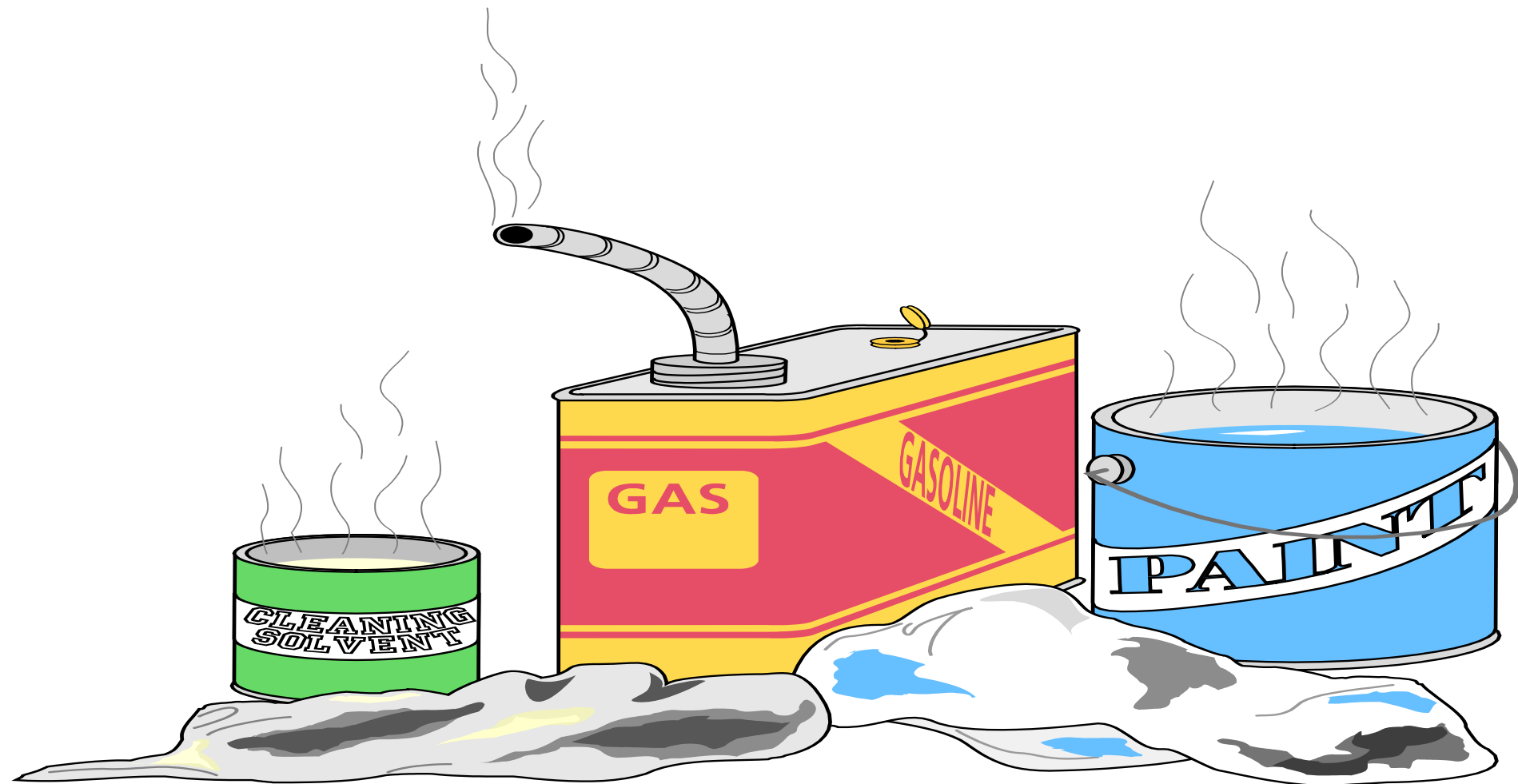


# HAZARDOUS MATERIAL IDENTIFICATION & SPILL RESPONSE



## ***INTRODUCTION***

*As Gas Free Engineer Personnel you will be required to know the procedures and safety precautions involved in hazardous material spill response.*

## ***ENABLING OBJECTIVES***

- Describe special terms and abbreviations associated with Hazardous Material (HM) and Hazardous Waste (HW) in accordance with OPNAVINST 5100.19, series and NAVOSH Program Manual for Forces Afloat, NAVSEA S9593-A7-PLN-010.

## ***ENABLING OBJECTIVES***




- Interpret Material Safety Data Sheets (MSDS), in accordance with OPNAVINST 5100.19, series, and NAVOSH Program Manual for Forces Afloat, NAVSEA 9593-A7-PLN-010.
- Describe the use of the Hazardous Material Spill Response Kit OPNAVINST 5100.19 (series) NAVSEA S9593-A7-PLN-010

## ***ENABLING OBJECTIVES***

- Describe procedures for Hazardous Material (HM) spill in accordance with OPNAVINST 5100.19, series and NAVOSH Program Manual for Forces Afloat, NAVSEA S9593-A7-PLN-010.

# ***HAZARDOUS MATERIAL DEFINITION***



- Any material that, because of its
  -  Quantity
  -  Concentration
  -  Physical or chemical characteristics
- May pose a substantial hazard to human health or the environment when purposefully released or accidentally spilled

Simply put, it's hazardous if it can cause harm to:

◆ *PEOPLE*

◆ *THE ENVIRONMENT*



# *WHY DO WE HAVE HAZMAT?*

- HAZMAT is required to attain & maintain operational effectiveness
- Ships require specified types & quantities of HAZMAT
- Care must be taken in handling, using, & storing HAZMAT



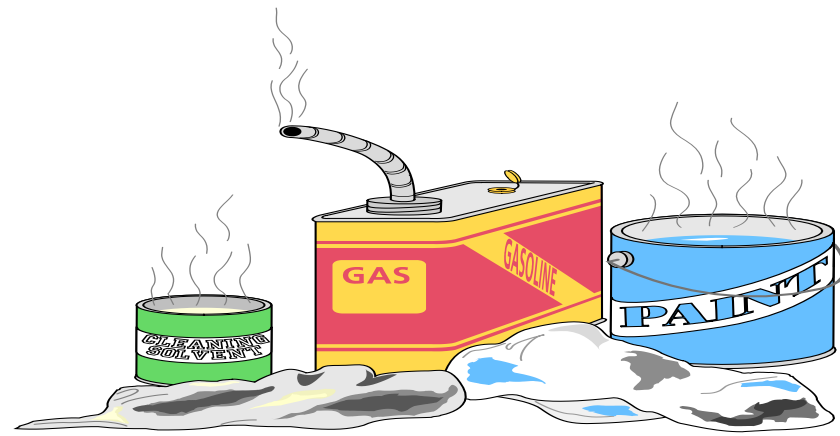
# *Are there materials in your workplace that are hazardous?*



- Chances are the answer is - **YES** -
- HAZMAT does not have to harm you if you learn
  - Which ones are dangerous
  - What their hazards are
  - How to work with them safely

# SUBCATEGORIES OF HAZMAT

- Flammable /Combustible Materials
- Toxic Materials
- Corrosive Materials
- Oxidizing Materials
- Aerosol Containers
- Compressed Gases



# NOT HAZMAT



- Ammunition
- Weapons
- Explosives
- Propellants
- Pyrotechnics
- Medical Waste
- Radioactive Materials

# HAZARDOUS WASTE (HW)

- Any **discarded** material (liquid, solid, or gas) which meets definition of HAZMAT
- *Navy policy is that ships do not generate hazardous waste*
- Ships are required to transfer used or excess HAZMAT to a shore facility



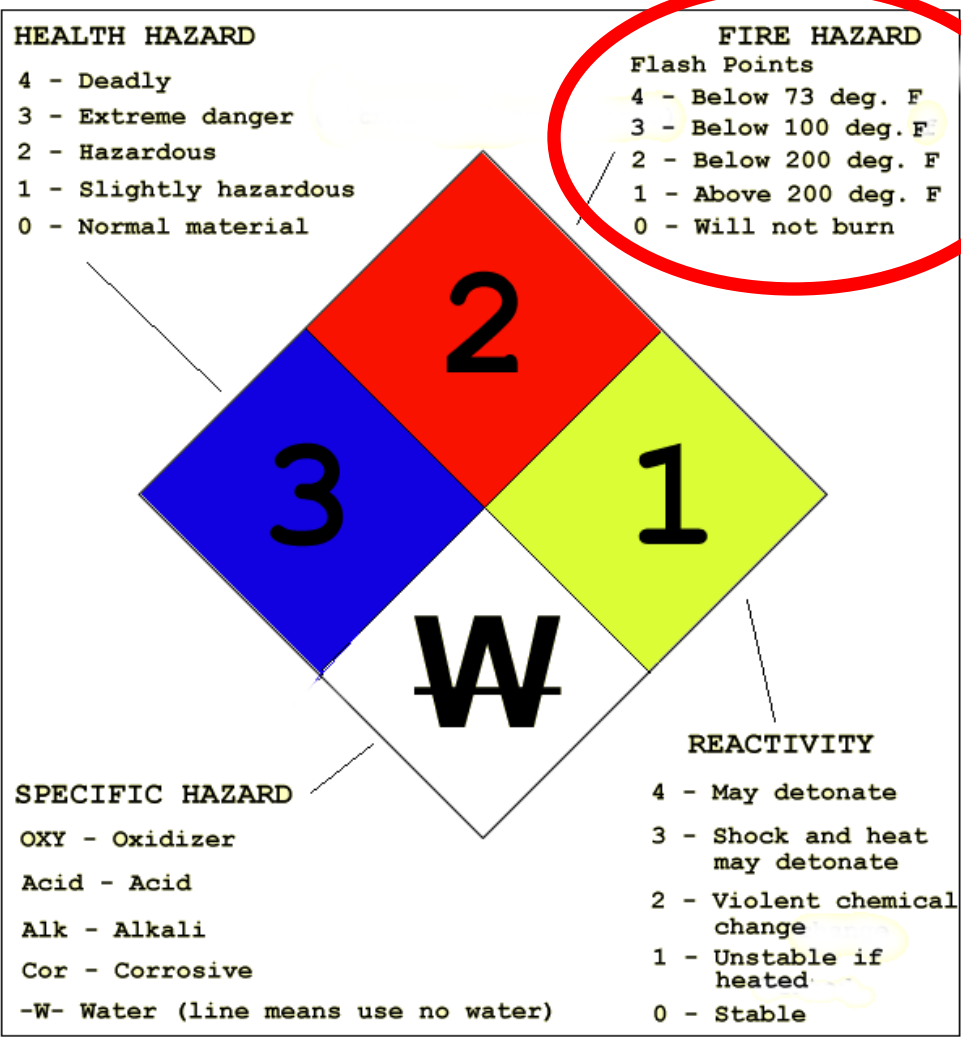
Pneumatic Vacuum System

## Hazardous Material (HM)

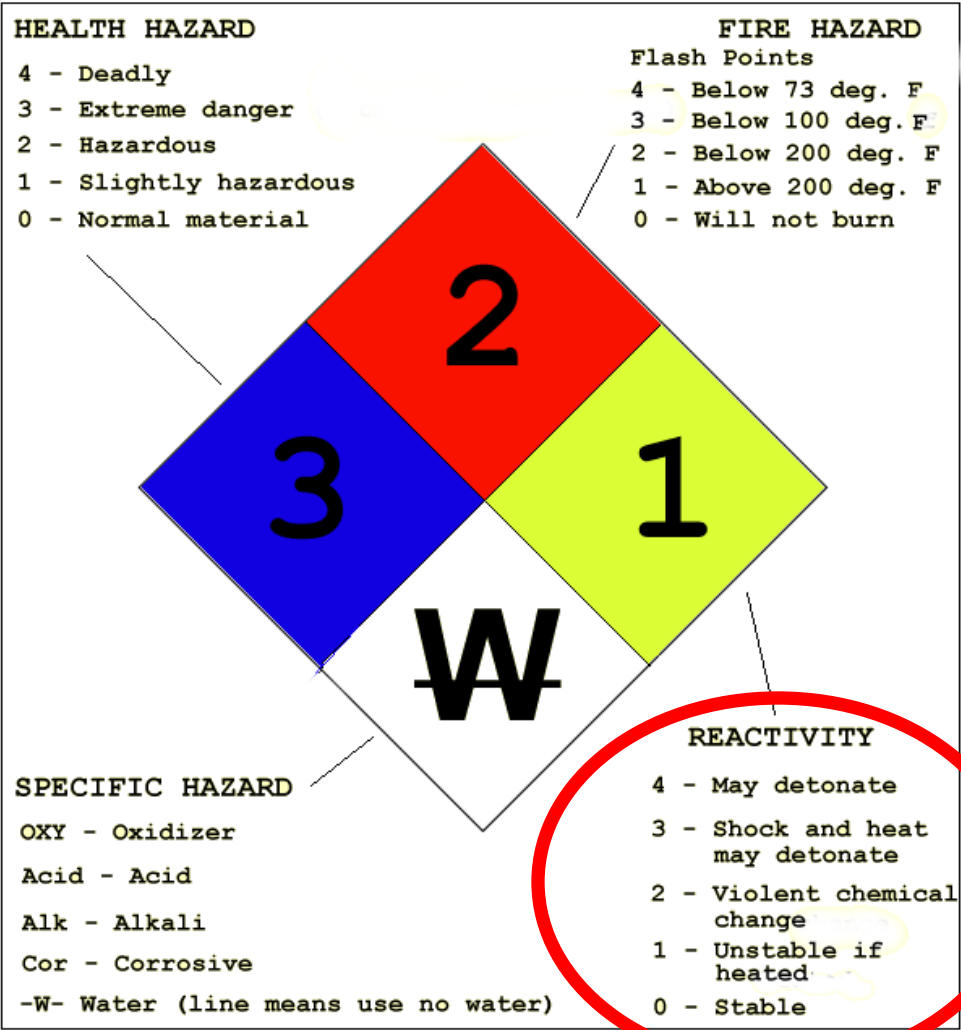


- Identification of hazardous waste
  - Manufacturer's labels - identify material name, manufacturer's name and address, and nature of the hazard.

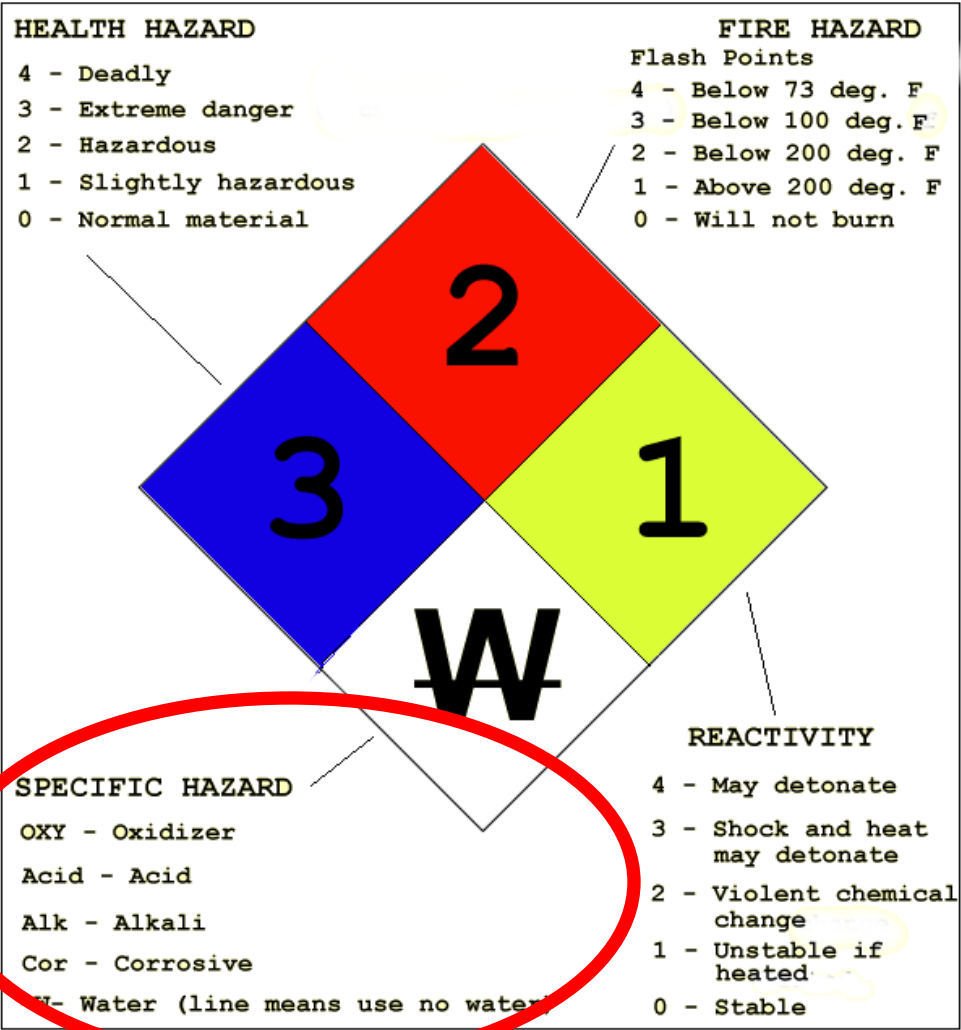
# National Fire Protection Association Label (NFPA)



# National Fire Protection Association Label (NFPA)

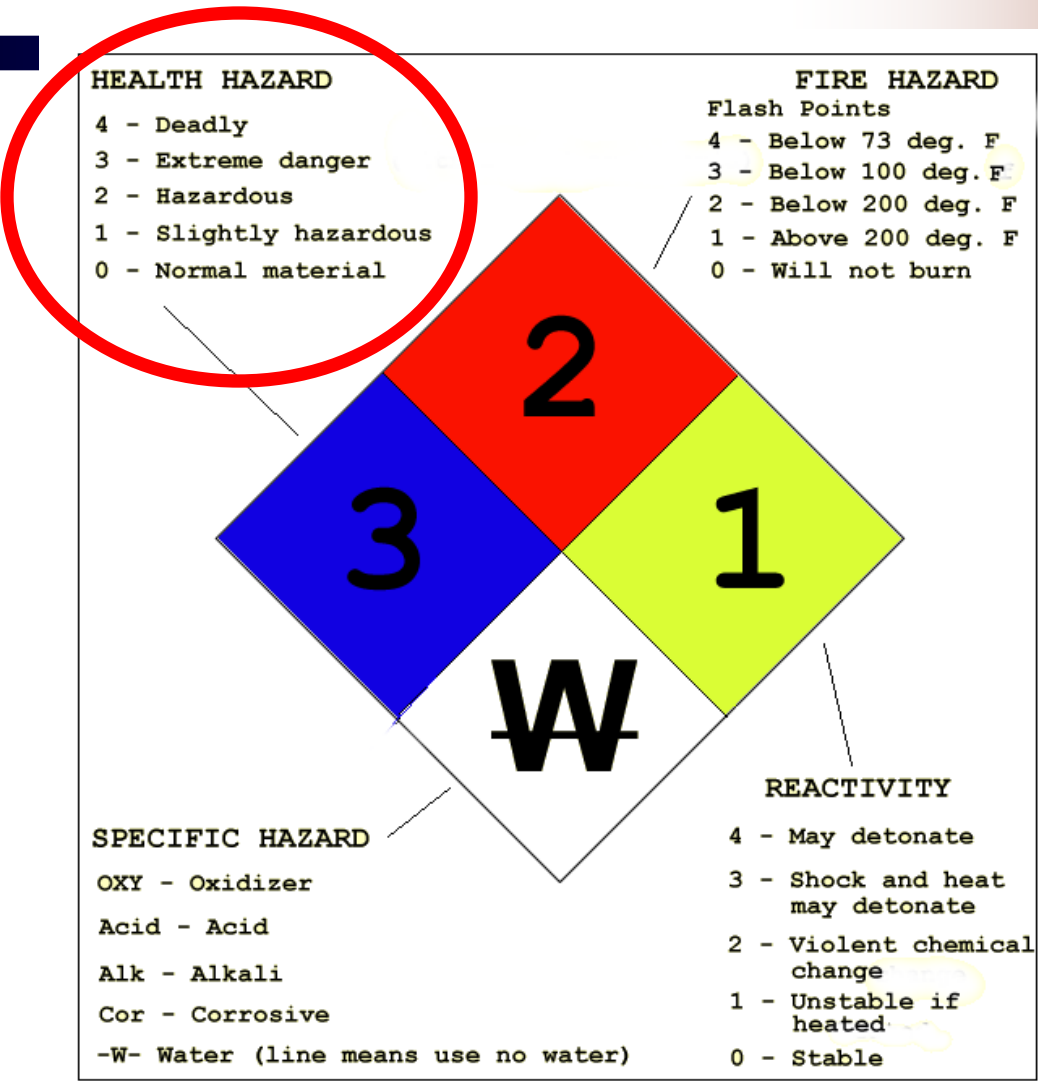


# National Fire Protection Association Label (NFPA)





# National Fire Protection Association Label (NFPA)



# KEY PLAYERS

## COMMANDING OFFICER

- Report all Hazmat mishaps
- Ensure HM spills are handled per Appendix B3-A of 5100.19D
- Appoint a HM coordinator in writing

## XO AND DH's

- Review list of HM stowage locations
  - Annually

# HAZMAT COORDINATOR

- Manages HM procedures
- Trains supervisors annually in HM markings, handling, stowage, usage, spill response, and disposal procedures
- Identifies and lists locations of all HM (reviewed annually by XO)
- Ensures HM is inventoried annually
- Retains HMIS & hard copies of MSDS

- ***Safety Officer***
  - Spot checks w/MAA compliance with program
  - Evaluates HM program annually

- ***Medical Dept. Representative***
  - Assists Workcenter Sups in training personnel
  - Maintains file of MSDS's
  - Provides Medical Assistance

# SUPPLY OFFICER

- Ensures MSDS is on file for all SHML-approved HM
- Supervise HM collection for disposal
- Ensure all HM containers are properly labeled



# *DCA*



## *RESPONSIBILITIES*

- Train & supervise ship's DC teams in combating spills of Hazmat
- Conduct at least one spill response drill annually per DC team
- Provide training to divisions regarding reporting, initial handling and clean-up procedures
- Maintain HM Spill Response Kits
  - **AEL 2-550024007**

# DIVISION OFFICER *RESPONSIBILITIES*

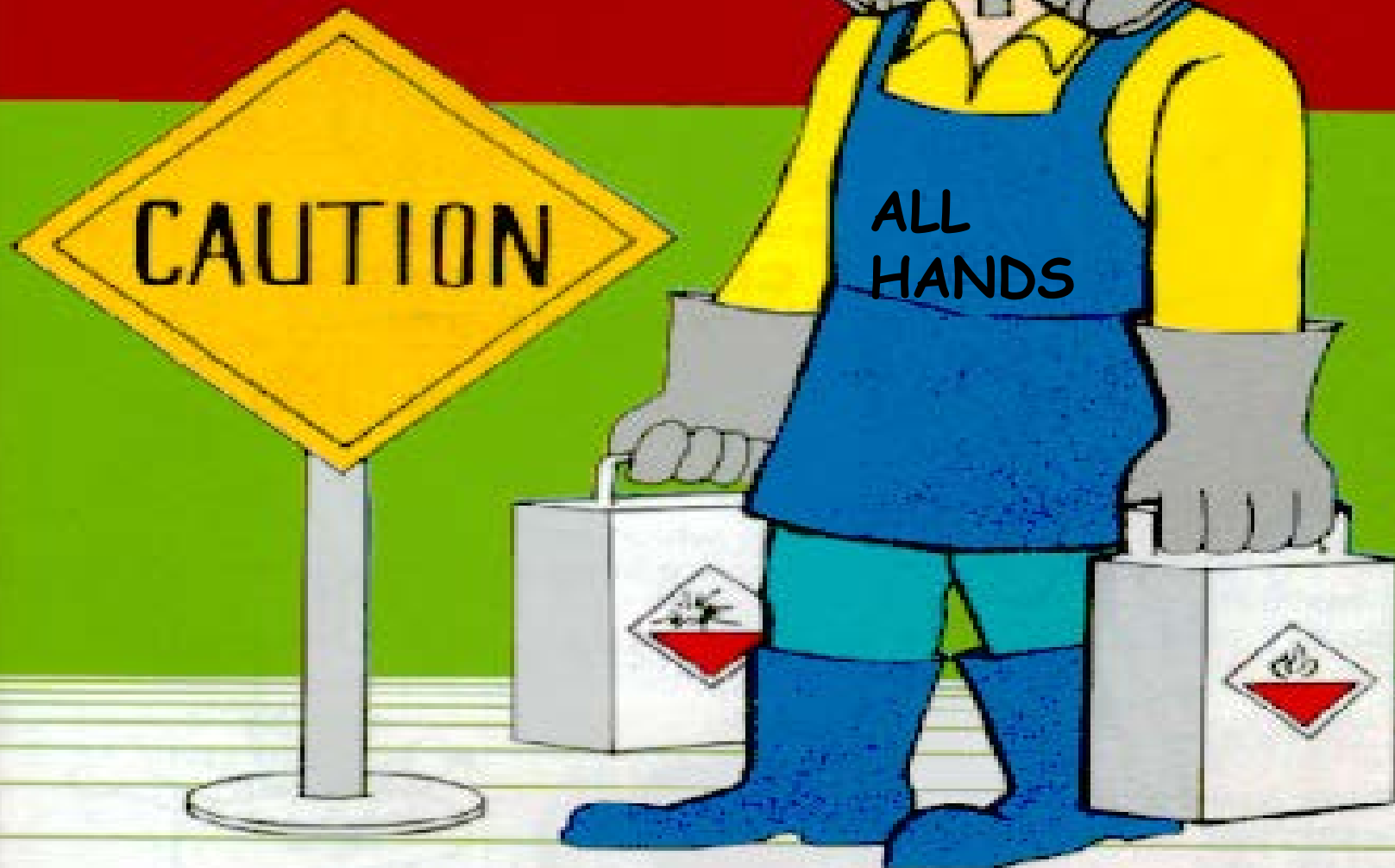
- When HM is moved into other holders, new holders are marked properly
- Proper PPE is available and personnel are trained in its use
- Personnel are properly trained in handling of HM
- MSDS are available for each HM item
- Personnel are trained on MSDS contents and location

# DIVISION OFFICER *RESPONSIBILITIES*

- Personnel are trained in HMC&M Program
  - Upon reporting
  - Annually
    - Use
    - Storage
    - Response to spill
    - Disposal of HM
- Maintain records of stock levels, locations, and usage of HM
- Obtain CO's permission for all Open Purchase items
  - CDR and above serving as SUPPO can approve



# Working With Hazmat



# **ALL HANDS**

## ***RESPONSIBILITIES***

- **Return HM upon completion of use or at end of day**
- **Follow MSDS instructions for proper use**
- **Properly collect and dispose of HM residue**
- **Report any spills to OOD, DIVO, and DCC**
- **Return improperly stowed HM for proper stowage**
- **Report any violation of HM use, storage, handling procedures**

# **MATERIAL SAFETY DATA SHEETS (MSDS)**

# *MATERIAL SAFETY DATA SHEET* *(MSDS)*

- Technical bulletins containing information about materials
- Must be available for every item of HAZMAT onboard
- Readily available

## (MSDS)

- All MSDSs for forces afloat are assigned a number by the Naval Safety Center.
- All personnel must read, understand, and be trained on the dangers and precautions contained in MSDSs before they use HM.

# MSDS CONTENTS

- GENERAL INFO

- Navy supply info
- Name & nomenclature
- Date prepared
- Mfr & MSDS info

## INGREDIENTS/IDENTITY INFORMATION

- Hazardous components
- Safe exposure limits

- PHYSICAL/CHEM.  
CHARACTERISTIC  
S

- Appear. / Odor
- Boiling point & vapor density

# *MSDS CONTENTS*

## **FIRE AND EXPLOSIVE DATA**

**Flash point**

**UEL/LEL**

**Extinguishing media**

**Special procedures & hazards**

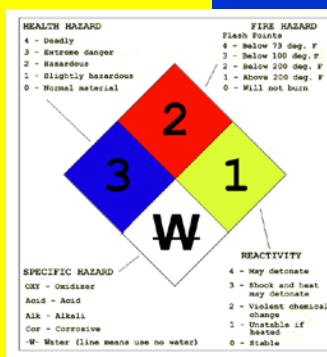
# MSDS CONTENTS

## • REACTIVITY DATA

- Stability
- Conditions to avoid
- Materials to avoid
- Hazardous decomposition products control measures

## • HEALTH DATA

- Acute & chronic
- Carcinogenity
- Symptoms for overexposure
- Aggravated exposure
- Emergency & first aid procedures





# MSDS CONTENTS

- PRECAUTIONS FOR SAFE HANDLING & USE

- Steps for spills
- Waste disposal method
- Handling & storage precautions



- CONTROL MEASURES

- Respiratory protection
- Ventilation
- Protective gloves
- Eye protection
- Extra safety & health data

# ***REQUIREMENTS FOR USE OF MATERIAL SAFETY DATA SHEETS (MSDS)***

- **FEDERAL LAW IS THE FOUNDATION**
  - 29 CFR 1960
  - OSHA ACT OF 1973
  - OSHA (DEPT. OF LABOR) FORM 174 SETS THE CONTENTS

# **Hazardous Material Spill Response Kit**

# ***HOW THE NAVY INTERPRETS THE REQUIREMENTS***

- **OPNAVINST 5100.19D NAVOSH PROGRAM MANUAL FOR FORCES AFLOAT**
  - Requires a MSDS for all Hazmat
  - MSDS must be available for use
  - Requires Crew Training in MSDS use

# Hazardous Material Spill Response Kit

- **Locker**
  - used to store contents of kit
- **Thirty gallon steel drum**
  - used to store contents of kit
- **Sorbent socks**
  - Used to contain a liquid spill
- **Sorbent pillows**
  - used to soak up a liquid spill after it has been contained

## **Hazardous Material Spill Response Kit**

- 9-inch tongs
  - used to pick up saturated pillows and socks.
- Scrub brush and dust pan
  - used to clean up spills of solid hazardous material
- Litmus Paper
  - used as an aid in the determination of the acidity or alkalinity of spills.

## **Hazardous Material Spill Response Kit**

- Squeegee with 12-inch blade
  - used to help clean up large spills
- Polyethylene sealing tape (black)
  - Used to place around gloves and boot openings to ensure a complete seal against the exterior atmosphere.
- Polyethylene bags
  - used for the disposal of saturated socks

## **Hazardous Material Spill Response Kit**

- Disposable coveralls
- Disposable aprons
- Chemical protective goggles
- Butyle rubber gloves
- Nitrile rubber gloves



## Hazardous Material Spill Response Kit

- Surgical gloves

**NOTE:** Surgical gloves are to be worn under the butyle or nitrile gloves.

- Organic vapor/acid respirators
- Ammonia/methylamine disposable respirators

# Hazardous Material Spill Response Kit

- Hazardous waste labels

**WARNING**

NAME OF MATERIAL \_\_\_\_\_

CONCENTRATION \_\_\_\_\_

SHIP \_\_\_\_\_ DEPARTMENT \_\_\_\_\_

SPECIAL STORAGE REQ'Ts \_\_\_\_\_

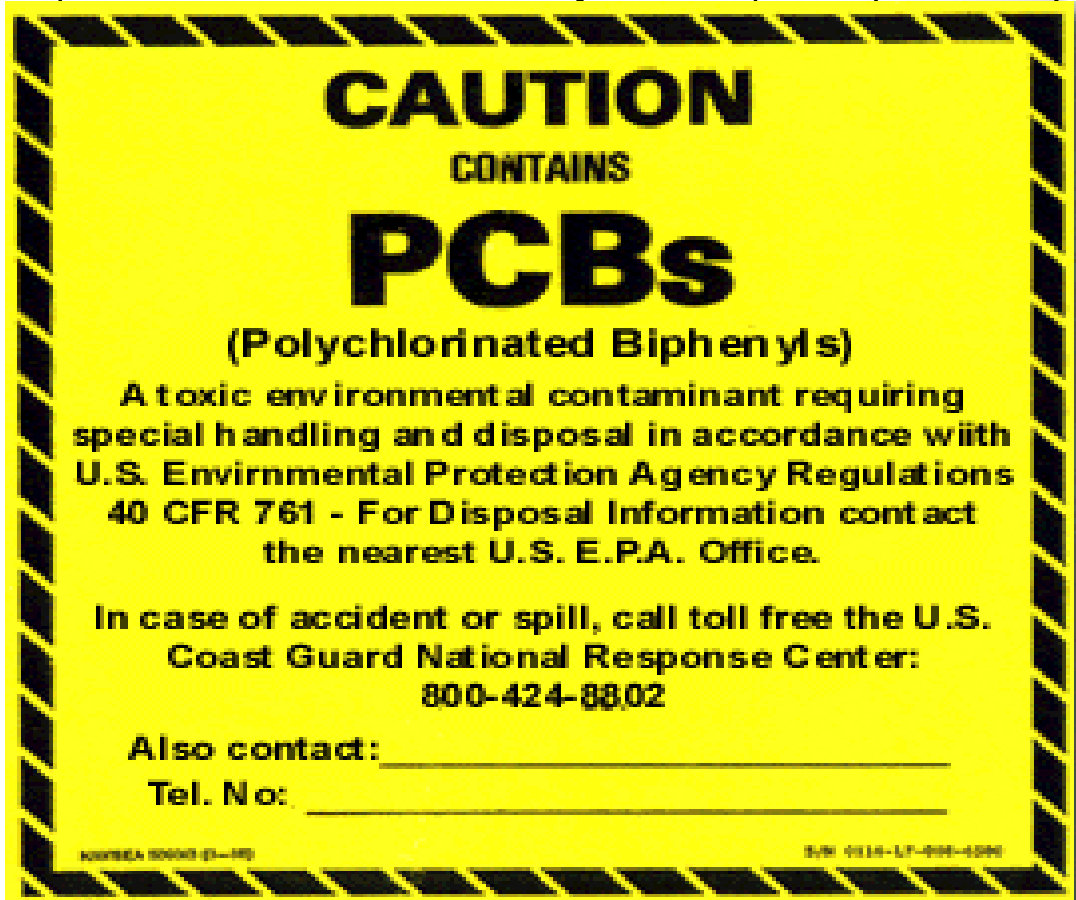
SPECIAL HANDLING REQ'Ts \_\_\_\_\_

SIGNATURE OF DEPT. HEAD \_\_\_\_\_ DATE \_\_\_\_\_

**HAZARDOUS WASTE**

# Hazardous Material Spill Response Kit

## Polychlorinated Biphenyls (PCB) labels



# Hazardous Material Spill Response Procedures



# ***NINE PHASES TO HAZMAT SPILL CLEAN-UP PROCEDURES***

## ***OPNAVINST 5100.19D APPENDIX B3-A***

- ★ **Discovery & notification**
- ★ **Initiation of action**
- ★ **Evaluation**
- ★ **Containment & Damage Control**
- ★ **Dispersion of gases/vapors**
- ★ **Cleanup and decon.**
- ★ **Disposal of contaminated materials**
- ★ **Certification for re-entry**
- ★ **Follow-up reports**

# Hazardous Material Spill Response Procedures



## Spill discovery/Initial Response Team

- Verbally report IMMEDIATELY to supervisory personnel and the OOD / CDO.
  - Time of spill discovery
  - Location of spill
  - Identification of spilled material
  - Behavior of material (reactions observed)
  - Source of spill (tank, container)

# Hazardous Material Spill Response Procedures



## Spill discovery/Initial Response Team

- Personnel in vicinity of spill
- Volume of spill
- Anticipated movement of spill
- Label or placard information

# Hazardous Material Spill Response Procedures



- Only trained personnel shall respond to a hazardous material / waste spill due to the extremely dangerous nature of many materials used aboard ship.



# Hazardous Material Spill Response Procedures

## Initiation of action by spill response team

- Evacuate all personnel from the area
- Cordon off the affected area
- Arrange first aid for injured personnel.

**CAUTION:** Do not enter contaminated area until necessary protective clothing has been determined.

- Establish communications

# Hazardous Material Spill Response Procedures

## Initiation of action by spill response team

- Close drains, ventilation ducts, doors, and hatches to prevent spills from entering other compartments.
- Disperse gases or vapors to weather by natural ventilation or forced exhaust.

**NOTE:** GFE will check area for oxygen, LEL and toxicity.

# Hazardous Material Spill Response Procedures

## Initiation of action by spill response team

- Eliminate any fire/explosion hazards such as electrical equipment, incompatible materials, and open flames.
  - Use standard firefighting methods compatible with material used.
- Use only explosion-proof fans.

# Hazardous Material Spill Response Procedures



## Clean-up and decontamination

- When directed by person in charge, employ spill clean-up methods recommended on the MSDS.
- After clean-up, thoroughly ventilate space.
- Reusable protective clothing shall be thoroughly decontaminated and otherwise maintained and returned to stowage.

# Hazardous Material Spill Response Procedures



## Disposal of contaminated materials

- All non-reusable clean-up materials are to be placed in impermeable containers, stored and disposed of as hazardous waste.

# Hazardous Material Spill Response Procedures



## Certification of safe re-entry

- Spaces affected shall be certified safe by the OOD/CDO via GFE before normal operations are resumed in that space.

# Hazardous Material Spill Response Procedures

## Follow-up reports

- OOD/CDO submits spill report to HM/HW coordinator.
  - Copy of report will be filed by the Safety Officer.
    - Date occurred
    - Spill location
    - Material identity
    - Cause of spill
    - Damage or injuries
    - Response and cleanup measures
    - Problems encountered
    - Method of disposal
    - Action taken to prevent similar spill



# REVIEW AND SUMMARY



## Review and Summary



- Hazardous Material (HM)
- Material Safety Data Sheets (MSDS)
- Hazardous Material Spill Response Kit
- Hazardous Material Spill Response Procedures



**ANY QUESTIONS?**