

IDHS DIVISION OF TRAINING
HAZARDOUS MATERIAL OPERATIONS
PRACTICAL SKILLS AND EXAMINATION HANDBOOK



HAZARDOUS MATERIAL
OPERATIONS EVALUATION
HANDBOOK

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Skill Sheet #1, Analyzing the Incident

Task: Given a pesticide label, identify each of the following pieces of information; then match the piece of information to its significance in surveying the hazardous material incident. *(NFPA 472, 2008 Edition, 5.2.1.3)*

The candidate will complete this task within 30 minutes.

Equipment & Materials

- Pesticide label and an ERG
- Full protective clothing and SCBA

Task Steps	
1.	Identify the Product name
2.	Significance of Product name
3.	Identify Signal word
4.	Significance of Signal word
5.	Identify the Pest Control Product (PCP) number
6.	Significance of PCP number
7.	Identify Precautionary statement:
8.	Significance of Precautionary statement:
9.	Identify the Hazard statement
10	Significance of Hazard statement
11	Identify Active ingredient;
12	Significance of Active ingredient;

Prevent or prohibit any unsafe acts.

Contact the Lead Evaluator at any time with any questions

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Skill Sheet #2, Analyzing the Incident

Given a materials safety data sheet (MSDS) for a specified material, identify the following hazard and response information.

- a) Physical and chemical characteristics
- b) Physical hazards of the material
- c) Health hazards of the material
- d) Signs and symptoms of exposure
- e) Routes of entry
- f) Permissible exposure limits
- g) Responsible party contact
- h) Precaution for safe handling (including hygiene practices, protective measures, procedures for cleanup of spills or leaks)
- i) Applicable control measures including personal protective equipment
- j) Emergency and first air procedures

(NFPA 472, 2008 Edition, 5.2.1.3)

Directions

The candidate will complete this task within 30 minutes. Whenever possible integrate the evaluation of this line item within a consolidated hazardous materials/emergency scenario. This will allow multiple line items to be evaluated effectively in conjunction with other hazardous materials/emergency scenario activities.

Equipment & Materials

- MSDS sheet for Ethylene Oxide
- Full protective clothing and SBCA

Task Steps	
1.	Physical and chemical characteristics: <ul style="list-style-type: none">• Boiling point• Specific gravity• Appearance• Odor

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2.	Physical hazards of the material:
3.	Health hazards of the materials:
4.	Signs and symptoms of exposure: <ul style="list-style-type: none">• Ingestion• Inhalation• Skin contact• Eye contact
5.	Routes of entry:
6.	Permissible exposure limits: <ul style="list-style-type: none">• Time Weighted Average (TWA)
7.	Responsible party contact:
8.	Precaution for safe handling: <ul style="list-style-type: none">• Hygiene practicals:• Protective measures and clean up of spills and leaks:
9.	Applicable control measure including personal protective equipment:
10	Emergency and first aid procedures: <ul style="list-style-type: none">• Ingestion• Inhalation• Skin contact• eye contact

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Skill Sheet #3, Analyzing the Incident

Given two examples of scenarios involving known hazardous materials, interpret the hazard and response information obtained from the current edition of the North American Emergency Responses Guidebook, (ERG) material safety data sheets, (MSDS) CHEMTREC/CANUTIC/SETIG and shipper/manufacturer contacts. (NFPA 472, 2008 Edition, 5.2.4; 5.2.3 (I))

Directions

The candidate will complete this skill within 30 minutes. Two scenarios: MSDS for Ethylene Oxide, ERG, CHEMTREC/CANUTIC/SETIZ and shipper/manufacturer information sheets. Full protective clothing and self contained breathing apparatus.

SCENARIO ONE (FIRE AT A CHEMICAL PLANT)

Task Steps	
1.	Initiate incident management system according to authority having jurisdiction. Make all notifications as defined in local ERP or Department SOP's
2.	Container behavior: <ul style="list-style-type: none">• Ruptured cylinders may rocket• Containers may explode when heated
3.	Material behavior: <ul style="list-style-type: none">• Some materials may react with water• May form explosive mixtures with air• Upper explosive limit• Lower explosive limit• Boiling point• Vapor pressure

SCENARIO TWO (SPILL/LEAK)

1.	Initiate incident management system according to authority having jurisdiction. Make all notifications as defined in Local ERP or Department SOP's.
2.	Control efforts: <ul style="list-style-type: none">• Consider initial downwind area• All equipment must be grounded to prevent ignition of the material

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	<ul style="list-style-type: none">• Use water spray to reduce vapors or divert vapor cloud• Prevent entry into waterways, sewers, basements and confined spaces• Apply alcohol medium-expansion foam to reduce vapors• Avoid eye and skin contact• Turn container so that gas will escape not liquid if possible
3.	Water solubility: Complete
4.	Vapor density: 1.5
5.	Specific gravity: 0.8711

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Skill Sheet #4, Analyzing the Incident

Demonstrate the ability to perform emergency decontamination. (NFPA 472, 2008 Edition, 5.3.4)

Equipment & Materials

- Personal protective equipment
- Waters supply, hoses, brushes
- containment area
- SCBA
- Product name and ERG

Task Steps	
1.	Identify the contaminated person
2.	Remove contaminated person from threatened area
3.	Wash gross contamination off person prior to removal of PPE
4.	Remove contaminated person's helmet and flood with water
5.	Remove contaminated person's SCBA leaving mask in place
6.	Remove contaminated person's clothing while maintaining continuous washing <ul style="list-style-type: none">• Remove coat• Remove pants• Remove flash hood• Remove SCBA mask
7.	Remove victim to clean area
8.	Inform medical personnel of contaminant

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Skill Sheet #5, Personal Protective Equipment

Demonstrating donning, working in, and doffing positive pressure self-contained breathing apparatus (*NFPA 472, 2008 Edition, 5.4.3 (6) (8)(9)*)

Equipment & Materials

- Full protective clothing and self contained breathing apparatus

DONNING

Task Steps	
1.	Don pants and boots properly-including suspenders in place
2.	Don protective hood
3.	Don coat-including storm flap closed and collar up and secured
4.	Don helmet
5.	Don gloves
6.	Don SCBA <ul style="list-style-type: none">• Open cylinder valve fully• Secures straps on SCBA• Don face piece• Check face seal• Hook up air supply
7.	Work in contaminated area
8.	Control breathing
9.	Exit hazard area

DOFFING

1.	Removes SCBA and place all equipment in a ready state for reuse
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Skill Sheet #6, Performing Defensive Control Actions

Using the type of fire-fighting foam or vapor suppressing agent and foam equipment furnished by the authority having jurisdiction, demonstrate the proper application of the fire-fighting foam(s) or vapor suppressing agent(s) on a spill or fire involving hazardous materials. (NFPA 472, 2008 Edition, 5.4.4 (1))

Equipment & Materials

- Fire-fighting foam
- Fire apparatus
- Full protective clothing and SCBA
- Foam equipment
- Hazardous liquid and burn area

Task Steps	
1.	Approach the spill or fire from uphill and upwind
2.	Set nozzle to correct pattern (<i>and GPM flow, if applicable</i>)
3.	Use correct application procedures <ul style="list-style-type: none">• Banked down• Roll on• Rain down
4.	Did not disturb foam blanket
5.	Exited hazardous area

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Skill Sheet #7, Performing Defensive Control actions

Given the appropriate tools and equipment, demonstrate how to perform the following defensive control activities :(*NFPA 472, 2008 Edition, 5.5.4 (3)*)

Equipment & Materials

- Personal protective equipment
- Shovel, rakes, absorbent materials
- Plastic sheeting
- Foam generating equipment
- SCBA
- Dirt, sand or hay
- Foam or vapor suppression agents
- A leaking container

Task Steps	
1.	<p>Absorption:</p> <ul style="list-style-type: none"> • Use common, available materials • Avoid contact with hazardous material • Ensure drains do not become contaminated • Ensure hazardous material is absorbed into the absorbent material
2.	<p>Damming:</p> <ul style="list-style-type: none"> • Use common, available materials • Avoid contact with hazardous material • Ensure dam is not breached
3.	<p>Diking:</p> <ul style="list-style-type: none"> • Use common, available material • Form a "v" and a "circle" dike • Ensure hazardous material does not enter drains or manholes
4.	<p>Dilution</p> <ul style="list-style-type: none"> • Use common, available materials • Avoid contact with hazardous material • Ensure hazardous materials is water soluble • Do NOT overflow retention pond of hazardous material
5.	<p>Diversion:</p> <ul style="list-style-type: none"> • Use common, available materials • Avoid contact with hazardous material

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	<ul style="list-style-type: none"> • Ensure hazardous material is diverted away from drains and waterways • Make sure the hazardous material does NOT breach diversion
6.	<p>Retention</p> <ul style="list-style-type: none"> • Define purpose of retention • Use common, available materials • Avoid contact with hazardous material • Ensure product flow does not exceed retention area
7.	<p>Vapor Dispersion:</p> <ul style="list-style-type: none"> • Avoid contact with hazardous material • Eliminate ignition sources, if applicable • Use water spray or fans to control dispersion • Move vapors away from threatened area
8.	<p>Vapor Suppression:</p> <ul style="list-style-type: none"> • Avoid contact with hazardous materials • Approach the spill or fire from uphill and upwind • Set nozzle to correct pattern (<i>and GPM flow, if applicable</i>) • Use correct application <ul style="list-style-type: none"> ○ Banked down ○ Roll on ○ Run down • Did NOT disturb foam blanket • Exited hazardous area

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