SAFETY TRAINING GOUGE #15

ENVIRONMENTAL COMPLIANCE 1

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About This Training Resource

If you're an afloat safety officer or division officer, you have a challenging, important role at your command. This series of newsletter-style training references will help you meet your bi-monthly training requirements. Modify and use them at quarters or muster.
Check the Naval Safety Center website at www.public.navy.mil/navsafecen/Pages/safety-gouge/SafetyGouge.aspx for the latest issues.
Send your feedback and suggestions to LTJG Melissa Balint at melissa.balint@navy.mil.

Introduction

Protection of the marine environment is mission essential. The goal of the Navy Environmental and Natural Resources Program is for us to conduct operations (in port and at sea), minimizing or eliminating any damage to the marine environment. Your ship has an Afloat Environmental Protection Coordinator (AEPC) who can provide training on the following topics.

- Protection of marine mammals and endangered species.
- Solid waste handling and minimization; plastics management and recycling.
- Water pollution.
- Prohibited zones for the discharge of shipboard wastes.
- Oil and Hazardous Substance (OHS) management, handling, minimization and spill response.
- Air pollution, such as ozone depleting substances (ODSs).

Sailors separate trash in the environmental shop aboard an amphibious assault ship.

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Getting Started

Familiarize yourself with the Environmental and Natural Resources Program Manual, OPNAVINST 5090.1C (Series), chapters 22 and 23 for guidance on ensuring your ship's environmental compliance.

The Environmental and Natural Resources Program Manual is your starting point.

Next, understand specific SURFOR (CNSP/CNSL) requirements for conducting and routing oil spill investigations found at COMNAVSURFOR 311606ZMAR09, and supplemental messages available on the SURFOR web portal (COMNAVSURFPAC 251921ZAUG09, COMNAVSURFPAC 061839ZSEP11, and COMNAVSURFPAC 192300Z OCT 12).

For environmental information resources, visit the SURFOR WEB Portal at: https://www.surfor.navy.mil/supply/env/default.aspx. Register for a SURFOR Web account at www.register.surfor.navy.mil. All COMNAVSURFOR requirements and training tools can be found, or requested from the POCs listed. Almost all of this information is common to all Navy vessels, regardless of TYCOM affiliation.

INSURV Discrepancies

- Environmental protection compliance board consisting of the XO, safety officer, department heads, AEPC, legal officer and CMC were not conducted quarterly and meeting minutes were not documented and/or compliance board was established just prior to inspection (OPNAVINST 3120.32, para 3.3.22; 3.4.22).
- AEPC was designated in writing but had not completed the AEPC course (A-4J-0021) (OPNAVINST 5090.1 (SERIES), para 22-2.2-7.3).
- Each duty section had not completed an oil spill drill exercising the oil spill contingency plan (OPNAVINST 5090.1 (SERIES), para 22-9.3.1).
- Personnel assigned to supervise oily waste processing and disposal operations had not completed the formal Oil Pollution Abatement (OPA) equipment operation and maintenance course (K-652-2196) prior to assuming the duties and (OPNAVINST 5090.1 (SERIES) para 22-5.5, NAVEDTRA 43704-302).
- All personnel who operate or maintain the Oil/Water Separators (OWSs) were not qualified NAVEDTRA 43704-302 oil transfer member/spill prevention team (OPNAVINST 5090.1 (SERIES), NAVEDTRA 43704).
- Duty sections did not have a PQS qualified sewage system operator (NAVEDTRA 43199 301-303). Newly reported personnel had not completed initial environmental awareness training OPNAVINST 5090.1 (SERIES), para 22-2.2.7).
- Mark II oil spill kits were not fully stocked and/or accessible for quick use (NSTM 593-3.6.6.2).

Frequently Asked Questions

How can I help protect marine mammals and endangered species?

On watch, look out for marine mammals, especially during calving (birthing) season. If you see a whale or something that you are unsure about, report it immediately to the Officer of the Deck (OOD).

What is a major environmental challenge aboard ship?

What is one of the biggest environmental challenges on a Navy vessel? Both plastic and non-plastic Solid Waste (e.g., paper, cardboard, glass and metal). The average Sailor generates 3.19 lbs of solid waste each day! That equals approximately one dumpster per day on a destroyer and 15 dumpsters per day on a carrier.

What are the keys to managing plastics?

- Participate in your ship-wide trash sorting, recycling and energy conservation programs both at sea and in port.
- Sort your trash before it goes into the solid waste processing room.
- Perform PMS on plastic waste processors, solid waste pulpers and metal glass shredders.
- If you think it could be plastic, it probably is (e.g. pens, CD cases).
- Remove plastic wrap from supply items before they are brought onboard.
- Leave as much plastic behind as you can.
- Recycle hazardous materials when possible.

A Sailor carries trash bags to a trash collection site during a beach clean-up, helping promote environmental and recycling awareness. Locally, the clean-up also prepared the beaches for the seasonal nesting of endangered sea turtles.

Where are you not allowed to discharge shipboard wastes?

The Clean Water Act prohibits the discharge of pollutants (including solid waste) from vessels into waters of the U.S. within 3 nm from shore. The “Whiz Wheel” (Ref. OPNAV P-45-111-8-09) can help you keep track of Navy Pollution Control Discharge Restrictions. You can also refer to Fig. 22-1 in OPNAVINST 5090.1 w/ CH-1.

Water Pollution

Oil can drip from machinery, wash downs and condensation and collect in the bilges. That's why bilges are the Navy's largest onboard source of oily waste. In compliance with the Clean Water Act, no discharge that produces a sheen is permitted within 12 nm of the U.S.

- Perform PMS on your Oil/Water Separators (OWSs) so that the oil can be properly removed from the bilge water.
- Use only the approved bilge cleaner.
- Ensure your Oil Content Monitors (OCMs) are working properly.
- Minimize waste oil and lubricants as much as possible.
- Keep nuts and bolts on machines tight.
- Perform your PMS on equipment! If you see an oil leak, clean it up immediately. Try to fix the leak.
- Place a drip pan under the leak to catch the oil if it cannot be immediately fixed.

Other Types of Waste

A cruiser generates more than 24,000 gallons of blackwater and graywater in one day from showers, laundries and sinks. An aircraft carrier generates more than 400,000 gallons! That's like filling an Olympic-size swimming pool every two days.

NSTM 593-4.3.1.1: A serious potential hazard associated with sewage and graywater systems is the release of toxic gases in confined spaces. Hydrogen sulfide (H_2S) is a toxic, explosive gas associated with decomposition of sewage and gray water in holding tanks. When the available dissolved oxygen in sewage or gray water is depleted by bacteria, certain types of bacteria produce hydrogen sulfide. This sewage or gray water is often called "septic."

H_2S is present in the air above septic sewage or gray water, and dissolved in large quantities in the sewage or gray water itself. Often, hydrogen sulfide will be produced in the lower levels of sludge layers, which may accumulate in holding tanks, since oxygen cannot reach these lower sludge layers.

As a result, sewage and gray water holding tanks and all sewage system piping are designated as Immediately Dangerous to Life or Health (IDLH) spaces in accordance with NSTM Chapter 074, Vol. 3 (Gas Free Engineering). Make sure that you are able to produce the required H_2S detector system log book with dates when sensors are installed (PMS MIP 4361/015 36M-1 STEP 1.e).

OPNAVINSTS 5090.1, 22-3.4 Training: Ships shall train personnel who operate or maintain sewage and graywater disposal or transfer equipment on the proper procedures for sewage or graywater disposal, including hookup and transfer of sewage or graywater to shore facilities and at-sea discharge restrictions.

Personnel assigned to supervise sewage or graywater disposal operations shall complete the Shipboard Sewage Collection, Holding, and Transfer (CHT) course found on the Naval Education and Training Command (NETC) Shipboard Training Enhancement Program (STEP) compact discs prior to assuming these duties. All personnel who operate or maintain sewage or graywater disposal equipment shall complete the PQS for shipboard sewage Collection, Holding, Transfer (CHT) and treatment (NAVEDTRA 43199-C), prior to assignment to those duties.

Strict adherence to checklists and procedures is key when performing maintenance on CHT holding tanks.

NAVOSH and Environmental (NEP) Pre-Inspection Brief Package for Surface Ships

INSURV environmental protection inspectors are responsible for inspecting compliance with the Navy's environmental protection program. This includes not only equipment, but training and procedures that preclude contamination of air and navigable waters due to oil, sewage, gray water drains, ozone depleting substances, solid waste, incineration, and noise pollution. The checklists can be downloaded from the INSURV website at www.spawar.navy.mil/fleet/insurv/htmlinstr/OH-EP-MD%20Checklists-Surface.htm.

INSURV inspectors examine a wash-down system in a hangar bay aboard an aircraft carrier.

Inspection Criteria	Yes	No
Check the operation and arrangement of all pollution control equipment. Ensure full compliance with the requirements of applicable references. Ensure installed equipment can operate to designed capability and is adequately maintained by crews.		
Check installation workmanship and accessibility.		
Check for items that may present a clear and immediate danger to personnel or equipment.		
Check performance of all pollution control equipment using PMS, NSTMs, system drawings, and operating procedures.		
Inventory the oil and CHT spill response and clean-up kits.		
Review documentation of sewage system, solid waste processing, and oil pollution abatement (OPA) equipment certifications.		
Review the ship's training and procedures that support the environmental protection program. This includes oil and hazardous substance spill response plans, procedures, training, and qualifications.		

Preparation	Yes	No
Prepare to demonstrate all functions and capabilities of installed equipment's automatic operation, level sensors, alarms, and valve operation (local and remote).		
Ensure all protective clothing and required sanitation gear is available for inspection and use.		
Ensure sewage system is leak-free throughout. If a particular leak cannot be corrected, ensure adequate sanitation practices are enforced.		
Prepare to demonstrate the solid waste processing equipment, including plastic waste processors, shredders, pulpers, and incinerators.		
Ensure oil spill and CHT response and containment kits are complete with all AEL items.		
Ensure the sewage system plant operating guide accurately corresponds to the actual installation.		
Ensure that H2S alarms are functioning and that ample calibration gas is available to test H2S sensors. Ensure that calibration gas has not expired.		
Prepare to provide training plan/documentation for annual environmental awareness training required by the Navy's environmental protection program.		
Prepare to provide ship's documentation that supports the Navy's environmental protection program.		
Prepare to demonstrate any Pollution Prevention (P2) equipment, such as paint dispensers, parts washers, or similar equipment.		
Environmental Protection Council minutes. Personnel on council should be designated in the ship's collateral duty list.		
PQS records/training records/EPA certification documents for all personnel qualified in: • Afloat Environmental Protection Coordinator (AEPC) PQS 43528 • Oil-spill response scene leader • Ozone Depleting Substance (ODS) maintenance personnel • CHT equipment operation • OPA equipment operation • Solid-waste equipment operation		
Note: It is highly recommended that the AEPC collect all administrative records (certifications, training records, PQS records, spill plans, council minutes, etc.) and locate them in one area prior to the start of the inspection for easy review.		

What About Air Pollution?

Air conditioning and refrigerant systems (AC&R), paint solvents and other chemicals onboard ship may give off harmful vapors and are therefore regulated by the Clean Air Act.

For stack emissions, the Navy complies with regulations regarding how much smoke can be emitted during normal operations. Therefore, when pierside, we only operate boilers, diesel engines and gas turbine engines when necessary and we also use shore-provided "hotel" service power cables when possible.

When on bridge watch, watch for black smoke coming out of the stack; we do not want to pollute the air. If you see anything out of the ordinary, report it immediately to the OOD.

To reduce air pollutant from paints, only use solvents, paints, fuels, lubricants and chemicals found in the Navy Supply system and material on your Ships Hazardous Materials User List (SHML).

Tracking Your Refrigerant

By MMC (SW/AW) Esters Wrights

Releasing refrigerant into the atmosphere is illegal. If refrigerant is unintentionally released into the environment or during a mishap, you would need a "get-out-of-jail" form to stay out of trouble.

Sailors working on air condition and refrigerant systems must document any and all refrigerant released into the atmosphere. Unfortunately, while conducting shipboard safety surveys, I find personnel who are responsible for refrigerant-leak repair and record-keeping still don't have a good handle on this critical task.

The two most common refrigerants used on Navy air-condition and refrigeration system are R-134a and R-236. No matter which refrigerant your system uses, record-keeping requirements are the same.

Source documents for those tasks are paragraph 516-1.11 of Naval Ship's Technical Manual (NSTM 519 Refrigeration System) and maintenance requirement cards (MRCs) MIP M-2 and 5140 M-4.

Document all refrigerant addition, removal, and consumption on a refrigerant sample log (sample logs are in the NSTM and MRC). Refrigerant can be lost through accidental or unintentional release, or from leakage. Determine whether or not refrigerant added to your system compensated for accidental release, or for leakage.

Accidental or unintentional release: Refrigerant that is lost through accidental release, purging air and non-condensable, routine maintenance, and as documented on the accidental, or unintentional release form.

Any air-conditioning or refrigeration system with an installed refrigerant charge of 50 lbs or more will accept the following performance goals:

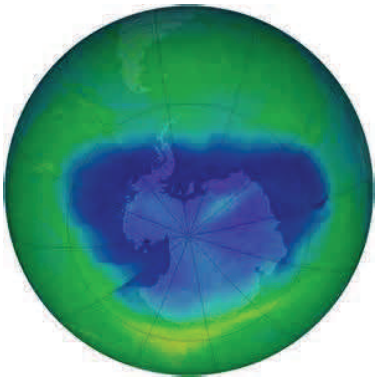
A) Make sure annual leakage for air-conditioning systems do not exceed 15% of the system's total charge.

B) Ensure the annual rate for refrigeration system does not exceed 35% of its total charge.

C) Calculate allowable monthly leakage rate using the following formula: *Max monthly leakage rate = RCx0.15 for A/C or 0.35 for reefers*.

Conduct monthly PMS (M-2 and M-4) of reviewing the refrigerant usage log. Make sure all accidental releases are documented. Compare the refrigerant leakage with the allowable monthly leakage rate. If it doesn't exceed the allowable leakage rate, then PMS is done and no further action is required. If the leakage exceeds the allowable leakage rate, the system has to be leak-tested and all leaks must be repaired.

Ozone Depleting Substances



According to OPNAVINST 5090.1C; 22-4.3.2.6, ships must recover Ozone Depleting Substances (ODSs) and ODS substitute materials including refrigerants and fire-fighting agents prior to maintenance on air conditioning and refrigeration systems and fire protection systems.

Navy personnel shall not intentionally release chlorofluorocarbons (CFCs) or halons during the servicing, maintenance, repair and disposal of any AC&R or fire-fighting equipment.

Only maintenance personnel trained per paragraph 22-4.3.3 shall perform maintenance on equipment containing such substances. Under these procedures, maintenance personnel shall use only approved procedures for minimizing loss of ODSs, regardless of the ship's location.

REFERENCES

INSURV: www.public.navy.mil/fltfor/insurv/Getting_Inspected/Pages/default.aspx

NSTM 593: Pollution Control

NSTM 670: Storage, Handling, and Disposal of Hazardous General Use of Consumables (Vol. I), Hazardous Materials User Guide (Vol. II) and Hazardous Material Minimization Center (HAZMINCEN) and Standard Operating Procedures (SOP).

"Environmental Guide for Ships Operating at Naval Base San Diego." Even if you are not stationed in sunny San Diego, you may benefit from implementing some of their "Best Management Practices" at your command.
http://www.cnic.navy.mil/navycni/groups/public/documents/document/cnicp_a288705.pdf

Order the following videos from www.defenseimagery.mil: PIN 806435 ("Your Ship, The Environment, and You"), and PIN 806628 ("Oil Spills In Port Prevention")