

Water Quality Protection Note

Chemical Spills-Emergency Response Planning

Purpose

- Provides our current considered views on this topic;
- Guides on acceptable practices used to protect the quality of the State's water resources; and
- Assists in development of multi-agency guidelines that seek to balance the views of industry, government and the community, while sustaining a healthy environment.

This note is intended as a general guide on issues of environmental concern, and to offer potential solutions based on professional judgement and precedent. Anyone may propose alternative, innovative yet practical environmental solutions suited to local conditions. The note's recommendations should not be used by regulators in place of a site-specific assessment of a project's environmental risks. Any conditions set should consider the values of the surrounding environment, the safeguards in place, and take a precautionary approach. This note may not be used as this agency's policy position on a specific matter unless confirmed in writing by an authorised officer. The note may also be varied at our discretion as industry standards change or new data becomes available.

Many industrial chemicals can degrade the environment if stored, handled or discharged inappropriately. A well considered emergency response plan will help to minimise the cost and frequency of production down-time, aid site clean-up, reduce occupational health and safety incidents, improve community attitudes and lessen environmental impacts. The plan should help prevent accidental chemical spills, leaks, and emergencies that would pollute the atmosphere, groundwater, soil, wetlands and waterways.

Scope

This note applies to any chemical spillage that may pose a threat to aspects of the environment, including human health and amenity. Chemicals of particular

focus are acids and alkalis, petroleum products, organic solvents, pesticides, surfactants, tainting substances eg phenol's, and carcinogens. Included are:

- Substances described in the current Schedules of the *Poisons Act 1964*,
- Concentrates and substances listed in Schedule Classes 3 to 9 of the *Explosive and Dangerous Goods Act 1961, Classification Order of 1988*, and
- Any matter that could contaminate waters (whether treated or otherwise) so they become unsafe for human, plant or animal use, significantly disrupt ecological processes or lose their aesthetic appeal.

The note recommends adequate Emergency Response Planning (ERP) by anyone who stores, transports or uses chemicals. Emergencies arise as a result of equipment malfunctions, operating accidents, employee malpractice, fires, natural events (eg. storms, earthquakes), and occasionally as result of civil disturbances and unauthorised site access by intruders.

The ERP has particular relevance in sensitive environments such as Public Drinking Water Source Areas (PDWSAs), buffers to conservation valued wetlands, and adjoining waterways of significant social and recreational value to the community.

PDWSAs include Underground Water Pollution Control Areas, Water Reserves and Catchment Areas declared under the *Metropolitan Water Supply, Sewerage and Drainage Act 1909* and the *Country Areas Water Supply Act 1947*. Policies to protect PDWSAs have been developed and include three levels of priority classifications of land. Management

strategies differ for each priority classification. For more information, refer to our guidance note: *Land Use Compatibility in Public Drinking Water Source Areas*.

The Commission, under the *Waterways Conservation Act 1976*, manages five declared waterways (Avon, Peel Harvey, Leschenault, Wilson Inlet and Albany). Approvals are required for works in these areas. For more information contact the relevant regional office.

• Recommendations

1. Emergency preparedness and a well considered response plan (ERP) is important for any organisation handling or using toxic or hazardous substances. The plan should be easy to read and comprehensive.
2. The ERP should establish any necessary links between internal emergency response protocols and the State emergency management structures and advisory committees eg State Flood Warning Consultative Committee, the WESTPLAN-HAZMAT Coordinating Committee and the National Plan WA State Committee for Combating Marine Oil Pollution. The plan should support the concepts of spill Prevention, Preparedness, Response and Recovery.
3. Operational plans should ensure that the user is able to quickly and effectively respond in the event of a chemical spill or other serious emergencies. The effectiveness of an emergency response system will depend on the documentation of the response process, adequate resources and training of those responsible for its implementation. The main ERP steps are described below.

• Prevention

4. Aim to eliminate or reduce the probability of unplanned release of chemicals and reduce the degree of damage that could occur to the surrounding environment. In situations where a spill risk exists, consider:
 - a. Placement of spill-risk facilities away from sensitive environments (especially sufficient to allow for effective intervention prior to pollution occurring).
 - b. Use of secondary spill containment facilities.

- c. Avoid risky activities at times when storm events may magnify the harm caused by a spill.
- d. Ensure drainage structures can be sealed to halt passage of spilt fluids (where practical).
- e. Training of employees and contractors on good environmental practice.

• Preparedness

5. Emergency preparedness and response (EPR) is an important procedure for any organisation handling potentially polluting substances. EPR is about being prepared for accidents and emergencies. It should include:
 - a. An assessment of risk scenarios leading to spills and probable impacts;
 - b. Installation and maintenance of warning signage;
 - c. Continuous access to the site incident response manual;
 - d. Staff training in incident response protocols;
 - e. Availability of equipment to mitigate the effects of any chemical spill; and
 - f. Planning for containment of contaminated water if there is a spill and /or fire.

• Content of your Emergency Response Plan

6. The following details should be included:
 - a. **Purpose of the plan** – state the aim, objectives, application and extent of the plan.
 - b. **Nature and quantities of chemicals on-site** – list types and quantities stored or handled. A material safety data sheet for each chemical should be available.
 - c. **Description of potential emergencies** – consider what incidents could occur and their possible impacts both on and off site. Consider the chemical pathways to environmental receptors (things downstream at risk). Define what actions may aggravate or limit impacts. Develop action plans for each scenario. Action plans should include both on-site and off-site mitigation measures, eg. acting with authorities to block stormwater drains.
 - d. **Risk assessments** should be prepared that define incident triggers, what may suffer harm, contaminant pathways, impact thresholds ie the concentration of chemicals

that may cause pollution (refer to the National Water Quality Management Strategy Guidelines), and the probability of occurrence. Factors such as dilution, soil filtration, stormwater impact should be considered and applied in a conservative manner.

- e. **Allocate responsibility** - Appoint an emergency response manager for implementation of the plan. Define roles of key support staff via a flow chart. Ensure staff are trained to carry out their assigned function. A roster should be available to ensure that trained personnel can respond at any time.
- f. **Communications** - An effective round-the-clock communications system is essential. Individual action cards should be prepared for personnel with roles and responsibilities under the ERP.
- g. **Backup resources** should be available to deal with emergencies, eg. personal protective gear, monitoring equipment, absorbent litter, fire fighting equipment, access to earth moving machinery and waste containment skips. Where necessary stand-by contracts should be arranged if others are expected to fulfil the emergency response role.
- h. **Test emergency procedures** – The ERP should be periodically tested to ensure the organisation is prepared, and response procedures work in an adequate and timely manner. Changes to the ERP should be made if tests demonstrate procedures can be improved. Tests can include desktop and incident simulation exercises, evacuations, testing communication systems and team training.
- i. **Notification of authorities** – Define procedures for contacting emergency services, regulators and agencies whose interests may be directly affected eg Fire and Emergency Services Authority, police, ambulance, Department of Environmental Protection and water services authority and local government. Specify who will contact the emergency services and under what conditions.
- j. **Notification of neighbours** – a contact list of neighbours and the circumstances where they are notified should be maintained. A cooperative approach can assist in an emergency response situation.

- k. **Evacuation** – In situations where people’s health or well-being may be at risk, a procedure should be prepared describing who, when, where, and how people will be evacuated and accounted for and how the evacuation protocol applies. Periodic evacuation drills are recommended.

- l. **Incident Investigation** – Staff should report both actual incidents and near misses to the designated Emergency Response Manager. Action should follow to prevent any similar incidents in future.

- m. **Media interest** – Effective media (press, radio, TV and Internet) communication is essential both in implementing ERP and dealing with community interest during and after any significant incident.

• **Types of Emergency Response:**

The type of response will depend on the nature and amount of substance(s) discharged, the environmental values present downstream and the risk of transmittal of the hazard to a receptor. Emergency response can be managed using a three-tier “Impact Classification system” (described below) based on a risk assessment of the potential severity of environmental impact.

7. The following three-tier Impact Classification (High, Moderate and Low) is aimed at providing an indication on the severity of the incident so that appropriate resources can be deployed to respond to emergencies.

- a. **High Impact** - applies to any one or more of the following:

- where there is an **immediate** threat to human life and property;
- where the incident is in any Public Drinking Water Source Area (Underground Water Pollution Control Areas (UWPCAs), declared Catchment Areas and Water Reserves);
- where the incident could be associated with significant harm to native fauna and flora;
- creates an immediate observable harm to environmental receptors;
- where it occurs in water catchments that have recognised conservation and scientific values;
- where the incident has the potential to seriously contaminate soil or water resources, or

- when a chemical spill exceeding 10 kilolitres enters the environment.
- b. **Moderate Impact** - applies to any one or more of the following:
- where there is significant (but not immediate) threat to human life and property;
 - where the incident is outside any metropolitan or country Public Drinking Water Source Area, but may affect private water supply sources;
 - where the incident may result in chronic or long-term harm to native fauna and flora;
 - may have a long term (but not immediate) observable impact on environmental receptors; or
- c. **Low Impact** - applies to any one or a combination of the following:
- when an chemical spill is between 100 litres and 10 kilolitres;
 - where there is no perceived threat to human life or property;
 - where the incident is outside sensitive environments;
 - where the incident poses no immediate or long term threat to environmental receptors; or
 - when a chemical spill of less than 100 litres enters the environment.

8. Recommended minimum response:

Impact class	Clean up	Notify authorities	Review ERP	Environmental monitoring
High	Immediate	Immediate	Yes	Yes
Medium	Within 4 hours	Within 24 hours	Yes	Decide on effectiveness of clean-up
Low	Within 24 hours	Via periodic report	No	No

Notes:

1. The above table is generic and site-specific variations may apply based chemical toxicity, the chemical fate / travel time in the environment, or the sensitivity of downstream environmental receptors.
2. In the event of any spill where it is likely the chemical will be discharged to the environment and cause pollution or environmental harm, the Department of Environmental Protection must be notified on 9222 7123.

Emergency Review:

9. After a significant incident or near miss, an internal review of the ERP and a risk assessment of the workplace should occur. These reviews help to determine how similar emergencies can be avoided and the effectiveness of the ERP. Necessary changes should be made to improve the ERP to help avoid or minimise future incidents.

More information

We welcome your comment on these notes. They will be updated from time to time as comments are received or activity standards change. Refer to our Internet site www.wrc.wa.gov.au/protecting_water/policies/water_quality_protection_notes for updates. If you wish to comment on the notes or require more information, please contact our Resource Quality Branch at the Hyatt Centre in East Perth. Phone: (08) 9278 0300 (business hours), fax: (08) 9278 0585 or E-mail: use the <feedback> section at our Internet address www.wrc.wa.gov.au, citing topic and version.

For General Advice on:

- Environmental health, waste management and disposal: contact your local government council
- Use and storage of hazardous chemicals – Department of Mineral and Petroleum Resources,
Phone: 222 3413 (storage) or 9222 3595 (transport)
- The Swan Canning Clean-up Program, contact the Swan River Trust phone: 9278 0400 or Internet site
www.wrc.wa.gov.au/srt/
- Pollution prevention – Department of Environmental Protection, phone: 9222 7000
- Sewer connection – Water Corporation, phone: 9420 2460

Appendices

A. Statutory requirements and approvals

What is regulated	Regulatory agency	Statue
Development approval	Local Government and Department of Planning and Infrastructure	Town Planning and Development Act, 1928
Impact on the values and ecology of the environment including waters	Department of Environmental Protection and/or Environmental Protection Authority	Environmental Protection Act, 1986
Licence to use surface water and groundwater	Water and Rivers Commission – regional office	Rights in Water and Irrigation Act, 1914
Explosives and Dangerous Goods	Department of Mineral and Petroleum Resources	Explosives and Dangerous Goods Act 1961
Emergency Response Planning	Department of Mineral and Petroleum Resources	Explosives and Dangerous Goods Regulations 1992

B. References and further reading

1. Environmental Management Systems Guidebook *Steps in Emergency Response*, 1999.
2. National Environmental Protection Council- *National Environmental Protection (Assessment of Site Contamination) Measure 1999*.
3. Standards Australia–
 - AS/NZS 5667 Water Quality Sampling Guidelines;
 - AS/NZS 4481.1 Guide to sampling and investigation of potentially contaminated sites management.
4. Australia and New Zealand Environment and Conservation Council / Agriculture and Resource Management Council of Australia and New Zealand / National Health and Medical Research Council-National Water Quality Management Strategy-document series :
 - *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, 2000
 - *Australian and New Zealand Guidelines for Water Quality Monitoring and Reporting*, 2000.
5. Department of Mineral and Petroleum Resources Western Australia- *Guidelines for the Preparation of an Emergency Plan*, 2000

6. Department of Environmental Protection:

- *Contaminated site assessment – A General Guideline for Reporting;*
- *Contaminated site assessment - Criteria*
- *Contaminated Site Assessment - Guidelines for the Development of Sampling and Analysis Programs*

7. Water and Rivers Commission -Water Quality Protection Notes (current version):

Land Use Compatibility in Public Drinking Water Source Areas

C. Emergency contact details:

All hours phone numbers-

Life / property emergencies (Ambulance, Fire or Police) – 000

Department of Environmental Protection – Pollution emergencies – 1800 018 800

Poisons Information Centre –13 11 26

Swan River Trust (Swan and Canning Rivers only) - 0419 192 845

Water Corporation – 13 13 75 (emergencies and water service difficulties)

Business hours phone numbers-

Fire and Emergency Services Authority – 9323 9300 (bus hours)

Department of Mineral and Petroleum Resources – Explosive and Dangerous Goods - 9222 3333

Department of Environmental Protection - 9222 7000

Water and Rivers Commission – 9278 0300

Your Local Government:



**Water and Rivers
Commission**

Level 2, Hyatt Centre
3 Plain Street
East Perth, Western Australia 6004
Telephone (08) 9278 0300



Level 3, Hyatt Centre
87 Adelaide Terrace
Perth Western Australia 6004
Telephone (08) 9278 0400



Swan-Canning Cleanup Program
Telephone (08) 9278 0592