

# OPERATIONAL PLANS AND PROCEDURES FOR MARITIME SEARCH AND RESCUE IN HNS INCIDENTS 2016–2019

PUBLICATIONS OF THE ChemSAR PROJECT  
4:2019



## A SELF-STUDY GUIDE FOR ChemSAR eLEARNING MATERIALS

on

Search and Rescue operations at sea involving  
Hazardous and Noxious Substances

Sari Nyroos



**ChemSAR**

## Contents

1. Introduction .....	2
2. Getting Started.....	2
2.1.1. Target groups .....	2
2.1.2. Pretest .....	3
2.1.3. ChemSAR Procedures .....	3
2.1.4. eLearning Materials .....	4
3. Chemical Data Portal.....	5
4. ChemSAR Game .....	5
5. ChemSAR Glossary.....	5



## 1. Introduction

Welcome to learn about HNS in SAR operations at sea!

ChemSAR presents operational plan (OP) and standard operational procedures (SOPs), eLearning materials, chemical data portal, simulation game, and other supporting links on hazardous and noxious substances (HNS) incidents at sea.

ChemSAR OP, SOPs and eLearning materials are supplementary to already existing SAR materials, e.g., national guidelines, SAR education and training as well as the International Aeronautical and Maritime Search and Rescue Manual by the International Maritime Organization. ChemSAR is aimed at rescue, maritime and environmental authorities, RCCs, vessels, shipping companies and seafarers, rescue units and SAR training and maritime academies within the Baltic Sea Region.

Large-scale maritime incidents in the Baltic Sea Region call for efficient international cooperation. ChemSAR helps to build up common procedures and knowhow, shared understanding and awareness of the situation between all parties involved in search and rescue (SAR) operations at sea.

## 2. Getting Started

### 2.1.1. Target groups

ChemSAR Pretest and eLearning materials are divided into two target groups, Authorities or Shipping Companies/Seafarers. The following emblems are used to guide you:



Authorities



Shipping Companies/Seafarers

### 2.1.2. Pretest

Start your learning experience with a short pretest. ChemSAR pretest is a set of multiple-choice questions to test your knowledge and awareness on HNS and SAR operations at sea. There is no time limit. At the end, you will see your score on the screen. You will also see the correct answers where your answer was wrong. Just repeat the test, if you fail.

### 2.1.3. ChemSAR Procedures

Study the ChemSAR Procedures before moving on to the eLearning materials. ChemSAR Procedures present an **Operational Plan (OP)** - Operation model providing general overview of the rescue operation procedures and rescue system in an HNS incident and **Standard Operational Procedures (SOPs)** - supporting all actors in maritime Search and Rescue (SAR) operation on Hazardous and Noxious Substances (HNS) incident to perform a successful and safe rescue operation. The following emblems are used to guide you through seven SOPs:



I Assessment of the incident



II Determination of the restriction area



III Arrival to the scene of incident



IV Boarding



V Rescue operation on board the distressed vessel



VI Evacuation and emergency towing



VII Decontamination

#### 2.1.4. eLearning Materials

Move on to the eLearning materials on HNS SAR operations at sea under seven sub-units. The units correspond to each of the SOPs:



I Situation Awareness



II Safe Area



III Safety On-scene



IV Possibilities to Get on Board



V Rescue on Board



VI Evacuation Possibilities



VII Possible Contamination



+ quiz at the end of each unit

Test yourself at the end of each unit. Quizzes are sets of multiple-choice questions. There is no time limit. At the end, you will see your score on the screen. You will also see the correct answers where you answer was wrong. Just repeat the test, if you fail.



### 3. Chemical Data Portal

Chemical data portal helps you to find relevant information when assessing HNS incidents. It includes, for example, easy-to-use and thorough databanks and contact information of HNS experts. You can also find the SOPs, background information on relevant regulation and research.

<https://www.chemsarportal.com/>

### 4. ChemSAR Game

ChemSAR game will raise awareness and emphasize the complexity and limitations of an HNS-related SAR operation at sea. It is a learning environment with high level of simulation for everyone who is interested in this kind of operations. The scenarios are based on ChemSAR SOPs.

### 5. ChemSAR Glossary

All the terms used in the site are defined in the glossary. Hovering a mouse on a term in the text reveals a definition. Glossary as a whole is included in the start menu. Glossary is also provided below.

#### CAS Registry Number (CASRN or CAS Number)

A unique numerical identifier assigned by the Chemical Abstracts Service (CAS) to every chemical substance described in the open scientific literature, including organic and inorganic compounds, minerals, isotopes, alloys and nonstructurable materials (numbering doesn't follow orders).

CAS Registry Numbers are simple and regular, convenient for database searches. They offer a reliable, common and international link to every specific substance across the various nomenclatures and disciplines used by branches of science, industry, and regulatory bodies. Almost all molecule databases today allow searching by CAS Registry Number. On the other hand, CASRNs are not related

to chemistry, are proprietary and unrelated to any previous systems, and do not readily form phonetic analogs or synonyms.

### Cold zone

One of the three-level working zones in a SAR operation where HNS are involved. The cold zone is an area outside the warm zone. The cold zone is free from contamination and may be used as holding and support area. When the warm zone and the cold zone are established onboard the SRU, service and treatment facilities are located in the cold zone. The uncontaminated area beyond the hot and warm zones where access is restricted for emergency response operations.

### Contaminant

Agent causing a contamination

### Contamination

Contamination means the pollution of surfaces of creatures (e.g. skin, hairs, clothing), soil, waters and objects with HNS. The agent causing the contamination is called contaminant. For example, passengers, rescue personnel, their equipment, cargo on board and the distressed vessel itself can be contaminated. Contamination can further spread into non-contaminated areas by wind, movement of contaminated personnel or similar factors.

### Decontamination

Reducing the contamination of surfaces of creatures (e.g. skin, hairs, clothing), soil, waters and objects. Decontamination by rescue units includes coarse cleaning of rescue personnel (including their PPE) or other persons, of injured persons and equipment or objects.

### Decontamination station

The place where the decontamination is conducted is called decontamination station. One has to establish a decontamination station on every single incident with HNS involved.



### Designated Person Ashore (DPA)

A key person who is required to ensure an active implementation of the company's safety management system onboard the vessel, and is required to be based ashore for developing and implementing the company safety culture. A DPA is especially designated to ensure a reliable connection between the company and the crew, and to supervise the safe operation of the vessel.

### Emergency decontamination

Quick decontamination to prevent further harm to (possibly) contaminated persons. The very first action is the undressing of every piece of (upper) clothing and slowly rinsing of the contaminated skin.

### Emergency Escape Breathing Devices (EEBD)

System which provides effected persons with clean breathing air, either by filtration or provision of pressurised air, to ensure a secure escape in harmful atmospheres.

### Entry point

System which provides effected persons with clean breathing air, either by filtration or provision of pressurised air, to ensure a secure escape in harmful atmospheres.

### Ex-protected

Explosion protection means that the used devices, vessels and any other equipment have a technical protection that prevents ignition of an explosable atmosphere by the device.

### Exit point

In order to organize controlled and safe exit from the restricted area (cold, warm and hot zones), the SMC defines an exit point that the vessels have to use in order to depart from the defined areas.





## Global Maritime Distress and Safety System (GMDSS)

Global Marine Distress and Safety System. A global communications service based upon automated systems, both satellite and terrestrial, to provide distress alerting and promulgation of maritime safety information for mariners.

## Hazardous and noxious substance (HNS)

A hazardous and noxious substance (HNS) is defined as any substance other than oil which, if introduced into the marine environment, is likely to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea (definition from the Protocol on Preparedness, Response and Co-operation to pollution Incidents by Hazardous and Noxious Substances [OPRC-HNS], 2000). In relation to ChemSAR, this HNS definition is considered to also include on a general level other dangerous goods or hazardous materials transported by sea.

## Hot zone

One of the three-level working zones in a SAR operation where HNS are involved. The hot zone is an area where the risk for contamination and probability for exposure to hazardous substances is the highest. In the first phase, the hot zone can be the radius around the DV or location onboard DV, based on HNS identification, measurements and calculations. The highest level of Personal Protective Equipment (PPE) is needed in this area. Hot zones are contaminated areas where the initial release occurs or disperses to. It will be an area likely to pose an immediate threat to the health and safety of all those located within it.

## Incorporation

HNS in form of particles, dust, aerosols, liquids or gases getting into the body via the respiratory system (inhalation), the digestive system (ingestions), skin lesions (e.g. animal bites as well) or body fluids (e.g. blood, saliva, semen, vaginal secretion), the skin (absorption).



## International Maritime Dangerous Goods (IMDG) Code

The International Maritime Dangerous Goods (IMDG) Code regulates the maritime transport of dangerous goods in packaged form. The IMDG has been created as per the recommendations of the United Nations' panel of experts on transport of dangerous goods along with the International Maritime Organization (IMO) in order to enhance and harmonize the safe carriage of dangerous goods and to prevent pollution to the environment. The Code sets out in detail the requirements applicable to each individual substance, material or article, covering matters such as packing, container traffic and stowage, with particular reference to the segregation of incompatible substances. <http://www.imo.org/en/OurWork/Safety/Cargoes/DangerousGoods/Pages/default.aspx>

## Liaison officer

A person who liaises between two organizations to communicate and coordinate their activities during international operations.

## Mass Rescue Operation (MRO)

Existing national and / or organizational plans or procedures for the evacuation of persons. In regard to ChemSAR, the MRO plans have to be considered, if there is a possible benefit for the evacuation process.

## Material Safety Data Sheet (MSDS)

A technical document which provides detailed and comprehensive information on a controlled product related to health effects of exposure to the product, hazard evaluation related to the product's handling, storage or use, measures to protect workers at risk of exposure and emergency procedures.

## MAYDAY RELAY

The passing of an emergency message from a vessel in distress by another ship or station.

## MOB

Man Over Board: a person who has fallen overboard



### NO-FLY zone

An area over which aircrafts are not permitted to fly when an incident takes place where there is a risk of being exposed to, e.g., toxic vapors or other danger.

### NoGo-area

An area around a track which vessels may not enter. Usually highlighted with cross-hatching or in red.

### PAN-PAN

An urgency signal used when the safety of a vessel or persons is in danger but the danger is not grave and imminent.

### Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) contains equipment for

- breathing protection (masks, filters, self-contained positive pressure breathing apparatus),
- face and eye protection (goggles, shields) and
- body protection (chemical resistant suits, gloves, boots, hoods, skirts).

The different parts are combined according to the actual risk assessment.

### Place of Refuge

Designated emergency port or anchorage for vessels in distress

### Point of Contact (POC)

Point of Contact on shore to ensure further medical care, e.g., ambulances and hospitals.

### Proper Shipping Name (PSN)

A standard technical name to describe the hazard properties and the composition of dangerous goods.



## Remotely Piloted Aircraft Systems (RPAS)

Pilotless aircraft, a flying machine without an onboard human pilot. Also known as a drone.

## Restriction area

Designates the controlled and possibly dangerous area into which unauthorized access is not permitted. It encompasses the cold zone, warm zone and hot zone.

## Self-Contained Breathing Apparatus (SCBA)

A self-contained breathing apparatus ((also referred to as a compressed air breathing apparatus (CABA), or simply breathing apparatus (BA)) is a device worn by rescue workers, firefighters, and others to provide breathable air in an immediately dangerous to life or health atmosphere. The term self-contained means that the breathing set is not dependent on a remote supply (equipped by a high-pressure tank for air supply).

## Situation report (SITREP)

A periodic report of the current situation during an operation

## Standard operational procedure (SOP)

Standard operational procedures (ChemSAR SOPs) support all actors involved in maritime Search and Rescue (SAR) operations on Hazardous and Noxious Substances (HNS) incidents to perform a successful and safe rescue operation. ChemSAR SOPs are meant to support and give additional information to normal daily SAR procedures of the RCC, e.g., risk assessing, rescue planning and SAR mission coordinating, as well as support SAR actions on-scene under threat of hazardous environment.

## TMAS

Maritime Telemedical Assistance Service or Radio Medical

## TRIAGE

A process of determining the priority of patients' treatments based on the severity of their condition.



### UN number

A four-digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods to classify a substance or a particular group of substances.

### Vessel Traffic Service (VTS)

A marine traffic monitoring system established by harbour or port authorities to keep track of vessel movements and provide navigational safety in a limited geographical area.

### Warm zone

One of the three-level working zones in a SAR operation where HNS are involved. The warm zone is an area surrounding the hot zone. This area is a transition area between hot zone and the cold zone. The decontamination activities take place in the warm zone. The warm zone can be the radius around the DV or location on board the DV, based on HNS identification, measurements and calculations. An area uncontaminated by the initial release of a substance, which becomes contaminated by the movement of people or vehicles. This is an area next to the hot zone that is considered safe for workers to enter with appropriate personal protective equipment. This includes areas used for decontamination activities.