

Risk Assessment (RA) is to be conducted before the commencement of any laboratory work activities.

RA is the process of evaluating the likelihood and severity of injury or illness arising from the exposure to an identified hazard, and determining the appropriate measures for risk control.

In SPMS, all individuals are to conduct his/her RA via the Online Workplace Risk Assessment System (WRAS).

The WRAS can be accessed via: <http://www.spms.ntu.edu.sg/Safety/RiskAssessment.html>

Click on “**Workplace Risk Assessment System (WRAS)**” (available in the link above) to log in to the system to begin conducting your RA.

Before you conduct your RA, please go through the “**WRAS User Guide**” (available in the link above) and the table below carefully.

RA samples can be found in: <http://www.spms.ntu.edu.sg/Safety/RiskAssessment.html> under “**Risk Assessment Samples**”

Please note that the work activities stated in the examples are not exhaustive. You are required to add in all work activities that are related to your project/research

What each column means in the RA form?

(Note: You will be able to view the entire RA form in the WRAS either after saving your RA as draft or after you have submitted your RA to your supervisor/PI for approval)

Header	Fill up all sections in the header of the RA by following the instructions as stated in the “ WRAS User Guide ” <i>Note: The next review date is up to one year ahead.</i> The RA is also reviewed: (1) When there are changes in work processes/activities (2) After any accidents/incidents
Column 1b Work Activity	Describe the work activity to be carried out. Note: Please do not fill in names of machines/equipment to be used. Therefore, a computer is not an activity, but working on a computer is
Column 1c Hazard	Identify hazard(s) associated with the activity to be carried out. Examples of hazards include chemical, biological, electrical, mechanical, physical, ergonomic etc.
Column 1d Sub Hazard	Identify sub hazard(s) associated with hazard(s) identified in Column 1c. This column allows you to further break the identified hazard(s) in Column 1c into a more specific sub hazard. For example: if the chosen hazard is “chemical”, the sub hazard lists allows you to break the hazard into a more specific sub hazard in the case of (toxic, poison, flammable etc)

<p>Column 1e</p> <p>Possible Accidents/ill health & Person-at-Risk</p>	<p>Identify possible accidents/ill health associated with each identified hazard. Examples of possible accidents/ill health include chemical poisoning, electrocution, eye injury etc.</p>
<p>Column 2a</p> <p>Existing Risk Control</p>	<p>Indicate risk control measures that are already in place to eliminate or minimise risks.</p> <p>Methods to control risks may be analysed according to the Hierarchy of Controls: Elimination, Substitution, Engineering Controls, Administrative Controls and Personal Protective Equipment (PPE).</p> <p>Elimination of the hazard should take first priority while PPE should be the last line of defence.</p> <p>Elimination Example: Use water based solvents instead of organic based solvents</p> <p>Substitution Example: Use a less toxic solvent</p> <p>Engineering Controls Example: Use of fume cupboard or gloves boxes</p> <p>Administrative Controls Example: Work instructions. Good laboratory practices. Training on proper use of chemicals</p> <p>PPE Example: Use of safety eyewear plus respiratory protection, use of gloves</p>
<p>Column 2b</p> <p>Severity</p>	<p>S=Severity</p> <p>Severity is the degree or extent of injury or harm caused by the hazards, or as a result of an accident. Choose the most likely severity from a value between 1 and 5, rather than the most extreme.</p> <p>Refer to the Severity Table (Appendix A) for detailed description of the 5 different levels of severity.</p>
<p>Column 2c</p> <p>Likelihood</p>	<p>L=Likelihood</p> <p>Likelihood of occurrence of an accident, incident or ill health is defined as the probability that the said accident, incident or ill health will happen. Choose the likelihood from a value between 1 and 5. Consider the records of such events happening in the past when deciding on the likelihood.</p> <p>Refer to the Likelihood Table (Appendix B) for detailed description of the 5 different levels of likelihood.</p>
<p>Column 2d</p> <p>Risk Prioritisation Number</p>	<p>RPN=Risk Prioritisation Number</p> <p>$RPN = \text{Severity} \times \text{Likelihood}$</p> <p>All RPNs should not be more than 6</p>
<p>Column 3a</p> <p>Additional Risk Control</p>	<p>Additional risk control measures are required when the RPN indicated in column 2d exceeds 6. If the RPN is 6 or less, enter "NA" in the column</p>

Column 3b Severity	S=Severity S may reduce upon introduction of additional control measures
Column 3c Likelihood	L=Likelihood L may reduce upon introduction of additional control measures
Column 3d Risk Prioritisation Number	RPN=Risk Prioritisation Number RPN will reduce upon introduction of additional control measures
Column 3e Follow Up by & date	Enter the name of the person appointed to oversee the implementation of the additional control measures. Enter the follow-up date.

APPENDIX A: LIST OF SERVERITY TYPES

SEVERITY INDEX	SEVERITY DESCRIPTION	WORKPLACE SAFETY	WORKPLACE HEALTH	ENVIRONMENT	FIRE DAMAGE	DOWNTIME INCURRED
5	CRITICAL	Fatality, single or multiple	Acute Poisoning, Failure of major Bodily Function	Spills to outside campus	More than \$10 million damages	More than 1 year for full re-instatement
		Permanent Body Injury or Loss of Use	Infection with no known cure	Infection outside confines of campus		
4	VERY SERIOUS	Injury requiring 30 days of hospitalization and/ or medical leave	Moderate exposure, Reversible Injury to Bodily functions on prolong recovery	Spills to outside building	More than \$1 million damages	More than 3 months for full re-instatement
		Temporary Body Injury or Loss of Use	Infection with known cure but extensive treatment	Infection outside confines of building affecting neighboring buildings but within campus		
3	SERIOUS	Injury requiring 10 days of hospitalization and/ or medical leave	Mild Exposure, Reversible injury to Bodily Functions with less than 1 month recovery	Spills to outside laboratory room	More than \$100K damages	More than 1 month for full re-instatement
		Temporary Body Injury or Loss of Use	Infection with known cure but extensive treatment	Infection outside confines of workplace but within laboratory only		
2	MARGINAL	Injury Requiring maximum of 3 days of medical leave only	Very mild exposure, reversible injury to bodily functions with less than 3 days recovery	Spills to outside workplace but within laboratory	More than \$10K damages	More than 5 days for full re-instatement
		Temporary Body Injury or Loss of Use	Infection with known cure but treatment needed	Infection outside confines of laboratory but within building only		
1	NEGLIGIBLE	First aid treatment only	Very mild exposure, reversible injury to Bodily functions with less than 3 days recovery	Spills within workplace only	Less than \$10k damages	No significant
		No or superficial injury	No Exposure	No Infection or infection with no effects		

APPENDIX B: List of Likelihood Types

Likelihood Index	Likelihood Description	Likelihood of Occurrence / Exposure Criteria
5	Frequent	Likely to occur many times per year
4	Moderate	Likely to occur once per year
3	Occasional	Might occur once in three years
2	Remote	Might occur once in five years
1	Unlikely	Might occur once in ten years

APPENDIX C:

Colour	RPN Score	Classification
Red	16 – 25	High
Amber	12 -15	Warning
Blue	8 -10	Medium
Green	1 – 6	Low