>	
OXIDISING 	R7 – R9	<ul style="list-style-type: none"> <li>Solids – always consign as hazardous waste</li> <li>Liquids – see Comments</li> </ul>	If oxidising properties of solids have been neutralised by dissolving in water as part of the experimental process the waste will not be classified as hazardous providing it doesn't contain any other hazardous substances above the respective threshold limits
HIGHLY FLAMMABLE / FLAMMABLE 	R10 – R19	<ul style="list-style-type: none"> <li>Always consign as hazardous waste unless you are sure that processes during the experiment have rendered the material non-flammable</li> </ul>	Tests for flammability are given in Appendix C of the Hazardous Waste Technical Guidance WM2. <b>YOU MUST</b> seek guidance from your Departmental / College Safety Co-ordinator before attempting such tests
VERY TOXIC / MUTAGENIC (Class 1/2) / CARINOGENIC (Class 1/2) 	R26 – R28 R45 – R46 R49	<ul style="list-style-type: none"> <li>Consign as hazardous waste if the concentration of the substance is:  <b>Greater than 0.1%</b></li> </ul>	The concentrations of these substances are 'Additive' eg if there two of these substances in the hazardous waste each at a concentration of 0.1% the overall concentration is 0.2% and therefore the waste is treated as hazardous
DANGER TO THE ENVIRONMENT (dangerous to the ozone layer) 	R59	<ul style="list-style-type: none"> <li>Consign as hazardous waste if the concentration of the substance is:  <b>Greater than 0.1%</b></li> </ul>	
DANGER TO THE ENVIRONMENT (very toxic to aquatic organisms may cause long term effects) 	R50 – R53 may cause long term environmental effect	<ul style="list-style-type: none"> <li>Consign as hazardous waste if the concentration of the substance is:  <b>Greater than 0.25%</b></li> </ul>	Risk Phrases R50 – R53 overlap, when deciding the hazardous waste threshold for such substances it is important to consider cumulative and long term effects. Substances with such effects have lower waste threshold values than those without

<p>REPRODUCTIVE TOXIN</p> 	<p><b>R60</b> - may impair fertility</p> <p><b>R61</b> - may cause harm to the unborn child</p>	<ul style="list-style-type: none"> <li>Consign as hazardous waste if the concentration of the substance is:</li> </ul> <p style="text-align: center;"><b>Greater than 0.5%</b></p>	
<p>CORROSIVE</p> 	<p><b>R35</b> causes severe burns</p>	<ul style="list-style-type: none"> <li>Consign as hazardous waste if the concentration of the substance is:</li> </ul> <p style="text-align: center;"><b>Greater than 1%</b></p>	<p>The concentrations of these substances are 'Additive' eg if there two of these substances in the hazardous waste each at a concentration of 1% the overall concentration is 2% and therefore the waste is treated as hazardous</p>
<p>CARCINOGEN CAT 3 / MUTAGEN CAT 3</p> 	<p><b>R40</b> <b>R68</b></p>	<ul style="list-style-type: none"> <li>Consign as hazardous waste if the concentration of the substance is:</li> </ul> <p style="text-align: center;"><b>Greater than 1%</b></p>	
<p>TOXIC</p> 	<p><b>R23 – R25</b></p>	<ul style="list-style-type: none"> <li>Consign as hazardous waste if the concentration of the substance is:</li> </ul> <p style="text-align: center;"><b>Greater than 3%</b></p>	<p>The concentrations of these substances are 'Additive' eg if there two of these substances in the hazardous waste each at a concentration of 3% the overall concentration is 6% and therefore the waste is treated as hazardous</p>
<p>CORROSIVE</p> 	<p><b>R34</b> causes burns</p>	<ul style="list-style-type: none"> <li>Consign as hazardous waste if the concentration of the substance is:</li> </ul> <p style="text-align: center;"><b>Greater than 5%</b></p>	<p>The concentrations of these substances are 'Additive' eg if there two of these substances in the hazardous waste each at a concentration of 5% the overall concentration is 10% and therefore the waste is treated as hazardous.</p> <p><b>See example</b> on hydrochloric acid and sodium hydroxide below</p>
<p>REPRODUCTIVE TOXIN</p> 	<p><b>R62 – R63</b> possible risk of impaired fertility and damage to the unborn child</p>	<ul style="list-style-type: none"> <li>Consign as hazardous waste if the concentration of the substance is:</li> </ul> <p style="text-align: center;"><b>Greater than 5%</b></p>	

<p>IRRITANT</p> 	<p><b>R41</b> risk of serious damage to the eyes</p>	<ul style="list-style-type: none"> <li>Consign as hazardous waste if the concentration of the substance is: <b>Greater than 10%</b></li> </ul>	<p>The concentrations of these substances are 'Additive' eg if there two of these substances in the hazardous waste each at a concentration of 10% the overall concentration is 20% and therefore the waste is treated as hazardous</p>
<p>IRRITANT (Xi)</p> 	<p><b>R36 – R38</b> irritating to eyes, skin and respiratory system</p>	<ul style="list-style-type: none"> <li>Consign as hazardous waste if the concentration of the substance is: <b>Greater than 20%</b></li> </ul>	<p>The concentrations of these substances are 'Additive' eg if there two of these substances in the hazardous waste each at a concentration of 20% the overall concentration is 40% and therefore the waste is treated as hazardous</p>
<p>HARMFUL (Xn)</p> 	<p><b>R20 – R22</b> harmful by inhalation, swallowing or skin contact</p> <p><b>R65</b> – may cause lung damage if swallowed</p> <p><b>R68</b> – possible risk of irreversible effects</p>	<ul style="list-style-type: none"> <li>Consign as hazardous waste if the concentration of the substance is: <b>Greater than 25%</b></li> </ul>	<p>The concentrations of these substances are 'Additive' eg if there two of these substances in the hazardous waste each at a concentration of 25% the overall concentration is 50% and therefore the waste is treated as hazardous</p>
<p>DANGER TO THE ENVIRONMENT (toxic or very toxic to aquatic organisms)</p> 	<p><b>R50 – R53</b></p>	<ul style="list-style-type: none"> <li>Consign as hazardous waste if the concentration of the substance is: <b>Greater than 25%</b></li> </ul>	<p>The 'Additive' effect of compounds with different risk phrases R50 – R53 is complex and you should consult the European Waste Catalogue Appendix C14 for guidance</p>

