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| https://www-p.unisa.edu.au/styleguide/logos/images/logo_unisa_RGB-blue.png | WHS FORM | WHS12 |
| Chemical Process Risk Assessment AND CONTROL*Safe Management of Chemicals* procedure |

**WHS12 PART A – SIMPLE RISK ASSESSMENT**

*Begin with**a simple risk assessment. Obtain relevant Chemical Safety Data Sheets (SDS) on Chemwatch GoldFFX before starting. If a vendor or Gold SDS is not available submit an email request to Chemwatch or contact your local Chemwatch super user.* ***Section 1 is mandatory. Fill in each box for each chemical listed.***

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| 1. Workplace:
 |       | Assessment date:       | Assessment No.:      |
| Risk assessor: |       | Title:       | Expiry date:       |  |
| Title of procedure: |       | **Notes :**  | **FR = Fridge****FZ = Freezer****CC = Corrosives Cabinet** **FC = Flammables Cabinet****Cb = Cupboard****Sh = Shelf****OC = Oxidizing Agents Cabinet****TC = Toxic Cabinet** |
| Description of procedure: |       |  |  |
| Frequency of procedure: |       | Duration of procedure:       |  |  |
| Are there any licensing/ permit requirements? | Yes [ ]  No [ ]  If “yes” provide details: |       |  |  |
| Complete for each chemical referring to the Chemical Safety Data Sheet (SDS). |  |  |
| **Chemical****(and concentration if applicable)** | **Hazardous chemical/ substance?****Yes/ No** | **CAS number** | **Dangerous Goods Class****eg 3,6,8** | **Poison Schedule eg S5** | **Hazard Ratings from Chemwatch Gold SDS****(0 - 4)** | **Volume or Quantity (L or kg)****used in procedure** | **Quantity stored (See Section 9 for Excessive storage >5l or > 1kg)** | **Duration of storage**  | **In Chemwatch manifest** | **Recommended storage** | **Is storage available?** | **Storage locations** | **Connected to Alarm/ CEMS** | **Connected to Backup Power** |
|  |  |  |  |  | **Flammability** | **Toxicity** | **Body contact** | **Reactivity** | **Chronic** |  | **Wt or Volume** | **Months** | **Yes/No** | **FR/ FZ/ CC/****FC/ Cb/ Sh / OC/ TC** | **Yes/No** | **Room No.** | **Yes/No** | **Yes/No** |
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| Are any of the **Hazard Rating** numbers **3 or above**? Safer options have been considered but deemed not suitable. | No [ ]  | Yes [ ]  |
| Are any of the hazardous chemicals, **cytotoxic drugs**, **carcinogens, reprotoxins**, **carbon nanotubes** or other **engineered nanomaterials**? | No [ ]  | Yes [ ]  |
| If any chemicals do not have a specific SDS (i.e. manufactured chemicals, drug libraries, etc.), is the use of these products likely to carry an elevated level of risk? If “Yes”, please acknowledge that the control measures described in the risk assessment below will be applied to, and are expected to be sufficient for, the products of unknown risk. | No [ ]  | Yes [ ]  |
| From general review of the Chemical SDSs could the chemicals or reaction products represent an elevated level of risk? | No [ ]  | Yes [ ]  |
| **If any hazard ratings are *3 or above* or there are other indicators of an elevated risk, you must conduct a full risk assessment using PART B.** Otherwise, continue to the table below to complete the simple risk assessment. | If all **No**: Continue to 2. below 🡻 | If any **Yes**:Go to **PART B** 🡺 |

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| 1. **Exposure controls:** Identify the required **exposure controls** taking into account the volume/quantity of chemicals used, the level of exposure to the chemicals and the controls recommended in the Chemical SDS(s)
 |
| Appropriate laboratory facilities provided: | Yes | No | Safe operating procedures and equipment are in place to: | Yes | No |
| - Fume hood | [ ]  | [ ]  | - Decant from primary source | [ ]  | [ ]  |
| - Chemical storage cabinet(s) | [ ]  | [ ]  | - Transfer from primary source to work area | [ ]  | [ ]  |
| - Safety shower and eye wash unit | [ ]  | [ ]  | - Store primary source and samples | [ ]  | [ ]  |
| Personal Protective Equipment is supplied: | [ ]  | [ ]  | - Safely perform process steps | [ ]  | [ ]  |
| - Lab coat / apron | [ ]  | [ ]  | - Control manual handling & ergonomic risks | [ ]  | [ ]  |
| - Protective gloves | [ ]  | [ ]  | - Handle, store and dispose of waste | [ ]  | [ ]  |
| - Enclosed footwear | [ ]  | [ ]  | - Appropriate control chemical spills | [ ]  | [ ]  |
| - Safety eyewear suitable to purpose | [ ]  | [ ]  | - Appropriate first aid treatment | [ ]  | [ ]  |
| - Hearing protection | [ ]  | [ ]  | - Appropriate emergency management | [ ]  | [ ]  |
| - Respiratory protection | [ ]  | [ ]  | Training or instruction for relevant staff and students | [ ]  | [ ]  |

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| 1. **Action plan for controls**
 |
| **Controls requiring further action\*****(where “No” above has been indicated)** | **Person(s) responsible for implementation** | **Proposed implementation date** | **Actioned** |
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| 1. The required exposure controls are in place and will ensure that the health and safety risks are not significant.

Supervisor’s name1:      Signature:      Date:      |

1 Principal Researcher or equivalent

*Simple risk assessment completed. Researchers should keep a copy in their laboratory record workbook.*

**WHS12 PART B – FULL RISK ASSESSMENT**

*Start a full risk assessment with an initial simple risk assessment using table 1 in WHS12 PART A. Then use this page to make a* ***summary*** *of the main findings from your review of the hazardous chemicals involved.* ***Do not copy and paste large tracts of text from Safety Data Sheets****. Please distil the salient points with respect to how the chemical/s are being used in this procedure (i.e. considering the volume/s, concentration/s, how exposure could occur in this procedure, etc.).*

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| 1. **Potential health effects from exposure (Refer Chemical SDS Section 11 Toxicological Information)**
 |
| Indicate the potential route of entry: |
| Skin: [ ] (eg solid, aerosol, liquid, absorption) | Eyes: [ ] (eg dust, aerosol, liquid) | Inhalation: [ ] (eg vapour, gas, aerosol, dust) | Ingestion: [ ] (eg dust, aerosols, liquid, hygiene) | Injection: [ ] (eg pressure, sharps) |
| How might exposure occur?**(eg. Container is dropped and breaks, spill, evolution of fumes, exothermic reaction, etc.)** |  |
| **What are the potential health effects of exposure?**Acute effects (immediate):(refer Sections 2, 4 & 11 Chemical SDS) |  |
| **What are the potential health effects of exposure?**Chronic effects (long term): (refer Sections 2, 4 & 11 Chemical SDS) |  |
| Describe any **physical or chemical properties** which may indicate potential hazards:(refer Section 9 Chemical SDS) |  |
| Describe any potential hazards relating to **chemical stability, incompatibility and reactivity** **of the chemicals:**(refer in part to Section 7 Gold SDS) |  |
| Is **health monitoring** required due to ongoing exposure involving significant risk to health?(refer to section 4.14 of the procedure) |  |
| 1. **Are there other additional hazards?** (eg. radiation, mechanical, electrical, ergonomic, heating/ flame, cooling/ cryogenic, pressure/vacuum)
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| 1. **Are you intending to undertake teaching or research involving the use of:**
 |
| * hazardous chemicals with a Chemwatch Hazard Rating of **4** for **toxicity**, **reactivity** or **chronic**
* cytotoxic drugs
* carcinogens (GHS Carcinogenicity categories 1A or 1B)
* reprotoxins (GHS Reproductive toxicity categories 1A or 1B), or
* carbon nanotubes or other engineered nanomaterials used or handled as a dry powder?
 | No[ ]  | Yes[ ] 🡻 |
| If **Yes**, you must obtain prior approval from the University **Chemical Advisory Safety Committee** by submitting form **WHS15** to chemsafety@unisa.edu.au attaching a copy of this completed form **WHS12**. |
| **Note**: Form WHS12 can be used in the case of **engineered nanomaterials**. When assessing the risks of the nanoform of a chemical (whose chemical properties may also be modified) focus on how exposure may occur and what controls are available for minimising exposure. This approach is taken given that information on potential health effects may be absent or incomplete, and there are no Australian exposure limits for nanoforms. |

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| 1. **Step by step identification of hazards and required risk controls**
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| To complete this Risk Assessment, refer to **the SDS information** and the process **Safe Operating Procedure (SOP)** to identify the potential hazards in your procedure. List these hazards under the relevant headings in the template below (add more lines / headings as needed). The template may be displayed in the work area as a **SOP** if required. |
| **Describe the Safe Operating Procedure\*****for using the chemicals****(which includes the combination of substances if relevant)** | **Potential hazards** | Inherent Risk Rating**(Refer Risk Assessment Matrix)** | **Current Control Measures in place*****For PPE specify the type of gloves or respiratory protection (e.g nitrile; P2)*** | Residual Risk Rating**(Refer Risk Assessment Matrix)** | **Additional Controls required*****If existing controls need improvement or new controls introduced to reduce residual risk rating*** | Controls Implemented**(If No, refer to section 9)** |
| ***Acquisition/Storage* –** *primary sources and samples* |
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| ***Preparation –*** *decanting/ mixing & transfer* |
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| ***Process –*** *use of chemicals and equipment* |
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| ***Waste –*** *handling, storage and disposal* |
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| ***Emergency Management –*** *fire/ explosion/ spill control, specialist first aid, neutralizing agents, training* |
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\*For more guidance refer to the WHS procedure: [Safe operating procedure development](http://www.unisa.edu.au/ohsw/procedures/procedures.asp)

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| 1. **Action plan for controls**
 |
| **Controls requiring further action\*****(where “No” above has been indicated)** | **Person(s) responsible for implementation** | **Proposed implementation date** | **Actioned** |
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\* Include any training or safety instruction required. Include any reasons for excessive chemical storage.

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| 1. **Consultation – People involved in preparing the assessment**
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| Relevant staff\* must be consulted in relation to this risk assessment. Please indicate who was consulted. |
| Name:      Date:      | Name:      Date:      |
| Name:      Date:      | Name:      Date:      |
| Name:      Date:      | Name:      Date:      |

\* e.g. Members of research group, people familiar with the procedure/ chemicals, Technical staff, Laboratory Manager/Coordinator, Elected health and safety representative, WHS Safety Consultant.

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| 1. **Comments and endorsements**
 |
| **Comments:** If additional controls are required and cannot be implemented within a short time, they are to be transferred to the Local Action Plan. |
| Assessor’s name:      | Signature:      | Date:      |
| **Assessment approval:**I am satisfied that with the implementation of the above controls the risks are negligible or not significant. The necessary resources will be provided to implement any outstanding controls before the chemical process commences in accordance with the above action plan.. |
| Supervisor’s name1:      | Signature:      | Date:      |
| Additional approval by Head of Research Group/ Technical Services Manager/ General Manager, where required: |
| Approver’s name2:      | Signature:      | Date:      |

1 Principal researcher or equivalent.

2 A person with sufficient authority should approve, where required (i.e. local procedural requirements, additional resources are required, etc.).

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| 1. **Worker Sign-off – People undertaking the procedure**
 |
| By signing this Chemical Risk Assessment, I acknowledge that I have read and understood the procedure described and agree to follow the processes and controls listed: |
| Name:      Signature:      Date:      | Name:      Signature:      Date:      |
| Name:      Signature:      Date:      | Name:      Signature:      Date:      |
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| Name:      Signature:      Date:      | Name:      Signature:      Date:      |

*Full risk assessment completed. Researchers should keep a copy in their laboratory record workbook.*

**12C – RISK ASSESSMENT OF MODIFIED CHEMICAL PROCESS**

*Use 12C to document when changes or modifications are made to a chemical process or standard operating procedure based on this existing risk assessment.*

***IMPORTANT***

* *For new chemicals refer to relevant SDS from GoldFFX and undertake an initial Simple Risk Assessment (12A).*
* *Full details of the procedural modification to be kept in the Laboratory Record Book.*

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| 1. **List of modifications and additional controls**
 |
| **Date** | **Modification** | **Potential hazards introduced** | **Additional controls** | **Approved by** | **Date users notified/ trained** |
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**Risk Assessment Matrix**

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|  | **RISK SEVERITY/CONSEQUENCE** |
| **LIKELIHOOD** | **CRITICAL***(may cause severe injury or fatality - more than two weeks lost time)* | **MAJOR***(injury resulting in at least one day lost time)* | **MINOR***(medical treatment injury - back to work)* | **NEGLIGIBLE***(first aid treatment - no lost time)* |
| **VERY LIKELY***(exposure happens frequently)* | **High** | **High** | **Medium** | **Medium** |
| **LIKELY***(exposure but not frequently)* | **High** | **Medium** | **Medium** | **Low** |
| **UNLIKELY***(exposure could happen but only rarely)* | **Medium** | **Medium** | **Low** | **Very low** |
| **VERY UNLIKELY***(Exposure can happen but probably never will)* | **Medium** | **Low** | **Very low** | **Very low** |
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Based on SafeWork SA risk assessment matrix April 2015

**Risk Priority Table**

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| **Risk priority** | **Definitions of priority** | **Time frame** |
| **High** | Situation critical, stop work immediately or consider cessation of work process.Must be fixed today, consider short term and/or long-term actions. | **Now** |
| **Medium** | Is very important, must be fixed urgently, consider short term and/or long-term actions. | **1 – 3 weeks** |
| **Low** | Is still important but can be dealt with through scheduled maintenance or similar type programming. However, if solution is quick and easy then fix it today. | **1 - 3 Months** |
| **Very low** | Review and/or manage by routine processes | **Not applicable** |