

Containers Lost at Sea – 2023 Update

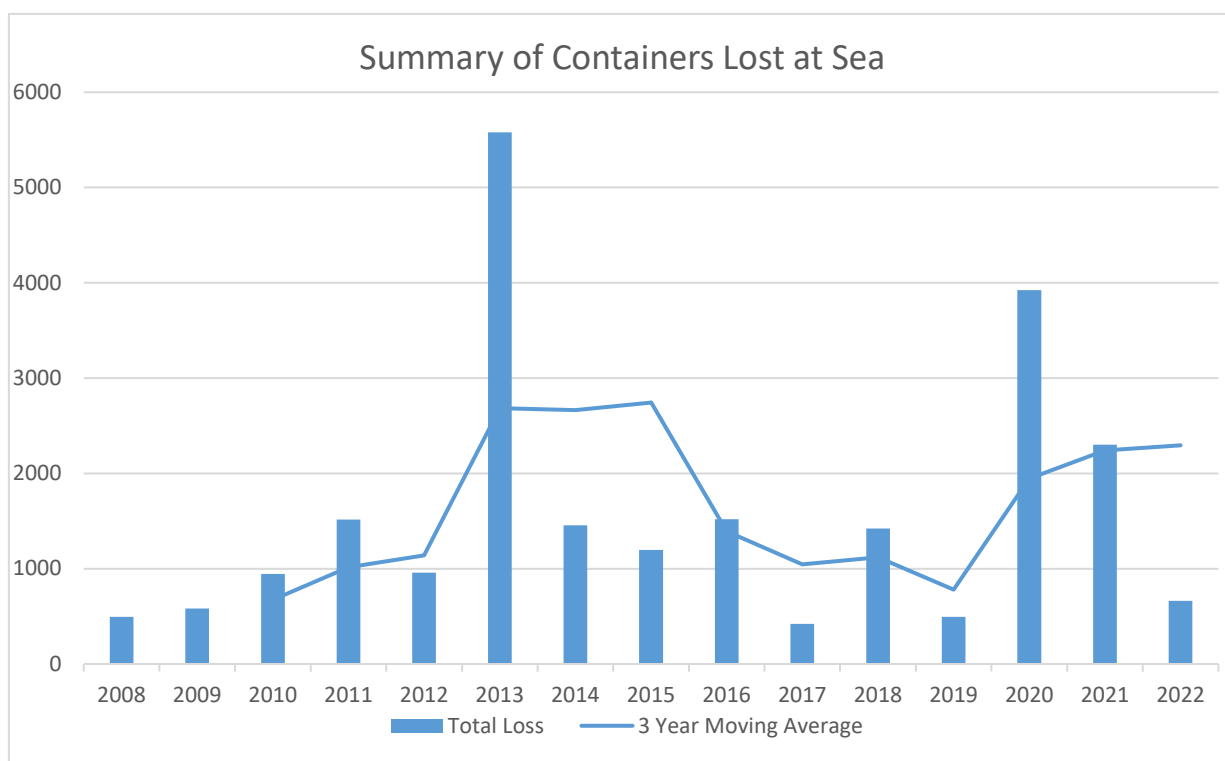
World Shipping Council, May 2023

Summary:

- In total 661 containers lost at sea in 2022, out of 250 million transported.
- This represents the lowest losses in % since the start of the survey in 2008.
- The improved numbers are positive news, but there is no time for complacency and we will continue our work to reduce the number of containers lost at sea.
- Safety is a job that never stops, and every container lost at sea will always be one too many.
- Marin TopTier Joint Industry Project has already delivered concrete outcomes on the causes of containers overboard together with recommendations and training material on how to avoid and manage different kinds of dangerous parametric rolling, and more is to come in the form of industry best practices, updated safety standards, guidance and recommendations as the project enters its third and final year.

Since 2011, the World Shipping Council (WSC) has undertaken a survey of its members to accurately estimate the number of containers that are lost at sea each year. The WSC's member companies operate more than 90% of the global containership capacity; thus, a survey of their losses provides a valid basis for a meaningful estimate of the total number of containers lost at sea. This 2023 update adds information from the year 2022.

Analysis of the Sixteen-Year Trends



Results

In 2022, 661 containers were lost at sea. This represents less than one thousandth of 1% (0.00026%) of the 250 million packed and empty containers currently shipped each year, with cargo transported valued at more than \$7 trillion.

During 2022, most WSC member carriers saw no or single digit container losses, with only two carriers reporting losses above 100 units for the year.

Reviewing the results of the total fifteen-year period (2008-2022) surveyed, the WSC estimates that there was on average a total of 1,566 containers lost at sea each year. Average losses for the last three years was 2,301 containers per year (2020-2022).

It can be helpful to also compare the current results to the trend of three-year averages that were reported in each of the previous updates. In the first period (2008-2010), total losses averaged 675 per year and then quadrupled to an average of 2,683 per year in the next period (2011-2013). This was due in large part to the sinking of the MOL Comfort (2013) that resulted in a loss of 4,293 containers and further impacted by the grounding and loss of M/V Rena (2011) resulting in approximately 900 containers lost.

The next period (2014-2016) saw one vessel sinking, the SS El Faro (2015). Even with that, the three-year average annual loss for the period was 1,390, about half that of the previous period. The downward trend continued into 2017-2019 when the 3-year average annual loss was almost halved again to 779. There were also no individual losses as significant as those noted in the previous periods.

The average annual loss for the two-year period 2020-2021 saw an increase to 3,113 from the 779 of the previous period, driven by major incidents. In 2020 the ONE Opus lost more than 1,800 containers in severe weather. The Maersk Essen also experienced severe weather in 2021 that resulted in the loss of some 750 containers.

Every-day container safety

From a liner shipping industry perspective, every container overboard is one too many, and every day carriers work with the other parties in the supply chain to enhance safety.

The responsibility for container safety is shared across the supply chain:

- The container operator is responsible for ensuring the container is clean, free from visible pest contamination, and is fit for purpose and complies with applicable requirements. Every party that handles the container along the supply chain is responsible for checking that it is in good condition, and for handling it so it remains so.
- The shipper, packer and freight forwarder are responsible for the container being packed, braced and stowed safely in accordance with the CTU Code¹, that the contents shipped are safe and free from visible pest contamination, and that the gross mass of the packed container is verified and together with the contents are correctly declared to the carrier in accordance with applicable timelines.
- The port terminal and stevedores are responsible for the proper handling of the container and that it is stowed properly based on its verified gross mass (VGM), content, and destination in accordance with the ship's Cargo Securing Manual (CSM) as approved by the flag state and the IMDG Code.

¹ [IMO/ILO/UNECE Code of Practice for Packing of Cargo Transport Units](https://www.imo.org/en/OurWork/Safety/Pages/CTU-Code.aspx) available at <https://www.imo.org/en/OurWork/Safety/Pages/CTU-Code.aspx>

- The vessel operator is responsible, in cooperation with the terminal and any vessel-sharing partners, for making a safe stowage plan based on the information received, monitoring the stowage, and securing the containers safely in line with the CSM and that, where required, containers are segregated.

How the cargo is packed and stowed in the container by the exporter, consignor or shipper is key to safe transport – both on sea and on land. The most important thing the party tendering the cargo can do to prevent losses is to make sure that cargo is conscientiously and correctly packed, declared and placarded, and its weight verified in line with applicable regulations (e.g. the SOLAS Convention and the IMDG Code) as well as the guidance set out in the CTU Code. To facilitate this, the Cargo Integrity Group, where WSC is a founding member, has developed a [short CTU Code Guide and a practical Container Packing Checklist](#) to make the information in the CTU Code more accessible and easier to use for all parties in the supply chain.

The content and gross mass of the containers are crucial information when loading the vessel. Containers are placed according to the cargo stowage plan to ensure a balanced vessel (e.g., heaviest containers at the bottom of the stack and the lightest on top) and to minimize risks (e.g., cargo categorized as flammable placed away from crew quarters, fuel tanks and other flammable cargo).

Container vessels are designed to transport containers safely and many precautions are taken to avoid that container are lost or dislodged even if under extreme stress. Containers are secured in the hold in racks and lashed together with steel bars and locks to be secure and stable, as are containers stowed on deck. These arrangements, including lashing gear, must be inspected for safety. When planning the journey, operation centers on land together with the vessel master and crew must plan for it to be as safe as possible, using weather routing before and during the journey to avoid dangerous conditions by adjusting the vessels route or speed where required.

Active Safety Improvement Initiatives

The liner shipping industry works continuously to further enhance container safety, partnering with governments and other stakeholders to reduce the number of containers lost at sea. These are some of the main initiatives under way:

- **MARIN Top Tier Study:** Triggered by the events late 2020 and early 2021, WSC and several Member lines are among the partners in the [MARIN Top Tier project](#). Based on scientific analyses, studies, and desktop as well as real-life measurements, the project aims to develop specific, actionable and effective recommendations to increase container safety. Initial results have shown that parametric rolling in following seas is especially hazardous for container vessels, a phenomenon that is not well known and can develop unexpectedly with severe consequences.

To prevent further incidents due to various forms of parametric rolling, training materials and tools have been developed in the form of:

- A [Notice to Mariners](#), describing how container vessel crew and operational staff can plan, recognize and act to prevent parametric rolling in following seas
- A [series of videos](#) to build awareness of the various kinds of parametric and resonant rolling that can occur and how the vessel behaves
- A Roll Risk Estimator tool which allows crew to calculate the risk of parametric rolling based on sea and weather conditions as well as vessel specifics

Research is currently taking place into container and lashing gear strength, guidelines for vessel operations, optimizing stowage and voyage planning, and what additional measures should be recommended. In addition to the regularly updated website, the TopTier project has updated the IMO Maritime Safety Committee through presentations and submissions (MSC 106/INF.16), and will continue to report and share insights on a regular basis.

- **Revision of the IMO’s guidelines for the inspection programs for cargo transport units, including containers: MSC 105 (April 2022) approved** to amend the IMO guidelines for CTU inspection programs in order to: 1) clarify that the scope of application is to CTUs carrying all types of cargoes, not just those declared to be carrying dangerous goods; 2) adequately refer to the CTU Code; 3) to allow for inspection reports from non-governmental organizations to be included; and 4) to include inspection for visible pest contamination. WSC participated actively in the revision work.
- **Mandatory reporting of containers lost at sea:** Today, at the international level, there are mandatory reporting requirements for containers lost overboard that are declared to contain dangerous goods and marine pollutants. However, there are not yet mandatory reporting requirements for containers lost overboard irrespective of their declared content. WSC was a co-sponsor of a submission to IMO’s Maritime Safety Committee (MSC) 102 by the European Union with a proposal for a new output on the mandatory reporting of containers lost at sea. Liner shipping supports mandatory reporting requirements, and WSC participated actively in the development at CCC 8 last September of a mandatory reporting system that will be considered at MSC 107 (May-June) with a view to adoption at MSC 108 next spring. Mandatory reporting requirements could then become effective as of 2026.

Improvements achieved

The liner industry has been engaged in this safety effort over two decades, and working with our partners in the supply chain there has been quite some progress on the regulatory side, including in regard to:

- **Amendments to the Safety of Life at Sea (SOLAS) Convention:** On July 1, 2016, changes to the Safety of Life at Sea (SOLAS) convention requiring verification of container weights before packed containers may be loaded aboard ships went into effect. This is an effort WSC advocated in support of for many years. The requirement makes container gross mass verification (VGM) a legally binding condition for vessel loading. Mis-declared container weights have contributed to the loss of containers at sea, as well as to other safety and operational problems.
- **Code of Practice for Packing of Cargo Transport Units (CTU Code):** The IMO, the International Labour Organization (ILO), and the United Nations Economic Commission for Europe (UNECE), with industry support, produced a code of practice for the packing of CTU, including containers, outlining specific procedures and techniques to improve safety, such as how to ensure correct distribution of the weight inside the container, proper positioning, blocking and bracing according to the type of cargo, and other safety considerations. The code was approved in late 2014, and informal work to revise it is under way; WSC is an active participant in those efforts.
- **Revised ISO standards for container lashing equipment and corner and intermediate fittings:** In support of the IMO's efforts to enhance container safety, the International Organization for Standardization (ISO), with the industry's active participation, revised its standards regarding lashing equipment and corner castings and the new standards went into effect in 2015. The corner and intermediate fittings standard is undergoing revision to ensure that it is fit for purpose.

For more information about these and other initiatives related to the improved safety of handling containers, visit: [Safety — World Shipping Council](#). There are over 7,000 containerships continuously operating on the world's seas and waterways linking continents and providing vital supplies to communities around the globe. The liner shipping industry's goal remains to keep the loss of containers carried on those ships as close to zero as possible. We will continue to explore and implement preventive and realistic measures to make that happen and welcome continued cooperation from governments and other stakeholders to accomplish this goal.



APPENDIX

Survey Methodology

In each of the surveys conducted in 2011, 2014, 2017, and 2020 the WSC member companies were asked to report the number of containers lost overboard for the preceding three years. However, the winter of 2020-21 saw an unusually high number of incidents, several of which involved very high numbers of containers lost overboard. The industry is deeply concerned about this development, and WSC therefore decided to increase the frequency of updates to its Containers Lost at Sea report. Hence, last year's update covered 2020-2021 and, starting this year, a survey will be carried out each year. Up to date data on the number of containers lost at sea is important for the work under way to increase safety and help guide the need for any additional initiatives by WSC, governments and other parties.

For the 2023 update, members were asked to report on losses for 2022. All WSC member companies responded, representing approximately 90% of the total global vessel container capacity deployed at the time of the survey. WSC assumes for the purpose of its analysis that the container losses for the 10% of the industry's capacity that is operated by carriers that did not participate in the survey would be roughly proportional to the losses reported by the responding carriers representing 90% of the industry's capacity.

Based on this assumption, the total annual figure reported by WSC members is adjusted upward to provide an estimated loss figure for all carriers, both WSC members and non-members, to arrive at an estimate of total containers lost.



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