

CBMU
The Canadian Board of Marine Underwriters

NCB
SAFETY OF LIFE AND CARGO AT SEA

Mis-declared and Undeclared DG Cargo/Proper Shipments of Hazmat (DG)

Eric Rounds– VP –Chief Surveyor
rounds@natcargo.org

What's in the Box?



Declared as:

```
1 CONT. 40'X9'6" HIGH CUBE CONT.
46 PACKAGES
MIX ALUMINUM SCRAP
```





NCB
SAFETY OF LIFE AND CARGO AT SEA









- Origins in collaboration with U.S. marine underwriters and U.S. Coast Guard.
- NCB established as a not-for-profit organization in 1952 with a mission of “Safety of Life and Cargo at Sea”
- Catalyst was a series of maritime disasters that demonstrated the need for uniform standards and regulations
- Offices in major ports in the US with presence in Europe and India
- Staff consists primarily of licensed ex-mariners
- Global coverage via remote inspection capabilities and over 100 well established network partners around the world
- 2018 EXIS Acquisition rounds out DG service capabilities, now rebranded as NCB Hazcheck
- 10,000’s of physical marine surveys, inspections and trainings are carried out in support of our mission each year

NCB Hazcheck

NCB
SAFETY OF LIFE AND CARGO AT SEA

OUR CORE ZONES

Grain & Bulk Cargo Vessel Surveys
Comprehensive certification & inspection services including readiness verification, loading stability assessments, vessel cleanliness checks, draft and hatch surveys, HAZMAT documentation, cargo gear certification, & damage evaluations.

Container & Cargo Inspections
Specialized inspections for hazardous containers and tanks, structural integrity evaluations, cargo packing and securing checks, flat rack assessments, dangerous goods (DG) incident investigations, and screening for radioactive or explosive materials.

Remote Inspection Services
Launched through the Haz check Inspections platform, this service enables workflow-based or live video inspections. Media and data can be uploaded via mobile without requiring app installation, allowing seamless global access to expert surveyors, even in regions with limited DG handling expertise. This improves operational efficiency, compliance, and safety standards.

Training & Certification Programs
Offers a wide range of accredited courses, including IMDG Code, 49 CFR Hazardous Materials Regulations, OSHA maritime safety, ship stability, and cargo packing/securing. Courses are available in both classroom and online formats to suit varying client needs.

Claims & Loss Prevention Consultancy
Expert consultancy in marine warranty surveys, warehouse risk assessments, and litigation support. Services are delivered by a team of surveyors with a combined experience exceeding 200 years.

Digital Compliance Tools
Hazcheck Validate and Hazcheck Detect provide advanced screening and compliance verification for dangerous goods, based on booking or bill of lading (BL) data—ensuring regulatory alignment from the point of cargo entry.

Working in Partnership with global organizations

World Shipping Council

NCB provides the digital solutions with regards to the Cargo Safety Program

WWF

Partnering with WWF, we are working on a Proof of Concept in the identification of potential IWT through cargo screening at the point of booking

Pro Bono Activities

- Container Inspection Safety Initiative (CISI):
  - 500 containers were inspected free of charge for participating lines (CINS members)
  - Containers inspected included DG and non-DG as well as Export and Import
  - Objective was to reveal the danger that exists on every voyage through detection of non-compliant cargoes
    - 55% Failed inspection
    - 43% Stowage and securing
    - 6.5% Mis-declared cargo





Maersk Honam – March 6, 2018

Pro Bono Activities

- Published White Papers:
  - Holistic Approach to enhance safety and address the carriage of undeclared, misdeclared and other non-compliant dangerous goods





- Warehousing – Storage and Handling of Dangerous Goods

- Attend and participate as Subject Matter Experts as part of the U. S. Delegation at IMO meetings, including CCC and E&T regarding updates to IMDG and IMSBC Codes.

What Are Dangerous Goods

- Dangerous goods are substances or articles that pose risks to people, property, or the environment. They can be solids, liquids, or gases and often present hazards like flammability, toxicity, or corrosivity, especially during transport.
- Despite their risks, dangerous goods are crucial in producing essential items like cars, plastics, electronics, and pharmaceuticals.







Different types of DGs

For transport purposes, dangerous goods are allocated to one of nine ‘classes’, according to the main danger they present. These are as follows:



Class 1 -Explosives

Class 2 -Gases

Class 3 -Flammable liquids

Class 4 -Flammable solids; substances liable to spontaneous combustion;

substances which, in contact with water, emit flammable gases

Class 5 -Oxidizing substances and organic peroxides

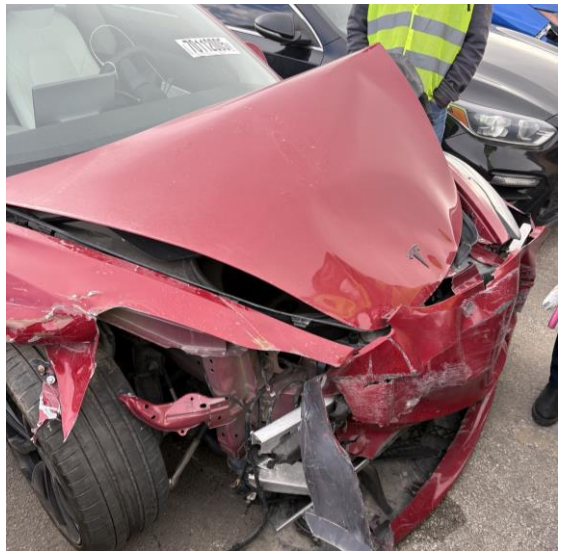
Class 6 -Toxic and infectious substances

Class 7 -Radioactive material

Class 8 -Corrosive substances

Class 9 -Miscellaneous dangerous substances and articles (Class 9) and

environmentally hazardous substances

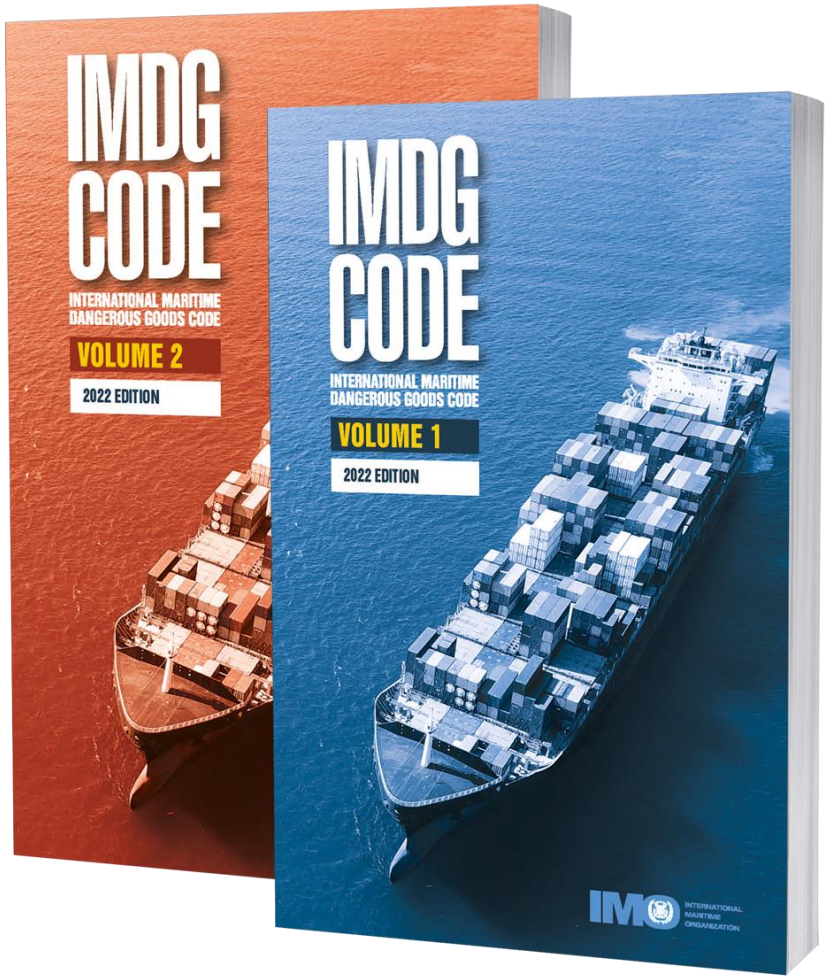


What is the IMDG Code?

The International Maritime Dangerous Goods (IMDG) Code contains provisions for the safe carriage of dangerous goods by sea.

These provisions require that dangerous goods are correctly and safely:

- Classified and identified
- Packed
- Marked, labelled and placarded
- Documented
- Stowed on board the vessel
- Segregated from other goods with which they may react dangerously

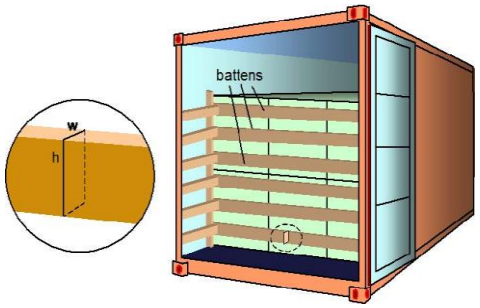


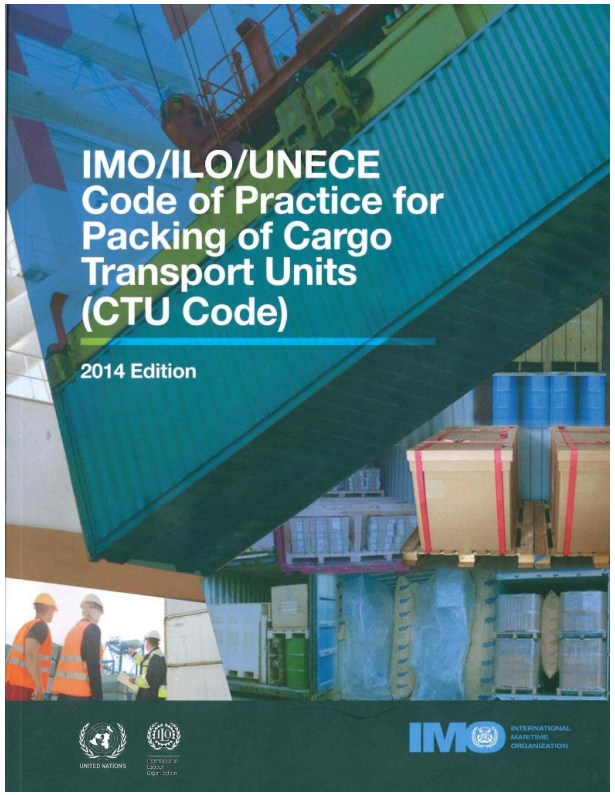
Cargo Securing

NCB
SAFETY OF LIFE AND CARGO AT SEA

Cargo stowage and securing plays a large part in whether mis/undeclared cargo becomes an incident

IMO/ILO/UNECE Code of Practice for Packing Cargo Transport Units (CTU Code):









Stowage and Segregation

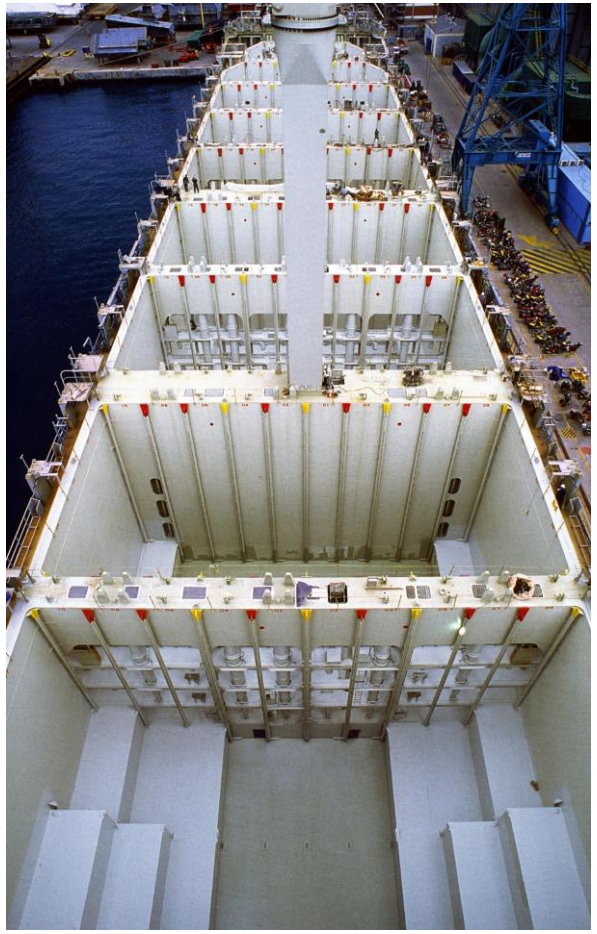
Cargo that is mis/undeclared will not be stowed and segregated correctly.

Table of segregation of freight containers on board container ships

SEGREGATION REQUIREMENT	VERTICAL			HORIZONTAL						
	CLOSED VERSUS CLOSED	CLOSED VERSUS OPEN	OPEN VERSUS OPEN		CLOSED VERSUS CLOSED		CLOSED VERSUS OPEN		OPEN VERSUS OPEN	
					ON DECK	UNDER DECK	ON DECK	UNDER DECK	ON DECK	UNDER DECK
"AWAY FROM" .1	ONE ON TOP OF THE OTHER PERMITTED	OPEN ON TOP OF CLOSED PERMITTED; OTHERWISE AS FOR "OPEN VERSUS OPEN"	*NOT* IN THE SAME VERTICAL LINE *UNLESS* SEGREGATED BY A DECK	FORE AND AFT	NO RESTRICTION	NO RESTRICTION	NO RESTRICTION	NO RESTRICTION	*ONE* CONTAINER SPACE	*ONE* CONTAINER SPACE OR *ONE* BULKHEAD
				ATHWART-SHIPS	NO RESTRICTION	NO RESTRICTION	NO RESTRICTION	NO RESTRICTION	*ONE* CONTAINER SPACE	*ONE* CONTAINER SPACE
"SEPARATED FROM" .2	*NOT* IN THE SAME VERTICAL LINE *UNLESS* SEGREGATED BY A DECK	AS FOR "OPEN VERSUS OPEN"		FORE AND AFT	*ONE* CONTAINER SPACE	*ONE* CONTAINER SPACE OR *ONE* BULKHEAD	*ONE* CONTAINER SPACE	*ONE* CONTAINER SPACE OR *ONE* BULKHEAD	*ONE* CONTAINER SPACE	*ONE* BULKHEAD
				ATHWART-SHIPS	*ONE* CONTAINER SPACE	*ONE* CONTAINER SPACE	*ONE* CONTAINER SPACE	*TWO* CONTAINER SPACES	*TWO* CONTAINER SPACES	*ONE* BULKHEAD
"SEPARATED BY A COMPLETE COMPARTMENT OR HOLD FROM" .3				FORE AND AFT	*ONE* CONTAINER SPACE	*ONE* BULKHEAD	*ONE* CONTAINER SPACE	*ONE* BULKHEAD	*TWO* CONTAINER SPACES	*TWO* BULKHEADS
				ATHWART-SHIPS	*TWO* CONTAINER SPACES	*ONE* BULKHEAD	*TWO* CONTAINER SPACES	*ONE* BULKHEAD	*THREE* CONTAINER SPACES	*TWO* BULKHEADS
"SEPARATED LONGITUDINALLY BY AN INTERVENING COMPLETE COMPARTMENT OR HOLD FROM" .4	PROHIBITED			FORE AND AFT	MINIMUM HORIZONTAL DISTANCE OF 24 M	*ONE* BULKHEAD *AND* MINIMUM HORIZONTAL DISTANCE OF 24 M*	MINIMUM HORIZONTAL DISTANCE OF 24 M	*TWO* BULKHEADS	MINIMUM HORIZONTAL DISTANCE OF 24 M	*TWO* BULKHEADS
				ATHWART-SHIPS	PROHIBITED	PROHIBITED	PROHIBITED	PROHIBITED	PROHIBITED	PROHIBITED

* CONTAINERS NOT LESS THAN 6 M FROM INTERVENING BULKHEAD.

NOTE: ALL BULKHEADS AND DECKS SHALL BE RESISTANT TO FIRE AND LIQUID.



Is there a Difference between Mis and Undeclared cargos and why is it important to differentiate?



- According to UNCTAD (2025) 80% of world's commodities traverse the seas and over 60% is containerized
- It is estimated that around 10% of cargo booked is declared DG
- Which means 90% is declared as non-DG
- It is important to differentiate between mis and undeclared because each is uncovered in different ways

Mis-declared

Mis-declared DG: DG wrongly declared, such as incorrect UN number, class, packing group, description, etc.





"No really, its a limited quantity"

A container with packages labeled Class 3 flammable liquid labels is mis-declared as a limited quantity.

Undeclared

Undeclared DG: DG shipped as “general cargo” with no DG declaration



“Wow…..I didn’t know dolls could do that!!!!!!”

KMTC Hong Kong suffered an explosion from a container declared as “Dolls” but, was actually calcium hypochorite

A new phenomenon?

- Atlantic Mutual Insurance Company disaster library has an entry regarding mis-declared dating back to 1870, and described mis-declaration as one of the “shady practices”.
- The cargo was declared as “valuable machinery” but actually contained straw, sawdust, turpentine, gasoline, and potassium chloride. The contents were packed in such a way to ignite, burn and sink the ship at sea.
- The shippers would then collect the insurance coverage of $83,400 from Atlantic Mutual.
- Fortunately, a vigilant captain and crew discovered the smoldering box and prevented the fire.



Steamship George Washington

Top Mis-declared & Undeclared Cargoes – Who Are the "Usual Suspects"?

Lithium-ion batteries and battery-powered devices

- (including consumer electronics, e-bikes, scooters, power tools) – often shipped as "electronics", "spare parts", "Aluminum Scrap", "PC accessories", "mobile phone accessories"





Cargo declared as bags of Copper Flake.

NCB
SAFETY OF LIFE AND CARGO AT SEA

Lithium-ion batteries and battery-powered devices

Port of Loading OAKLAND, CA			
Place of Delivery BATAM, INDONESIA	Freight to be: Prepaid ☐ Collect ☐		
Quantity and Unit	Description of Goods	Gross Weight (KGS)	Measurement (M^3)
40 packages	COMPUTER PERIPHERALS	14,732 kg	50M3
40 packages	HS CODE: 8471[illegible] (do not show on the BL)	13,894 kg	50M3







Undeclared batteries







- Declared as: Non-DG PUMPS WITH RELATED PARTS
- Found: Two (2) UN2800 Non-spillable batteries
- Non-spillable batteries are not subject to IMDG Code if terminals are protected from short circuit and case is not cracked.
- Failed also for insufficient cargo securing

Undeclared Batteries

Cargo declared as: *14 PALLETS, ALUMINUM INGOT*

Cargo found: *13 PALLETS OF USED BATTERIES, WRAPPED IN BLACK PLASTIC WITH BROWN CARDBOARD COVERING THE TOP.*









Undeclared Battery Powered Vehicle

NCB
SAFETY OF LIFE AND CARGO AT SEA

EV declared as non-DG (battery removed).
Actually, battery still intact. Should be UN3171.





Top Mis-declared & Undeclared Cargoes

- **Calcium hypochlorite and other oxidizing chemicals** – heat-sensitive cargoes with history of container fires – often undeclared as “organic surface”; “calcium chloride”; “disinfectant” and “whitening agent”.



Top Mis-declared & Undeclared Cargoes –

NCB
SAFETY OF LIFE AND CARGO AT SEA

Charcoal and carbon products

self-heating and smouldering risk. Has been declared as “tablets for water pipes”









- Declared as “Coconut Shell Briquette or Chips”.
- SDS contain several discrepancies, missing and conflicting information.
- Self-Heating Test Reports and Certificates provided are expired, not for correct shipment, or based on old samples

Investigators blamed a January 2019 fire on the Yantian Express on “coconut charcoal” being accidentally declared as “coconut pellets”.

Mis-declared cargo remains the chief contributing cause to container ship fires, despite growing awareness of the issue among shipowners, according to Captain Anastasios Leonburg, Senior Marine Risk Consultant, Allianz Commercial. *

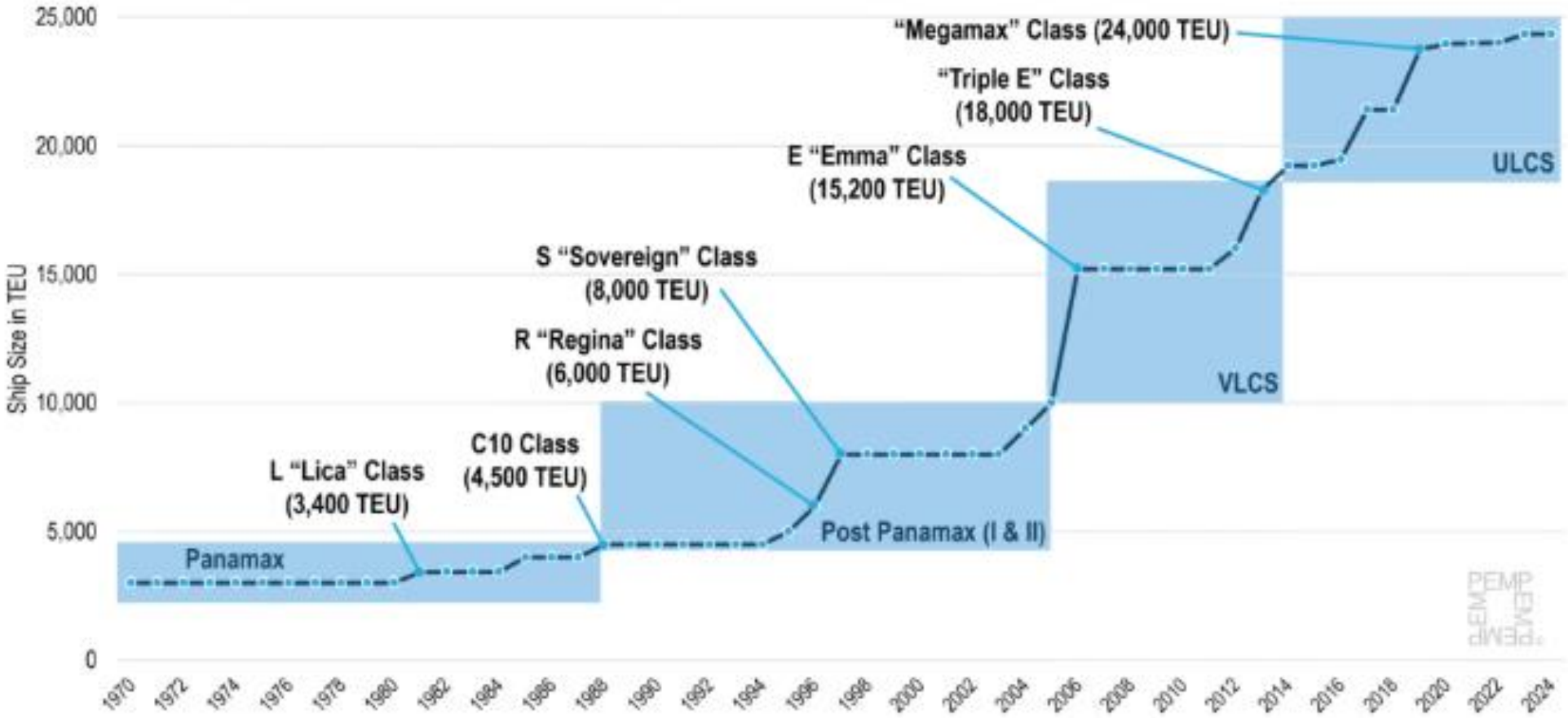
*Allianz – Commercial Safety Shipping Review 2025



- In recent years, there have been several significant cargo fires, particularly on container ships and car/RoRo vessels. These incidents are often linked to the transportation of dangerous goods
- Statistically, the growing size of these vessels also raises the likelihood that they carry dangerous cargo, and the loss due to an incident will be greater.

Unparalleled surge of Containership capacity

NCB
SAFETY OF LIFE AND CARGO AT SEA



- Fires on large vessels can quickly overwhelm crew firefighting efforts.
- Their size and design make detecting and controlling fires difficult, and once the crew abandons ship, response and salvage become costlier and risk of total loss rises.
- Rapid containment is crucial, but reaching a fire's source may take hours.

NCB
SAFETY OF LIFE AND CARGO AT SEA

Mis/undeclared DG Cargo – Consequences

Wan Hai 503



June 9, 2025 – Multiple explosions, crew abandons ship, 4 missing and presumed dead.

Misdeclaration suspected – vague cargo declarations. Reports state that there is strong circumstantial evidence that at least one container may have held undeclared hazardous material.

NCB
SAFETY OF LIFE AND CARGO AT SEA

Mis/undeclared DG Cargo – Consequences

MAERSK FRANKFURT



5920 TEU – Explosion - Jul 2024– off of India- I crew died- General Average declared – Suspected short circuit or fire in containers

NORTHERN JUVENILE



8411 TEU – Explosion - May 2024– off of Indonesia - General Average declared –Suspected mis/undeclared DG - fire in containers

MARIE MAERSK



19,000 TEU – Explosion - Aug 2025 – off of West Africa - General Average declared – suspected mis/undeclared DG

YM MOBILITY

5920 TEU – Explosion- Aug2024– Berthed at Ningbo- General Average declared – Class 5.2 Organic Peroxide in reefer that was not operating



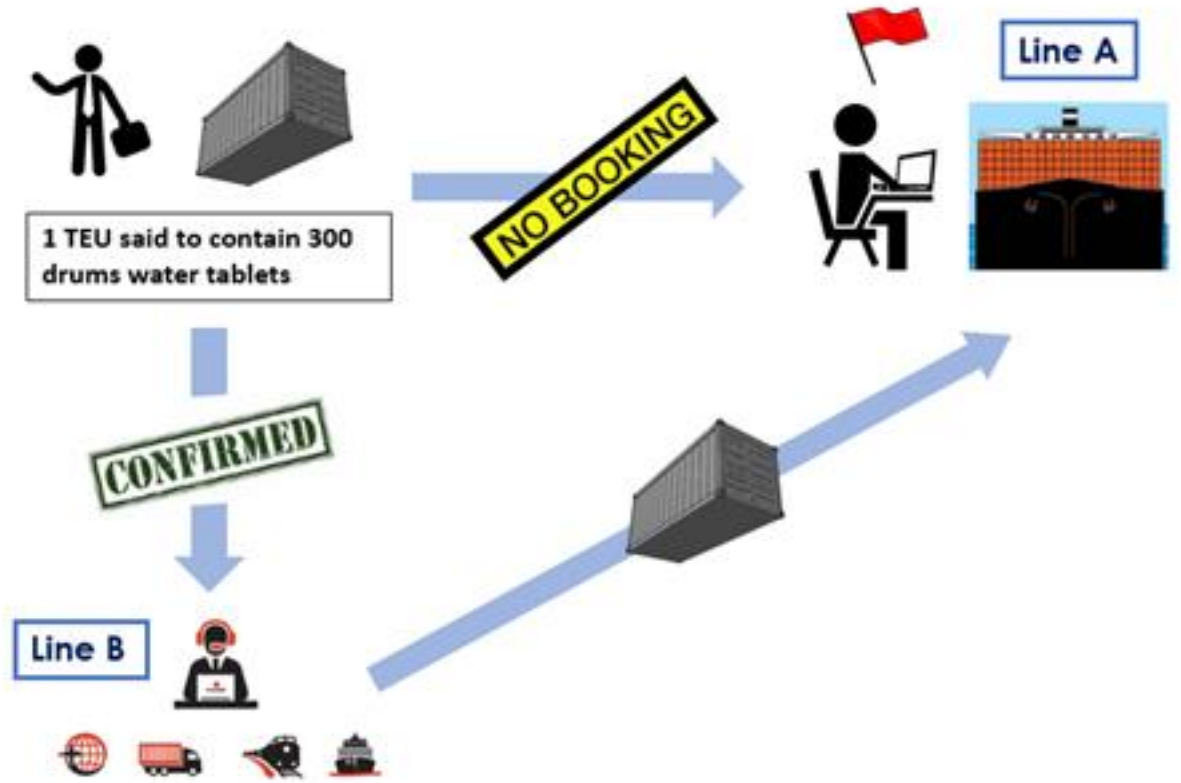
Root Causes – Why Are DG Cargoes Mis/Undeclared?

- **Cost avoidance:** DG surcharges, special packing, documentation and insurance costs
- **Competitive pressure:** fear of losing business
- **Complex regulations:** IMDG, domestic regulations, modal interfaces (road/rail/sea)
- **Knowledge gaps:** Lack of knowledge and training of DG regulations (i.e. IMDG Code)
- **Time pressure:** last-minute bookings, lack of time for full checks
- **Fraud:** deliberate concealment in certain trades and commodities

Objective factor:

In practice, the restricted transport or operation of certain DG cargo is often a reason for driving shippers or agents to conceal or misrepresent DG goods.

Why an Industry Solution is Necessary



Solutions to help prevent Mis/Undeclared shipments

NCB
SAFETY OF LIFE AND CARGO AT SEA

- **Digital pre-screening tools:** technology that scans booking information by applying rules, keyword libraries, fuzzy matching and anomaly (route, weights) to flag suspicious entries.
- **Container inspections**
  - Based on criteria set by the line
  - Based on hits from the screening tool
- **Shipper and packer facility checks/audits:** to determine if employees have suitable training to handle DG and have processes and procedures in place for declaring and packing the cargo.
- **Training:** ensure training and regulatory publications are accessible in all regions.
- **Accountability:** apply penalties at the right point. Accountability should be applied where mis/undeclarations originate to discourage repeat violations.

Hazcheck VALIDATE

NCB SAFETY OF LIFE AND CARGO AT SEA

- ✓ **Realtime compliance and validation** tool for managing the transportation of dangerous goods.
- ✓ Software as a Service with easy connectivity via **API and EDI** (IFTDGN and IFTMBF)
- ✓ Designed for **carriers, shippers, freight forwarders, port operators**, and anyone transporting dangerous goods at sea.
- ✓ Supports **Multi Regulatory and Validation** (IMDG, 49CFR)
- ✓ Customizable Rules - **Restrictions, prohibitions,** and **carrier exclusions**
- ✓ Produces **Dangerous Goods Declarations (DGD)** and manifest documentation



80% Global DG TEU

Maritime market share, based on estimated cargo volume (TEU) in 2025

1.6m Validations Weekly

Average DG Validations per week in 2024

15k Users Per Day

Trusted by 15k DG Professionals Daily

44k+ Daily Rules Processed

Customized rules processed per day

<80ms To validate cargo

Average Cargo Validation Time in milliseconds

Hazcheck Detect

NCB SAFETY OF LIFE AND CARGO AT SEA

- ✓ An API based, **Cargo Screening** tool for identifying **misdeclared, undeclared cargo such as Dangerous Goods, IWT, military, contraband.**
- ✓ **Undeclared** – identifies cargo not declared as DG; but should be declared. **Misdeclared** – identifies cargo which is declared; but not correctly declared.
- ✓ **Highly customizable rules** for customer specific search.
- ✓ Use **Artificial Intelligence** and **Machine Learning** to improve detection
- ✓ **AI** features **Automatic Dangerous Goods Detection**, and **Unusual Behaviors** to identify anomalies e.g. shipping patterns, commodity itineraries.



Hazcheck Detect

70%+ Global TEU
Maritime market share, based on estimated cargo volume (TEU) in 2025

200m Screenings
Projected screenings in 2025

800k Screening per day
As of September 2025

900 Bookings per Minute
Based on load testing.

<3s Seconds
Average response to process whole cargo.

450+ Risks Mitigated week
Average Cargo Risks Mitigated (Sep 25)

Statistics (Aug 2024 - Sept 2025)

- **160m** Screenings
- **127m** Bookings
- **382m** Cargo
- **166m** Containers
- **2%** bookings to case creation

Common Misdeclarations	%
IMDG Terms (Haz, Class, Flashpoint etc.)	46.5%
ETHANOL	3.0%
CHARCOAL	2.0%
BATTERIES	1.2%
PAINT	1.2%
AEROSOLS	1.1%
LITHIUM ION BATTERIES	0.8%
RESIN SOLUTION	0.8%
CORROSIVE	0.7%
CYCLOHEXANE	0.7%
AUTOMOBILE	0.6%

NCB
SAFETY OF LIFE AND CARGO AT SEA
World Shipping Council

World Shipping Council (WSC) Cargo Safety Program

*"The main **root cause** for cargo fires on container ships **is the integrity of dangerous goods throughout the supply chain**. Therefore, it is a problem that can **only** be improved through **industry wide solutions**" Aslak Ross - Maersk*

Introduces a standardized process for cargo screening and inspections.

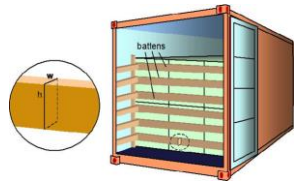
- Sets minimum safety standards for screening booking requests.
- Utilizes a common digital tool managed by an **independent** third-party service provider.
- Enhances visibility of shippers adhering to basic safety standards.
- Uniformizes container inspection procedures.
- Creates a list of approved container inspection companies capable of conducting standardized inspections.

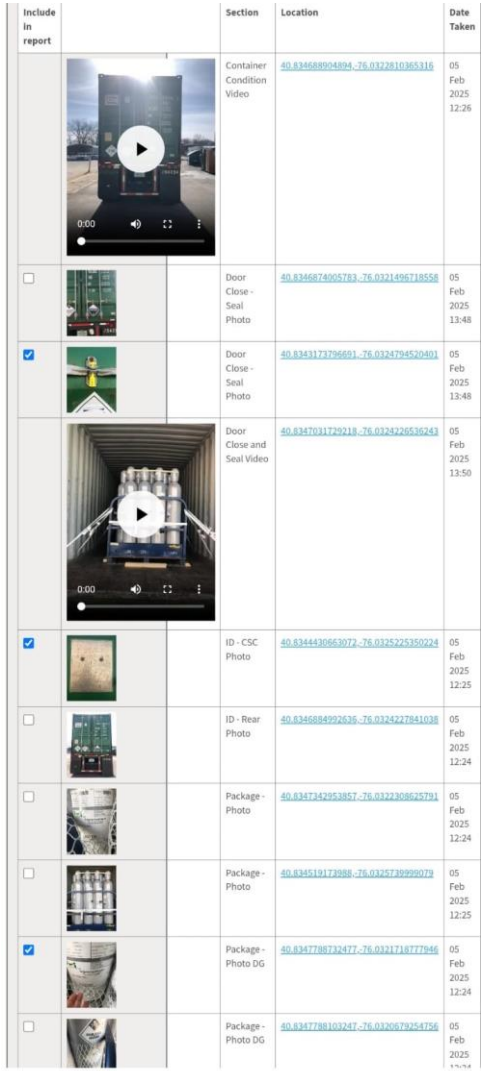




Container Inspections

- Processes mapped out for distinct types of inspections including “tailgate”, “vanning”, and non-DG vs DG cargo
- Inspections are carried out:
  - Physically, by qualified trained NCB surveyors or global network partners with NCB oversight.
  - Remotely, on a global basis where a physical inspection may not be possible or practical.
- NCB Container Inspections meet MSC.1/Circ. 1649 and WSC criteria for “industry best practice standard”
- Documentation, marking, labeling and placarding are assessed according to the IMDG Code.
- CTU structural serviceability, cargo stowage and securing is assessed according to the IMDG and CTU Codes.
- Standardized Container Inspection reports are generated from the data entered in NCB's Container Data Base (CDB).







Documentation



CTU Structural Serviceability



Placards, CSC plate



Package condition/labels/ marks/UN Package Type



Cargo Stowage/ Segregation/ Securing



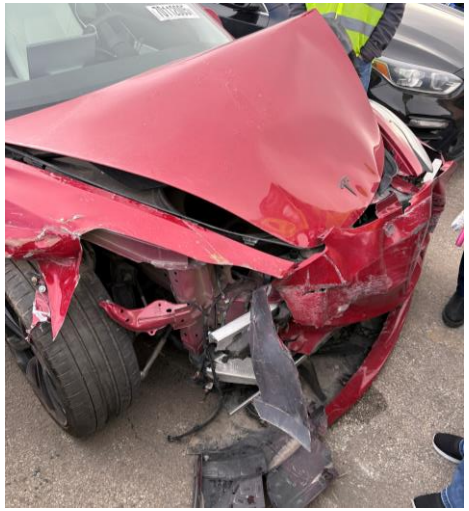
Security seal

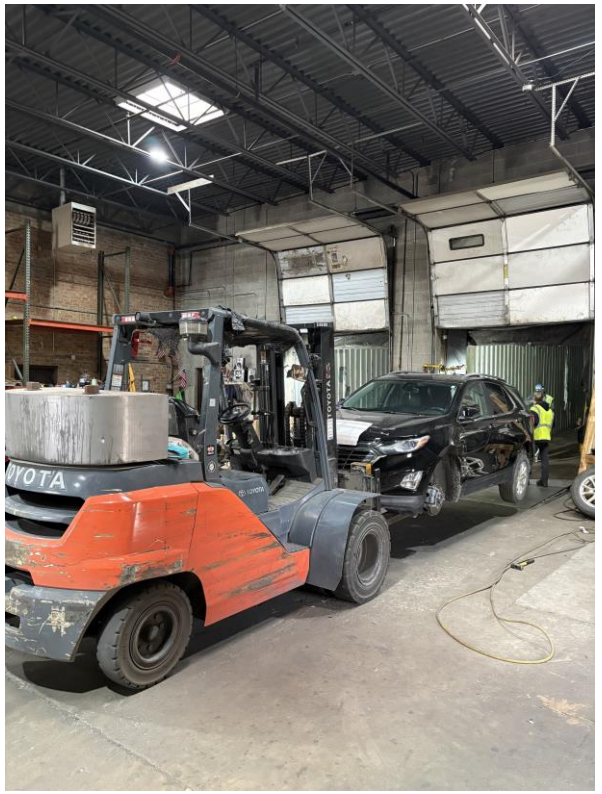
NCB
SAFETY OF LIFE AND CARGO AT SEA

Shipper and packer facility checks/audits

To determine if employees have suitable training to handle DG and have processes and procedures in place for declaring and packing the cargo.









NCB
SAFETY OF LIFE AND CARGO AT SEA

Key Takeaways

- Mis-declared and undeclared DG are a **leading driver** of container ship fires and major cargo losses

- Statistics from Allianz, Gard, CINS and others show **frequency is rising** and severity remains high

- Lithium-ion batteries and EVs will remain a central risk theme in the coming decade

- Marine underwriters have a powerful role: using their leverage to drive better DG compliance, support initiatives like Hazcheck and WSC's Cargo Safety Program, and encourage inspections and training



THANK YOU FOR LISTENING

Questions?

NCB

SAFETY OF LIFE AND CARGO AT SEA

Eric Rounds – VP, Chief Surveyor
rounds@natcargo.org
(973) 568-5793
www.natcargo.org