

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	<ol style="list-style-type: none"> Understand the definition of toxic and concerned chemical substances and hazards at the site of the incident; Understand potential consequences of toxic and concerned chemical substances at the site of the incident; Have the competence to identify toxic and concerned chemical substance hazards; 	<ol style="list-style-type: none"> Introduce to the capacity requirements, functions and competency of emergency responders at all levels; A brief introduction to the toxic and concerned chemical substance emergency response organization; Introduction to the knowledge, procedures, terminologies and protective equipment required for handling toxic and concerned chemical substance incidents. 	2 hours	—
	<ol style="list-style-type: none"> Have the competence to identify toxic and concerned chemical substance hazards; Have the competence to identify toxic and concerned chemical substances; Understand the recognition of frontline emergency responder: 	<ol style="list-style-type: none"> Introduction to the labeling of domestic toxic and concerned chemical substances, including the labeling and marking of containers (GHS), tank cars, pipelines and cylinders; Introduction to safety data sheet, emergency response card and Emergency Response Guidebook; 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	—

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

		<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
16 hours in total			12 hours	4 hours

III. Technician Level

Courses	Training Objectives	Training Outline	Training Hours	
			Indoor	Hands-on
Awareness Courses	<ol style="list-style-type: none"> 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; 	<ol style="list-style-type: none"> 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	—
	<ol style="list-style-type: none"> 3. Be capable to play the role of designating functions of responder in the emergency response command system; 4. Understand how to select 	<ol style="list-style-type: none"> 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	—

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

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

		<ol style="list-style-type: none"> 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. 		
		<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 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	<ol style="list-style-type: none"> 1. Understand and be capable to implement the emergency response command system; 2. Understand how to implement emergency response plan; 	<ol style="list-style-type: none"> 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	—

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

		<ol style="list-style-type: none"> 1. Communication skills and cognition; 2. Applications of chemical substance response terminology; 3. Messages and communication practice in environmental incidents. 	—	2 hours
		<ol style="list-style-type: none"> 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	—
		<ol style="list-style-type: none"> 1. Incident investigation and handling report; 2. Post-disaster restoration and follow-up works; 3. Incident (accident) investigation. 	2 hours	—
		<ol style="list-style-type: none"> 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	—
		<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> Understand how to implement regional emergency response plan; Understand how to carry out quantitative and qualitative analyses on and confirm a known or unknown chemical substance using advanced detection and examination instruments; Understand how to select specific PPE when conducting operations of special toxic and concerned chemical substance response technology; Have an in-depth understanding on hazard 	<ol style="list-style-type: none"> Introduce to the capacity requirements, functions and competency of emergency responders at all levels; A brief introduction to the toxic and concerned chemical substance emergency response organization; Introduction to the knowledge, procedures, terminologies and protective equipment required for handling toxic and concerned chemical substance incidents. 	2 hours	—
		<ol style="list-style-type: none"> Introduction to the labeling of domestic toxic and concerned chemical substances, including the labeling and marking of containers (GHS), tank cars, pipelines and cylinders; Introduction to safety data sheet, emergency response card and Emergency Response Guidebook; Introduction to the inquiry of physical and chemical properties of other related chemicals. 	4 hours	—
		<ol style="list-style-type: none"> Introduction to the domestic toxic and concerned chemical substance emergency response system and response units; 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
Technician Courses	7. Have the competence to write the regional safety and control plan; 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.		
		<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 	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

		pipelines; 4. Practice of tank movement.		
Specialist Courses		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