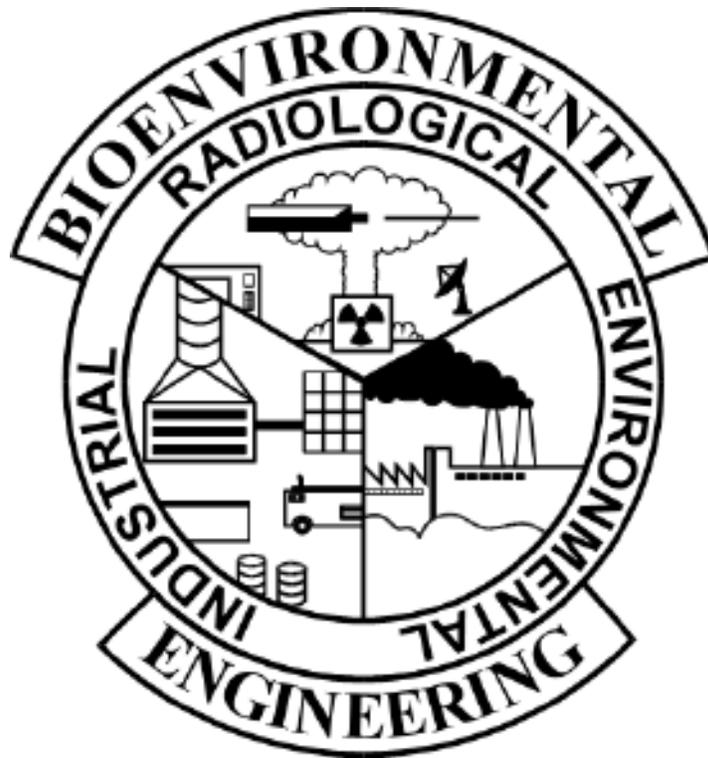


AIR FORCE SPECIALTY CODE 4B071 BIOENVIRONMENTAL ENGINEERING

Occupational and Environmental Health (OEH) Program Overview



QUALIFICATION TRAINING PACKAGE

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STS Line Item 4.1.2.2: Conceptual Site Model

TRAINER GUIDANCE

Proficiency Code:	3c
PC Definition:	Can do all parts of the task. Needs only a spot check of completed work. Can identify why and when the task must be done and why each step is needed.
Prerequisites:	None
Training References:	<ul style="list-style-type: none"> • AFMAN 48-154, <i>Occupational and Environmental Health Site Assessment</i>, Mar 2010 • AFTP 3-2.82, <i>Occupational and Environmental Health Site Assessment</i>, Apr 2012 • USAFSAM <i>Occupational and Environmental Health Site Assessment (OEHS) Tech Guide</i>, 2011
Additional Supporting References:	Training Module 4.1.2.2 Conceptual Site Model
CDC Reference:	4B051
Training Support Material:	<ul style="list-style-type: none"> • Occupational and Environmental Health Site Assessment - Stage 1 Template (ESOH Service Center) (https://hpws.afrl.af.mil/dhp/OE/ESOHSC/pages/index.cfm?id=657&admin) • DOEHS-EH Reference Table: OEH Site Assessment Template Field for In-Garrison Surveys (https://hpws.afrl.af.mil/dhp/OE/ESOHSC/pages/index.cfm?id=657&admin)
Specific Techniques:	Conduct hands-on training and evaluation.
Criterion Objective:	Given a scenario and source documentation, complete a conceptual site model while completing all checklist items with NO trainer assistance.
Notes:	Trainers must develop a scenario for trainees to complete a conceptual site model.

TASK STEPS

1. Identify the five elements of an exposure pathway.¹
2. Determine if exposure pathway is complete, partially complete or incomplete.²
3. Collect data from complete and partially complete exposure pathways.³
4. Compile data and populate CSM.⁴
5. Utilize OEHMIS (DOEHRS)

LOCAL REQUIREMENTS:

- NOTES:**
1. Five elements to an exposure pathway which must be considered.
 - a. Source of an OEH threat release - Point or non-point origin of a health threat
 - b. Environmental Media - Material an OEH threat can travel through/means by which human exposure occurs.
 - c. Health Threat
 - d. Route of Exposure - Mode the health threat enters or interacts with a human being
 - e. Population at Risk (PAR) - Group of human beings whose health is potentially impacted by a health threat.
 2. Exposure Pathways
 - a. Complete exposure pathway – All five elements are present
 - b. Potentially complete exposure pathway – one or more elements can't be eliminated due to an information gap.
 - c. Incomplete – One or more of the elements are not present.
 3. Complete the chart with the following information
 - a. Source
 - b. Environmental media
 - c. Health threat
 - d. Route of exposure
 - e. Population affected
 - f. Existing controls
 - g. Frequency/duration
 - h. Severity

CSM Hazard Severity Selection Information	
Selection	Definition
Catastrophic	Loss of ability to accomplish the mission or mission failure. Death or permanent disability.
Critical	Significantly degraded mission capability, unit readiness or personal disability.
Marginal	Degraded mission capability or unit readiness. Injury or illness of personnel.
Negligible	Little or no adverse impact on mission capability. First aid or minor medical treatment.

i. Probability

CSM Hazard Probability Selection Information	
Selection	Definition
Frequent	For individuals: Occurs very often, expected to occur several times during mission or operation. For all personnel: Occurs continually during a specific mission or operation.
Likely	For individuals: Occurs several times, expected to occur during a specific mission or operation. For all personnel: Occurs at a high rate, but experienced intermittently
Occasional	For individuals: Occurs over a period of time, may occur during a specific mission or operation, but not often. For all personnel: Occurs sporadically (irregularly, sparsely, or sometimes)
Seldom	For individuals: Occurs as isolated incident. Remotely possible, but not expected to occur during a specific mission or operation. For all personnel: Occurs rarely within exposed population as isolated incidents.
Unlikely	For individuals: Occurrence not impossible, but may assume will not occur during a specific mission or operation. For all personnel: Occurs very rarely, but not impossible.

j. Risk estimate

Hazard Severity	Hazard Probability				
	Frequent (A)	Likely (B)	Occasional (C)	Seldom (D)	Unlikely (E)
Catastrophic (I)	Extremely High	Extremely High	High	High	Moderate
Critical (II)	Extremely High	High	High	Moderate	Low
Marginal (III)	High	Moderate	Moderate	Low	Low
Negligible (IV)	Moderate	Low	Low	Low	Low

4. Populate CSM

Elements of an Exposure Pathway						Obtained Through Interview/ Reconnaissance	Risk Estimate for Prioritization of Exposure Pathways		
Source	Env. Medium	Health Threat	Route of Exposure	Population Affected (#)	Existing Controls	Frequency/ Duration	Severity	Probability	Risk
Burn Pit Emissions	Air	PM, PAHs	Inhalation	Tent City	None	16 hrs/day 7 days/wk	Marginal	Likely	Moderate
Burn Pit Runoff	Water	Water Contaminants	Ingestion/ Contact	Tent City	Water Treatment Plant	24 hrs/day 7 days/wk	Negligible	Unlikely	Low
Flight line	Air	Noise	Physical	Tent City	Distance/ Shielding	10 hrs/day 6 days/wk	Marginal	Frequent	High
Off-Site Industry	Air	TIC/TIM	Inhalation	Tent City	None	12 hrs/day 7 days/wk	Negligible	Seldom	Low
Barrel Dump	Soil	Soil Contaminants	Contact	Tent City	None	24 hrs/day 7 days/wk	Negligible	Unlikely	Low
Desert Env	Air	PM	Inhalation/ Ingestion	Camp	None	24 hrs/day 7 days/wk	Marginal	Occasional	Moderate

TRAINEE REVIEW QUESTIONS

STS Line Item 4.1.2.2: Conceptual Site Model

1. Why do we develop a conceptual site model?

2. What is a conceptual site model used for?

PERFORMANCE CHECKLIST

STS Line Item 4.1.2.2: Conceptual Site Model

Proficiency Code:	3c
PC Definition:	Can do all parts of the task. Needs only a spot check of completed work. Can identify why and when the task must be done and why each step is needed.

DID THE TRAINEE...		YES	NO
1. Identify the five elements of an exposure pathway?			
2. Determine if exposure pathway is complete, partially complete or incomplete?			
3. Collect data from complete and partially complete exposure pathways?			
4. Compile data and populated CSM?			
5. Utilize OEHMIS (DOEHRS)?			
Did the trainee successfully complete the task?			

 TRAINEE NAME (PRINT)

 TRAINER NAME (PRINT)

ANSWERS

1. Why do we develop a conceptual site model?

A:

Defining element of an OEHSA

Written description and visual representation of all OEH threats with a complete or potentially complete exposure pathway to human receptors.

(Source: 4B051 CDC)

2. What is a conceptual site model used for?

A:

Identifies complete or potentially complete exposure pathways from OEH threat sources to PARs with additional information.

Serves as communication tool in the decision making process

Develops initial step of pre-deployment/baseline activities

Evolves as more information is ascertained

(Source: 4B051 CDC)

STS Line Item 4.1.2.3: Exposure Assessment Strategies

TRAINER GUIDANCE

Proficiency Code:	3c
PC Definition:	Can do all parts of the task. Needs only a spot check of completed work. Can identify why and when the task must be done and why each step is needed.
Prerequisites:	Training Module 4.1.2.2 Conceptual Site Model and Training Module 4.1.2.4 Exposure Pathway Evaluation
Training References:	<ul style="list-style-type: none"> • AFMAN 48-154, <i>Occupational and Environmental Health Site Assessment</i>, Mar 2010 • AFTP 3-2.82, <i>Occupational and Environmental Health Site Assessment</i>, Apr 2012 • USAFSAM <i>Occupational and Environmental Health Site Assessment (OEHS) Tech Guide</i>, 2011
Additional Supporting References:	None
CDC Reference:	4B051
Training Support Material:	<ul style="list-style-type: none"> • Occupational and Environmental Health Site Assessment - Stage 1 Template (ESOH Service Center) (https://hpws.afrl.af.mil/dhp/OE/ESOHSC/pages/index.cfm?id=657&admin) • DOEHRS-EH Reference Table: OEH Site Assessment Template Field for In-Garrison Surveys (https://hpws.afrl.af.mil/dhp/OE/ESOHSC/pages/index.cfm?id=657&admin)
Specific Techniques:	Conduct hands-on training and evaluation.
Criterion Objective:	Given a scenario and source documentation, complete an exposure assessment strategy while completing all checklist items with NO trainer assistance.
Notes:	
Trainers should either develop a scenario or have the trainer perform the tasks at their current base.	

TASK STEPS

1. Identify pre-deployment/baseline activities.¹
2. Identify site and sector appropriately.²
3. Perform interviews and reconnaissance.³
4. Compile data and populate a Conceptual Site Model.⁴
5. Perform an initial assessment.⁵
6. Determine need for special assessment.⁶
7. Identify requirement for reassessment.⁷
8. Utilize OEHMIS (DOEHRS)/Complete JS-OEHSA

LOCAL REQUIREMENTS:

NOTES:

1. Pre-Deployment/Baseline activities
 - a. Identify potential OEH threats on- and off-site prior to arrival and/or immediately upon arrival
 - b. Generate a list of potential OEH threats to validate
2. Site Identification and Sectoring
 - a. Identify the AOR (installation, GSU, forward operating base, etc)
 - b. Divide the AOR into smaller, more manageable areas of concerns identifiable PARs (e.g. cantonment areas, industrial operations areas, housing, flight line operations)
 - c. Provide framework to link sampling/survey results (potential OEH exposures) to PARs in support of LER
3. Interviews and Reconnaissance
 - a. Interview military, host nation and local personnel
 - b. Identify and validate/verify current OEH conditions in the AOR which could negatively impact the health of personnel
 - c. Build upon what is known from pre-deployment/baseline activities
 - d. Fill data/information gaps and identify other potential OEH threat sources
 - 1) Perform visual inspection – look for
 - a) Stained soils
 - b) Debris piles
 - c) Lagoons
 - d) Pits
 - e) Ponds
 - f) Unnatural topography
 - g) Stressed vegetation
 - h) Sick animals
 - i) Drums
 - j) Local resident info
 - 2) Potential hazardous facilities w/in 20 mile radius
 - a) Industrial manufacturing
 - b) Waste reclamation/disposal
 - c) Medical facilities
4. Build Conceptual Site Model –
 - a. Present a complete listing or pictorial display potentially or complete exposure pathways for OEH threats
 - b. Link complete or potentially complete exposures pathways to PARs

Elements of an Exposure Pathway						Obtained Through Interview/ Reconnaissance	Risk Estimate for Prioritization of Exposure Pathways	
Source	Env. Medium	Health Threat	Route of Exposure	Population Affected (#)	Existing Controls	Frequency/ Duration	Severity	Probability
Burn Pit Emissions	Air	PM, PAHs	Inhalation	Tent City	None	16 hrs/day 7 days/wk	Marginal	Likely
Burn Pit Runoff	Water	Water Contaminants	Ingestion/ Contact	Tent City	Water Treatment Plant	24 hrs/day 7 days/wk	Likely	Unlikely
Flight line	Air	Noise	Physical	Tent City	Distance/ Shielding	10 hrs/day 6 days/wk	Marginal	Frequent
Off-Site Industry	Air	TIC/TIM	Inhalation	Tent City	None	12 hrs/day 7 days/wk	Negligible	Seldom
Barrel Dump	Soil	Soil Contaminants	Contact	Tent City	None	24 hrs/day 7 days/wk	Negligible	Unlikely
Desert Env	Air	PM	Inhalation/ Ingestion	Camp	None	24 hrs/day 7 days/wk	Occasional	Moderate

5. Initial Assessment (Pathway Screening)

- a. Determine if an exposure pathway is complete via professional judgment, literature research, similar installation review, direct reading instruments, sampling, etc.
 - 1) Complete pathways – No further action required
 - 2) Potentially complete pathway – Further analysis required
 - a) Identify using criteria
 - b) Professional judgment
 - c) Physical evidence
 - d) Literature search
 - e) Similar installation review
 - f) Sampling
 - g) Direct reading instruments
 - i. Photoionization detector (PID)
 - ii. Flame ionization detector (FID)
 - iii. Handheld assays (HHA)
 - iv. Radiation detectors
 - v. HAPSITE
 - vi. Hazmat ID
- b. Determine Estimated Risk using the Hazard Severity and Hazard Probability

Hazard Severity	Hazard Probability				
	Frequent (A)	Likely (B)	Occasional (C)	Seldom (D)	Unlikely (E)
Catastrophic (I)	Extremely High	Extremely High	High	High	Moderate
Critical (II)	Extremely High	High	High	Moderate	Low
Marginal (III)	High	Moderate	Moderate	Low	Low
Negligible (IV)	Moderate	Low	Low	Low	Low

- c. Populate CSM

Elements of an Exposure Pathway						Obtained Through Interview/ Reconnaissance	Risk Estimate for Prioritization of Exposure Pathways		
Source	Env. Medium	Health Threat	Route of Exposure	Population Affected (#)	Existing Controls	Frequency/ Duration	Severity	Probability	Risk
Burn Pit Emissions	Air	PM, PAHs	Inhalation	Tent City	None	16 hrs/day 7 days/wk	Marginal	Likely	Moderate
Burn Pit Runoff	Water	Water Contaminants	Ingestion/ Contact	Tent City	Water Treatment Plant	24 hrs/day 7 days/wk	Negligible	Unlikely	Low
Flight line	Air	Noise	Physical	Tent City	Distance/ Shielding	10 hrs/day 6 days/wk	Marginal	Frequent	High
Off-Site Industry	Air	TIC/TIM	Inhalation	Tent City	None	12 hrs/day 7 days/wk	Negligible	Seldom	Low
Barrel Dump	Soil	Soil Contaminants	Contact	Tent City	None	24 hrs/day 7 days/wk	Negligible	Unlikely	Low
Desert Env	Air	PM	Inhalation/ Ingestion	Camp	None	24 hrs/day 7 days/wk	Marginal	Occasional	Moderate

6. Specialized Assessment

- a. Collect adequate data to fully assess (and document) the health risk of OEH threats and exposure pathways to a PAR and/or SEG
- b. Prioritize special surveillance items by risk estimate
 - 1) Determine exposure acceptability
 - a) Acceptable exposure
 - b) Uncertain of exposure
 - c) Unacceptable exposure
 - 2) Run data quality objective (DQO) process
 - a) Step 1 – State the problem
 - b) Step 2 – Identify the decision or goal
 - c) Step 3 – Identify information inputs to the decision
 - d) Step 4 – Define the boundaries
 - e) Step 5 – Develop the decision rules/analytical approach
 - f) Step 6 – Performance or acceptance criteria
 - g) Step 7 – Develop the detailed sampling plan
 - 3) Perform sampling

7. Reassessment

- a. Periodically reassess the OEH threats from a macro-level to update assessment progress and identify significant changes
- b. Completed within the first three months of new flight leadership. The template must be reviewed annually and presented to the OEHWG.

PERFORMANCE CHECKLIST

STS Line Item 4.1.2.3: Exposure Assessment Strategies

Proficiency Code:	3c
PC Definition:	Can do all parts of the task. Needs only a spot check of completed work. Can identify why and when the task must be done and why each step is needed.

DID THE TRAINEE...		YES	NO
6. Identify pre-deployment/baseline activities?			
7. Identify site and sector appropriately			
8. Perform interviews and reconnaissance?			
9. Compile data and populate a Conceptual Site Model?			
10. Perform an initial assessment?			
11. Determine need for special assessment?			
12. Identify requirement for reassessment?			
13. Utilize OEHMIS (DOEHRS)?			
Did the trainee successfully complete the task?			

 TRAINEE NAME (PRINT)

 TRAINER NAME (PRINT)

STS Line Item 4.1.2.4: Exposure pathway evaluation

TRAINER GUIDANCE

Proficiency Code:	3c
PC Definition:	Can do all parts of the task. Needs only a spot check of completed work. Can identify why and when the task must be done and why each step is needed.
Prerequisites:	None
Training References:	<ul style="list-style-type: none"> • AFMAN 48-154, <i>Occupational and Environmental Health Site Assessment</i>, Mar 2010 • AFTP 3-2.82, <i>Occupational and Environmental Health Site Assessment</i>, Apr 2012 • USAFSAM <i>Occupational and Environmental Health Site Assessment (OEHS) Tech Guide</i>, 2011
Additional Supporting References:	None
CDC Reference:	4B051
Training Support Material:	<ul style="list-style-type: none"> • Occupational and Environmental Health Site Assessment - Stage 1 Template (ESOH Service Center) (https://hpws.afrl.af.mil/dhp/OE/ESOHSC/pages/index.cfm?id=657&admin) • DOEHRS-EH Reference Table: OEH Site Assessment Template Field for In-Garrison Surveys (https://hpws.afrl.af.mil/dhp/OE/ESOHSC/pages/index.cfm?id=657&admin)
Specific Techniques:	Conduct hands-on training and evaluation.
Criterion Objective:	Given a scenario and source documentation, complete an exposure pathway evaluation while completing all checklist items with NO trainer assistance.
Notes:	Trainers must develop a scenario for trainees to complete an exposure pathway evaluation.

TASK STEPS

1. Identify the source of an OEH threat release.¹
2. Determine environmental media.²
3. Identify/analyze the health threat.³
4. Identify the route of exposure.⁴
5. Determine the population affected.⁵

LOCAL REQUIREMENTS:

NOTES:

Five elements to an exposure pathway which must be considered.

1. Source of an OEH threat release - Point or non-point origin of a health threat
 - a. Documentation should be specific
 - b. Examples
 - Field of buried drums
 - Burn pit
 - Bulk chemical storage
 - Incinerator
 - Radio frequency emitters
 - Fugitive emission from off-site industries
 - On-site sanding/painting operations
 - Transportation route
2. Environmental Media - Material an OEH threat can travel through/means by which human exposure occurs.
 - a. Examples
 - Air
 - Water
 - Soil
 - Other
3. Health Threat
 - a. Definitive threat examples
 - Chemical (Trichloroethylene, JP-8, PM10)
 - Biological (E. coli bacteria)
 - Radiological (Cesium-137)
 - Physical agent with the potential to harm human health (Noise)
 - b. Non-definitive threat examples
 - Paint
 - Volatile organic compounds
 - Combustion by-products

- Heavy metals

4. Route of Exposure - Mode the health threat enters or interacts with a human being

a. Examples

- Inhalation
- Ingestion
- Skin Contact
- Physical
- Skin Absorption
- Other.

5. Population at Risk (PAR) - Group of human beings whose health is potentially impacted by a health threat.

a. Scaled term/ranges from the entire base population to a SEG

b. Examples

- Liquid fuel system maintainers
- Flight line personnel
- Adjacent shop workers
- North cantonment area
- Base housing
- Daycare centers
- Hangar 9
- Entire installation.

TRAINEE REVIEW QUESTIONS

STS Line Item 4.1.2.4: Exposure pathway evaluation

Scenario: The flight line at Base Banjo maintains F-15s and F-16s and sustains 24-hr operations. The CC has asked for BE to determine exposures to the tent city which is located approximately 2 miles from the flight line. You are currently performing your OEHSA anyway, so start with performing an exposure evaluation with the above information.

1. What is the OEH threat released?

2. What is the environmental media?

3. What health threat is present?

4. What is the route of exposure?

5. What is the population affected?

PERFORMANCE CHECKLIST

STS Line Item 4.1.2.4: Exposure pathway evaluation

Proficiency Code:	3c
PC Definition:	Can do all parts of the task. Needs only a spot check of completed work. Can identify why and when the task must be done and why each step is needed.

DID THE TRAINEE...		YES	NO
14. Identify the source of an OEH threat release?			
15. Determine environmental media?			
16. Identify/analyze the health threat?			
17. Identify the route of exposure?			
18. Determine the population affected?			
Did the trainee successfully complete the task?			

 TRAINEE NAME (PRINT)

 TRAINER NAME (PRINT)

ANSWERS

Answer Questions 1 through 5 based on the scenario below:

The flight line at Base Banjo maintains F-15s and F-16s and sustains 24-hr operations. The CC has asked for BE to determine exposures to the tent city which is located approximately 2 miles from the flight line. You are currently performing your OEHSAs anyway, so start with performing an exposure evaluation with the above information.

1. What is the OEH threat released?

A: Flight line

(Source: 4B051 CDC)

2. What is the environmental media?

A: Air

(Source: 4B051 CDC)

3. What health threat is present?

A: Noise

(Source: 4B051 CDC)

4. What is the route of exposure?

A: Physical

(Source: 4B051 CDC)

5. What is the population affected?

A: Tent city

(Source: 4B051 CDC)

STS Line Item 4.1.4: Perform TIC/TIM vulnerability assessment

TRAINER GUIDANCE

Proficiency Code:	3c
PC Definition:	Can do all parts of the task. Needs only a spot check of completed work. Can identify why and when the task must be done and why each step is needed.
Prerequisites:	Training Module 4.1.4.1 Collect Data Required in TIC/TIM Vulnerability Assessment
Training References:	USAFSAM, <i>Toxic Industrial Chemicals/Toxic Industrial Materials Vulnerability Assessment Technical Guide</i> , July 2009, updated September 2011
Additional Supporting References:	AFI48-145, <i>Occupational and Environmental Health Program</i> , 15 September 2011 AFMAN48-154, <i>Occupational and Environmental Health Site Assessment</i> . Certified current 22 March 2010 <i>Bioenvironmental Engineering Field Manual</i> , November 2012
CDC Reference:	4B051
Training Support Material:	<i>TIC/TIM Vulnerability Assessment Technical Guide</i> <ul style="list-style-type: none"> • <i>Form 1-1: Stakeholders Listing</i> • <i>Form 1-2: Meteorological Data Worksheet</i> • <i>Form 1-3: Toxic Industrial Chemicals/Toxic Industrial Materials (TIC/TIM) Inventory</i> • <i>Form 1-4: Levels of Concern (LOCs) Table for TIC</i> • <i>Form 1-5: TIC/TIM Inventory Hazard Zones</i>
Specific Techniques:	
Criterion Objective:	Given information on support organizations, stakeholders, facility, transportation, and analysis of inventory of TIC/TIM data, determine the impact of exposure on population utilizing worst-case and alternative case scenarios successfully completing task steps with NO trainer assistance.
Notes:	

TASK STEPS

1. Identify lead assessor.¹
2. Identify team members and assign roles and responsibilities.²
3. Develop list of stakeholders.³
4. Identify TIC/TIM of concern.⁴
5. Determine sources for collecting TIC/TIM data.
6. Collect off-base TIC/TIM data.
7. Collect transportation data.⁵
8. Collect on-base TIC/TIM data.⁶
9. Verify data.
10. Compile comprehensive TIC/TIM inventory.⁷
11. Obtain base map.⁸
12. Collect meteorological and terrain data.⁹
13. Collect natural disaster and accident information.
14. Collect data on TIC/TIM characteristics.¹⁰
15. Screen toxic substances to determine potential impact to base.
16. Develop location maps.¹¹
17. Develop worst-case and alternative scenarios.¹²
18. Determine the severity of each scenario.
19. Delineate chemical and/or radiological hazard zones.
20. Determine the severity rating.¹³
21. Determine the probability of each scenario.¹³
22. Assign a risk level to each scenario.¹³
23. Develop report in classified and/or unclassified version(s).¹⁴
24. Utilize OEHMIS (DOEHRS or equivalent).

LOCAL REQUIREMENTS:

NOTES:

1. A lead assessor is necessary to coordinate and manage the assessment team. It is his/her responsibility to assign all tasks associated with the assessment and to ensure that the assessment is completed on schedule.
2. Individuals from various organizations that can support data collection requests are identified. The team members should have strong technical backgrounds and familiarity with TIC/TIM assessment methodology; Site-specific TICs/TIMs, including installation infrastructure, base operations, and off-base industries; TIC/TIM characteristics and health effects; and transport of contaminants via air (outdoors and indoors) and water.
3. Stakeholders, those with an interest in the outcome of the assessment, can include those organizations above with the addition of others not directly involved in the assessment. Collectively, they can include the following individuals, organizations and entities:
 - Bioenvironmental Engineering (BE)
 - Radiation Safety Officer (RSO)
 - Antiterrorism Officer (ATO)
 - Office of Special Investigations (OSI)/Intel
 - Security Forces
 - Civil Engineering (CE)
 - Emergency Management (EM)
 - Local Emergency Planning Committee (LEPC) representative
 - Emergency Planning and Community Right-to-know Act (EPCRA) point-of-contact (POC)
 - Fire Department

- Pest Management
- GeoBase POC
- Hazardous Waste Program Manager
- Real Property Officer
- Hazardous Material Pharmacy Manager
- Safety Office
- Weather Office
- Public Health
- Contractor Support
- Off-Base LEPC Representative(s)
- Off-Base SERC Representative(s)
- Railroad Company Environmental Safety Officer(s).

Use Form 1-1: Stakeholders Listing, from the TIC/TIM Vulnerability Assessment Technical Guide.

4. It is recommended that the TIC of concern include toxic substances regulated under EPA Risk Management Plan (RMP) program and toxic chemicals for which NIOSH has determined Immediately Dangerous to Life or Health (IDLH) concentration values. The TIMs also include Toxic Industrial Biologicals (TIBs) and Toxic Industrial Radiologicals (TIRs).

5. The assessors should collect information about the various transportation routes (railway, highway, and waterway) proximal to the base and evaluate each for the possibility of a TIC/TIM release. Railroad companies and trucking firms maintain records/manifests that list type, quantity, and frequency of shipments that could impact a site assessment.

6. The possible sources to contact may include the following:

- HAZMART Pharmacy to obtain a list of hazardous materials (to include toxics) from the master chemical authorization database
- Hazardous Waste Program Manager to obtain a copy of the latest hazardous waste stream inventory
- Central Hazardous Waste Storage Facility Manager to obtain information on hazardous waste stored at the installation hazardous waste storage facility
- Base Supply to obtain a list of any chemicals on base that are not obtained through HAZMART Pharmacy
- CE Storage Tank Manager to obtain information on any storage tanks containing toxic chemicals (e.g., hydrazine, hydrochloric acid)
- Installation Fire Department and/or EM to obtain information on response scenarios based on known chemicals on base
- Installation Radiation Safety Officer (RSO) to obtain information on industrial radiation sources on base.
- Medical Infection Control Officer to obtain a list of TIBs

7. Use Form 1-3: Toxic Industrial Chemicals/Toxic Industrial Materials (TIC/TIM) Inventory, from TIC/TIM Vulnerability Assessment Technical Guide to compile comprehensive TIC/TIM inventory.

8. The base map should be wide-ranging enough to include Zone 1 (an area where death may result), Zone 2 (an area where severe injuries and/or illnesses may result), and Zone 3 (an area where minor injuries and/or illnesses may result). The map should include at least a 20-mile radius around the base. Use the map for identifying location of TIC/TIM.

9. Wind speed, wind direction, and atmospheric stability are expressed using the Pasquill stability classes. Use Form 1-2: Meteorological Data Worksheet, from TIC/TIM Vulnerability Assessment Technical Guide.

10. Use Form 1-4: Levels of Concern (LOCs) Table for TIC from TIC/TIM Vulnerability Assessment Technical Guide.

11. The following data elements should be included on these maps:

- TIC/TIM identifiers and locations
- Base facilities and critical assets
- Transportation assets, including roads, railroads, and base access points

12. Form 1-5: TIC/TIM Inventory Hazard Zones from the TIC/TIM Vulnerability Assessment Technical Guide can be used in determining each scenario

13. The severity rating can be catastrophic, critical, moderate, or negligible. The probability rating is expressed as frequent (or likely), occasional, seldom, or unlikely. Use the Operational Risk Management (ORM) Risk Assignment Matrix to assign risk to each scenario. It is located on page 29 of USAFSAM, Toxic Industrial Chemicals/Toxic Industrial Materials Vulnerability Assessment Technical Guide, July 2009

14. Upon completion of the field assessment, the team should document and consolidate results. The report should include the following elements:

- Executive Summary
- Introduction
- Methodology
- Scope and Limitations
- TIC/TIM Assessment and Inventory
- Risk Assessment
- Conclusion
- References
- Appendices (forms, maps/plots, weather data, comprehensive inventory)

The report will typically be generated in classified and/or unclassified version(s). A classified version is stored on the Secret Internet Protocol Router Network (SIPRNET) and is available only to personnel with the proper security clearance.

TRAINEE REVIEW QUESTIONS

STS Line Item 4.1.4: Perform TIC/TIM vulnerability assessment

1. How is a site's atmospheric stability expressed, and what are the conditions defined?

2. When conducting a TIC/TIM vulnerability assessment, at what point during the process does the document become classified as CONFIDENTIAL or SECRET, and why?

PERFORMANCE CHECKLIST

STS Line Item 4.1.4: Perform TIC/TIM vulnerability assessment

Proficiency Code:	3c
PC Definition:	Can do all parts of the task. Needs only a spot check of completed work. Can identify why and when the task must be done and why each step is needed.

DID THE TRAINEE...		YES	NO
1. Identify lead assessor?			
2. Identify team members and assign roles and responsibilities?			
3. Develop list of stakeholders?			
4. Identify TIC/TIM of concern?			
5. Determine sources for collecting TIC/TIM data			
6. Collect off-base TIC/TIM data?			
7. Collect transportation data?			
8. Collect on-base TIC/TIM data?			
9. Verify data?			
10. Compile comprehensive TIC/TIM Inventory?			
11. Obtain base map?			
12. Collect meteorological and terrain data?			
13. Collect natural disaster and accident information?			
14. Collect data on TIC/TIM characteristics?			
15. Screen toxic substances to determine potential impact to base?			
16. Develop location maps?			
17. Develop worst-case and alternative scenarios?			

18. Determine the severity of each scenario?			
19. Delineate chemical and/or radiological hazard zones?			
20. Determine the severity rating?			
21. Determine the probability of each scenario?			
22. Assign a risk level to each scenario?			
23. Develop report in classified and/or unclassified version(s)			
24. Utilize OEHMIS (DOEHRS or equivalent)?			
Did the trainee successfully complete the task?			

 TRAINEE NAME (PRINT)

 TRAINER NAME (PRINT)

ANSWERS

1. How is a site's atmospheric stability expressed, and what are the conditions defined?

A: Atmospheric stability is expressed in terms of Pasquill's stability class definitions which are as follows:

- A = Very unstable
- B = Unstable
- C = Slightly unstable
- D = Neutral
- E = Slightly stable
- F = Stable

[Source: USAFSAM, *Toxic Industrial Chemicals/Toxic Industrial Materials Vulnerability Assessment Technical Guide*, July 2009 (Updated September 2010)]

2. When conducting a TIC/TIM vulnerability assessment, at what point during the process does the document become classified as CONFIDENTIAL or SECRET, and why?

A: During the analysis phase, the TIC/TIM VA information may need to be treated as classified information because the information gathered is evaluated to determine their potential impact to the base. And once a document identifies vulnerabilities or concerns associated with a specific US military site, it will be classified as CONFIDENTIAL or SECRET. Once this phase of the TIC/TIM VA has begun, caution should be taken to protect the information, including working on a computer designed to handle SECRET documents (i.e., a SIPRNet computer).

(Source: 4B051 CDC)

STS Line Item 4.1.9: Review DOEHRS Input

TRAINER GUIDANCE

Proficiency Code:	3c
PC Definition:	Can do all parts of the task. Needs only a spot check of completed work. Can identify why and when the task must be done and why each step is needed.
Prerequisites:	None
Training References:	DOEHRS Student Guides https://doehrs-ih.csd.disa.mil/Doehrs/DisplayStudentGuides.do
Additional Supporting References:	ESOH Sservice Center – DOEHRS Support (DOEHRS Technical Guides) 4B051 CDC
CDC Reference:	4B051
Training Support Material:	Computer with DOEHRS access
Specific Techniques:	Conduct hands-on training and evaluation.
Criterion Objective:	Given inputted DOEHRS data, correctly review the data IAW DOEHRS student guides and applicable local policy successfully completing all checklist items with NO trainer assistance.
<p>Notes:</p> <p>This training module, 4.1.9 – OEH Program Overview, Review DOEHRS Input, covers the review of all OEH data entry into DOEHRS. Trainers can focus more attention to modules that support specific training requirements at their installation. Refer to the flight Master Training Plan for specific training requirements.</p> <p>A DOEHRS Demo account is recommended if actual OEH data is not available for review.</p>	

TASK STEPS

1. Login to DOEHRS.
2. Enter correct module of DOEHRS and select shop.¹
3. Review observations and notes.¹
4. Review shop personnel roster.¹
5. Review processes.¹
6. Review process personnel.¹
7. Review process equipment.¹
8. Review process hazmat.¹
9. Review actual/potential process OEH hazards.¹
10. Review process controls.¹
11. Review SEG.¹
12. Verify accuracy of data.

LOCAL REQUIREMENTS:

NOTES:

1. Correctly review data in the DOEHRS IAW DOEHRS Guidance Document and applicable local policy.

TRAINEE REVIEW QUESTIONS

STS Line Item 4.1.9: Review DOEHRS Input

<p>1. How can DOEHRS be used for risk communication to commanders and supervisors?</p>
<p>2. What feature of DOEHRS allows for reviews of health risk assessment data?</p>
<p>3. How are personnel managed within DOEHRS and why is this important?</p>
<p>4. What is a hazard within DOEHRS, and how do they get managed within DOEHRS to complete health risk assessments?</p>

PERFORMANCE CHECKLIST

STS Line Item 4.1.9: Review DOEHRS Input

Proficiency Code:	3c
PC Definition:	Can do all parts of the task. Needs only a spot check of completed work. Can identify why and when the task must be done and why each step is needed.

DID THE TRAINEE...		YES	NO
1. Login to DOEHRS?			
2. Enter correct module of DOEHRS and select shop?			
3. Review observations and notes?			
4. Review shop personnel roster?			
5. Review processes?			
6. Review process personnel?			
7. Review process equipment?			
8. Review process hazmat?			
9. Review actual/potential process OEH hazard?			
10. Review process controls?			
11. Review SEG?			
12. Verify accuracy of data?			
Did the trainee successfully complete the task?			

 TRAINEE NAME (PRINT)

 TRAINER NAME (PRINT)

ANSWERS

1. How can DOEHRS be used for risk communication to commanders and supervisors?

A: BE personnel may use DOEHRS to create reports for risk communication to commanders and supervisors.

(Source: 4B051 CDC)

2. What feature of DOEHRS allows for reviews of health risk assessment data?

A: DOEHRS provides personnel the capability to perform Quality Assurance (QA) reviews.

(Source: 4B051 CDC)

3. How are personnel managed within DOEHRS, and why is this important?

A: Personnel must first be added to a shop, then to processes, and finally grouped into SEGs. To execute the IH function properly, people must ultimately be associated to shops and processes. Active management of personnel within the DOEHRS application is necessary to ensure exposures are adequately documented for all assigned personnel.

(Source: DOEHRS Guidance Document)

4. What is a hazard within DOEHRS, and how do they get managed within DOEHRS to complete health risk assessments?

A: A hazard within DOEHRS is the existence of a completed pathway of exposure to a stressor that has the ability or potential to cause harm. DOEHRS facilitates the completion of a health risk assessment for all identified hazards to determine whether a hazardous or unacceptable condition exists. Hazards can be chemical, physical, biological as well as ergonomic. In an ideal world of unconstrained resources, every stressor would be identified and the degree of risk captured. In reality, some professional judgment will need to be applied.

(Source: DOEHRS Guidance Document)