

EMSA information tools for HNS pollution response

MAR-ICE and MAR-CIS

**SafeSeaNet "HAZMAT Working Group"
25 February 2014**

**Cooperation and Information
Pollution Response Services**



HNS¹ Maritime Transport

The global trade of HNS makes the maritime transport of HNS cost effective.

The maritime transport of HNS has inherent risks associated.

Particulars of Maritime Transport:

- Large quantities of HNS on board;
- Carriage of incompatible substances;
- Long distance transport.



MCA, UK

¹HNS Hazardous and noxious substances

Complexity of HNS response operations

HNS encompasses many different substances with different behaviours.

HNS bulk transport:

- Large quantities of chemicals on board;
- In case of incident the substance(s) will be directly released into the environment.



MCA, UK

3

HNS packaged:

- Small quantities on board;
- The container/package might delay/prevent the release of the substance(s) into the environment.



Swedish Coast Guard, Sweden

Limitation of HNS response operations

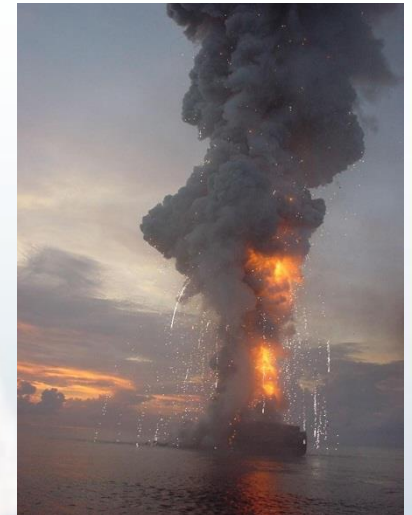
- Reactivity with water and air;
- Reactivity with other chemicals on board;
- Cargo manifest mis-declarations.



New Zealand Defence Force



MCA, UK



www.containershipping.nl/casualties

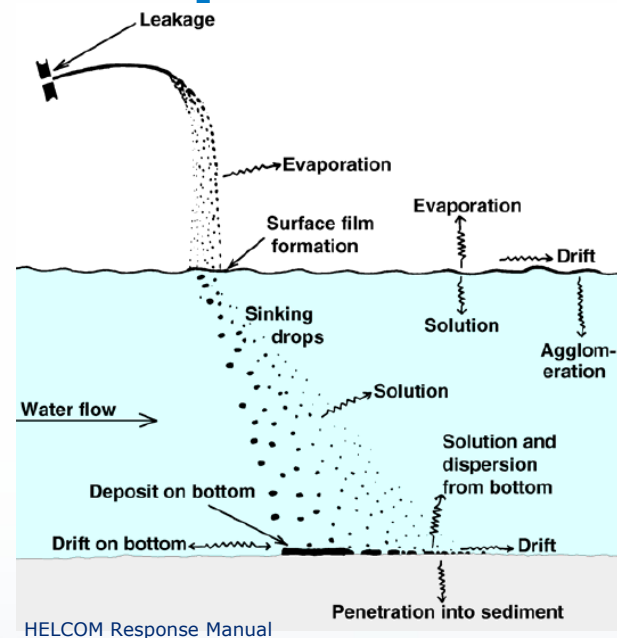
Limitation of HNS response operations

Response operations for HNS bulk transport:

- Depending on the physical behaviour of the chemical and window of opportunity;
- Limited response options.

Response operations for HNS packaged:

- Recovery of containers/drums.



Irish Coast Guard

Limitation of HNS response operations

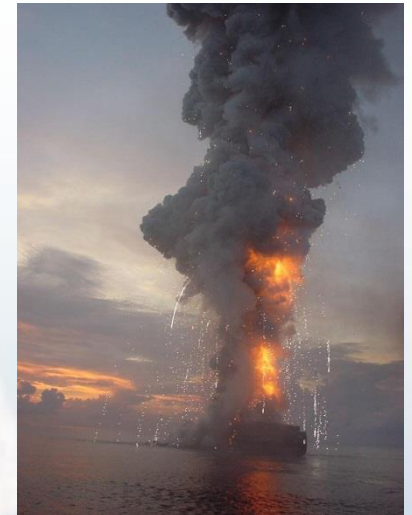
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Definition of HNS

HNS: *“any substance other than oil which, if introduced into the marine environment, is likely to create hazards to human health, harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the Sea”* (OPRC-HNS Protocol 2000)

HNS: Hazardous and Noxious Substances
“harmful” chemicals other than oil

Information needs in a HNS incident:

First stage:

- Concise information on the substances involved is needed;
- Information on the hazards, behaviour, physical and chemical properties of the substance;
- Evaluate the risks for the crew on board and responders.

Second stage:

- Ship integrity information.

Third stage:

- Information for salvage operations.

EMSA's information tools for HNS Pollution Response

- **MAR-ICE Network Service**
- **MAR-CIS MARine Chemical Information Sheets**
 - Both products aim at provide substance specific information for pollution response to incidents with HNS.
 - To cover information needs at the first stage of the incident.

MAR-ICE Network

Based on a Memorandum of understanding between 3 parties:

- **Cedre**¹ acts as the MAR-ICE Contact Point;
- **Cefic**² manages the ICE-Database (contacts with chemical industry);
- **EMSA** initiated, finances, evaluates & coordinates the service.



How does it work?

Requesting parties: 28 EU MS, NOR/ICE, EU Candidate countries, EMSA;

Contact CEDRE, via phone, fax or email;

Availability 24/7.



A. Procedure summary for activating the MAR-ICE Network 1. Call MAR-ICE Contact Point (CEDRE); 2. Send the contact form filled in by email/fax to CEDRE (alternatively pass the information by phone); 3. CEDRE confirms receipt of email/fax; 4. CEDRE sends by email/fax the information requested (alternatively passes the information by phone); 5. Confirm receipt of information requested.		MAR-ICE Network contact details Phone number: 00 33 2 98 33 10 10 00 33 8 00 62 77 45 00 33 800 MARPOL Fax number: 00 33 2 98 44 91 38 Email address: MAR-ICE@cedre.fr
B. Information about request Real Incident: <input type="checkbox"/> Exercise or Drill: <input type="checkbox"/> Date: <input type="text"/> Local Time: <input type="text"/>		
C. Information about caller (Requester) Name: <input type="text"/> Position / Title: <input type="text"/> National Authority / Organisation: <input type="text"/> Country: <input type="text"/> Telephone: <input type="text"/> Fax: <input type="text"/> E-mail: <input type="text"/>		
D. Information about transport incident Name of vessel(s) and type(s): <input type="text"/> IMO number: <input type="text"/> Cause of Incident: Collision: <input type="checkbox"/> Mechanical failure: <input type="checkbox"/> Structural failure: <input type="checkbox"/> Grounding: <input type="checkbox"/> Fire or explosion: <input type="checkbox"/> Other: <input type="text"/> Description of incident location: <input type="text"/> Latitude/Longitude: <input type="text"/> / <input type="text"/> Weather conditions: <input type="text"/> Sea State: <input type="text"/> Water depth (in m): <input type="text"/> Was there a spill/release: <input type="checkbox"/> (yes) Other situation: <input type="text"/> Spill/release contained on ship: <input type="checkbox"/> Spill/release into water: <input type="checkbox"/> Lost Container(s): <input type="checkbox"/> (yes) Container(s) ID-number(s): <input type="text"/>		

¹ Centre of Documentation, Research and Experimentation on Accidental Water Pollution

² European Chemical Industry Council

MAR-ICE Network

Service provided: expert information and advice for ship sourced chemical incidents (spills or threats thereof) from a Network of marine pollution response and chemical experts.

- Product-specific / Incident-specific / Marine-related information

MSDS & other product-relevant documentation
(as of Feb 2014 also MAR-CIS datasheets)

- Remote information & advice / Modelling / Risk Assessment

3-D chemical model results

Information and advice from knowledgeable chemical company / manufacturer

MAR-ICE Network

17 Activations 2009 – 2014 (Jan):

- 6 real incidents (Ireland, Sweden, Norway, Spain, 2x Belgium)
- 11 notification exercises/drills (3x Ireland, 2x France, Turkey, Latvia, UK, Finland, 2x Spain)
- ~ 3 activations /year

Two formal evaluations to date (April 2011, September 2013)

Positive feedback from Network's users, in particular regarding:

- **Expert** information and advice provided
- **Promptness** of reply
- **Reliable initial source of information** to assist in incident response (*complementing other more detailed information sources where available*)

MAR-CIS MARine Chemical Information Sheets

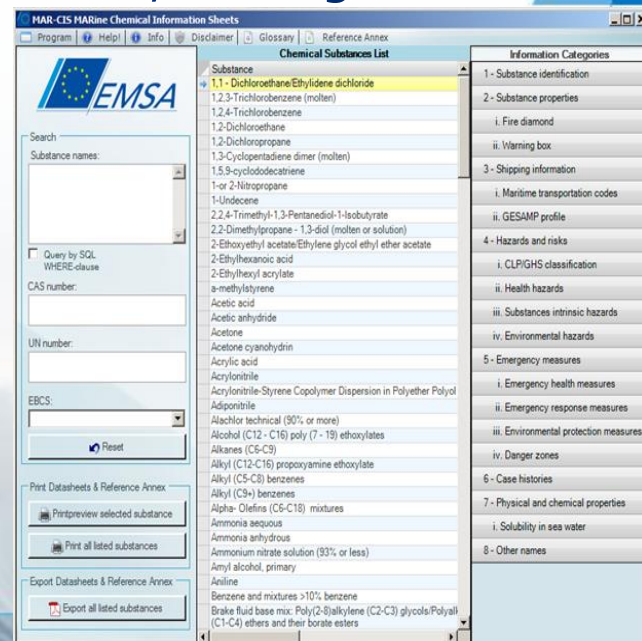
- ▶ There is a need for relevant & concise information for emergency responders at-sea
- ▶ **Key questions** arising during an HNS incident:
 - What is the substance's behaviour (chem./phys. properties)?
Fume hazards, contact with air, water; reaction with other substances...
 - What are the existing safeguards on board of the ship?
Ship building requirements, IMDG code, packaging requirements...
 - How to control the situation?
Response measures in case of leakage to water, on deck or in confined spaces...
 - What precautions are needed to approach the incident area?
PPE, Monitoring/detection equipment, danger zones, exposure safety limits
 - How will the substance spread/dissolve in seawater?
Effect of salinity and temperature on the solubility of the substance



Swedish Coast Guard,

MAR-CIS MARine Chemical Information Sheets

- ▶ Compile relevant and concise information for marine HNS incident responders;
- ▶ Added value:
 - Include maritime specific information
 - include information on solubility in seawater, through laboratory tests.
- ▶ Deliverables:
 - Database/pdf datasheets of ~200 substances;
 - Access to data through an interactive display menu (search, print, e-mail the datasheet).



MAR-CIS user interface

MAR-CIS MARine Chemical Information Sheets

Outcome of MS's Consultation (2013):

- 17 replies from CTG MPPR
- Positive result (average feedback 4.2, scale 1 to 5)
- Feedback/comments received to be included in future developments

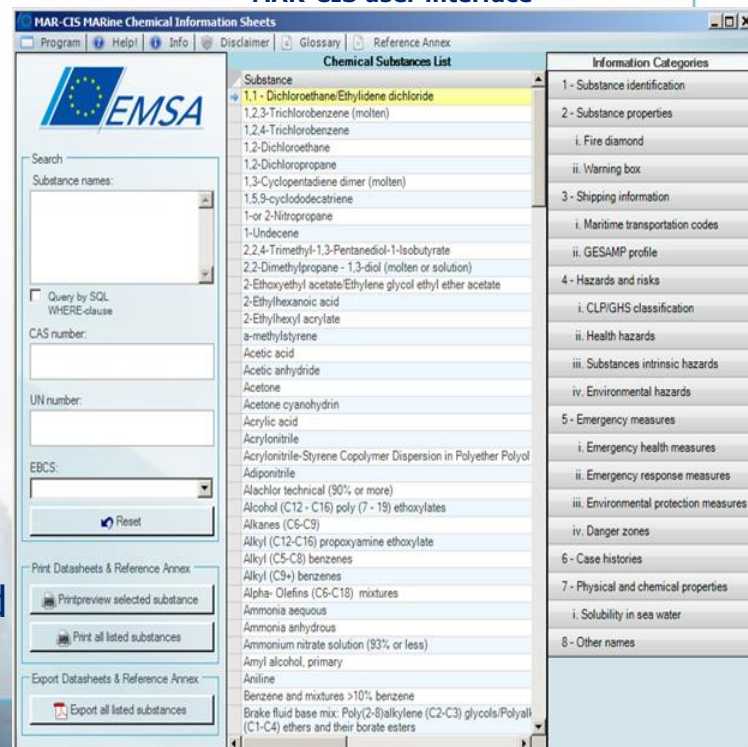
Project status:

- Ongoing project (final year)
- 133 datasheets, 26 of which include info on seawater solubility determined in lab
- IMO, Cefic involved in reviewing process

Next steps:

- As of Feb. 2014, datasheets to be distributed via MAR-ICE Network (if available)
- Final tool (200 datasheets) to be distributed to Member States in 2015

MAR-CIS user interface





The screenshot displays the MAR-CIS user interface. On the left, there is a search section with fields for 'Substance names', 'CAS number', 'UN number', and 'EBCS', along with a 'Reset' button. Below the search fields are buttons for 'Print Datasheets & Reference Annex', 'Print preview selected substance', 'Print all listed substances', 'Export Datasheets & Reference Annex', and 'Export all listed substances'. The main area is titled 'Chemical Substances List' and contains a table of substances. The first substance listed is '1,1-Dichloroethane/Ethylidene dichloride'. To the right of the substances list is a column for 'Information Categories', which includes: 1 - Substance identification, 2 - Substance properties (i. Fire diamond, ii. Warning box), 3 - Shipping information (i. Maritime transportation codes, ii. GESAMP profile), 4 - Hazards and risks (i. CLP/GHS classification, ii. Health hazards, iii. Substances intrinsic hazards, iv. Environmental hazards), 5 - Emergency measures (i. Emergency health measures, ii. Emergency response measures, iii. Environmental protection measures, iv. Danger zones), 6 - Case histories, 7 - Physical and chemical properties (i. Solubility in sea water), and 8 - Other names.

MAR-CIS MARine Chemical Information Sheets

Includes explanatory information on Maritime transportation codes providing information on existing safeguards on board.

- IBC code
Liquid substances transported in bulk
- IMDG code
Substances transported in packaged form

Maritime transport codes					
IMDG			IBC		
UN number		1279	Marine pollution category	Y	Category Y-Substances under MARPOL Annex II
Hazard class	3	Flammable liquids			
Subsidiary risks	-				
Packing group	II	Moderate hazard	Hazards	S/P	Safety and pollution hazards
			Ship type	2	Chemical tanker for products with appreciably severe environmental and safety hazards (significant preventive measures)
Emergency schedule EmS	F-E	Non-water-reactive flammable liquids	Tank type	2G	Integral gravity tank
	S-D	Flammable liquids			
Placard / label			Tank vents	Cont.	Controlled venting
			Gauging	R	Restricted gauging
			Tank environmental control	No	No special requirements
			Vapour detection	F-T	Flammable toxic vapours
			Fire protection	A	Alcohol-resistant foam or multi-purpose foam
				B	Regular foam; (not of an alcohol-resistant type, including fluoro-protein and aqueous-film-forming foam)
Stowage and segregation	Cat.B	Cargo or passenger ships with < 25 passengers or 1 passenger/3 m length - stowage on or under deck; other passenger ships with more passengers - stowage on deck only	Emergency escape	No	No special requirements
Marine pollutant		No			

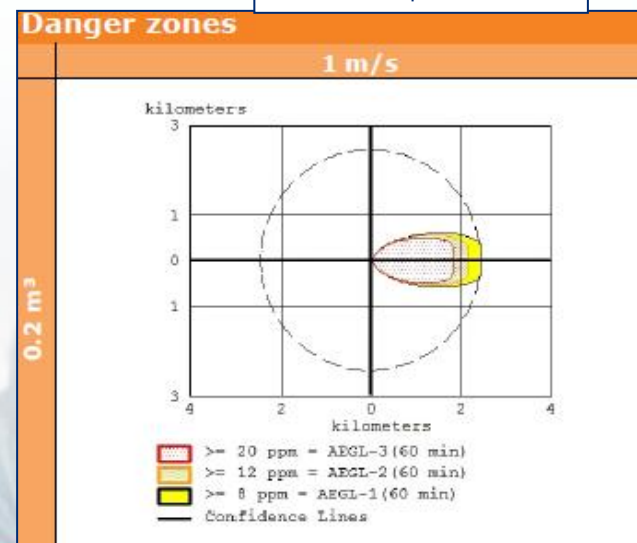
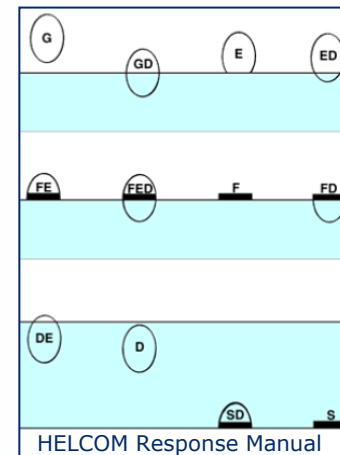
MAR-CIS MARine Chemical Information Sheets

Graphic representation of the GESAMP hazard profile used for classifying HNS that may enter the marine environment through operational discharge, accidental spillage or loss of overboard containers from ships.

GESAMP profile		1	2	3	4	5	6
Bioaccumulation & biodegradation	A1 Bioaccumulation	1					
	A2 Biodegradation	NR: Not readily biodegradable					
Aquatic toxicity	B1 Acute aquatic toxicity	2					
	B2 Chronic aquatic toxicity	1					
Acute mammalian toxicity	C1 Mammalian acute oral toxicity	1					
	C2 Mammalian acute dermal toxicity	0					
	C3 Mammalian acute inhalation toxicity	2					
Irritation, corrosion and long term health effects	D1 Skin irritation and corrosion	2: Irritating					
	D2 Eye irritation and corrosion	2: Irritating					
	D3 Long-term health effects						
Interference with other uses of the sea	E1 Tainting						
	E2 Physical effects on wildlife & benthic habitats	S: Sinking substances D: Dissolves					
	E3 Interference with coastal amenities	2					
Legend		■ maximum value					
		■ maximum value reached					
		() indicative or provisional classification					

MAR-CIS MARine Chemical Information Sheets

- Emergency measures on-board of ships.
 - In case of leakage in open area;
 - In confined spaces;
 - To water.
- Scenarios built-up;
- How substance will behave in water; e.g. dissolve, evaporate, sink...
- PPE (Personal protective equipment)
- Monitoring/detection



MAR-CIS MARine Chemical Information Sheets

Main features

- Should be readily available for response planners and first responders;
- Provide relevant information for Maritime Pollution Response on board of ships;
- Concise and focused;
- Easy understandable by first responders that may not be chemical experts.


Page 1 - Identification
MAR-CIS MARine Chemical Information Sheets
Chloroform

Identification		Reference numbers
Name	Chloroform	UN number
IUPAC name	trichloromethane	UN number
Proper shipping name	CHLOROFORM	OSG number
Product name	Chloroform	EINECS
		Index number
Synonyms (more on page 11)	Chloroethid Chloroethid Chloroform DAB 8 Chloroform, stabilisiert mit Alkoholen oder Olefinen Chloroform, unsterilisiert	200-663-8 602-006-00-4

References: 1, 10, 43, 44

Substance Properties	
Colourless volatile liquid with characteristic odour. Toxic substance. Dissolves in water to form a corrosive solution of hypochlorous acid which decomposes on standing to chlorine, oxygen, and chloric acid. Non-combustible, extremely dangerous fire effluent.	
Class	Toxic substance
Main uses	Feedstock/intermediate, solvent (minor use).
Appearance	Colourless liquid
Odour	Characteristic
Behaviour (EBCs)	SD - sinker / dissolver

References: 1, 10, 229

Fire Codes		
Legend	no risk	
Health	Blue (Left) 0 to 4	
Flammability	Red (Top) 0 to 4	
Reactivity	Yellow (Right) 0 to 4	
Special	White (Bottom) OK means "oxidizer"	
Hazards	W means "use no water"	

References: 10

Warning: Extremely toxic smoke and fire effluent.

References: 2, 10

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Version: 20.10.2013

Thank you for your attention!

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