

Containers Lost at Sea

2022 Update

In 2021, the international liner shipping industry transported approximately 241 million containers, with cargo transported valued at more than \$7 trillion.¹ Proper packing, stowage and securing of containers and reporting of correct weight are very important to the safety of a container ship, its crew, and its cargo, to shore-based workers and equipment, and to the environment.

However, even with proper packing of the cargo into the container, correct container weight, and proper stowage and securing aboard ship, several factors ranging from severe weather and rough seas to more catastrophic and rare events like ship groundings, structural failures, and collisions can result in containers being lost at sea. Since 2011, the World Shipping Council (WSC) has under-

taken 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 three quarters 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.

The 2022 update gathered information from years 2020 and 2021. The recent survey results, explained in more detail below, show that containers lost overboard represent less than one thousandth of 1% (0.001%) of the roughly 241 million packed and empty containers currently shipped each year.

¹ WSC 2022

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. Although so far in 2022 there have been few incidents involving containers lost at sea, the industry is deeply concerned about this development.

WSC is therefore, in addition to other measures described in this report such as the TopTier project, increasing the frequency of updates to its Containers Lost at Sea report. Hence, this update covers 2020-2021 and, going forward, 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 2022 update, members were asked to report on losses for 2020 and 2021. All WSC member companies responded and together they represent approximately 80% 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 20% of the industry's capacity that is operated by carriers that did not participate in the survey would be roughly comparable to the losses reported by the responding carriers representing 80% of the industry's capacity.

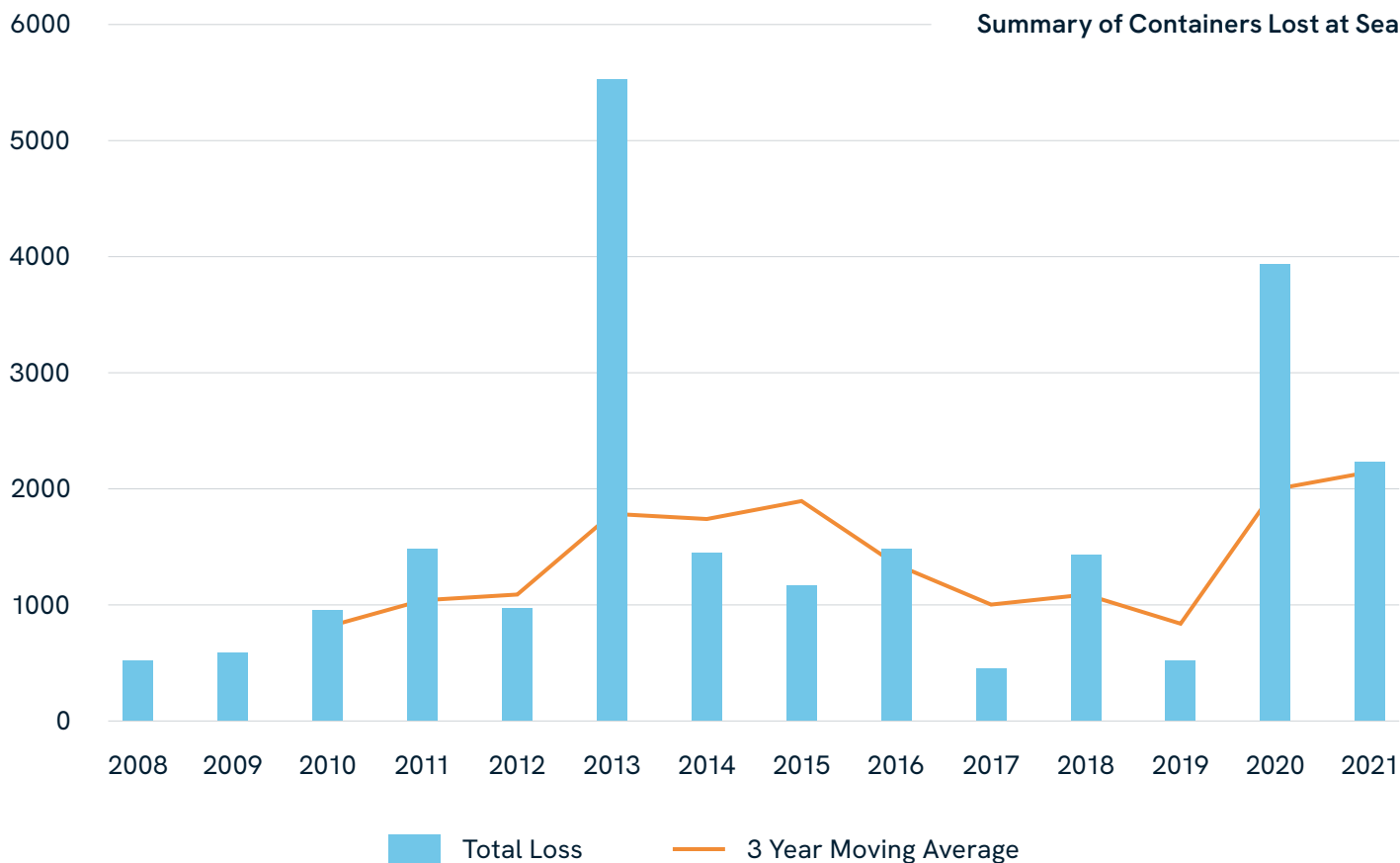
The total annual figure reported by WSC members is adjusted upward to provide an estimated loss figure for all carriers, both WSC members and non-members, to arrive at an estimate of total containers lost. As expected, some carriers lost no containers during the period, while others experienced a significant incident where hundreds of containers were lost in a single event.

There are more than 6,300 ships carrying containers around the world at any point in time. All containers lost at sea represent safety and environmental hazards regardless of how and when those containers were lost. Accordingly, the 2022 Update to the Containers Lost at Sea Survey includes the total number of containers lost at sea, regardless of how they were lost.

We continue to work with governments and other interested stakeholders to identify losses, their causes, and actionable solutions to reduce the losses in the future.



Analysis of the Fourteen-Year Trends



Reviewing the results of the fourteen-year period (2008-2021) surveyed, the WSC estimates that there were on average a total of 1,629 containers lost at sea each year, which is a significant increase (18%) to the average annual loss for the twelve-year period ending in 2019.

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) was marked by another vessel sinking with the tragic total loss of the SS El Faro (2015) with 33 crew members and 517 containers. 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. This was a positive trend that seems to have reversed with the latest update.

The average losses for the two-year period 2020-2021 have increased to 3,113 from the 779 of the previous period. A significant loss occurred in 2020 when 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. Such large losses in a single incident have not been reported since the 2014-2016 period.

Container Safety – an Ongoing Daily Task

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:

- When dispatching the empty container, the container operator is responsible for ensuring that 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 and clean condition, and for handling it so it remains so.
- Specifically, the shipper, packer and freight forwarder are responsible for the container being packed, braced and stowed safely in accordance with the CTU Code², 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.
- 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, or shipper is key to safe transport – both on sea and on land. The most important thing the shipper can do to prevent losses is to make sure that cargo is conscientiously and correctly packed, declared and placarded, and in line with applicable rules and regulations (e.g. the IMDG Code) and 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 CTU Guide and Checklist are today available in Arabic, Chinese, English, French, Russian, Spanish and Italian.](#)

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. The same is required for containers stowed on deck.

These arrangements are inspected for safety, including ensuring that the lashing gear is maintained. When planning the journey, operation centers on land together with the vessel master and crew 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.

² [IMO/ILO/UNECE Code of Practice for Packing of Cargo Transport Units available at https://www.imo.org/en/OurWork/Safety/Pages/CTU-Code.aspx](https://www.imo.org/en/OurWork/Safety/Pages/CTU-Code.aspx)

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 TopTier Study:** Triggered by the events late 2020 and early 2021, WSC and several of its Member lines are among the partners in the [MARIN TopTier project](#). This project will run over three years and, based on scientific analyses, studies, and desktop as well as real-life measurements and data collection, aims to develop and publish at regular intervals specific, actionable and effective recommendations, developed by six different working groups, to increase container safety.

Initial results from the study show 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 help in preventing further incidents a [Notice to Mariners](#) has been developed, describing how container vessel crew and operational staff can plan, recognize and act to prevent parametric rolling in following seas.

The project will be reporting on progress and sharing insights on a regular basis with a submission planned for CCC 8 that is scheduled to discuss, among other things, stowage position surveys, responses to questionnaires to ship crews on container handling and stowage, and a gap analysis. Many more topics, tests and measurements are planned to be undertaken by the six working groups during the project.

- **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.

- **Discrepancy in container stacking strength:** WSC, working together with IMO Member governments and other industry associations, proposed to the IMO's Sub-Committee on Carriage of Cargoes and Containers (CCC 6) in September 2019 to align the Safe Container Convention (CSC)'s and ISO 1496-1 container stacking strength requirements, noting that the existing discrepancy might have significant safety implications, including collapsed container stacks and containers lost at sea. This is an issue that is now being considered as part of the MARIN TopTier project.
- **Mandatory reporting of containers lost at sea:** Presently, 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 comparable international mandatory reporting requirements for containers lost overboard, irrespective of their declared content.

WSC is 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. The liner shipping industry supports such a mandatory reporting requirement and will continue to advocate for its early implementation.

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, 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 has commenced.
- **Revised ISO standards for container lashing equipment and corner castings:** 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 casting standard is poised to be revised in the near future.

For more information about this and other initiatives related to the improved safety of handling containers, visit: [Safety — World Shipping Council](#).

There are over 6,300 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.

