CHAPTER 17. HAZARDOUS MATERIALS AND WASTE

17.1 AFFECTED ENVIRONMENT

This Section provides a summary of federal, Department of Defense (DoD), and local Commonwealth of the Northern Mariana Islands (CNMI) laws and regulations related to hazardous materials and waste that must be complied with by the DoD regardless of whether any increase in military activity occurs. In addition, this Section discusses the relevant affected environment or present conditions on Tinian, prior to any possible increased military activity.

The potential impacts hazardous materials and waste have on human health and environment is largely dependent upon their types, quantities, toxicities, and management practices. There is cause for concern if the use of these substances in some fashion violates applicable federal or local laws and/or regulations or DoD requirements. There is also cause for concern if the use of these substances increases risks to human health or the environment. This chapter describes current conditions on the United States (U.S.) territory of Tinian resulting from past and present use of these substances. In addition, this chapter discusses how these existing conditions could be altered by the proposed increase in military activities. The current DoD region of influence on Tinian addressed in this chapter for hazardous materials and wastes consists of the areas of Tinian Military Leased Area (MLA).

Hazardous substances are controlled in the U.S. primarily by laws and regulations administered by the U.S. Environmental Protection Agency (USEPA), the U.S. Occupational Safety and Health Administration (OSHA), and the U.S. Department of Transportation (DOT). Each agency incorporates hazardous substance controls and safeguards according to its unique Congressional mandate. USEPA regulations focus on the protection of human health and the environment. OSHA regulations primarily protect employee and workplace health and safety. DOT regulations promote the safe transportation of hazardous substances used in commerce.

All DoD operations are required to comply with the laws and regulations administered by the USEPA, DOT, and OSHA, as well as all other applicable federal, territorial, DoD laws and regulations, and Executive Orders (EO) (e.g., EO 12088, EO 13101, and EO 13148). Major federal environmental requirements associated with the management of hazardous material and waste are discussed in detail in Volume 2, Chapter 17, and therefore is not repeated here.

The CNMI oversees and administers these regulations through the CNMI Division of Environmental Quality (DEQ). The CNMI DEQ Hazardous and Solid Waste Management Branch regulates hazardous waste generated within the CNMI. In 1984, the CNMI DEQ adopted the federal hazardous waste regulations under Resource Conservation and Recovery Act (RCRA) and the hazardous and solid waste amendments. The CNMI does not have hazardous waste regulations that are more stringent than USEPA regulations.

The *Harmful Substance Clean up Regulations* were adopted under the authority of the CNMI Environmental Protection Act, (*Public Law 3-23; 2 CMC §3101 et seq. [as amended by Public Law 11-103]; 1 CMC §2646-2649; P.L. 11-108*). These regulations establish administrative processes and standards to identify, investigate, and clean up facilities where hazardous substances are located.

The CNMI DEQ's Toxic Waste Management branch protects human health and the environment through the enforcement and ongoing inspections of hazardous waste and emergency response. The CNMI DEQ regulates hazardous and toxic materials through Title 65 DEQ §65-50, *Hazardous Waste Management Regulations*.

The Oil Pollution Act preserves local authority to establish regulations governing oil spill prevention and responses. Statutory petroleum, oil, and lubricants (POL) management authority for the CNMI is the CNMI DEQ Above & Underground Storage Tank and Pesticide Management (AUPM) Branch. The AUPM is responsible for regulating storage tank spill prevention, control, and countermeasures (SPCCs) as well as used oil and pesticides.

The AUPM branch regulates these activities based upon the CNMI DEQ's memorandum of understanding (MOU) with USEPA Region 9. The MOU establishes that the CNMI DEQ will take the lead when conducting and Enforcing Facility Response Plan/Spill Prevention, Control and Countermeasure (SPCC) requirements and specifies that the CNMI DEQ report their findings and recommendations quarterly to the USEPA.

All DoD operations on Tinian are required to comply with the CNMI DEQ as well as applicable federal and DoD laws and regulations.

17.1.1 Definition of Resource

The Defense Reutilization and Marketing Office (DRMO) arranges for the cataloging, storing, shipping, and disposal of hazardous substances generated from military activities in the CNMI. The DRMO maintains hazardous substance documentation and contracts with licensed contractors for the disposal of these substances at permitted facilities in accordance with all applicable federal, local, and DoD laws and regulations.

17.1.1.1 Hazardous Materials Management

DoD Hazardous Materials Management

The DoD has various guidance documents and policy that establish specific requirements for the minimization, recycling, storage, use, handling, and disposal of hazardous materials. This guidance and policy is described in Volume 2, Chapter 17, and therefore is not repeated here.

All applicable guidance and policy must be complied with for all DoD operations within the CNMI.

CNMI Hazardous Materials Management

The CNMI DEQ's AUPM branch protects human health and the environment by preventing the release of hazardous substances through enforcement of local and federal environmental laws and regulations.

This branch is responsible for permitting, inspecting, and monitoring storage tank installation and operation. AUPM is also responsible for the authorization of onsite commercial oil operations, including storage, and disposal of used oil through the use of an approved used oil burner unit and disposal at permitted facilities. In addition, the AUPM regulates the importation, sale, distribution, and application of pesticides in the CNMI.

17.1.1.2 Toxic Substances Management

DoD Toxic Substances Management

Toxic substances that may be present relative to DoD operations on Tinian include: asbestos containing materials (ACM), lead-based paint (LBP), polychlorinated biphenyls (PCB), and radon. LBP and PCBs

originating in the CNMI are first transported to Guam, then off Guam by licensed disposal contractors for subsequent disposal at permitted facilities in accordance with federal, state, and local laws and regulations. ACM is disposed of at federal facilities located on Guam. Volume 2, Chapter 17 discusses DoD management practices relative to ACM, LBP, PCBs, and radon and is therefore not repeated here.

CNMI Toxic Substances Management

The CNMI DEQ Toxic Waste Management branch is responsible for implementing regulations for ACM, LBP, PCBs, and radon control and abatement for Tinian. DoD operations must comply with applicable local, federal and DoD laws and regulations (CNMI DEQ 2008).

17.1.1.3 Hazardous Waste Generation and Disposal

DoD Hazardous Waste Management

Volume 2, Chapter 17 describes various hazardous waste minimization, recycling, and use-reduction practices implemented by all DoD operations. In general, most hazardous waste generation on Tinian would take place as a result of DoD training exercises. Once hazardous waste is generated, it is transported to Guam in accordance with DOT regulations to DRMO facilities. Once on Guam, the DRMO arranges for the subsequent transfer and disposal of the hazardous waste off-island at licensed hazardous waste facilities.

For example, occasionally, small amounts of used oil are collected from these Tinian military training exercises as a result of vehicle repair or other circumstances. Once received on Guam, this oil is tested for hazardous characteristics to determine whether it should be classified and handled as hazardous waste. In addition, lithium batteries are used to power most field equipment. These batteries are generally returned to the U.S. mainland for recycling. If these batteries are not recycled, then they are classified and handled as hazardous waste and are disposed of as appropriate at permitted facilities off-island.

CNMI Hazardous Waste Management

Tinian-based activities generate hazardous waste from a multitude of waste streams. The CNMI DEQ imposes regulations to control the generation and disposal of hazardous waste. The CNMI DEQ's Toxic Waste Management branch protects human health and the environment through the enforcement and ongoing inspections of hazardous waste. The CNMI DEQ Toxic Waste Management branch is responsible for regulating businesses that engage or manage hazardous wastes (e.g., auto/heavy equipment shops, dry cleaning shops, print or photo shops) and responds to oil/chemical spills on land or water. DoD operations on Tinian must comply with applicable local, federal and DoD laws and regulations.

17.1.1.4 Contaminated Sites

Applicable DoD Hazardous Waste Sites

Past DoD activities have resulted in the presence of hazardous substance contamination and/or munitions and explosives of concern (MEC). In response, the USEPA, DoD, and the CNMI have established mitigation and cleanup activities under a variety of cleanup programs. These programs are described in Volume 2, Chapter 17. Table 17.1-1 lists DoD hazardous waste sites (GMP, Inc. 1997) on Tinian that are near or within the proposed expanded training operation footprints (Figure 17.2-1).

Table 17.1-1. Applicable DoD Hazardous Waste Sites on Tinian

Site	*Description/Materials Disposed*	*Status*
Tinian		
Site L-4	This site contains possible post -WWII era POL products.	According to the Tinian Environmental Baseline Survey (GMP, Inc. 1997) this was assigned a Category 3 status (areas where storage or release of hazardous substances has occurred, but at concentrations that do not require a removal or remedial response).
Site L-7	This site consists of WWII – era service aprons and engineering areas containing possible POL products.	According to the Tinian Environmental Baseline Survey (GMP, Inc. 1997) this was assigned a Category 3 status (areas where storage or release of hazardous substances has occurred, but at concentrations that do not require a removal or remedial response).
Site L-12	This site consists of WWII – era scrap metal dump site containing possible POL products and MEC.	According to the Tinian Environmental Baseline Survey (GMP, Inc. 1997) this was assigned a Category 5 status (areas where storage or release has occurred where removal or remedial actions has occurred).

CNMI DEQ Brownfields Program

Under the Brownfields Program, several projects have been set up to meet the program's requirements. These projects include: the development of environmental screening levels project, Brownfields site survey and inventory project, and Brownfields inventory database. If a Brownfields site is known or suspected to contain MEC, development of that site may be prohibited or may proceed only with extreme caution and with the proper safety measures in place.

The CNMI DEQ uses environmental screening levels to assist in identifying and prioritizing heavily contaminated sites. The environmental screening levels have been established for chemicals commonly found in soil and groundwater where releases of hazardous substances have occurred.

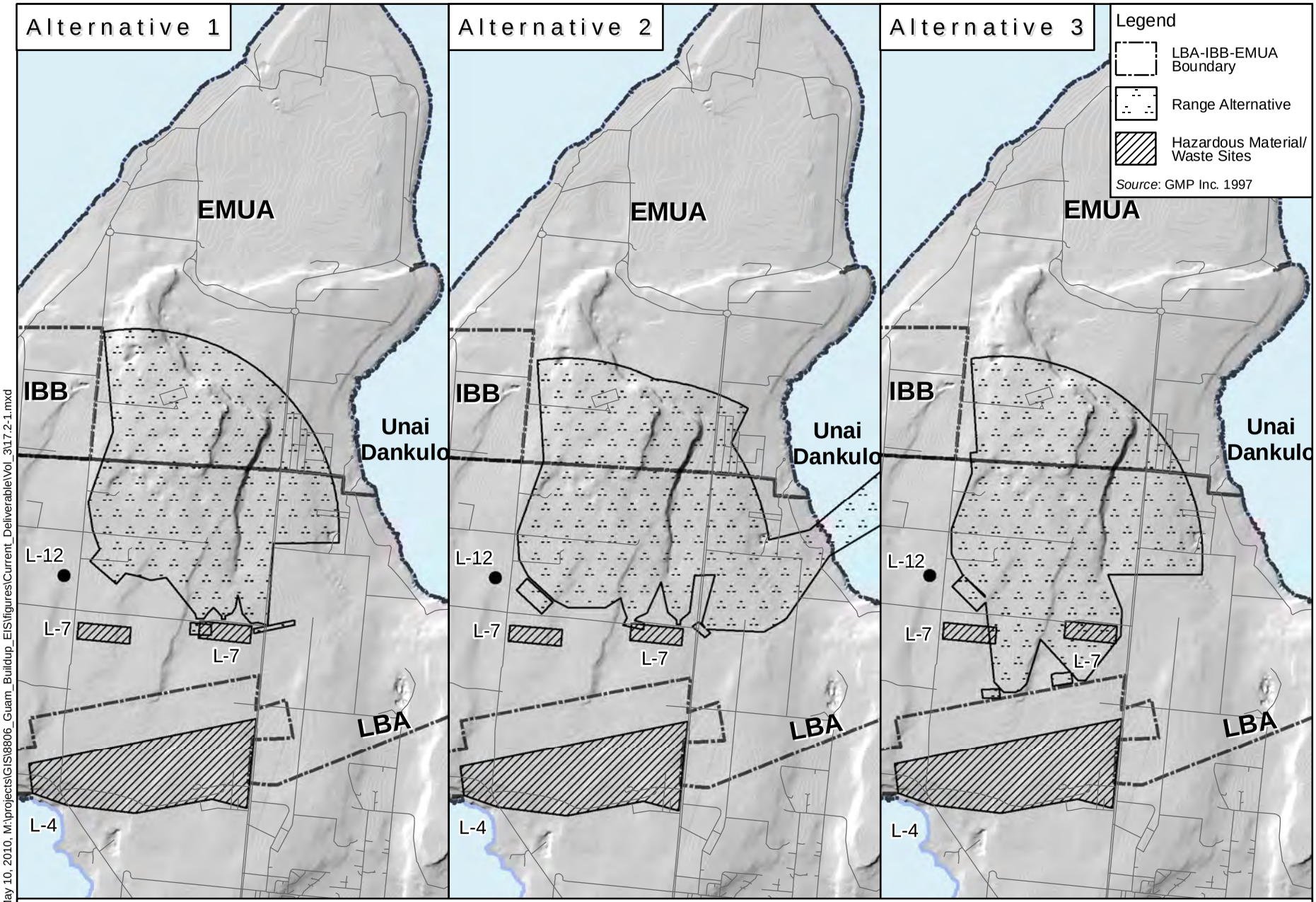

Figure 17.2-1
Tinian Hazardous Material/Waste Sites Near or Within Proposed Action Footprint

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17.2 ENVIRONMENTAL CONSEQUENCES

17.2.1 Approach to Analysis

17.2.1.1 Methodology

This section describes potential hazardous materials and waste impacts and proposed mitigation measures as they relate to the proposed increased DoD training operations at the Tinian MLA. Specifically, these impacts were assessed for the human health as well as various media (i.e., soils, surface water, groundwater, air, and biota) based upon various potential actions that include:

- Transportation to and on Tinian
- Minor Construction
- DoD operations

17.2.1.2 Determination of Significance

The determination of significance is based upon existing hazardous substance management practices, expected or potential impacts and environmental consequences of the proposed action, and alternatives and proposed mitigation measures to reduce the severity of impacts. This determination evaluated the overall ability to mitigate or control environmental impacts and consequences to soils, surface water, groundwater, air, and biota. This determination considers current conditions and potential consequences relative to the anticipated ability of the hazardous substance management infrastructure to accommodate added hazardous substance demand on the overall system. Specifically, for hazardous substances to be considered a significant impact, the following would have to occur:

- Leaks, spills, or releases of hazardous substances to environmental media (i.e., soils, surface water, groundwater, air, and/or biota) resulting in unacceptable risks to the human health or the environment.
- Violation of applicable federal, state, or local laws or regulations regarding the transportation, storage, handling, use, or disposal of hazardous substances.

17.2.1.3 Issues Identified during Public Scoping Process

As part of the analysis, concerns related to hazardous substances that were mentioned by the public, including regulatory stakeholders, during the public scoping meetings were addressed. A general account of these comments includes the following:

- Address management practices for hazardous substances including hazardous wastes, toxic substances, hazardous materials, and MEC.
- Describe the potential overall impacts of hazardous substances from construction and operation of proposed projects.
- Identify the projected hazardous waste types and volumes.
- Identify expected hazardous substance storage, disposal, and management plans.
- Evaluate measures to mitigate generation of hazardous waste including pollution prevention.
- Discuss how hazardous substances on land and from ships would be managed.
- Discuss the potential for impacts to environmental media from spills, accidents, and/or releases of hazardous substances.
- Identify existing installation restoration sites.

17.2.2 Alternative 1 (Preferred Alternative)

17.2.2.1 Transportation to and on Tinian

This subsection describes potential environmental consequences and proposed mitigation related to the establishment of expanded military training areas on Tinian. This includes the transport of all necessary supplies, materials, equipment, expendable, and non-expendable resources needed to perform the expanded training mission. In addition, this analysis considers the transport of these hazardous substances to Tinian and the routine transfer and use of hazardous substances within various DoD on-island training areas.

Hazardous Materials

The proposed action on Tinian would result in the transport/transfer of more hazardous materials on Tinian. It is expected that the largest increases of hazardous materials would occur from the use of POL. This includes gasoline, diesel, oil, grease, kerosene, and other related products. On Okinawa, approximately 32,000 pounds (lbs) (14,515 kilograms [kg]) of hazardous materials are annually arranged for disposal by DRMO from Marine activities. Training missions on Tinian are estimated to result in 20% of that total or about 6,400 lbs (14,606 kg) per year (DRMO Okinawa 2009).

However, proven and effective Best Management Practices (BMPs) and Standard Operating Procedures (SOPs) would be used to:

- Prevent, contain, and/or clean up spills and leaks to protect the human health and environment.
- Provide personnel training and operational protocol and procedures to protect human health and environment.
- Ensure DRMO's ability to properly arrange for and coordinate the disposal of anticipated hazardous materials.
- Protect overall human health, welfare, and the environment.
- Properly identify, manage, and dispose of MEC associated with construction and operation of the expanded mission facilities.

Due to the projected increase in the volume of hazardous materials, Alternative 1 would have the potential to result in significant impacts to human health and the environment (i.e., soils, surface water, groundwater, air, and biota). However, the increase in hazardous materials would be handled and disposed per applicable BMPs and SOPs. Therefore, the increase in volume would result in less than significant impacts. Table 17.2-1 summarizes BMPs and SOPs (also refer to Volume 7) that would be used. These include, but are not limited to:

Table 17.2-1. Summary of BMPs and SOPs

Alternatives 1, 2, and 3
For Soils, Water, Air, and Biota Relative to Transportation, Construction, and Operations Functions
• Update/implement HMMPs and HWMPs. • Update/implement Facility Response Plans. • Update/implement SPCC plans (training, spill containment and control procedures, clean up, notifications, etc.). • Update/implement stormwater pollution prevention plans (SWPPPs) • Ensure all DoD personnel and contractors are trained in accordance with applicable federal and CNMI DEQ regulations and DoD requirements regarding the importation, handling, use, and application of pesticides (e.g., during maintenance, pre and post construction, and general operations activities). • Ensure all DoD personnel and contractor personnel are trained as to proper labeling, container, storage, staging, and transportation requirements for hazardous substances. Also, ensure they are trained in accordance with spill prevention, control, and cleanup methods. • Perform all maintenance activities off-range at existing DoD maintenance shops. • Implement aggressive hazardous waste and hazardous material minimization plans that substitute hazardous waste for non-hazardous or less toxic waste as applicable, maximize recycling, and use LEEDS criteria. • Verify through surveillances and inspections full compliance with federal and CNMI DEQ regulations and adherence to DoD requirements. Implement corrective actions as necessary. • Minimize the risk of uncontrolled leaks, spills, and releases through industry accepted methods for spill prevention, containment, control, and abatement. • Implement routine firing range clearance operations (e.g., annually or as needed), perform sampling and analysis as deemed necessary, and implement all applicable DoD MEC operations guidance to minimize or eliminate potential MEC explosion hazards and other adverse impacts (including depositions with potential to leach into the subsurface). • Implement land use controls, fencing, signage, observation points, periodic inspections, and other means to ensure no unauthorized access to firing ranges, MEC, and/or hazardous substances. • Implement public awareness education seminars and workshops regarding the dangers of MEC, the importance of staying off firing ranges, and what to do if possible MEC is found. • Minimize the use of contaminated sites for new construction. When new construction occurs on sites where contamination and/or MEC has been identified, ensure that the risk of human/ecological risk and exposure is minimized via the use of a site-specific health and safety plans, engineering and administrative controls, and PPE. These site-specific health and safety plans must specifically address how these controls will be implemented to ensure the protection of human health and the environment and designs must consider and address contaminated sites as appropriate. In addition, these projects would be subject to regulatory oversight from GEPA and/or USEPA. • Ensure that soils to be excavated are well characterized, properly handled, and disposed of in accordance with all applicable accordance with applicable federal and CNMI DEQ regulations and DoD requirements to minimize dispersal of any contaminants that may be present. • Ensure that site planning and activities are conducted in accordance with NOSSA Instruction 8020.15B Explosives Safety Review, Oversight, and Verification of Munitions Responses.

Table 17.2-2 summarizes potential effects and impacts associated with hazardous materials transport to and on Tinian. Note that BMPs and SOPs would be implemented as a part Alternative 1 and are not considered "mitigation measures" thus consequences and mitigation tables within this section state that no mitigation measures are identified.

Table 17.2-2. Hazardous Materials Transport/Transfer Consequences and Proposed Mitigation

Potential Activity (Cause)	*Potential Effect*	*Potential Impacts*	*Proposed Mitigation Measures*
• Hazardous materials transport to Tinian and transfer on Tinian.	• Increased transport of hazardous materials to Tinian • Increased hazardous materials transfer and use on Tinian	• Spill, leak, or release impacts during transport/ transfer between DoD locations • Adverse impacts and increased risks to human health and/or the environment including terrestrial and marine ecosystems • Increased risk of environmental media contamination	• No mitigation measures are identified

Toxic Substances

Toxic substances regardless of any DoD expansion include: ACM, LBP, PCBs, and radon. ACM, LBP, and PCBs in the CNMI are transported by licensed transporters and disposed of in accordance with applicable federal, state, and local laws and regulations as well as applicable DoD requirements.

The collection, transportation, and disposal of toxic substances from all DoD operations is arranged for by the DRMO. The management of ACM, LBP, PCBs, and radon are discussed as part of the Affected Environment section in Volume 2, Chapter 17.

When assessing the transport, transfer, and future use of these toxic substances associated with the proposed DoD expansion, there are not expected to be any significant environmental consequences from ACM, LBP, and PCBs. This is because LBP was banned by the USEPA in 1978 and most uses of PCBs were USEPA-banned in 1979. In addition, ACM and radon gas not already present would not be transported/transferred as a result of these activities. Therefore, no mitigation measures are required. Instead, BMPs and SOPs would be implemented as appropriate (refer to Table 17.2-1 and Volume 7) and would result in less than significant impacts.

Hazardous Waste

Expanded DoD missions on Tinian would result in an increase in the off-island transport and inter-island transfer of hazardous waste. Increases in the transport/transfer and use of pesticides, herbicides, solvents, adhesives, lubricants, corrosive liquids, aerosols, and other hazardous wastes are expected. On Okinawa, approximately 644,000 lbs (292,727 kg) of hazardous waste is annually arranged for, and disposed by DRMO from Marine activities. Training missions on Tinian are estimated to result in 20% of that total or about 128,800 lbs (58,423 kg) of hazardous waste per year (DRMO Okinawa 2009).

Due to the projected increase in the volume of hazardous materials, Alternative 1 would have the potential to result in significant impacts to human health and the environment (i.e., soils, surface water, groundwater, air, and biota). However, the increase in hazardous materials would be handled and disposed per applicable BMPs and SOPs (refer to Table 17.2-1 and Volume 7), and therefore the increase in volume would result in less than significant impacts.

Table 17.2-3 summarizes potential hazardous waste transport/transfer effects, impacts, and mitigation.

Table 17.2-3. Hazardous Waste Transport/Transfer Consequences and Proposed Mitigation

Potential Activity (Cause)	*Potential Effect*	*Potential Impacts*	*Proposed Mitigation Measures*
• Hazardous waste transport to Tinian and transfer on Tinian	• Possible increased transport of hazardous waste to Tinian • Increased hazardous waste transfer and use on Tinian	• Spill, leak, or release impacts during transport/ transfer between DoD locations • Adverse impacts and increased risks to human health and/or the environment including terrestrial and marine ecosystems • Increased risk of environmental media contamination	• No mitigation measures are identified

17.2.2.2 Minor Construction Activities

Minor construction activities would be required to develop training ranges on Tinian. This subsection analyzes possible impacts of the potential expansion.

Anticipated construction activities under this alternative include site preparation, site grading, trenching and excavation, road improvements, landscaping, and other related infrastructure actions. There is a possibility that some of these planned construction project footprints could encounter sites contaminated with hazardous substances and/or MEC. If relocation of various construction projects that may encounter hazardous substances and/or MEC is not possible, several BMPs and SOPs (refer to Table 17.2-1 and Volume 7) would be used including, but are not limited to: development of site-specific health and safety plans, the use of engineering controls (e.g., dust suppression, etc.) and administrative controls, and the use of PPE. NOSSA Instruction 8020.15B establishes the ESS to provide effective review, oversight, and verification of the explosives safety aspects of munitions responses.

Waste Sites

As described in Section 17.1.1, there are waste sites located within or in close proximity to the overall areas of the proposed expansion. Consideration and careful attention during project design phases must be given prior to construction to avoid overlap with these sites. If relocation of proposed construction projects that may overlap these waste sites is not possible, then various BMPs and construction operational protocol must be followed to protect human health and the environment. In addition, special design techniques and methodology will be required to ensure the long-term structural integrity of proposed construction projects.

MEC

The proposed expansion areas are likely to contain MEC. NOSSA Instruction 8020.15B establishes the ESS process to provide effective review, oversight, and verification of the explosives safety aspects of munitions responses. When the ESS has been endorsed by NOSSA and approved by the DoD Explosive Safety Board, SOPs and operational protocol would be developed for addressing explosive safety hazards of MEC in the proposed construction areas.

Hazardous Materials

Proposed construction activities would result in the use and disposal of more hazardous materials. It is expected that the most notable increases of hazardous materials would occur for the use of POL for heavy construction equipment, construction vehicles, generators, and other construction activities. Construction activities on Tinian are estimated to result in approximately 1,280 lbs (581 kg) of hazardous materials per year, or approximately 4% of the known Okinawa annual total (DRMO Okinawa 2009).

Due to the projected increase in the volume of hazardous materials, Alternative 1 would have the potential to result in significant impacts to human health and the environment (i.e., soils, surface water, groundwater, air, and biota). However, the increase in hazardous materials would be handled and disposed per applicable BMPs and SOPs, and therefore the increase in volume would result in less than significant impacts (refer to Table 17.2-1 and Volume 7).

Table 17.2-4 summarizes potential hazardous materials effects, impacts, and mitigation of expected construction activities.

Table 17.2-4. Hazardous Materials Construction Consequences and Proposed Mitigation

Potential Activity (Cause)	*Potential Effect*	*Potential Impacts*	*Proposed Mitigation Measures*
• Possible use of contaminated site footprint(s) for new construction projects • Hazardous materials use during construction activities	• Increased hazardous materials storage, use, handling, generation, and disposal • Increased fueling and POL operations	• Spill, leak, or release impacts during construction activities • Adverse impacts and increased risks to human health and/or the environment including terrestrial and marine ecosystems • Violations of applicable federal, state or local regulations, or DoD requirements during construction and demolition operations • Increased risk of environmental media contamination. • Increased construction site erosion runoff	• No mitigation measures are identified

Toxic Substances

There are not expected to result in significant environmental consequences from ACM, LBP, and PCBs. This is because LBP was banned by the USEPA in 1978 and most uses of PCBs were USEPA-banned in 1979. In addition, ACM would not be used to construct proposed new facilities on Tinian. However, minor building and/or utilities demolition may result in encountering PCBs, ACM and LBP that were used in building materials at the time of construction. If PCBs, ACM, and/or LBP are encountered during demolition, licensed contractors would be used for these projects to ensure that all DoD, federal, and local PCBs, ACM, and LBP testing, handling, and disposal protocol, procedures, and requirements are followed. If radon zones are present on Tinian, it is possible that new facilities and/or structures would be constructed in these areas. However, radon resistant construction techniques would be used and DoD would periodically test facilities constructed in known radon zones to verify that no unacceptable radon

gas buildup occurs. As appropriate, radon mitigation measures would be installed. Therefore, less than significant impacts would result from toxic substances.

Hazardous Waste

Proposed construction activities would result in an increase in the use of hazardous waste. Construction activities are anticipated to increase the use of pesticides, herbicides, solvents, adhesives, lubricants, corrosive liquids, and aerosols. Construction activities on Tinian are estimated to result in approximately 25,760 lbs (11,685 kg) of hazardous waste, or 4% of the known annual Okinawa total (DRMO Okinawa 2009).

Due to the projected increase in the volume of hazardous waste, Alternative 1 would have the potential to result in significant impacts to human health and the environment (i.e., soils, surface water, groundwater, air, and biota). However, the increase in hazardous waste would be handled and disposed per applicable BMPs and SOPs (refer to Table 17.2-1 and Volume 7); therefore, the increase in volume would result in less than significant impacts.

Table 17.2-5 summarizes hazardous waste potential impacts associated with construction activities.

Table 17.2-5. Hazardous Waste Construction Consequences and Proposed Mitigation

Potential Activity (Cause)	*Potential Effect*	*Potential Impacts*	*Proposed Mitigation Measures*
• Possible use of contaminated site footprint(s) for new construction projects • Hazardous waste generated during construction activities	• Increased hazardous waste generation, storage, handling, and disposal	• Spill, leak, or release impacts during construction activities • Increased requirement for off-island hazardous waste disposal • Adverse impacts and increased risks to human health and/or the environment including terrestrial and marine ecosystems • Violations of applicable federal, state or local regulations, or DoD requirements during construction and demolition operations • Changes in hazardous waste generator status • Increased risk of environmental media contamination	• No mitigation measures are identified

17.2.2.3 DoD Operations

There are various DoD-related operations as a result of the proposed military expansion. For the purpose of this analysis, these operations have been divided into the following categories:

- General Activities – administrative and support functions associated with the DoD expansion
- Range Operations – Firing range activities and range maneuver exercises

General Activities

This subsection discusses the potential impacts related to general support functions associated with the proposed training expansion mission.

Hazardous Materials

Increases in the use of hazardous materials are estimated be minimal as a result of these general support activities. General activities on Tinian are estimated to result in approximately 640 lbs (290 kg) of hazardous materials per year, or approximately 2% of the annual Okinawa total (DRMO Okinawa 2009).

Due to the projected increase in the volume of hazardous materials, Alternative 1 would have the potential to result in impacts to human health and the environment (i.e., soils, surface water, groundwater, air, and biota). However, the increase in hazardous materials would be handled and disposed per applicable BMPs and SOPs, and therefore the increase in volume would result in less than significant impacts (refer to Table 17.2-1 and Volume 7).

Table 17.2-6 presents a summary of hazardous materials anticipated consequences and mitigation measures expected from these potential general support functions.

Table 17.2-6. Hazardous Materials/Waste Consequences and Proposed Mitigation

Potential Activity (Cause)	*Potential Effect*	*Potential Impacts*	*Proposed Mitigation Measures*
• Hazardous materials/ waste associated with general activities	• Negligible increases of hazardous materials/waste generation	• Minor spill, leak, or release impacts • Slight adverse impacts and increased risks to human health and/or the environment	• No mitigation measures are identified

Toxic Substances

ACM, LBP, and PCBs are not expected to result in additional impacts. This is because LBP was banned by the USEPA in 1978 and most uses of PCBs were USEPA-banned in 1979. In addition, ACM would not be used in new facilities on Tinian.

It is possible that new facilities may encounter radon intrusion. However, radon resistant construction techniques would be used and DoD would periodically test facilities constructed in known radon zones to verify that no unacceptable radon gas buildup occurs. As appropriate, radon mitigation measures would be installed. Therefore toxic substances impacts would be less than significant.

Hazardous Waste

Expected increases in the use of hazardous wastes are judged to be negligible as a result of these general activities. General activities on Tinian are estimated to result in approximately 1% of the known Okinawa annual total or about 6,440 lbs (2,921 kg) of hazardous waste per year.

Consequently, less than significant impacts (refer to Table 17.2-6) are expected due to the proposed actions and no proposed mitigation measures would be required. Instead, BMPs and SOPs would be implemented as appropriate (refer to Table 17.2-1 and Volume 7).

Range Operations

DoD has historically conducted live-firing, ordnance testing, and training exercises to ensure military readiness. These munitions-related activities have resulted in the presence of unexploded ordnance

(UXO), Discarded Military Munitions (DMM), and Munitions Constituents (MC). UXO, DMM, and MC are all collectively referred to as MEC. Volume 3, Chapter 2 describes these potential range operations, including types and quantities of MEC expected to be used.

Hazardous Materials

Activities associated with firing range operations would result in increased hazardous materials in the form of MEC. This is because UXO, DMM, and MC present an explosive hazard all have the potential to contain high explosives and explosives constituents and potentially leachable compounds. Furthermore, firing range activities would require the use of military transport vehicles and aircraft, hence resulting in an increase in the usage of fuels and POL. Firing range operations on Tinian are estimated to result in approximately 14% of the known Okinawa total or about 4,480 lbs (2,032 kg) of hazardous materials per year (DRMO Okinawa 2009).

Due to the projected increase in the volume of hazardous materials, Alternative 1 would have the potential to result in impacts to human health and the environment (i.e., soils, surface water, groundwater, air, and biota). However, the increase in hazardous materials would be handled and disposed per applicable BMPs and SOPs (refer to Table 17.2-1 and Volume 7). Therefore, the increase in volume would result in less than significant impacts.

Table 17.2-7 presents potential impacts and mitigation measures for hazardous materials.

Table 17.2-7. Hazardous Materials Firing Range Operations Consequences and Proposed Mitigation

Potential Activity (Cause)	*Potential Effect*	*Potential Impacts*	*Proposed Mitigation Measures*
• Hazardous materials associated with firing range operations	• Increases of hazardous materials usage • Increased MEC disposition within firing ranges	• Minor spill, leak, or release impacts • Adverse impacts and increased risks to human health and/or the environment from MEC, fuels, and POLs	• No mitigation measures are identified

Toxic Substances

Activities associated with firing range operations would not result in environmental impacts from toxic substances (i.e., ACM, LBP, PCBs, or radon); therefore, no mitigation measures would be required. Instead, BMPs and SOPs would be implemented (refer to Table 17.2-1 and Volume 7).

Hazardous Waste

Military munitions that are used for their intended purposes are not considered waste per the Military Munitions Rule [MMR (40 Code of Federal Regulations 266.202)]. In general, military munitions become subject to RCRA transportation, storage, and disposal requirements (i.e., judged not to have been used for their "intended purposes") when:

- Transported off-range for storage
- Reclaimed and/or treated for disposal
- Buried or land filled on- or off-range
- Munitions land off-range and are not immediately rendered safe or retrieved

MEC at "closed" ranges are classified as solid waste and would likely be subject to RCRA Subtitle C hazardous waste disposal requirements as well. As long as the proposed firing ranges on Tinian remain on

"active" or "inactive" status, then the MEC on those ranges should be considered as used for their "intended purposes" and subject to the MMR exception to Subtitle C of RCRA (i.e., likely not classified as a hazardous waste). Volume 2, Chapter 17 contains an in depth discussion of the MMR.

In addition to increased MEC, there may be slightly increased usage of other hazardous wastes as a result of expanded firing range operations. Specific increased hazardous waste generated could include: pesticides, herbicides, solvents, corrosive or toxic liquids, aerosols, pesticides, and herbicides. These hazardous wastes would be used for vehicle and aircraft maintenance, as well as range maintenance and operations activities. These operations on Tinian are estimated to result in approximately 14% of the known Okinawa total or about 90,160 lbs (40,896 kg) of hazardous waste per year (DRMO Okinawa 2009).

Due to the projected increase in the volume of hazardous waste, Alternative 1 would have the potential to result in significant impacts to human health and the environment (i.e., soils, surface water, groundwater, air, and biota). However, the increase in hazardous waste would be handled and disposed per applicable BMPs and SOPs (refer to Table 17.2-1 and Volume 7). Therefore, the increase in volume would result in less than significant impacts.

Table 17.2-8 presents possible impacts and mitigation measures for firing range operations.

Table 17.2-8. Hazardous Waste Firing Range Consequences and Proposed Mitigation

Potential Activity (Cause)	*Potential Effect*	*Potential Impacts*	*Proposed Mitigation Measures*
• Hazardous waste generated from firing range operations	• Increased hazardous waste generation, storage, handling, and disposal	• Minor spill, leak, or release impacts from firing range vehicular traffic • Increased requirement for off-island hazardous waste disposal • Adverse impacts and increased risks to human health and/or the environment including terrestrial and marine ecosystems • Violations of applicable federal, state or local regulations or DoD requirements • Adverse impacts to DRMO's hazardous waste storage, handling, and disposal capacity. • Changes in hazardous waste generator status • Increased risks of environmental media contamination • MEC being classified as hazardous waste as a result of closing firing ranges	• No mitigation measures are identified

17.2.2.4 Summary of Alternative 1 Impacts

Due to the projected increase in the volume of hazardous substances, Alternative 1 would have the potential to result in significant impacts to human health and the environment (i.e., soils, surface water, groundwater, air, and biota). However, the increase in hazardous substances would be handled and disposed per applicable regulations and BMPs/SOPs (refer to Table 17.2-1 and Volume 7) therefore, the increase in volume would result in less than significant impacts (Table 17.2-9).

Table 17.2-9. Summary of Alternative 1 Impacts

Area	*Project Activities*	*Project Specific Impacts*
Tinian	Construction	Less than significant adverse impacts to soils, surface water, groundwater, air, and/or biota related to construction activities
	Operation	Less than significant adverse impacts to soils, surface water, groundwater, air, and/or biota related to operation activities

17.2.2.5 Alternative 1 BMPs and SOPs

BMPs and SOPs that would be used as part of the proposed action are described in Table 17.2-1 and Volume 7.

17.2.3 Alternative 2

17.2.3.1 Tinian

Alternative 2 environmental consequences would be nearly identical to those of Alternative 1. The various proposed alternatives involve conducting DoD training operations at varying geographic areas. The use/presence of hazardous materials, toxic substances, and hazardous waste is primarily a function of the magnitude of DoD activities, not the geographic areas where potential operations would be based. Therefore, this chapter's potential environmental consequences, BMPs/SOPs, and related mitigation measures do not vary from alternative to alternative.

17.2.3.2 Summary of Alternative 2 Impacts

Table 17.2-10 summarizes Alternative 2 impacts.

Table 17.2-10. Summary of Alternative 2 Impacts

Area	*Project Activities*	*Project Specific Impacts*
Tinian	Construction	Less than significant adverse impacts to soils, surface water, groundwater, air, and/or biota related to construction activities
	Operation	Less than significant adverse impacts to soils, surface water, groundwater, air, and/or biota related to operation activities

17.2.3.3 Alternative 2 BMPs and SOPs

BMPs and SOPs (refer to Table 17.2-1 and Volume 7) for Alternative 2 would be the same as for Alternative 1.

17.2.4 Alternative 3

17.2.4.1 Tinian

Alternative 3 environmental consequences would be nearly identical to those of Alternative 1.

17.2.4.2 Summary of Alternative 3 Impacts

Table 17.2-11 summarizes Alternative 3 impacts.

Table 17.2-11. Summary of Alternative 3 Impacts

Area	*Project Activities*	*Project Specific Impacts*
Tinian	Construction	Less than significant adverse impacts to soils, surface water, groundwater, air, and/or biota related to construction activities
	Operation	Less than significant adverse impacts to soils, surface water, groundwater, air, and/or biota related to operation activities

17.2.4.3 Alternative 3 BMPs and SOPs

The BMPs and SOPs (refer to 17.2-1 and Volume 7) that would be used for Alternative 3 would be the same as for Alternative 1.

17.2.5 No-Action Alternative

Under the no-action alternative, no new construction or new training activities associated with the Marine Corps relocation would occur, and the Marine Corps would not meet training needs and requirements in support of the proposed action. The purpose and need for training on Tinian as described in Chapter 1 would not be met. Therefore, implementation of the no-action alternative would retain existing conditions, and there would be no impacts associated with the proposed action and alternatives.

17.2.6 Summary of Potential Impacts

Table 17.2-12 summarizes the potential impacts of each action alternative and the no-action alternative. The resources potentially impacted by hazardous substances are soils, surface water, groundwater, air, and biota.

Table 17.2-12. Summary of Potential Impacts

Alternative 1	*Alternative 2*	*Alternative 3*	*No-Action Alternative*
Soils, Surface Water, Groundwater, Air, and/or Biota Impacts			
LSI • Less than significant adverse impacts are anticipated • As with all operations using hazardous substances, there is a possibility for an inadvertent leak, spill, or release	LSI • The impacts would be the same as for Alternative 1	LSI • The impacts would be the same as for Alternative 1	NI • No impacts

Legend: LSI = Less than significant impact; NI = No impact

The potential environmental impacts related to the proposed military training activities on Tinian include increased transportation, handling, use, and disposal of hazardous materials and hazardous wastes. It is expected that the largest increases of hazardous materials would occur from the use of POL/fuels. Expected increases in hazardous waste include pesticides, herbicides, solvents, corrosive or toxic liquids, and aerosols. Toxic substances are not expected to contribute significantly to the expected waste increases. However, the increase in hazardous material and hazardous waste would be handled and

disposed per applicable regulations, BMPs, and SOPs as discussed in this Chapter (refer to Table 17.2-1 and Volume 7).

Despite expected increases in hazardous materials and hazardous wastes, less than significant impacts are anticipated as long as the controls (e.g., BMPs and SOPs) discussed within this Chapter and in Volume 7 are implemented and related plans and procedures updated and modified as appropriate to meet possible increased demands upon DRMO regarding hazardous substance transportation, handling, storage, use, and disposal.

17.2.7 Summary of BMPs and SOPs

As shown above, Table 17.2-1 summarizes BMPs and SOPs (also refer to Volume 7) that would be implemented relative to hazardous substance transportation, construction, and/or operations activities for all the proposed alternatives. Note that BMPs and SOPs are not considered "mitigation measures."