Post-Test

- *Read each question CAREFULLY and completely before choosing the best answer.*
- *Try to answer every question, even if you are unsure about the correct response.*
- *Please answer all questions on the Answer Sheet provided.*
- *Do not write on this test booklet.*
- *After completing the test, follow the instructors' directions on how to proceed.*

1. Which of the following describes why pre-incident plans are a necessity in managing chemical process industry incidents?

    a. Pre-incident plans allow chemical process industry facilities to rely solely on emergency response personnel for their emergency planning needs.
    b. Pre-incident plans allow the collection of information about a facility and its processes and planning for potential incident in a non-stressful environment.
    c. Pre-incident planning eliminates the need for chemical process industry facilities and local fire companies to work in close coordination with one another.
    d. Pre-incident planning eliminates the need for in-house emergency response teams.

2. Which of the following describes the ***Analyze, Plan, Implement and Evaluate (APIE): A Risk-Based Response Process***?

    a. Responders should consider the facts, science and the circumstances at each step.
    b. Actions or decisions should be based on risk-benefit analysis.
    c. The goal is safe, competent response.
    d. All of the above.

3. Which of the following describes the goal of the ***Analyze the Problem*** step of the APIE process?

   a. Observe operations and outcomes.
   b. Develop and communicate an Incident Action Plan (IAP).
   c. Identify the problem and likely behaviors of hazmats and containers.
   d. Assess response effectiveness.

4. Which of the following should be the first action taken during the ***Analyze the Problem*** step in the APIE process?

   a. Initiate an Incident Command System (ICS) and establish command.
   b. Perform protective and control actions, and decontamination.
   c. Describe response options and decontamination issues.
   d. Evaluate the effectiveness of the actions in the Incident Action Plan (IAP).

5. The Incident Command Post (ICP) is located in which of the following zones?

   a. Exclusion zone
   b. Hot zone
   c. Warm zone
   d. Cold zone

6. What action does the APIE process prescribe immediately after initiating the Incident Command System (ICS) at an incident at a chemical process industry site?

   a. Survey the incident.
   b. Identify and request necessary resources.
   c. Implement the best options for incident management.
   d. Determine the strategy and tactics.

7. Which of the following describes why the Incident Action Plan (IAP) is a critical part of the ***Plan the Response*** step of the APIE process?

    a. The IAP defines necessary resources and identifies at risk resources prior to incidents.
    b. The IAP assesses the response actions of emergency response personnel.
    c. Incident priorities and objectives are identified in the IAP.
    d. The IAP establishes the incident management system.

8. Which of the following is an action most likely taken during the ***Plan the Response*** step of the APIE process?

    a. Select response options.
    b. Perform protective actions.
    c. Perform control options.
    d. Identify the container type.

9. Which of the following is a method of determining the probability of a victim's survival?

    a. Lack of severe conditions
    b. Visual confirmation
    c. Calls for help
    d. All of the above

10. When actions are directed toward property conservation only, first responders should be subjected to which of the following risk environments?

    a. High
    b. Moderate
    c. Low

11. Which of the following is an example of a defensive response action that could be performed by operations-level responders, after consulting site personnel, to stabilize an incident at a chemical process industry site?

    a. Product transfer
    b. Patching and plugging
    c. Remote valve shut-off
    d. Pressure isolation

12. Which is the next action after the Incident Action Plan (IAP) is developed for an incident at a chemical process industry site?

    a. Analyze the situation.
    b. Determine incident objectives and strategies.
    c. Evaluate actions and modify the plan.
    d. Communicate the plan.

13. Which of the following describes the goal of the ***Evaluate the Progress*** step of the APIE process?

    a. Assess response effectiveness.
    b. Observe operations and outcomes.
    c. Develop and communicate an Incident Action Plan (IAP).
    d. Identify the problem and likely behaviors of hazmats and containers.

14. The decontamination corridor is located in which of the following zones?

    a. Hot zone
    b. Warm zone
    c. Cold zone
    d. Exclusion zone

15. Why is it important to monitor weather conditions throughout the duration of an incident?

    a. Temperature extremes and precipitation rarely affect the outcome of an incident.
    b. Weather conditions may change significantly over the course of an incident.
    c. High temperatures coupled with humidity result in higher flash points.
    d. Emergency response actions are easier in poor weather.

16. Which of the following situations would dictate that an Incident Action Plan (IAP) should be adjusted?

    a. The public is demanding answers.
    b. The incident commander is relieved.
    c. The media has entered the exclusion zone.
    d. The number of victims requiring rescue changes.

17. Which of the following actions is NOT a part of the termination of an incident?

    a. Debriefing
    b. Record keeping
    c. Pre-incident planning
    d. Post-incident analysis

Bethune Point Wastewater Plant Explosion[1]

Read the scenario.

On January 11, 2006 at 11:15 a.m., Bethune Point Wastewater Treatment Plant (WWTP) workers heard an explosion and immediately went to the scene of the fire and aided the victims. The facility superintendent and a facility operator called 911 to report the incident and request fire and medical assistance. City Fire Station # 1 dispatched the first unit at 11:18 a.m., which arrived at Bethune Point WWTP at 11:22 a.m. When the unit arrived, the methanol and an adjacent empty tank were fully involved in the fire.

1 Investigation Report: Bethune Point Wastewater Treatment Plant. United States Chemical Safety and Hazard Investigation Board (CSB) Case Study. Report No. 2006-03-I-FL. July 2008. <http://www.chemsafety.gov/

Use the 2008 Emergency Response Guidebook (ERG), NIOSH Pocket Guide and MSDS on pages 7 to 14 to answer the next three questions.

18. What is the Guide number in the 2008 Emergency Response Guidebook (ERG) for methanol?

    a. 111
    b. 128
    c. 131
    d. 134

19. What is the physical description for methanol found in the NIOSH Pocket Guide?

    a. Colorless liquid with a characteristic pungent odor
    b. Colorless to white liquid with a banana-like, fruity odor
    c. Yellow liquid with a weak, aromatic odor
    d. Colorless to straw-colored liquid with a mild, geranium odor

20. What are the products of combustion listed on Purification Technologies Inc.'s MSDS for methanol on pages 7 to 14?

    a. Carbon monoxide and carbon dioxide
    b. Carbon monoxide and hydrogen cyanide
    c. Carbon dioxide and water vapor
    d. Nitrogen oxide

Purification Technologies, Inc. — Methanol

MSDS Code: PTI001
Effective Date: 5/04/07

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name:	Methanol
Synonyms:	Wood alcohol, methyl alcohol, carbinol
Chemical Formula:	CH_3OH
CAS Number:	67-56-1
Manufacturer/Supplier:	Purification Technologies, Inc. (PTI)
Address:	67 Winthrop Rd., Chester, CT 06412
General Assistance:	860-526-7801 (Mon-Fri, 8:30 am to 5:00 pm)
Emergency Number:	860-526-7801 (Calls during hours other than "General Assistance" will be forwarded to key personnel)

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS Number	% Weight
Methanol	67-56-1	100.0%

3. HAZARDS IDENTIFICATION

Emergency Overview:

POISON! DANGER! VAPOR HARMFUL. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CANNOT BE MADE NONPOISONOUS. FLAMMABLE LIQUID AND VAPOR. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM AND LIVER.

SAF-T-DATA ™ Ratings (provided here for your convenience)

Health Rating: 3 Severe (Poison)
Flammability Rating: 3 Severe (Flammable)
Reactivity Rating: 1 (Slight)
Contact Rating: 3 Severe (Life)
Lab Protective Equipment: Goggles & Shield, Lab Coat and Apron, Vent Hood, Proper Gloves, Class B Extinguisher
Storage Color Code: Red (Flammable)

Potential Health Effects:

Inhalation:
A slight irritant to the mucous membranes. Toxic effects exerted upon nervous system, particularly the optic nerve. Once absorbed into the body, it is very slowly eliminated. Symptoms of overexposure may include headache, drowsiness, nausea, vomiting, blurred vision, blindness, coma and death. A person may get better but then worse again up to 30 hours later. Symptoms usually occur at air concentrations higher than the recommended exposure limits (See Section 8).

Swallowing:
Toxic. Symptoms parallel inhalation. Can intoxicate and cause blindness. Usual fatal dose: 100-125 milliliters.

Skin:
Methanol is a defatting agent and may cause skin to become dry and cracked. Skin absorption can occur; symptoms may parallel inhalation exposure.

Eye:
May cause eye irritation. Symptoms include stinging, tearing, and redness. Continued exposure may cause eye lesions.

Chronic Exposure:
Marked impairment of vision has been reported. Repeated or prolonged exposure may cause skin irritation.

Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders or eye problems or impaired liver or kidney functions may be more susceptible to the effects of the substance.

Target Organ Effects: Exposure to lethal concentrations of methanol has been shown to cause damage to organs including liver, kidneys, pancreas, heart, lungs and brain. Although this rarely occurs, survivors of sever intoxication may suffer from permanent neurological damage. Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: liver abnormalities, central nervous system damage. Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans: visual impairment.

Developmental Information: Methanol has caused birth defects in laboratory animals, but only when inhaled at extremely high vapor concentrations. The relevance of this finding to humans is uncertain.

Cancer Information: Based on the available information, this material cannot be classified with regard to carcinogenicity. This material is not listed as a carcinogen by the International Agency for Research on Cancer, the National Toxicology Program, or the Occupational Safety and Health Administration.

Other Health Effects: No data.

Primary Route(s) of Entry: Inhalation, skin absorption, skin contact, eye contact, ingestion.

4. FIRST AID MEASURES

Inhalation:
Remove individual away from exposure and into fresh air. If breathing is difficult, administer oxygen if available or give artificial respiration. Keep person warm and quiet; seek immediate medical attention.

Ingestion:
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin:
Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Notes to Physicians: This product contains methanol which can cause intoxication and central nervous system depression. Methanol is metabolized to formic acid and formaldehyde. These metabolites can cause metabolic acidosis, visual disturbances and blindness. Since metabolism is required for these toxic symptoms, their onset may be delayed from 6 to 30 hours following ingestion. Ethanol competes for the same metabolic pathway and has been used to prevent methanol metabolism. Ethanol administration is indicated in symptomatic patients or at blood methanol concentrations above 20 ug/dl. Methanol is effectively removed by hemodialysis. Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: skin, lung (for example, asthma-like conditions), liver, kidney, central nervous system, pancreas, heart. Exposure to this material may aggravate any preexisting condition sensitive to a decrease in available oxygen, such as chronic lung disease, coronary artery disease or anemias.

5. FIREFIGHTING MEASURES

Flashpoint: 54.0°F (12.2°C) CC
Lower Explosive Limit in air, % by volume: 6.0
Upper Explosive Limit in air, % by volume: 36.0
Autoignition Temperature: 867°F (464°C)

Flammable Liquid and Vapor!

Hazardous Products of Combustion: May form carbon dioxide and carbon monoxide.

Fire and Explosion Hazards: Vapors are heavier than air and may travel along the ground or may be moved by ventilation and ignited by pilot lights, other flames, sparks, heaters, smoking, electric motors, static discharge, or other ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively. During a fire, irritating or toxic decomposition products may be generated.

Extinguishing Media: Alcohol foam, carbon dioxide, dry chemical.

Firefighting Instructions: Water may be ineffective. Water may be used to keep fire-exposed containers cool until fire is out. Wear a self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode with appropriate turn-out gear and chemical resistant personal protective equipment. Refer to the personal protective equipment section of this MSDS.

NFPA Rating:
Health: 1 Flammability: 3 Reactivity: 0

6. ACCIDENTAL RELEASES MEASURES

Ventilate area of spill.

Small Spill: Absorb liquid on vermiculite, floor absorbent or other absorbent material.

Large Spill: Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source. Prevent from entering drains, sewers, streams or other bodies of water. Prevent from spreading. If runoff occurs, notify authorities as required. Pump or vacuum transfer spilled product to clean containers for recovery. Absorb unrecoverable product utilizing inert material (vermiculite, dry sand, earth). Transfer contaminated absorbent, soil and other materials to containers for disposal. Prevent run-off to sewers, streams or other bodies of water. If run-off occurs, notify proper authorities as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling:
Protect against physical damage. Store in a cool, dry, well-ventilated location, away from any area where fire hazard may be acute. Outside or detached storage is preferable. Storage and use areas should be No Smoking areas. Containers of this material may be hazardous when emptied. Since emptied container retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. All five-gallon pails and larger metal containers, including tank cars and tank trucks, should be grounded and/or bonded when material is transferred. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death.

WARNING:
Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions. Any use of this product in elevated temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Eye Protection: Chemical splash goggles in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. Consult your safety representative.

Skin Protection: Wear resistant gloves (consult your safety equipment supplier). To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

Respiratory Protection: If workplace exposure limit(s) of product or any component is exceeded (see exposure guidelines), a NIOSH/MSHA approved air-supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your industrial hygienist). Engineering or administrative controls should be implemented to reduce exposure.

Engineering Controls: Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

Exposure Guidelines

Ingredient	OSHA PEL	OSHA VPEL	ACGIH TLV

Purification Technologies, Inc. **Methanol**

MSDS Code: PTI001
Effective Date: 5/04/07

Methanol 67-56-1	**TWA**	**TWA** (skin)	**STEL** (skin)	**TWA** (skin)	**STEL**(skin)
	200 ppm	200 ppm	250 ppm	200 ppm	250 ppm

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: 147.0°F(63.8°C) @ 760 mmHg
Vapor Pressure: 97.680 mmHg @ 68.00°F
Specific Vapor Density: 1.110 @ AIR=1
Specific Gravity: .792 @ 68.00°F
Liquid Density: 6.600 lbs/gal @ 68.00°F
0.792 kg/l @ 20°C
% Volatile: 100.0%
Volatile Organic Compounds:
100.00%
795.00 g/l
6.630 lbs/gal
Bulk Density: 0.890 lbs/ft^3

Evaporation Rate: 2.10 (N-Butyl Acetate)
Appearance: Clear, mobile
State: Liquid
Physical Form: Neat
Color: Colorless
Odor: Mild Alcohol
pH: No Data
Viscosity: 0.6 cps
Freezing Point: -144.00 ° F (-97.7 °C)
Molecular Weight: 32.04
% Solubility in Water: Complete

10. STABILITY AND REACTIVITY

Hazardous Polymerization: Product will not undergo hazardous polymerization.

Hazardous Decomposition: May form: carbon dioxide, carbon monoxide and formaldehyde when heated to decomposition.

Chemical Stability: Stable under ordinary conditions of use and storage..

Incompatibility: Avoid contact with: calcium hypochlorite, hypochlorites, peroxides, sodium, strong acids, strong bases, strong oxidizing agents, zinc.

11. TOXICOLOGICAL DATA

Methyl Alcohol (Methanol) Oral rat LD50: 5628 mg/kg; inhalation rat LC50: 64000 ppm/4H; skin rabbit LD50: 15800 mg/kg; Irritation data-standard Draize test: skin, rabbit: 20mg/24 hr. Moderate; eye, rabbit: 100 mg/24 hr. Moderate. Investigated as a mutagen, reproductive effector.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Methyl Alcohol (67-56-1)	No	No	None

12. ECOLOGICAL DATA

Environmental Fate:
When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into the water, this material is expected to have a

biodegrade. When released into the air, this material is expected to exist in the aerosol phase with a short half-life. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into air, this material is expected to have a half-life between 10 and 30 days. When released into the air, this material is expected to be readily removed from the atmosphere by wet deposition.

Environmental Toxicity:
This material is expected to be slightly toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORTATION INFORMATION

U.S. Department of Transportation (DOT) 49 CFR 172.101
Proper Shipping Name: Methanol
Hazard Class: 3
UN/NA Code: UN1230
Packing Group: PG II
Bill of Lading Description: Methanol, 3, UN 1230, PGII
Labels Required: Flammable Liquid
Placards Required: Flammable Liquid

NOS Component: None

RQ (Reportable Quantity), 49 CFR 172.101
Product Quantity (lbs): 5000
Component: Methanol

Other Transportation Information: The DOT Transport Information may vary with the container and mode of shipment.

15. REGULATORY INFORMATION

--------\Chemical Inventory Status - Part 1\---------------------------------

Ingredient	TSCA	EC	Japan	Australia
Methyl Alcohol (67-56-1)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\---------------------------------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Methyl Alcohol (67-56-1)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\----------------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.

MSDS Code: PTI001
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```
Methyl Alcohol (67-56-1)                    No     No       Yes         No

--------\Federal, State & International Regulations - Part 2\----------------
                                                        -RCRA-     -TSCA-
Ingredient                                  CERCLA      261.33      8(d)
------------------------------------------  ------      ------     ------
Methyl Alcohol (67-56-1)                    5000        U154        No


Chemical Weapons Convention:  No      TSCA 12(b):  No      CDTA:  No
SARA 311/312:  Acute: Yes       Chronic: Yes  Fire: Yes Pressure: No
Reactivity: No           (Pure / Liquid)
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Australian Hazchem Code: 2PE
Poison Schedule: S6
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

International Regulations

Inventory Status

AICS (Australia) The international ingredients of this product are listed.
DSL (Canada) The international ingredients of this product are listed.
ECL (South Korea) The international ingredients of this product are listed.
EINECS (Europe) The international ingredients of this product are listed.
ENCS (Japan) The international ingredients of this product are listed.
IECSC (China) The international ingredients of this product are listed.
PICCS (Philippines) The international ingredients of this product are listed.

State and Local Regulations

California Proposition 65: None.
New Jersey RTK Label Information: Methyl Alcohol 67-56-1
Pennsylvania RTK Label Information: Methanol 67-56-1

16. OTHER INFORMATION

NFPA Ratings: Health: **1** Flammability: **3** Reactivity: **0**
Label Hazard Warning:
POISON! DANGER! VAPOR HARMFUL. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CANNOT BE MADE NONPOISONOUS. FLAMMABLE LIQUID AND VAPOR. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM AND LIVER.
Label Precautions:
Avoid breathing vapor.
Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.
Keep container closed.
Use only with adequate ventilation.
Keep away from heat, sparks and flame.
Label First Aid:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give

oxygen. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases get medical attention immediately.

Product Use:
Laboratory Reagent.

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