Reference:
NP-GUI-027 (v2.0)

NATIONAL PLAN

MARINE OIL SPILL RESPONSE HEALTH AND SAFETY GUIDANCE

Revision History

Revision Date	Version	Author	Description of Changes	Approval
30/03/2017	0.0	AMOSC	Initial draft	
01/06/2017	1.0	AMOSC	Publication of version 1.	Endorsed by NPSCC / published by AMSA
01/06/2018	1.1	AMSA/NPSCC Working Group	Edits, amendments and additions (Annexes) for readability	Endorsed by NPSCC for publication, once final edits and Annex additions made by AMSA.
22/10/2018	2.0	AMSA and NPSCC Working Group	2018 review to add examples and maintain currency Publication of version 2.0	
10/12/2018	2.0	AMSA	Re-publication on AMSA website	AMSA CP&R

CONTENTS

LIST OF ACRONYMS

AIIMS	Australian Inter-service Incident Management System
ALARP	As low as reasonably practicable
AMSA	Australian Maritime Safety Authority
AMOSC	Australian Marine Oil Spill Centre
APR	Air purifying respirator
CFA	Country Fire Authority
EPA	Environmental Protection Agency
FOB	Forward Operating Base
FWADC	Fixed Wing Aircraft Dispersant Contract
GRN	Global Response Network
HazMat	Hazardous materials
HNS	Hazardous and Noxious Substances
HUET	Helicopter Underwater Escape Training
HVAC	Heating, Ventilation and Air Conditioning
IAP	Incident Action Plan
ICC	Incident Control Centre
ICT	Information and Communications Technology
IMO	International Maritime Organization
IMT	Incident Management Team
IPIECA	International Petroleum Industry Environmental Conservation Association
JHA	Job Hazard Analysis
JSA	Job Safety Analysis
MEPC	Marine Environment Protection Committee
MFB	Metropolitan Fire Brigade
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
O&G	Oil and Gas
OSRL	Oil Spill Response Ltd
OWR	Oiled Wildlife Response
PFD	Personal flotation device (lifejacket)
POB	Persons (passengers) on board (a vessel)
PPE	Personal Protective Equipment
RA	Risk Assessment
RMP	Risk Management Process
SAR	Supplied air respirator
SCBA	Self-contained breathing apparatus
SDS	Safety Data Sheet
SFAIRP	So far as is reasonably practical
SMEACS	Situation, Mission, Execution, Administration, Communication, Safety
SOP	Standard Operating Procedure
TBOSIET	Tropical Basic Offshore Safety Induction & Emergency Training

INTRODUCTION

Purpose

Guidance on how to address workplace health and safety during an oil spill response, in a consistent way across sectors, agencies and circumstances.

In Scope

- working on responses to maritime incidents, casualties and spills – primarily of hydrocarbon-based oils
- assisting workers to identify and manage workplace health and safety risks

Out of Scope

- specific guidance on hazardous and noxious substances (HNS) or hazardous materials (HazMat) from this document
- the specialised response requirements of chemical spills that are potentially more complex and hazardous
- the expert advice and capability required for chemical or chemical mixtures spills

Application

- all spill workers operating under contingency plans or for control agencies applying the Australian National Plan for Environmental Emergencies
- all workers, including professionals and volunteers, no matter where they come from, or what job they do
- response functions and roles included within the Incident Controller's incident management structure

Audience

- all oil spill response workers, including incident management and operational team members throughout Australia, including all State and Commonwealth jurisdictions

Structure

This guidance has five parts:

1. hazard identification and risk assessment
2. safety planning
3. personal protective equipment (PPE)
4. general references and additional reading
5. annexes with detailed information about tools, processes, templates and checklists

Review process

We will review this guidance as often as necessary to ensure relevance.

1. HAZARD IDENTIFICATION AND RISK ASSESSMENT

This guidance provides marine oil spill workers with examples of how they can identify, assess, manage and mitigate workplace health and safety hazards during a response.

By suitable hazard identification and risk assessment tools workers can identify preventative and/or corrective actions to take to reduce significantly the risks of responding to an incident.

1.1 Mandatory Workplace Health and Safety Requirements

1.1.1 Legislative Arrangements

For responses to incidents and spills from the maritime sector, employers and employees must meet the obligations outlined within the acts and regulations relevant to each state or territory, with Safe Work Australia (and their state/NT counterparts) as regulators.

For the offshore petroleum sector the regulator is the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

1.1.2 Workplace Health and Safety

All oil spill workers (IMT/field personnel) and their employers have a duty of care to ensure that all reasonable and practical steps are taken to protect the health and safety of all response workers and the public.

No matter what response job they do, or where they do it, all workers within the response (including volunteers) are covered by the legislative requirements.

Response work must be undertaken safely, consistent with relevant legislation, compliance codes, codes of practice, and any Australian or other recognized standards or codes applicable to each jurisdiction.

Under these requirements, employers are generally required to provide:

- a suitable working environment
- safe work premises
- safe machinery and materials
- safe systems of work
- information, instruction, training and supervision
- suitable PPE as determined by the outcomes of risk assessment

Process safety includes the physical barriers and processes to manage the safe completion of tasks during a spill response. Process safety elements include:

- specialist equipment
- standard operating procedures
- safe operating limits (temperature, exposure limits)
- oil spill response training
- management systems

Personal safety refers to the actions and behaviours of managers and workers to remove physical harm or the threat of physical harm to workers, including being free from hostility, aggression, and harassment. Tools available include:

- induction training
- safety briefings
- pre-start meetings
- job safety analysis
- safety report forms
- personal protective equipment

1.1.3 Worker and public welfare

Safety of response personnel (and the public) is always the highest priority within any oil spill response. All response personnel must understand that their own safety, the safety of other workers and that of the community is paramount.

Informed and aware response workers will likely be safer workers.

To be informed and aware of the safety hazards and risks in their area of activity, best practice means the workers will have completed a risk management process, produced a safety plan, and be using appropriate safety mitigation tools.

1.2 Risk management process

A suitable risk management process is fundamental to workplace health and safety. It applies to all levels and facets of oil spill response. Suitable hazard analysis and risk assessment should address the personal and process safety measures necessary prior to any activity. The incident management team (IMT) may conduct a higher-level risk assessment across the entire response structure. All response personnel (office, field, maritime, aviation, etc.) should also apply similar processes to their very specific circumstances.

The risk management process is quite simple. Once a hazard has been identified and the risk determined, hazard control measures are considered. Then the risk is reassessed. If hazard control

measures reduce the original risk to an acceptable level then work may proceed.

The key question is: “what is acceptable risk?”

1.2.1 Key risk management principles

To assist risk managers and workers determine acceptable levels of risk, legislation in Australian uses two different phrases to describe residual risk. The phrases “as low as reasonably practicable” (ALARP) and “so far as is reasonably practicable” (SFAIRP) are both recognised across jurisdictions and working environments likely to be encountered by an oil spill worker. Both use the concept of “reasonably practicable” to identify risks and risk management measures. In practice, for response personnel, the two terms are interchangeable.

Reasonable practicability involves a comparison between the risks to be avoided and the effort, time, and money required to avoid, manage or mitigate that risk. When a measure is practicable, and its implementation costs are not grossly disproportionate to any benefit gained, then the measure should be considered ‘reasonably practicable’ and be implemented.

1.2.2 Risk management tools

The key to a safe response is through a well-developed and implemented response-wide safety culture. This starts with a pre-incident risk management process. This translates into documented action at the response operational and tactical levels as a response Safety Plan within the overall Incident Action Plan (IAP).

The five individual steps of the Risk Management Process are shown in Figure 1. The details of each step are shown in **Annex 1**.

Figure 1: The Risk Management Process

Table 1 has examples of risk management tools. These will assist trained personnel to identify,

document, assess, and manage risk as they complete their risk management process.

Table 1: Risk management tools quick reference

Tool	Definition	Details
Hierarchy of Hazard Control	A system of prioritising control measures to ensure that the most effective controls are applied first. Used within step 3. (Apply Hazard Controls) of the risk management process.	**Annex 1**
Safety Plan	The plan to be used by workers that identifies the scope of response activities and locations, including the safety priorities, field documentation and communications details, any health monitoring activities, and first aid or medical capability provided.	**Annex 5.1** **Annex 5.2**
Site Safety Evaluation Form	Form used to identify and document all potential hazards particular to a location. Used on arrival at any new or unfamiliar response location.	**Annex 3.1**
Site Safety Briefing Template	Form used by a site manager or team leader to brief their personnel at any new or unfamiliar response location. It could be used with a Site Safety Evaluation Form.	**Annex 3.2**
Standard Operating Procedure (SOP)	Contains the specific steps to complete safely a routine activity or to use a specific item of equipment. It could be used as a refresher for personnel previously familiar with the task, or with a Job Safety Analysis to train new personnel. An SOP can be or form part of a 'Safe Work Statement'.	**Annex 3.3**
Job Safety Analysis (JSA)	A form to assist with identifying job hazards and implementing risk control measures. It should be used by all personnel prior to carrying out a new or unfamiliar activity, or when there are changes to a Standard Operating Procedure. A JSA can be or form part of a 'Safe Work Statement'.	**Annex 3.5** **Annex 3.6** **Annex 3.7**
Take-Five	A five-step procedure to assess risk as it presents. Used by field response personnel at any time risks are identified.	**Annex 3.8**
Safety Report Form	A feedback form for field workers to report and document safety incidents, near-misses, hazards, drills, initiatives, and observations, to the IMT safety officer.	**Annex 3.9**
Personal Protective Equipment (PPE) Register	Allows tracking of the PPE issued to individuals, vessels, and/or storage and supply locations. It also allows costs to be tracked, and availability and use of PPE to be tracked.	**Annex 3.4**

2. SAFETY PLANNING

The response safety plan and incident action plan come directly from the risk management process. They provide the specific detail for each relevant task or operation.

Figure 2: From risk assessment to response operations

2.1 The safety plan

A response safety plan is fundamental. The safety plan is always based on a suitable risk/hazard assessment. It should be started as soon as the response starts. A safety officer will be appointed to have responsibility for the safety plan.

The safety plan checklist (**Annex 5.1**) and the safety plan template example (**Annex 5.2**) show how to develop a comprehensive safety system (the necessary set of documents and processes).

The level of detail in the safety plan should reflect the size and complexity of the response. Regular and continuous discussion and feedback between the safety officer, the incident management team, and in-field personnel about safety related issues is important to implement an effective safety plan.

The general objectives of the safety plan should be:

- to establish a safe working environment and culture within the response
- Zero safety incidents during the response

We implement these objectives through some or all of the following examples of expectations and processes:

- assign responsibility for implementing safety process and procedures at all locations
- identify current and potential safety issues
- determine safe work practices and procedures and implement these
- use a near miss/incident reporting and mitigation process
- use only adequately trained and competent personnel in response operations
- have a clear personal protective equipment policy and processes to ensure, for each task, the correct equipment is available, used, maintained and disposed of
- establish clear communication between the incident control centre, any field bases and any in-field operations locations
- have suitable safety messages within the incident action plan and all verbal and written briefings to all personnel

Figure 3: Recommended Safety Plan Document Set

2.2 Incident Management Team (IMT)

As a response develops, the safety plan becomes a crucial part of the full incident action plan (IAP).

The response risk management process should start before workers are assigned tasks or sent to a location.

Ideally, a safety officer will be appointed within the IMT, and at each field base or operational site, a person will be designated for team or site safety, often known as the site/team safety officer.

Provision of first aid or medical response capability could be in a medical plan, or be included as part of a safety plan, if any workplace health and safety risks require this level of preparation or planning

2.3 In-field workers

All workers have a responsibility for their own safety and the safety of their co-workers. Everyone should be vigilant for safety hazards and risks, and be ready to apply the available safety tools and processes in a timely way.

All response personnel should:

- demonstrate competency – through effective and practical completion of the work assigned
- evaluate – complete and sign-off the team's initial job safety analysis (Annex 3.5) and manage changes through the take five (Annex 3.8) process
- communicate – speak up or report issues (or 'by-exception issues') through a safety report form (**Annex 3.9**) to their team leader, site safety officer, or site manager

Site safety officer, site managers, or team leaders, must:

- evaluate – do a site safety evaluation (Annex 3.1) when they arrive at each new site
- brief – give a site safety briefing (Annex 3.2) to their workers prior to starting work on site
- review – review individual activity/work evaluations with their workers, before they start their assigned tasks, and consider any task-specific needs, i.e. standard operating procedures (**Annex 3.3**)

- check – required personnel protective equipment is identified and provided - PPE Register (**Annex 3.4**)

2.4 Worker safety through health and welfare

A comprehensive safety plan will address issues relate to maintaining the health and welfare of workers, especially field workers. Often taken for granted with office-based workers, many of these issues prevent or minimise risks and hazards for people working outside and in or near the spilled oil.

2.4.1 Field amenities, facilities and services

Field workers require amenities and services to operate safely and effectively. These services include shelter, feeding and watering, personal hygiene and toilets, and first aid.

A more extensive list of these amenities and services is in **Annex 4**. The incident management team, or site manager, can use this list to assess what worker services and amenities will be necessary and how and from where these will be provided. Logistics group will have responsibility for providing the services.

Often field locations are remote from population centres and to supply these needs can be very challenging. Accessing these services requires leaving their worksite, and if they are not adjacent, can lead to shorter work periods, longer transit times, more frequent rotations of workers, or lower quality of services provided.

2.4.2 Worker fitness for task

Oil spill workers should have a minimum level of competency and be physically and mentally suitable for the work they will do.

All workers must have completed suitable oil spill response training (**Annex 6**), and must be for the specific tasks required of them throughout the response.

Workers must:

- have competency (suitable training or experience) for the tasks and equipment assigned them
- be in good overall health and physically fit for their assigned operational tasking. Initially, this would be assessed by their employing organisation, but may also be assessed on-site by team leaders. Being 'fit-for-purpose' is important. This includes but is not limited to:
    - Field staff working remotely (e.g. on a vessel or shoreline, or doing sampling or oiled wildlife response) must be capable of physically sustaining the work required. This will often be outdoors, on their feet, while wearing suitable PPE. It will also involve light/medium physical labour over a sustained period of deployment (e.g. daily shifts for up to seven days duration).
    - IMT workers doing predominantly 'office type duties' must be capable of working indoors for up to 12 hour daily shifts over 7 day rotations, including overnight shifts.
- carry no physical impairments or disabilities that may result in them placing themselves or another person at risk of harm.

- have good hearing and vision, and a good working knowledge of written and spoken English
- declare any pre-existing medical conditions, medication or risk factor activities (e.g. smoking) that may impact upon their performance, awareness or state-of-mind
- be prepared to be reassigned, if appropriate

Personnel and personal medical information is confidential, and must be kept secure. This could be by the worker's original employer, the response human resources unit within logistics, or the records unit.

Annex 6.1 provides an example of criteria used to ensure that response personnel meet fitness for work health requirements. Further criteria will apply, depending on circumstances.

2.4.3 First aid requirements

Suitable first aid treatment, facilities and staff will always be a safety risk or hazard control measure. The scale and size will depend on the results of the hazard assessment.

When assessing the safety hazard of the incident and the response measures, consider:

- fitness for purpose of first aid equipment, to suit the:
  - location and nature of the work environment
  - work being carried out
  - the number of workers
  - season, climate and weather
  - special needs, e.g. venomous animals
- locations, facilities and site accessibility for workers and emergency services
- back-up or contingency first aid people in remote teams

If a safety, first aid or medical incident occurs during the response, a record must be created using the safety report form (**Annex 3.9**) and maintained by the safety officer within the IMT.

2.4.4 Worker health and safety monitoring

Hydrocarbons and response chemicals can present both acute and chronic health hazards. Work locations, tasks and worker exposure levels must be recorded and tracked if hazards are present. This allows effects to be observed, prevented, or remediated. It also allows workers to be medical monitored or assessed after their work is completed.

Response workers record their work assignments, tasks, and locations as part of their own daily log. These can be collated into Standardised Operations Reports (sometime called Daily Operational Logs) and By-exception Reports. These records are normally collected and collated as part of a worker's or team's daily reconciliation. These go to the finance and administration section of the IMT. Any safety or incident reports go to the safety officer.

Worker health and safety monitoring may include pre-impact, during response, and post response health monitoring, overseen by medical experts. In an event where exposure hazards cannot be fully mitigated and acute or chronic chemical exposure is a real hazard, expert medical advice should be obtained as soon as possible. Medical sampling programs are the subject of separate guidance.

2.4.5 Hygiene and Worker Decontamination

Worker hygiene, through the use of PPE and suitable barriers and behaviours, prevents exposure and contamination. The starting point of good hygiene is good work practices. This means minimising a worker's exposure to or physical with oils (or response chemicals).

For emergency response, including chemical and oil spill response, decontamination can mean the urgent cleaning, first aid or medical response delivered when a person's is exposed to the contaminant by a physical barrier, such as PPE.

In an oil spill response, decontamination normally means how workers are cleaned when they move themselves and their equipment out of oil contaminated areas to clean areas.

Good worker hygiene practices can include:

- preventing secondary contamination – through organised cleaning and decontamination processes. Workers and equipment need to move from oily to clean places, to use amenities, refuel equipment, or at the end of a shift.
- Personal protective equipment – choosing, supplying and using the correct PPE (Annex 3.4) is mandatory. It is the final barrier to prevent contamination and exposure. It must be cleaned and/or left in the oily zone.
- zoning – clearly identified and managed work site zones show where the oily or contaminated areas are, and where workers can move in and out throughout their work day
- behaviour – workers' behaviour, including their use of PPE, the zoning and their movement in and out, can significantly lower contamination
- amenities – for hygiene and comfort amenities, such as eating areas, washing areas and bathrooms, should always be provided outside the oily areas

Annex 4 provides more detail about amenity and hygiene/decontamination site requirements.

2.5 Finding all the workplace and environmental hazards

Sometime common or special hazards can often be minimised or even overlooked, unless we make special efforts to identify them.

Australia has a wide range of climate and weather conditions, very challenging coastlines, and hazardous flora and fauna. Some risk control measures in remote or challenging places may require special equipment that may be difficult to find or use. So, risk identification and control measures should be completed before workers leave for these remote places. (See **Annex 2.4**).

Also, once at the work-site the team leader or safety officer should work with the rest of the work team to check the hazards register and add any extras not already included (**Annex 2**).

Examples of some of the most common or most serious hazards are:

Pollutants:

- Air quality – oils contain chemicals that can potentially be very hazardous to human health (**Annex 7.1 and 7.2**)
- Volatility and flammability – many chemicals in oil easily evaporate, and are very easily ignited, to both explode and burn

Workplace:

- Noise – equipment can be noisy (**Annex 7.5**)
- Handling – spill response generally requires lots of manual labour (**Annex 7.7**)
- Heights – sometime workers need to work above the ground or with equipment slung overhead (**Annex 7.6**)
- Vehicle use – response work always includes using vehicles, planes, helicopters and boats, and often in places where normal uses would be challenging. Unfamiliarity and fatigue can add risks. (**Annex 7.8**)

Environment/context

- Wildlife – oiled, large and/or dangerous wildlife can pose hazards, especially for people unfamiliar with either the wildlife or the environment.
- Climate, weather, sea state – this category includes many specific hazards that range from irritating to potentially lethal. (**Annex 7.3 and 7.4**)

As with any workplace, when working is unusual, unfamiliar or challenging places, hazard identification tools and mitigation measures will be required. Extra consideration and caution may be necessary, including seeking expert advice.

3. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Personal protective equipment provides the final protective barrier for workers where oiling or other conditions can pose a health or safety hazard.

The following is the minimum standard level of PPE, suitable for general field operations. Other equipment may be necessary in other locations or where specific hazards apply.

Table 2: Minimum Standard PPE

Eyes	Safety glasses (clear or tinted)
Body	Long sleeve shirt and long pants, or similar coveralls – all oil resistant.
Hands	Work gloves – oil resistant • rigger's leather or synthetic • nitrile (not latex)
Feet	Enclosed oil resistant footwear

All PPE should be:

- the final barrier applied to any hazard
- well maintained and easily accessible
- appropriate for the type of work and give appropriate protection for the risk
- compatible with other PPE in use and not create extra health or safety risks
- compatible with any workers' medical needs or conditions
- easy to use, fit properly and comfortable for extended use
- Compliant with relevant Australian Standards

To assist in hazard assessment and choosing PPE suitable for the range of environmental and work types, **Annex 3.4** provides a range of scenarios and hazards.

4. GENERAL REFERENCES

Note: specific additional information or reading material is listed at the end of each annex, where applicable.

Australian Government Business, WHS/OH&S acts, regulations and codes of practice, https://www.business.gov.au/info/run/workplace-health-and-safety/whs-oh-and-s-acts-regulations-and-codes-of-practice

Australian Emergency Management Handbook Series – Handbook 1, Disaster Health, Australian Emergency Management Institute, Commonwealth of Australia 2011

Chemical Human Health Hazards Associated with Oil Spill Response, Regulatory Analysis and Scientific Affairs, API Publication Number 4689, August 2001

Draft Guidance on the safe operation of oil pollution combating equipment, IMO Marine Environment Protection Committee, 67th Session, Agenda Item 12, MEPC 67/12/2, 30th June 2014

National Offshore Petroleum Safety and Environmental Management Authority website: https://www.nopsema.gov.au/

National Plan For Maritime Environmental Emergencies, Aide-memoire for Marine Pollution Response Australian Maritime Safety Authority, Version 2.0, March 2016

National Standard for Occupational Noise, [NOHSC: 1007(2000)], National Occupational Health and Safety Commission, 2nd Edition, Canberra, July 2000

Oil Spill Responder Health and Safety, IPIECA OGP, OGP Report Number 480, December 2012

Personal Protective Equipment for Oil Spill Responders, API Recommended Practice 98, First Edition, August 2013

UK Health and Safety Executive website: http://www.hse.gov.uk/aboutus/index.htm

Using Risk Based Decision Making to Select Personal Protective Equipment for Oil Spill Responders, 2014 International Oil Spill Conference paper, Abstract 300237

WorkSafe Victoria website http://www.worksafe.vic.gov.au/

5. ANNEXES

Annex 1. How to do an oil spill workplace risk analysis

The following generic risk management process is a guide for those jurisdictions, agencies, industries and companies that do not yet have their own agency process. Please consult and use your own particular process, as required.

Figure 4. Example of risk management process

1: Identify the hazard

The first step is to identify the hazards, including anything that could cause harm or damage to personnel, property, the environment, or reputation.

Oil spill workers mostly come from both industry and government and so may have a wide variety of practical experience and knowledge. Training to meets minimum practical or competency standards is listed in **Annex 6.** Volunteers often do not have access to suitable training before offering their support, and so must either be suitably trained prior to starting work, or be employed under strict supervision, depending on their role.

Oil spill workers face many types of hazards. Examples include:

- working in the environment
- vehicles and movements
- vessel and aircraft operations
- deploying and using equipment
- contact with oil and response chemicals
- wildlife
- local weather and sea-state

A hazard register is a list of all potential hazards related to a location or deployment area, including the use of specific equipment or related to specific tasks. (**Annex 2**)

Workers and work teams must build a hazard register specific to their work and their location.

2: Assess the risk

A two dimensional risk matrix can provide a structured and systematic way to assess risk (Table 3).

Risk = Likelihood x Consequence

- Likelihood means the probability that an event will occur, often expressed as a frequency with a defined return time (e.g. 1 in one hundred year event, or 3 times per month)
- Consequences means the outcome, and this will almost certainly vary, depending on the individual worker and/or their organisation, the spill and/or its location, and the response required. Hazards must always be seen as more than simply any personal injury risk associated only with responders. Hazards to the public or community must also be considered.

A complete risk assessment will involve listing all potential hazards related to the location, item of equipment, and activity, and assessing the risk before and after the application of hazard controls.

Both factors (likelihood and consequence) can be given a number value to assist in defining a quantitative analysis of the hazard risk.

Table 3 shows how this may work.

Table 3: Risk Matrix (Adapted from ISO 31000:2009)

RISK MATRIX

E = Extreme Risk. Detailed risk plan needed before progressing

H = High Risk. Needs immediate senior management attention

M = Medium Risk. Specify management responsibility

L = Low Risk. Manage through routine procedures

LIKELIHOOD				CONSEQUENCES (to people)						
			Effects on People	**NOT requiring first aid** or medical treatment	**First aid treatment** required	**Serious injury** requiring **hospital treatment** or multiple medical cases	**Life threatening** or multiple serious injuries requiring **hospital treatment**	**Death or multiple life threatening** injuries
				Insignificant	**Minor**	**Moderate**	**Major**	**Catastrophic**
Probability (in time)	**Historical experience**			1	2	3	4	5
> 1 in 10	Expected to occur in most cases	Almost certain	5	M	H	H	E	E
1 in 10 –100	Will probably occur	Likely	4	M	M	H	H	E
1 in 100 –1,000	Might occur at some time in the future	Possible	3	L	M	M	H	E
1 in 1000 –10,000	Could occur but doubtful	Unlikely	2	L	M	M	H	H
1 in 10,000 – 100,000	May occur but only in exceptional cases	Rare	1	L	L	M	M	H

3: Apply hazard controls

Hazard controls reduce the risk of a particular hazard. They are applied using the hierarchy of hazard control to minimise or eliminate exposure to hazards through prioritising which controls are likely to be most effective.

Figure 5: Hierarchy of Hazard Control (From NIOSH)

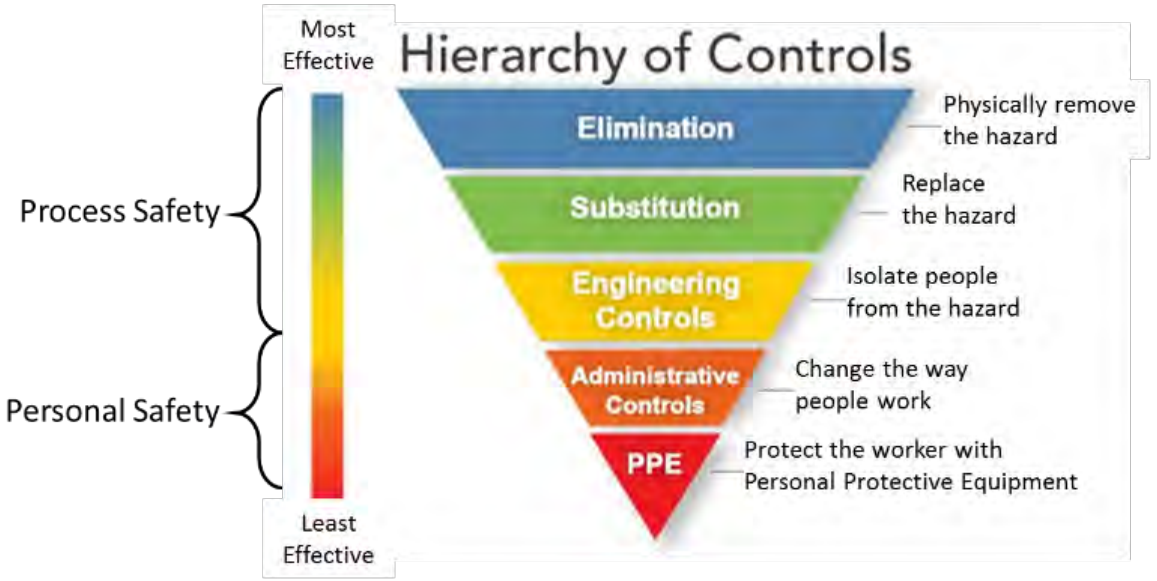


Figure 5 shows the five different levels of risk control.

1. Elimination – physically remove the hazard or change the location or conditions of the task to remove the hazard
2. Substitution – replace something that produces a hazard with an item that does not
3. Engineering controls – use machinery or other items to isolate people from the hazard
4. Administrative controls – these can take the form of both process safety and personal safety to highlight hazards and limit exposure
5. Personal Protective Equipment – the final barrier to risk, used only when all other reasonable and practical options have been considered. Some PPE may actually make it harder to do the job, and this increase in hazard needs to be considered.

The risk management process and decisions on hazard controls should begin prior to any work starting and before personnel arrive at a new location. It is also prudent to review this if circumstances change, such as new personnel, equipment, or weather.

The application of hierarchy of hazard control must be specific to each hazard to reduce the level of risk to the relevant requirement (e.g. as low as reasonably practicable).

4: Accept or reject residual risk

Once risk control options are in place, a reassessment is required to see if the reduced level of risk is acceptable or not. Further risk control options may be necessary. If a hazard continues to present an unacceptably high level of risk even after all reasonable and practical risk control efforts are in place, then the activity must not be carried out.

Those activities, regardless of the risk control measures applied, that still have a higher than acceptable level of risk should be referred to response managers to assess and reject or accept the residual risk. These activities may include the following:

- Aviation operations – offshore and/or with a single engine aircraft
- Marine operations – in high-energy environments or with inexperienced mariners
- Remote operations – away from population centres, requiring remote communications, and/or in extreme environments.

After the control for each hazard has been identified, that hazard must be re-assessed to determine whether the residual risk is now at an acceptable level.

5: Monitor and review

Operations change – so too do the hazards, risks and consequences. Controls can become less effective or ineffective. The dynamic nature of oil spill response requires that safety and risk management include ongoing monitoring and review.

There are two ways for this to occur – standardised operations reporting (sometimes referred to as daily operational logs), and by-exception reporting.

Standardised operations reports are part of the daily operations process. At the end of each operational cycle or workday workers should conduct a de-brief at their worksite. The report should summarise the site/team safety and risk management process, including the hazards present and the controls applied.

A by-exception hazard or safety report is produced when something has gone wrong or could go wrong. The workers will submit their safety report form to the safety officer (**Annex 3.9**) when the following apply:

- incidents – when an injury/death occurs
- near-misses – when an incident occurs that could have resulted in injury/death
- new hazards – when a new hazard is identified
- new safety initiative – when workers spot a way to improve personal or process safety

Both operations reports and safety reports are sent daily to the IMT for collation, assessment and sharing with other sites, if relevant, as part of the continuous improvement of the whole response safety plan. This step must be included in the safety plan by the IMT (**Annex 5.1** and **Annex 5.2**).

Annex 2 Building Your Hazards Register

A comprehensive hazard register will include every potential hazard that oil spill workers may face at any time during the response. The example that follows can be used by an IMT to begin a response risk management process.

Annex 2.1 Example hazard register: onshore - general activities

Annex 2.1 Hazard Register: Onshore – General			
ACTIVITY	**HAZARD**	**RISKS**	**CONTROLS**
General	Weather – Heat	• Sunburn	• Limit exposure • Seek shelter • Take regular breaks • Adjust shifts • Use PPE - Protective clothing / Hat / Sunscreen
		• Dehydration	• Maintain fluids • Take regular breaks • Acclimatise personnel
		• Heat Rash (Prickly Heat)	• Limit Exposure • Take regular breaks in cool environment • Minimise work in humid environment while using clothing that traps moisture • Wash skin thoroughly • Apply medicated lotions/powder
		• Heat Cramps • Heat Exhaustion • Heat Stroke	• Limit Exposure • Seek shelter • Take regular breaks in cool environment • Adjust shifts • Maintain Fluids • Acclimatise personnel • Use PPE - Protective clothing / Hat / Sunscreen
	Weather - Cold	• Hypothermia	• Limit Exposure • Seek shelter • Take regular breaks in warm environment • Adjust shifts • Acclimatise personnel • Use PPE - Protective clothing / Hat / Sunscreen
	Weather – Strong Wind	• Impact from debris/objects • Debris in eyes • Equipment damage	• Secure loose items • Use PPE (Safety glasses)
	Weather - Lightning	• Electrocution • Personal injury / death	• Limit exposure • Shut down work if lightning is observed within 5km (Stop watch or second count divided by 5 gives approximate distance in km. 25 seconds is approx. 5km) • Avoid conductors/tall objects • Avoid open areas • Crouch low with heels together
	Slip, Trip, Falls	• Personal injury	• Good housekeeping • Clear walkways • Secure equipment • Minimise clutter • Clean spills • Apply non slip materials • Maintain situational awareness • Use PPE

Annex 2.1 Hazard Register: Onshore – General (cont.)			
ACTIVITY	**HAZARD**	**RISKS**	**CONTROLS**
General	Working at height	• Personal injury / death	• Restrict access • Use barriers / tape • Use guard rails • Use no go zones • Maintain situational awareness • Team communication • Use PPE – fall arrest / harness
	Manual Handling	• Personal injury	• Correct lifting techniques • Team lift for heavier or awkward items • Good communication during team lift • PPE – Gloves/Safety Boots
	Pinch points	• Personal injury	• Avoid bights/pinch points • Maintain situational awareness • PPE - Gloves
	Sharps/debris	• Personal injury	• Pre job inspection of area/equipment • Effective observation while operating • Effective team communication • PPE – Gloves/Safety boots
	Noise	• Personal injury	• Limit exposure • Effective communication plan • Use PPE – Hearing Protection
	Night operations • Poor visibility • Fatigue	• Personal injury • Equipment damage	• Adequate lighting • Avoid night operations
	Fire	• Personal injury • Death	• Be informed of media warnings • Comply with warnings signs and fire bans
	Flood	• Personal injury • Death	• Be informed of media warnings • Comply with warnings signs and travel bans • Do not enter flood waters
	Portable Electrical Equipment	• Personal injury • Death	• Trained/competent operator • Equipment must be tagged in date and in good condition • Comply with manufacturer recommendations and SOP • Protect leads • Use residual current protection devices
	Extended hours / stressful situations / fatigue	• Personal injury • Death	• Regulated shifts • Sufficient resources to avoid unnecessary demands on responders • Avoid irregular work patterns • Adequate rest periods • Job rotation

Annex 2.2 Hazard register: vehicles, vessels, aircraft, and movements

Annex 2.2 Hazard Register: Vehicles, Vessels, Aircraft, and Movements			
ACTIVITY	**HAZARD**	**RISKS**	**CONTROLS**
Vehicle Movements	Driving • General • Off road • Outside normal hours	• Crash • Fatigue • Bogged in remote • areas • Lost	• Operator must have appropriate licence • Vehicle must be registered, in good condition, and fit for purpose • Comply with road regulations • Drive to road / environmental conditions • Plan trip • Driver fit to work
	Pedestrian movements	• Crush/impact • Personal injury	• Establish safe zones and barriers • Separate vehicles and pedestrians • Use spotters • Limit access • Use PPE – High visibility clothing
Loading Vehicles and Vessels	Forklift operations	• Crash • Personal injury	• Operator must have appropriate licence • Vehicle must be registered for road use if used on public road areas • Vehicle must be in good condition, and fit for purpose • Comply with road regulations • Drive to road / environmental conditions • Plan lifts and movements • Driver fit to work • Use a spotter where appropriate
	Crane operations	• Dropped objects • Crush/personal injury • Impact/damage to equipment • Impact/damage to vessel	• Operator must have appropriate licence • Use qualified rigger/dogman for all movements • Loads to vessels must be under guidance of vessel master • Crane must be in good condition, and fit for purpose • Plan lifts and movements • Driver fit to work • Established safe/no go zones
	Fastening loads	• Personal injury • Significant injury of third party • Damage to equipment	• Competent personnel to conduct • Load assessment
	Manual Handling	• Personal injury	• Correct lifting techniques • Team lift for heavier or awkward items • Good communication during team lift
Vessel Operations - General	General vessel operations • Launching • Retrieval • Operation	• Personal injury • Death • Damage to vessel or equipment	• Vessel to be in survey • Vessel and safety equipment to be fit for purpose and in good condition • Vessel master to be Coxswain qualified as minimum • Maritime regulations to be observed at all times • Master to provide safety briefing to all oncoming crew/personnel • Use PPE – Personal Flotation Device (PFD)
	Collision/ grounding	• Personal injury • Significant injury of third party • Damage to equipment • Death	• Maritime regulations to be observed at all times • Operate to conditions • Utilise charts and/or local knowledge to avoid known hazards • Operate at low speeds near fixed structures • Maintain safe distance between vessel and fixed structures or other vessels
	Fire	• Personal injury • Damage to equipment • Death	• Firefighting equipment to be available and discussed during safety briefing • Competent trained personnel only to respond • POB to muster as directed

Annex 2.2 Hazard Register: Vehicles, Vessels, Aircraft, and Movements (cont.)			
ACTIVITY	**HAZARD**	**RISKS**	**CONTROLS**
Vessel Operations - General	Person overboard	• Personal injury • Death	• Rescue/recovery equipment to be available and discussed during safety briefing • Effective team communications • Maintain visual on POB at all times • Use PPE - PFD
	Vessel to vessel transfer	• Person overboard • Crush/impact injury • Death	• Vessel master to control operational safety • Competent trained personnel to supervise • Use safe zones only • Raft vessels • PPE - PFD
	Stored energy • Moorings • Tow/anchor lines • Handing lines between vessel and shore • Towing boom	• Personal injury • Person overboard • Death	• Vessel master to control operational safety • Stay clear of bight • Stay clear of snap back zones • Good housekeeping • Clear Decks • Neat Lines • Effective team communication
Working around aircraft	Rotating equipment	• Personal injury	• Situational awareness • Trained personnel
	Heat (Exhaust)	• Personal injury	• Situational awareness • Trained personnel • Use PPE
	Air sickness	• Personal injury	• Medication
	Emergency landing/crash	• Personal injury • Death	• Trained personnel • Use PPE - PFD

Annex 2.3 Hazard register: hazards specific to oil spill response

Annex 2.3 Hazard Register: Hazards specific to oil spill response			
ACTIVITY	**HAZARD**	**RISKS**	**CONTROLS**
Deploying and retrieving near shore or offshore boom	Stored energy • Ropes/lines • Boom • Anchor points	• Personal injury	• Avoid standing in the bight • Avoid crossing lines of tension • Maintain situational awareness • Effective team communication • Use barriers and no go zones
Operating Equipment • **Skimmers** • **Power packs** • **Pumps**	Moving / Rotating equipment	• Personal injury	• Trained personnel to operate • Designated operator to maintain control of equipment at all times • Situational awareness / teamwork • Limit exposure • Use barriers / no go zones • PPE – gloves / safety glasses / protective clothing
	Stored hydraulic pressure	• Personal injury • Environmental impact	• Trained personnel to operate • Designated operator to maintain control of equipment at all times • Controlled pressure release • Use hydraulic unloaders or safe method to relieve pressurised hoses prior to connection • Release hydraulic pressure in equipment prior to disconnection of hoses • Use PPE – safety glasses/gloves • Sorbent materials/rags for oil discharge
Operating Equipment **Dispersant Spray Systems**	• Chemical spray • Slippery deck / equipment	• Personal injury • Slip/trip/fall • Ingestion • Eye irritation • Skin irritation	• Trained personnel to operate • Avoid exposure to spray plume • Spray downwind • Use barriers to restrict access to affected areas • Housekeeping – clean / flush deck and equipment • Use PPE – protective clothing / safety glasses / gloves / respirator mask
In situ burning	Smoke Plume	• Personal Injury • Ingestion • Skin exposure	• Limit Exposure • Follow Procedures • Observe weather/wind • Use PPE - respirator
	Fire	• Personal injury • Damage to equipment • Death	• Firefighting equipment to be available and discussed during safety briefing • Limit Exposure • Follow procedures • Observe weather/wind • PPE – protective clothing
• **Working in oiled environment** • **Working with oily equipment** • **Waste management**	Contact with oil	• Skin irritation • Ingestion • Inhalation	• Suitable Air/Water Quality Monitoring Program • Limit Exposure • Timed shifts (Heat during the day may increase vapour levels – work in cool conditions early) • Observe weather/wind • Comply with Occupational Exposure Limits • Use PPE – protective clothing, gloves, respirators
Working with Oiled Wildlife	• Bites • Stings	• Personal injury • Anaphylaxis • Death	• Vigilance / situational awareness • Appropriate first aid kit • Trained first aid personnel to perform • Protective clothing and gloves

Annex 2.4 Hazard register: Australian regional hazards

Annex 2.4 Hazard Register: Australian geographical or regional hazards			
REGION	**HAZARD**	**RISKS**	**CONTROLS**
Far North Australia	Crocodiles	• Personal injury • Death	• Vigilance near shorelines and waterways • Avoid entering the water • Observes safety warning signs
	Tropical Jellyfish • – Box jellyfish • – Irukandji	• Personal injury • Anaphylaxis • Death	• Vigilance near shorelines and waterways • Avoid entering the water • Protective clothing and gloves
	Mosquitoes	• Dengue fever • Ross River Virus	• Protective clothing • Repellent
	Stonefish/Cone shell	• Personal injury • Anaphylaxis • Death	• Vigilance near shorelines and waterways • Avoid entering the water • Protective footwear, clothing, and gloves
Australia wide	Snakes Spiders	• Personal injury • Death	• Protective clothing and footwear
	Sharks	• Personal injury • Death	• Vigilance in offshore areas • Avoid entering the water

Annex 3 Risk management tools

Annex 3.1 Example site safety evaluation form

From IPIECA – Oil Spill Responder Health and Safety

1. SITE:

2. DATE: **3. TIME:** **4. INCIDENT:**

5. PRODUCT(S): _____ (Attach MSDS)

6. Site Characterization (tick all relevant boxes):

6a. Area: ☐ Ocean ☐ Bay ☐ River ☐ Saltmarsh ☐ Mudflats
☐ Shoreline ☐ Sandy ☐ Rocky ☐ Cliffs ☐ Docks

6b. Use: ☐ Commercial ☐ Industrial ☐ Farming ☐ Public ☐ Government
☐ Recreational ☐ Residential ☐ Other

7. Weather: ☐ Ice/frost ☐ Snow ☐ Rain ☐ Wind ☐ Sun

Temperature _____

8. Site Hazards:

☐ Bird handling	☐ Fumes, vapours, gases	☐ Pumps and hoses
☐ Boat safety	☐ Heat	☐ Slips, trips and falls
☐ Chemical hazards (to skin)	☐ Helicopter operations	☐ Steam and hot water
☐ Cold	☐ Humidity	☐ Tides
☐ Drum handling	☐ Insects/animals	☐ Trenches, excavations
☐ Electrical hazards	☐ Lifting	☐ UV radiation
☐ Endemic diseases	☐ Manual handling	☐ Visibility
☐ Equipment operations	☐ Motor vehicles	☐ Weather
☐ Fatigue	☐ Noise	☐ Work near water
☐ Fire, explosion, in-situ burn	☐ Overhead/buried utilities	☐ Other (specify overleaf)

9. Air Monitoring:

☐ O_2 ☐ LEL ☐ Benzene ☐ H_2S ☐ Other (specify overleaf)

10. Personal Protective Equipment:

☐ Foot protection	☐ Coveralls	☐ Head protection
☐ Impervious suits	☐ Eye protection	☐ Personal flotation
☐ Ear protection	☐ Respirators	☐ Hand protection
☐ Other		

11. Site Facilities Required:

☐ Sanitation ☐ First Aid ☐ Decontamination

12. Emergency Plan Requirements:

☐ Alarm system ☐ Evacuation plan

13. Contact Details Required:

☐ Fire ☐ Doctor ☐ Ambulance ☐ Police ☐ Hospital ☐ Other (specify overleaf)

14. Date Plan Completed: _____ **15. Plan Completed by:** _____

Continued overleaf ...

Site Name:
Location/Map Reference:

Include work zones, first-aid locations, primary and secondary escape routes, assembly points, staging area and command post locations. Also include notes to entries marked 'Other' on the previous page.

Annex 3.2 Site safety briefing templates

Incident: _____ **Project Code:** _____

Site Name: _____ **Location/Map Ref.:** _____

Date: _____ **Time:** _____

Briefing Conducted by: _____

Topics Covered:

- Weather conditions ☐
- Injuries and illnesses ☐
- Corrective actions/precautions ☐
- First aid ☐
- Site emergency plan ☐
- Site hazards ☐
- Oil/chemical hazards ☐
- PPE to be worn ☐
- Decontamination procedures ☐
- Other topics (list below) ☐

Comments:

AMOSC TACTICAL ASSIGNMENT BRIEFING TEMPLATE

Date:

Time:

Location:

Onsite Commander:

Safety Officers:

Team Leaders/Supervisors:

Teams:

Operations:

Aim:

Objectives:

Communications:

Sequence of events:

Safety:

1. PPE
2. Complete JSA - all participants
3. Mitigate hazards identified as part of JSA's
4. Site safety plan to be considered if appropriate for activity
5. **No Duff Procedure – to be used in any actual safety incident to stop all operations**
    a. **"No Duff, No Duff, No Duff"**
6. **Safety vigilance**
    a. All operations in accordance with AMOSC HSSE policy
    b. Team Leader/Supervisors – ensure safety at all times
    c. All personnel to ensure vigilance during all operations
    d. **If in any doubt – TAKE 5**

Annex 3.3 Standard operating procedures (SOPs)

All oil spill response equipment should have an accompanying SOP to assist with safe operations. Standard operating procedures are available for all National Plan equipment. Contact the supplier (AMSA, AMOSC, Mutual Aid company) to obtain this if not with the equipment or unavailable on provider websites.

SOPs are often produced as written instructions designed to ensure routine tasks are carried out in a safe, consistent, efficient and uniform manner. These include the manufacturers' operating manual for a specific item of equipment, or are documents produced to show how to complete a task according to business or industry requirements.

Workers unfamiliar with the operation of a particular item of equipment, the task, or the working location, must complete a job safety analysis (JSA) prior to beginning the work.

Annex 3.4 Personal protective equipment register and selection

PPE register

A register of PPE issued to all workers should be maintained by safety personnel in the field teams or in the IMT. It should record:

- name of person issued
- details of PPE issued (item/brand/model/application/expiry date)
- date of issue
- date and reason for replacement/servicing

An exchange system where new equipment is issued in place of used or damaged or expired equipment can manage risks, and reduce and control waste. Due care must be taken to ensure that surrendered PPE is disposed of in designated facilities, with waste segregation that avoids secondary oil contamination.

PPE selection matrix

The example PPE selection matrix presented as a table over the following pages indicates a set of work tasks or scenarios and the PPE that may be suitable for workers. It assumes a minimum set of PPE is available to all spill response workers, and then can be used to identify extra or specific hazards for which additional PPE may be required. It is neither comprehensive for complete – that is the role of the risk assessment and hazard control process for a specific incident and response. The colours below indicate the various PPE expectations noted.

Minimum standard PPE – for or all oil spill responders for general oil spill response
Hazard-specific additional PPE – for when protection is required from specific hazards
Contextual PPE – recommended or required, depending on circumstance or context

For work or hazard categories/activities with different likelihoods of exposure between hydrocarbon and dispersant, the higher standard of PPE is applied.

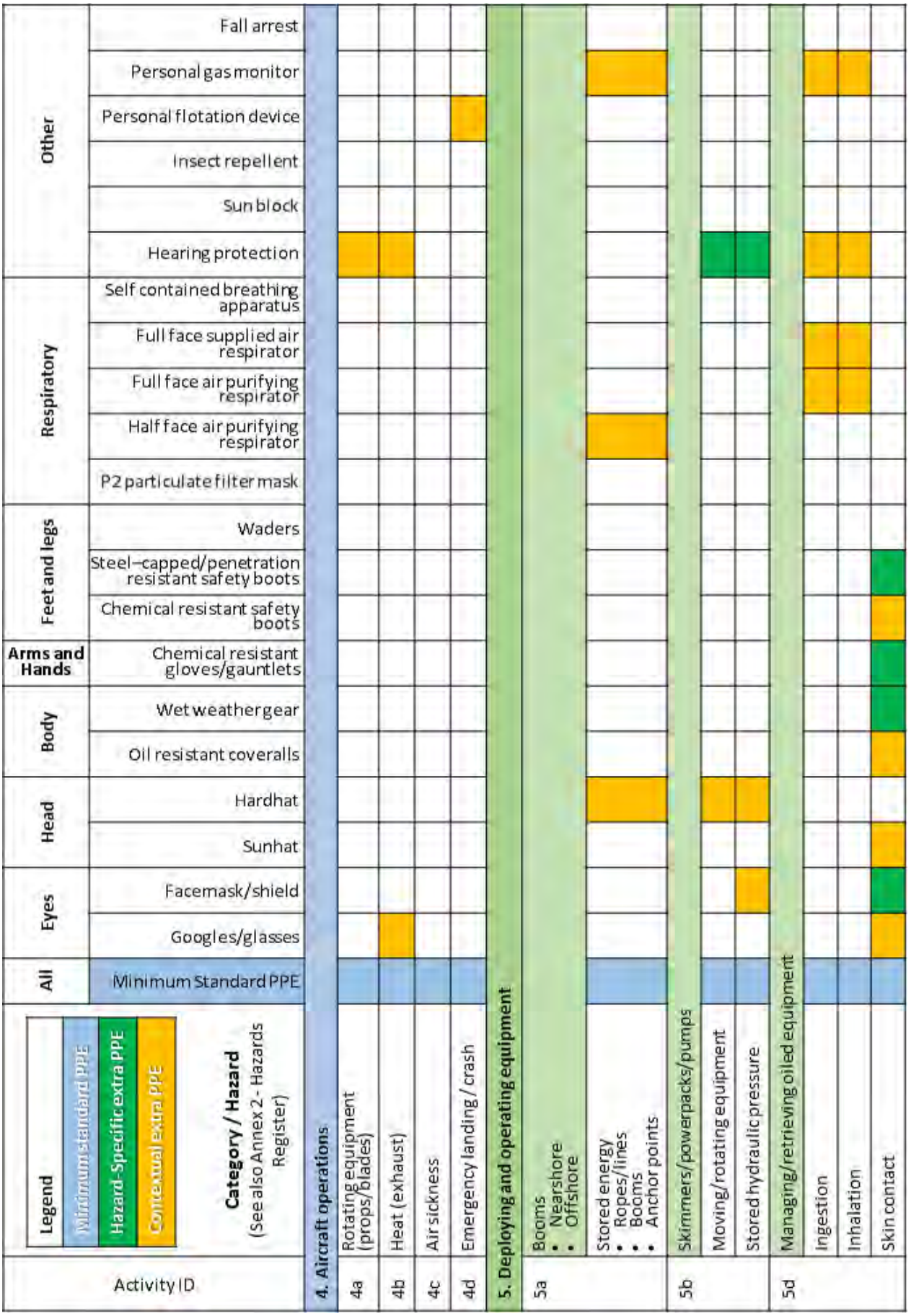
Note: HNS requires specialist PPE

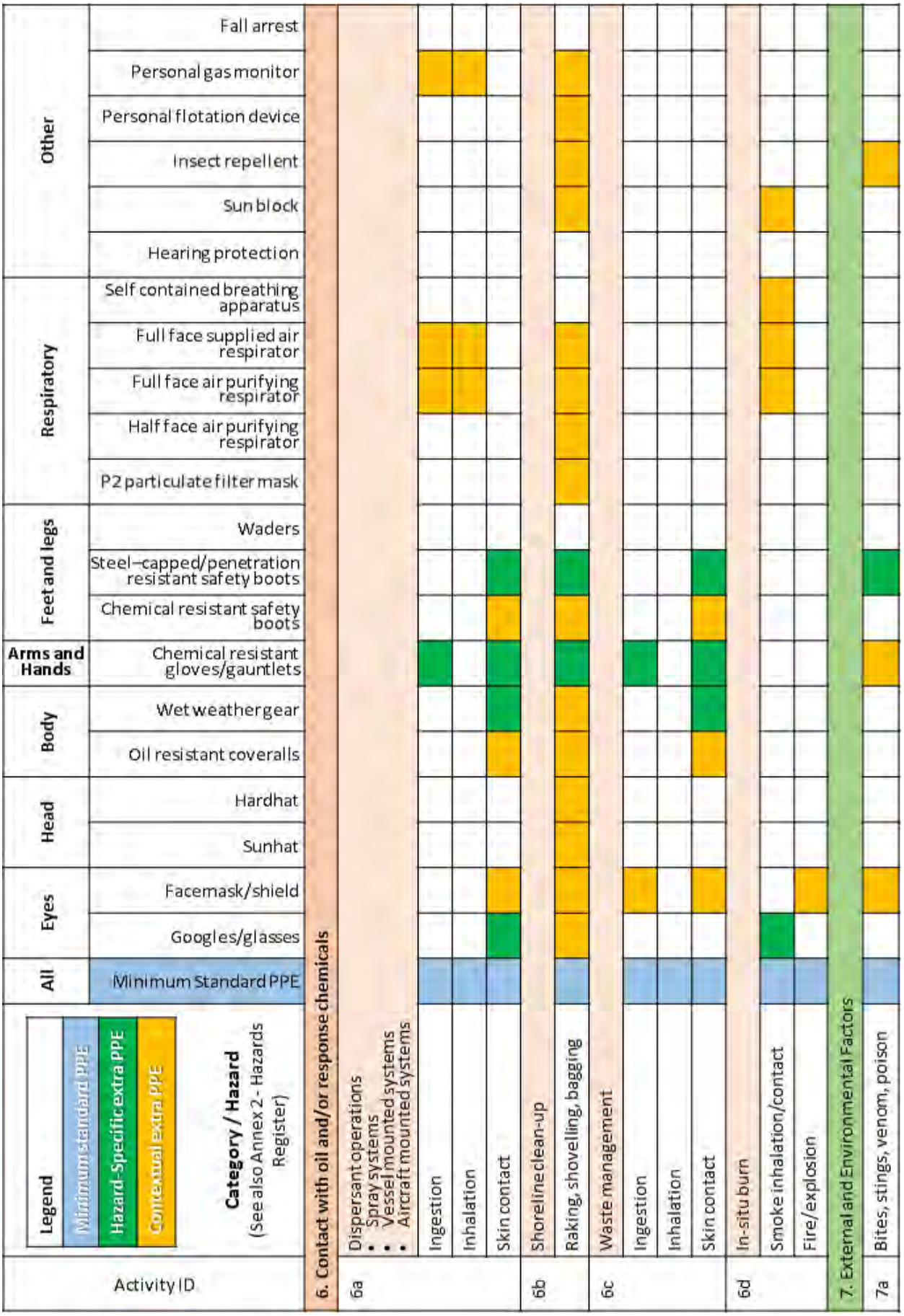
PPE sufficient for oil spill response may not be suitable or adequate for other chemicals, known as hazardous and noxious substances (HNS) or hazardous materials (HazMat). These are often more complex and more hazardous to respond to. Specific guidance on HNS and its relevant PPE is excluded from this document. Expert advice and capability must be sought and applied.

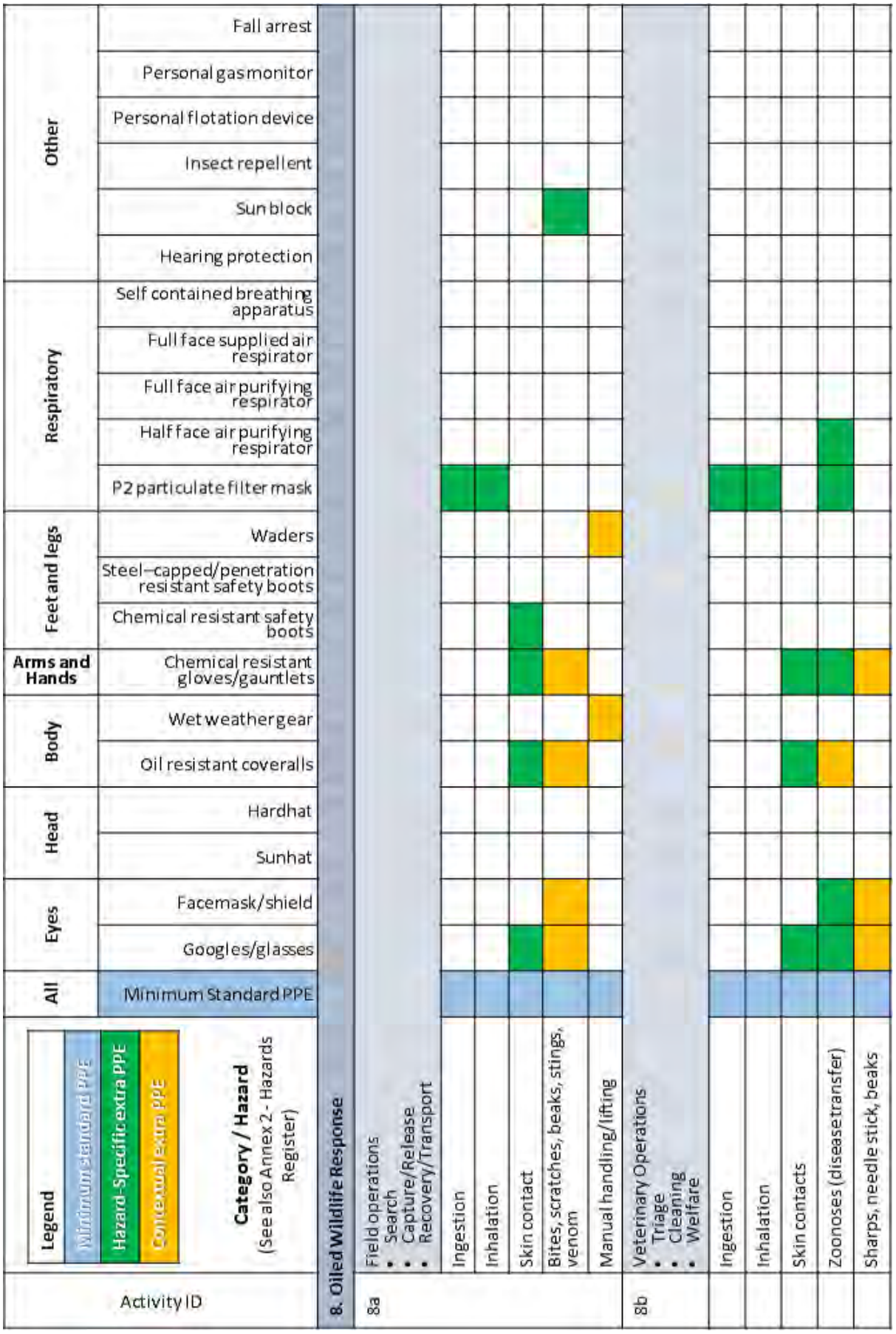
Activity ID	Category / Hazard (See also Annex 2 - Hazards Register)	All	Eyes		Head		Body		Arms and Hands	Feet and legs			Respiratory					Other					
		Minimum Standard PPE	Goggles/glasses	Facemask/shield	Sunhat	Hardhat	Oil resistant coveralls	Wet weather gear	Chemical resistant gloves/gauntlets	Chemical resistant safety boots	Steel–capped/penetration resistant safety boots	Waders	P2 particulate filter mask	Half face air purifying respirator	Full face air purifying respirator	Full face supplied air respirator	Self contained breathing apparatus	Hearing protection	Sun block	Insect repellent	Personal flotation device	Personal gas monitor	Fall arrest
1. Working in the environment																							
1a	Cold							■															
1b	Heat				■														■				
1c	Wet						■					■											
1d	Wind							■															
1e	Lightning																						
1f	Slips / trips / falls																						
1g	Noise																	■					
1h	Working at height																						■
1i	Manual handling										■												
1j	Pinch points																						
1k	Sharps / debris		■								■												
1l	Falling objects / head impacts					■					■												
1m	Night operations / limited visibility																						
1n	Excessive hours / fatigue																						
1o	Flora / fauna – tropical north										■												
1p	Flora / fauna – cold south										■												

Legend: Minimum standard PPE; Hazard-Specific extra PPE; Contextual extra PPE

Activity ID	Category / Hazard (See also Annex 2 - Hazards Register)	All	Eyes	Head	Body	Arms and Hands	Feet and legs	Respiratory	Other
	Legend: Minimum standard PPE; Hazard-Specific extra PPE; Contextual extra PPE	Minimum Standard PPE	Goggles/glasses; Facemask/shield	Sunhat; Hardhat	Oil resistant coveralls; Wet weathergear	Chemical resistant gloves/gauntlets	Chemical resistant safety boots; Steel–capped/penetration resistant safety boots; Waders	P2 particulate filter mask; Half face air purifying respirator; Full face air purifying respirator; Full face supplied air respirator; Self contained breathing apparatus	Hearing protection; Sun block; Insect repellent; Personal flotation device; Personal gas monitor; Fall arrest
2. Vehicles and movements									
2a	Cranes			Hardhat			Steel–capped/penetration resistant safety boots		Hearing protection
2b	Forklifts			Hardhat			Steel–capped/penetration resistant safety boots		Hearing protection
2c	Fastening loads			Hardhat			Steel–capped/penetration resistant safety boots		Hearing protection
2d	Lifting and manual handling			Hardhat			Steel–capped/penetration resistant safety boots		Hearing protection
2e	General driving								
2f	Off-road/allterrain driving								Hearing protection
2g	Driving outside normal hours								
2h	Pedestrian activity								
3. Vessel operations									
3a	Collision / grounding								Personal flotation device
3b	Fire							Full face supplied air respirator; Self contained breathing apparatus	Personal flotation device
3c	Person overboard								Personal flotation device
3d	Vessel to vessel transfer								Personal flotation device; Fall arrest
3e	Stored energy • Moorings • Tow/anchor lines • Handling lines off a vessel • Towing boom								Personal flotation device


Legend
Minimum standard PPE
Hazard-Specific extra PPE
Contextual extra PPE
Activity ID
Category / Hazard
(See also Annex 2 - Hazards Register)
All
Minimum Standard PPE
Eyes
Googles/glasses
Facemask/shield
Head
Sunhat
Hardhat
Body
Oil resistant coveralls
Wet weathergear
Arms and Hands
Chemical resistant gloves/gauntlets
Feet and legs
Chemical resistant safety boots
Steel–capped/penetration resistant safety boots
Waders
Respiratory
P2 particulate filter mask
Half face air purifying respirator
Full face air purifying respirator
Full face supplied air respirator
Self contained breathing apparatus
Other
Hearing protection
Sun block
Insect repellent
Personal flotation device
Personal gas monitor
Fall arrest
4. Aircraft operations
4a Rotating equipment (props/blades)
4b Heat (exhaust)
4c Air sickness
4d Emergency landing / crash
5. Deploying and operating equipment
5a Booms
• Nearshore
• Offshore
Stored energy
• Ropes/lines
• Booms
• Anchor points
5b Skimmers/powerpacks/pumps
Moving/rotating equipment
Stored hydraulic pressure
5d Managing/retrieving oiled equipment
Ingestion
Inhalation
Skin contact


Legend
Minimum standard PPE
Hazard-Specific extra PPE
Contextual extra PPE
Activity ID
Category / Hazard
(See also Annex 2 - Hazards Register)
All
Minimum Standard PPE
Eyes
Googles/glasses
Facemask/shield
Head
Sunhat
Hardhat
Body
Oil resistant coveralls
Wet weather gear
Arms and Hands
Chemical resistant gloves/gauntlets
Feet and legs
Chemical resistant safety boots
Steel–capped/penetration resistant safety boots
Waders
Respiratory
P2 particulate filter mask
Half face air purifying respirator
Full face air purifying respirator
Full face supplied air respirator
Self contained breathing apparatus
Other
Hearing protection
Sun block
Insect repellent
Personal flotation device
Personal gas monitor
Fall arrest
6. Contact with oil and/or response chemicals
6a
Dispersant operations
• Spray systems
• Vessel mounted systems
• Aircraft mounted systems
Ingestion
Inhalation
Skin contact
6b
Shoreline clean-up
Raking, shovelling, bagging
6c
Waste management
Ingestion
Inhalation
Skin contact
6d
In-situ burn
Smoke inhalation/contact
Fire/explosion
7. External and Environmental Factors
7a
Bites, stings, venom, poison


Legend
Minimum standard PPE
Hazard-Specific extra PPE
Contextual extra PPE
Activity ID
Category / Hazard
(See also Annex 2 - Hazards Register)
All
Minimum Standard PPE
Eyes
Googles/glasses
Facemask/shield
Head
Sunhat
Hardhat
Body
Oil resistant coveralls
Wet weather gear
Arms and Hands
Chemical resistant gloves/gauntlets
Feet and legs
Chemical resistant safety boots
Steel–capped/penetration resistant safety boots
Waders
Respiratory
P2 particulate filter mask
Half face air purifying respirator
Full face air purifying respirator
Full face supplied air respirator
Self contained breathing apparatus
Other
Hearing protection
Sun block
Insect repellent
Personal flotation device
Personal gas monitor
Fall arrest
8. Oiled Wildlife Response
8a
Field operations
• Search
• Capture/Release
• Recovery/Transport
Ingestion
Inhalation
Skin contact
Bites, scratches, beaks, stings, venom
Manual handling/lifting
8b
Veterinary Operations
• Triage
• Cleaning
• Welfare
Ingestion
Inhalation
Skin contacts
Zoonoses (diseasetransfer)
Sharps, needle stick, beaks

Annex 3.5 Job safety analysis

Using a job safety analysis workers can identify job-site or task hazards and assess the most appropriate hazard control methods, relevant to them, the task and location. Completing a JSA doesn't guarantee worker safety. However, it can raise awareness of hazards in a non-routine or unfamiliar task. **Annex 3.6** offers an example list of such hazards.

Job hazard analysis (JHA) + risk assessment (RA) = Job safety analysis (JSA)

The template at **Annex 3.7** is an example of how the outcome of this process could be documented. The following steps assist workers to identify and document:

1. the steps or tasks involved in the activity
2. roles and responsibilities
3. the hazards
4. the control measures
5. who is responsible for implementation of the control measures
6. how to monitor and review

Once completed , it should be agreed to, and signed by all personnel involved in the activity.

Annex 3.6 Job safety analysis – task hazard assessment form (non-regular worksite)

The hazards and controls listed below can help with a JSA., but can never cover all situations. As a minimum, suitable PPE should always use by workers.

Annex 3.6 - Job Safety Analysis – Task hazard Assessment Form (Non Regular Worksite)	
Hazards	**Possible Controls**
Poor lighting or visibility	• Provide alternate lighting • Wait or defer until visibility improves • No work over water that could require rescue (including sea state
Falling or Dropped Objects	• Use signs and barriers to restrict entry • or access under work at elevation • Use lifting equipment to raise tools to or from the work platform • Secure tools (tie-off)
Portable Electrical Equipment	• Inspect equipment for condition and test date currency • Implement continuous gas testing • Protect electrical leads from impact or damage
Radiation Hazard	• Use barriers and signs to restrict access • Notify personnel who may be affected • Implement NORM Naturally Occurring Radioactive Material) controls • • Conduct RAD (Radiation Absorbed Dose) testing
Equipment and Tools	• Inspect equipment and tools • No use of modified tools • Use protective guards • Use correct tools and equipment for task • Protect or remove sharp edges
High Energy or High Voltage	• Restrict access to authorised personnel only • Discharge equipment and make electrically dead • Observe safe distances for live cables • Use flash burn PPE suit • Use insulated gloves, tools and mats
Excavations	• Have an excavation plan or safe work practice • Locate underground pipes or cables by hand digging • De-energize underground services • Implement confined space entry controls
Waste Clean-up and Disposal	• Apply environmental management practices • Follow site waste management procedures • Clean up equipment and materials at site • Optimise task to minimise waste production
Confined Space	• Discuss confined space entry safe work practice • Monitor access or entry • Protect surfaces from inadvertent contact • Do not locate mobile engines near confined space • Provide observer • Develop rescue plan

Annex 3.6 - Job Safety Analysis – Task hazard Assessment Form (Non Regular Worksite) cont.	
Hazards	**Possible Controls**
Other Energy Sources	• Spring compression or expansion control • Implement electromagnetic (radio) controls • Manage pressure or vacuum • Manage heat generating processes • Use seismic activity safe work practice
Other Hazards	• Implement abrasive blasting controls (for equipment and practices) • Prepare a dive plan • Manage potential blocked or plugged equipment • MOC (Management of Change) required for temporary connections or modifications
Emergency Response	• Keep egress route open • Keep shower and eye wash stations accessible • Have a rescue plan in place • Keep emergency alarm, fire equipment, and shutdown locations unobstructed
Mobile Equipment	• Access equipment condition • Implement controls on users or access • Limit and monitor proximity to live equipment or cables • Manage overhead hazards • Adhere to road and site rules
Lifting Equipment	• Confirm lifting equipment condition and certification • Have a documented and approved lift plan
High Noise	• Wear correct hearing PPE • Manage exposure times • Shutdown equipment • Use “quiet” tools, sound barriers or curtains • Provide or use suitable communication techniques
Hazardous Substance	• Drain or purge equipment • Follow MSDS controls • Implement health hazards controls (Lead, Asbestos, H2S, Iron Sulphide, Sulphur Dioxide, NORM – Naturally Occurring Radioactive Material) • Test or analyse material
Ignition Sources	• Remove, isolate or contain combustible materials • Provide firefighting equipment • Construct a fire-safe habitat • Provide a fire watch during and after hot work • Conduct continuous gas testing • Bond or earth for static electricity or cathodic protection
Simultaneous Operations (SIMOPS)	• Management of change (MOC) documentation required for deviation from SIMOPS restrictions • Interface between groups • Use barriers and signs to segregate activities

Annex 3.7 Job safety analysis – template

Task:		**Job Location:**	
Work Supervisor:		**Safety Officer:**	
First Aider:		**Emergency Radio/Contact #:**	
JSA Reviewed By:		**Date Prepared:**	

ITEM NUMBER	WORK ACTIVITY	HAZARD	RISK CONTROL	PERSONS RESPONSIBLE
	Break the job down into steps	*What could harm someone?*	*What can be done to make the job safe?*	*Who will make sure it happens?*
1.				
2.				
3.				
4.				

JSA Read and Signed by ALL participants involved in activity:

Signed	Print Name

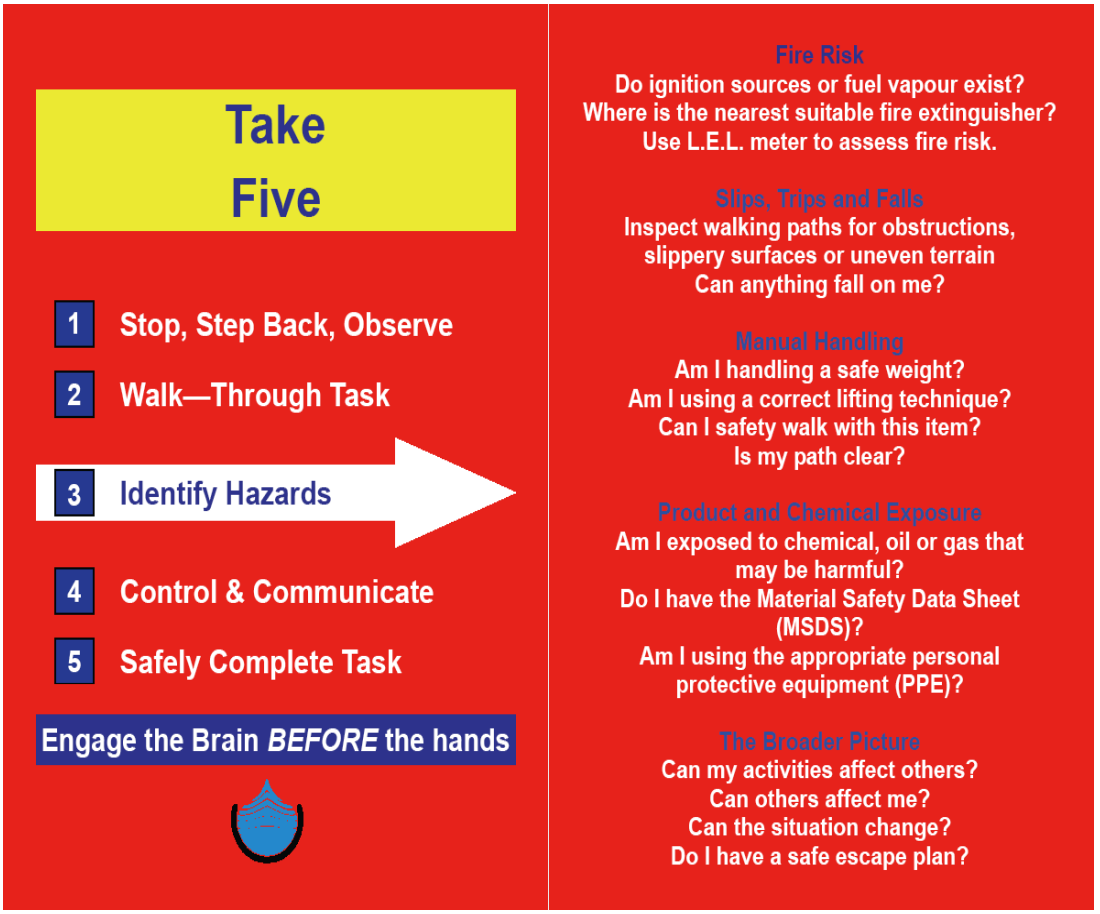
Annex 3.8 Take-Five assessment

All workers can face unanticipated hazards. Dynamic or continuous hazard and risk assessment is necessary. One common practice is the Take-Five (see figure below). This can be done at any time, during any work operation, and can be called by any member of a team if any worker:

- finds a new hazard
- has information to share about the hazard or the task
- needs clarity about task, hazard or control

If a Take-Five identifies a significant hazard not previously considered, or follows the identification of a hazard due to a near miss or observation, a Safety Report Form (**Annex 3.9**) should be completed.

The Take-Five Process



Annex 3.9 Example workplace health and safety incident report form

Australian Maritime Safety Authority

WHS INCIDENT REPORT

About this form

Please complete this form to report all incidents resulting in injuries, illnesses and near misses. Complete parts A to C and then forward this report to your supervisor to complete part D.

PART A – Incident details

Date of incident | Time of incident | Location of incident

Were there any witnesses? ☐ No ☐ Yes ➡ Witness name and contact number

Describe the incident and how it occurred
(include: what led up to the event, the actual event and any equipment, work practices, tasks or processes that may have been involved)

Did this incident result in an injury? ☐ Yes ➡ Go to Part B ☐ No ➡ Go to Part C

PART B – Injured person details

Surname | Given name(s) | Contact number

Division and/or Section

Is the injured person:
- ☐ Employee
- ☐ Contractor
- ☐ Sub-contractor
- ☐ Volunteer
- ☐ Visitor
- ☐ Other

What part(s) of the body were affected and how?

What did the injured person do?
- ☐ Stay on duty
- ☐ Go home
- ☐ Seek treatment or advice

Did the injured person take time off work?
- ☐ No
- ☐ Yes - less than one day was taken
- ☐ Yes - more than one day was taken off ➡ confirm number of days

What type of treatment was provided?
- ☐ No treatment was required
- ☐ First Aid treatment
- ☐ Medical treatment ➡ confirm date of treatment

Does the injured person intend to claim compensation?
- ☐ No
- ☐ Yes - a claim pack will be forwarded to you

PART C – Reporting details

Incident reported by | Incident reported to | Date reported

Forward this report to your supervisor to complete Part D

AMSA69 (9/17) Page 1 of 2

PART D – Corrective and Preventative actions

- Check that parts A to C have been completed correctly
- Notify the General Manager of the incident

What factors do you believe caused this incident?
(For example, fatigue, faulty equipment, poor knowledge of hazards etc).

What actions have been taken to prevent a similar occurrence happening?

What other preventative / corrective actions are proposed?

- ☐ Changes to induction
- ☐ Changes to ongoing training
- ☐ Equipment modification or maintenance
- ☐ Changes to work procedures
- ☐ Changes to work environment
- ☐ Job re-design
- ☐ Other ➡ please explain

Does the cause of this incident represent an on-going hazard?

- ☐ Yes - ensure the hazard is recorded in the WHS Hazard Register
- ☐ No ➡ give reason

Supervisor's Full name	Contact number	Date

PART E – Incident Notification

Is this incident considered notifiable under Comcare reporting regulations.
(See Table 'Does Comcare need to be notified')?

- ☐ Yes
- ☐ No

The Advisor, HSE will report to Comcare any notifiable incidents. However, when the Advisor, HSE isn't available, it is the responsibility of the manager/supervisor to report these incidents.

Have you reported this incident to Comcare?

- ☐ Yes - Please attach a copy of the incident notifcation report
- ☐ No

Does Comcare need to be notified?

Under the *Work Health and Safety Act 2011*, Comcare must be notified of certain work incidents. See below for details of the types of incidents to be reported.

Work related incident	Method of report	Timeframe
Death of a person	Phone Comcare on 1300 366 979	Notice must be given immediately after becoming aware that a notifiable incident has occurred In the fastest possible way by phone or other electronic means.
Serious injury or illness OR a dangerous occurrence	Notify Comcare by: http://www.comcare.gov.au/preventingresponse/incident_notification	

AMSA69 (9/17) Page 2 of 2

Annex 4 Amenities, services and facilities checklist

Requirements	Incident control centre	Forward operating base	Field work site
Medical and first aid support available and accessible			
Muster points, including **evacuation procedures** for emergencies			
Access to and from work locations including distances, transport types, and duration.			
Drinking water, including suitability, volumes, accessibility, refilling, recycling and waste management			
Toilets, including sufficiency during rest or meal breaks, proximity to work or break areas, accessibility for servicing, location for odour/sounds, etc. management			
Washing facilities, sufficiency for worker numbers, volume of water, supply, locations, proximity, waste and wastewater management, serviceability.			
Black and grey water storage and service accessibility			
Mess/rest/shelter facilities, sufficiency, accessibility to workers and servicing by suppliers, seating, heat, ventilation and air conditioning, air flow, pests, associated facilities (i.e. washing & toilet)			
Change rooms, as per mess/washing and toilet facilities, size, proximity, sufficiency, and security.			
Smoking areas, with suitable proximity to operational areas, but not for risk. Waste management, and avoidance of second hand smoke in sensitive areas.			
Overnight accommodation/lodgings, consider comfort and cleanliness. Proximity to work areas and other facilities for extended stay, including laundry, wifi and recreation. Parking, security, equipment management.			
Decontamination requirements, transitioning from work to clean areas. As per 'washing facilities' above. May include storage of oiled PPE. Location, numbers, level of oiling, waste types and volumes.			

Annex 5 Response Safety Plan

Annex 5.1 Safety Plan Checklist

	ICC	FOB	Field
Record keeping			
• Maintain a log of actions			
• Prepare shift handover documents			
• Provide written records of briefings delivered			
• Details on selected hazard controls			
Safety Briefings to all ICC and field personnel			
Medical plan and emergency first aid procedures			
Emergency contact list for in-field responders			
• Safety and Health			
• Wildlife			
• Indigenous Affairs			
• Incident Control Centre			
• Logistics			
• Operations			
Spilled pollutant hazards			
• Air monitoring considerations			
Personnel monitoring			
• Sign in/Sign out, or QR code ID tag tracking			
• Emergency contact information			
• Medical history/fitness for task			
• Fatigue management			
Areas of operation			
• Aerial dispersant loading / aircraft movement			
• Helicopter/Aerial Observation			
• Dispersant Application			
• Shoreline Assessment			
• Shoreline Cleanup			
• Shoreline Containment and Recovery			
• Offshore/Nearshore Containment and Recovery			
• Oiled Wildlife Response			
• Night operations			
• Transport and vehicles			
• Decontamination			
• Waste management			
Regional locations			
• Hazardous locations (Rocky shorelines, islands, significant tidal movement)			
• Northern Australia (Stingers, Crocodiles)			
• Affected wildlife (Handling, disease)			
Environmental conditions			
• Northern Australia (heat)			
• Southern Australia (cold climate exposure)			
• Weather and warnings			
Feedback to the IMT			
• Field reporting of potential hazards			
• Incident reporting			
• Investigation outcomes& recommended actions			

Annex 5.2 Safety Message/Plan Template

Source – USA ICS form 208 - Safety Message/Plan

Purpose: The Safety Message/Plan expands on the Safety Message and Site Safety Plan.

Preparation: The ICS 208 is an optional form for the Safety Officer for the Incident Action Plan (IAP).

Distribution: All recipients of the IAP, when completed, to be returned to the Documentation Unit.

Notes:

- The ICS 208 may serve (optionally) as part of the IAP.
- Use additional copies for continuation sheets as needed, and indicate pagination as used.

Block No.	Block Title	Instructions
1	Incident Name	Enter the name assigned to the incident.
2	Operational Period Date and Time From Date and Time To	Enter the start date (month/day/year) and time (using the 24-hour clock) and end date and time for the operational period to which the form applies.
3	Safety Message/Expanded Safety Message Safety Plan Site Safety Plan	Enter clear, concise statements for safety message(s), priorities, and key command emphasis / decisions / directions. Enter information such as known safety hazards and specific precautions to be observed during this operational period. If needed, additional safety message(s) should be referenced and attached.
4	Site Safety Plan Required. Yes ☐ No ☐	Check whether a site safety plan is required for this incident.
	Approved Site Safety Plan(s) Located At:	Enter where the approved Site Safety Plan(s) is located.
5	Prepared by: Name: Position/Title Signature Date/Time	Enter the name, ICS position, and signature of the person preparing the form. Enter date (month/day/ year) and time prepared (24-hour clock).

Safety Message/Plan Template

1. Incident Name:		**2. Operational Period:**	Date From:		Time From:	
			Date To:		Time To:	

3. Safety Message/Expanded Safety Message, Safety Plan, Site Safety Plan:

Scope of Activities:

Marine/vessel:

Shoreline:

Other:

Safety Priorities:

Marine/vessel:

Shoreline::

Other:

Hazard Register:

Risk Assessment:

Monitoring:

Decontamination:

Site Map/location:

Emergency procedures/contact details:

Communications: Hazard/Incident Reporting: Site Security:

Attachments:

- Product Safety Data Sheet/s
- Tactical Brief Template
- Job Safety Analysis Template
- Safety Plan Checklist
- Safety Plan Core Document Chart
- Site Safety Survey Template
- Site Safety Brief Template

4. Site Safety Plan Required? Yes/no

Approved Site Safety Plan(s) Located At:

5. Prepared by: Name: Position/Title: Signature: _____

ICS 208	**IAP Page** ____	Date/Time: _____

Annex 6 Oil spill responder competency

Annex 6.1 Response personnel training availability

Government Personnel	Training
Australian State and Territory personnel	AMSA competency-based training courses under the National Plan and intergovernmental arrangements. Online Introduction to Pollution Response, through the AMSA Learning Centre, consists of four modules: • The National Plan • Health and Safety in an Oil Spill • Introduction to Oil Spills • Introduction to Chemical Spills The online learning component must be completed prior to attending. AMSA National Plan courses are listed on the AMSA website.
Government Agency personnel and Contractors	
Industry Personnel	**Training**
AMOSC Core Group	Completion of AMOSC competency based training course, accredited by the Nautical Institute to the International Maritime Organisation (IMO) standards: • IMO I, Operations • IMO II, Management • IMO III, Incident Command plus AMOSC Core Group Specialised Training Workshop
AMOSC Participating Member and Associated Member company personnel	AMOSC IMO accredited courses: • IMO I, Operations • IMO II, Management • IMO III, Incident Command AMOSC Non Accredited Courses • Offshore/Nearshore Operations • Aerial Surveillance • Shoreline Operations • Bespoke Courses
Marine Personnel	
Contractors	
Global Response Network Personnel	OSRL / GRN Accredited and Non Accredited Courses

Annex 6.2 Response personnel - fitness for work

A pre-deployment health assessment can assess a response worker's medical and physical ability to do the work safely.

It is recommended that workers have a pre-deployment health assessment before starting response work. This will assess risk factors likely to limit a worker's ability to work safely and effectively.

A health or medical assessment may involve:

- health questionnaires, including health history
- physical (medical) examination by a doctor

For medical assessments to be meaningful, before and after data needs to be available. So, as well as an initial health assessment, workers may be further assessed during a response, and after, with a post deployment health assessment.

Information on why the information is required, how the information will be used, and how to access their own information, should be available to any worker required to undertake health assessments.

Personal medical information is confidential and must be stored securely. This information must only be used for the purpose for which it was collected and will not be disclosed to any other persons or party without the worker's agreement.

Annex 7 Specific hazard information

Annex 7.1 Hazardous components of petroleum products

Relative Potential Health Concern for Components of Petroleum Products

(Ref: *Chemical Human Health Hazards Associated with Oil Spill Response: API 4689*)

> ***Note: If there is any concern regarding the hazardous nature of any chemical in an oil spill, contact expert HazMat or Fire Service or HNS advisors and manage the site and exposure as if it is hazardous.***

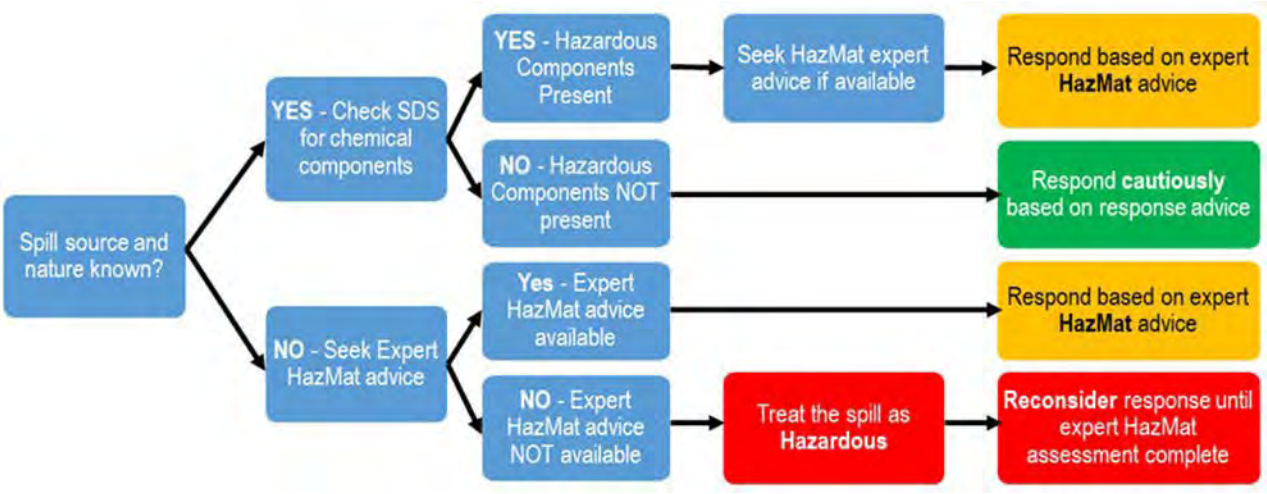
Most oil spills are from known sources with clear documentation about the nature and extent of any hazards related to the chemical constituents of the oil. However, caution should always be taken to ensure that responders (and the public) are not exposed to the more dangerous and volatile chemicals occasionally found within oil.

Ratings are relative to specific conditions and may vary considerably. For detailed interpretation of the hazards associated with particular products, exposure limits, and safe working limits in any given response location, the services of qualified specialist personnel must be engaged.

C Component of concern
L Component of low concern
N Component of no concern

Chemical of concern	Product type							
	Crude Oil	Gasoline	Middle distillates	Kerosene	Jet fuel	Diesel/Heating oil	Heavy fuel oil	Asphalt
Benzene	C	C		N	N	N	N	N
N-Hexane	L	L		N	N	N	N	N
Hydrogen sulphide	C	N		N	N	N	L	L
Naphthalene	N	N		L	L	L	N	N
Polynuclear Aromatic Hydrocarbons (PNAs)	C	N		N	N	N	C	L
Toluene	L	L		N	N	N	N	N
Total hydrocarbons	L	C		L	L	L	N	N
Trimethyl benzene	L	L		L	L	L	N	N
Tetraethyl/Tetramethyl lead (TEM/TML)	N	N		N	L	N	N	N

A decision tree, similar to the one provided below, can assist responders to determine when they are able to use their own judgment, or when they will require expert advice.



For quick reference, SafeWork Australia provides an internet-based advisory service for a wide range of chemicals: the Hazardous Chemical Information System (HCIS).

It is always the responsibility of the Australian manufacturer/importer to determine if their product is a hazardous chemical and to classify their product correctly. Contact the chemical supplier or the manufacturer/importer for more information or obtain independent professional advice.

Annex 7.2 Air quality

The environment should be assessed, at the minimum, for high/low readings of combustible gases (%LEL): for oxygen (O_2), carbon monoxide (CO), and hydrogen sulphide (H_2S).

If in doubt about air quality – get expert advice.

Any need for air monitoring should prompt the IMT to remove general personnel, and ensure that competent and appropriately trained expert personnel are deployed to operate suitable air monitoring equipment.

Once engaged, personnel responsible for the design and implementation of the plan must report sensor readings or field gas tests that register above safe limits to the IMT.

Responders undertaking monitoring should approach the spill from downwind where possible via shoreline or on board vessels.

Air monitoring equipment should be used to establish a safe perimeter prior to any other response operations. This information also needs to be relayed to in-field responders to define areas to avoid and to establish safe operational working areas. Personal 4x4 (%LEL, O_2, CO, H_2S) gas monitors should be issued to responders working in areas or situations that may be at risk should environmental (wind change) or other conditions (confined space entry) result in changes to the air quality.

Air monitoring sources and contacts

Service Provider	Contact
Environmental Protection Agency	EPA
Industrial hygienist	Local health and safety providers
Industry personnel	Oil and gas spiller safety officer
Emergency response personnel	Fire services
Oil spill response agencies	AMOSC

Annex 7.3 Working in extreme cold

Australian winter months can bring frigid, sub-zero temperatures. Planning ahead and applying risk management procedures can prevent cold-related health problems like hypothermia and frostbite.

Prevention is one of the best ways to deal with injuries from working in the elements. When working in cold weather it's important that workers and supervisors understand the symptoms of over exposure to cold, the proper clothing requirements and safe work practices, and emergency procedures in the event of cold injury.

To stay safe and dry, workers should insulate themselves against air temperature, air movement (wind speed), and humidity (wetness). Wearing layered clothing is one way to regulate the amount of heat and perspiration generated and lost while on the job.

Regular breaks, suitable eating and having a buddy system are other possible hazard controls workers can apply.

Wind chill chart

(adapted from Environment Canada and Transport British Columbia advice to workers).

Estimating wind chill and its hazard

Wind (km/h)	Wind speed indicators	Temperature (C°) real and apparent									
		0	-5	-10	-15	-20	-25	-30	-35	-40	-45
10	Wind felt on face; wind vane begins to move	-3	-9	-15	-21	-27	-33	-39	-45	-51	-57
20	Small flags extended	-5	-12	-18	-24	-30	-37	-43	-49	-56	-62
30	Wind raises loose paper; large flags flap; small tree branches move	-6	-13	-20	-26	-33	-39	-45	-52	-59	-65
40	Small trees sway; large flags flap strongly	-7	-14	-21	-27	-34	-41	-48	-54	-61	-68
50	Large branches move; overhead wires whistle; hard to use an umbrella	-8	-15	-22	-29	-35	-42	-49	-56	-63	-69
60	Trees bend; walking is hard against the wind	-9	-16	-23	-30	-36	-43	-50	-57	-64	-71

	Work outside is uncomfortable in PPE
	Work is difficult in PPE; extended time outside is unwise.
	Work in PPE is untenable outside; extended time outside is dangerous.
	No work possible; even short periods outside is life threatening

Additional Information

New South Wales Nurses and Midwives Association (2017) *Guidelines on Working in Cold Conditions*

US Occupational Safety and Health Administration (2018) *Winter Weather work website*

Annex 7.4 Working in extreme heat

Working in heat can be hazardous and can cause harm to workers. If the body has to work too hard to keep cool or starts to overheat a worker begins to suffer from heat-related illness. This is a general term to describe a range of progressive heat related conditions.

Common effects of working in heat include:

- exhaustion, fainting, heat stroke
- rash, burns
- dehydration, cramps
- reduced concentration
- increased chemical uptake into the body

Monitoring for heat stress can be an effective hazard control.

The following are examples of simple, card-based tools developed to be able to identify, or manage heat related risks.

Additional Information

SafeWork Australia (2017) *Guide for managing the risks of working in heat*

Thermal Work Limit - Working Zones

Control Interventions, Rest-Work and Rehydration Schedules

Working Zones	Interventions	Rehydration Schedule (per hr)	Work-rest Schedule (minutes)
Low Risk Unrestricted Zone TWL: 140 - 220 <	**No limits on self-paced work**[a] for educated, hydrated workers.	Light Work 600 ml - 1 Litre / hr	Safe for **all** continuous **self-paced work**[a]
Medium Risk Cautionary Zone TWL: 115 – 140	**Cautionary zone indicates situations in which environmental conditions require additional precautions.** • Practicable Engineering control measures to reduce heat stress should be implemented e.g. provide shade, improve ventilation etc. • Working alone to be avoided • No unacclimatised person to work[b] • Ensure adequate fluid intakes appropriate for type of work	Light Work 1 -1.2 Litres / hr	Safe for continuous **self-paced light work**[a]
		Heavy Work > 1.2 Litres / hr *	**Continuous paced work** 45 work - 15 rest
High Risk Zone TWL: < 115	• **Strict Work/Rest cycling required** • No person to work alone • No unacclimatised person to work[b] • High Risk induction required emphasising hydration and identifying signs of heat strain • Provide personal water bottle (2 litre capacity) on-site at all times	All Work >1.2 Litres / hr *	Light work[c] 45 work – 15 rest
			Heavy work[d] 20 work - 40 rest

Thermal Work Limits – provided by the Health Authority Abu Dhabi

Annex 7.5 Noise exposure

Excessive noise is a workplace hazard. 'Noise' means any unwanted or damaging sound.

The exposure to noise is taken to be that measured at the employee's ear position without taking into account any protection, which may be afforded by personal hearing protectors.

Effective hazard controls are reducing the noise at source or reducing the worker's exposure to the noise through personal protective equipment, such as devices worn over or inserted in the ears to protect the person's hearing.

Additional Information:

SafeWork Australia (2015) *Model Code of Practice: Managing noise and preventing hearing loss at work*

National Occupational Health and Safety Commission (2000) *National Standard for Occupational Noise [NOHSC: 1007 (2000)] 2nd Edition*

Annex 7.6 Working at or with height

[From Worksafe.vic.gov.au]

The most prevalent hazard from working at heights is a fall. Working on roofs, scaffolds, ladders, trucks and mezzanine floors, or around pits or holes can cause falls, often causing permanent and debilitating injuries. Falls from as low as one metre can result in fractures, spinal cord injury, concussions and brain damage. The risk of serious injury or death from a fall increases significantly when working at heights over two metres.

Hazard controls are as diverse as the workplace. However, the following hazard controls may have general application.

- workplace or task redesign, such as lower shelving, fixed secure access, machinery
- tools to prevent falls, such as platforms or ladders with secure handrails, and harnesses

Additional Information:

SafeWork Australia (2015) *Model Code of Practice: Managing the risk of falls at workplaces*

Annex 7.7 Manual handling

[From Worksafe.vic.gov.au]

Manual handling, where a worker uses their body to exert force to lift, lower, push, pull, carry, move, hold or restrain objects or people, creates hazards. It is one of the most common causes of workplace injury. The risk increases if tasks are carried out over long periods, at a fast pace or in other difficult conditions. Environmental factors such as heat, cold and lighting levels can also increase the risk of an injury.

Hazard controls are as diverse as the workplace. However, the following hazard controls may have general application.

- mechanical aids, such as trolleys, conveyors, hoists or forklifts for lifting
- workplace design, so work surfaces are the correct height, and workers have adequate space for working or storage
- use fixed jigs or vices with tools
- automate manual tasks
- regularly rotate workers to different tasks
- Training on correct and safe work practices

Additional Information:

SafeWork Australia (2016) *Model Code of Practice: Hazardous manual tasks*

Annex 7.8 Fatigue, extended working hours and stressful situations

Fatigue is a quiet, insidious threat to all workers. It is often-overlooked hazard in many work places. Fatigue risk can arise both within the workplace and beyond, and can result in risk and hazards both during work and outside work.

Spill response workers often work longer shifts and more consecutive shifts than the typical workweek, increasing the risk of work injuries and accidents, and contributing to poor health. Fatigue and stress from strenuous work schedules can be compounded by heavy physical workloads, unfavourable environmental, working or living conditions, long commutes to remote work locations, and personal demands on workers.

Because of these circumstances, spill response organisations should have a specific focus on fatigue as a hazard for their workforce, including planning to minimize fatigue risks, recognize hazards, and provide regular opportunities for worker rest and recovery.

Before a response, many factors can influence good fatigue management practice.

- incident type and risk – nature, frequency, intensity, duration, effects
- agency character – roles, responsibilities, work types, duration of response, deployments and shifts, physical working and living conditions and challenges, worker health issues

Each response will likely be different, but generic risks and hazards apply.

- work type, hours, conditions
- outside-of-work and living conditions
- stress caused by the work, or exposure to injured people or wildlife, emotional victims or stakeholders
- insufficient levels or types of support and services contracting, financial services, clerical support, health and welfare, catering, hygiene, transport

Controls available cover those the response organisation can apply and those for each worker. A fatigue management program should address the categories listed below, and any other controls devised or implemented.

- organisation preparation – including contingency planning for mobilisation deployment, roles and responsibilities, and policies for worker management, support, equipment, and medical
- worker preparation – including training, consideration of their normal work and family life, and contingencies for being away, including go kits, child or pet care, bills and business continuity
- operational deployment – including deployment travel, duration, work hours, work shift rotation, rest breaks and return home
- transportation – including deployment or commuting, and operating within the response, especially where unusual vehicles are used or operated

- accommodation – including lodging arrangements, meals, privacy, quiet areas, sanitation facilities, security, and laundry facilities
- recuperation – including facilities or opportunities for recreation, exercise, non-work activities, noting that some of these also pose risks or challenges (e.g. bars)
- health acre - including first aid, medical, mental health, and stress management services

SafeWork Australia has produced a specific Australian guideline on addressing workplace fatigue in emergency services, including templates and checklists for hazard identification, risk assessment, and implementing risk controls. It is not specific to oil spill response, but it, and all the material provided above, should provide a significant start to being able to address the risk of workplace fatigue during a spill response.

Additional Information:

IPIECA (2006) *Managing Workplace Stress – a guide for oil industry managers and supervisors*

IPIECA (2007) *Managing fatigue in the workplaces – a guide for oil and gas industry supervisors and occupational health practitioners*

IPIECA (2012) *Oil spill responder health and safety Good practice guidelines for incident management and emergency response personnel*

IPIECA (2014) *Assessing risks from operator fatigue – guidance document for the oil and gas industry*

SafeWork South Australia (2018) *Emergency services: guideline for risk managing fatigue*

SafeWork Australia (2013) *Guide for Managing the Risk of Fatigue at Work*

Short, M. (2017) *Managing human risk during an oiled wildlife response*

USA National Response Team (2009) *Guidance for Managing Worker Fatigue During Disaster Operations*, Technical Assistance Document

Annex 8 An example of a risk management process - AMSA Hygiene & Decontamination Strategy

Oil spill workers physically engage with oil to remove it from the environment. This means that they face hazards and risks of oil contamination, on their work clothes and personal protective equipment, on their skin and in their bodies. They can also move it outside of their workplace.

Although preventing hazards from this may seem obvious, AMSA decided to take a fresh, structured risk management approach to this hazard problem, so that it could better define it, and apply more suitable hazard controls.

The following is a summary of what and how AMSA did this. It is an example of how the risk management framework (**Annex 1.**) can be used prior to a response to identify hazards, lower risk, through risk identification, and manage those risks through new control options.

Background

AMSA's (and other National Plan agencies') response activities are supported by contingency plans, national equipment and dispersant stockpiles, response team training and exercises. AMSA maintains and manages pollution response equipment stockpiles at various locations throughout Australia, to be available to response workers to clean up spilled oil, and to protect themselves and others from oil contamination.

AMSA equipment stockpiles supplement local and regional resources of the jurisdictions and/or industry.

The Risk Review

When workers deal with spilled oil, getting dirty is expected. However, getting contaminated, where the oil ends up on bare skin, or gets inside a person through ingestion, inhalation or skin contamination, is not, and presents a significant hazard. Workers are protected from this kind of risk through the application of many hazard controls, including personal protective equipment.

However, experience (from work, practice, training, exercise and existing equipment shortcomings) AMSA identified that responder hygiene and contamination risk should be revisited, especially for shoreline clean-up workers.

Shoreline assessment and clean-up workers run the risks of self-contamination with oil and other hazardous materials, through oiling of their personal protective equipment, and also transferring oil to areas outside the immediate work zone.

AMSA engaged an independent HazMat subject matter expert to review existing risks and hazard controls (procedures, equipment and training, etc.) for both land-based and ship-based responses.

Six key issues came from the investigation:

1. Interpretation – fire (HazMat) and oil spill responders categorise oils and other materials differently.
2. Changing expectations – National and international expectations of suitable control

options are evolving (such as PPE and decontamination tactics).

3. Current risk inadequacies – current National Plan equipment (and processes) for addressing hygiene and decontamination are out-of-date or non-existent (at sea not addressed).
4. PPE Selection – Selection tools and processes for suitable and appropriate PPE is lacking.
5. Training – Programs to train the use and application of equipment and processes needs updating.
6. Safety Data Sheets – an over-reliance on SDSs as primary or only sources of information.

For each of these issues the expert identified the hazards and risks, and analysed mitigation and control options.

The report identified two very specific issues with broader implications that will be addressed beyond this strategy, and through a broader AMSA/National Plan response preparedness strategy.

a) Training – this has wider implications to ensure appropriate knowledge transfer would address all aspects of the risks of responding to chemical spills (oil and HNS), through National Plan training.

b) Air quality monitoring – due to its very specific, complex and expert requirements, this would be included in the AMSA/National Plan through engaging external expert capabilities.

The Risk Control Recommendations to AMSA

Five hazard areas arose. Collating hazard control options for each resulted in a five-step approach for AMSA to implement.

- **Poor terminology and common understanding**. Common and consistent terms and language for hygiene, contamination and decontamination do not exist.

  The definitions (and distinctions) of what constitutes ‘hygiene’, ‘contamination’ and ‘decontamination’ should be consistent and clear across all aspects of the strategy.– Adopt and promote a greater understanding of what constitutes (and is described as) exposure, contamination, decontamination, and hygiene. Using evidence-based decision-making, show how improved clarity and understanding of expectations by all people involved can create a more robust approach to Work Health and Safety practices and obligations.

- **insufficient or inadequate shore-based equipment** to address worker hygiene needs

  Provide hygiene/decontamination stations designed, built and provisioned to a pre-determined capability to work with recognised risk oils. Develop or adopt suitable Standard Operating Procedures to support these assets. An air transport suitable capability is required for deployment to support a PacPlan or remote Australia deployment.

- **insufficient or inadequate vessel-based equipment** to address worker hygiene needs

  Provide suitable hygiene/decontamination capabilities for use on a response vessel. Develop or adopt suitable Standard Operating Procedures to support these assets.

- **ensuring hygiene and decontamination competency**

  Develop and deliver a training strategy and pathway. Included are delivery of units of competency PUAFIR308B (Employ personal protection at a hazardous materials incident) and PUAFIR320 (Render hazardous materials incidents safe), as well as focussed less technical components targeted at IMT, NRT and ES&T participants. Annual exercises to reinforce the training and strategy.

- **sharing existing and future knowledge and capability**

  Develop and deliver an external support strategy and build on existing relations through MOU's or service level agreements to share capability.

As of January 2018, AMSA is in the process of delivering and implementing all these recommendations.

Additional Information:

AMSA (2017) *Hygiene/Decontamination Strategy – in line with the National Plan for Maritime Environmental Emergencies* (internal administrative report available on request of AMSA).