

A photograph of three workers in hazardous materials (hazmat) suits on the deck of an offshore oil or gas platform. The worker on the left is wearing a yellow and black suit with a red helmet and is carrying a clear plastic container. The worker in the center is wearing an orange full-body suit with a large clear face shield. The worker on the right is also in an orange suit. The background shows the complex structure of the platform with various pipes, ladders, and equipment. The deck is wet, suggesting recent rain. Safety signs are visible on the platform structure, including "NO SMOKING" and "HAZARDOUS AREA".

Standard Operational Procedures

Note! ChemSAR SOPs and checklists are supplements to existing Search and Rescue (SAR) procedures; they do not replace any part of them.

These SOPs and checklists do not have to be used in chronological or any specific order, as they can be used on need basis: one by one, parallel, etc., depending of the actual situation.

PURPOSE

ChemSAR standard operational procedures (ChemSAR SOPs) support all actors involved in maritime 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 Search and Rescue (SAR) procedures of the Rescue Coordinating Centre (RCC), e.g. assessing the risks, rescue planning and SAR mission coordination, as well as support SAR actions on-scene under threat of a hazardous environment.

SCOPE

This document pertains to all personnel involved in the maritime SAR operation in the HNS incident.

RESPONSIBILITIES

SAR operation coordination and responsibilities are based on international agreements and national legislation. SAR operations in the HNS incident are coordinated by the Search and Rescue Mission Coordinator (SMC). SMC is responsible for the distressed vessel rescue operation procedures in the Rescue Coordination Centre (RCC). The master of the distressed vessel (DV) is responsible for rescue operations on board the DV. Local authorities are responsible for the rescue operation on board the DV in a situation where there is no person in charge on board the DV. The master of the Search and Rescue Unit (SRU) is responsible for the procedures on board the SRU. Each rescue team participating in the rescue operation will follow their national and organisational occupational safety procedures.

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SOP 1: Assessment of the incident

PROCEDURES

Hazardous and Noxious Substances (HNS) involved in the Search and Rescue (SAR) operation have a great impact when assessing rescue plan possibilities. During the rescue planning phase, the HNS have to be taken into account when analyzing the incident and the area (1.1), assessing possible rescue procedures (1.3), resources (1.2) and rescue plan options (1.3).

1.1 Risk assessment

Information gathered from the distressed vessel and experts concerning the incident and the HNS involved gives the Rescue Coordinating Centre (RCC) the possibility to do the risk assessment of the incident and plan the best available rescue option for rescuing persons on board the Distressed Vessel (DV). A rescue operation in a dangerous atmosphere should be considered as a high-risk operation.

Detailed identification of the HNS involved is needed for the correct

rescue and response measures. General information consists of the following:

- HNS name (chemical name/name of the substance)
- Proper Shipping Name (PSN)
- United Nations (UN) number
- Chemical Abstracts Service (CAS) number
- Nature of damage and/or size of the outflow (contained on board, leaked on board, leaked overboard)
- Situation of the incident (dynamic, static)
- Ongoing or planned rescue and response actions taken by the crew (also detection and measurement possibilities)

Additional information concerning the substance involved, health and other risks can be gathered from the DV, the shipping company Designated Person Ashore (DPA), chemical databases, codes and other relevant documents, e.g. International Maritime Dangerous Goods (IMDG) code, Material Safety



Data Sheets (MSDS) etc. The information is needed for the following:

- Form and package of the HNS
- Quantity of HNS, rate of release and theoretical max. release
- Reactivity and properties of the HNS
- Risk of fire or explosion
- Expected hazards for humans and the environment
- HNS-spreading estimations
- Cargo separation and cargo plan (possible other HNS)

The possibilities for monitoring the situation on-scene by measurements or at least perceptible findings (colour, form, and smell) and the possibility to take and send pictures to the RCC should also be considered when assessing the risks of the ongoing incident and planning rescue operations.

National chemical and HNS experts should be consulted for more information on the behaviour of the substance (primary and secondary risks), aggregation state and change of aggregation state at

a given temperature, and the spreading estimations. Also, inform and advise a possible national environment inspector, safety agency, security agency and legal agency (depending on national organisational structures; could be police/crime investigation/national maritime authorities) and media, when necessary.

1.2 Resources

Facts from the situation on board form a need for the assistance acquired, the personal protection level, and Search and Rescue Units (SRUs) with the capacity to perform and support rescue operations in the hazardous atmosphere. A possible need for extra personnel and equipment during the rescue operation should be taken into account. National resources, e.g. Mass Rescue Operations (MRO), Multi-response Maritime Accident (MMA), the capability of the SRUs, SAR plans and agreements should be found out and activated to achieve a successful rescue operation.

In a situation where national resources



are not efficient for rescue measures, international partners (RCCs, experts, liaison officers, etc.) should be informed and consulted in the early phase. Finding out the possibility for available international resources in this phase reduces the delay for an effective SRU arrival on-scene.

1.3 Action options

Depending on the situation on board the distressed vessel, considerable action options can be one or several of following:

- No external assistance needed
- Consultation (Maritime Telemedical Assistance Service (TMAS), experts, etc.)
- External assistance needed outside the DV (emergency towing, Man over Board (MOB), etc.)
- External assistance on board the DV needed (emergency/first responders; emergency medical care, medivac, containing the leakage, etc.)
- Ship abandoning, Mass Rescue Operation (MRO)
- Intervention is impossible due to some reason (area, vessel or specific section on board defined as a NoGo area)

Evacuation of the DV in a dangerous atmosphere is always a demanding and incident-specific procedure. Find out the alternative action options; there can be more risks to evacuate a great number of people into the hazardous atmosphere than finding out the procedures for minimizing the influence of a possible leak on board. The DV crew or responders' response operations can be protective, e.g. transferring persons to the sheltered location on board or repositioning or shifting the DV by means of emergency towing, etc.

The possibility for early evacuation should be considered if the situation on board the distressed vessel gets worse (e.g. a dangerous HNS chemical reaction) and the SRU's arrival on-scene is expected to be delayed. Use of the Vessel Triage categorisation system as a tool for simplifying the decision-making process could give an impression of the status of the situation and its development. In a later stage, there can be a situation where on board rescue operations are impossible to carry out.

The need for the Place of Refuge / Safe Haven for the vessel in distress should be considered and a preparation procedure launched if needed.



SOP 2: Determination of the restriction area

PROCEDURES

2.1 First phase area isolation actions

In Hazardous and Noxious (HNS) incidents where there is a risk of flammable, explosive, toxic or irritative cloud or vapours, the dangerous area has to be isolated from maritime (and air) traffic. In general, only Search and Rescue Units (SRU) with the capability of entering the dangerous atmosphere are permitted to enter the restricted zone and only with Rescue Coordination Centre (RCC) approval.

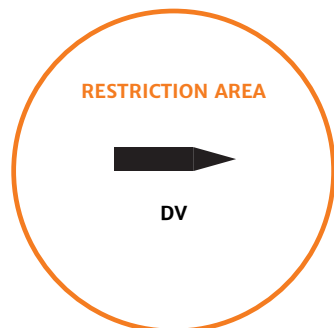
2.2 Continuous risk assessment

Information to update a risk assessment and maintaining the situation awareness are essential when defining the restrictions to respond to the actual hazards on-scene. The continuous update process of the restriction and working areas should be based on the latest risk assessment and weather conditions (e.g. wind direction and weather forecast).

2.3 Assessment of the HNS impact

The restriction area for maritime and air traffic (NO-FLY zone; e.g. possible hazards, Remotely Piloted Aircraft System (RPAS) operations, rescue operations) should be determined based on information about the incident. Defining of area should be based on the information and identification of the HNS involved. The determination is done by formulating a circular (or hemisphere if there is a NO-FLY zone) area around the distressed vessel.

In a situation where information about the HNS involved is not available in the first phase, the radius of the immediate restriction area should be at least 2NM.





The effect of the weather and weather forecast as well as possible distressed vessel manoeuvres should be taken into account when determining the area for further restrictions. From the point of release, the gas cloud will move in the wind direction in a triangular area. The area defined from approximately a 30° angle from the release is the limit of the hot zone, and the 60° angle defines the warm zone limit. If there is a risk of the hazardous zone expanding to concern third parties (e.g. on land), continue procedures with the national land-based alarm plan.

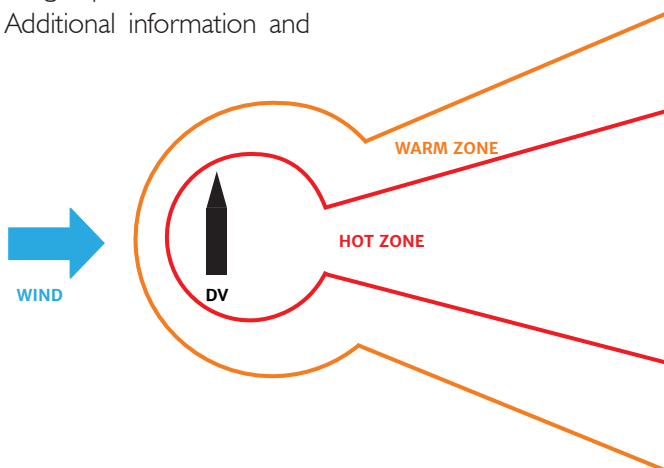
2.2 Defining the restriction area

Risk assessment considering HNS in the area should be based on the support of the experts, predictive tools, databases, use of the cargo plan etc. available information. Additional information and

situation reports (SITREP) from the distressed vessel (DV) (cargo information, hazards and alterations), rescue units on-scene and other maritime or air traffic will complete the situation awareness. RCC should continuously update the available HNS information.

The established area restrictions should be updated based on the performed risk assessment by increasing or reducing radius and formulating the shape of the restricted area. Definition of the area is done by means of measurements and by consulting experts for the drift estimations and calculations.

DV, SRUs, Vessel Traffic Service (VTS) (and Air Traffic Service (ATS) if needed) should be informed by the RCC considering the updates and possible cancellation of restrictions in the area.





2.3 Information

Maritime traffic should be regularly informed considering the restriction area with GMDSS PAN-PAN or MAYDAY RELAY messages. Contact VTS (and ATS) concerning the restriction of the areas. Contact relevant authorities and/or media for the issuance of warnings, access restrictions and a general warning to people in the risk area, if needed.

SRUs approaching the area require the latest information on the restrictions and isolation process. The restriction area should be under the surveillance of authorities (RCC and SRUs with surveillance capability), and maritime traffic approaching the area should be informed and rerouted if necessary. The area restriction surveillance should be performed by authorities and vessels with the capacity to monitor the area's isolation.

2.4 Determining areas for SAR operation

The three-level working zone system of area designation:

2.4.1 Hot zone

The hot zone is an area where the risk for contamination and probability for exposure to hazardous substances is highest. In the first phase, the hot zone can be the radius around the DV or a location on board the DV, based on HNS identification, measurements and calculations. The highest level of Personal Protective Equipment (PPE) is needed in this area.

2.4.2 Warm zone

The warm zone is an area surrounding the hot zone. This area is a transition area between the hot zone and the cold zone. The warm zone can be the radius around the DV or a location on board the DV, based on HNS identification, measurements and calculations. If a decontamination process is planned to proceed on board the SRU or other vessel on-scene, the vessel is usually positioned in the warm zone or on the border of the warm zone and cold zone, if possible. The warm zone and the cold zone are then established on board the SRU to ensure an effective decontamination process.

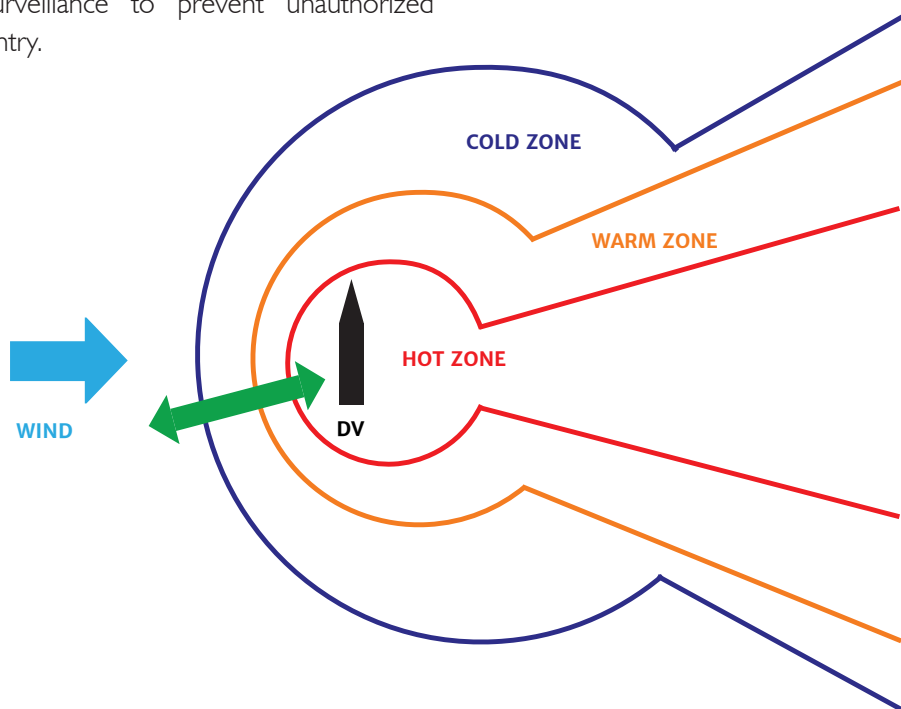


2.4.3 Cold zone

The cold zone is an area outside the warm zone. The cold zone is free from contamination and may be used as a holding and support area. When the warm zone and the cold zone are established on board the SRU, service and treatment facilities are located in the cold zone. The cold zone defines the outer safety cordon, i.e. the limit of the restricted area that should be under surveillance to prevent unauthorized entry.

2.4.4 Entry point

Prepare to arrange controlled access to the restricted area for the rescue vessels. Entering the warm zone should be upwind and allowed only for vessels with the capacity to perform rescue operations in the hazardous atmosphere. Weather and weather forecast (e.g. changes in wind direction) should be considered when establishing the entry (and exit) point of the restricted area.





SOP 3.1: Arrival to the scene of incident (RCC)

PROCEDURES

3.1.1 Resources

To ensure correct tasks and measures for the applicable units, find out about available resources as well as the capabilities of the Search and Rescue units (SRUs) on-scene. Information on the following facts will assist the decision-making process when planning tasks for units:

- Rescue vessels with the capability of entering and working in the hazardous atmosphere (hot and warm zones – rescue operations)
- Rescue vessels with limited capability or without the capability of entering hazardous atmosphere (cold zone – isolation and support)
- Rescue craft on board rescue vessels that can be used for transport, boarding and evacuation (hot and warm zones)
- Other vessels in the area (cold zone or outside the restriction area – support and transport)
- Available aircraft for transport/reconnaissance

- Available special groups (e.g. Maritime Incident Response Group (MIRG))

SRU-specific capabilities:

- Capacity for detection and monitoring
- Capacity for decontamination and first aid / emergency medical care
- Capacity of the available personnel
- Available Personal Protective Equipment (PPE)
- Response equipment

3.1.2 HNS risk assessment

The available Hazardous and Noxious Substances (HNS) and risk information should be requested from experts. When evaluating the risks on-scene, information on the suggested area restrictions, safe direction to approach the dangerous area, suggested working zone definitions (incl. entry and exit points), possible explosive, flammable or toxic hazard involved, drifting calculations (prediction tools) and latest weather



forecast should be available.

3.1.3 Communications

Rescue Coordinating Centre (RCC) coordinates distress communication in the area and determines the channels and frequencies that can be used in different sections of the rescue operation. Inform participating units about the on-scene communication table, including back-up channels, to ensure that all necessary information will reach all relevant units on-scene.

3.1.4 Rescue operation

Depending on the situation, the rescue action option can be offensive (e.g. rescuing persons and active efforts to minimize the effect of HNS), defensive (e.g. rescuing and evacuating persons) or even non-intervention if the situation is too risky for rescue personnel to enter the distressed vessel or response actions are impossible to execute, for example due to the chemical reaction on board the distressed vessel.

In the rescue plan, at least the following procedures should be planned and performed:

- Area isolation procedures
- Protection procedures (both

vessel and personnel)

- Preparation process to receive contaminated persons
- Supportive procedures (transport, safe environment, first aid, equipment and material)
- Rescue procedures

To ensure and secure continuous and effective SAR operation, the supportive procedures such as replacement of personnel, materials and equipment have to be organised in the early planning phase.

3.1.5 Executing

After the planning process is completed and the first action plan formulated, the Search and Rescue Mission Coordinator (SMC) or On-scene Coordinator (OSC) should consult with the master of the DV and inform all SRUs on-scene. This first on-scene rescue plan should include at least the following information:

- Planned tasks and possible actions on-scene for each SRU
- HNS risk information (explosive, flammable, etc.)
- Status of the distressed vessel (HNS situation on board)
- Area restrictions
- Safe direction for SRUs to approach and authorization



process to enter the restricted area

- Detection and monitoring plan
- Entry points to the warm and hot zones
- Emergency plan (e.g. withdrawal in case of an unexpected deterioration)
- Estimations / drifting calculations
- Regular Situation reports (SITREPs) to SRUs and other maritime traffic in the area

The rescue action plan should be updated regularly to respond to alterations in the situation.



SOP 3.2: Arrival to the scene of incident (SRU)

PROCEDURES

3.2.1 Safety measures

Prior to entering the incident area, the Search and Rescue Units (SRUs) should prepare and test the vessel-specific protection systems according to the organisational, vessel-specific and system-based safety procedures. The correct function of the following systems is crucial when entering the hazardous atmosphere:

- Pressurization of the vessel (i.e. overpressurizing system, back-up systems and devices)
- Gas detection, monitoring and analysing systems
- Equipment for potentially explosive atmospheres (ATEX)
- Water curtain or water spray system
- Water and/or foam cannons and monitors
- Emergency evacuation and rescue plan

All the spaces and equipment needed in the Hazardous and Noxious Substances (HNS) incident should be tested prior to arriving on-scene. These spaces and

equipment contain emergency medical care or first aid facilities, decontamination procedures for the casualties and rescue personnel, available and appropriate Personal Protective Equipment (PPE), other protective equipment and portable or hand-held detection and measurement equipment.

3.2.2 Detection and measurement

When arriving at the area, arrange continuous monitoring to detect possible HNS from the air or from the water surface. This action is needed to formulate and update areas where the HNS concentration is at the risk level due to its toxicity or explosiveness/flammability. Oxygen deficiency is also important to monitor, as the plume or cloud can initially decrease the oxygen content of the air. Monitoring should be continuous and the results of the measurements reported to the Rescue Coordination Centre (RCC) for updating the rescue plan and area restrictions. To identify the involved substance(s) and



concentration, air (and water) samples should be taken from the area if possible.

3.2.3 Remote sensors

To avoid unnecessary risk, the first stage detection should be done using remote gas detection and monitoring devices (e.g. systems using infra-red light) or specific drones designed to detect or take samples from the HNS. Using a thermal imaging system, it is also possible to detect fire or a chemical reaction on board the Distressed Vessel (DV) from a distance.

3.2.4 Fixed and portable sensors

Fixed and portable sensors have to be used for detection and measurements when the SRU intends to enter the hazardous atmosphere on a mission (e.g. rescuing casualties from the dangerous area or when executing the measurement task) or to give an early warning for the crew when approaching the dangerous area. Fixed sensors are often part of the gas detection and analysing system and this system has to

be activated when there is a potential risk of HNS.

Portable and handheld devices such as gas tracing tubes, portable gas chromatographs, photoionisation instruments, flammability risk-monitoring devices, and oxygen-deficient air monitoring devices are compulsory for the teams for monitoring or identifying the substance(s) in the area.

3.2.5 Visual monitoring

To monitor a possible HNS gas cloud or leak visually, weather conditions (wind, humidity, waves) that affect the observation should be taken into account as well as current knowledge of the substance. (However, the HNS involved may not necessarily produce a visible cloud or plume.) The latest weather forecast and drifting estimation should be used to support on-scene monitoring.



3.2.6 Detection and monitoring teams

Prior to launching rescue operations in the hazardous zone, it is essential to monitor the oxygen level, flammable or explosive vapours, and the level of toxic vapours. Plan and order the task for the detection and monitoring patrols. The purpose of these measurements is to define the outer limits of the dangerous area to determine the area restrictions as well as to take samples to identify the substance and concentration involved. The applicable rescue craft or tender could be used when the possible dangerous area is around the distressed vessel. Teams should have the following information prior to executing the task:

- Sampling plan (starting point, route, safe direction and distance to approach etc.)
- Appropriate detection and measurement equipment
- Applicable rescue craft or tender and equipment (e.g. risk of explosive or flammable substance on the area)
- First team to enter dangerous area in situation where HNS is not identified should be equipped with the highest possible PPE level

3.2.7 Situation Report (SITREP)

RCC should be informed by the SRUs at regular intervals concerning the situation on-scene, weather conditions, ongoing and planned activities and results from the measurements. Request the information of the updated drifting estimation and weather forecast from the RCC or experts.

Authorization for the SRUs and other maritime traffic to enter the area should be coordinated and done in cooperation with the RCC.



SOP 4: Boarding

PROCEDURES

4.1 Risk assessment and occupational safety

Safe procedures to evacuate rescue teams boarding the Distressed Vessel (DV) should be confirmed in case of an unexpected emergency situation. Consultation with the master of the DV should be performed concerning possible escape ways and safe locations. Use the vessel's safety plan if that is available. Standby boats should be arranged as 'ready to launch' for the evacuation of the rescue teams, passengers and the DV crew in case of an emergency evacuation.

The Search and Rescue Mission Coordinator (SMC) or On-scene Coordinator (OSC) should consult with experts to determine the needed Hazardous and Noxious Substances (HNS) protection procedures. At minimum, the rescue teams have to have clear information about the level of Personal Protective Equipment (PPE), possible extra protection, detection and measurement equipment, equipment for potentially explosive atmospheres

(ATEX), and decontamination procedures. Depending on the risk assessment, in some situations the transport phase for the DV has to be performed with the highest PPE level which has to be taken into account when considering the possible boarding procedures. A proscription of wearing PPE during transport (e.g. chemical protective suits and Self Contained Breathing Apparatus (SCBA) in rescue crafts and helicopters) and a very short remaining working time after transport (due to consumption of breathing air and/or physical exhaustion wearing PPE) may make boarding of the DV impossible.

Prior to boarding the DV, the participating units/teams should be informed about the action plan, their task, situation on board the distressed vessel, risk assessment, communication channel and circumstances (weather, restrictions, etc.). Basic procedure to approach the DV for boarding in the hazardous environment should contain at least the safest direction to approach (upwind, away from visible or detected gas), the use of detection and measurement



devices, the appropriate PPE level and safety equipment (e.g. life vests) and communications.

After the briefing and before the practical execution, all rescue personnel should be registered. Additional documentation includes recording the entry and exit time to and from the warm zone, the consumption of breathing air, and the progress of the rescue operation. Contamination of the body, incorporation and injuries in general should be recorded as well.

4.2 Limitations

When assessing different possibilities for transportation, the following factors have an effect on the decision or can be exclusionary:

- Result of the HNS risk assessment
- Limitations on the use of the helicopter (distance to reach the DV, and/or using a helicopter is too dangerous or impossible due to a hazardous atmosphere around the DV)
- Weather impact that affects landing or winching from a helicopter and boarding from the rescue craft
- Capabilities of the SRUs in the area

The distressed vessel's manoeuvre capability and possibility to anchor should be confirmed from the master of the DV. The SMC and the master of the SRU should find out if there is a possibility to control the DV with external assistance (e.g. with emergency towing) if the DV maneuver capability of the DV is limited or if the vessel in distress is not under control.

4.3 Pre-boarding measures

Possible measures to enable safe boarding the DV should be considered and launched. Consult the master of the DV about the possibility to extinguish or cool down a possible fire or chemical reaction with water cannons and/or foam if the HNS risk assessment allows that. Prior to approaching the distressed vessel, also consider possible gas cloud control with water cannons or water jets to reduce the HNS impact and guide gas cloud and vapors, etc., away from the casualties and rescue teams. These protective measures can be done by both the DV and SRU firefighting (fi-fi) equipment when applicable.

To avoid ignition of the substance, use only devices and equipment that can be used in potentially explosive



atmospheres (ATEX) and foam the area as a precaution and use foam monitors if necessary.

4.4 Boarding possibilities

The decision on boarding the distressed vessel should be done after discussions with the master of the DV. The master of the SRU should consult with members of the boarding, entry and backup teams on issues concerning occupational safety when planning the boarding procedures. Find out the safe boarding point for the rescue craft or the entering point for a winch operation, and confirm the following preparation operations on board the distressed vessel:

- Landing or winching procedures for the helicopter in situations where the use of a helicopter is possible
- Boarding procedures for the rescue craft or tender (pilot hatch, gangway, ramps, etc.)
- Reception and guidance of the rescue personnel boarding the distressed vessel
- Assistance of the rescue personnel to establish an emergency decontamination station and first aid facilities on board, if possible

- Provision of supplementary SCBA, Emergency Escape Breathing Devices (EEBDs) or the equivalent for evacuating the casualties and as a supplementary air reserve for rescue teams.

In cases where the assistance of the DV crew is not available for boarding, consider alternative boarding measures. Options to be considered for the specific boarding team transported to the DV by the helicopter or tender:

- Preparing pilot hatch, gangway or pilot ladder,
- Lowering the rescue boat from davits, or
- Preparing the rescue boat ladders, ramps, etc. for the rescue teams to arrive.

Depending on the risk assessment, one possibility is also manoeuvring the SRU alongside and using the crane with the rescue basket for transporting the rescue teams to the DV.



SOP 5: Rescue operation on board the distressed vessel

PROCEDURES

5.1 Risk assessment

The situation should be assessed and rescue possibilities considered based on the latest information from Distressed Vessel (DV) and Hazardous and Noxious Substances (HNS) experts. If an intervention is possible, the decision regarding activities on board the DV should be made in consultation with the Rescue Coordination Centre (RCC)—the Search and Rescue Mission Coordinator (SMC) together with the group of experts—and the master of the DV. The rescue action plan should be updated to respond to possible alterations and units informed about the plan. The common situation awareness between participating units should be confirmed, e.g. by Situation Reports (SITREP).

5.2 Early phase response

5.2.1 Distressed vessel

The first rescue plans and immediate actions on board the DV have to be

made by the crew on board. Often the assistance of the Search and Rescue (SAR) organisation can be delayed for several hours or more, and the rescue and/or response measures are often easier and most effective to execute in the early stage. The most important tasks to organise are protection and safety for persons on board (incl. emergency decontamination procedures and emergency medical care), preventive response measures and detection, and measurement or estimation of the leakage.

5.2.2 The Search and Rescue Mission Coordinator (SMC) / On-scene Coordinator (OSC)

Consultation with the master of the DV concerning the rescue action plan (SMC, experts) should be done in the early planning phase. The master of the DV should also be informed of the possible need to assist the rescue teams by DV crew actions. The SITREP prior to initiating the entry team boarding procedures should be requested:



Information from the DV is needed regarding the situation of the HNS release and ongoing and planned rescue or response activities by the DV crew.

5.3 Rescue procedures

5.3.1 Preparation

The master of the Search and Rescue Unit (SRU) should assign the initial entry preparations on board the SRU. The following procedures should be completed in a situation where there is an intention to execute rescue actions on board the DV:

- Decontamination station is set up, tested and operational
- First aid/Emergency medical care facilities are operational
- All persons involved have the knowledge, understanding and agreement of their role(s) and planned activities in the operation
- Ensure that a controlled boarding system is established

Rescue teams (entry team, backup team and decontamination team) should be prepared according to the organisational and/or unit-specific procedures.

Protection of the rescue personnel and equipment should be based on the latest risk assessment and hazard identification. At minimum, the Personal Protective Equipment (PPE) level, detection/monitoring equipment, emergency decontamination procedures (e.g. mobile emergency decontamination shower or water hose, etc., to flush down the contaminant), communication channels and outside supervision of the teams have to be organised before launching the boarding procedures of the rescue teams. Arrange logistics for providing sufficient and suitable PPE, other consumable materials and spare parts.

5.3.2 Entry procedure

Prior to entering the hot zone, the emergency decontamination station near the entry point should be established and tested. Confirm procedures that both chemical rescue teams (entry and backup team) are at the entry point prior to authorizing the entry team to enter the hot zone. The entry team is allowed to enter the hot zone only by permission of the responsible rescue operation leader.



5.3.3 Rescue activities on board

Rescue activities are based on the rescue plan and the tasks given to the boarding rescue teams by the RCC. The first rescue teams boarding the distressed vessel can also give valuable information about the situation to the RCC for updating the risk assessment and the rescue plan.

Possible tasks for the rescue teams on board can be for example:

- Support the communication between DV and RCC
- Risk assessment on board, supporting the master of the vessel for decision-making
- Preventive response measures and detection

- Minimising the influence of the HNS, e.g.
- Restricting or stopping the leakage
- Neutralising the substance
- Emergency medical service
- Medical evacuation
- Emergency decontamination procedures
- Preparations of the ship abandoning/Mass Rescue Operations (MRO)

5.3.4 Disembarking

Safe disembarking procedures for the rescue teams and casualties should be ensured. First stage decontamination (or emergency decontamination) should be done on board the distressed vessel if possible. Chemical rescue teams that operated in the hot zone must be decontaminated, even if they were not in actual contact with the substance. Arrange a safe disembarking and decontamination process for affected and injured persons.



SOP 6: Evacuation and emergency towing

PROCEDURES

6.1 Situation awareness

The number of persons to be evacuated and the number of injured and/or affected casualties should be clarified in discussions with the master of the Distressed Vessel (DV). The current situation on board and the location of persons in danger are essential information when planning the evacuation process. If persons have partially or totally abandoned the DV, plan actions to recover them from the lifeboats, life rafts and water. The possibility of life rafts launched from the DV drifting to a hazardous atmosphere should be taken into account and prevented. Use the national and/or organisational Mass Rescue Operation (MRO) plans and procedures if applicable.

6.2 Resources

Consult the master of the DV about the capability of the DV crew to evacuate persons. Find out the capabilities and capacities of the sea and airborne units in the area to evacuate persons from the DV. Evacuation from the DV could be done using helicopters, with the Search

and Rescue Unit (SRU) alongside, using rescue craft, tender or lifeboats and life rafts. Find out the need for additional assistance (e.g. SRUs) and the Estimated Time of Arrival (ETA) on-scene.

6.3 Risk assessment

The safe and executable measures to evacuate persons from the DV, including possible and suggested evacuation routes, should be ensured. The current and predicted situation of the Hazardous and Noxious Substances (HNS) release, results from the measurements, and the HNS impact on rescue personnel and evacuees have to be taken into account (when considering measures of evacuating persons from the DV). Also weather conditions (wind, waves, swell, etc.) have a great impact on the rescue operation, especially for the evacuation process; and in some situations, abandoning the vessel in distress might not be the safest solution due to the HNS situation, sea state, etc.



6.4 Action plan

When preparing the action plan for the evacuation process, consider the possibility of a partial evacuation (e.g. to evacuate all other passengers and crew except those needed for operations on board, or evacuate only injured/affected persons) instead of a total abandoning of the DV (possible MRO), what protective equipment is needed for persons to be evacuated, the need/possibility to use the boarding team or rescue personnel on board the DV to assist in the evacuation (DV crew capabilities), transport possibilities from the DV to the SRU, actions on board the SRU, and transport to the evacuation centre or further medical care. All evacuation measures should be accepted by the master of the DV.

The evacuation action plan should enable:

- Evacuating persons from the DV and/or rescuing them from the water
- Transporting persons to the SRU
- Counting and TRIAGE (sorting and allocation of treatment) of the evacuees

- Sufficient facilities for accommodation, decontamination and emergency medical care
- Connection from the SRU to shore (helicopter/vessel)
- Point of Contact (PoC) ashore to ensure further medical care, e.g. ambulances and hospitals

6.5 Measures

Depending on the HNS situation, the possibility to evacuate persons from the DV by using manned or unmanned life rafts and lifeboats sent from the SRU should be considered. Applicable (situation-specific, e.g. ignition prevented/ex-protected) rescue craft or tenders can be used if available. Manoeuvring the SRU with the capacity to enter the hazardous atmosphere alongside the DV to evacuate a large number of persons disembarking from the vessel (using possible slides, ladders, gangway, lifeboats, rescue baskets, etc.) can be the only possible option. Use of the helicopters for evacuating persons directly from the DV can often be impossible due to the hazardous atmosphere.



6.6 Operation

The evacuation process for the affected persons should be organised. When evacuating persons in the HNS area, arrange provision of the protective breathing devices for evacuees, e.g. filtration masks, Emergency Escape Breathing Devices (EEBD) (or similar easy-to-use breathing devices) or Self-Contained Breathing Apparatuses (SCBA). Find out the need for extra-protective clothing or equipment when evacuating persons. To stabilize the condition of the casualties, arrange emergency decontamination procedures and establish decontamination lines for mass decontamination when necessary. Find out HNS-specific procedures for first aid when arranging emergency medical care facilities.

Persons confirmed as deceased are left in the hot zone or on board the DV until all other persons have been evacuated.

6.7 Documentation

All evacuated persons – whether injured/affected or not – should be registered to ensure later retrieval and further necessary medical treatment. This

includes:

- Identification and personal information
- Possible find spot
- Possible contamination
- Possible received medical treatment

6.8 Emergency towing

Consider the possibility and/or necessity of shifting the distressed vessel by emergency towing to reduce the impact of HNS or if there is a need to control the drifting or heading of the DV. Consult with the Search and Rescue Mission Coordinator (SMC) about a possible safe haven/place of refuge or anchorage in situations where the DV has to be towed to a harbour and the DV or parts of it are contaminated.

6.8.1 SRU

The emergency towing preparation procedures on board the SRU should be confirmed. If there is a hazardous atmosphere around the distressed vessel, the SRU-specific pressurization and gas warning system procedures should be performed if not yet completed. Inform the boarding team about the task (if a boarding team is needed). Prepare



the SRU-specific emergency towing procedures, and order the appropriate PPE level when working on the deck.

6.8.2 DV

The emergency towing preparation procedures on board the DV should be confirmed as well as guidelines from the DV-specific emergency towing booklet. Find out the DV's capabilities for emergency towing: available personnel and PPE, ship-specific emergency towing procedure and equipment, capability of using winches and possibilities for the reception and guidance of the boarding team.



SOP 7: Decontamination

PROCEDURES

7.1 Preparation

Before executing the rescue operation in the Hazardous and Noxious Substances (HNS) incident, the basic requirements for the decontamination station should be ensured. The decontamination station should be located upwind from the actual incident and have the features for effective operation (e.g. access to the hot zone, a usable water supply, the possibility to collect contaminated liquids and waste) and access to first aid facilities to ensure the prompt commencement or continuance of emergency medical care.

Finding out the HNS involved and possible specific decontamination processes is essential to ensure an effective and sufficient decontamination process. The number of contaminated persons, the type of contamination and the number of casualties on board the distressed vessel (DV) should be clarified to have recourses for carrying out planned tasks.

7.2 Establishing phase

When establishing the decontamination station, an adequate number of assisting personnel and the required level of personal protective equipment (PPE) available should be confirmed. All areas where the decontamination process takes place should be clearly marked and guided (e.g. clean and unclean sites). Service and treatment facilities should be established in the cold zone. Access to the cold zone from the decontamination station should be organised to ensure a reliable decontamination process and prevent secondary contamination.

7.3 Decontamination processes

7.3.1 Emergency decontamination

Emergency decontamination should be carried out as soon as possible to minimize the effect of the HNS by removing contaminant from casualties. A basic procedure is to have an effective decontamination process for casualties without any personal protective clothing. Emergency decontamination can be



carried out at the decontamination point, which can be fixed or portable. That can also be done through the mass decontamination line or through the responder decontamination procedure. Lifesaving medical measures have priority over (coarse) decontamination. Self-protection of the assisting and medical personnel must be assured.

Notice that due to the risk of secondary contamination; only patients who have been decontaminated will be transported. Confirm that receiving hospitals are informed and have the capacity to respond to the situation.

7.3.2 Responder decontamination

The decontamination process consists of both physical and chemical methods to minimize the impact of the possible contaminant. Responder decontamination is a basic procedure to have an effective decontamination process mainly for rescue workers wearing personal protective clothing and equipment.

The responder decontamination process can be divided into different stages, e.g.

first stage decontamination, second stage decontamination, check-up point, and a final phase decontamination which includes packing up contaminated PPEs, etc.

7.3.3 Search and rescue unit (SRU) and equipment decontamination

The possibilities and procedures to decontaminate the SRU and equipment are highly dependent on the type, quality and quantity of the HNS involved. When assessing the possibilities to arrange decontamination for the SRU or equipment, it is important to consult professionals to find out the process needed for the decontamination. In some situations, decontamination of the vessel or equipment can be very expensive and time-consuming.

Special equipment inventory (e.g. detection and monitoring equipment used in the incident) should be done and documented separately for each device used.



7.3.4 Decontaminated waste

The facility and containers, etc., on board should be established for contaminated waste such as equipment, clothing and fluids. Plan and arrange for appropriate handling of the contaminated waste ashore before arriving at the port of destination.



Photo: The Finnish Border Guard