

EMSA/NEG/28/2022

**Appendix III – Technical requirements for the provision of
ICT services to the MAR-CIS and CHD applications**

Version
Data

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List of Abbreviations

BE-CHEM	Behaviour of CHEMicals tools
CHD	Central Hazmat Database
IBC	International code for the construction and equipment of ships carrying dangerous chemicals in bulk
IMO	International Maritime Organisation
IMDG	International Maritime Dangerous Goods Code
IMSBC	International Maritime Solid Bulk Cargoes Code
MAR-CIS	MARine Chemical Information Sheets
MAP	Maritime Applications Portal
MARPOL	International Convention for the Prevention of Pollution from Ships

1. Background

1.1 Scope of the document and its structure

The objective of this document is to describe the CHD and MAR-CIS application in view of providing enough business and technical information for the tenderers to prepare a bid for EMSA/NEG/28/2022. This document includes a list of requirements that the tenderers will have to assess and provide a quotation as part of their bid. The document is structured as follows:

Chapter 2, outlines the objectives for this contract.

Chapter 2.1, lists and describes the requirements for the Module 1. These requirements will be implemented once the contract between EMSA and the winning tenderer enters in force.

Chapter 3, lists the requirements for potential future developments. These potential requirements will be used for evaluating the bids. Note that EMSA may choose not to implement these requirements.

For an overview of MAR-CIS and CHD application see *Appendix II – MAR-CIS and CHD overview* to the tender specifications.

1.2 Objective of Central Hazmat Database (CHD) application

The CHD aims to provide a reference and validation tool to support the mandatory accurate reporting of dangerous and polluting goods (HAZMAT) information transported by sea in the European SafeSeaNet system. The CHD incorporates a list of dangerous and polluting goods that have to be reported in accordance with the VTMIS Directive and IMO FAL Form 7, taking into consideration the relevant data elements in the IMO Conventions and Codes.

1.3 Objective of MARine Chemical Information Sheets (MAR-CIS) application

To provide to EU/EFTA Member States' response authorities relevant information for evaluating the risk of and responding to marine spills of Hazardous and noxious substances (HNS) improving their preparedness to marine chemical emergencies. These sheets provide concise information on the substances' physical and chemical properties, handling procedures and emergency spill response procedures, as well as maritime transport requirements for safe transport at sea.

1.4 Present situation

The CHD was made available to SafeSeaNet and public users on 28 September 2016. The MAR-CIS Application was launched on 15 December 2016. Both web applications were made available from the EMSA Maritime Applications Portal (MAP) The MAR-CIS App for mobile devices was released on 31 August 2017.

The feedback received on both applications is positive. The CHD is recognised as a useful tool to support the reporting and verification of HAZMAT information in SSN. The CHD has over 3000 users. The CHD is also accessible to industry stakeholders and the general public (the latter two are referred to as guest users). Registered EMSA Portal users can access the CHD using their credentials. Guest user accounts, who do not have all the functionalities as regular Portal users, may access using guest credentials (see *Appendix II – MAR-CIS and CHD overview* for CHD guest user credentials).

MAR-CIS has been recognised as a useful information source for responding to chemical emergencies at sea. Non-EU authorities/organisations have expressed their interest to access the MAR-CIS information.

An additional tool, the BE-CHEM was added to MAR-CIS web portal and MAR-CIS application for mobile devices. The BE-CHEM tool can theoretically estimate the physical behaviour of chemical substances based on the input of certain physical and chemical properties of the substance. It classifies the substance in one of 13 different physical behaviour classes: 12 classes from the Bonn Agreement

Behaviour Classification System (G, GD, E, ED, F, FE, FED, FD, D, DE, S, SD), and one more class persistent slick forming substance (Fp) defined by the GESAMP expert Group. The BE-CHEM tool complements the MAR-CIS information. For substances not in the MAR-CIS database, the BE-CHEM can provide an indication on the expected behaviour of the chemical once it is released to the environment. The MAR-CIS datasheets already include this classification.

Another tool was developed to support the MAR-CIS content administrator to generate advice for the information category “emergency response advice on board of vessels”. Based on a combination of the hazard scenarios selection(s) and the “Physical behaviour” the system can populate the “Response actions”, “In open area”, “In confined spaces” and “To water” fields of the datasheet. The MAR-CIS content administrator can edit the generated text.

2. Module 1 objective and list of requirements

The objective of this request for change is to enhance and update the MAR-CIS and CHD applications:

- To reflect future updates to the GESAMP profile by IMO.
- To improve the content edition of the MAR-CIS datasheet.
- To improve CHD’s management of Code versions.

The Requirements drafted for Module 1 have not yet been assessed by the EMSA’ Change Advisory Board (CAB) because they are self-contained, there is no interaction with other EMSA applications, and it is not foreseen that the Requirements’ substance will change. Nonetheless, the CAB may recommend these Requirements to be redrafted or clarified further.

2.1 Module 1 List of requirements

Add new field to MAR-CIS datasheet for the MAR-CIS Content administrator to add internal notes

ID: CHD-838

Type: FUN

Service: CHDMARCIS

Sub-service: MAR-CIS and CHD

The MAR-CIS Administrator and MAR CIS content Administrator can add free text to a new field in the datasheet:

- Visible only for the MAR-CIS Administrator and MAR CIS content Administrator using the MAR-CIS web interface.
- The text should be editable.
- The text field will compile internal notes on the rationale behind the information gathered in the specific datasheet.
- It is not mandatory to be completed each time the datasheet is updated.
- To be included in the excel export file.
 - MAR-CIS export file (for online version)
 - MAR-CIS export file (for working version)

Acceptance criteria:

- The MAR-CIS content administrator / MAR-CIS administrator can, view, add text or edit the new text field, in working version mode.
- The content of the new field is included in the MAR-CIS excel export file working version.
- Once the working version passes to online, content of the new field is included in the MAR-CIS excel export file online version.

GESAMP profile - modification of column E, field E1

ID: CHD-839

Type: FUN

Service: CHDMARCIS

Sub-service: MAR-CIS and CHD

The existing “E1: tainting” category in GESAMP profile is replaced with the new category “E1: Flammability” category. Possible values for the new category:

	[empty]
0	Not Flammable (does not burn)
1	Low Flammability Potential
2	Combustible
3	Flammable
4	Highly Flammable
(1)	Low Flammability Potential
(2)	Combustible
(3)	Flammable
(4)	Highly Flammable
NI	No information

The System displays the old GESAMP state (Datasheet view, Datasheet download PDF, Online version export data) until the working version containing the new GESAMP changes and becomes Online.

These modifications will have to be reflected in:

- MAR-CIS datasheet web interface and pdf
- MAR-CIS datasheet template and edit
- MAR-CIS mobile Application
- MAR-CIS export file online version
- MAR-CIS export file for working version

The GESAMP value reflects this modification.

The new “E1: Flammability” category can be linked to a term from the glossary list.

The MAR-CIS content administrator/ Administrator manually changes the “E1: tainting” values in each datasheet to the new “E1: Flammability” values.

Acceptance criteria:

- In working version mode, for each datasheet, the MAR-CIS content administrator/ Administrator, replaces the existing rating of “E1: tainting” category in GESAMP profile with the rating from the new category “E1: Flammability”.
- These modifications are reflected in the MAR-CIS export file working version.
- Upon publishing the working version, the changes with the new “E1: Flammability” are visible in the online version.

Order the text displayed in the emergency response measures on board of vessels

ID: CHD-840	Type: FUN
Service: CHDMARCIS	Sub-service: MAR-CIS

The MAR-CIS content administrator/ Administrator can define the order that the text generated by the tool “emergency response advice tool” is displayed in the datasheet.

For more information on the business requirement regarding the “emergency response advice tool”, see the SRS (System Requirements Specifications) of MAR-CIS and CHD applications, Artf67356: Emergency response advice tool. To obtain this document please check the instructions in *Appendix II – MAR-CIS and CHD overview*.

Acceptance criteria:

- The MAR-CIS content administrator/ Administrator can define the order that each response action advice is displayed in the datasheet.

Manage of list of references

ID: CHD-841	Type: FUN
Service: CHDMARCIS	Sub-service: MAR-CIS

The MAR-CIS content administrator can see which references are not being used and can delete them.

For more information on the business requirement regarding the manage and display list of references, see the SRS (System Requirements Specifications) of MAR-CIS and CHD applications, section 3.2.12

Manage and display list of references, MARCIS2-Business-Req-16. MAR-CIS 2 application must provide means for managing and displaying the List of Reference. To obtain this document please check the instructions in *Appendix II – MAR-CIS and CHD overview*.

Acceptance criteria:

- The user can delete references that are not being used.

Move away from Oracle - switch to Tomcat and OpenJDK**ID:** CHD-162**Type:** TEC**Service:** CHDMARCIS**Sub-service:** CHD and MAR-CIS

Given licensing costs of Oracle's application server (Weblogic) and recent changes in Oracle's Java SE licensing, EMSA has started assessing the feasibility of migration of maritime applications from Oracle-based technology to non-Oracle.

As a first stage, we wish to consider, to:

use Tomcat instead of Weblogic

use OpenJDK instead of Oracle JDK

for the moment we would continue using Oracle database.

EMSA ICT has drafted Tomcat and OpenJDK installation instructions documents in CHD MARCIS Confluence page [EMSA ICT Wiki pages \(public\)](#).

Latest Tomcat tar.gz file in ICT folder is: apache-tomcat-9.0.62.tar.gz, but in Wiki we can read "latest recommended releases are 8.5, 9.0 or 10.0 on RH7"

For OpenJDK recommended versions are either in <https://jdk.java.net> (the .tar.gz files, version 17) or community builds (RH endorsed, versions 8 or 11) in <https://github.com/ojdkbuild> (.zip file)

Acceptance criteria:

- **Acceptance criteria will be agreed at design stage.**

CHD: Targeting a version shall allow to select the time for the Code to become an Online version**ID:** CHD-843**Type:** FUN**Service:** CHDMARCIS**Sub-service:** CHD**Objective**

The CHD Administrator shall be able to select at which time the target version will become the new Online version of the selected Code.

At a minimum, the time shall be set to 15 minutes after targeting the Working version.

Acceptance criteria:

- The CHD Administrator shall be able to set a date and time to target the Working version
- When targeting a working version, with a time set in the past, the target time shall be +15 minutes from the time of the target action.

CHD: Cancellation of a Target version**ID:** CHD-844**Type:** FUN**Service:** CHDMARCIS**Sub-service:** CHD**Objective**

When the CHD Administrator cancels a targeted version, all the changes made to the Working version are lost, and the status becomes Deleted.

In order to prevent this loss of data, the CHD Administrator shall be able to revert the Target version back to a Working version.

Acceptance criteria:

- When the CHD Administrator cancels a Target version, the Working version becomes available again for editing

Integration with new Access Management platform – phase 1

ID: CHD-854

Type: TEC

Service: CHDMARCIS

Sub-service: CHD and MAR-CIS

EMSA is undergoing a change of its Access Management platform (part of Identity and Access Management). The new platform has a new Identity Provider (previously known as Access Manager), based on keycloak and allowing new integration protocols. In a first phase, the current Access Management configurations will be migrated and an Apache web server will replace the current webgate (also on top of Apache) and will keep passing the SM_USER HTTP header to the maritime applications.

Limited changes might be needed in the maritime applications, and these should be included in the scope of this requirement. So far, this integration has already been tested in EMSA's Test environment and no issue has been detected.

Acceptance criteria:

- Acceptance criteria will be agreed at design stage.

3. Module 2 objective and list of potential requirements

The list of requirements below, are potential upgrades and enhancements to MAR-CIS and CHD that EMSA may implement in the future through Module 2. EMSA may add additional requirements after the contract's signature.

The tenderers should assess the list of potential requirements and provide a quotation as part of the scenario to be used in the bid evaluation (price and quality).

3.1 Module 2 List of potential requirements

New S2S interface for simplified-data announcements

ID: CHD-845

Type: FUN

Service: CHDMARCIS

Sub-service: CHD

Objective

The CHD shall implement a new interface pushing less details (still to be defined) per substance to subscribers of CHD updates.

When associated to a system user account (External System - ES), from that moment onwards all announcements shall be made using the simplified interface.

The CHD Administrator shall be able to define for each ES account, which interface will be used (the existing or the simplified version).

Acceptance criteria:

- A new interface is created, containing the same substances of the normal interface, but each substance will expose less details.
- The CHD Administrator shall be able to assign the new interface to a S2S user
- When pushing announcements to subscribers the CHD will send only the version associated to that S2S user at the time of pushing the CHD updates

Scalability of subscriptions and announcements

ID: CHD-846

Type: SCA

Service: CHDMARCIS

Sub-service: CHD

In order to foresee integration with EMSWe national systems, the CHD subscription and announcement web service shall be able to handle up to 50 subscriptions and the corresponding announcements, without failures. In terms of delay, a delay of several minutes or tens of minutes is considered acceptable.

Acceptance criteria:

- Acceptance criteria will be agreed at design stage.

Manage system subscriptions (list, view details, edit details and enable/disable subscription)**ID:** CHD-847**Type:** FUN**Service:** CHDMARCIS**Sub-service:** CHDObjective

The CHD Administrator shall have a dedicated area to administer the subscriptions to Code updates made by external systems (ES).

In this area the Administrator shall be able to:

1. List all subscriptions and see a summary of information (ES username, date of subscription update, status)
2. Filter the information by ES and subscription status
3. Access the details of each subscription. The details page shall allow to
 - a. Consult the same information as in the list
 - b. Consult the date of subscription creation and date of subscription update
 - c. Consult the list of the previous 5 subscription logged records from the ES (all log fields shall be visible) and link to the Subscriptions log, filtered for the specific ES.
4. Edit each subscription details manually, including ES username, endpoint, etc.
5. Enable and disable the subscription.
6. Link to the list of announcements related to the subscription.
7. Export the subscription list (filtered or not) in spreadsheet format.

All manual changes to the subscription shall be logged.

Acceptance criteria:

- Acceptance criteria will be agreed at design stage.

Management of announcements (list, view details, view xml, manually retry announcement)**ID:** CHD-848**Type:** FUN**Service:** CHDMARCIS**Sub-service:** CHDObjective

The CHD Administrator shall have a dedicated area to administer the announcements tasked to be sent or already sent to External Systems (ES) when there are Code updates.

In this area the Administrator shall be able to:

1. List all announcements tasked to be sent to each ES, for all Codes and see a summary of information (Code updated, ES, date/time of announcement created, announcements status)
2. Filter the information by ES, Code, announcement status and start and end date/time
3. Access the details of each announcement. The details page shall allow to:
 - a. Consult the same information as in the list
 - b. Consult the date/time the announcement was last pushed and its delivery status (success, failure)
 - c. Consult the previous 5 announcement logged records for the ES (all log fields shall be visible) and link to the Announcements log, filtered for the specific ES.
 - d. Consult the XML announcement file pushed (or attempted to be pushed) to the ES
4. Manually resend the announcement to the selected ES
5. Link to the subscription details of the ES
6. Export the announcements list (filtered or not) in spreadsheet format.

All manually re-sent announcements shall be logged.

Acceptance criteria:

- Acceptance criteria will be agreed at design stage.

Consult user activity**ID:** CHD-849**Type:** FUN**Service:** CHDMARCIS**Sub-service:** CHDObjective

The CHD administrator shall be able to consult and list user activity logged by the CHD and to filter it by username, human/system users, activity type (authentication, access to page, query) and date/time of the activity. For the date/time filter, the list shall allow to set a start and an end date of the logged activity.

The CHD administrator shall be able to export the list (filtered or not) in spreadsheet format.

Acceptance criteria:

- User activity logged by CHD can be consulted, filtered and exported as defined in the requirement.

Log Code update activity

ID: CHD-850	Type: FUN
Service: CHDMARCIS	Sub-service: CHD

Objective

The CHD shall log the activities related to Code updates, at all main stages of the process, i.e., creation of working version, upload of lists, sending of emails to users, etc., both for full code updates and for individual substance records and shall include who triggered the activity and date/time of the activity. Log entries older than 12 months shall be discarded.

Acceptance criteria:

- Code update activities are logged, containing the required information

Log subscription activity

ID: CHD-851	Type: FUN
Service: CHDMARCIS	Sub-service: CHD

Objective

The CHD shall log all subscription activity, including the username, date/time, source IP address, activity type (initial push, update, enable, disable), status of the subscription activity (Success, Fail) and when failed, the reason for the failure.

A failed attempt to update a subscription that shall be logged with a reason for the failure in the “subscription activity log” but a failed attempt to create a subscription shall be logged only in a system log as a Warning. In this case, a short reason for the failure.

Log entries older than 12 months shall be discarded.

Acceptance criteria:

- Subscription-related activities are logged, containing the required information

Log announcement activity

ID: CHD-852	Type: FUN
Service: CHDMARCIS	Sub-service: CHD

Objective

The CHD shall log all announcement activity, including the ES, ES endpoint, date/time, programmed or manual announcement, status of delivery to ES (Success, Fail) and when failed, the reason for the failure. The log record shall also contain a reference to the Code that is being pushed, how many records are being pushed and the size of the pushed data (XML file size).

Log entries older than 12 months shall be discarded.

Acceptance criteria:

- Announcement-related activities are logged, containing the required information

Log user activity

ID: CHD-853	Type: FUN
Service: CHDMARCIS	Sub-service: CHD

Objective

The CHD shall log user activity (authentication, pages accessed, queries made), including the username, date/time of the activity, source IP. Details will be agreed at design stage.

Log entries older than 12 months shall be discarded.

Acceptance criteria:

- User activities are logged, containing the required information.

GESAMP profile - modification to column C, field C3

ID: CHD-855	Type: FUN
Service: CHDMARCIS	Sub-service: MARCIS

The existing “C3 inhalation toxicity” category in GESAMP profile is replaced by two sub-categories. The “C3a: Acute inhalation toxicity by combined exposure to vapour and mist” and “C3b: Acute inhalation toxicity by vapour-only exposure”.

Possible values for these new categories:

	C3a	C3b
	[empty]	[empty]
0	Negligible	Negligible
1	Slight	Slight
2	Moderate	Moderate
3	Moderately high	Moderately high
4	High	High
(1)	Slight	Slight
(2)	Moderate	Moderate
(3)	Moderately high	Moderately high
(4)	High	High
NI	No information	No information

The System should display the old GESAMP state (Datasheet view, Datasheet download PDF, Online version export data) until the working version containing the new GESAMP changes and becomes Online.

These modifications will have to be reflected in:

- MAR-CIS datasheet web interface and pdf
- MAR-CIS datasheet template and edit
- MAR-CIS mobile Application
- MAR-CIS export file online version
- MAR-CIS export file for working version

The GESAMP value list reflects this modification.

The new sub-categories can be linked to a term from the glossary list.

The MAR-CIS content administrator manually assigns the new ratings to the new sub-categories in each datasheet.

Acceptance criteria:

- In working version mode, for each datasheet, the MAR-CIS content administrator/ Administrator, can assign the new rating to “C3a: Acute inhalation toxicity by combined exposure to vapour and mist” and “C3b: Acute inhalation toxicity by vapour-only exposure”.
- These modifications are reflected in the MAR-CIS export file working version.
- Upon publishing the working version, the changes with the new two sub-categories are visible in the online version.

Revamp MAR-CIS datasheet web interface

ID: CHD-856 **Type:** FUN

Service: CHDMARCIS **Sub-service:** MARCIS

To revamp the MAR-CIS datasheet web interface, bringing to the beginning of the datasheet the critical information for emergencies. All the existing information fields are kept, but the order and grouping will change.

Note: It is expected several iterations between the contractor and EMSA. The contractor is expected to develop mock-ups to be validated by EMSA.

Acceptance criteria:

- The new structure of the MAR-CIS datasheet pdf is displayed in the MAR-CIS datasheet web interface.

Integration with new Access Management platform – phase 2

ID: CHD-857 **Type:** TEC

Service: CHDMARCIS **Sub-service:** CHD and MAR-CIS

In the second phase, all maritime applications shall become compliant with the new standards (Oauth 2.0 and openID Connect) and to fully use the new Identity Provider.

Additional information:

In this phase the UserInfo web service will continue to be available, but the LDAP server will no longer be available. Several tokens might be provided to the applications. The Java Web Token (JWT) is one of them. JWT contains much more information about the authenticated account.

Applications are responsible to validate JWT against the Identity Provider.

Contractors are expected to be fully autonomous, without needing EMSA's environments to test.

Acceptance criteria:

- **Acceptance criteria will be agreed at design stage.**

4. Module 3: helpdesk, corrective and preventive maintenance services

This module aims at providing support and correction to issues that arise during the normal operation of MAR-CIS and CHD applications, as per **Annex VII to the Draft Framework Contract, the "Service Level Agreement (SLA)";** additionally, this module aims at providing preventive maintenance services to keep both applications operational.

European Maritime Safety Agency

Praça Europa 4
1249-206 Lisbon, Portugal
Tel +351 21 1209 200
Fax +351 21 1209 210
emsa.europa.eu

