

Attachment 1

Training hours and syllabus of emergency responder certificate training

I. Awareness Level

Courses	Training Objectives	Training Outline	Training Hours	
			Indoor	Hands-on
Awareness Courses	1. Understand the definition of toxic and concerned chemical substances and hazards at the site of the incident; 2. Understand potential consequences of toxic and concerned chemical substances at the site of the incident; 3. Have the competence to identify toxic and concerned chemical substance hazards;	1. Introduce to the capacity requirements, functions and competency of emergency responders at all levels; 2. A brief introduction to the toxic and concerned chemical substance emergency response organization; 3. Introduction to the knowledge, procedures, terminologies and protective equipment required for handling toxic and concerned chemical substance incidents.	2 hours	—
	4. Have the competence to identify toxic and concerned chemical substances; 5. Understand the recognition of frontline emergency responder:	1. Introduction to the labeling of domestic toxic and concerned chemical substances, including the labeling and marking of containers (GHS), tank cars, pipelines and cylinders; 2. Introduction to safety data sheet, emergency response card and Emergency Response Guidebook; 3. Introduction to the inquiry of physical and chemical properties of other related chemicals.	4 hours	—

	including regional safety, control and Emergency Response Guidebook; 6. Have the competence to understand external resources and timely report to the command system.	1. Introduction to the domestic toxic and concerned chemical substance emergency response system and response units; 2. A brief introduction to toxic and concerned chemical substance incident regulations and reporting mechanisms.	2 hours	—
8 hours in total			8 hours	—

II. Operations Level

Courses	Training Objectives	Training Outline	Training Hours	
			Indoor	Hands-on
Awareness Courses	1. Have the skills and competence to assess basic hazards and risks; 2. Understand how to select proper personal protective equipment (PPE) during the response process; 3. Understand the terms for basic toxic and concerned chemical substances;	1. Introduce to the capacity requirements, functions and competency of emergency responders at all levels; 2. A brief introduction to the toxic and concerned chemical substance emergency response organization; 3. Introduction to the knowledge, procedures, terminologies and protective equipment required for handling toxic and concerned chemical substance incidents.	2 hours	—
	4. Be capable to implement basic control,	1. Introduction to the labeling of domestic toxic and concerned chemical substances, including the labeling	4 hours	—

Operations Courses	containment and leak control operations using existing resources and within the practical range of PPE;	and marking of containers (GHS), tank cars, pipelines and cylinders;		
	5. Understand how to implement decontamination procedures;	2. Introduction to safety data sheet, emergency response card and Emergency Response Guidebook;		
	6. Understand emergency response related standard operating procedures and post-incident restoration procedures.	3. Introduction to the inquiry of physical and chemical properties of other related chemicals.		
		1. Introduction to the domestic toxic and concerned chemical substance emergency response system and response units;	2 hours	—
		2. A brief introduction to toxic and concerned chemical substance incident regulations and reporting mechanisms.		
		1. Types and identification of the package and container;	3 hours	1 hour
		2. Introduction to the basic composition of Incident Action Plan (IAP) and common toxic and concerned chemical substance emergency response actions (offensive and defensive);		
		3. Regional control methods and actions;		
		4. Use relevant documents and data to perform area zoning and allocation in practice (use SDS and ERG in simulated incident cases).		

		1. Introduction to personal protective equipment (PPE) and decontamination types and procedures; 2. The wearing of PPE, establishment of decontamination station and implementation of decontamination procedures.	1 hour	3 hours
16 hours in total			12 hours	4 hours

III. Technician Level

Courses	Training Objectives	Training Outline	Training Hours	
			Indoor	Hands-on
Awareness Courses	1. Understand how to implement emergency response plan; 2. Understand how to carry out quantitative and qualitative analyses on a known or unknown chemical substance using the detection and examination instruments;	1. Introduce to the capacity requirements, functions and competency of emergency responders at all levels; 2. A brief introduction to the toxic and concerned chemical substance emergency response organization; 3. Introduction to the knowledge, procedures, terminologies and protective equipment required for handling toxic and concerned chemical substance incidents.	2 hours	—
	3. Be capable to play the role of designating functions of responder in the emergency response command system; 4. Understand how to select	1. Introduction to the labeling of domestic toxic and concerned chemical substances, including the labeling and marking of containers (GHS), tank cars, pipelines and cylinders; 2. Introduction to safety data sheet, emergency response card and Emergency Response	4 hours	—

Operations Courses	specific PPE when conducting toxic and concerned chemical substance response operations;	3. Introduction to the inquiry of physical and chemical properties of other related chemicals.		
	5. Understand hazard and risk assessment skills;	1. Introduction to the domestic toxic and concerned chemical substance emergency response system and response units;	2 hours	—
	6. Be capable to implement advanced control, containment and leak control operations using existing resources and within the practical range of PPE;	2. A brief introduction to toxic and concerned chemical substance incident regulations and reporting mechanisms.		
	7. Understand and be capable to implement decontamination procedures;	1. Types and identification of the package and container;	3 hours	1 hour
	8. Understand post-incident restoration procedures;	2. Introduction to the basic composition of Incident Action Plan (IAP) and common toxic and concerned chemical substance emergency response actions (offensive and defensive);		
	9. Understand the terminology and nature of fundamental chemistry and toxicology.	3. Regional control methods and actions;	1 hour	3 hours
		4. Use relevant documents and data to perform area zoning and allocation in practice (use SDS and ERG in simulated incident cases).		
		1. Introduction to personal protective equipment (PPE) and decontamination types and procedures;	1 hour	3 hours
		2. The wearing of PPE, establishment of decontamination station and implementation of decontamination procedures.		

Technician Courses		<ol style="list-style-type: none"> 1. Including general toxicological terms, such as the LD₅₀, PELs, TLVs and mode of action; toxic exposure types/ dose-response relationship and exposure to radioactive substances; 2. Emergency responder assesses the chemical and physical properties of compounds required for a potential physical and chemical hazard; 3. Be familiar with the inquiry and application of toxic and concerned chemical substance emergency response related information. 	2 hours	—
		<ol style="list-style-type: none"> 1. Introduction to the types, safety design and potential hazards of common factory equipment, facilities and containers used to store or produce toxic and concerned chemical substances; 2. Introduction to potential hazards of indoor chemical storage room, pipelines and other facilities; 3. Introduction to all types of transportation tools and containers used to load, carry or transport toxic and concerned chemical substances; 4. Identification of and introduction to international transport containers. 	2 hours	—

		<ol style="list-style-type: none"> 1. Introduction to toxic and concerned chemical substance incident detection strategies and equipment; 2. Introduction to emergency sampling strategy and equipment; 3. Practice of detecting unknown substances 	1 hour	1 hour
		<ol style="list-style-type: none"> 1. Introduction to the incident assessment model, including hazard assessment at the site of the incident, hazard analysis, vulnerability analysis and risk analysis; 2. Explain possible causes and consequences of container damages and how to carry out a damage assessment; 3. Confirm the scale of incident and divide the region. 	2 hours	—
		<ol style="list-style-type: none"> 1. Introduction to Incident Action Plan (IAP); 2. Introduction to the duties and responsibilities of organizing the handling of toxic and concerned chemical substance incidents inside the incident command system; 3. Assess the effectiveness of incident control; 4. Terminate, record and review the incident; 5. Communication skills and sand table exercises on the organization. 	2 hours	3 hours
		<ol style="list-style-type: none"> 1. Introduction to and selection of PPE; 2. The wearing and removal of technician-level PPE; and the implementation of operations; 	1 hour	4 hours

		3. Introduction to various decontamination methods, including emergency decontamination, large-scale decontamination and technical decontamination; 4. Be familiar with decontamination procedures and operations; 5. Evaluate the effectiveness of decontamination operations.		
		1. Introduction to toxic and concerned chemical substance emergency response action plans and control technologies; 2. Terminate, record and review the incident; 3. Practice of leak prevention and control technology for different containers and pipelines; 4. Practice of tank movement.	2 hours	4 hours
40 hours in total			24 hours	16 hours

IV. Incident Commander Level

Courses	Training Objectives	Training Outline	Training Hours	
			Indoor	Hands-on
Awareness Courses	1. Understand and be capable to implement the emergency response command system; 2. Understand how to implement emergency response plan;	1. Introduce to the capacity requirements, functions and competency of emergency responders at all levels; 2. A brief introduction to the toxic and concerned chemical substance emergency response organization; 3. Introduction to the knowledge, procedures, terminologies and	2 hours	—

	3. Understand the risks and hazards of handling chemical substance incidents while wearing PPE; 4. Understand the emergency response plan and toxic emergency response system 5. Understand and recognizing the importance of decontamination procedures.	protective equipment required for handling toxic and concerned chemical substance incidents.		
		1. Introduction to the labeling of domestic toxic and concerned chemical substances, including the labeling and marking of containers (GHS), tank cars, pipelines and cylinders; 2. Introduction to safety data sheet, emergency response card and Emergency Response Guidebook; 3. Introduction to the inquiry of physical and chemical properties of other related chemicals.	4 hours	—
		1. Introduction to the domestic toxic and concerned chemical substance emergency response system and response units; 2. A brief introduction to toxic and concerned chemical substance incident regulations and reporting mechanisms.	2 hours	—
		1. Types and identification of the package and container; 2. Introduction to the basic composition of Incident Action Plan (IAP) and common toxic and concerned chemical substance emergency response actions (offensive and defensive); 3. Regional control methods and actions; 4. Use relevant documents and data to perform area zoning and allocation in practice (use SDS and ERG in simulated incident	3 hours	1 hour
Operations Courses				

Incident Commander Courses		cases).		
		<ol style="list-style-type: none"> 1. Introduction to personal protective equipment (PPE) and decontamination types and procedures; 2. The wearing of PPE, establishment of decontamination station and implementation of decontamination procedures. 	1 hour	3 hours
		<ol style="list-style-type: none"> 1. Definition of the event; 2. Event analysis and assessment of potential consequences; 3. Confirm the response action targets and plan; 4. Implementation of the emergency response plan 5. Decontamination action plan; 6. Records of safety report and summarized response actions taken on site; 7. Deactivate the incident. 	4 hours	—
		<ol style="list-style-type: none"> 1. Introduction to the environmental incident prevention and rescue systems, and general/ emergency response practice thereof; 2. Composition of the emergency response command system organizational structure; 3. A summary of the attribute of different missions in each unit. 	2 hours	—
		<ol style="list-style-type: none"> 1. Known about the role of mass media; 2. Information circulation and confidentiality; 3. Essentials of press contact; 4. Outline of external speech 	2 hours	—

		1. Communication skills and cognition; 2. Applications of chemical substance response terminology; 3. Messages and communication practice in environmental incidents.	—	2 hours
		1. Emergency response system and reporting mechanisms; 2. Alarm release methods; 3. External supporting system activation methods; 4. Disaster response actions; 5. Personnel rescue and separation methods in disaster areas; 6. Restoration, cleanup and handling of the environment; 7. Evacuation methods.	4 hours	—
		1. Incident investigation and handling report; 2. Post-disaster restoration and follow-up works; 3. Incident (accident) investigation.	2 hours	—
		1. Assessment of disaster situation and estimation of hazards; 2. The decision-making model for and implementation of response action plan; 3. Decision-making priority in an environmental incident (accident); 4. The emergency response decision making model and sharing of domestic and foreign examples.	2 hours	—
		1. Scenarios and simulations of accidents; 2. Sand table exercises on the organization.	—	6 hours
40 hours in total			28 hours	12 hours

V. Specialist Level

Courses	Training Objectives	Training Outline	Training Hours	
			Indoor	Hands-on
Awareness Courses	1. Understand how to implement regional emergency response plan; 2. Understand how to carry out quantitative and qualitative analyses on and confirm a known or unknown chemical substance using advanced detection and examination instruments;	1. Introduce to the capacity requirements, functions and competency of emergency responders at all levels; 2. A brief introduction to the toxic and concerned chemical substance emergency response organization; 3. Introduction to the knowledge, procedures, terminologies and protective equipment required for handling toxic and concerned chemical substance incidents.	2 hours	—
	3. Understand how to select specific PPE when conducting operations of special toxic and concerned chemical substance response technology;	1. Introduction to the labeling of domestic toxic and concerned chemical substances, including the labeling and marking of containers (GHS), tank cars, pipelines and cylinders; 2. Introduction to safety data sheet, emergency response card and Emergency Response Guidebook; 3. Introduction to the inquiry of physical and chemical properties of other related chemicals.	4 hours	—
	4. Have an in-depth understanding on hazard	1. Introduction to the domestic toxic and concerned chemical substance emergency response system and response units; 2. A brief introduction to toxic and concerned chemical substance incident regulations and	2 hours	—

	and risk assessment skills;	reporting mechanisms.		
Operations Courses	5. Be capable to implement professional control, containment and leak control operations using existing resources and within the practical range of PPE;	1. Types and identification of the package and container; 2. Introduction to the basic composition of Incident Action Plan (IAP) and common toxic and concerned chemical substance emergency response actions (offensive and defensive); 3. Regional control methods and actions; 4. Use relevant documents and data to perform area zoning and allocation in practice (use SDS and ERG in simulated incident cases).	3 hours	1 hour
	6. Have the competence to design and implement decontamination procedures;	1. Introduction to personal protective equipment (PPE) and decontamination types and procedures; 2. The wearing of PPE, establishment of decontamination station and implementation of decontamination procedures.	1 hour	3 hours
	7. Have the competence to write the regional safety and control plan;			
Technician Courses	8. Understand the terminology and nature of fundamental chemistry and toxicology.	1. Including general toxicological terms, such as the LD ₅₀ , PELs, TLVs and mode of action; toxic exposure types/ dose-response relationship and exposure to radioactive substances; 2. Knowledge required by emergency responders for assessing potential physical and chemical hazards; 3. Be familiar with the inquiry and application of toxic and concerned	2 hours	—

		chemical substance emergency response related information.		
		1. Introduction to the types, safety design and potential hazards of common factory equipment, facilities and containers used to store or produce toxic and concerned chemical substances; 2. Introduction to potential hazards of indoor chemical storage room, pipelines and other facilities; 3. Introduction to all types of transportation tools and containers used to load, carry or transport toxic and concerned chemical substances; 4. Identification of and introduction to international transport containers.	2 hours	—
		1. Introduction to toxic and concerned chemical substance incident detection strategies and equipment; 2. Introduction to emergency sampling strategy and equipment; 3. Practice of detecting unknown substances	1 hour	1 hour
		1. Introduction to the incident assessment model, including hazard assessment at the site of the incident, hazard analysis, vulnerability analysis and risk analysis; 2. Explain possible causes and consequences of container damages and how to carry out a damage assessment; 3. Confirm the scale of	2 hours	—

		incident and divide the region.		
		<ol style="list-style-type: none"> 1. Introduction to Incident Action Plan (IAP); 2. Introduction to the duties and responsibilities of organizing the handling of toxic and concerned chemical substance incidents inside the incident command system; 3. Evaluate the effectiveness of incident control; 4. Terminate, record and review the incident; 5. Communication skills and sand table exercises on the organization. 	2 hours	3 hours
		<ol style="list-style-type: none"> 1. Introduction to and selection of PPE; 2. The wearing and removal of technician-level PPE; and the implementation of operations; 3. Introduction to various decontamination methods, including emergency decontamination, large-scale decontamination and technical decontamination; 4. Be familiar with decontamination procedures and operations; 5. Evaluate the effectiveness of decontamination operations. 	1 hour	4 hours
		<ol style="list-style-type: none"> 1. Introduction to toxic and concerned chemical substance emergency response action plans and control technologies; 2. Terminate, record and review the incident; 3. Practice of leak prevention and control technology for different containers and 	2 hours	4 hours

Specialist Courses		pipelines; 4. Practice of tank movement.		
		1. Identify and authenticate the types, components and damage level of toxic and concerned chemical substance tanks, container and pipelines; 2. Predict the possible behavior of various tanks, containers, pipelines and contents in an incident; 3. Introduction to cases.	4 hours	—
		1. Explain the methods, procedures, risks, safety preventive measure and equipment that are obligatory for the implementation of loss and leakage control procedures in tank car incidents; 2. Explain the assessment factors for righting the overturned tank cars; 3. Explain the objectives, potential risks, implementation procedures and safety preventive measures of the techniques used to remove or empty the tank car contents; 4. Practice of non-pressure tank/ tank container accessories for leakage control; 5. Practice of high-pressure tank accessories for leakage control; 6. Practice of removal/ depletion techniques of high-pressure tank.	4 hours	4 hours
		1. Introduction to direct reading instruments; 2. Introduction to gas chromatography mass spectrometer; 3. Introduction to Fourier-transform infrared	2 hours	2 hours

		spectrometer; 4. Standard gas detection practice.		
		1. Explain risks involved in cylinder/ steel drum leakage control, procedures of implementation required equipment and safety preventive measures for leakage control; 2. Practice of gas cylinder/ steel drum leakage control and content removal/depletion techniques (cylinder barrel, Kit A/B).	2 hours	2 hours
		1. Introduction to evacuation and sheltering plan for toxic and concerned chemical substance incidents; 2. Introduction to emergency response guidelines and control zone; 3. Sand table exercises on regional safety and control plan.	2 hours	2 hours
		64 hours in total	38 hours	26 hours