DEPARTMENT OF ECOLOGY
State of Washington

BUNKERING
BEST PRACTICES

Safe bunkering operations in Washington State

PREFACE

Our mission is to protect Washington's communities, environment, and economies through a comprehensive spill prevention, preparedness, and response program.

This *Bunkering Best Practices* manual contains tips and best practices that can help you prevent oil spills and protect Washington's environment, public health, safety, and economy. We encourage you to use this guide to develop your bunkering policies and train your crew in safe and effective practices. By using responsible oil transfer procedures, you can greatly reduce costly and dangerous spill incidents.

Thank you for your interest in safe bunkering operations.

Bulk carrier bunkering at anchor in Port Angeles.

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SPILL REPORTING

In the event of an oil spill, you MUST call BOTH of the following phone numbers:

- **Washington State..... 1-800-258-5990**
- **U.S. Coast Guard..... 1-800-424-8802**

AND

You MUST follow your Washington State-approved contingency plan.

For more information, contact:
Department of Ecology
Spills Program, Prevention Section
PO Box 47600
Olympia, WA 98504-7600
Phone: 360-407-7455
Fax: 360-407-7288
Website: **www.ecy.wa.gov**

INTRODUCTION

The Washington State Department of Ecology regulates oil transfers over Washington waters to help prevent oil spills.

The bunkering best practices checklists in this guide comply with the Washington State bunkering rule (Chapter 317-40 WAC). Find the full rule at **http://apps.leg.wa.gov/wac**.

The checklists include the experience and knowledge of our spill prevention inspectors. Our inspectors have conducted and observed thousands of bunkering operations and reviewed many more vessel oil transfer/bunkering procedures.

The practices highlighted in this manual are meant to create a spill prevention mindset during your bunkering operations. They do not replace your vessel's procedures or the federal oil transfer requirements of the U.S. Coast Guard.

In addition to state regulations, vessel owners and operators must also comply with the following U.S. Code of Federal Regulations (CFR) requirements:

- Title 33, Parts 155 & 156.
- Title 46, Sections 12, 15, & 35.

Failure to comply with federal requirements is a failure to comply with the Washington State bunkering rules. Find CFR information at **www.ecfr.gov.**

The primary causes of spills are fatigue, inattention, poor communication, and unclear procedures and policies.

BOOMING OIL TRANSFERS
In Washington State

Pre-booming requirements

We have determined that high-rate over-water oil transfers present the highest risk of a sizeable oil spill.

All bunker barges delivering oil must deploy containment boom equipment before starting over-water oil transfers at rates greater than 500 gallons per minute, when it is safe and effective to do so.

The pre-booming requirements will be met by the bunker supplier. If at anchor, vessel operators may be asked to tie lines to the ship to secure the boom during bunkering operations.

Vessel pre-boomed during bunkering. Note the boom that is set around both the ship and the bunkering vessels.

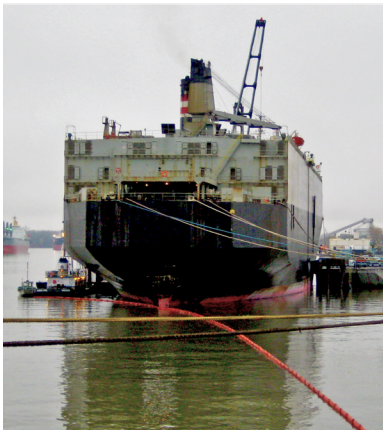
Pre-booming is the first line of defense

While our first priority is preventing spills from occurring, pre-booming oil transfers is our state's first line of defense if a spill happens.

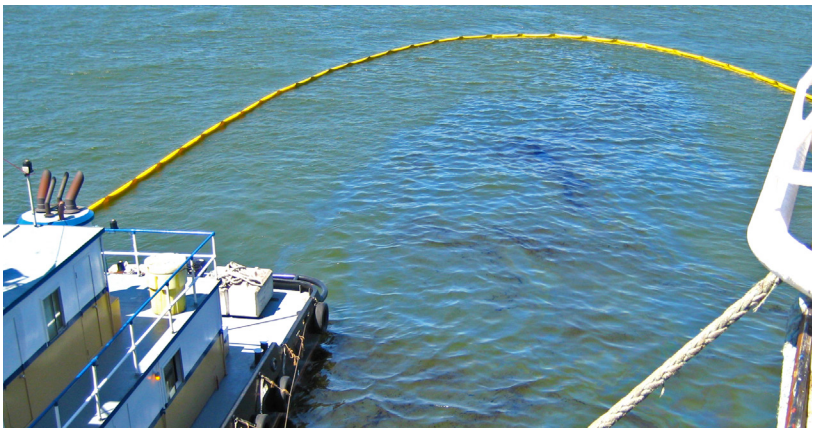
Pre-booming helps reduce damage to our natural resources. This is especially important in a high risk area like Puget Sound where many oil transfers occur.

Pre-booming can:

- Prevent or reduce environmental damage.
- Speed cleanup efforts and reduce cleanup costs.
- Reduce economic impacts on the community where a spill occurs.
- Reduce resource damage assessment fines.



Vessel pre-boomed during bunkering.



Pre-boomed vessel with spilled oil contained within the boom.

BUNKER PROCEDURE CHECKLIST: Written Pre-loading Plan

Fuel oil line marked with pressure test date.

The receiving vessel's person in charge (PIC) must prepare a pre-loading plan prior to conducting the training session (required within 48 hours of the operation) and transfer of bunkers. The PIC must ensure that a copy of the plan is posted in a place where it can be easily seen by, and in a language common to, the vessel crew engaged in bunkering.

The pre-loading plan must include:

☐ Identification of location and maximum fill level of tanks receiving oil.

☐ Level and type of liquid in each tank before bunkering.

☐ Planned final level of tanks and the planned final percent of each tank to be filled.

The final planned tank fill level in the plan should be recorded in the same way that tank levels are taken. For example, don't take soundings of tank depth and record a planned final as an ullage. The person taking soundings should know the planned fill point as the tank is filled.

☐ Order in which tanks will be filled.

This ensures all bunkering team members know which valve(s) will be opened and which tanks sounded next.

☐ Procedures to regularly monitor all bunker tank levels and valve settings.

Additional information

- ✓ **Pre-loading plan:** Your vessel might have a pre-loading or pre-bunker plan form that differs from the sample plan provided on page 37. As long as your plan contains the required information, and the bunker team is trained and familiar with your plan, you can organize your plan as you see fit.
- ✓ **Hydrostatic testing:** In preparation for bunkering, ensure that your system has been hydrostatically tested within the past year, per 33 CFR 156.170.
- ✓ **Spill response gear:** Ensure that your shipboard oil pollution emergency plan (SOPEP) response gear is complete and readily available.

SOPEP response gear locker.

SOPEP response gear on deck.

BUNKER PROCEDURE CHECKLIST: Watchstanders & Personnel Duties

Personnel assigned to bunkering operations cannot work more than 15 hours in any 24-hour period, nor 36 hours in any 72-hour period (including the time it takes to bunker). Relief should be provided to those that will exceed these restrictions.

☐ Assign a person to stand watch at the bunker header, and record the name of this point-of-transfer watchstander in the oil transfer procedure (OTP).

The point-of-transfer team member and the deck rover must have radio communication with both the PIC, usually the chief engineer, and the master or deck watch officer. This ensures the ability to quickly raise the alarm if a spill or problem occurs.

☐ Assign a person as a deck rover watch, and record their name in the OTP.

The main duty of the deck-rover is to watch for oil spills on deck and over the side during bunkering. The deck-rover may perform other duties not in conflict with his or her primary duty. The deck-rover must:

(i) Visually inspect the deck and water near or opposite all bunker tanks and each tank's sounding tube and vent, if accessible; and

(ii) During changing over of tanks or topping off, remain in a position to view any spills on deck or in the water.

☐ Ensure each watchstander has two-way communication with the PIC and master or officer in charge.

☐ The PIC must ensure they receive regular sounding reports as stated in the pre-loading plan.

☐ Write the pre-loading plan in a language common to all bunkering crew and post it where it can be easily seen by bunkering personnel.

Additional information

- ✓ **Fatigue:** In Washington State, fatigue is a contributing factor in many bunker spills. Maneuvering, short port stays, regulatory inspections, taking stores, required maintenance, and bunkering can make it difficult to get adequate rest. Bunkering is a critical operation, and proper rest for bunker team members is essential and required. If they do not meet the rest-hour minimums, the bunkering must be delayed until the bunker team members are sufficiently rested according to rest-hour requirements. *For more information about fatigue, refer to page 28.*
- ✓ **Sounding reports:** The receiving vessel's PIC must ensure that he or she receives sounding reports on tank levels according to the monitoring procedure set in the vessel's pre-loading plan. Soundings should be more frequent during start-up and topping-off.
- ✓ **Oil Transfer Procedures (OTP):** 33 CFR 155.750 requires vessels to have an OTP, including specific standards. Inspectors often find the OTP posted differs from the bunkering procedure actually used by the vessel. All OTPs posted throughout the vessel should reflect the same duty assignments, transfer requirements, and transfer data.
- ✓ **Records retention:** After bunkering, the written pre-loading plan and declaration of inspection (DOI) must be saved for at least 30 days.

A point-of-transfer watch must remain at the point of connection with the delivering vessel during bunkering.

BUNKER PROCEDURE CHECKLIST: Training for Bunker Crew

The vessel's PIC must conduct a training session for all personnel with duties under the vessel's OTPs within 48 hours prior to a vessel's scheduled bunkering.

Training must include, but is not limited to, review of:

☐ Pre-loading plan.

☐ Civil and criminal penalties and liabilities for not complying with federal and state regulations, and for spilling oil in Washington waters. *For more information about penalties go to page 34.*

☐ OTPs, including each person's bunkering duties.

During training

☐ Instruct all bunkering personnel, except the deck-rover, that only bunkering duties may be performed during bunkering.

☐ Ensure the primary duty of the deck-rover is to monitor for oil spills on deck, or over the side, during bunkering. The deck-rover may perform other duties not in conflict with his or her primary duty.

☐ Make clear that all personnel are to remain at their assigned locations during topping-off.

☐ Make sure communications between receiving and delivering vessels are understood, including English phrases and hand signals for 'Stop,' 'Hold,' 'Wait,' 'Fast,' 'Slow,' and 'Finish.' *For more information, go to the Communications Guide on page 36.*

☐ Review emergency shutdown procedures.

Immediately after training

☐ The master, or their designee, should enter the date and time of training in an official log or deck log. List only the names and ratings of attendees.

Additional information

✓ If crew who are not normally assigned bunkering duties in the OTP end up being assigned such duties, the PIC must train such personnel before they can assume bunkering responsibilities. Conduct training in a language common to both the PIC and crew being trained.

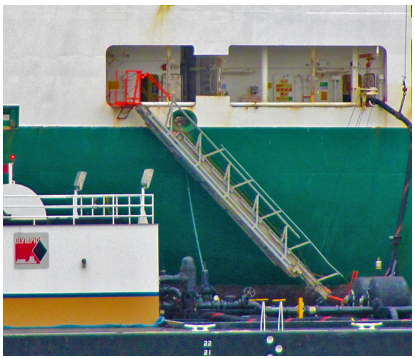
✓ Many times, the bunkering gets delayed or the quantity changed. If the bunkering is delayed beyond 48 hours, conduct a refresher training session to ensure the bunker team is ready for the operation.

Inattention, poor communication, and fatigue can result in bunkering accidents.

BUNKER PROCEDURE CHECKLIST: When Bunkers Arrive

Vessel access

☐ Make sure a ladder, or other means of access, meets safety of life at sea (SOLAS) standards and is securely in place between vessel and delivering vessel or facility. *For more information about safe access, go to page 30.*



Safe access is provided with the accommodation ladder.

Pre-transfer conference with delivery person

☐ Establish a means of two-way communication with the delivering vessel or facility. For example: hand held radio, air horns, or sound-powered telephones.

☐ PICs must meet face-to-face aboard either vessel or facility to complete the declaration of inspection.

☐ Discuss topping-off procedures.

☐ Discuss emergency shutdown procedures with delivery person, including emergency shutdown signal.

☐ Identify personnel serving as point-of-transfer and deck-rover watches to the delivering PIC.

☐ Master, or PIC, must enter pre-transfer conference in official log or deck log.

☐ Discuss the maximum transfer rate for each particular stage of bunkering. For example: starting, steady flow and topping-off.

Ensure:

☐ All the scupper plugs are installed and tightened.

☐ All valves are lined up correctly. Valves to unused tanks are closed.

☐ Everyone is rested, knows what to do, and is ready to start.

Check all scupper plugs to avoid accidental spills.

☐ Any overflow tanks are empty and their high-level switches or pipeline flow switches are working.

☐ All level gauges, level alarms, and remote-operated valves are known to be working correctly.

☐ All declaration of inspection and pre-loading plans are saved for at least 30 days.

When bunkering begins:

☐ Start slowly and confirm oil is entering into the expected tank(s) before increasing the loading rate.

BUNKER PROCEDURE CHECKLIST: *During Bunkering*

Inattention during tank level monitoring, and the improper aligning of valves, are the most common causes of oil spills during transfers. Ensure that your transfer procedures and training emphasize the importance of these transfer basics.

Everyone must follow the plan. If something changes:

- Stop the bunkering.
- Adjust the plan.
- Communicate the plan changes to everyone, including the tankerman.
- Post the new plan at the point-of-transfer.
- Resume bunkering under the new plan.

During bunkering operations

☐ Align valves to ensure flow to the correct tank(s). Make sure valves to unused tanks are closed.

☐ Ensure two-way communication with delivering vessel or facility.

☐ Maintain two-way communication with the bunker team.

☐ Notify the delivering vessel or facility before changing tanks and topping-off.

☐ Make sure bunkering personnel perform duties as required.

☐ Ensure no team member exceeds work hour restrictions.

☐ Compare deliverer's rate to receiving rate. If there is a significant difference, shut down immediately and investigate.

☐ The receiving vessel's PIC should compare the calculated transfer rate to the planned rate and, if the transfer rate is higher than planned, the PIC should contact the delivering vessel or facility immediately to reduce it.

Do not exceed the planned transfer rate without considering potential impacts to safety. Increased transfer rates require more attention and communication. If the PIC chooses to exceed the planned rate, they have more responsibility to make sure the transfer operation remains safe and free of spills.

☐ If the oil transfer rate exceeds the planned rate, the delivering PIC should notify the receiving vessel's PIC and decrease the transfer rate.

☐ Allow ample time to complete the operation at a safe transfer rate when scheduling the bunkering operation. Time constraints should not drive the need for an increased transfer rate.

☐ Company policies and procedures for bunkering should clearly place safety and environmental protection over commercial considerations.

Additional information

✓ Verify, by frequent observations, that all fuel system tank levels are as expected. If using the ship's electronic tank gauging system during the bunkering operation, verify the electronic system is accurate with manual soundings before and/or during bunkering.

It is better to restart a bunkering operation than clean up after a spill.

Never hesitate to STOP bunkering to avoid a spill.

BUNKER PROCEDURE CHECKLIST: After Bunkering

Complete the following:

- ☐ Close header valve.
- ☐ Drain hoses before disconnecting.
- ☐ Close all bunker system valves.
- ☐ Blank bunker hose before returning to delivering vessel or facility. Thoroughly clean hose flange before blanking.
- ☐ Blank bunker header flange.
- ☐ Take final soundings of all fuel oil tanks to ensure ample space for expansion.
- ☐ Properly complete oil record book, deck, and engine log books.
- ☐ Save the written pre-loading plan and declaration of inspection for at least 30 days.

Crew preparing to bunker.

RESOURCES:
Environmental Harm from Oil Spills

Washington State waters are valued for their natural beauty, cultural significance, commerce, recreation and bounty of seafood they provide. An oil spill can harm the environment and put public health and the economy at risk. Impacts from oil spills can be immediate and catastrophic, or longer term and chronic, causing lingering contamination.

An oil spill can harm the tiniest microscopic plants and animals, as well as largest marine mammals, such as whales. Fish and wildlife habitat can be destroyed. Oil can remain in the environment for days or years, causing long-term injury. While some types of oil may not appear as harmful as others, the toxicity, mechanical injury, and persistence of oil make all types of spills potentially damaging or destructive.

Thick, sticky oils cause mechanical injury to wildlife.
Photo courtesy of Washington Department of Fish and Wildlife.

Acute toxicity

Acute toxicity is a measure of a substance's ability to cause severe biological harm or death soon after a single exposure. Volatile compounds in oil can readily dissolve into water and evaporate into the air, posing an immediate threat to life in the water and on the land. While all petroleum products have some level of toxicity, marine diesel fuel/marine gas oil is one type of highly toxic oil.

Mechanical injury

Mechanical injury is a measure of how much harm oil causes because of its physical characteristics. This is sometimes called the "coating" effect because oils which are thick and sticky (viscous) tend to coat plants and animals to a level that causes physical injury, such as loss of insulation, immobility, or smothering.

Bunker fuel/Intermediate Fuel Oil (IFO)-380 and lubricating oils (grease, gear oil, motor oil, hydraulic oil, and mineral oil) are several types of viscous oil.

Persistence

Persistence is a measure of how long oil stays in the environment before breaking down. Oils with high persistence tend to contaminate habitats longer and pose ongoing threats to organisms that rely on these habitats.

Persistence is also a measure of chronic, or long term, toxicity. Certain compounds in oil can persist in the environment for months or years following a spill. Many oils have components called polycyclic aromatic hydrocarbons (PAHs). Some types of PAHs cause long term, sub-lethal, chronic effects to an organism's growth, reproduction, and survival, which can harm populations over time.

Bunker fuel/ IFO-380 and lubricating oils are persistent and remain in the environment for several years.

Spills of persistent bunker fuel can remain in the environment for years.

Summary of oil qualities by type

Bunker fuel/Intermediate Fuel Oil (IFO)-380

Acute toxicity	Few volatile compounds, generally not very acutely toxic. Adding diesel or other solvents increases acute toxicity. Some IFOs increase in acute toxicity with exposure to sunlight.
Mechanical injury	Very viscous and sticky; major threat.
Persistence	Very persistent; can remain in the environment for over ten years.

Lubricating oils (such as grease, gear oil, motor oil, hydraulic oil, and mineral oil)

Acute toxicity	No volatile compounds. Low acute toxicity.
Mechanical injury	Somewhat viscous; moderate threat.
Persistence	Moderately persistent; generally remain a few years in the environment.

Marine diesel fuel/marine gas oil

Acute toxicity	Can contain high to moderate levels of volatile compounds; acutely toxic to animal life.
Mechanical injury	Not viscous or sticky when fresh; can form emulsions over time which pose greater threat.
Persistence	Somewhat persistent; remain in the environment from a day to a year.

RESOURCES:
Lessons Learned from Bunkering Spills

To find the most common causes of bunkering spills, we conduct in-depth investigations on many spills. These recommendations are based on lessons learned and will help crews avoid spills.

Training and awareness

- Crew should understand the importance of getting enough rest and the dangers of working while fatigued.
- The PIC should be familiar with the vessel's oil transfer procedures, the fuel piping system, and the status of the piping, valves, and fuel tanks before fueling.
- Vessel crew must receive training as required by Washington's rules for safe bunkering, and be prepared to carry out their duties as part of a bunkering team.
- The PIC should ensure the bunkering team understands the importance of closely watching the vents of fuel tanks, especially when those tanks are topped-off.

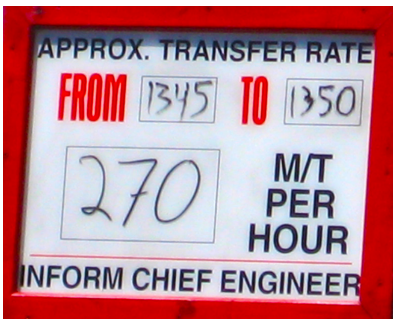
Communication

- Delivering and receiving PICs should carefully review and discuss the pre-loading plan.
- At the end of the transfer, when draining a fuel hose into a vessel's tank, the delivering and receiving PICs should work together to make sure fuel does not burp out through the tank vents.
- If an oil spill occurs, delivering and receiving PICs should use available communication systems, such as voice, radio, or air horn, to immediately notify all involved crew.

Procedures and cautions

- Crew, including the PICs, must have enough rest prior to fueling operations.
- The receiving vessel's PIC should prepare a pre-loading plan for bunkering that includes a planned transfer rate. The planned rate should meet company standards, be at or below the maximum rate allowable for the tanks to be filled, and consider the time it takes for ship's crew to detect and correct any problems.
- Sound fuel tanks at regular intervals that fit the bunker operation and the stage of bunkering taking place. For example, take soundings during the starting, steady flow, and topping-off stages. Record soundings and retain records in the bunkering file.
- The receiving vessel's PIC should compare the calculated transfer rate to the planned rate. If the transfer rate is higher than planned, the PIC should contact the delivering vessel or facility immediately to reduce it. The receiving vessel's PIC must frequently calculate and record the rate of transfer based on the soundings. Record transfer rates in the bunkering file.

Sounding tape near the fuel tank sounding location.



Planned transfer rate.

Vessel oil transfer procedures should:

- Describe the duties of each person involved in fueling operations by position or title.
- Assign the deck-rover to specifically watch the deck and vents for oil spills.
- State the level at which topping-off begins and the maximum fill level for each fuel tank.
- State the maximum rates for safely filling and for topping-off each fuel tank.
- Describe special or unusual parts or behaviors of the fuel tanks or their fill and vent piping.
- Describe added steps needed to keep fueling safe when the vessel's trim or list is unusual.
- Have a pre-loading plan that includes the items required by Washington's rules.
- Require that PICs complete all parts of the pre-loading plan before each fuel transfer.
- Require a check of the fuel oil piping and valve line-up before starting any fuel transfer.
- Describe procedures for regularly checking the fuel tank levels.
- Require fuel tank level checks at the start of transfer operations to make sure that fuel is only going into the expected tanks.
- Require fuel tank level checks after closing the valves of each filled tank to ensure that the fuel levels do not change.
- Conduct only one oil transfer at a time unless the PICs use more people to make sure both transfers happen safely.

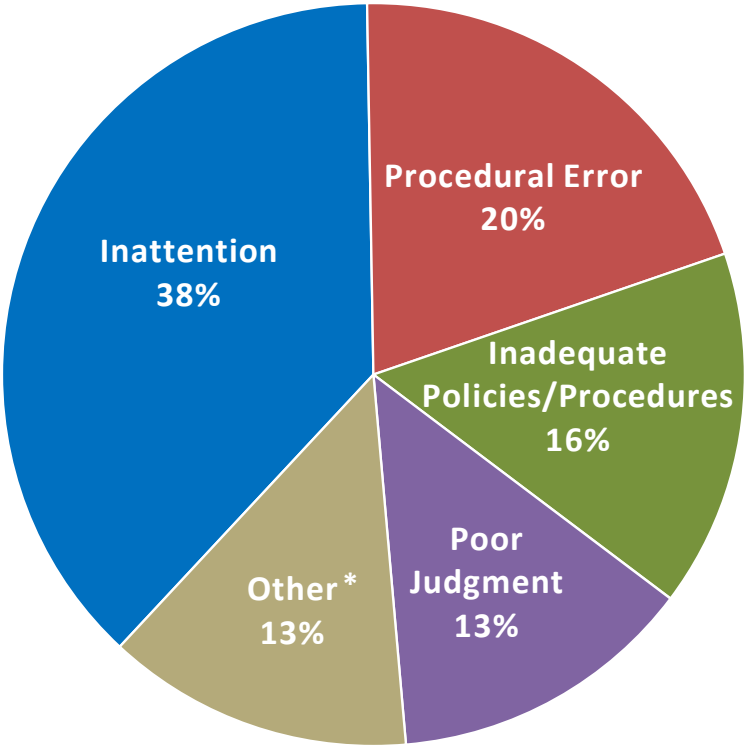
Equipment

- Identify "problem" fuel oil tanks prone to burps, overflows, or other issues for each vessel based on experience. The vessel operator should identify the cause of the problems and fix them.
- All fuel system valves, manifolds, and piping should be marked clearly with their use and the tanks they serve.
- Maintain easy-to-read fuel system markings.
- Vessel fuel oil valves and manifolds should be well-lit so the PIC can see what they are for and if they are open or closed.
- When using sight glasses to check tank fuel levels, consider having the topping-off and maximum safe-fill levels clearly marked on the sight glass or the bulkhead next to it.
- Post an up-to-date line drawing of the fuel oil system at each of the vessel's fuel manifolds.

Crew tending tanks during oil transfer.


Crew sounding tanks during oil transfer.

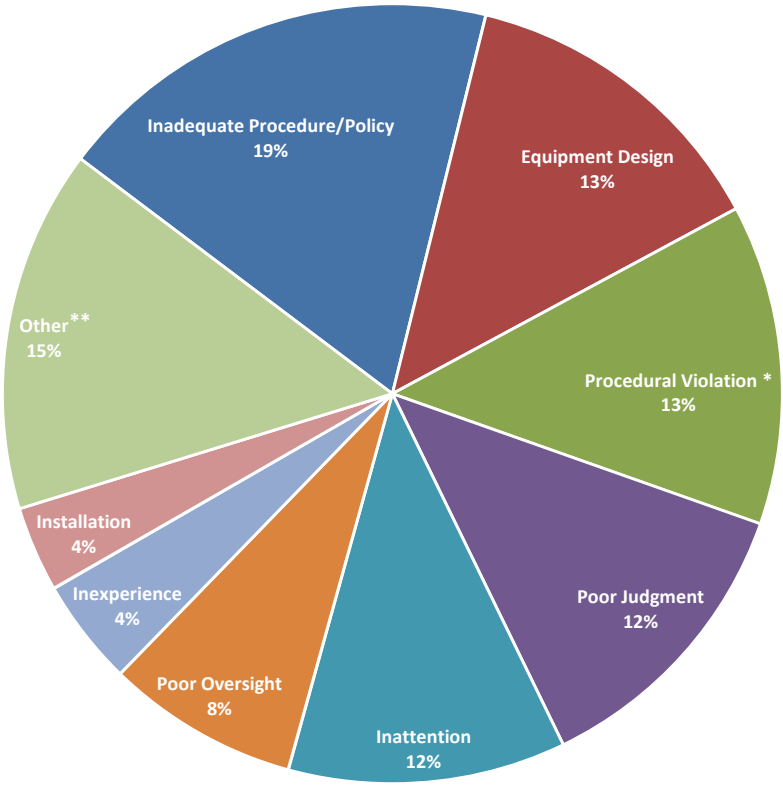
Bunkering/fueling spills: Immediate cause for bunkering spills investigated 1999-2016



The most common immediate cause of bunkering/fueling spills is Inattention. Inattention and Procedural Error combined account for over 50% of the immediate causes of bunkering/fueling spills.

***** "Other" includes mechanical failure, structural failure, installation problem, or wind.

Bunkering/fueling spills: Contributing factors for bunkering spills investigated 1999-2016



While there are many different factors that can contribute to a bunkering/fueling spill, the most common contributing factor is Inadequate Procedure/Policy, which accounts for 19% of contributing factors.

***** In 2008, this data included only "Procedural Error" and "Intentional Violation" was part of "Other." For 2016 update "Procedural Error" and "Intentional Violation" were combined into the category of "Procedural Violation" as there was a significant increase in the number of "Intentional Violations" cited.

****** "Other" includes mechanical failure, inadequately planned maintenance program, lack of supervision, insufficient personnel, improper equipment use, communicaton, and sea state.

RESOURCES:
Fatigue & Maritime Operations

Bunkering by fatigued crew can cause oil spills. In Washington State, fatigue has been a factor in a number of bunker spills. Though sleep is a basic human need, fatigue and the need for sleep are too often viewed as weaknesses that can be overcome. In reality, fatigue is not controllable, and it leads to a degradation of performance and poor decision-making.

There are many misconceptions about fatigue and the need for sleep, including:

Misconception	Reality
"I know how tired I am."	Since fatigue impairs all mental functions, including perception, people consistently underestimate their levels of fatigue.
"I've been awake this long before with no problem."	The body's natural sleep rhythms are complex and subject to a variety of factors. Do not assume that because you stayed awake for a long period without incident you can safely repeat the experience.
"If I drink coffee, I'll stay awake with no problem."	Caffeine's effect is temporary (three to four hours), and those who drink caffeinated beverages regularly experience less of a stimulant effect over time. In addition, once the stimulant effects have worn off, you may experience a "rebound effect" and be even more fatigued. Stimulants such as caffeine can also degrade your sleep quality.

A number of fatigue-related effects have been identified:

- Lapses in judgment or failures to respond.
- Inappropriate responses.
- Decreased performance consistency.
- Slowed reactions.
- Increased mental errors.
- Decreased memory and recall.
- Decreased attention.
- Increased risk-taking behavior.

For bunkering operation work hours, WAC 317-40-085 states:

> "Vessel personnel involved in bunkering may not work more than 15 hours in any 24-hour period, nor more than 36 hours in any 72-hour period, except in an emergency or spill response operation. For purposes of this section, 'emergency' means an unforeseen situation that poses an imminent threat to human safety, or the environment, or substantial loss of property."

Crew work and rest hour records must be available, upon request by the state inspector, to confirm compliance.

Fatigue plays a major role in oil spills during bunkering.

RESOURCES:
Safe Access to Vessels

Safe access to vessels is important for personnel safety

During bunkering operations, certain crew need access to the vessel. It is important the gangway, brow, or ladder access points are strong, stable, clean, and well-lit to avoid potential injuries.

Accidents that occur while accessing a vessel can result in serious injuries and loss of life. Safety issues include:

- Loose and unstable gangway handrails and ropes.
- Vertical ladders that are not secured or attended at the top and/or bottom.
- Inadequate lighting.
- Oily or slick ladder treads or gangway.

Example of vessel access from a barge during a transfer.

Legal requirements for access during bunker and oil transfer operations

For bunkering operations, WAC 317-40-050 requires vessels to have an accommodation ladder between the vessel and facility or to another vessel. If the ladder is inaccessible, another means of access that meets SOLAS standards, such as a pilot's ladder, can be used instead.

Why safe access matters

Personnel injuries and accidents, including loss of life, have occurred because access to the vessel was unsafe. Understanding which arrangements are safe and acceptable, and which are not, can prevent future accidents.

Secure the access platform at the top and bottom to keep it from moving.

Keep the entire ladder and access points from the vessel and facility well-lit during low visibility conditions.

RESOURCES:
Cell Phone Use & Maritime Operations

When used appropriately, mobile phones can be useful tools for those in the marine industry. However, when used inappropriately, they can be dangerous distractions that can lead to marine accidents and oil spills.

Recommendations

Your company's safety management system (SMS) operations manual should set rules for mobile phone use by on-duty crew. The rules should, at a minimum:

- Restrict mobile phone use by on-duty crew to operations-related calls.
- Set time limits for calls that allow for only brief, important conversations.
- Identify locations and circumstances when on-duty mobile phone calls are permitted, or are not permitted. Choose the best approach for your operation.
- Outline procedures for on-duty crew to get relief if they receive an emergency personal phone call.

Bunkering spills related to mobile phone use

These spills occurred in Washington State and involved use of mobile phones.

- The sole navigation watchstander was in charge of both monitoring for spills during an internal fuel transfer and acting as a lookout for a tugboat pulling a laden tug barge. The barge was near ferry lanes in Puget Sound. The watchstander was busy with back-to-back mobile phone calls for about 19 minutes and failed to notice oil spilling from the fuel transfer operation. About 200 gallons of diesel spilled into Washington waters before the watch stander noticed the spill and stopped the transfer.

- The engineer in charge of fueling a tugboat was talking on a mobile phone while topping-off one of the tanks with diesel. The engineer on the delivering vessel saw him on the phone and reproached him because personal mobile phone use was against company policy. The engineer then hung up the phone and went below to close the valve to one tank and open a valve to another, but it was too late. When he returned to the deck, diesel was already spilling from the tank he was topping off. About five gallons spilled to Washington waters.

Research examples of mobile phone hazards

Bunkering activities and activities related to operating an automobile both require concentration and sustained focus. Because of this similarity, research about mobile phone hazards from the automobile industry can also inform the maritime community.

- A study* found that automobile driver performance while talking on a mobile phone was comparable to driving while under the influence of alcohol at the legal limit.
- According to the National Highway Traffic Safety Administration (NHTSA), driving an automobile while using a mobile phone can pose a serious mental distraction and degrade driver performance. NHTSA estimates that driver distraction from all sources contributes to 25% of all police-reported traffic crashes.
- Both hands-free and hand-held mobile phones cause mental distraction that are significant enough to decrease the performance of drivers, causing them to miss key visual and audio cues needed to avoid collisions.

Other portable electronic devices

You should also consider these factors when setting rules for the use of other electronic devices.

* Strayer, D., Drews, F., Crouch, D. "A comparison of the cell phone driver and the drunk driver." *Human Factors*, Vol. 48, No. 2, Summer 2006, pp 381-391.

RESOURCES:
Vessel Oil Spill Penalties

Washington State violations

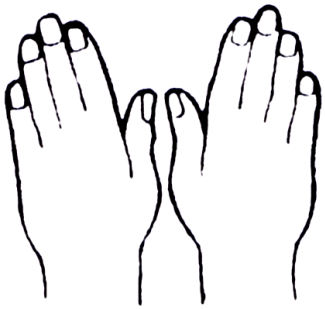
DISCHARGE
Up to $10,000 per discharge with each day of discharge a separate violation.
NEGLIGENT DISCHARGE
Up to $100,000 per violation with each day the oil poses a threat to the environment a separate violation.
RECKLESS OR INTENTIONAL DISCHARGE
Up to $500,000 per violation with each day the discharge poses a threat to the environment a separate violation.
FAILURE TO COMPLY WITH STATE LAW, RULES OR ORDERS
Up to $10,000 per violation with each day of noncompliance a separate violation.
FAILURE TO HAVE A STATE APPROVED OIL SPILL CONTINGENCY PLAN OR FINANCIAL RESPONSIBILITY
Up to $100,000 per violation with each day of noncompliance a separate violation.
FAILURE TO IMMEDIATELY NOTIFY WASHINGTON STATE (1-800-258-5990 or 253-912-4904)
Up to $10,000 per violation, with each day of non-compliance a separate violation.

The responsible party for the spill may also pay costs for response and cleanup, damages to natural resources, state expenses, and third party damages.

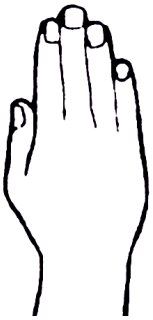
United States Coast Guard - Port State

DISCHARGE – Administrative Penalties (by the Coast Guard)
Class 1 penalty – up to $18,107 per violation to a maximum of $45,268.
Class 2 penalty – up to $18,107 per day of violation up to a maximum of $226,338.
DISCHARGE – Civil Penalties (by a federal court)
Up to $45,268 per day of discharge; or $1,811 per barrel of oil or hazardous substance discharged.
GROSS NEGLIGENCE OR WILLFUL MISCONDUCT
Judicial Assessment - A minimum of $181,071 and not more than $5,432 per barrel of oil discharged.
FAILURE TO COMPLY WITH NATIONAL CONTINGENCY PLAN
Class 1 penalty – up to $18,107 per violation to a maximum of $45,268.
Class 2 penalty – up to $18,107 per day of violation up to a maximum of $226,338.
FAILURE TO COMPLY WITH FEDERAL REGULATIONS – Civil Penalties
Up to $90,063 per day of violation.
FAILURE TO IMMEDIATELY NOTIFY NATIONAL RESPONSE CENTER (1-800-424-8802 or 202-267-2675)
Federal crime: upon conviction up to 5 years in prison, and/or a maximum fine of $250,000 for individuals, or $500,000 for organizations.

RESOURCES:
Communication Guide



HOLD
DO NOT CHANGE



WAIT
AWAIT FURTHER ORDERS

SLOW
REDUCE TRANSFER RATE

FAST
INCREASE TRANSFER RATE

STOP
STOP TRANSFER NOW

FINISH
TRANSFER OPERATION COMPLETED

DEPARTMENT OF ECOLOGY
State of Washington

Bunker Pre-Loading Plan

Meets preloading plan requirements of WAC 317-40

Receiving Vessel:_____ **PIC:**_____

Delivering Facility/Barge:_____ **PIC:**_____

Date:_____ **Transfer Location:**_____

Oil Delivery Rate* Recommended:_____ Maximum:_____ Topping Off:_____

Type and Volume of Bunkers to be Taken:_____

Fill Sequence	**ALL FUEL TANKS INVOLVED IN BUNKER OPERATIONS**		**Product Name**	☐ **SOUNDING** ☐ **ULLAGE**		☐ **FEET & INCHES** ☐ **METERS & TENTHS**		**Percent Full at Planned Final**
				Starting		**Planned Final**		
	Number/Name	**Total Capacity** Units:_____ @100% Full		Sounding	Volume*	Sounding	Volume*	

Person Monitoring Tank Levels*:_____ Point of Transfer/Bunker Station Watch**:_____

Person Aligning Valves*:_____ Deck Rover**:_____

Procedures to regularly monitor tank levels and valve alignments or location where the information can be found:

Notes, special instructions, or procedures:

*These items are NOT required to be on this form but are recommended best practices.

**These items must be identified either on this form or in the Oil Transfer Procedures.

This form must be kept for 30 days following the transfer.

RESOURCES:
Bunkering Training Video

We offer a video for bunkering training that helps crew:

- Identify the steps of a safe oil transfer procedure.
- Learn the parts of a pre-loading plan.
- See preparations for safe transfer, including necessary inspections.
- Understand typical distractions during oil transfers and how to avoid them.
- Recognize why and when to shut down a transfer.

To watch or download the video, visit:
www.oilspilltaskforce.org/ourwork/bunkering-video/


This video was produced by Maritime Training Services and brought to you by the Pacific States/British Columbia Oil Spill Task Force, which includes Alaska, Washington, Oregon, California, Hawaii, and British Columbia.

www.maritimetraining.com

PACIFIC STATES | BRITISH COLUMBIA
OIL SPILL TASK FORCE

www.oilspilltaskforce.org

DEPARTMENT OF
ECOLOGY
State of Washington

For more information, contact:
Department of Ecology
Spill Prevention, Preparedness, and Response Program
PO Box 47600
Olympia, WA 98504-7600
Phone: 360-407-7455
Fax: 360-407-7288
Webpage: www.ecology.wa.gov/SpillsProgram

Special accommodations:
To request this document in a format for the visually impaired, please call the Ecology Spills Program at 360-407-7455. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.

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