



Maritime Administration's Safety Corner



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Thank you to all those in the maritime industry that are working during the holidays to keep America's products moving. The work you do is extremely important to the success and prosperity of our nation! During this time of year, it is particularly easy to become distracted as you think about family and friends at home during the holidays. Remind your coworkers to stay engaged on the task at hand until it is their time to be home. Nothing is more important than getting yourself and your coworkers home - healthy and safe. A good job is done safely.

It has been an honor to serve as your Maritime Administrator.

I wish everyone a happy and safe holiday season and a wonderful New Year 2025!



Rear Admiral Ann C. Phillips
(USN Ret.)
Maritime Administrator

Lithium-Ion Batteries

Lithium-ion (Li-ion) batteries are commonly used in a wide range of consumer electronics, from smartphones and laptops to electric vehicles, power tools, and handheld radios. While these batteries offer high energy density and long-lasting power, and are generally safe to use, they also come with certain hazards if not handled properly. In this article, we'll discuss some potential risks of lithium-ion batteries and provide best practices for their safe use.

Thermal Runaway and Fire Risk

One of the most significant risks associated with lithium-ion batteries is thermal runaway, a self-sustaining chain reaction that can cause a battery to overheat, catch fire, or even explode. This typically occurs when the battery is overcharged, exposed to high temperatures, or damaged in a way that causes a short circuit (such as dendrite formation discussed later). Thermal runaway can lead to fires that are difficult to extinguish and can release toxic and flammable gases.

Venting and Gassing

Lithium-ion batteries contain flammable electrolytes, which can be released as gas if the battery overheats or is damaged. This release of gas is called venting. In some cases, the gas buildup can cause the battery to rupture or explode. Venting often appears as thick white "smoke", but the released gases are toxic and highly flammable.

Short Circuits

Lithium batteries can be short circuited through external physical damage (puncture or crush) or internally through lithium plating of the anode and the formation of tiny tree-like metal crystals called dendrites. Lithium plating and dendrites result from charging or discharged too quickly or charging at low temperatures (below freezing). Plating and dendrites have the effect of both reducing battery capacity as well as increased potential for overcharging and internal short

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Lithium-Ion Batteries

circuits. To minimize dendrite formation, always use the recommended charger, and avoid overcharging or discharging your device too quickly.

Swelling and Deformation

Lithium-ion batteries may swell or deform when exposed to excessive heat, overcharging, aging, or physical damage. The electrolyte in the battery breaks down and causes gas build up which can puff up a pouch-type battery. Contrary to what you may see on the internet, poking the cell with a sharp object to relieve the gas and then covering that hole with tape does not “fix” the battery. A swollen battery is an indication that the internal chemistry has been compromised, and the battery should be safely disposed of as it is prone to failure.



From: https://commons.wikimedia.org/wiki/File:Expanded_lithium-ion_polymer_battery_from_an_Apple_iPhone_3GS.jpg

Best Practices for Safe Use

To minimize the risk of accidents and prolong the life of your lithium-ion batteries, it is essential to follow proper handling, charging, and storage procedures. Here are some best practices to ensure safe use:

Use the Correct Charger

Always use the correct charger designed for your device or battery. Using an incompatible charger can lead to overcharging, overheating, or even damaging the battery. Avoid using cheap or uncertified third-party chargers, as they may not meet safety standards.

Avoid Temperature Extremes

Exposing lithium-ion batteries to extreme temperatures (both hot and cold) can have negative effects. Avoid charging a battery when it is either hot or cold to prevent lithium plating and capacity loss. Battery chargers may have built-in battery management systems which prohibit charging a battery if it is outside of the allowable temperature range. For optimal battery life and performance, store and charge batteries at room temperature (approximately 68°F to 77°F). Avoid leaving batteries (such as in a laptop) in hot locations such as inside a car in the sun.

Avoid Physical Damage

Be mindful not to drop, puncture, or crush lithium-ion batteries. If a battery becomes physically damaged, it may pose a serious safety hazard, including fire and chemical leaks. Handle batteries with care, especially when removing them from devices or storing them.

Don't Overcharge or Overdischarge

Lithium-ion batteries perform best when they are kept between 20% and 80% charge. Avoid fully discharging the battery or leaving it fully charged for extended periods. If possible, unplug your device once it reaches 100%, and try to avoid letting the battery drain completely. If you need to store lithium-ion batteries for a period of time, store them in a cool, dry place at a partial charge (around 40-60%).

Dispose of Batteries Properly

Never throw lithium-ion batteries in the trash, as they can pose environmental hazards and fire risks. Lithium-ion batteries have been known to start fires in garbage trucks after being crushed. Separate lithium-ion batteries and dispose them at a recycle point or battery disposal facility.

Conclusion

Lithium-ion batteries are a cornerstone of modern technology, offering high efficiency and power in a compact form. By following these best practices—using the correct charger, storing batteries in safe conditions, and regularly inspecting them for damage—you can help prevent accidents and extend the lifespan of your devices. Always remember to dispose of damaged or worn-out batteries responsibly to minimize environmental impact and prevent safety risks.

EMBARC Updates

New and Improved SOCP SASH Prevention Products

The Maritime Administration's (MARAD) Every Mariner Builds A Respectful Culture (EMBARC) Standards program continues its mission to foster and promote a safe, respectful, and inclusive work environment across the maritime industry, pursuant to 46 U.S.C. §51322 - Protection of cadets from sexual assault onboard vessels. EMBARC has been in place for nearly three years and there are now 22 vessel operators enrolled in EMBARC, representing most U.S. commercial operators of SOLAS compliant vessels and all vessels in MARAD's MSP, TSP, and CSP programs, and MARAD RRF Ship Managers.

To support the EMBARC Standards program, the Ship Operations Cooperative Program (SOCP) has been working under a cooperative agreement with MARAD to update and produce a series of critical training and other resources to aid in preventing and addressing Sexual Assault and Sexual Harassment (SASH) at sea.

SASH Contact Training Course

In September 2024, SOCP released the first of its kind maritime focused SASH Contact Training Course. The SOCP's Achieving a Respectful Onboard Culture (AROC) Technical Team developed the course under a cooperative agreement with MARAD to support the EMBARC Program and address issues affecting the shipboard climate in the U.S. Maritime Industry. The AROC team compiled industry input and created an outline with course requirements as a basis for the National Organization for Victim Advocacy (NOVA) to use in developing this US Maritime focused course for SASH Contacts. This 40-hour course was designed to meet EMBARC standards, including eligibility for National Advocate Credentialing Program (NACP) Provisional Certification as a Victim Advocate. The course provides SASH Contacts with the training and tools to help victims/survivors in a trauma informed manner. Upon completion of the course, participants are provided with instructions on the application process for NACP Provisional Certification.

Best Practices Guide

SOCP released an updated SASH Best Practices Guide (BPG) for U.S. Maritime Industry in August 2024. The updated BPG on the Prevention of and Response to SASH in the U.S. Merchant Marine, addresses retaliation, bullying, hazing, coercion, stalking, and other prohibited behaviors. SOCP developed this 2024 BPG in partnership with the Rape, Abuse & Incest National Network (RAINN) to replace the previous 2017 version.

This Guide is intended for U.S. merchant mariners, shore based employees, ship owners and operators, contractors, and others who work in the industry, to include vessel husbanding agents, pilots, marine terminal employees, longshoremen, and ship building and repair industry employees, and all contractors, subcontractors, and vendors interacting with merchant mariners. These best practices apply to all segments of the U.S. Merchant Marine including oceangoing, coastwise, Great Lakes, inland, harbor, towing, offshore industry, cruise, ferries, dredging, research vessels, and government-owned vessels, and should be a part of every company's policy on sexual assault and sexual harassment in the workplace, whether on shore or at sea.

Updated Posters on SASH Prevention in the U.S. Merchant Marine

To reinforce awareness and commitment to workplace safety, SOCP has updated series of SASH Prevention Posters. Designed for placement aboard vessels and in maritime facilities, these posters remind mariners of their responsibility to uphold a harassment-free workplace and highlight avenues for seeking assistance.

SASH Computer Based Training

The EMBARC Standards require the SOCP SASH Computer Based Training (CBT) to be taken by every crew member prior to embarking cadets, and once taken - repeated annually. SOCP will be releasing a updated training course in Spring 2025.

Vessel operators are encouraged to adopt and integrate these useful SOCP resources across all operations. **All courses and materials described above are available free of charge and can be accessed through the SOCP website at: <https://www.socp.us/sash-prevention>**

If you want to know more about EMBARC or have other questions as they pertain to the topics discussed, please visit MARAD's EMBARC web page: <https://www.maritime.dot.gov/embarc>, or email the Office of Cadet Training At-Sea Safety at EMBARC@dot.gov.



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Maritime Safety Meetings

- January 5-9, 2025: **Transportation Research Board Annual Meeting** in Washington D.C. ([TRB Annual Meeting](#) | [National Academies](#))
- January 27-30 2025: **Passenger Vessel Association (PVA) Annual Convention** in Savannah, GA ([Meetings and Events Calendar](#) | [Passenger Vessel Association](#))
- February 18-20, 2025: **American Waterways Operators Safety Meeting** in Nashville, TN ([The American Waterways Operators](#))
- April 7-11, 2025: **IMO Marine Environmental Protection Committee** in London, U.K. ([PROG-133-Preliminary-Rev.1 - Preliminary Programme Of Meetings For 2025 \(Secretariat\).pdf \(imo.org\)](#))
- April 29-30, 2025: **Waterborne Transport Group** in Houston, TX ([Waterborne Transports Group - National Safety Council \(nsc.org\)](#))
- June 16-27, 2025: **IMO Maritime Safety Committee** in London U.K. ([PROG-133-Preliminary-Rev.1 - Preliminary Programme Of Meetings For 2025 \(Secretariat\).pdf \(imo.org\)](#))
- June 25-26, 2025: **ASTM F25 Committee on Ships and Marine Technology** in Toronto, Canada ([ASTM International](#))

Safety Tip:

Starting in January 2025 NOAA will discontinue the production of all paper charts. USCG will transition from using NOAA Paper Chart Numbers and Editions/Dates for disseminating Marine Safety Information to using Official Waterway Names. During the week of December 2nd, the U.S. Coast Guard Navigation Center (NAVCEN) launched it's updated Local Notice to Mariners (LNM) and Light List application. Users will now be able to obtain Local Notice to Mariners (LNMs) updates every 15 minutes and Light List updates every 24 hours. The LNM and Light List data will now be available in a geospatial format, which will allow you to visualize information interactively on a map/chart. The upgraded application allows users to download and print LNM for entire Coast Guard Districts or define their own area of interest. Users will be able to zoom in and access localized data and the form section allows sorting of LNMS by waterway or category.

<https://www.navcen.uscg.gov/LNM-and-LL-app-frequently-asked-questions>

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