

TC 3-34.489

The Soldier and the Environment



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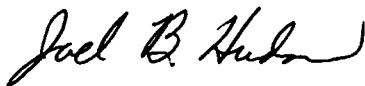
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The Soldier and the Environment

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Preface

The purpose of TC 3-34.489 is to help soldiers make responsible decisions about the environment. It is the companion to FM 3-100.4, which spells out the Army's guidelines for protecting the environment. TC 3-34.489 provides information on personal and professional responsibilities for protecting the environment. Following the guidelines in this manual will help soldiers and the Army protect the environment.

Soldiers should read this manual because they are faced with environmental challenges every day. These challenges may come when soldiers—

- Turn in equipment that contains hazardous materials.
- Are required to position a vehicle without damaging trees.
- Determine how to control erosion during a construction project.

Reading this manual will help soldiers learn how to perform their job without causing unnecessary harm to the environment. Soldiers have a personal and professional responsibility to protect the environment.

Soldiers use this manual in two ways. First, they read through each chapter and become familiar with environmental requirements that apply to their job. Second, they use it on the job. TC 3-34.489 is designed to help soldiers comply with environmental guidelines while performing their job, whether it is in garrison or in the field.

Appendix A contains an environmental checklist to help reduce or eliminate environmental risks.

This publication is intended to improve the internal management of the Army only. It is not intended to create any right or benefit, substantive or procedural, enforceable by law in any part against the United States (US), its agencies, its officers, or any person.

The proponent of this publication is HQ TRADOC. Send comments and recommendations on Department of the Army (DA) Form 2028,

and forward it directly to Commandant, United States Army Engineer School (USAES), ATTN: ATSE-DD-D, Fort Leonard Wood, MO 65473-6650.

Unless this publication states otherwise, masculine pronouns do not refer exclusively to men.

Chapter 1

The Army, the Soldier, and the Environment

The military must confront its environmental responsibilities. Currently, the Department of Defense (DOD) must clean up more than 20,000 sites suspected of being contaminated with toxic materials. The Army is responsible for many of the sites that are littered with hazards such as paints, solvents, ammunition, and fuel. Preventing this damage would have been far less costly than cleaning up these sites.

ENVIRONMENTAL VISION

1-1. Caring for the environment begins with the Army's vision of environmental responsibility. The following vision statement describes what the Army expects of soldiers:

Vision Statement: *"The Army will integrate environmental values into its mission in order to sustain readiness, improve the soldier's quality of life, strengthen community relationships, and provide sound stewardship of resources."*

1-2. Taking care of the environment protects health, safety, and natural resources. For example, when fuel spills on the ground, it soaks into the soil, poisons plants, and eventually enters streams and lakes that supply drinking water. (See *FM 3-100.4* for more information.)

1-3. Caring for the environment also supports the Army mission. Costly environmental cleanups detract from Army readiness. During war, many wise tactical, medical, or operations-security (OPSEC) practices are also good environmental practices. Handling fuels safely, maintaining vehicles, disposing of solid waste/hazardous waste (HW), and managing and turning in ammunition properly are sound environmental and tactical considerations that carry over from training into combat operations.

1-4. Many practices that damage the environment waste time and do not lead to success in combat. One example occurred during the Gulf War when Iraqi soldiers set fire to Kuwaiti oil fields and poured millions of gallons of crude oil into the Persian Gulf. The Iraqi Army deliberately damaged environmental resources and wasted valuable time and effort on activities that did not stop the allies' advance. Remember, environmental stewardship does not prevent the Army from fighting and winning wars—it supports the Army mission.

ENVIRONMENTAL ETHIC

1-5. *FM 22-100* defines ethics as principles or standards that guide soldiers and professionals to do the moral or right thing. The environmental ethic is as follows:

Environmental Ethic: *“We will take care of the environment because it is the right thing to do.”*

1-6. Soldiers put this ethic into practice by—

- Complying with installation environmental policies, unit standing operating procedures (SOPs), Army regulations (ARs), and environmental laws and guidelines (see *Appendix B*).

- Preventing environmental damage and pollution by making sound decisions that will not harm the environment.
- Advising the chain of command when unit actions do not comply with environmental guidelines.
- Supporting the Army recycling program.
- Reporting hazardous-material (HM) and HW spills immediately.
- Making sound environmental decisions in the absence of a supervisor or proper guidance.

STRATEGY

1-7. Based on the vision and the ethic (*FM 3-100.4*), the Army seeks to conduct operations that are environmentally sustainable, enhance the quality of life, and improve national security. The Army's strategy is to—

- Comply with all environmental laws and regulations.
- Prevent pollution at the source by reducing, reusing, or recycling materials that cause pollution.
- Conserve and preserve natural and cultural resources so that they will be available for present and future generations.
- Restore contaminated sites as quickly as possible.

1-8. The environmental model (see *Figure 1-1, page 1-4*) shows how these four pillars support environmental stewardship. The Army mission, at the top, requires the Army to manage and use natural resources wisely. Just as a building's walls support its roof, the model's four pillars support environmental stewardship. Environmental stewardship, in turn, supports the Army mission.

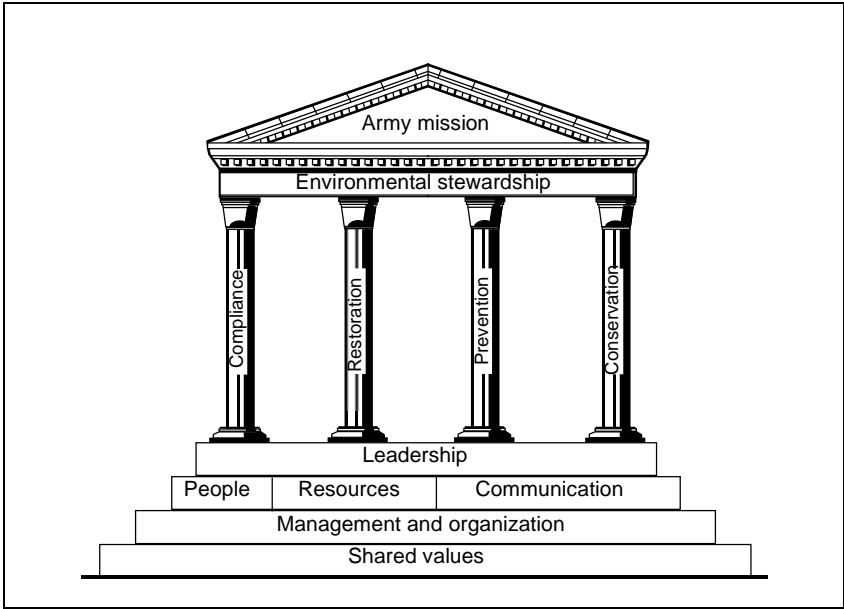


Figure 1-1. Environmental Model

COMPLIANCE

1-9. Compliance with environmental regulations is now a necessary cost of doing business. The Army expects soldiers to obey local, state, federal, and host-nation (HN) environmental requirements. By following the unit environmental SOP, the environmental guidance that leaders publish in operation orders (OPORDs), and installation environmental regulations, soldiers can help the Army meet its compliance goal.

RESTORATION

1-10. Most soldiers do not have any restoration responsibilities. However, to make the installation a safer place for soldiers and their families, the Army is cleaning up its contaminated sites. By following the principles under the other three environmental pillars,

soldiers can help the Army eliminate the need for a restoration pillar.

PREVENTION

1-11. Prevention is the Army's attempt to reduce or eliminate pollution. Preventing pollution is always more effective and less costly than cleaning up polluted sites. Soldiers can support prevention efforts by reducing, reusing, or recycling waste products.

Reduce

1-12. If soldiers perform a job carefully, they can often reduce the amount of pollution produced. For example—

- Storing cans of paint properly prevents the paint from ruining and prevents pollution.
- Using floor-sweep compound carefully reduces the amount of floor sweep required to clean up oil spills.
- Using products with less packaging prevents pollution.
- Using less harmful products reduces the toxicity of the waste generated.
- Using soap and water instead of harmful solvents reduces the amount of harmful materials produced and prevents pollution.

Reuse

1-13. Reusing products reduces the amount of trash and waste that must be taken to commercial landfills. Instead of throwing things away, reuse them. For example—

- Use both sides of notepaper before throwing it away.
- Select products that have refillable containers.
- Collect and reuse rags in the arms room or the motor pool.

Recycle

1-14. Prevent pollution by recycling. Many products the Army uses can be recycled. This includes paper, aluminum cans, radiators, batteries, pavement, and scrap metal. The installation can often sell recyclable materials and raise funds for things like recreation facilities.

CONSERVATION

1-15. Conservation is the Army's intent to preserve the natural and cultural resources under its care. Soldiers can support conservation by avoiding needless damage to the environment. During training exercises, practice trash and litter discipline. Afterwards, thoroughly police training areas and bivouac sites. Participating in activities such as the unit recycling and energy-conservation programs conserves resources for the future.

CONCLUSION

1-16. The Army is integrating environmental considerations into its approach to war fighting. This ensures that as the Army fights and wins future conflicts, its approach will strive to protect and preserve valuable resources (soldiers and materials) and the natural environment.

Chapter 2

Protecting the Environment

Soldiers are the Army's first line of defense in protecting the environment. They must safeguard the environment where they work and live. By making good environmental decisions, soldiers can make a difference.

THE ENVIRONMENT

2-1. A soldier's actions have an effect on the environment each day. If something is poured onto the ground or into a storm drain, it pollutes the drinking water (*Figure 2-1, page 2-2*). Chemicals that soak into the soil contaminate plants and eventually enter lakes, ponds, and aquifers. Once these chemicals enter primary water sources, it is only a matter of time until they contaminate the drinking water. Actions taken to prevent contamination are inherently more effective and efficient than actions taken to remedy a situation.

SOLDIER ACTIONS

2-2. The Army wants soldiers to think about the environmental consequences of their actions before they act. Each time a soldier begins a task, he should ask, "How will this activity affect the environment?"

2-3. Answering this question begins the process of assessing the environmental risks associated with the job. Here are some common situations in which a soldier affects the environment by his actions:

- Vehicle maintenance.
- Weapons maintenance and cleaning.

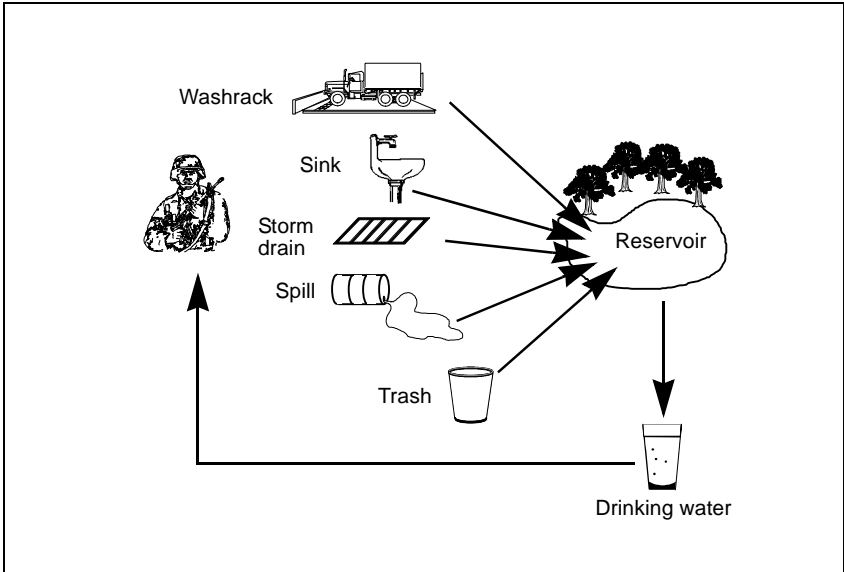


Figure 2-1. Environmental Effects

- Nuclear, biological, and chemical (NBC) equipment maintenance and decontamination equipment.
- Supply, storage, and transportation.
- Vehicle refueling.
- Field sanitation.
- Maneuver-damage control.
- Field recovery.
- Weapons training and demolition.

2-4. Beginning in the unit area, soldiers perform maintenance and training using their assigned equipment. During training or deployment, soldiers use the equipment and supplies to perform their missions in a field environment. Before redeploying or returning from training, soldiers account for equipment, supplies, and waste materials. Upon returning to the unit area, soldiers clean their equipment and prepare for the next

2-2 Protecting the Environment

mission. In each of these situations, soldiers perform their jobs in an environmentally sound manner.

VEHICLE MAINTENANCE

2-5. During vehicle maintenance, fuels, oils, coolants, or other fluids may be spilled. Clean up spills immediately to eliminate hazards that could lead to personal injury (usually by slipping and falling). This also gives the spill less chance to soak into the ground, which helps conserve water resources. Take simple precautions (place drip pans, diapers, or absorbents under vehicles) to prevent or reduce pollution. Keep a copy of the applicable material safety data sheet (MSDS) for each HM on hand in a binder in the motor pool. (See *Appendix C* for more information on MSDSs.) Protect the environment by using the checklist in *Appendix A* and following the guidelines below:

COMPLIANCE

2-6. Disposing of products as specified in unit SOPs and installation regulations will help reduce solid waste. Maintaining and operating vehicles and other equipment, including oil-water separators, according to specifications in applicable technical manuals (TMs) will help reduce air and noise pollution.

PREVENTION

2-7. **Reduce** solid waste and HW by preparing the work site with absorbents, drip pans, and rags to catch small leaks and drips. This will minimize the impact of leaks and spills. Clean up spills immediately, using just enough materials to get the job done.

2-8. **Reuse** rags and floor sweep. Place rags in a dirty-rags container and have them laundered. Collect used dry sweep and reuse it several times. Take leftover

items, such as paint or excess parts, to the installation reissue center so that other units can use them.

2-9. **Recycle** HM such as solvents and coolants. Return damaged parts and assemblies to the supply facility for rebuilding or recycling.

WEAPONS MAINTENANCE

2-10. Solvents, cleaners, and lubricants used to clean weapons can be hazardous to the environment because they evaporate and contaminate the air. Keep solvent-vat lids closed to minimize air pollution. Use absorbent floor sweep under solvent vats to catch leaks and spills. Used floor sweep, patches, and brushes are contaminated with harmful solvents and metal particles, so dispose of them properly to prevent them from spreading contamination to landfills. Keep a copy of the applicable MSDS for each HM on hand in a binder in the arms room. Avoid harming the environment during weapons maintenance by using the checklist in *Appendix A* and following the guidelines below:

COMPLIANCE

2-11. Follow installation guidelines for disposing of HW (like solvents) and solid waste (like damaged parts) whether in the field or at a garrison. Collect these waste products close to the places where they are created, and dispose of them often. Also, follow the cleaning guidelines in the applicable TM.

PREVENTION

2-12. **Reduce** the use of hazardous cleaning solvents and solutions by substituting less hazardous solvents and solutions where permitted. Use just enough solvent or lubricant to maintain the weapon to TM specifications.

2-13. **Reuse** cleaning equipment and lubricant containers when possible. Purchase lubricants in bulk, and refill smaller containers.

2-14. **Recycle** cleaning solvents as part of the installation solvent-reclamation program.

NUCLEAR, BIOLOGICAL, AND CHEMICAL EQUIPMENT MAINTENANCE

2-15. NBC training presents situations that require sound environmental decisions. The filters and cleaning materials disposed of may contribute to persistent pollution problems. Store HM, such as decontaminant solution 2 (DS2), carefully. Ensure that containers have appropriate drip pans or other forms of secondary containment underneath them. Keep a copy of the applicable MSDS for each HM on hand in a binder in the NBC room. During field training, collect used chemical-detection equipment and dispose of it according to installation regulations. Support installation environmental goals by using the checklist in *Appendix A* and following the guidelines below:

COMPLIANCE

2-16. Many pieces of NBC equipment can be damaged during maintenance by not following the procedures in the applicable TM. This adds to disposal problems. Collect HM (such as used filters, decontamination materials, and cleaning solutions) at the point of generation and dispose of them properly. Be very careful with detection equipment because it may contain small amounts of radioactive isotopes. Unit NBC noncommissioned officers (NCOs) should ensure that all collected materials are properly marked and turned in.

PREVENTION

2-17. **Reduce** the use of hazardous cleaning solvents and solutions by substituting less hazardous solvents and solutions where permitted.

2-18. **Reuse** mask carriers and cleaning equipment. Turn in excess repair parts so that other units may use them.

2-19. **Recycle** solid waste such as damaged or broken components and batteries. Many of these items contain harmful substances, such as tritium or lithium.

SUPPLY, STORAGE, AND TRANSPORTATION

2-20. Supply and storage facilities often contain HM. Take precautions when storing and transporting these materials. Do not assume that they can be thrown into the trash or poured down a drain. Turn in excess paint, solvents, cleaners, and supplies to the installation supply point. These materials can be reissued to other units. Keep a copy of the applicable MSDS for each HM on hand in a binder in the storage area. Support installation environmental goals in supply areas by using the checklist in *Appendix A* and following the guidelines below:

COMPLIANCE

2-21. Store materials according to manufacturer guidelines as stated on the MSDS. Use older items first, ensure that new items are labeled and dated, and place new items to the back of the storage area.

PREVENTION

2-22. **Reduce** the amount of solid waste and HW in the supply room by avoiding stockpiling or keeping items around “just in case they are needed.” When possible, select items that have less packaging, are less

hazardous, or are easily recycled. Dispose of all waste according to the unit SOP, but do not wait until a container is full before arranging for proper disposal.

2-23. **Reuse** containers when possible. Try to purchase supplies, such as cleaning solutions or lubricants, in bulk and refill smaller containers as needed. Containers should be appropriately labeled and be compatible with the material stored.

2-24. **Recycle** materials as required by the installation recycling program. Keep recycling containers free of trash and garbage. Turn in excess or damaged repair parts and tools as stated in the unit maintenance or supply SOP. These parts will be rebuilt, repaired, and returned to the maintenance system.

REFUELING

2-25. Pay close attention during refueling operations because of the potential for spills and fires. Taking simple precautions prevents large pollution problems. Clean up spills immediately as shown in *Figure 2-2*, page 2-8. During refueling, protect the environment and dispose of contaminated soil according to installation policies and unit SOPs. Use the checklist in *Appendix A* and follow the guidelines below:

COMPLIANCE

2-26. Follow the unit SOP concerning the types and quantities of items to be stored at a fuel point. The unit SOP should say to place the refueling nozzle in a drip pan and not on the ground. It should address placing drip pans or absorbent material, such as floor sweep, under vehicles being refueled to catch any overflow. Maintain a properly stocked spill kit, and ensure that it is readily available.

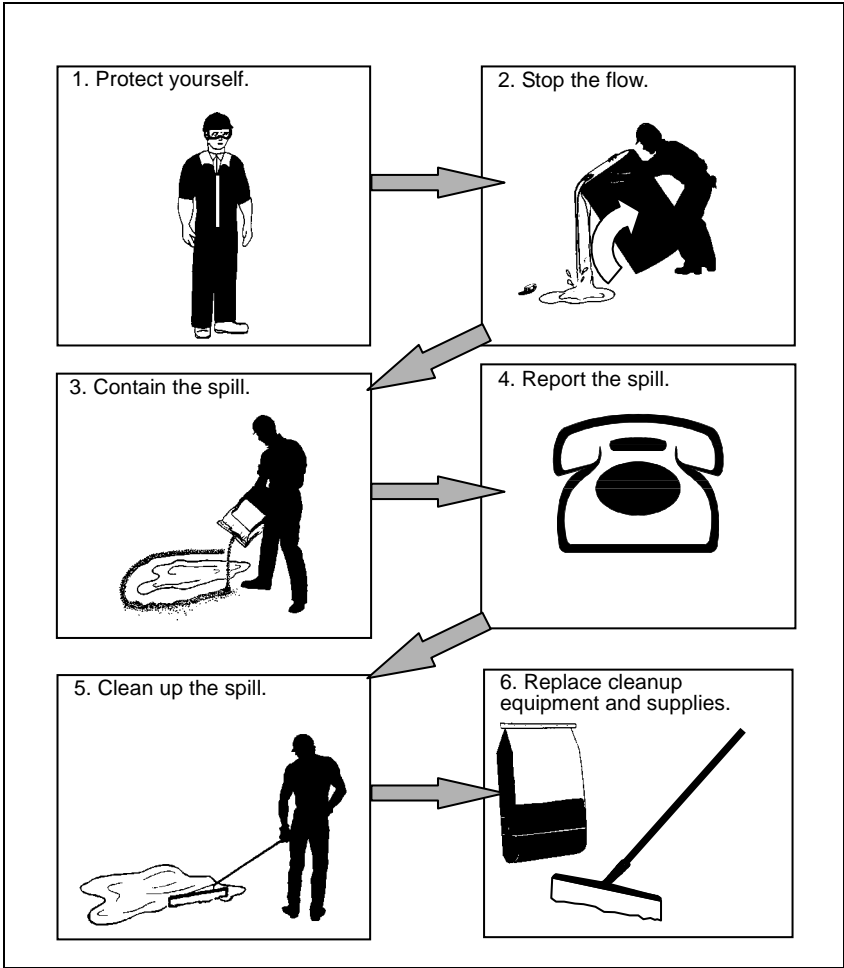


Figure 2-2. Reacting to Spills

PREVENTION

2-27. **Reduce** the amount of soil contaminated during refueling by being careful not to spill fuel. Pay attention at all times when refueling; do not lock the nozzle open and walk off. When refilling or storing fuel cans, place them in a drip pan to catch any overflow or leaks.

2-28. **Reuse** rags and absorbent material. Reuse overpack drums for transferring contaminated soil. When the rags become soaked, have them laundered and reuse them.

2-29. **Recycle** used or contaminated petroleum, oils, and lubricants (POL). Depending on state and local requirements, the unit may have accumulation containers for used fuel, oil, and other POL.

FIELD SANITATION/FIELD MESS

2-30. Field-sanitation activities (pest control, latrines, mess operations, and medical-waste disposal) affect the environment. Limit the use of pesticides within training areas, bivouac sites, and ranges. Pesticides can create contamination that lasts for years. Instead, use insect repellent to ward off mosquitoes and flies. Keep a copy of the applicable MSDS on hand for each HM. Ensure that field-sanitation practices prevent harm to the environment by using the checklist in *Appendix A* and following the guidelines below:

COMPLIANCE

2-31. The unit field SOP should say where and how to emplace latrines, dispose of kitchen waste, and collect medical waste. Enforce the use of field latrines instead of expedients such as “catholes.” Human waste attracts additional pests, spreads disease, and contaminates runoff water. Use caution when disposing of any substance in the field. In many states, even the water used in immersion heaters must be disposed of in a

sanitary sewer system due to the metal contamination from the garbage can.

PREVENTION

2-32. **Reduce** the spread of litter and solid waste by collecting it at the source (mess site, aid station, or issue point). Reduce the amount of spoiled materials that must be thrown away by storing perishable items (such as food) properly.

2-33. **Reuse** waste-accumulation containers. Select sturdy, reusable containers (such as barrels). Ensure that they have lids to keep out weather and pests.

2-34. **Recycle** solid waste that accumulates during field situations. Batteries, ammunition packing, and cardboard containers can be recycled if collected properly and turned in.

MANEUVER-DAMAGE CONTROL

2-35. When training areas are stripped of vegetation, they lose valuable concealment; and erosion often prevents further use. Plan to conserve resources before going to the field. For instance, plan to reduce erosion risks by conducting off-road driving only in authorized areas. Crossing streams only at approved crossing points also reduces erosion. By filling in fighting positions before leaving an area, soldiers reduce erosion problems and make the area safer. Use camouflage netting instead of branches and shrubs. Prevent maneuver-damage problems by using the checklist in *Appendix A* and following the guidelines below:

COMPLIANCE

2-36. In an area that contains historical artifacts or threatened or endangered species, assess the environmental risk before going to the field. When identifying a potential hazard, develop a plan to

eliminate or control the risk. Check the driving and convoy requirements for the installation. In some states, installations may receive fines for raising too much dust when vehicles convoy to and from training sites. Maintain a properly stocked spill kit, and ensure that it is readily available.

PREVENTION

2-37. **Reduce** the likelihood of creating a spill by securing cargo properly. Traveling with open or loose containers or driving carelessly creates a potential for spills.

2-38. **Reuse** wire, barrier materials, and sandbags.

2-39. **Recycle** materials that are collected at collection points (CPs), latrines, maintenance facilities, aid stations, and mess facilities.

FIELD RECOVERY

2-40. Taking care of equipment develops an important habit that helps the Army prepare for combat, and it conserves natural resources. When returning from training, account for all of the equipment and then clean it. Bring all of the trash and waste back for proper disposal. Wash the equipment at approved wash sites that have oil-water separators. Prevent pollution and protect yourself by making sound environmental decisions each day. Use the environmental checklist in *Appendix A*, and follow the guidelines below:

COMPLIANCE

2-41. Upon departing the training area, return all waste to the containment area. Do not bury any waste materials. Collect all unused munitions and turn them in. Police all brass, wire (communication, concertina, and barbed), and litter before departure.

2-42. Use only approved washracks. When washing equipment in a parking lot or a maintenance area, the runoff enters storm drains and runs into streams and rivers, causing pollution. The same is true when washing a vehicle in a lake, a stream, or a pond.

PREVENTION

2-43. **Reduce** pollution at the washrack by using only approved solvents or detergents when washing vehicles. Using unapproved soaps, detergents, and solvents can clog the oil-water separator, causing it to back up and overflow.

2-44. **Reuse** barbed wire, barrier material, and communication wire. After finishing with these materials, turn them in to unit supply. This will ensure that they are available for future use, and it will make the area safer for wildlife. Also, reuse cleaning materials such as brushes and rags.

2-45. **Recycle** worn-out or damaged equipment rather than throwing it out.

WEAPONS TRAINING AND DEMOLITION

2-46. Weapons training and demolition can lead to noise complaints from citizens living near firing ranges. When these complaints result in letters to local newspapers, letters to Congress, or litigation, they can lead to curtailment of the soldier's ability to train as he fights. Although the primary responsibility for preventing noise complaints belongs to the operations officer (Operations and Training Officer [US Army] [S3] or Assistant Chief of Staff, G3 [Operations and Plans] [G3]) and the installation master-planning office, there are ways that individual soldiers can help the effort. Use the environmental checklist in *Appendix A*, and follow the guidelines below:

COMPLIANCE

2-47. When selecting artillery firing points close to the installation boundary, check with the range-control office to ensure that there are no noise-sensitive buildings nearby. When conducting air-to-ground gunnery or nap-of-the-earth flying, check with airfield operations for no-fly zones due to noise-sensitive homes or livestock. When conducting night training, comply with nighttime curfews or seek an exception to policy in advance. For demolition operations, comply with the weight limits designated in installation range-control regulations.

PREVENTION

2-48. Maintain mufflers on vehicles and generators. When motor pools or military roads are near housing, avoid unnecessary noise from revving engines or excessive speed. If an installation has a history of noise complaints from demolition training or explosive-ordnance disposal (EOD), avoid detonating under the following conditions:

- Days of steady wind (8 to 16 kilometers per hour [kph]) with gusts of greater velocity (above 32 kph) in the direction of nearby residences.
- Days that are clear with a layering of smoke or fog.
- Mornings that are cold, hazy, or foggy.
- Days following a day with extremes of temperature (20°C) between day and night.
- Days with high barometer readings and low temperatures.

2-49. If a site for mock skirmishes with simulators and blank ammunition is within 500 meters of homes, use the forest as a buffer. Avoid open fields and water. Aim firearms away from homes.

CONCLUSION

2-50. The Army and the American people believe that soldiers have a professional responsibility to protect the environment. Soldiers can do that by making smart environmental decisions—which is not difficult to do. Performing a job in an environmentally smart manner protects the environment where people work and live.

Chapter 3

Environmental Responsibility

The Army's environmental vision sets goals that the Army will try to achieve. Applying the strategy of compliance, prevention, and conservation to a job is one way to help achieve these goals. The Army has accepted its environmental responsibilities, but the Army's environmental ethic places responsibility on soldiers to make good environmental decisions each day.

ARMY RESPONSIBILITY

3-1. The Army is responsible for taking care of the resources entrusted to it by the American people, and this includes the environment. First, this is morally right. Second, by caring for the environment, the Army avoids expensive cleanups that detract from readiness and limit the Army's ability to wage war. (See *FM 3-100.4* for more information.)

3-2. Based on its commitment to environmental protection, the Army will conduct its operations in ways that minimize environmental impacts. The Army will—

- Comply with all environmental laws and regulations. This includes federal, state, local, and HN laws, some of which are outlined in *Appendix B*.
- Prevent pollution at the source by reducing, reusing, and recycling material that causes pollution.

- Conserve and preserve natural and cultural resources so that they will be available for present and future generations.
- 3-3. Soldiers can support these efforts by—
- Complying with installation environmental policies, unit SOPs, ARs, and environmental laws and guidelines.
 - Preventing environmental damage and pollution by reducing, reusing, and recycling waste material.

PERSONAL RESPONSIBILITY

3-4. Everyone faces situations that require them to make decisions concerning the environment. The decision may be whether to empty a bucket of solvent onto the ground or carry it to an accumulation point. To make good decisions, ask yourself the following questions:

- **What are my orders?** Look to your leaders for guidance, and ensure that you understand what they expect. If instructions are unclear or confusing, ask for help. Review unit SOPs for environmental guidance.
- **What have I been trained to do?** Ask this question in the absence of specific orders or guidance. This manual provides guidance on how to perform tasks in an environmentally safe manner. Following these guidelines ensures compliance with federal environmental guidelines.
- **What does my concept of right and wrong tell me to do?** Ask this question in the absence of training and orders. Most people know when an action will harm the environment. Do not perform environmentally dangerous tasks without proper guidance, especially if you have

not been trained on the task or if you doubt it is correct.

CONCLUSION

3-5. The procedures in this manual provide some specific ways to protect the environment. The Army expects soldiers to share its vision of environmental protection. By complying with environmental regulations, preventing pollution, and conserving resources, soldiers can support the Army's vision and its environmental goals.

Appendix A

Environmental Checklist

Soldiers must make decisions to protect the environment every day. Failure to make the right decisions may cause serious damage to the environment. For example, identify environmental risks before performing a job. Next, reduce or eliminate these risks when possible. One way to reduce or eliminate environmental risks is to use a checklist, such as the one shown in *Table A-1*, that contains information to help prevent environmental damage. For a more encompassing checklist, contact the local command and see *FM 3-100.4, Appendix H*.

Table A-1. Environmental Checklist

Vehicle Maintenance	
<input type="checkbox"/>	Place drip pans, diapers, or absorbents under vehicles.
<input type="checkbox"/>	Maintain vehicles and equipment according to TM specifications.
<input type="checkbox"/>	Clean up spills immediately.
<input type="checkbox"/>	Collect used rags in a dirty-rags container.
<input type="checkbox"/>	Collect used dry-sweep compound for reuse.
<input type="checkbox"/>	Recycle solvents and coolants.
<input type="checkbox"/>	Return damaged parts and assemblies to the supply facility for rebuilding or recycling.
<input type="checkbox"/>	Locate waste-accumulation containers close to the source of the waste products.
<input type="checkbox"/>	Label and date waste-accumulation containers.

Table A-1. Environmental Checklist (continued)

Weapons Maintenance	
<input type="checkbox"/>	Dispose of contaminated patches and cleaning equipment properly.
<input type="checkbox"/>	Reuse cleaning equipment and lubricant containers when possible.
<input type="checkbox"/>	Purchase lubricants in bulk, and refill smaller containers.
<input type="checkbox"/>	Recycle cleaning solvents.
<input type="checkbox"/>	Keep the lids on solvent vats closed when not in use.
NBC Equipment Maintenance	
<input type="checkbox"/>	Keep a copy of the applicable MSDS for each HM on hand in a binder.
<input type="checkbox"/>	Collect HM (used filters, decontamination materials, and cleaning solutions) at the point of generation, and dispose of them properly.
<input type="checkbox"/>	Mark and turn in damaged equipment.
<input type="checkbox"/>	Reuse mask carriers and cleaning equipment.
<input type="checkbox"/>	Store DS2 and STB containers in separate locations that are dry and well ventilated.
<input type="checkbox"/>	Dispose of HW and batteries according to the unit SOP.
<input type="checkbox"/>	Turn in excess repair parts so that other units can use them.
<input type="checkbox"/>	Ensure that DS2 containers have drip pans or other forms of secondary containment underneath them.
<input type="checkbox"/>	Dispose of out-of-date, chemical-agent kits properly as HW.
Supply, Storage, and Transportation	
<input type="checkbox"/>	Substitute less hazardous solvents and cleaning solutions where permitted.
<input type="checkbox"/>	Select items that have less packaging.
<input type="checkbox"/>	Take leftover items (such as paint or excess parts) to the installation reissue center.
<input type="checkbox"/>	Store materials according to MSDS guidelines.
<input type="checkbox"/>	Keep a copy of the applicable MSDS for each HM on hand in a binder.
<input type="checkbox"/>	Label and date new supplies.
<input type="checkbox"/>	Place new supplies to the back of the storage area.
<input type="checkbox"/>	Issue older supplies first.
<input type="checkbox"/>	Avoid stockpiling or keeping items around "just in case they are needed."
<input type="checkbox"/>	Keep recycling containers free of trash and garbage.

A-2 Environmental Checklist

Table A-1. Environmental Checklist (continued)

<input type="checkbox"/> Turn in excess or damaged repair parts and tools as stated in the unit maintenance or supply SOP.
<input type="checkbox"/> Turn in excess paint, solvents, cleaners, and supplies to the installation supply point.
<input type="checkbox"/> Reuse containers when possible.
<input type="checkbox"/> Purchase cleaning solvents and lubricants in bulk, and refill smaller containers as needed.
<input type="checkbox"/> Recycle materials as required by the installation recycling program.
<input type="checkbox"/> Dispose of solid waste and HW according to local policy.
<input type="checkbox"/> Transport paint, solvents, cleaners, and other HW and HM safely as required by existing requirements. Ensure that there are proper placards and that appropriate spill-containment equipment is with the vehicle.
Refueling
<input type="checkbox"/> Report spills immediately.
<input type="checkbox"/> Place the refueling nozzle in a drip pan, not on the ground.
<input type="checkbox"/> Place drip pans, diapers, or absorbent material (such as floor sweep) under vehicles when refueling.
<input type="checkbox"/> Place fuel cans in a drip pan for refueling or storage.
<input type="checkbox"/> Ensure that each refueling vehicle has at least two fire extinguishers.
<input type="checkbox"/> Ensure that a properly stocked spill kit is readily available.
<input type="checkbox"/> Ensure that potable water is available for emergency eye washing.
<input type="checkbox"/> Reuse overpack drums to transfer contaminated soil.
<input type="checkbox"/> Recycle used or contaminated POL products.
<input type="checkbox"/> Dispose of contaminated soil and absorbents according to installation policy.
Field Sanitation/Field Mess
<input type="checkbox"/> Enforce the use of field latrines instead of expedients such as "cat-holes."
<input type="checkbox"/> Collect litter and solid waste at the source (mess site, aid station, or issue point).
<input type="checkbox"/> Store perishable items (such as food) properly to reduce spoilage.
<input type="checkbox"/> Reuse waste-accumulation containers.
<input type="checkbox"/> Ensure that waste-accumulation containers have lids that keep out weather and pests.

Table A-1. Environmental Checklist (continued)

<input type="checkbox"/> Store motor-gas containers properly at all times. They should be closed, with no open funnels or tubes attached.
<input type="checkbox"/> Conduct filling operations on a tarp or a plastic liner with a soil berm or sandbag perimeter for secondary containment in the event of a spill.
<input type="checkbox"/> Conduct lighting operations on open soil so that any residual fuel will freely burn during the operation.
Maneuver-Damage Control
<input type="checkbox"/> Identify environmental risks before going to the field.
<input type="checkbox"/> Brief personnel on maneuver-damage considerations and minimization measures.
<input type="checkbox"/> Develop a plan to minimize or eliminate environmental risks.
<input type="checkbox"/> Identify areas that contain historical and prehistorical sites, buildings, and structures and Native-American sacred sites.
<input type="checkbox"/> Identify areas that contain threatened or endangered species.
<input type="checkbox"/> Observe convoy restrictions.
<input type="checkbox"/> Cross streams and ditches only at approved crossing points.
<input type="checkbox"/> Drive carefully in forested areas to avoid damaging vegetation.
<input type="checkbox"/> Drive only on approved roads and trails.
<input type="checkbox"/> Avoid unnecessary noise by not revving engines.
<input type="checkbox"/> Fill in all fighting positions at the end of training.
<input type="checkbox"/> Secure cargo properly.
<input type="checkbox"/> Use camouflage netting instead of live vegetation.
<input type="checkbox"/> Reuse wire, barrier materials, and sandbags.
<input type="checkbox"/> Recycle materials at collection points.
Field Recovery
<input type="checkbox"/> Return all waste to the containment area for proper disposal. Do not burn or bury waste material.
<input type="checkbox"/> Recover all expended brass, communications wire, concertina, booby traps, and barrier material.
<input type="checkbox"/> Do not pour materials into storm drains.
<input type="checkbox"/> Wash equipment at approved wash sites that have oil-water separators.
<input type="checkbox"/> Use only approved solvents or detergents when washing vehicles.
<input type="checkbox"/> Reuse cleaning brushes and rags.

Table A-1. Environmental Checklist (continued)

<input type="checkbox"/> Recycle worn-out and damaged equipment.
Weapons Training and Demolition
<input type="checkbox"/> Check with range control for artillery noise-buffer zones near the installation.
<input type="checkbox"/> Check with airfield operations concerning no-fly zones.
<input type="checkbox"/> Adhere to nighttime-gunnery curfews.
<input type="checkbox"/> Keep demolitions below the maximum permissible weight specified by range control.
<input type="checkbox"/> Avoid excessive vehicle noise when homes are located near range roads.
<input type="checkbox"/> Use the forest and the terrain as buffers between noisy training and noise-sensitive areas.
<input type="checkbox"/> Aim firearms away from noise-sensitive areas.
<input type="checkbox"/> Avoid detonating large charges when the wind is blowing from the demolition ground towards noise-sensitive sites or when temperature inversions are likely to be present.
<input type="checkbox"/> Avoid making noise in the habitat of endangered species.
<input type="checkbox"/> Respect noise-buffer zones and altitude restrictions in forest-service land or other areas of exceptional quiet.

Appendix B

Environmental Laws Affecting Soldier Actions

The environmental laws and regulations in this appendix are not all inclusive, but they represent those that are most applicable to soldiers. For further information about these and other laws, ask the chain of command or the installation staff judge advocate or environmental office.

BASIS OF ENVIRONMENTAL LAWS

B-1. The four types of environmental laws in *FM 3-100.4* that apply to soldiers are federal, state, local, and HN (*Figure B-1, page B-2*).

B-2. Federal laws are enacted by Congress and enforced by federal agencies like the Environmental Protection Agency (EPA), the Department of Transportation (DOT), and the Army. Once an agency determines how to enforce the laws, it develops regulations. In this way, Army environmental regulations are based on federal laws. States and cities may also enact environmental laws of their own. These state and local environmental laws are often tougher than federal laws. However, Army installations located in these states or near these cities must obey state and local environmental laws as well as federal environmental laws. If an Army installation is located overseas, soldiers must also follow HN environmental laws.

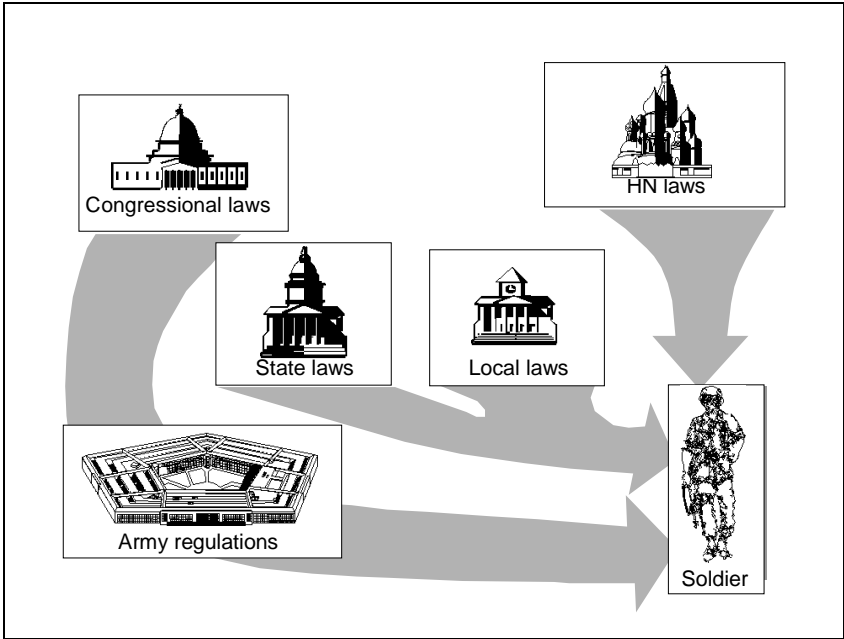


Figure B-1. Sources of Environmental Laws

B-3. Soldiers are responsible for knowing what environmental requirements apply to their duties. The following regulations contain Army environmental laws:

- *AR 200-1* describes the Army environmental program and assigns responsibilities for managing the program.
- *AR 200-2* describes how the Army considers environmental issues during planning and decision making.
- *AR 200-3* describes how the Army manages the natural resources under its control, including threatened and endangered species.
- *AR 200-4* describes the Army cultural-resources management program, including historical and

B-2 Environmental Laws Affecting Soldier Actions

prehistorical sites, buildings, and structures and Native-American sites.

- *AR 200-5* describes Army policies, standards, and procedures for pest-control activities. It also incorporates DOD measures of merit for pest management as articulated in *Department of Defense Instruction (DODI) 4150.7*.

B-4. Each installation has an environmental regulation that combines all the environmental laws and regulations into a single set of environmental guidelines. Installation environmental regulations tell how to comply with local, state, federal, and HN environmental laws. Units base their environmental SOPs and environmental training on the guidelines specified in installation environmental regulations.

FEDERAL ENVIRONMENTAL LAWS

B-5. Soldiers should understand the following federal environmental laws. They affect many of the activities that soldiers perform each day.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

B-6. The NEPA (*FM 3-100.4, Appendix A*) requires the Army to determine the environmental impact of proposed actions. If a proposed action will harm the environment, the Army must develop a plan to eliminate or minimize the damage. Soldiers comply with the NEPA by—

- Considering the environmental consequences of their actions.
- Following environmental guidelines set forth in unit SOPs, installation regulations, and mission orders.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

B-7. The RCRA (*FM 3-100.4, Appendix A*) governs how the Army identifies, transports, stores, and disposes of HM and HW. RCRA places “cradle-to-grave” responsibility for HW on the personnel or units generating the waste. It also governs recycling and reusing nonhazardous material and waste. Used munitions can become a regulated HW in some cases.

B-8. Soldiers comply with RCRA by—

- Supporting the installation recycling program.
- Removing materials (expended brass, communications wire, concertina, booby traps, UXO, and propellant charges) from training sites.
- Conducting police calls to collect and dispose of solid waste.
- Collecting and turning in HW and HM according to unit SOPs.
- Knowing what HM they use on the job or at home.
- Knowing what HW they produce as they perform their jobs.

CLEAN WATER ACT (CWA)

B-9. The CWA (*FM 3-100.4, Appendix A*) applies to facilities that place pollutants into bodies of water. The CWA affects groundwater, storm water, surface water (lakes, rivers, and streams), marshes, swamps, wetlands, coastlines, and navigable waterways (canals). Soldiers comply with the CWA by—

- Disposing of chemicals, solvents, and HW properly. Never dispose of them in storm drains, sinks, toilets, or drains.
- Washing vehicles in approved washracks only.
- Cleaning up spills in the work area immediately.
- Reporting spills through the chain of command.

B-4 Environmental Laws Affecting Soldier Actions

CLEAN AIR ACT (CAA)

B-10. The CAA (*FM 3-100.4, Appendix A*) requires the Army to prevent, control, and/or reduce air pollution from nontactical vehicles, facilities, and operations. Soldiers comply with the CAA by—

- Checking with the local environmental office before using gas or smoke.
- Meeting state inspection standards for privately owned vehicles (POVs).
- Observing local fire and burning restrictions.
- Following local dust-control guidelines on tank trails and range roads.
- Keeping solvent vats closed when not in use.
- Using paints and thinners correctly with proper equipment (paint application techniques and paint booths).
- Maintaining and operating equipment (engines, boilers, and generators) properly to reduce air-pollution problems.
- Ensuring that air-conditioning systems in POVs and government vehicles are only serviced by individuals who are properly trained and certified.

NATIONAL HISTORIC PRESERVATION ACT (NHPA)

B-11. The NHPA (*FM 3-100.4, Appendix A*) safeguards against the loss of irreplaceable historical, archeological, and cultural properties. The NHPA requires Army installations to identify and safeguard possible archeological and historical sites, artifacts, and structures. It also requires the Army to protect and preserve the historical sites located on its installations. Soldiers comply with the NHPA by—

- Leaving historical and prehistorical artifacts and sites undisturbed.

- Reporting the discovery of artifacts and sites to the chain of command.
- Reporting vandalism, theft, and damage to historical, cultural, and archeological sites.
- Planning and conducting training, operations, and logistics activities to avoid damaging historical and archeological sites.

ENDANGERED SPECIES ACT (ESA)

B-12. The ESA (*FM 3-100.4, Appendix A*) protects threatened and endangered plants and animals. Army installations often include natural areas that are the last remaining refuge for endangered plants and animals. Almost every military training area has some endangered species. Soldiers comply with the ESA by—

- Recognizing signs and markers that indicate protected habitat areas.
- Avoiding marked-off habitat areas during training and operations.
- Following installation regulations for hunting, fishing, and camping.
- Obeying range-control guidelines for cutting brush and trees for camouflage.

FEDERAL FACILITIES COMPLIANCE ACT (FFCA)

B-13. The FFCA (*FM 3-100.4, Appendix A*) allows the EPA and the states to inspect and fine Army installations that violate environmental laws identified in the RCRA. The FFCA also allows federal, state, and local environmental agencies to prosecute soldiers who knowingly violate environmental laws during the performance of their duties. Soldiers comply with the FFCA by—

- Cooperating with environmental inspectors.

- Performing self-assessments of their work area to ensure that they are complying with environmental guidelines.
- Informing their chain of command when they discover environmental problems.

NOISE CONTROL ACT (NCA)

B-14. The NCA (*FM 3-100.4, Appendix A*) promotes an environment that is free from noise that jeopardizes health or welfare. The Army should comply with all federal, state, and local requirements, respecting the control of noise unless doing so conflicts with the military mission. Soldiers comply with the NCA by—

- Avoiding unnecessary noise.
- Respecting noise-buffer zones, minimum flight altitudes, no-fly zones, and nighttime curfews designated by the installation.

LOCAL, STATE, AND HOST-NATION ENVIRONMENTAL LAWS

B-15. Some state and local governments have additional environmental laws (*FM 3-100.4, Appendix A*). Actions allowed by the environmental laws of one state may be illegal in another state. The installation environmental coordinator knows the state laws that apply to the installation.

B-16. Many of the countries where soldiers might deploy also have different environmental requirements. Army units in foreign countries must follow the environmental guidelines of the HN. When units deploy to other states or countries, leaders should inform them of changes in environmental requirements.

ENVIRONMENTAL PENALTIES

B-17. Federal and state environmental regulatory agencies can impose penalties on the Army for violating environmental laws. These penalties (*FM 3-100.4, Appendix A*) include fines, increased monitoring and intervention by environmental regulators, and damage awards from lawsuits.

B-18. A soldiers who violates environmental laws or allows others to do so can be prosecuted by military authorities under the Uniform Code of Military Justice (UCMJ) or in Federal District Court. If convicted of environmental violations, he can receive fines up to \$50,000 per day of violation and imprisonment up to two years.

CONCLUSION

B-19. Army environmental regulations are based on federal laws. State and local environmental laws apply to the area where soldiers live and work. If living in a foreign country, HN laws also apply. The Army will obey all environmental laws that apply to its installations, and the Army expects soldiers to do the same.

Appendix C

Material Safety Data Sheet

No matter where a soldier works or what his job is, chances are that he uses a hazardous chemical. Each soldier should know the hazards associated with the chemicals he uses. Environmental and safety laws require chemical manufacturers to provide this information on a form called an MSDS (see *TM 38-410*). Everything that is known about the chemical is listed on the MSDS. There are various versions of the MSDS; however, each version contains the same basic information. Supervisors must have an MSDS for every chemical in their work area.

CONTENTS

C-1. An MSDS contains details on the dangers associated with a chemical. It also includes information on safety procedures to use when handling the chemical and provides emergency response techniques. With this information soldiers can—

- Protect themselves.
- Protect other soldiers.
- Store materials safely.
- Respond to spills and other emergencies correctly.

C-2. Although an MSDS contains technical information, a soldier does not need to be a chemist to get the information he needs from it. The sample MSDS sections

in this appendix show where to get important information about a chemical.

HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

C-3. This section (*Figure C-1*) identifies the hazardous ingredients. The ingredients listed here represent at least 1 percent, by weight, of the product. If the ingredients are carcinogens (can cause cancer), they represent at least 0.1 percent, by weight, of the chemical substance.

SECTION 1: NAME AND PRODUCT	
Chemical name: Acrylonitrile	Catalog number: AX0350
Trade name and synonyms: Vinyl cyanide CAS #107-13-1	Chemical family: Nitrile
Formula: CH ₂ :CHCH	Formula Weight: 53.07

Figure C-1. Hazardous Ingredients/Identity Information

PHYSICAL/CHEMICAL CHARACTERISTICS

C-4. This section (*Figure C-2*) contains information that helps recognize the substance (appearance and odor). It also contains information about whether the chemical substance dissolves or floats in water and includes its boiling point (BP).

C-5. The BP tells whether the product will produce vapors at room temperature. If the number is lower than 21°C, vapors are a problem; so use the product in a well-ventilated area or wear a respirator.

SECTION 2: PHYSICAL DATA		SAMPLE	
Boiling point, 760 mm Hg (°C)	77.3°	Specific gravity (H ₂ O = 1)	0.806
Melting point (°C)	-83.5°	Stability in H ₂ O, % by wt at 20°C	7.35%
Vapor pressured at 20°C	83 mm Hg	Appearance and odor: Clear yellow	
Vapor density (air = 1)	1.83	liquid, pungent odor	
Percent volatiles by volume	100%	Evaporation rate (butyl acetate = 1)	4.5

Figure C-2. Physical/Chemical Characteristics

C-6. If the specific gravity is less than 1, the product will float in water. A number greater than 1 indicates that the product will sink. This is important to consider for fire-fighting purposes.

C-7. Vapor density tells whether the fumes from the product will rise to the ceiling (numbers less than 1) or sink to the floor (numbers greater than 1). Products with vapor pressures greater than 10 millimeters (mm) are explosive hazards.

FIRE/EXPLOSION HAZARD DATA

C-8. This section (*Figure C-3, page C-4*) tells how to handle hazards. It lists things such as fire-fighting equipment and procedures required in case of fire. Carefully read the information on “flash point.” The flash point is the temperature at which the material could ignite if a spark is present. This is important when using open containers in the work area.

SECTION 3: FIRE AND EXPLOSION HAZARD DATA			
Flash point (test method): 1°C (TCC)	Flammable limits	LEL: 3%	UEL: 17%
Extinguishing media: CO ₂ , alcohol foam, dry chemical. (Water may be ineffective.)			
Special hazards and procedures: Wear self-contained breathing apparatus and protective clothing.			
Unusual fire and explosion hazards: Violent polymerization may occur in the presence of concentrated alkali. Thermal decomposition produces highly toxic fumes.			

Figure C-3. Fire/Explosion Hazard Data

REACTIVITY DATA

C-9. This section (*Figure C-4*) tells about dangerous chemical reactions (such as explosion, corrosion, or fire) which could occur if the chemical is combined with another substance. It also tells which substances and situations to avoid when storing or using the chemical.

SECTION 4: REACTIVITY DATA	
Stable: XX	Conditions to avoid: Polymerizes in the absence of oxygen or exposure to light.
Unstable:	
Materials to avoid:	
<input type="checkbox"/> Water <input checked="" type="checkbox"/> Strong acids <input type="checkbox"/> Bases <input type="checkbox"/> Corrosives <input type="checkbox"/> Oxides <input checked="" type="checkbox"/> Other (specify) Alkali, Br, NH ₃ Cu and copper alloys, amines	
Hazardous decomposition products: HCN, NO ₂ , CO _x	

Figure C-4. Reactivity Data

SPILL OR LEAK PROCEDURES

C-10. This section (*Figure C-5*) tells what to do if the substance spills or leaks. It includes equipment and procedures to use for cleaning up spills and leaks. It also includes how to dispose of the substance after cleanup.

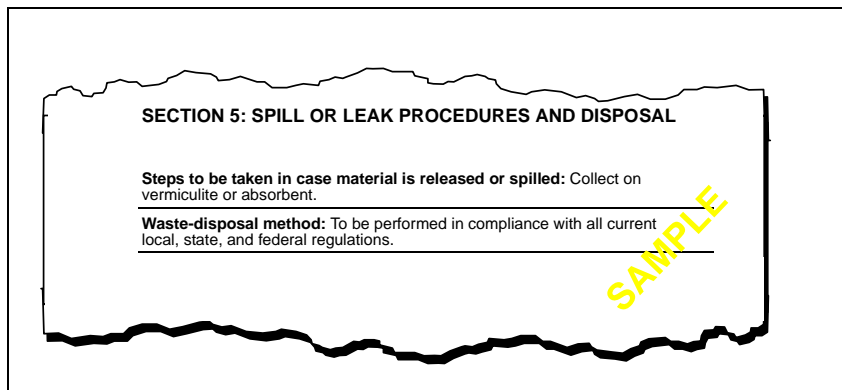


Figure C-5. Spill or Leak Procedures

HEALTH HAZARD DATA

C-11. This section (*Figure C-6, page C-6*) tells how the chemicals enter the body—whether through inhalation, skin contact, or ingestion. The threshold limit value (TLV) tells how hazardous the product is and whether the product requires special ventilation. Generally, the lower the parts per million (ppm), the more hazardous the product is to a person's health.

C-12. A chemical with a TLV more than 100 ppm is generally safe to use or store indoors. Chemicals with TLVs less than 100 ppm require ventilation systems or can only be used and stored outside.

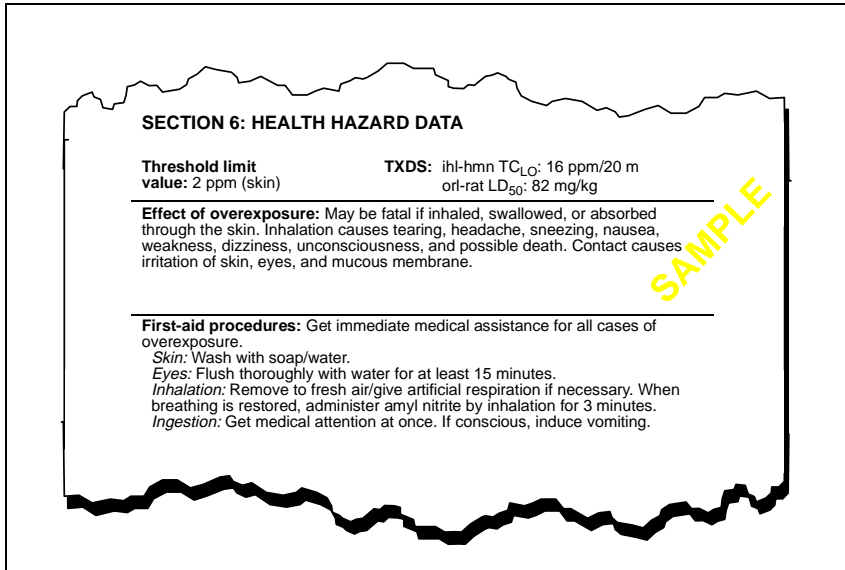


Figure C-6. Health Hazard Data

SPECIAL PROTECTION INFORMATION

C-13. This section (*Figure C-7*) provides information on how a soldier can protect himself and other soldiers from hazardous exposure.

SPECIAL HANDLING AND STORING PRECAUTIONS

C-14. This section (*Figure C-8*) tells how to handle, store, and transport the chemical.

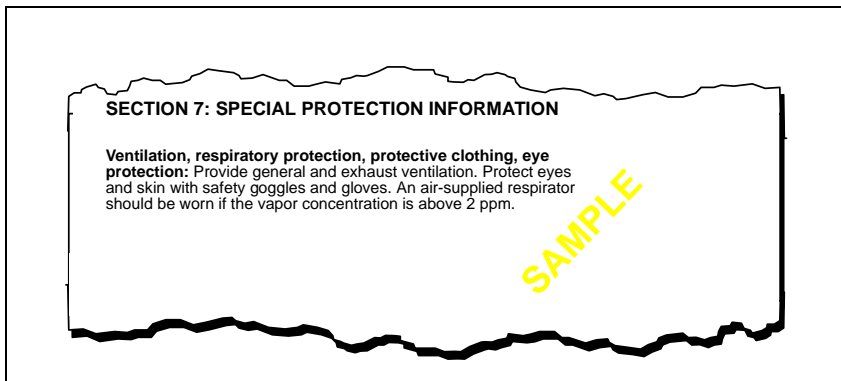


Figure C-7. Special Protection Information

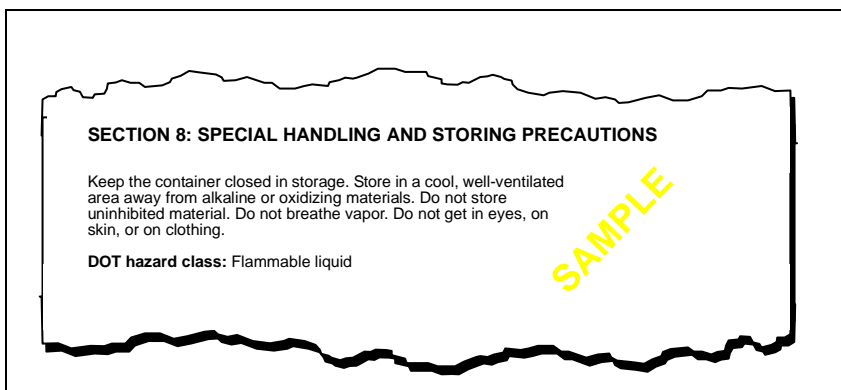


Figure C-8. Special Handling and Storing Precautions

STORAGE AND HANDLING PRECAUTIONS

C-15. This section (*Figure C-9*) provides information on how to handle and store the HM.

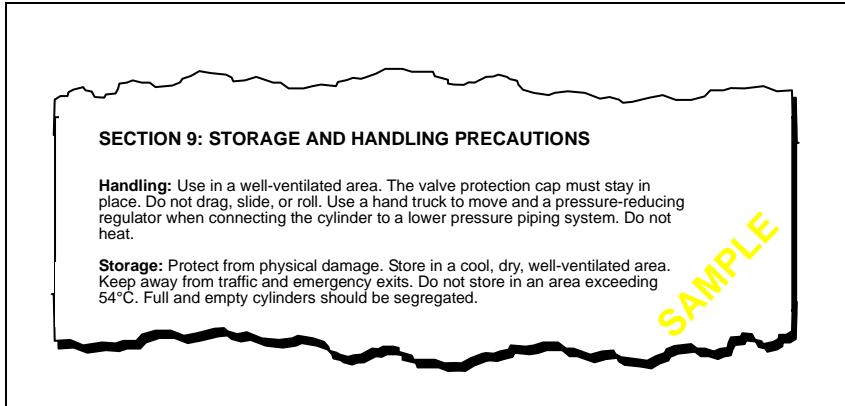


Figure C-9. Storage and Handling Precautions

TRANSPORTATION DATA AND ADDITIONAL INFORMATION

C-16. This section (*Figure C-10*) provides transportation data and additional information.

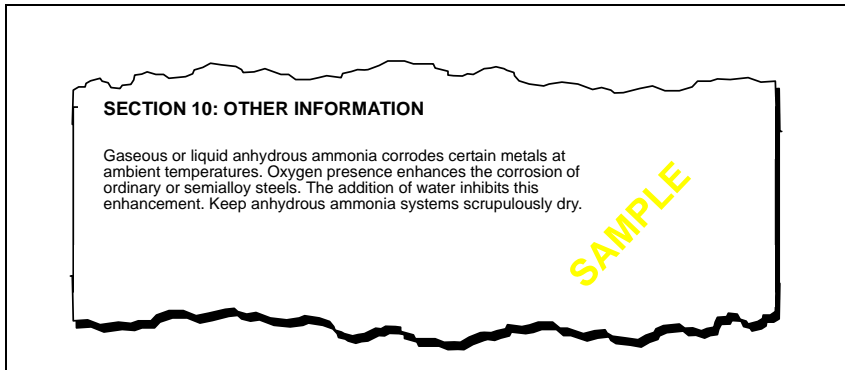


Figure C-10. Transportation Data and Additional Information

CONCLUSION

C-17. All MSDSs do not all look alike; there are various versions of the form. However, each version contains the same basic information. The MSDS lists everything that is known about the chemical. It provides soldiers with the information they need concerning a hazardous chemical, material, or substance. Read the MSDS before using any chemical. Know where to find the MSDS for each chemical used in the work area.

NOTE: The information published in this appendix was compiled from experience and data presented in various technical publications. It is the user's responsibility to determine the suitability of this information for adoption of necessary safety precautions. The manufacturer reserves the right to revise MSDSs periodically as new information becomes available.

Glossary

- AR** Army regulation
- ATTN** attention
- BP** boiling point
The temperature at which a compound will go from the liquid state to the vapor state.
- C** Celsius
- CAA** Clean Air Act
- carcinogen** A substance known to cause or contribute to the growth of cancerous cells.
- CAS** chemical abstract service number
A unique number given to a chemical compound when it has been thoroughly identified. Information can be tracked by this number even when a different trade name or synonym is given for the chemical.
- CERCLA** Comprehensive Environmental Response, Compensation, and Liability Act. It regulates cleanup of HW sites. Also known as "Superfund."
- CFR** Code of Federal Regulations

- characteristics of HW** A method of identifying which substances are HW by their physical/chemical properties. The EPA has defined four characteristics that can be determined by tests:
- Ignitability—the ability to catch fire.
 - Corrosivity—the ability to corrode other materials.
 - Reactivity—the ability to enter into a violent chemical reaction, which may involve explosions or fumes.
 - Toxicity—the ability to release certain toxic constituents when leached with mild acid.
- chemical** A substance that is produced by or used in a chemical process.
- civil action** A lawsuit filed in court against a person who has—
- Failed to comply with statutory or regulatory requirements or an administrative order.
 - Contributed to a release of hazardous wastes or constituents.
- There are four types of civil actions—compliance, corrective, monitoring and analysis, and imminent hazard.
- compliance** The Army's expectation that soldiers obey local, state, federal, and HN environmental requirements.
- conservation** The act of conserving and preserving natural and cultural resources so that they will be available for present and future generations.
- CP** collection point

-
- criminal action** A prosecutorial action taken by the US Government or a state towards any person(s) who has knowingly and willfully not complied with the law. Such an action can result in the imposition of fines or imprisonment.
- critical habitat** A designated area declared essential for the survival of a protected species under the authority of the ESA.
- CWA** Clean Water Act
- DA** Department of the Army
- DC** District of Columbia
- detergent** Synthetic, water-soluble cleaning agent that acts like soap.
- discharge** Includes, but is not limited to, the accidental or intentional spilling, leaking, pumping, emitting, emptying, or dumping of a substance into or on any land or water.
- disposal** The discharge, deposit, dumping, spilling, leaking, or placing of any solid waste or HW into or on any land or water.
- DOD** Department of Defense
- DODI** Department of Defense instruction
- DOT** Department of Transportation

DS2 decontaminant solution 2
Incompatible with most metals, DS2 is procured exclusively by DOD to decontaminate machinery after a chemical-weapons attack. DS2 is not authorized for training due to the hazards it presents to humans who are exposed to it. It can cause severe burns; stricture of the esophagus; and damage to the central nervous system, liver, and reproductive system.

ecosystem A system formed by the interaction of a community of organisms with its environment.

endangered species Those species designated by the Secretary of the Interior which are in danger of extinction throughout all or a significant portion of their range.

environmental ethic Taking care of the environment because it is the right thing to do. This ethic is the operating principle and value that governs soldiers, units, and the Army.

environmental noise The outdoor noise environment consisting of all noise (including ambient noise) from all sources that extend beyond, but do not include, the workplace.

environmental pollution The condition resulting from the presence of chemical, mineral, radioactive, or biological substances that alter the natural environment or that adversely affect human health or the quality of life, biosystems, the environment, structures, equipment, recreational opportunities, aesthetics, or natural beauty.

environmental reconnaissance	The systematic observation and recording of site or area data collected by visual or physical means, dealing specifically with environmental conditions as they exist and identifying areas that are environmentally sensitive or of relative environmental concern.
environmental stewardship	The care and management of another's property. The Army's objective is to plan, initiate, and carry out its actions and programs in a manner that minimizes adverse effects on the environment without impairing the mission.
EOD	explosive-ordnance disposal
EPA	Environmental Protection Agency Established in 1970, the EPA is charged with protecting and enhancing the environment today and for future generations to the fullest extent possible.
ESA	Endangered Species Act
FFCA	Federal Facilities Compliance Act
flash point	Temperature at which there is enough vapor of a chemical to ignite if a spark is present.
FM	field manual
freezing point	The temperature at which a compound will change from a liquid to a solid.
G3	Assistant Chief of Staff, G3 (Operations and Plans)

- gray water** Any nontilet water (nonsewage) that is nonpotable because it has been used in some way; for example, water from sinks, bathtubs, showers, or laundry operations.
- GTA** graphic training aid
- hazard** A condition that can be expected to cause damage, including injury or death, to exposed individuals.
- hazardous substance** Under CERCLA, any element, compound, mixture, solution, or substance which, when released into the environment, on land or in water, may present an imminent and substantial danger to public health/welfare or the environment. The definition is broader than the definition of HW under RCRA.
- health hazards** Those that can cause injury or illness when a person is exposed to hazardous chemicals by breathing, swallowing, skin contact, or eye contact.
- historical artifacts** Something created by humans, usually for a practical purpose and especially an object remaining from a particular period (prehistorical caves, burial sites).
- HM** hazardous material
Any material, including waste, that may pose an unreasonable risk to health, safety, property, or the environment when it exists in specific quantities and forms. Chemicals that have been determined by the Secretary of Transportation to present risks to safety, health, or property during transportation.
- HMTUSA** Hazardous Material Transportation and Uniform Safety Act

HN	host nation
	A nation that receives the forces and/or supplies of Allied nations and/or North Atlantic Treaty Organization organizations to be located on, to operate in, or to transit through its territory.
HQ	headquarters
HW	hazardous waste
	Waste, which if improperly managed, can create a risk to the safety or health of people or to the environment. The EPA considers HW a subset of both solid waste and HM. Technically, the wastes that are regulated under RCRA (Title 40, CFR, Part 261) because they are “listed” or because they are ignitable, corrosive, reactive, or toxic.
incineration	Disposal of waste materials through controlled burning.
kg	kilogram(s)
kph	kilometers per hour
LEL	lower explosive limit
lubricant	A substance (such as grease) capable of reducing friction, heat, and wear when introduced as a film between solid surfaces.
m	meter(s)
medical waste	Any waste that is generated in the diagnosis, treatment, or immunization of humans or animals.
mg	milligram(s)
mm	millimeter(s)

- MO** Missouri
- MSDS** material safety data sheet
- NBC** nuclear, biological, and chemical
- NCA** Noise Control Act
- NCO** noncommissioned officer
- NEPA** National Environmental Policy Act
- NHPA** National Historic Preservation Act
- No.** number
- OPORD** operation order
- OPSEC** operations security
- OSHA** Occupational Safety and Health Administration
- pam** pamphlet
- penalties** The legal punishment (fines, jail) for having violated a law.
- pesticide** A chemical or other substance used to destroy plants or animal pests.
- physical hazards** Those that can cause explosions, fires, violent chemical reactions, or other hazardous situations.
- POL** petroleum, oils, and lubricants
- POV** privately owned vehicle
- ppm** parts per million
Molecules of a chemical per one million molecules of air.

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- prevention** The process of reducing or eliminating pollution.
- RCRA** Resource Conservation and Recovery Act
- reclamation** Regeneration of a material or processing a material to recover a usable product. Examples include the recovery of lead from spent batteries or the regeneration of spent solvents.
- recovered materials** Waste materials and by-products that have been recovered or diverted from solid waste. They do not include materials and by-products generated from, and commonly reused within, an original manufacturing process.
- recyclability** The ability of a product or material to be recovered from, or otherwise diverted from, the solid-waste stream for the purpose of recycling.
- recycling** The process by which recovered materials are transformed into new or usable products.
- restoration** The process of cleaning up contaminated sites.
- risk** The probability of exposure, coupled with the severity of the consequences. Risk is often used in a more general way than danger, in that risk is used to describe potential financial loss or property damage in addition to environmental damage or personal injury.
- S3** Operations and Training Officer (US Army)

solid waste	Any material or substance (solid or liquid) that is inherently waste-like by being no longer suitable for its originally intended purpose.
solvent	A volatile organic compound (such as trichloroethylene) used as a powerful cleaner, a degreaser, or a paint stripper. Solvents were widely used in the military's industrial production and maintenance operations and were routinely dumped into the ground untreated.
SOP	standing operating procedure
spill	A generic term that encompasses the accidental and deliberate, but unpermitted, discharge or release of a pollutant.
STB	super tropical bleach
tactical risk	The risk concerned with hazards that exist because of the presence of an enemy or an adversary.
TC	training circular
TCC	tag closed cup
threatened species	Those species that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.
TLV	threshold limit value The recommended limit for worker exposure over an 8-hour workday.
TM	technical manual

toxic	Capable of producing injury, illness, or damage to humans, domestic livestock, wildlife, or other organisms through ingestion, inhalation, or absorption through any body surface.
TRADOC	United States Army Training and Doctrine Command
TXDS	toxic dose
UCMJ	Uniform Code of Military Justice
UEL	upper explosive limit
US	United States
USAES	United States Army Engineer School
UXO	unexploded ordnance
vapor density	How heavy the vapor is relative to air. Air is assigned a vapor density of 1. If the number is less than 1, the vapor from the compound will rise. If the number is greater than 1, the vapor will tend to sink to the ground.
vapor pressure	Pressure of a compound in the vapor state. The higher the number, the more readily the compound will evaporate. Compounds with high vapor pressures are often flammable; and if they are contained in a sealed container, they may burst.
viscosity	Measure of how “thick” a liquid or semi-solid material is at room temperature.

wetlands Generally includes marshes, swamps, bogs, and similar areas. Areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for saturated-soil conditions.

wt weight

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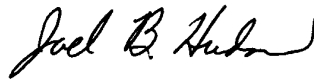
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By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:



JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
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