

Activity-Based Risk Assessment Form

Name of Activity: Sodium Dodecyl Sulfate-Polyacrylamide Gel Electrophoresis (SDS-PAGE)

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Hazard Identification				Risk Evaluation and Control			
S/N	Description	Hazard	Risks	Severity	Likelihood	Risk Level	Risk Control
1	Spillage Cleanup	Biological – Contact with potentially pathogenic agents Chemical – Contact with hazardous chemicals	Exposure to biological agents or hazardous chemicals	3	1	3	<ul style="list-style-type: none"> Clean up spillage according to SOP for Biological Spill Procedure and Biological Waste Disposal Procedure. Ensure biological spill is cleaned up by trained biological spill responders equipped with proper PPE All bacteria work is to be conducted in a BSL2 biosafety cabinet.
2	Chemical Irritation (General)	Chemical – Contact with hazardous chemicals	Minor irritation	1	1	1	<ul style="list-style-type: none"> Users are to read the MSDS of chemical before starting experimentation Proper PPE is to be donned; avoid splashing by using proper pipetting techniques
3	Use of benchtop centrifuge	Mechanical – Unbalanced centrifuge may cause rotor imbalance and damage	Physical injury, equipment damage, release of biological materials	2	1	3	<ul style="list-style-type: none"> Ensure centrifuge is accurately balanced before operation. Ensure lid of centrifuge is fastened to prevent flying debris or aerosolization of samples during failure. Users are to be trained on the use of the equipment before operation
4	Chemical Hazard – Use of Acrylamide	Chemical – Contact with acrylamide	Neurotoxin and potentially carcinogenic	3	1	3	<ul style="list-style-type: none"> Users are to read the MSDS of chemical before starting experimentation Handle acrylamide in fume hood, use premixed acrylamide solutions instead If possible, use pre-cast gels instead
5	Chemical Hazard – β -mercaptoethanol	Chemical – Accidental inhalation	Toxic fumes that may cause respiratory irritation, headache and nausea	2	1	2	<ul style="list-style-type: none"> Handle β-mercaptoethanol in the fume hood Users are to read the MSDS of chemical before starting experimentation

6	Assembly and disassembly of tall/short plates	Sharps – Breakage of plates may occur during disassembly	Cuts and lacerations	2	1	2	<ul style="list-style-type: none"> • Proper PPE is to be donned; usage of correct equipment (lever) to open the gel apparatus • Handle with caution
7	Boiling of SDS-loading dye during denaturation of samples	Physical/Mechanical – Contact with the 100°C heating element	Burns	3	1	3	<ul style="list-style-type: none"> • Wear heat resistant gloves when heating samples • Use a heat block with a lid
8	Use of the power supply to perform electrophoresis	Electrical – contact with live electrodes or faulty cables	Electrocution	3	1	3	<ul style="list-style-type: none"> • Keep area around the gel tank and power supply free of buffer spillage • Inspect cables and electrodes before use • Do not touch gel nor buffer during electrophoresis; switch off power supply before handling
9	Use of methanol and ethanol in coomassie staining/destaining solution	Chemical – Irritation to skin and eyes Fire Hazard	Chemical irritation to skin or eyes Flammable vapors can be produced which are ignitable	3	1	3	<ul style="list-style-type: none"> • Users are to read the MSDS of chemical before starting experimentation • Prepare the solutions in a fume hood • Seal containers tightly within a flammable cabinet.