Pollution Prevention and Spill Response for Municipal Operations

HAMPTON ROADS PDC
PLANNING DISTRICT COMMISSION

URS

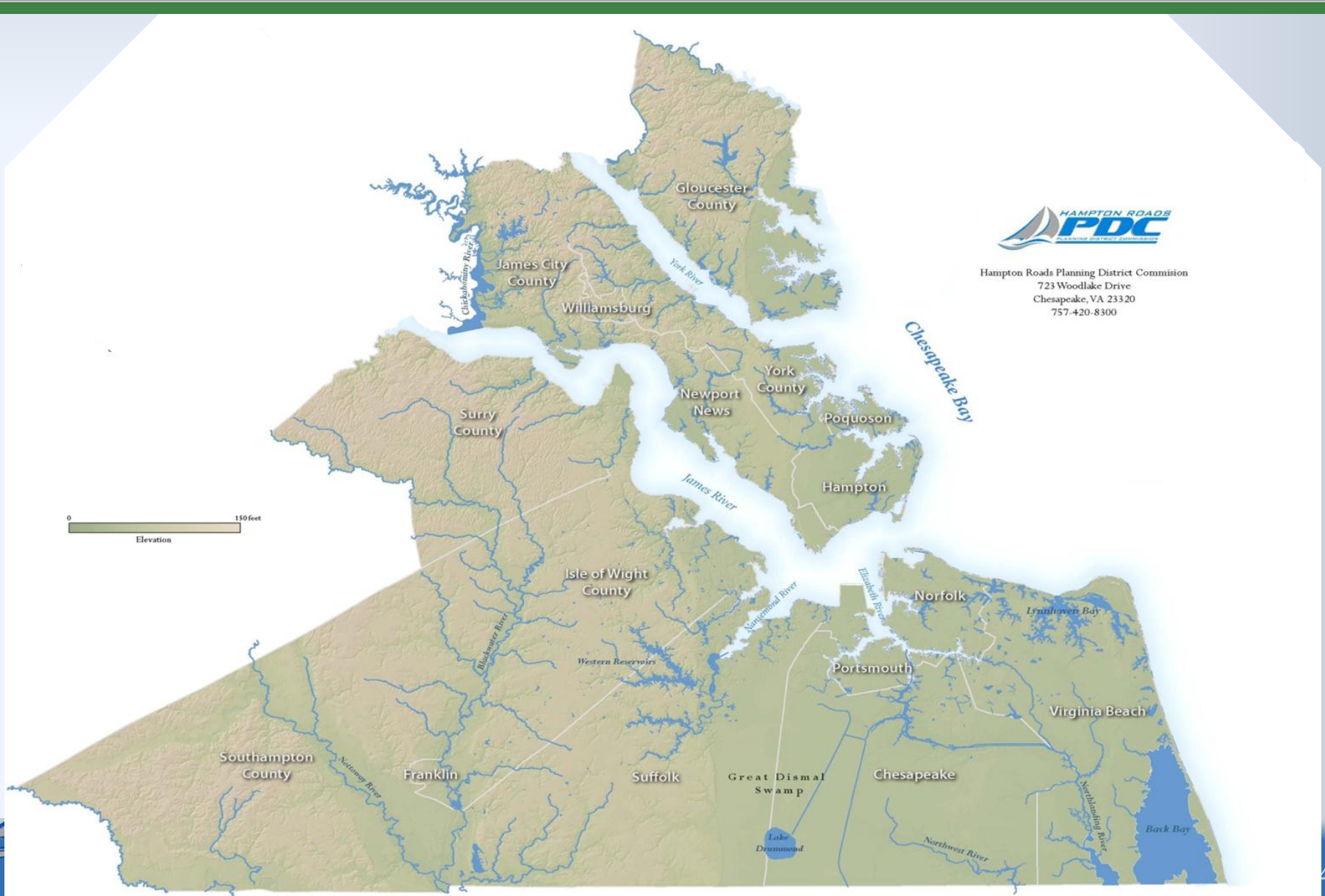
Participant Expectations and Training Format

- Silence phones and electronic devices
- Breaks will be taken as needed
- Active participation is encouraged

Training Objectives

- Pollution Prevention / Good Housekeeping Program
  - Identify common pollutant sources from municipal operations
  - Identify and implement best management practices for preventing stormwater pollution
  - Monitor the effectiveness of the program
- Spill Prevention and Response
  - Spill Prevention, Control and Countermeasure (SPCC) Plans
  - Implement an effective spill prevention and control program
  - Understand spill hazards and safe response actions

Hampton Roads Water Resources



Pollution Effects on Local Water Resources

Pollution Effects on Local Water Resources

Laws and Regulations to Protect Water Resources

Laws

- Federal - Clean Water Act
- Code of Virginia: Title 62.1 - Waters of the State, Ports and Harbors.
  - State Water Resources Law
  - State Water Control Law
  - Chesapeake Bay and Virginia Waters Clean-Up and Oversight Act

Laws and Regulations to Protect Water Resources

Regulations

Title 4 – Conservation and Natural Resources

Agency 50 – Virginia Soil and Water Conservation Board

Chapter 60 – Virginia Stormwater Management Program (VSMP) Permit Regulations

Title 9 – Environment

Agency 25 – State Water Control Board

Chapter 31 – Virginia Pollutant Discharge Elimination System (VPDES) Permit Regulation

Virginia MS4 Permit Requirements

- Minimum Measure #6: Pollution Prevention/Good Housekeeping for Municipal Operations
- MM 6a: Operations and Maintenance *Activities*
- Develop and implement written procedures designed to minimize or prevent pollutant discharge from:
  - daily operations such as road, street, and parking lot maintenance
  - equipment maintenance
  - the application, storage, transport, and disposal of pesticides, herbicides, and fertilizers

Virginia MS4 Permit Requirements

- At a minimum, the written procedures shall be designed to:
  - Prevent illicit discharges
  - Ensure the proper disposal of waste materials
  - Prevent the discharge of municipal vehicle wash water/wastewater into the MS4 without authorization under a separate VPDES permit
  - Require BMPs when discharging water pumped from utility construction and maintenance activities
  - Minimize the pollutants in stormwater runoff from bulk storage areas
  - Prevent pollutant discharge from leaking municipal automobiles and equipment
  - Ensure that the application of materials, including fertilizers and pesticides, is conducted in accordance with the manufacturer's recommendations

Virginia MS4 Permit Requirements

- Minimum Measure #6b: Municipal *Facility* Pollution Prevention and Good Housekeeping
  - composting facilities
  - equipment storage and maintenance facilities
  - materials storage yards
  - pesticide storage facilities
  - public works yards
  - recycling facilities
  - salt storage facilities
  - solid waste handling and transfer facilities
  - vehicle storage and maintenance yards

Virginia MS4 Permit Requirements

- Identify which of the municipal high-priority facilities have a high potential of chemicals or other materials to be discharged in stormwater.
- Develop and implement specific stormwater pollution prevention plans (SWPPPs) for all high-priority facilities identified as having a high potential for the discharge of chemicals and other materials in stormwater

Pollution Prevention and Good Housekeeping for Municipal Operations

Developing a P2/Good Housekeeping Program

- Step 1: Identify the pollutant sources and pollutants
- Step 2: Identify best management practices to prevent the discharge of pollutants
- Step 3: Develop an implementation and monitoring plan

Common Pollutant Source Areas and Activities

- Vehicle and equipment parking/storage
- Vehicle and equipment fueling
- Vehicle and equipment maintenance and repair
- Vehicle and equipment washing and steam cleaning
- Waste handling and disposal
- Buildings and grounds maintenance

Common Pollutant Source Areas and Activities

- Outdoor Loading and Unloading of Materials
- Outdoor Container Storage of Liquids
- Outdoor Storage of Bulk Materials
- Outdoor Process Equipment
- Landscape Maintenance

Pollutants from Municipal Operations

- Sediment
- Nutrients
- Metals
- Hydrocarbons
- Pesticides
- Trash
- Bacterial
- Oil & Grease
- Toxins
- Organics

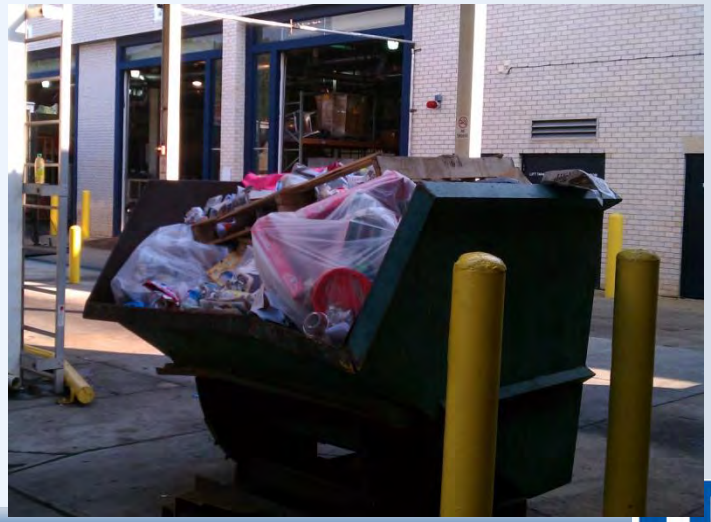
Step 1: Identify Pollutant Sources

- Inspect all outdoor areas of your facility or area of operations
- Note hotspot activities – storage, loading/unloading , maintenance, fueling, waste handling, grounds maintenance, etc.
- Look for evidence of pollutants – sediment trails, oily deposits and stains, loose materials, dead vegetation, etc.

Vehicle and equipment parking/storage

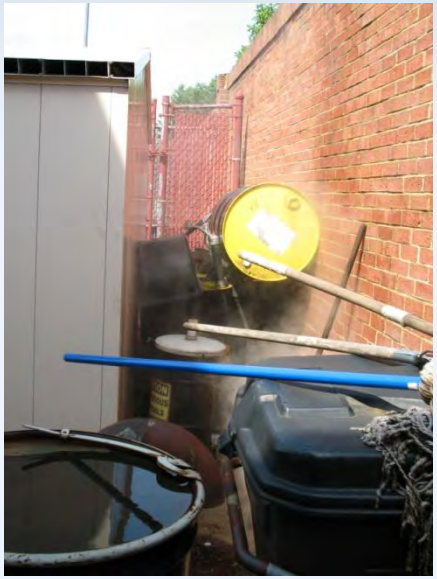
Vehicle and equipment fueling

Waste handling and disposal

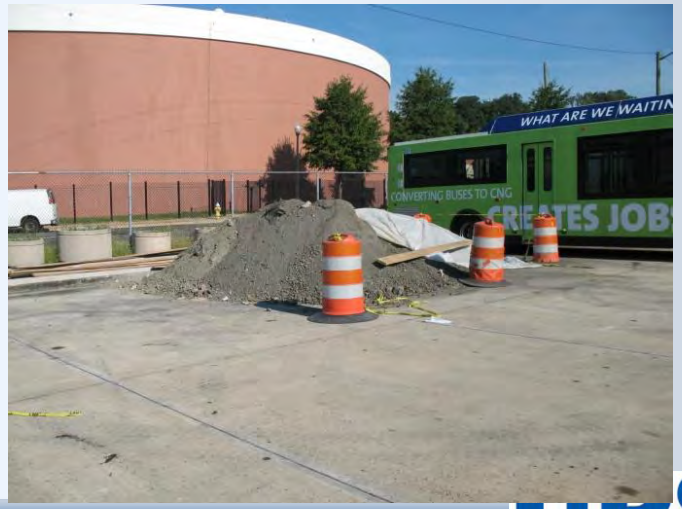


Outdoor Container/Equipment Storage

Outdoor Material Storage



Bulk Material Storage



Bulk Material Storage

Step 2: Identify best management practices to prevent the discharge of pollutants

- Identify existing BMPs
- Identify drivers for the existing BMPs
  - Existing SWPPP
  - Standard Operating Procedure
  - Local ordinance
  - Departmental policy

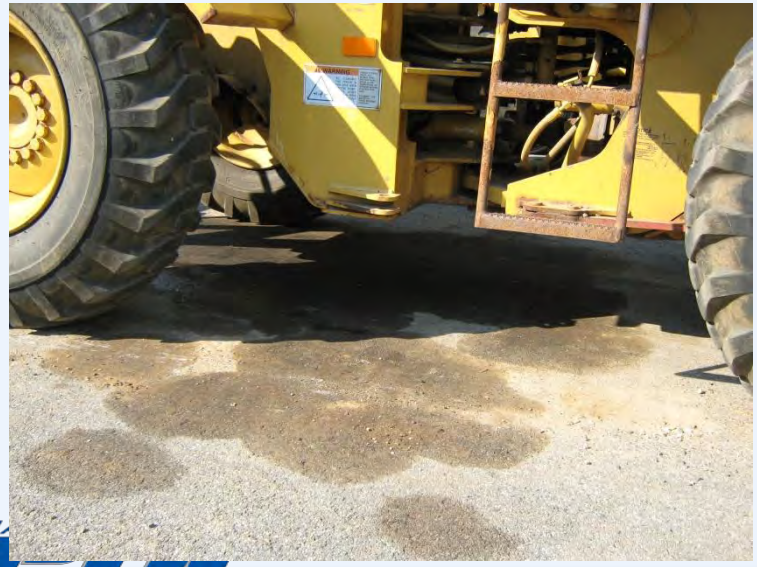
Step 2: Identify best management practices to prevent the discharge of pollutants (cont.)

- Identify new BMPs
- P2/Good Housekeeping BMPs should be focused on:
  - Behavioral/management changes
  - Non-structural practices

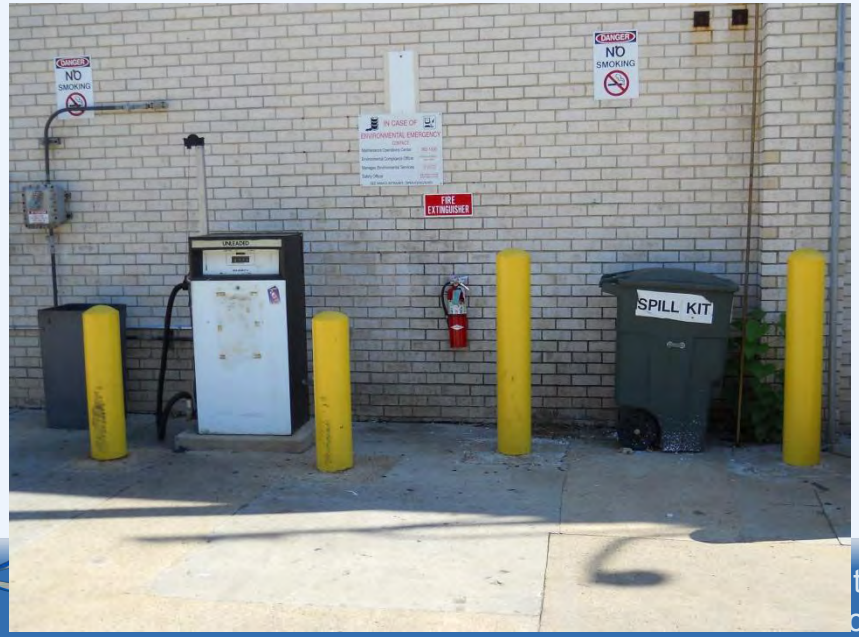
Step 2: Identify best management practices to prevent the discharge of pollutants (cont.)

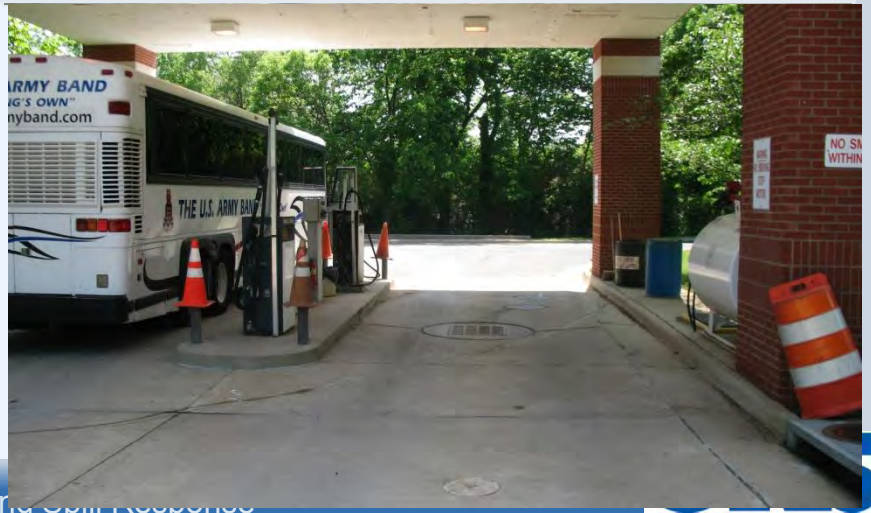
- BMP categories to consider:
  - Source elimination
  - Source reduction/inventory control
  - Storage/work practices
  - Inspection and maintenance
  - Spill prevention and control
  - Training

Vehicle and equipment parking/storage



Vehicle Fueling and Washing





Bulk Material Storage

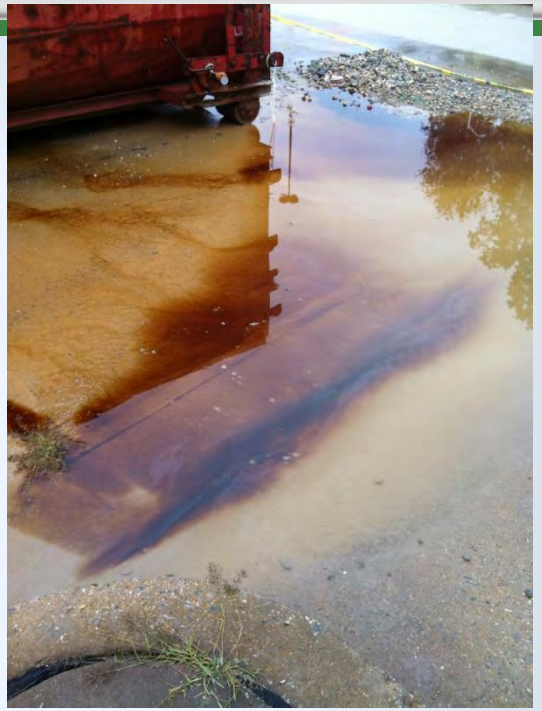
Outdoor Material Storage

Outdoor Material Storage

Outdoor Container Storage

Outdoor Container Storage

Waste handling and disposal



Step 3: Develop an implementation and monitoring plan

- **Implementation Plan**
  - Develop measurable goals and a schedule for implementing pollution prevention and good housekeeping BMPs
  - The goals must have a yardstick for measuring effectiveness and progress towards achievement
    - Example: number of employees trained, number of inspections performed, frequency of sweeping reduced, etc.
  - Include a recordkeeping system

Step 3: Develop an implementation and monitoring plan

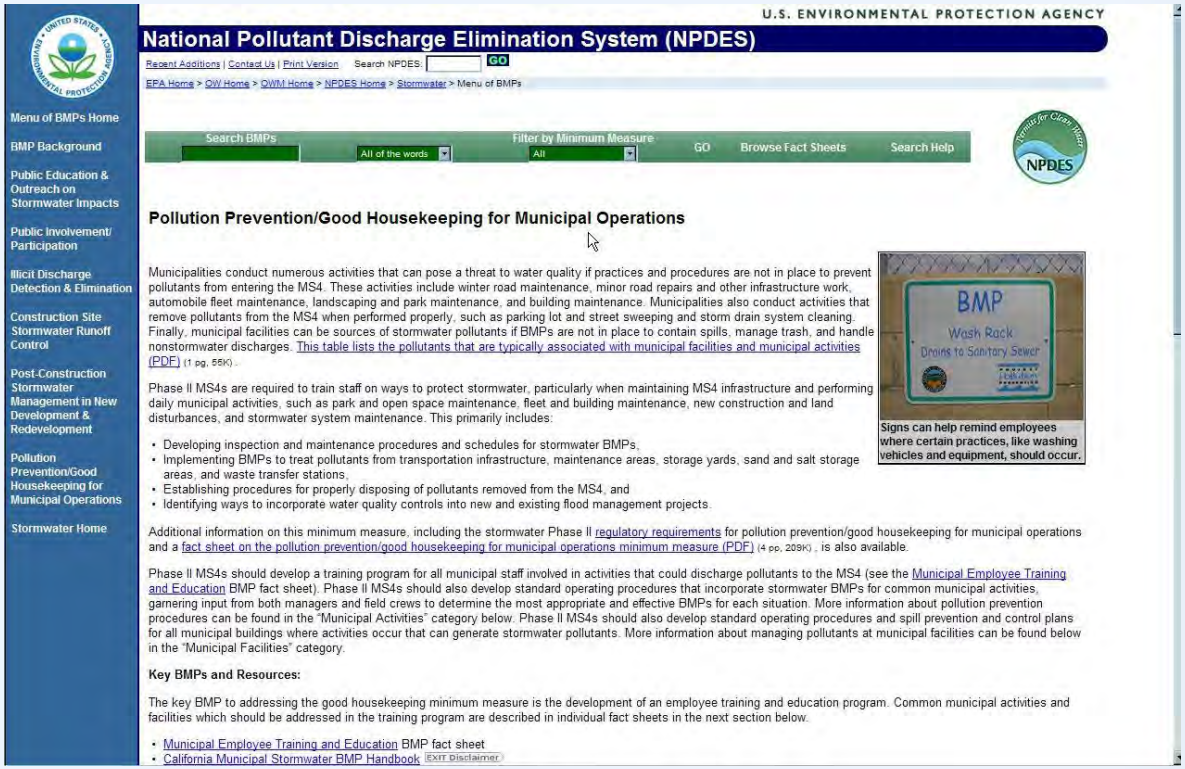
- Examples of measurable goals:
  - Provide containment for drum storage areas
  - Implement weekly exterior inspections
  - Remove/recycle scrap metal and equipment from boneyard
  - Provide spill kits and waste absorbent containers at fueling stations
  - Develop material inventories
  - Develop training program

Step 3: Develop an implementation and monitoring plan

- Monitoring Plan
  - Conduct annual inspections
    - Confirm that BMPs have been implemented
    - Look for evidence of effectiveness
  - Conduct an annual implementation plan evaluation
    - Review routine inspection records; look for trends and improvements
    - Review training records
  - Other methods to consider: surveys, storm water monitoring

Additional Resources

- http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=min_measure&min_measure_id=6



U.S. ENVIRONMENTAL PROTECTION AGENCY

National Pollutant Discharge Elimination System (NPDES)

Recent Additions | Contact Us | Print Version Search NPDES: GO

EPA Home > OW Home > OWM Home > NPDES Home > Stormwater > Menu of BMPs

Menu of BMPs Home
BMP Background
Public Education & Outreach on Stormwater Impacts
Public Involvement/ Participation
Illicit Discharge Detection & Elimination
Construction Site Stormwater Runoff Control
Post-Construction Stormwater Management in New Development & Redevelopment
Pollution Prevention/Good Housekeeping for Municipal Operations
Stormwater Home

Search BMPs | All of the words | Filter by Minimum Measure: All | GO | Browse Fact Sheets | Search Help

Pollution Prevention/Good Housekeeping for Municipal Operations

Municipalities conduct numerous activities that can pose a threat to water quality if practices and procedures are not in place to prevent pollutants from entering the MS4. These activities include winter road maintenance, minor road repairs and other infrastructure work, automobile fleet maintenance, landscaping and park maintenance, and building maintenance. Municipalities also conduct activities that remove pollutants from the MS4 when performed properly, such as parking lot and street sweeping and storm drain system cleaning. Finally, municipal facilities can be sources of stormwater pollutants if BMPs are not in place to contain spills, manage trash, and handle nonstormwater discharges. This table lists the pollutants that are typically associated with municipal facilities and municipal activities (PDF) (1 pg, 55K) .

Signs can help remind employees where certain practices, like washing vehicles and equipment, should occur.

Phase II MS4s are required to train staff on ways to protect stormwater, particularly when maintaining MS4 infrastructure and performing daily municipal activities, such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance. This primarily includes:

- Developing inspection and maintenance procedures and schedules for stormwater BMPs,
- Implementing BMPs to treat pollutants from transportation infrastructure, maintenance areas, storage yards, sand and salt storage areas, and waste transfer stations,
- Establishing procedures for properly disposing of pollutants removed from the MS4, and
- Identifying ways to incorporate water quality controls into new and existing flood management projects.

Additional information on this minimum measure, including the stormwater Phase II regulatory requirements for pollution prevention/good housekeeping for municipal operations and a fact sheet on the pollution prevention/good housekeeping for municipal operations minimum measure (PDF) (4 pp, 209K) , is also available.

Phase II MS4s should develop a training program for all municipal staff involved in activities that could discharge pollutants to the MS4 (see the Municipal Employee Training and Education BMP fact sheet). Phase II MS4s should also develop standard operating procedures that incorporate stormwater BMPs for common municipal activities, garnering input from both managers and field crews to determine the most appropriate and effective BMPs for each situation. More information about pollution prevention procedures can be found in the "Municipal Activities" category below. Phase II MS4s should also develop standard operating procedures and spill prevention and control plans for all municipal buildings where activities occur that can generate stormwater pollutants. More information about managing pollutants at municipal facilities can be found below in the "Municipal Facilities" category.

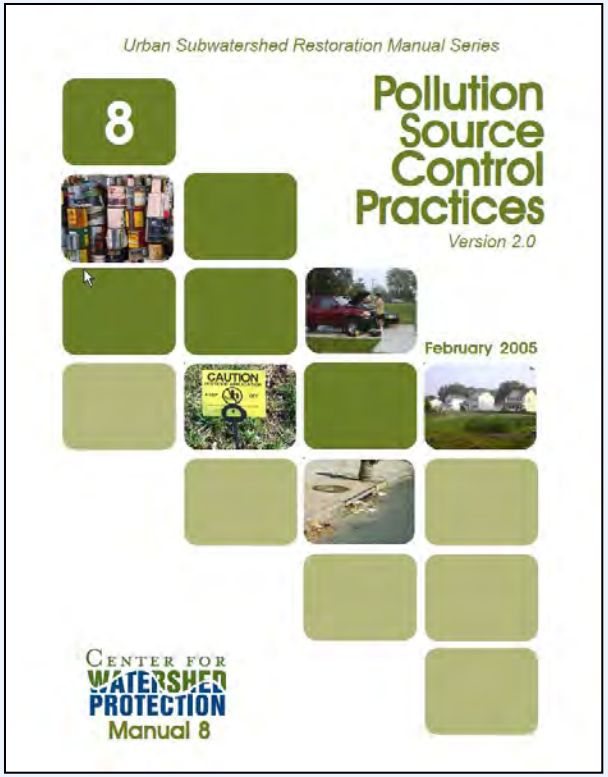
Key BMPs and Resources:

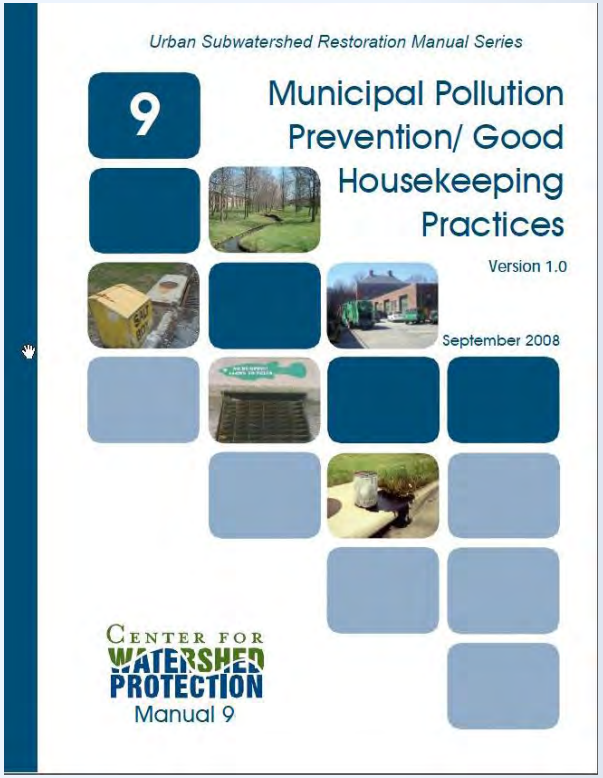
The key BMP to addressing the good housekeeping minimum measure is the development of an employee training and education program. Common municipal activities and facilities which should be addressed in the training program are described in individual fact sheets in the next section below.

- Municipal Employee Training and Education BMP fact sheet
- California Municipal Stormwater BMP Handbook EXIT Disclaimer

Additional Resources

- http://www.cwp.org/documents/cat_view/68-urban-subwatershed-restoration-manual-series.html





Additional Resources

- http://www.epa.ohio.gov/Portals/41/storm_workshop/ppghptemplateblank.pdf
- http://www2.erie.gov/environment/sites/www2.erie.gov.environment/files/uploads/guidance_document.pdf

Spill Prevention and Response

Spill Prevention and Response

- Preventing spilled materials from contacting storm water and reaching waterways is an important component of any pollution prevention program
- Your facility may be subject to Spill Prevention Control and Countermeasure (SPCC) Plan requirements under federal regulations
- If your operations require the use and storage of oil products and other potentially hazardous materials, a spill response and control plan will help reduce the risk of spilled materials contaminating waterways

SPCC Plans

- Required for facilities with aboveground oil storage capacity greater than 1,320 gallons or 42,000 gallons in underground storage tanks that are not regulated under another program
- Can reasonably expect a discharge to reach navigable waters of the US

SPCC Plans

- What is an SPCC Plan?
  - Document that details the equipment, workforce, and procedures to prevent, control, and respond to a discharge of oil
- Purpose of the SPCCP
  - To prevent discharges of oil into U.S. waters
- What is an “oil”?
  - Any kind, in any form, including: heating oils, motor fuels, lubricating oils, cutting oils, quenching oils, hydraulic oils, transformer oils and cooking oils.

Spill Prevention and Response

- **Spill Prevention**
  - Practices that reduce the risk of materials being spilled
- **Spill Response**
  - Preventing spilled materials from reaching waterways or impacting the environment

Spill Prevention

- Common spill prevention practices:
  - Inspection and regular maintenance of liquid containers and equipment
  - Best management practices: clearly-labeled containers, good housekeeping
  - Constant monitoring during liquid transfers/deliveries
  - Secondary containment
  - Routine inspections
  - Site security
  - Annual training

Spill Response

- Your responsibilities for spill response may vary based on departmental/agency policies
- Your department/agency's policies may specify the size of the spill you can control or clean up
- Safety should be your first priority ALWAYS

Spill Response Safety

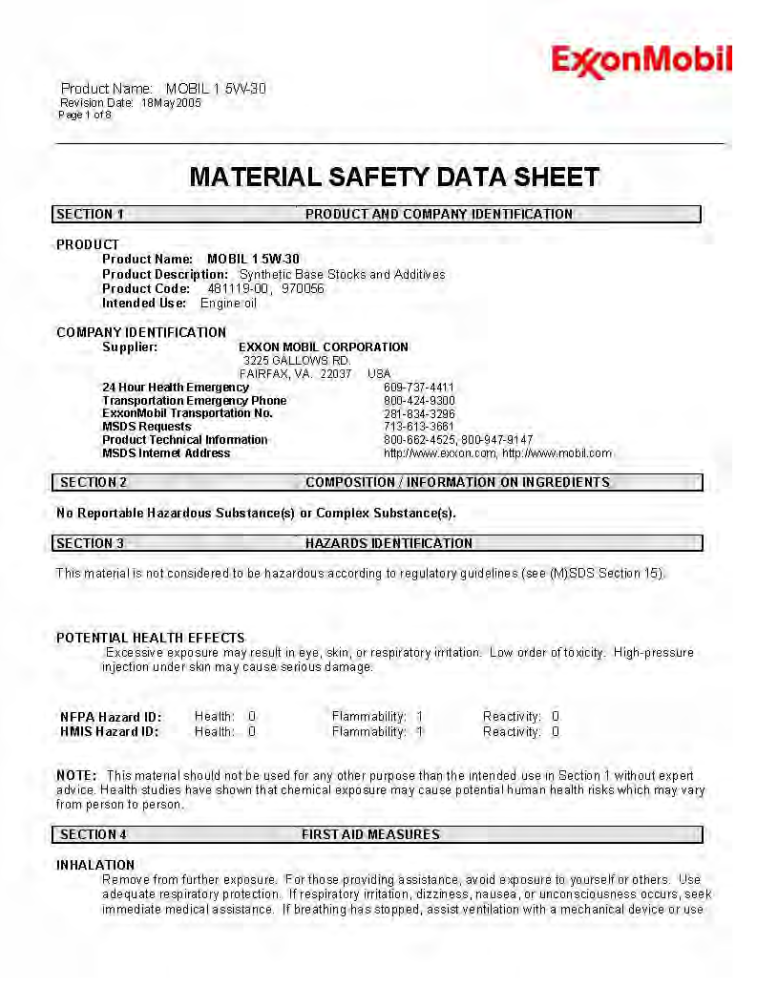
- Think about the ways you could be exposed to hazards:
  - Inhaling vapors, gases, or dusts in air
  - Being splashed by materials while handling containers or waste materials
  - Walking through puddles of spilled materials
  - Touching wet or leaking containers or contaminated equipment

Spill Response Safety

- Always wear your personal protective equipment (PPE) such as gloves, boots, and safety glasses
- Wear the correct PPE for the task
- Know the limitations of the PPE

Spill Response Planning

- Evaluate likely spill scenarios
  - Materials
  - Volume
- Use Material Safety Data Sheets (MSDS) to evaluate exposure hazards, appropriate PPE, and disposal requirements for clean up materials
- Make sure roles and responsibilities are clearly defined



ExxonMobil

Product Name: MOBIL 1 5W-30
Revision Date: 18May2005
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MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT
Product Name: MOBIL 1 5W-30
Product Description: Synthetic Base Stocks and Additives
Product Code: 481119-00, 970056
Intended Use: Engine oil

COMPANY IDENTIFICATION
Supplier: EXXON MOBIL CORPORATION
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300
ExxonMobil Transportation No.	281-834-3296
MSDS Requests	713-613-3661
Product Technical Information	800-662-4525, 800-947-9147
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS
Excessive exposure may result in eye, skin, or respiratory irritation. Low order of toxicity. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0
HMIS Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION
Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use

Spill Response Planning

- Make sure roles and responsibilities are clearly defined
- Establish a notification chain-of command
- Identify spill reporting requirements
- Provide adequate spill response materials
- Provide training and written response instructions

Spill Response Procedures

- General Spill Response Procedures

Step 1:	Approach The Scene
Step 2:	Secure The Scene
Step 3:	Identify The Hazards
Step 4:	Assess The Situation
Step 5:	Report The Spill
Step 6:	Contain The Spill
Step 7:	Cleanup The Spill
Step 8:	Complete Spill Documentation

Step 1: Approach the Scene

- Don't rush in!
- Always consider the safety of:
  - Yourself
  - Your coworkers
  - The public
- Do not take risks – act on the cautious side.
- Avoid exposure – Approach upwind, and stay clear of spills, vapors, fumes, and smoke
- If a person is injured, call 911 immediately

Step 2: Secure the Scene

- Isolate the spill
- Keep people away from the scene
  - Divert traffic and pedestrians
- If possible, stop the source of the spill
- Eliminate any ignition sources

Step 3: Identify the Hazards

- Attempt to identify the spilled material
  - May be obvious
  - Characteristics (odor, color, sheen)
  - Labels/Markings
  - Container type
  - Activities in area
  - Placards
  - Hazard warnings

Step 4: Assess the Situation

- Determine the appropriate first response actions and if additional response help is needed
- The response will be dictated by the size of the spill and the hazard
  - Is there a fire, a spill, or a leak?
  - Is there a potential for it to mix with something else?
- Observe your surroundings:
  - Who/what is at risk?
  - Is an evacuation necessary?
  - What resources are required and readily available to contain the spill?

Step 5: Report the Spill

- The Virginia Department of Environmental Quality must be notified within 24 hours of any petroleum spills that:
  - Cause a sheen on the water,
  - Are greater than 25 gallons, or
  - Cannot be cleaned up within 24 hours
- All spills contacting or occurring close to water or that pose a threat to human health or the environment must be reported to the National Response Center **immediately**
- Consult agency directives for local and municipal notification requirements

Step 6a: Contain the Spill

- Put on the appropriate PPE
- Place booms or available materials around the perimeter of the spill to keep it from spreading
- Apply absorbent materials starting from the downhill and outside edge of the spill

Step 6b: Keep the Spill from Entering Waterways

- Place booms in front of nearest storm drain inlet
- Put absorbent pads over any exposed ground drains
- You may need to construct a dike out of soil or other materials to prevent spill from reaching storm drains and waterways

Step 7a: Clean Up the Spill

- If you have the proper training, small spills of some hazardous materials can be cleaned up according the chemical label and your training
- For incidental spills that you can safely contain, clean up the spill and remove all used spill response materials
- Clean up and disposal responsibility may vary for emergency spills

Step 7b: Complete Spill Follow-up Actions

- Clean and decontaminate all reusable spill cleanup equipment
- Don't bring the contamination home
  - Remove contaminated clothing
  - Place in a bag to wash separately
  - Clean or remove boots
  - Wash your hands
- Be sure to restock your spill response materials and PPE as soon as possible

Step 8: Complete Spill Documentation

- Update facility spill records
- Write a Release Investigation Report if required by the VDEQ
  - VDEQ will send a letter outlining investigation requirements and deadlines when a suspected or confirmed release is reported

Hazard Identification

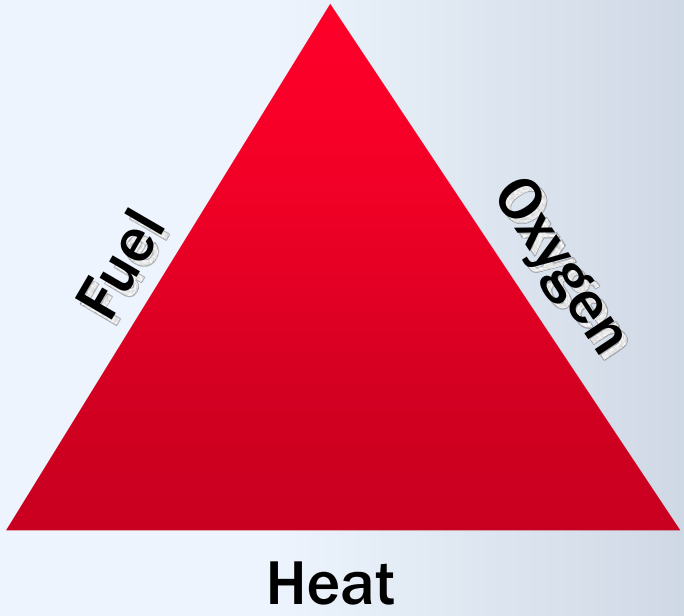
Types of Hazards

Type of Hazard	Examples	
Physical	Mechanical Electrical Noise	Radiation Confined Space Heat Stress
Chemical	Toxicity Flammability Explosivity	Corrosivity Reactivity
Biological	Bacteria Viruses Plants	

Common Hazards - Flammability

Flammability and volatility

- Fire triangle
  - Burning requires three components
- Flash point (FP)
  - Lowest temperature at which a substance will ignite
  - Low FP = high fire hazard



Common Hazards - Flammability

- Flashpoint (FP) examples:
  - Vegetable oil = 540° F
  - Mineral spirits = 170° F
  - Diesel fuel = 160° F
  - Benzene = 12° F
  - Gasoline = - 45° F
  - Kerosene = 100 to 150 °F

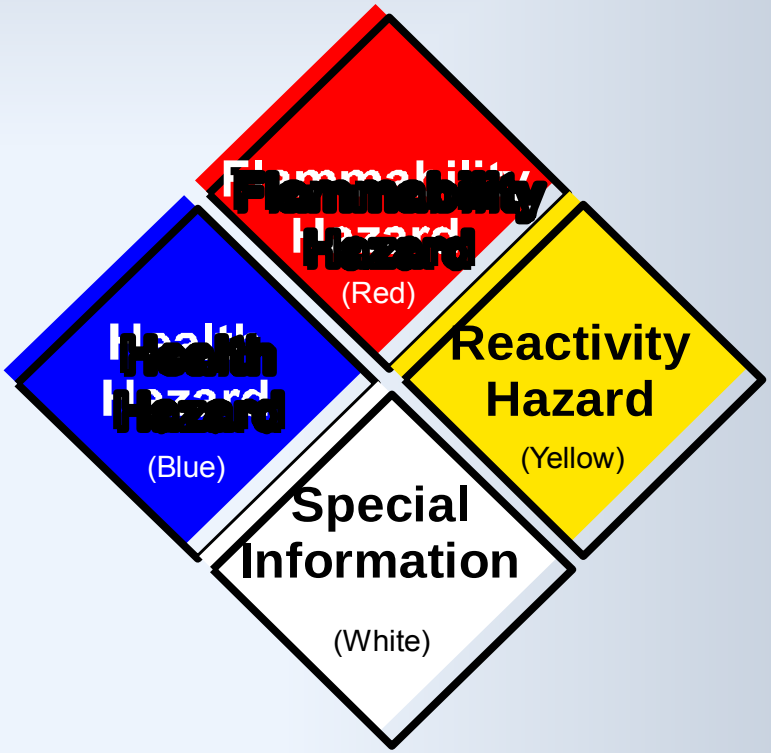
Common Hazards - Flammability

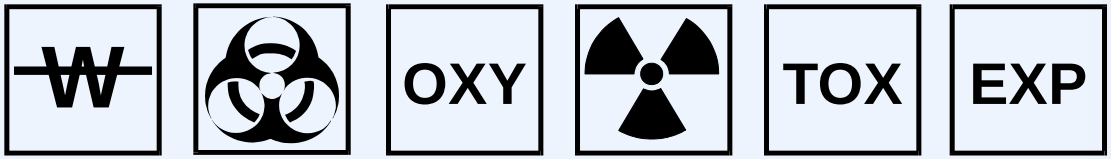
- Safety Measures:
  - Wear appropriate PPE:
    - Protective clothing
    - Leather boots/gloves
    - Eye protection
  - Extinguish all ignition sources
  - Do not use metal tools that could create a spark

NFPA Label

Hazard Information based upon:

- Color codes
- Numeric codes
  - 0 = Minimum
  - 1 = Light
  - 2 = Moderate
  - 3 = Serious
  - 4 = Severe
- Special Information

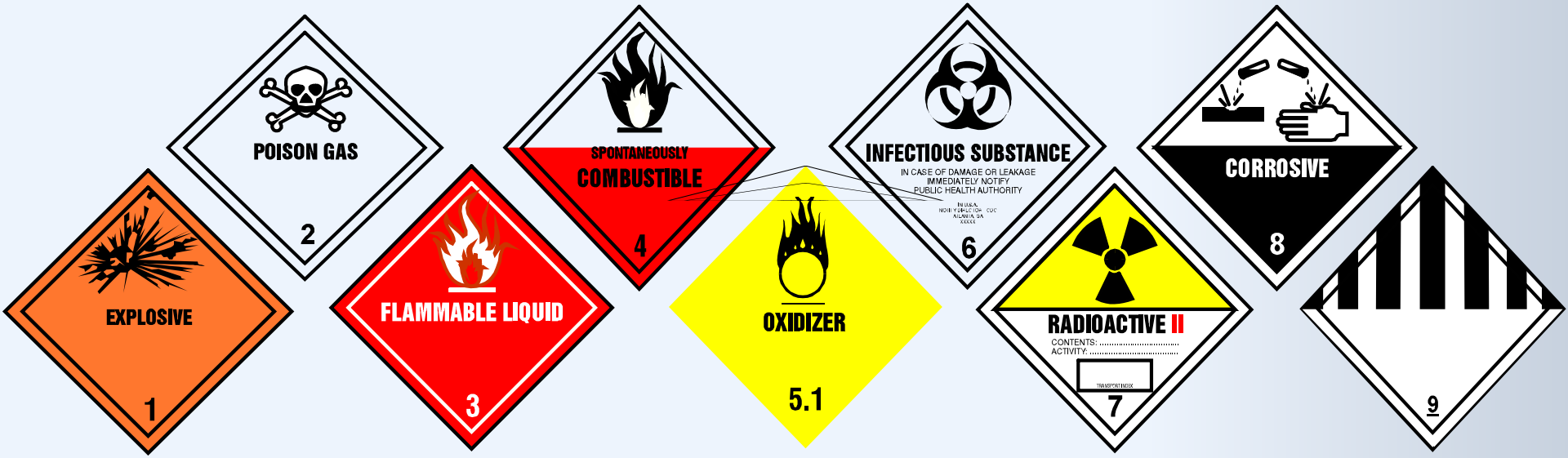




Do Not Use Water | Biological Hazard | Oxidizer | Radiation Hazard | Toxic | Explosive

Department of Transportation (DOT) Label

Under 49 CFR 172, the U.S. Department of Transportation requires vehicles transporting designated hazardous materials to bear placards and labels



UN GHS Pictograms

Health Hazard

- Carcinogen
- Mutagenicity
- Reproductive Toxicity
- Respiratory Sensitizer
- Target Organ Toxicity
- Aspiration Toxicity

Flame

- Flammables
- Pyrophorics
- Self-Heating
- Emits Flammable Gas
- Self-Reactives
- Organic Peroxides

Exclamation Point

- Irritant (skin and eye)
- Skin Sensitizer
- Acute Toxicity
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer (Non-Mandatory)

UN GHS Pictograms

Gas Cylinder

- Gases under Pressure

Corrosion

- Skin Corrosion/Burns
- Eye Damage
- Corrosive to Metals

Exploding Bomb

- Explosives
- Self-Reactives
- Organic Peroxides

UN GHS Pictograms

Flame over Circle

- Oxidizers

Environment (non-mandatory)

- Aquatic Toxicity

Skull and Crossbones

- Acute Toxicity (fatal or toxic)

Material Safety Data Sheets (MSDS)

Material Safety Data Sheets contain reference information

- Material description
  - Common and alternative names
  - Appearance
  - Physical and chemical properties
- Hazards
- Handling and storage
- Spill cleanup
- First aid and firefighting measures
- Contact information

Personal Protective Equipment (PPE)

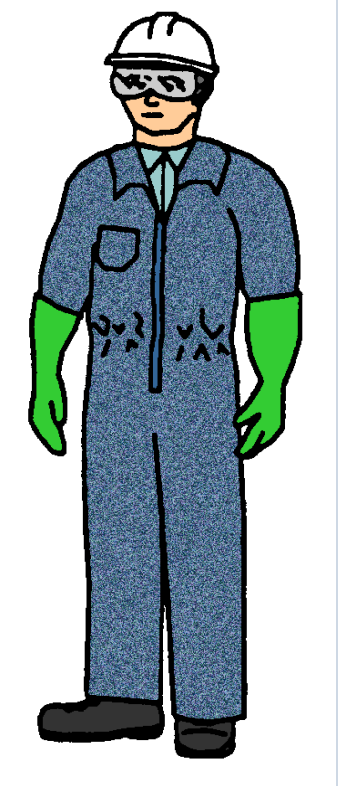
- The purpose of personal protective equipment (PPE) is to shield workers from chemical, physical, and biological hazards
- Should be used in conjunction with engineering controls and safe work practices
- Required as part of a defensive approach to leaks or spills involving hazardous materials

Selecting Personal Protective Equipment

- Identify the hazards or suspected hazards
- Determine potential exposure routes
- Evaluate performance of the PPE
- Remember: No single combination of PPE is capable of protecting against all hazards

Level D Protection

- Work uniform or coveralls (rubber apron, as needed)
- Chemical-resistant gloves
- Boots or shoes (rubber, as needed)
- Chemical splash face shield or goggles (as needed)
- Used when:
  - No known or suspected atmospheric hazards (air contaminants)
  - Minimal potential for inhalation, splashes or contact with chemicals



Avoid Additional Exposure to Hazardous Materials

- Avoid carrying hazmat contamination away from the spill scene
- Avoid continued contact with hazardous materials
- Avoid exposing family or others to hazardous materials
  - Separate contaminated clothing
  - Observe decontamination protocol

QUESTIONS?