

# SAFETY TRAINING GOUGE #4

## Hazardous Material Control and Management



### REGULATIONS

OPNAVINST 5100.19E (Chapters B3, C23, D15)

Environmental Readiness Program Manual: OPNAVINST 5090.1C (Chap. 22)

Hazardous Material Users Guide (HMUG)

NSTM Chapter 670

On board ship, hazardous materials (HM) are used daily in maintenance, repair and cleaning. These materials are classified as “hazardous” because they have certain properties that make them flammable, reactive, corrosive, or hazardous to health. Excess flammable and incompatible chemicals can react explosively and threaten the safety of the ship. HM can cause adverse effects to the environment or to the health and safety of individuals when incorrectly used, purposefully released, or accidentally spilled.

The Navy's Hazardous Material Control and Management (HMC&M) program is intended to decrease or minimize the types and amounts of HM used aboard ships and reduce these hazards. While the HM Coordinator is responsible for the overall HMC&M program, the ship's safety officer ensures day-to-day compliance in the work centers. The safety officer must be familiar with the requirements and parameters of the HMC&M Program to properly manage it.

### HELPFUL WEBSITES

Hazmat Questions? Contact the Norfolk Fleet Logistics Center: [http://www.navsup.navy.mil/navsup/ourteam/navsupgls/navsupflcn/contact\\_us](http://www.navsup.navy.mil/navsup/ourteam/navsupgls/navsupflcn/contact_us)

U.S. Chemical Safety Board: [www.csb.gov](http://www.csb.gov)

Hazardous Materials Information Resource System: [www.dlis.dla.mil/hmirs](http://www.dlis.dla.mil/hmirs)

DOD Shelf Life Management Program: [https://www.shelflife.hq.dla.mil/policy\\_DoD4140\\_27.aspx](https://www.shelflife.hq.dla.mil/policy_DoD4140_27.aspx)

GSA Shelf Life Management Program: [www.gsa.gov/portal/content/100843](http://www.gsa.gov/portal/content/100843)

Ships Hazardous Material List (SHML): <https://nll.ahf.nmci.navy.mil/shml/shmlmain.cfm>

Naval Safety Center: [www.public.navy.mil/navsafecen/Pages/home.aspx](http://www.public.navy.mil/navsafecen/Pages/home.aspx)

Naval Safety and Environmental Training Center: [www.public.navy.mil/navsafecen/navsafenvtracen/Pages/default.aspx](http://www.public.navy.mil/navsafecen/navsafenvtracen/Pages/default.aspx)

Afloat safety officers have a challenging and very important role at their commands. “Safety Training Gouge” briefs help safety officers and division officers meet their bi-monthly training requirements. Modify and use these topics at quarters or muster. You can also check the Naval Safety Center website at [www.public.navy.mil/navsafecen/](http://www.public.navy.mil/navsafecen/) weekly as we work to develop a series of safety gouge briefs. Please let us know how we can help you and your command by emailing LTJG Melissa Balint at [melissa.balint@navy.mil](mailto:melissa.balint@navy.mil).

# Division Center Training Exercise #1

Before they check out some hazmat, walk your Sailors through a brief HM training exercise. Use a common HM found in your work center. We've used Radcolube® 9000 Engine Lubricating Oil from Radco Industries, Inc. as an example (NSNs: 9150-00-181-8229; 9150-00-181-8097).

## Material Safety Data Sheet (MSDS)

<b>Why do I need an MSDS?</b>	HAZMAT is any material that is regulated as hazardous, requires a MSDS, and during use, handling, packaging, storage, transportation, or disposal meets or has components which meet or have potential to meet the definition of Hazardous Waste (HW). An MSDS must be available either on hand or via the internet for all HM.
<b>Where can I find an MSDS for HM?</b>	The MSDS can be obtained from the hazardous materials minimization center (HAZMINCEN) or from the Hazardous Materials Information Resource System (HMIRS): <a href="http://www.dlis.dla.mil/hmirs/">http://www.dlis.dla.mil/hmirs/</a> . Match each HM container's CAGE code and manufacturer to determine the appropriate MSDS.
<b>What is the purpose of the MSDS?</b>	MSDSs are technical bulletins that contain specific product information. They provide guidelines for identifying the HM's hazards; first-aid measures; control measures in case of an accidental release; handling and storage; personal protection guidelines; chemical properties; stability and reactivity; and the health effects that could occur if the HM is inhaled, ingested or gets on the skin.

## FIRST THINGS FIRST

**Ship's Hazardous Material List** -- Only HM listed in the SHML (surface ships) or SMCL (submarines) is authorized aboard Navy surface ships. See your HAZMINCEN or Supply Department prior to ordering or going to SERVEMART/SUBMART. The SHML also prevents stocking of dangerous material for which the ship has no use. [Ref: OPNAVINST 5100.19E C2302(C)(1)(a-e)]

**Shelf-life Management** -- Sailors should be trained in the "First In, First Out" (FIFO) method of stock management or simply, to use up the HM that will expire first. A product's shelf-life information can be determined using the date of manufacture and looking up the SLC shelf life code in Fedlog or Logicom to determine the correct code. Type 2 can be extended based on the SLAC shelf life action code. The expiration date should be printed on the label or identified separately. Hazmat databases can be located in the Hazardous Inventory Control System for Windows (HICSWIN).

Two types of shelf life in the Navy: Type 1 non-extendable and Type 2 extendable Lubricating oil is a code 6, or a Type II extendable. Upon inspection, a Type II's expiration date may be extended for 24 additional months. Type I HM's are non-extendable. Type I HM's are indicated with a letter A-Z with the exception of X. Type II products are assigned a number or the letter X. If a material is expired, submit a supply discovery report (SDR). Department of Defense (DOD)

Shelf life codes may be found in NAVSUP P-485 appendix 9 part S and in appendix E: [https://www.shelflife.hq.dla.mil/Policy\\_DoD4140\\_27.aspx](https://www.shelflife.hq.dla.mil/Policy_DoD4140_27.aspx)

**HM Container Condition** -- Train sailors to inspect the condition of the HM container. Have them verify that the packaging/container is in good condition (no dents, bulges, rust, creases or other visible damage that could affect integrity). Next, that the packaged is sealed and not leaking. Lastly, that the material is within its shelf-life (reasonable life remains so HM does not expire prior to use).

**Labeling** -- Labels must remain attached and legible on all HM containers at all times. Primary labels for shipboard use must contain the identity of the material, name and address of manufacturer, stock number, HCC and appropriate hazard warnings, including target organs affected by HM. If HM is dispensed to another container, labels must include the material name, manufacturer name and address as well as the nature of the hazard including the target organs affected by the HM. If your container is really small, it must contain the material name, manufacturer's name and stock number. Labels, if available, can be printed off in HMIRS. Otherwise, use label format DD2521 or DD2522. CHRIMP technicians are available to assist. [Ref: OPNAVINST 5100.19E C2302(D)(1)] [jimmy.w.james@navy.mil](mailto:jimmy.w.james@navy.mil) 757-444-4789.

# CHEMICAL & PHYSICAL PROPERTY BASICS

**Boiling Point** -- Use the MSDS to teach Sailors how the HM will respond. For example, if the HM's boiling point is below 100°F it is an inhalation threat and most likely requires the use of a respirator. If the BP is above 100°F this HM can be absorbed onto the skin and may require the use of special gloves or other PPE.

**Vapor Pressure** (If the HM is a vapor or gas):

- Greater than 100 mm Hg = Inhalation Hazard
- Between 10 mm Hg and 100 mmHg = Adsorption/Inhalation Hazard
- Less than 10 mmHg = Absorption Hazard

**Vapor Density:**

- Below 1.0 = Rise to Ceiling
- Above 1.0 = Sink to Floor (Will the vapor or gas get into the ventilation system?)

**Specific Gravity:**

- Below 1.0 = Lighter than water (Why oil floats on water; the specific gravity for engine oil is 0.9)
- Above 1.0 = Heavier than water (Sinks!)

**Flash Point:**

- Less than or equal to ( $\leq$ ) 141°F = Flammable
- Between 141°F to 200°F = Somewhat Flammable
- Above 200°F = Low Flammability (The flash point for this engine lube oil is 503°F)

## TOXICOLOGY BASICS

1. **Acute Exposure** -- A single, high level exposure over a short period of time (<1 day). For lubricating oil, the MSDS tells us that if the oil is misted or vapors are generated from heating, exposure may cause irritation of the mucous membranes or the upper respiratory tract.
2. **Chronic Exposure** -- Multiple or continuous low level exposures over a long period of time (80% of life span). The MSDS tells us that repeated exposure to this HM does not appear to cause long term health effects.

## HM HANDLING & STORAGE

<b>Handling</b>	Make sure that your work center only uses the minimum quantity of HM required to complete the mission. Prohibit smoking, eating and drinking where HM is used to prevent Sailors from accidentally ingesting the HM.
<b>Personal Protective Equipment (PPE)</b>	Use the MSDS to determine the necessary PPE. For engine lubricating oil, Sailors must work in areas with adequate ventilation; wear nitrile gloves, safety goggles and long sleeve shirts. According to the MSDS, under normal conditions, respirators are not usually required. However, if your Industrial Hygiene survey states that respirators are required, then Sailors must adhere to the IH's recommendations.
<b>General Handling &amp; Specialty Materials</b>	Print out & discuss: OPNAVINST 5100.19E para C2304 & C2305.
<b>Storage</b>	HM can be stored in 7-day lockers. Ensure that Shipboard Sailors return used/excess HM to the HAZMINCEN. Violations of HM use, storage or handling are reported immediately to their supervisor. To ensure that incompatible materials are not stowed together, if available, use the HM's hazard characteristic code (HCC). This code can be found in HMIRS, SHML OR SMCL. A segregation chart for surface can be found on page C23-17 and page D15-A for subs in OPNAVINST 5100.19E series. NAVSUP PUB 573 Appendix B also provides a detailed explanation for understanding HM storage: <a href="http://www.dla.mil/dlaps/dlai/i4145.11.pdf">www.dla.mil/dlaps/dlai/i4145.11.pdf</a>

## IN CASE OF EMERGENCY

**First Aid** -- Always review your first aid measures before issuing HM. For eye irritation, the MSDS for engine oil directs us to flush with water for at least 30 minutes. For skin irritation, one should wash with soap and water and launder clothing before reuse. If inhaled, expose the Sailor to fresh air. If ingested, DO NOT induce vomiting. Get immediate medical attention.

### Spills:

- Spills should be reported immediately to the OOD and/or DC central. Sailors should be trained in immediate spill response.
- Ships shall conduct and document at least one OHS spill response drill for each duty section annually. These drills shall include deployment of the Oil Spill Response Kit or Hazardous Material Spill Response Kit and exercising notification practices, including simulated telephone calls and the drafting of “do not release” messages to higher authority. Ships may take credit for responding to actual spills, when such spills meet drill objectives. When possible, the ship shall include OHS spill response requirements into other routine shipboard emergency drills.
- In addition, the Environmental and Natural Resources Program Manual (OPNAVINST 5090.1C, Appendix H) provides the requirements for completing an Oil Spill Report. In case of a chemical emergency, spill, leak, fire exposure, accident or medical emergency, the MSDS will list the Company Name and Emergency phone number.



### Training Exercise #2: HM Operational Risk Management (ORM)

Have your Sailors do a HM ORM exercise. Give them a HM scenario and ask them to apply RAC codes before and after controls are implemented. Discuss the pros and cons of what happens when HM instructions are not followed.

#### The ABCDs of HM ORM:

**Assess:** Using the HM’s physical and chemical properties, how might the HM react? What is it incompatible with (not to come in contact) with? What PPE is necessary when handling the material? What is the safest way to handle and use the material?

**Balance:** What is the health hazard data and what could happen to the Sailor if the HM is accidentally inhaled, ingested, gets on the skin, or gets into the eyes?

**Communicate:** If mishaps occur, what emergency and first aid procedures are required?

**Do-Debrief:** Carry out the mission. Was it successful? Did preventive actions reduce risk?

## Training Exercise #3

Questions for divisional training	References
What role does the Consolidated Hazardous Material Reutilization Inventory Management Program (CHRIMP) provide?	OPNAVINST 5100.19E para B0301g(4)
What is a Hazardous Materials Minimization Center (HAZMINCEN)?	OPNAVINST 5100.19E para B0301g(5,4)
What is the purpose for an MSDS?	OPNAVINST 5100.19E para B0301g(6)
What "list" is used to determine the authorized HM for each ship?	OPNAVINST 5100.19E para B0301g(8)]
How often are flammable/satellite lockers inspected by the Hazmat Coordinator, Hazmat Supervisor and the Safety Officer?	OPNAVINST 5100.19E para B0302(4)(k) and (6)(c)
How often are supply and safety officers to make satellite locker inspections and storeroom inspections with corresponding action to correct deficiencies?	OPNAVINST 5100.19E para B0302(4)(k) and (6)(c)
Who is responsible for maintaining and replenishing spill kit material?	OPNAVINST 5100.19E para B0302(8)(c)
How long are Sailors allowed to retain a Flammable Hazmat product in their work centers flammable/satellite lockers?	OPNAVINST 5100.19E para C2302(e)(2)(b)
What are the six categories of hazardous materials?	OPNAVINST 5090.1C para 22-6.2.3
What is the definition of Hazardous Material?	
What is the maximum capacity of in-use flammable liquid cabinets per work-center?	OPNAVINST 5100.19E para C2302(e)(2)(b)
What information is required on a label for primary, secondary, and small containers?	OPNAVINST 5100.19E para C2302(d)
What is an HCC? Where do I find it?	OPNAVINST 5100.19E para C2303, NAVSUP 573 Appendix B
Explain incompatible material and describe two examples	OPNAVINST 5100.19E Appendix C-23A OPNAVINST 5100.28
State the personal protection equipment required when handling Hazmat	MSDS, OPNAVINST 5100.28 PMS CARD
Discuss all hands responsibilities as they pertain to HMC&M	OPNAVINST 5100.19E para B0302(a)(13)
Discuss the Work Center Supervisor responsibilities as they pertain to HMC&M	OPNAVINST 5100.19E para B0302(a)(12)
What are the responsibilities of Division Supply Petty Officers/Repair Parts Petty Officers regarding HMC & M program?	OPNAVINST 5100.19E para B0302(a)(10)
State the location and contents of the oil spill containment kit	AEL 2-550024006/ AEL 2-550024007
Discuss proper stowage procedures for Hazardous Material	OPNAVINST 5100.19E para C2302(e), C2303
If I have a valid requirement for a Hazmat product but it is not listed in the SHML, what steps do I have to follow to acquire the product?	OPNAVINST 5100.19E para C2302(c)

## ARE YOU INSPECTION READY?

Print out the INSURV Checklist for your Hazardous Materials program review: <http://www.public.navy.mil/fltfor/insurv/Documents/Inspection%20References/PREPS%20AND%20CHECKSHEETS/NEP/OH%20Checklist%20Master%202011%20Final.xls>

### LOCKER INSPECTION CHECKLIST

- 1A. All Lockers reflect the material being stored inside (Flammable, Corrosive, Toxic, Oxidizer).
- 1B. All hazardous material is segregated and stored according to hazard class.
2. All hazardous material decanted into another container is labeled with a Hazardous Chemical warning label DD Form 2522.
3. All shelf life material is within date on CHRIMP Barcode.
4. All Hazmat is properly bar coded and is physically located in the corresponding work center.
5. All Hazmat is in proper condition; no leaking containers, missing labels, and all applicable documentation is on hand.
6. There is a MSDS for each hazardous material issued to your work center and under your control.
7. The locker is clean (no spill residue) and in proper working condition.
8. Inventory of hazmat is complete and being performed monthly.
9. The amount of hazardous material in the work center inventory does not exceed the minimum necessary to support work and/or exceed the 7 day maximum.

## MORE INFORMATION

For more information, email LSC(SW/AW) Lucia M. Johnston at [lucia.j.johnston@navy.mil](mailto:lucia.j.johnston@navy.mil). Ask for her Hazardous Material Program training presentation.

