Access

The new CHARM Programme for writing COSHH risk assessments can be found at the link

https://www.st-andrews.ac.uk/ehss/charm/

This will produce the Single Sign on site as follows:

Then ‘login’

CHARM Programme

When you have logged in you will get a menu

A Training version of the programme exists - The aim is to allow people to try the programme without producing ‘Live’ records which can be misinterpreted as work proposed.
To search or suggest new chemicals

The search feature will produce a screen as follows:

[Diagram of search feature]

Press arrow to open folder

to search for chemicals - Press Search button

Enter name of chemical or part chemical here

The search feature will produce a screen as follows:

[Diagram of search feature]

This will determine if the chemical is on the University Database but should NOT be used as the start of the risk assessment process (you will need to open the risk assessment folder for this).
To Suggest a New Chemical

You should then fill in as much information as you know about the chemical or biological agent including its name and potential hazards - see form below. Then once you have filled in as much as you can press the submit button at the very bottom of the page.

This information will then be picked up the University Chemical Adviser who will assess the chemical and then either confirm your hazard rating or define a different hazard rating.

NOTE - Please do not try contacting the University Chemical Hazards Adviser directly. All new chemicals must be submitted through this process.
Producing a COSHH Risk Assessment

To start a COSHH Risk Assessment

If you wish to carry on a previously started risk assessment, press the ‘Continue’ button. If you wish to search previous risk assessments to either modify them or ‘Archive’ them, press the ‘Search button:

Page 1

If you press the Create and then the ‘Yes’ button, the following screen appears:

This column shows the sections of the risk assessment you have completed

To start a new risk assessment - Press the arrow here

Press the ‘Create’ Button and you will be asked to confirm that you want to create a new risk assessment

Put in a brief title of the procedure

You should put in your School that manages you personally NOT WHERE YOU ARE WORKING

You should put the location of your work here
The screen should look like the screen shot below:

Once you have made your selection you must press the ‘Save’ button. The system does NOT automatically store the data you enter.

To move to the next page - Press the ‘Continue’ button.

**Page 2**

On the second page you will be asked to list the chemicals and/or biological agents to be used in your procedure. You will also be asked to put in a text description of the procedure.

You will be asked to put in the chemicals used in the procedure here.
If you are using a category 3 biological agent, then you will be warned of this:

When you submit this project for approval, then as work on category 3 biological agents can only be undertaken in the category 3 containment laboratory, the project will have to be approved by the Director of the Category 3 laboratories.

If you plan to work with ‘Controlled Substances’ under the Misuse of Drugs Act 1971, you will be warned of this and ask for your licence number to ensure you have all the necessary Home Office licences.

If your School/Unit requires a Cyanide form or an overnight form - you should highlight these boxes - Data will be directly downloaded onto these forms.
You will then be asked to complete the procedure. The procedure should include all chemicals and/or biological agents to be used in the complete procedure. The aim is to identify the risk of the procedure, but this can only be done when you have a list of all the agents to be used and what you intend to do with them.

* Details of the procedure

Sample procedures:
1. Example Chemical procedure Risk Assessment
2. Example Biological procedure Risk Assessment

Example risk assessments to show the standard expected can be found here

Once you have filled in this page - Press the ‘Continue’ button.

Page 3

This page deals with who may be at risk.

You will be asked to identify those workers who will be involved in the project. These workers will be informed of the fact that they are part of a project and asked to agree with the risk assessment automatically.

You should also identify others who may be at risk due to the work. Please do not forget those who you may not see often in a laboratory eg Cleaners, trades staff and maintenance workers. In this section you should also identify what you will do to warn them about the hazards and risks associate with the work in the project.

Put the e-mail address of workers on the project here. Then highlight worker then press the + Add Worker’ button
Once this section has been completed - press the ‘Continue Button.

**Page 4**

**Hazards of Procedure**

Each individual chemical will have a hazard but it must be realised that when the chemicals are mixed in a particular procedure, the mixture of chemicals may have a completely different set of properties. This section asks you to assess the properties of the mixture of chemicals or the reaction products.

The following items need to be completed for the mixture / reaction mixture of chemicals

**The Risk of the Procedure**

The risk of the procedure is determined by the possible severity of injury and by the probability that the hazard will cause harm. The following section on Page 4 does this by drop down menus.

For other workers - you should complete this section for others who may be affected by the work and what you propose to do to minimise the risk to these workers.
If this is deemed to be a HIGH RISK project, a warning message will be activated. Please, this is there to warn you of the high risk nature of the work and that you need to ensure appropriate controls are in place.

**Page 5**

**Control Measures**

Pages 5 and 6 deal with the control measures that need to be applied to eliminate or minimise the risks of the procedure described in the COSHH Risk Assessment.

On page 5, the basic control measures are defined:


Details on the different classes of microbiological safety cabinets (MSC) can also be found in Management, Design and Operation of Microbiological Containment Laboratories [http://www.hse.gov.uk/pubns/priced/microbiologyiac.pdf](http://www.hse.gov.uk/pubns/priced/microbiologyiac.pdf)

**NOTE:** Class of microbiological safety cabinet does NOT correlate to containment - The Class of MSC just defines how they work. Therefore you do not need to have Class 2 MSC in Category 2 containment facilities - you can use Class 1 MSCs.

When you have completed Page 5 you will be asked to confirm you have filled in all that is necessary. Then when you are completed, press the ‘Continue’ Button
You will then be asked to identify the PPE necessary. It is **VERY IMPORTANT** that when you identify the type of personal protective equipment, you make sure it is the right type. For example:

- **Respiratory Protection (RPE)** - Is this FFP2 for particulates only or FFP3 which has a much higher level of particulate protection. Also, is there a need for protection against chemicals and if necessary against what type of chemical. (see [http://www.arco.co.uk/browse/Personal%20Protection/Respiratory%20Protection](http://www.arco.co.uk/browse/Personal%20Protection/Respiratory%20Protection))

- **Hand Protection** - Not all gloves have the same properties and will protect against only specified chemicals due to the chemistry of the material in the glove. Two factors to take into account -
  - Breakthrough time - This is the time it takes for a chemical to breakthrough a particular material in a glove
  - Permeation Rate - This is the rate at which a specific chemical will pass through a glove once it has broken the main barrier in that glove (ie Breakthrough time).

- **Eye Protection** - Eye Protection can be for penetration by projectiles or against chemical splashed (http://www.arco.co.uk/browse/Personal%20Protection/Eye%20and%20Face%20Protection)

The control measures identified on Page 5 of the Form should NOT be seen as covering all situations. Just ticking the tick boxes on page 5 may not be enough. If you are unsure or there are other hazards which need controlling, please complete the section on page 6 entitled ‘Any Other Control Measures’.

You should also mention if there is need for specific training for handling any of the chemical and/or biological agents eg

- Training requirement for entering category 3 containment laboratories;
- Working with category 3 pathogens;
- Working with HF acid
- Working with inorganic cyanides eg NaCN

Some chemicals have Workplace exposure limits (WELs) as defined in the Control of Substances Hazardous to Health Regulations 2002 and defined in the EH40 document (http://www.hse.gov.uk/pubns/priced/eh40.pdf). Where WELs exist, these are deemed to be maximum legal exposure limits, exceeding these limits is a criminal offence. It, thus, may be necessary to monitor levels of these compounds. Some limits are so vast that we do not do any work that may reach these
limits eg ethanol WEL = 1000ppm over an 8 hour working period. However some other substances eg formaldehyde the WEL is 2ppm or a 15 minute exposure period. Thus it may be necessary to periodically measure formaldehyde levels using systems like Kitagawa tubes or electronic measuring devices. If you do undertake monitoring, you need to keep accurate records of all monitoring activities.

**Page 7**

**Waste Disposal**

This section deals with the waste disposal procedures for the chemicals/biological agents being used. This is managed through the Special Waste Amendment (Scotland) Regulations 2004 and enforced by the Scottish Environment Protection Agency (SEPA).

However to ensure simple management of Hazardous Waste, it has been University guidance that no chemicals are put to drain.

The controls of how waste should be disposed of is managed through the European Waste Catalogue (EWC) which can be found at: [http://www.sepa.org.uk/waste/waste_regulation/idoc.ashx?docid=6694b6cd-1890-4b78-b20e-9d1d07207fac&version=-1](http://www.sepa.org.uk/waste/waste_regulation/idoc.ashx?docid=6694b6cd-1890-4b78-b20e-9d1d07207fac&version=-1). It is a legal requirement on the University that waste must be disposed of in a safe and environmental acceptable manner. The EWC does allow for harmless chemicals to be put to drain but that they must comply with the European Waste Catalogue (EWC) requirements.

The EWC has three categories of waste -

- **Absolute category** - This is where it is absolutely forbidden to put this chemical to drain in any quantity;
- **Mirror Category** - where a chemical can be put to drain but only if the concentration is below the limit set in the EWC. This is done through algorithms set up in the EWC.
- **Non-hazardous**
To determine if the quantity of a substance is deemed non-hazardous under the Special Waste Amendment (Scotland) Regulations 2004, you will need to use the algorithms stated in the EWC. For example:

**Concentrated Nitric Acid.**

Using data from the Sigma Aldrich Material Safety Data Sheet (MSDS) for fuming nitric acid, this compound has the following risk phrases:
- R8 (as an oxidiser)
- R26/27 (Very toxic by inhalation and contact with the skin)
- R35 (Causes severe burns).

Using the European hazardous waste Catalogue (as e-mailed to you) to define what can be disposed of to drain.

For R8 - as an oxidiser:

```
<table>
<thead>
<tr>
<th>Does the waste contain substances assigned R7, R8, or R9 on the AISL?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes: Is the concentration above the limit value in the AISL?</td>
</tr>
<tr>
<td>No: Does the waste contain organic peroxides assigned R7 or R8?</td>
</tr>
<tr>
<td>Yes: Is the concentration of these organic peroxides in the waste &gt;5%?</td>
</tr>
<tr>
<td>No: Is there &gt;0.5% available oxygen and &gt;5% hydrogen peroxide?</td>
</tr>
<tr>
<td>No: Does the waste contain other oxidisers assigned R7, R8 or R9?</td>
</tr>
<tr>
<td>Yes: Is testing an available option?</td>
</tr>
<tr>
<td>No: Does EC Annex V test method A11 (or equivalent) give a positive result?</td>
</tr>
<tr>
<td>Yes: Hazardous waste by H2</td>
</tr>
<tr>
<td>No: Not Hazardous by H2</td>
</tr>
</tbody>
</table>
```
As can be seen, this is a very complex procedure. Ensuring this is complied with is very difficult. However, if you are prepared to go through the relevant algorithm and show that the waste is not deemed hazardous, then it can be put to drain.

There are algorithms for:

- Explosive waste
- Highly flammable and flammable waste;
- Irritant and harmful waste
- Toxic waste;
- Corrosive waste; Environmentally Harmful waste
- Toxic for reproduction
- Infectious waste;
- Mutagenic waste
- Carcinogenic waste;
- Waste producing toxic gases whe in contact with water
- Any other substance which is hazardous

If you do this you **MUST KEEP A COPY OF THE ALGORITHM SHOWING it complies with relevant legislation.**

**NOTE:** It is however recommended that to simplify management of hazardous waste disposal that all chemical waste is deemed hazardous and disposed of in this manner and no such waste is put to drain.
Where special procedures are needed to inactivate or minimise the risk from a chemical, then that procedure should be detailed in this section. This procedure should provide exact details including timings for inactivation and necessary precautions for inactivation (eg to be done in a fume cupboard).

Once this section is competed, then you should mark it as complete and then press the ‘Continue’ Button as below.

**Special Waste (Incineration)** is only for very special cases where the chemical/biological agent must be incinerated and cannot be put to toxic landfill eg Waste from with SAPO agents.

**Aqueous liquid waste**
- Wash to drain
- Special waste
- Other

**Solid biohazard waste**
- Autoclave
- Disinfect with 2.5% virkon
- Disinfect with Hypochlorite
- Other

**Liquid biohazard waste**
- Autoclave
- Disinfect with 2.5% virkon
- Disinfect with Hypochlorite
- Other

If there are any special procedures require to make waste safe prior to disposal, please give details below.

- NO aqueous waste can be put to drain unless the EWC algorithm has been undertaken and it can be shown not to be hazardous.
- If you are using a disinfectant - You must be able to show the disinfectant reduces the number of viable organism by $10^5$ fold.
Emergency Actions

The purpose of this section is to ensure that the appropriate measures to be taken in the event that the procedure described goes wrong are adequately described. This means that if there is an accident, staff know what to do.

The use of fire extinguishers should only be contemplated if the person knows what types of fire the extinguishers can be used against, how to use the extinguisher and only if it is safe to tackle the fire.

Always call a first aider for a heat or chemical burn. Only if the first aider believes it is necessary should an ambulance be called for.

Any chemical spillage - you should detail not only the means of cleaning up the spill but also what personal protective equipment that should be used (in particular the type of gloves).
Once you have completed this section, you should mark it as complete and then press the ‘Continue’ Button.

**Page 9**

**Submit Risk Assessment**

<table>
<thead>
<tr>
<th>Progress tracker</th>
<th>Workers and notification</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Title and location</td>
<td>Search for workers</td>
</tr>
<tr>
<td>✓ Substance and procedure</td>
<td>Enter name or user ID</td>
</tr>
<tr>
<td>✓ Workers and notification</td>
<td>Add worker</td>
</tr>
<tr>
<td>✓ Hazards of procedure</td>
<td></td>
</tr>
<tr>
<td>✓ Control measures</td>
<td></td>
</tr>
<tr>
<td>✓ Monitoring and supervision</td>
<td></td>
</tr>
<tr>
<td>✓ Waste disposal</td>
<td></td>
</tr>
<tr>
<td>✓ Emergency action</td>
<td></td>
</tr>
</tbody>
</table>

When you have completed the risk assessment form and all the boxes on the left hand side are ticked - You will see the ‘Submit Risk Assessment’ button.

If you are using a disinfectant - You must be able to show the disinfectant reduces the number of viable organism by $10^5$ fold.
When you press this, a dialogue box will appear:

```
Submit Risk Assessment

By submitting this Risk Assessment, I agree to carry out this work activity in accordance with the procedures and precautions specified herein.
```

By agreeing to the risk assessment, you agree to comply with the procedures agreed in the risk assessment.

Once you have pressed the agree button, this will automatically notify

- Other workers and request their signature;
- Request approval from your Supervisor;
- If necessary request approval of the School Safety Co-ordinator
- If necessary request approval of the Category 3 Containment Laboratory Director

**Page 10**

**View and Revise Risk Assessment**

To view partially completed risk assessments:

```
Risk assessment
Use the options below to
- Create a new risk assessment
- View un-submitted risk assessment
- Search for risk assessment depending on your risk

Create  Continue  Search
```

Chemicals and micro-organisms

Training system

This will bring up a list of partially completed risk assessments:

```
<table>
<thead>
<tr>
<th>Title</th>
<th>Creator</th>
<th>School</th>
<th>Locations</th>
<th>Supervisor</th>
<th>Workers</th>
<th>Substances</th>
<th>Created</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dr Paul Szwedowski (post)</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td>03-Mar-2014</td>
</tr>
<tr>
<td>2</td>
<td>Dr Paul Szwedowski (post)</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td>03-Mar-2014</td>
</tr>
<tr>
<td>3</td>
<td>Dr Paul Szwedowski (post)</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td>23-Jan-2014</td>
</tr>
<tr>
<td>4</td>
<td>Dr Paul Szwedowski (post)</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td>23-Jan-2014</td>
</tr>
<tr>
<td>5</td>
<td>New one (post) School of Biology</td>
<td>BSRC Annex (Rooms: 5)</td>
<td>Mr Akin Sosa (loc21)</td>
<td>Mr Akin Sosa (loc21)</td>
<td>potassium ethoxide (3A)</td>
<td>26-Sep-2012</td>
<td></td>
</tr>
</tbody>
</table>
```

To reactivate the risk assessment - press this button
To view your risk assessments which have been submitted for approval, go to the CHARM homepage:

This will bring up the following table:

You must highlight the role you are searching under - eg are you the creator, PI etc)

This shows the status of the approval process

To reactivate the risk assessment - Press this button

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**NOTE:**

If you have any problems regarding the use of the CHARM system, you should in the first instance contact Paul Szawlowski at EHSS using the e-mail address: ehss