Draft: Model Curriculum

NAME: FUNDAMENTALS OF OCCUPATIONAL RISK MANAGEMENT IN THE CHEMICAL INDUSTRY

MICROCREDENTIAL CODE: SSD/MCr-0106

MICROCREDENTIAL VERSION: 1.0

NSQF LEVEL:4

MODEL CURRICULUM VERSION-1.0

Safety Skill Development Foundation || Safety Skill Development Foundation D-507Light House, Town Square Sector 82A, Gurugram, Haryana, India - 122004

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Training Parameter

Sector	Hydrocarbon, Iron & steel, Mining, Power, Automotive, Construction, Chemicals & Petrochemicals and others.
Sub Sector	-
Occupation	Chemical Safety Management
Country	India
NSQF Level	4
Minimum Educational Qualification and Experience	12th grade pass or equivalent OR 10th grade pass or equivalent with 3 years of relevant experience OR Previous relevant qualification of NSQF level 3 with 3 years of relevant experience
Pre-Requisite License or Training	NA
Minimum Age	18 Years
Last Reviewed On	08-05-2025
Next Review Date	08-05-2028
NSQC Approval Date	08-05-2025
MC Version	1.0
Model Curriculum Creation Date	08-05-2025

Model Curriculum Valid Up to Date	08-05-2028
Model Curriculum Version	1.0
Minimum Duration of the Course	15 hours
Maximum Duration of the Course	15 hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

After completing the program, the participant will be able to: -

- Determine the presence of dangerous substances within your work environment.
- Evaluate the potential risks associated with the identified chemicals.
- Decide on how to effectively manage and control the identified risks.
- Introduce physical modifications to the workplace that will effectively minimize or eliminate the risk of chemical exposure.
- Apply the Hierarchy of Controls approach when addressing chemical hazards.
- Maintain continuous compliance with chemical regulations by conducting regular reviews.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Module 1: Identification and assessment of risks and hazards in chemical Industry	02:00 Hours	02:00 Hours	00:00 Hours	00:00 Hours	04:00 Hours

Module 2:Safety measures to reduce exposure to potentially hazardous chemicals and their handling, storage, transportation, treatment, and disposal.	02:00 Hours	02:00 Hours	00:00 Hours	00:00 Hours	04:00 Hours
Module 3: Chemical Safety Practices and Proper Labeling for Risk Communication	02:00 Hours	1.5:00 Hours	00:00 Hours	00:00 Hours	3.5:00 Hours
Module 4: Emergency Evacuation Procedures and MSDS Management	02:00 Hours	1.5:00 Hours	00:00 Hours	00:00 Hours	3.5:00 Hours
Total Duration	**08:00 Hours**	**07:00 Hours**	**00:00 Hours**	**00:00 Hours**	**15.00 Hours**

Module Details

Module 1: Identification and assessment of risks and hazards in chemical Industry

Terminal Outcomes:

- Identify safety concerns related to the utilization, production, transportation, and handling of chemicals within manufacturing facilities.
- Assess dangerous chemicals based on their characteristics, including explosiveness, flammability, toxicity, carcinogenicity, and teratogenicity.
- Evaluate chemical risks to determine the potential dangers posed to individuals managing the chemicals, the surrounding environment, and the communities and ecosystems within that environment.

Duration: 02:00 Hours	**Duration: 02:00 Hours**
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
• Identify hazardous chemicals and assess their potential risks. • Understand and interpret Safety Data Sheets (SDS) and chemical labelling. • Perform risk assessments for the use, storage, and disposal of chemicals. • Implement control measures to minimize chemical risks in the workplace.	• Identify hazardous chemicals and associated risks in the workplace. • Assess chemical hazards using Safety Data Sheets (SDS) and other tools. • Evaluate and categorize risks associated with hazardous chemicals. • Implement safety measures to manage chemical risks effectively. • Respond to chemical spills and emergencies safely.

• Comply with local and international chemical safety standards (OSHA, REACH, GHS). • Respond effectively to chemical spills and other emergencies. • Recognize the types of toxicity (acute, chronic, sub-chronic) and the factors that influence the toxicity of substances (e.g., dose, duration, route of exposure, and individual susceptibility).	• Apply safety protocols to minimize the risk of exposure to toxic substances, including the use of personal protective equipment (PPE).
Classroom Aids	
Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser	
Tools, Equipment and Other Requirements	
Personal Protective Equipment (PPE), Chemical Storage Cabinet, Spill kits, Absorbent materials, Containment pallets, Safety cans for flammables, Chemical storage containers, Gas Detector, Chemical Sensors, Radiation Detectors, Air Quality Monitors, Emergency Showers and Eyewash Stations, Fire Extinguishers, First Aid Kits, Emergency Response Kits, Chemical Handling Tools, Safety Data Sheets (SDS), Chemical Safety Manuals and Guides.	

Module 2: Safety measures to reduce exposure to potentially hazardous chemicals and their handling, storage, transportation, treatment, and disposal.

Terminal Outcomes:

- Implement policies, procedures, and practices aimed at minimizing the risk of exposure to potentially hazardous chemicals.
- Implement measures for the proper handling, storage, and transportation of hazardous chemicals.
- Implement measures for the treatment and disposal of hazardous chemicals.

Duration: 02:00 Hours	**Duration: 02:00 Hours**
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
• Implement control measures to reduce chemical exposure risks. • Manage hazardous chemicals safely during routine tasks. • Ensure proper storage and segregation of hazardous chemicals.	• Implement control measures to reduce chemical exposure risks. • Ensure safe handling, storage, and segregation of hazardous chemicals. • Safely transport hazardous chemicals in compliance with regulations. • Treat and dispose of hazardous chemicals correctly.

• Safely transport hazardous chemicals in compliance with regulations. • Manage the treatment and disposal of hazardous chemicals. • Respond to emergencies and spills involving hazardous chemicals. • Explain the types of chemical waste (e.g., hazardous, non-hazardous, flammable, corrosive) and the appropriate disposal methods for each	• Respond effectively to chemical spills and emergencies. • Apply disposal techniques for several types of chemical waste, including proper disposal of hazardous materials.
Classroom Aids	
Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser	
Tools, Equipment and Other Requirements	
Personal Protective Equipment (PPE), Chemical Storage Cabinet, Spill kits, Absorbent materials, Containment pallets, Safety cans for flammables, Chemical storage containers, Gas Detector, Chemical Sensors, Radiation Detectors, Air Quality Monitors, Emergency Showers and Eyewash Stations, Fire Extinguishers, First Aid Kits, Emergency Response Kits, Chemical Handling Tools, Safety Data Sheets (SDS), Chemical Safety Manuals and Guides.	

Module 3: Chemical Safety Practices and Proper Labelling for Risk Communication

Terminal Outcomes:

- Adhere to basic chemical safety practices, which includes the use of personal protective equipment such as safety goggles.
- Adopt labelling standards to clearly indicate the presence of hazards and the type of hazard involved.

Duration: 02:00 Hours	**Duration: 1.5:00 Hours**
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
• Identify chemical hazards and associated risks. • Implement fundamental safety practices for handling hazardous chemicals. • Understand and apply proper chemical labelling and signage. • Use Safety Data Sheets (SDS) to ensure safety and compliance. • Communicate chemical risks effectively using appropriate labelling and documentation.	• Implement basic safety practices when managing and storing chemicals. • Identify and classify chemical hazards using GHS symbols and labelling. • Properly label chemical containers and storage areas to communicate risks. • Use Safety Data Sheets (SDS) to ensure safety and compliance. • Communicate chemical hazards effectively to co-workers and supervisors. • Manage and respond to emergencies related to the transportation of dangerous goods, including spill containment and fire suppression.

• Explain the labelling, packaging, and documentation requirements for the safe transport of dangerous goods.	
Classroom Aids	
Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser	
Tools, Equipment and Other Requirements	
Personal Protective Equipment (PPE), Chemical Storage Cabinet, Spill kits, Absorbent materials, Containment pallets, Safety cans for flammables, Chemical storage containers, Gas Detector, Chemical Sensors, Radiation Detectors, Air Quality Monitors, Emergency Showers and Eyewash Stations, Fire Extinguishers, First Aid Kits, Emergency Response Kits, Chemical Handling Tools, Safety Data Sheets (SDS), Chemical Safety Manuals and Guides.	

Module 4: Emergency Evacuation Procedures and MSDS Management

Terminal Outcomes:

- Establish emergency evacuation procedures, consideration of relevant factors, and the appointment of chemical marshals/wardens.
- Develop and maintain Material Safety Data Sheets (MSDS) for each hazardous chemical, which includes information on workplace health aspects, restrictions, emergency contact numbers, and other safety-related details.

Duration: 02:00 Hours	**Duration: 1.5:00 Hours**
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
• Understand the importance of emergency evacuation procedures and protocols. • Identify several types of emergencies that may require evacuation. • Develop and implement an effective emergency evacuation plan. • Access and interpret MSDS to inform emergency response actions. • Ensure that MSDS are organized and easily accessible for all employees.	• Implement emergency evacuation procedures effectively. • Identify several types of emergencies and corresponding responses. • Access, interpret, and manage MSDS to support safety and compliance. • Communicate emergency procedures and chemical safety information to colleagues.
Classroom Aids	
Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser	

Tools, Equipment and Other Requirements
Personal Protective Equipment (PPE), Chemical Storage Cabinet, Spill kits, Absorbent materials, Containment pallets, Safety cans for flammables, Chemical storage containers, Gas Detector, Chemical Sensors, Radiation Detectors, Air Quality Monitors, Emergency Showers and Eyewash Stations, Fire Extinguishers, First Aid Kits, Emergency Response Kits, Chemical Handling Tools, Safety Data Sheets (SDS), Chemical Safety Manuals and Guides.

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	**Specialization**	**Years**	**Specialization**	
Graduate in any discipline / Diploma in Engineering	Science Domain	7	Relevant Domain	0	-	
M. Tech/ B. Tech	Science Domain	4	Relevant Domain	0	-	

Trainer Certification	
Domain Certification	**Platform Certification**
Certified as Trainer for the Job Role: "SSD/M0106 v1.0 :**FUNDAMENTALS OF OCCUPATIONAL RISK MANAGEMENT IN THE CHEMICAL INDUSTRY**" or higher	Recommended that the Trainer is certified for the Job Role: "Trainer (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2601 v2.0". The minimum accepted score is 80%.

qualification as per career progression by SSDF. The minimum accepted score is 80%.	

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Graduate in any discipline / Diploma in Engineering	Science Domain	7	Relevant Domain	0	-	
M. Tech/ B. Tech	Science Domain	4	Relevant Domain	0	-	

Assessor Certification	
Domain Certification	**Platform Certification**
Certified as Assessor for the Job Role: "SSD/M0106 v1.0 : **FUNDAMENTALS OF OCCUPATIONAL RISK MANAGEMENT IN THE CHEMICAL INDUSTRY**" or higher qualification as per career progression by SSDF. The minimum accepted score is 80%.	Recommended that the Assessor is certified for the Job Role: "Assessor (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2701 v2.0". The minimum accepted score is 80%.

Assessment Strategy

The assessment will be based on the concept of third-party assessments through certified assessors with empaneled Assessment Agencies of NCVET. The certification of each assessor will be done by SSDF through a process of selection, training, assessment & certification through training of assessor's program.

The assessments will include both formative & summative. The progressive assessments will be through the trainer during the progress of the training. Summative assessments will be carried out by an assessor through assessment agencies.

The assessment process will determine whether the candidate or professional is competent or not to perform the job as per expected performance criteria. The assessment plan contains the following information:

a) Assessment elements – Competencies based on performance criteria of each NOS.
b) Methods of assessment – Written test (online/offline), viva and practical/ field exercises.
c) Time of assessment – The assessment will be done both formative and summative (post orientation/training) of candidates.
d) Place i.e., context of the assessment - The assessment will be conducted through theory, viva voce and practical/ field exercises, on simulators and will be both online and offline modes.
e) The criteria for decision making– It will be based on assessment criteria & guidelines as given in the qualification pack.
f) Questions – The written questions, viva & practical questions will be set to cover all aspect of performance criteria and would have been validated from experts in the subject matter.

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to Be known and/or understood to accomplish or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training Outcome is specified in terms of knowledge, understanding(theory)and skills (practical application).
OJT(M)	On-the-job training(Mandatory);trainees are mandated to complete specified hours of training on site
OJT(R)	On-the-job training(Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work or produce a tangible work output by applying. cognitive, affective, or psycho motor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes helps to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standard
AB	Awarding Body
AA	Assessment Agency
TP	Training Partner