

Laboratory Risk Assessment Tool

The Laboratory Risk Assessment Tool provides a framework for researchers to perform risk assessments on experiments. By identifying the hazards, controls needed, and analyzing each step of the process prior to performing the experiment, this tool will help reduce risk of injuries and incidents.

Lab Group:					
Completed By: Date:					
Brief Description of Operation/Experiment:					
· · · · · · · · · · · · · · · · · · ·	search to identify the hazards of the reagents, reactions perating Procedures (SOPs), Safety Data Sheets (SDS) processes. Check all hazards that apply below.				
Hazard	ous Agents				
Physical Hazards of Chemicals	Health Hazards of Chemicals				
☐ Compressed gases	☐ Acute toxicity				
Cryogens	☐ Carcinogen				
Flammables	Eye damage/irritation				
Organic peroxides	Nanomaterial				
Oxidizers	Reproductive toxin				
Peroxide forming chemicals	Sensitizer				
Potentially explosive	☐ Simple asphyxiant				
Pyrophorics	Skin corrosion/irritation				
☐ Water reactive	Specific target organ toxicity				
Hazard not otherwise categorized:	Hazard not otherwise categorized:				
Hazard not otherwise categorized:	Hazard not otherwise categorized:				
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Hazardous Conditions or Process					
Reaction Hazards	Hazardous Processes				
Treatment in the second	Generation of air contaminants (gases, aerosols, or				
Explosive	particulates)				
Exothermic, with potential for fire, excessive heat, or runaway reaction	☐ Heating chemicals				
☐ Endothermic, with potential for freezing solvents or decreased solubility	☐ Large mass or volume				
Gases produced	Pressure > atmospheric				
Hazardous intermediates/products	Pressure < atmospheric				
Hazardous side-reactions	Scale-up of reaction				
Other:	High voltage				
Other:	Hand/power tools/machinery				
Other:	☐ Needles/sharps				
Other:	Hazard not otherwise categorized:				
Other:	Hazard not otherwise categorized:				

Outline the Procedure: List the steps or tasks for your procedure in the table below, including set-up and clean-up steps. For each step of the procedure, identify the hazard/potential consequences. Define the hazard control measures or precautions to minimize the risk of each step (e.g. run at microscale, work in fume hood, wear a face shield, etc.)

Step or Task	Hazard(s)	Hazard Control Measure(s)	
Safety Control Summary: Indicate the controls	s utilized in the outline	ed procedure.	
Engineering Controls		PPE	
☐ Fume hood	☐ Appropriate	clothing (long pants, closed toe shoes)	
☐ Biosafety cabinet	☐ Gloves - indi	icate type:	
Glove box	☐ Safety glass	☐ Safety glasses	
☐ Blast shield	☐ Safety goggl	☐ Safety goggles	
Pressure relief device	☐ Face shield	Face shield and goggles	
Thermocouples	☐ Lab coat		
Other:	☐ Flame-resist	☐ Flame-resistant lab coat	
Other:	Other:		
Specific Considerations: Indicate any unique	considerations for the	process in regards to the below.	
Lab specific training:			
Lab SOP(s) to review:			
Decontamination Procedures:			
Hazardous waste:			
Special Emergency Procedures (if spill, fire, or p	personal exposure occur	rs):	
Other:		,	
Other:			

Challenge Your Methods: Designing safe experiments requires that we consider that the process may not proceed as expected. Challenge your assessment and process by asking "What if...?" questions. These "What if" questions should probe potential gaps in your knowledge or logic. Factors to consider are human error, equipment failures, and deviations from planned/expected parameters (e.g. temperature, pressure, time, flow rate, scale/concentration).

What If Analysis
What if? Examples: there is a loss of cooling?valves/stopcocks are left open?there is an unexpected over-pressurization?a spill occurs?
Thenthere may be a runaway reactionthere may be an unexpected splash potential the reaction vessel may
failthere may be a dermal exposure.
What if?
Then
What if?
Then
What if?
Then

Assess Your Design. Look over the identified hazards, the outlined procedure, and the challenges to your methods to determine if you should proceed with the experiment. Are any changes needed to the experimental design due to unacceptable risk? Are there additional controls needed? Can you do a dry run of the procedure without hazardous materials or with less hazardous materials? Can you test your design at a smaller scale?

Trial Run	
Trial Run Procedure:	
Experimental Design Changes (if needed):	

Perform and Evaluate. Run your procedure and evaluate the controls and hazards as you work. If changes are needed to your process/controls, update the portions of this risk assessment and re-evaluate.

Evaluate Your Process		
What went well?		
Did the controls perform as expected?		
Did anything unexpected occur?		
Did a hazard manifest itself that was not previously identified?		
Any close-calls or near misses?		
Did something go exceptionally well that others could learn from?		
I plan to evolve my procedure by		

Additional Notes			