

4 Response Support

4.1 Charter and Hire Arrangements

4.1.1 Charter of Vessels

During an incident there may be the requirement to charter local vessels to assist in response operations. A Vessel Charter Agreement used by AMSA (Appendix 12) provides an example of such an agreement, which may be amended for use by other agencies.

It is suggested that a formal agreement should be used whenever there is a need for agencies to charter a fishing vessel, or other craft, for use at pollution incidents and where the owner agrees to its use for such charter.

Whilst the IC may need to control the operation of a vessel to suit prevailing conditions and the particular circumstances of the incident, it shall be made clear that THE NAVIGATION AND SAFETY OF THE VESSEL WILL REMAIN THE RESPONSIBILITY OF THE VESSEL'S MASTER AT ALL TIMES.

When an owner is not prepared to accept the suggested agreement, but is prepared to make a vessel available, the charterer should ensure that:

- The vessel complies with all safety and equipment requirements; and
- It is made clear by the charterer to the owner that the controls shall apply at all times.

All other aspects of the charter shall be the subject of local negotiation at the time of the incident.

Details of craft availability, including Port and State/NT government craft, should be shown in appropriate regional and local contingency plans.

4.1.2 Surveillance Aircraft

Where the source of an incident is not identified and thus recovery of costs unlikely, where it is intended to claim reimbursement of costs from AMSA under the IGA arrangements, then the EP Duty Officer or Manager, EP must approve the use of aircraft for surveillance or investigation.

Procedures for the identification and charter of appropriate aircraft should be shown in appropriate State/NT, regional and local contingency plans.

4.1.3 Hire of Other Equipment

In a cleanup operation the hire of other equipment, including earthmoving equipment, storage, and transport will be arranged under the direction of the IC as required.

4.2 Defence Force Assistance

Requests for Defence Force assistance, including the use of military transport are to be directed to EP.

After assessing and approving any requests, EP will seek the assistance of the Defence Forces through EMA, Canberra. EMA will arrange for Defence Force

assistance once all avenues of utilising commercial resources have been exhausted, or where timeframes are such that it is impractical to use commercial resources.

Following approval of a request by the Defence Force, EP will continue to liaise with EMA regarding transport details.

Costs associated with the engagement of Defence Force resources, will be charged against the incident and recovered from the polluter. These costs are determined by the Defence Forces in accordance with Government cost recovery directions and, therefore, may exceed normal commercial rates.

4.3 Salvage Arrangements

4.3.1 Salvage Involvement

In the event of an incident involving a damaged or disabled ship, it is paramount that the salvage industry be involved in the response as soon as possible. Salvage activities may need to be arranged to take the vessel in tow, refloat a grounded vessel, or reduce or stop a discharge of chemicals to minimise environmental damage resulting from the casualty. It is essential that these operations be undertaken as soon as possible.

In accordance with the IGA, AMSA has responsibility for safety issues relating to vessels on interstate or foreign voyages and will be responsible for ship operational matters. These functions include alerting and liaising with salvors, taking measures to minimise chemical outflow and other salvage activities.

The vessel's Master/Owner will normally appoint a salvor by signing a Lloyds Open Form Agreement. However, in cases where this does not occur, AMSA may use its powers under the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties 1969 to either direct the Master/Owner to engage a salvor or alternatively contract a salvor to undertake necessary work, with costs recoverable from the owner.

4.3.2 Salvage Liaison

During an incident requiring the salvage of a vessel, consideration should be given to the appointment of a Casualty Coordinator (CC). The role of the CC is to enable continuing exchange of information regarding the salvage operation between the IC, the Salvage Master and the Statutory/Combat Agencies. This will enable the Salvage Master to limit briefings to one person, whilst at the same time providing for continuity in information flow. A senior AMSA marine surveyor is available to act as the CC as required.

4.3.3 Independent Salvage Advice

In a major casualty the possibility may arise for the need to have access to independent salvage advice. AMSA has identified three suitable companies that can provide independent advice on the salvage operation, including whether the proposed salvage operations are appropriate. In the event of requiring such advice, AMSA will make appropriate arrangements with one of the identified companies.

In incidents involving an intrastate vessel, the State/NT may wish to undertake the above salvage arrangements. AMSA will provide assistance where required.

4.4 Updating the Plan

Contingency Plans are evolving documents, and as such, require regular updating. It is recommended that all Contingency Plans be reviewed annually to take into account policy changes and experience from incidents and exercises. Regular amendments should be made to reflect changes in contact, equipment and other details.

Minor amendments to this Plan will be issued by AMSA as they become necessary. AMSA will review ChemPlan annually.

Information for updating the Plan should be forwarded on a regular basis to:

Manager
Environment Protection Response
Maritime Standards Division
Australian Maritime Safety Authority
GPO Box 2181
CANBERRA CITY ACT 2601

Facsimile: (02) 6279 5076

4.5 Chemical Spill Trajectory Modelling (CHEMMAP)

4.5.1 About CHEMMAP

AMSA is custodian of the interactive chemical spill trajectory computer model CHEMMAP. The model is designed to predict the movement (trajectory) and fate of chemicals in the marine and freshwater environment. The model is capable of simulating spills of pure chemicals as well as chemicals in solutions and emulsions, but not chemical mixtures.

Based on user inputs of chemical type and volume, wind data, water temperature and other parameters, CHEMMAP integrates the outputs with hydrodynamic modelling of the local water body to track the chemical according to the following fates:

- Surface (floating) concentration
- Dissolved concentration
- Particulate concentration
- Adsorbed and sediment concentration
- Shoreline fate
- Atmospheric concentration and trajectory of gases and vapours

Outputs are presented on a GIS (geographic information systems) platform compatible with ArcGIS and other GIS applications, including OSRA.

CHEMMAP should be used principally to inform the decision-making process regarding resources/areas likely to be affected by a chemical spill. In addition to modelling the behaviour of a spill, CHEMMAP will enable responders to anticipate the likely concentration of the chemical at any location or time. The inbuilt Chemical Database of can also be used to present a detailed summary (MSDS) of the chemical(s) in question.

4.5.2 Activation of CHEMMAP

Activation of CHEMMAP is through the EP Duty Officer, who can be contacted via the ERC. Requests for activation of CHEMMAP should be accompanied by a completed CHEMMAP Proforma (Appendix 20) which can be accessed via the AMSA website (www.amsa.gov.au). The completed Proforma should be submitted online or by facsimile. CHEMMAP predictions may be forwarded to the client in a number of formats, including video files (AVI), a series (jpegs), shape files, graphed reports and shape files (*.shp). Copies of the CHEMMAP Proforma are available from the AMSA's website at http://www.amsa.gov.au/Marine_Environment_Protection/National_Plan/General_Information/CHEMMAP/CHEMMAP_Request_Proforma.asp

4.5.3 Updates and Additional Information

5. To ensure the model is accurate as possible, user inputs should be updated as required to reflect prevailing field conditions and chemical characteristics. Therefore data should reflect weather updates and water temperature, specific location of the chemical plume, exact information on the product and shoreline characteristics. The CHEMMAP operator will refer to resources such as the Bureau of Meteorology (BOM) and chemical database where field information is not available.

4.6 CAMEO

CAMEO (Computer-Aided Management of Emergency Operations) is a set of software modules and programs designed to assist first responders and emergency planners access chemical property and response information, and model potential chemical releases.

CAMEO was developed jointly by the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA), and it runs on both Macintosh and Windows computers. The following programs are used as decision support systems under the National Plan:

- Cameo Chemicals: a program that allows the user to search for chemicals in the CAMEO chemical database, print customized reports with response recommendations, and find out how chemicals would react if they mixed; and
- ALOHA (Areal Locations of Hazardous Atmospheres): is a modelling program that estimates threat zones associated with hazardous chemical releases, including toxic gas clouds, fires, and explosions.

CAMEO may be downloaded from the NOAA Office of Response and Restoration website: <http://response.restoration.noaa.gov/>

4.7 CONTINGENCY PLAN DECISION SUPPORT SOFTWARE

AMSA holds copies of various software programs that can provide assistance to MPCs and ICs involved in operations under ChemPlan. Full details of the software and its capabilities can be obtained from EP, but brief details are as follows:

Software	Purpose	Information	Remarks
ALOHA (Areal Locations of Hazardous Atmospheres)	Chemical plume modelling software.	Allows the user to model the behaviour of a chemical and the “footprint” of a toxic gas plume escaping from a vessel, tank or other storage container under the influence of wind and other meteorological conditions. The dose and concentration level over time for the escaping chemical can be predicted at any point down wind e.g. indoor and outdoor, in a building, at certain heights, etc.	Developed by the US National Oceanic and Atmospheric Administration (NOAA), Hazardous Materials Response and Assessment Division and the US Environmental Protection Agency (EPA). Requires trained operators.
CHRIS (Chemical Hazard Response Information System)	Information needed for decision-making by personnel during emergencies involving hazardous materials.	A variety of chemical information, hazard assessment information and response guides.	Developed for the US Coast Guard.
IMDG Code (Computerised International Maritime Dangerous Goods Code)	Information on the safe transport, handling and stowage of packaged dangerous goods by sea.	Classification, documentation, storage, segregation, packing, Marking, labelling and packaging of packaged dangerous goods. UN Codes Properties of the substances GESAMP Ratings Class Packaging Group Fire Precautions Emergency Schedules for Ships Carrying Dangerous Goods (EmS) Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG) Code of Safe Practice for Solid Bulk Cargoes (BC Code) Reporting Procedures under SOLAS 74 and MARPOL 73/78 IMO/ILO Guidelines for Packing Cargo in Freight Containers or Vehicles Recommendations on the Safe Use of Pesticides in Ships International Nuclear Fuels Code.	Developed by IMO

Software	Purpose	Information	Remarks
MCIS (Milbros Chemical Information System)	Up-to-date source of information on the safe transportation and handling of liquid bulk chemicals.	<ol style="list-style-type: none"> 1. chemical product name 2. description 3. formula 4. synonyms and trade names 5. UN number 6. CHRIS code (US Coast Guard) 7. IMDG classification 8. IMO regulations that apply 9. various MARPOL information 10. physical data 11. cargo temperature & heating requirements 12. Threshold Limit Value (TLV) levels 13. reactivity of the chemical 14. stability and use of stabilisers/inhibitors 15. cargo handling instructions 16. tank cleaning requirements 17. MARPOL regulations related to cleaning/loading 18. emergency procedures in case of fire, spillage, human exposure 19. loading/transfer equipment requirements including equipment suitability. 20. pollution rankings and details based on GESAMP ratings. 	Developed by Milbros Shipping AS. Originally designed for chemical tanker operators.
MOSES (Marine Oil Spill Equipment System)	Computer based database, of pollution control equipment.	Type, quantity, location, status and availability of equipment	Developed by AMSA. Copies of MOSES outputs are also available in State/NT Plans or directly from EP
OSRA (Oil Spill Response Atlas)	Identifies and describes the coastal resources in an area. Provides information on access features of an area. Can contain information on the response options such as boom deployment and dispersant use, and logistical problems.	Base Map Shoreline Biological Resources Wetlands, Estuaries & Rivers Human Resources Logistical Use Resources /Infrastructure Remote Sensing/Aerial Photography Incident Details/Spill Trajectory Sensitivity Ratings/Response Options.	Developed by States/NT under a National Plan-funded ongoing program. OSRA is a Geographic Information System (GIS), PC based resource for use, with real-time data from the Bureau of Meteorology (BOM), by field scientific and environmental staff during chemical or oil spill incidents and exercises.

Software	Purpose	Information	Remarks
OSTM (Oil Spill Trajectory Modelling)	Provides modelling of bulk liquid or water movement in the continental shelf region of Australia. Can also predict the extent of certain spills.	Speed of movement, weathering and spreading characteristics of the oil under the influence of prevailing currents and weather conditions.	Developed for AMSA. Can also be applied (with caution) to certain chemical spills. Periodic updates of the prevailing winds and confirmed observations of the movement of the spill are needed to confirm accuracy. Bureau of Meteorology forecasts are needed to maintain currency.
ChemAlert	ChemAlert provides definable reports including: ChemAlert Reports & Labels; Manufacturers' Scanned MSDS; Risk Assessment Module; Hazardous Substances Registers; Dangerous Goods Registers; and Stock Management System & Reporting.	Features of ChemAlert include: Health hazards & precautions for use, safe handling procedures, storage & transport requirements, environmental fate, and emergency and first aid advice.	Developed by Risk Management Technologies, United States of America. Access by contacting Fire Services in each State/NT.
ChemData	An extensive database of hazardous materials, providing 'first response' information for fire fighters and other emergency services and designed for use by communications personnel rather than technical specialists.	Provides information on personal protection, hazards, precautions, environmental protection priorities, fire fighting procedures, decontamination, and first aid for a very broad range of hazardous materials. Also includes the IMDG Emergency Schedules (EmS).	Developed and maintained by the National Chemical Emergency Centre, Harwell, United Kingdom. Practically all Australian Fire Services use a modified Australian edition designed to provide information for the HAZMAT Action Guide form used by Fire Services for communication of response advice by radio.

A list of website links for chemical databases and information follows:	
Organisation	Website
Computer-Aided Management of Emergency Operations (CAMEO) - National Oceanic and Atmospheric Administration (NOAA)	response.restoration.noaa.gov/cameo/links.html
Material Safety Data Sheets	www.msds.com.au/
Guiding Principles for Chemical Accident Prevention, Preparedness and Response	http://www2.oecd.org/guidingprinciples/index.asp
Aids for Chemical Accident Responders and Planners - NOAA	response.restoration.noaa.gov/chemaids.html
US Office of Hazardous Materials	hazmat.dot.gov/
US National Safety Council – chemical hazards	www.crossroads.nsc.org/index.cfm
Agency For Toxic Substances & Disease Register - Hazardous Substance Release and Health Effects Database	www.atsdr.cdc.gov/hazdat.html
Toxicological Network – data base & fact sheets	ace.ace.orst.edu/info/extoxnet/
Dangerous Goods Information – International Air Transport Association	http://www.iata.org/whatwedo/dangerous_goods1
US Chemical Emergency Preparedness and Prevention Officer	http://yosemite.epa.gov/oswer/ceppoweb.nsf/content/index.html

List of Reference Material and Publications

- Emergency Response Guidebook: Guidebook for first response to hazardous materials incidents (2000), US Department of Transportation
<http://hazmat.dot.gov/pubs/erg2004/guidebook.htm>
- Dangerous Goods – Initial Emergency Response Guide: Australian/New Zealand Handbook (1996), Standards Australia/Standards New Zealand (ISBN: 0 7337 0465 4)
- Guide to the Compatibility of Chemical Cargoes from V5 IMDG Code 2000 edition.
- Manual on Chemical Pollution Section 1: Problem assessment and response arrangements 1999 (IMO-630E, ISBN 92-801-6096-6)2 prepared by IMO.
- Manual on Chemical Pollution Section 2: Search and Recovery of Packaged Goods Lost at Sea (IMO-633E)