

**SKILLS FRAMEWORK FOR BIOPHARMACEUTICALS MANUFACTURING
TECHNICAL SKILLS & COMPETENCIES (TSC) REFERENCE DOCUMENT**

TSC Category	Health, Safety and Environment (HSE)					
TSC	Chemical Risk Management					
TSC Description	Implement chemical safety and security practices to ensure a safe work environment					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
		BPM-HSE-2002-1.1	BPM-HSE-3002-1.1	BPM-HSE-4002-1.1	BPM-HSE-5002-1.1	
		Follow chemical safety procedures to conduct work safely within own work area	Deploy chemical safety procedures to maintain a safe working environment	Develop and monitor the implementation of chemical safety plans, and manage chemical-incident responses	Formulate strategies and systems for ensuring chemical safety and managing chemical hazards	
Knowledge		<ul style="list-style-type: none"> Organisational chemical safety and security codes and practices Current Good Manufacturing Practices (CGMPs) Principles of handling chemical materials Types and properties of toxic, corrosive, flammable, carcinogenic, explosive and radioactive materials, oxidizing agents, sensitizers, depressants, and asphyxiant substances Types of chemical hazards and risks Types of preventive and protective measures against chemical hazards Types and functions of Personal Protective Equipment (PPE) Emergency Response Plans (ERPs) Personnel to be notified of incidents and accidents 	<ul style="list-style-type: none"> Organisational chemical safety and security codes and practices Current Good Manufacturing Practices (CGMPs) National and international chemical safety and security standards, guidelines and legislations Types and components of laboratory programmes Principles of audits, inspections and certifications Components of an Emergency Response Plan (ERP) 	<ul style="list-style-type: none"> Components of a chemical safety plan Key considerations in designing chemical safety plans Methods of reviewing the effectiveness of chemical safety procedures Methods of conducting chemical hazard and risk assessments Plans for addressing chemical hazards Methods of managing emergency responses to chemical incidents Types and content of chemical safety training programmes for staff 	<ul style="list-style-type: none"> Industry best practices in chemical safety and security Components of a chemical hazard management system Possible conflicts between chemical safety and security with Current Good Manufacturing Practices (CGMPs) Types and features of laboratories of different hazard exposures Types of chemical hazards and risks associated with new technologies, equipment and hazardous materials Methods of formulating programmes for addressing chemical waste management Methods of formulating chemical hazard management training programmes Methods of formulating chemical incident Emergency Response Plans (ERPs) Requirements of a chemical hazard 	

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					management review programme	
Abilities		<ul style="list-style-type: none"> Follow chemical safety and security codes and practices in the workplace Locate and refer to Material Safety Data Sheets (MSDS) to apply safe handling practices for chemicals Apply safe hazard management practices and techniques when handling chemical substances Respond to incidents and accidents in laboratories and manufacturing facilities according to ERPs and notify appropriate personnel 	<ul style="list-style-type: none"> Apply national and international chemical safety and security standards, guidelines and legislations in the workplace Implement chemical hazard and risk control measures Participate in chemical hazard and risk audits and inspections Report chemical incidents and accidents Conduct chemical hazard and risk assessments Implement measures to reduce or eliminate potential chemical hazards and threats, and 	<ul style="list-style-type: none"> Develop plans for addressing chemical hazards and waste management Review the implementation of chemical hazard and risk controls Facilitate the conduct of chemical hazard and risk assessments Manage emergency responses to chemical incidents Develop training and communication programmes to enhance staff readiness in chemical hazard and safety 	<ul style="list-style-type: none"> Establish organisation-wide chemical safety guidelines and strategies Formulate chemical hazard management strategies and systems to mitigate risks within laboratories of different exposure levels Formulate chemical hazard and waste management programmes Integrate chemical safety and security with Current Good Manufacturing Practices (CGMPs) to maintain safe working environments 	

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			<p>restore chemical safety and security in the facility</p> <ul style="list-style-type: none"> • Devise ERPs for chemical hazard incidents to ensure personnel safety in the workplace and to minimise environmental impact 	<ul style="list-style-type: none"> • Conduct chemical hazard management review programmes • Implement improvements to chemical hazard management systems 	<ul style="list-style-type: none"> • Drive the implementation of chemical hazard assessments • Determine appropriate laboratory exposure levels by reviewing hazards and risks associated with chemical processes • Devise measures to reduce risks relating to newly introduced technologies • Articulate the direction and objectives for chemical safety training and chemical hazard and risk management programmes • Formulate chemical hazard management review programmes 	
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