

GUIDANCE NOTE

OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT AND CONTAMINATED SITES WORK

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Guidance for employers, employees, site owners,
consultants, self-employed people and contractors

Foreword

The introduction of the *Occupational Safety and Health Act 1984* (the Act) enabled the establishment of the tripartite Commission for Occupational Safety and Health. The Commission, which comprises representatives of employers, unions and government, as well as experts, has the function of developing the occupational safety and health legislation and supporting guidance material, and making recommendations to the Minister for their implementation. To fulfil its functions, the Commission is empowered to establish advisory committees, hold public inquiries, and publish and disseminate information.

This guidance note has been developed through a tripartite consultative process and the views of employers and unions, along with those of government and experts, have been considered.

The Commission's objective is to promote comprehensive and practical preventive strategies that improve the working environment of Western Australians.

The Act

The Occupational Safety and Health Act 1984 (the Act) provides for the promotion, co-ordination, administration and enforcement of occupational safety and health in Western Australia.

The Act places certain duties on employers, employees, self-employed people, manufacturers, designers, importers and suppliers. It also places emphasis on the prevention of accidents and injury.

In addition to the broad duties established by the Act, the legislation is supported by a further tier of statute, commonly referred to as regulations, together with a lower tier of non-statutory codes of practice and guidance notes.

Regulations

Regulations have the effect of spelling out specific requirements of the legislation.

Regulations may prescribe minimum standards and have a general application, or define specific requirements related to a particular hazard or particular type of work. They may also allow licensing or granting of approvals and certificates etc.

Codes of Practice

A code of practice is defined in the Act as a document prepared for the purpose of providing:

- practical advice on preventive strategies; and
- a practical means of achieving any code, standard, rule, provision or specification relating to occupational safety or health in Western Australia.

A code of practice may contain explanatory information. The preventive strategies outlined do not represent the only acceptable means of achieving a certain standard.

A code of practice does not have the same legal force as a regulation and is not sufficient reason, of itself, for prosecution under the Act.

Guidance Notes

A guidance note is an explanatory document providing detailed information on the requirements of legislation, regulations, standards, codes of practice or matters relating to occupational safety and health, as approved by the Commission.

This publication is available on request in other formats to assist people with special needs.

Cover photograph has been supplied by the Department of Environment.

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Authority

This guidance note is issued by the Commission for Occupational Safety and Health under the *Occupational Safety and Health Act 1984* (the Act).

Scope

This guidance note applies to all workplaces in Western Australia covered by the Act. It provides guidance on occupational safety and health management and contaminated sites work and some of the legislative requirements in the Act and the Occupational Safety and Health Regulations 1996 (the Regulations). However, it is not possible to deal with every situation that may be found at contaminated sites. The practical guidance in this guidance note should be considered in conjunction with the general duties in the Act.

Who should use this code of practice?

This code of practice has been developed to assist employers, site owners, consultants, self-employed people, employees, people in control of workplaces and safety and health representatives to comply with the Act and the Regulations.

Application

To be read in conjunction with the Act and the Regulations.

Definitions

For the purpose of this guidance material:

contaminated: in relation to land, water or a site, 'contaminated' means having a substance present in or on that land, water or site at above background concentrations that presents, or has the potential to present, a risk to human health, the environment or any environmental value. This definition includes both developed and undeveloped sites. It is from Section 4 of the *Contaminated Sites Act 2003*, which does allow for some exclusions by regulation.

competent person: in relation to the doing of anything, 'competent person' means a person who has acquired, through training, qualification or experience or a combination of these things, the knowledge and skills required to do that thing competently.

DoE: The acronym DoE refers to the Western Australian Department of Environment, which is the former Department of Environmental Protection and the Water and Rivers Commission.

hazard: in relation to a person, 'hazard' means anything that may result in (a) injury to the person, or (b) harm to the health of the person.

practicable: under the *Occupational Safety and Health Act 1984*, the term 'practicable' means reasonably practicable having regard, where the context permits, to: (a) the severity of any potential injury or harm to health that may be involved, and the degree of risk of it occurring; (b) the state of knowledge about the potential injury or harm to health, the risk of it occurring, and the means of removing or mitigating the risk or mitigating the potential injury or harm to health; and (c) the availability, suitability and cost of the means.

principal: the term 'principal' refers to a person who, in the course of a trade or business carried out, engages another person (the contractor). Under Section 23D of the *Occupational Safety and Health Act 1984*, the principal has 'duty of care' safety and health responsibilities of an employer towards the contractor and his or her employees for matters over which they have control or the capacity to have control.

the Act: references to 'the Act' refer to the *Occupational Safety and Health Act 1984*.

the Regulations: references to 'the Regulations' refer to the Occupational Safety and Health Regulations 1996.

risk: in relation to any injury or harm, 'risk' means the probability of that injury or harm occurring.

workplace: under the *Occupational Safety and Health Act 1984*, 'workplace' means a place, whether or not in an aircraft, ship, vehicle, building, or other structure, where employees or self-employed persons work or are likely to be in the course of their work.

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1. Occupational safety and health management

1.1 Introduction

This document provides general guidance on the occupational safety and health issues to be addressed as part of the Preliminary Site Investigation, Detailed Site Investigation, Remediation, Waste Management and Waste Disposal stages of work on a contaminated or potentially contaminated site. Environmental management issues are only addressed where they impact on safety and health planning.

The Department of Environment (DoE) guidelines in the contaminated sites management series should be consulted for guidance on DoE reporting requirements and environmental management issues.

Available on the internet at:
www.environment.wa.gov.au

1.2 Overview

Contaminated sites may present occupational safety and health risks for workers during investigations and remediation, as known and unknown hazards can be encountered at any stage of site works.

See definitions section at front of document for a definition of 'contaminated'.

The hazards from contaminants may include substances such as volatile organic solvents, fuels such as petrol and diesel, heavy metals, pesticides and hazardous wastes. The contaminants could be in a solid, liquid, vapour or dust form. They may be in the soil or groundwater.

Most commonly, contaminants are located in chemical storage areas, workshop areas, landfill areas or places where there has been inappropriate waste disposal. They can also be found where there are leakages from storage facilities into the surrounding environment. Landfill sites are of particular concern due to uncertainty over landfill content and the release of dusts or vapours.

Other potential hazards include fires, explosions, confined spaces, underground and aboveground services (eg gas lines and electricity), plant, manual handling and slips, trips and falls.

Employers have a duty to ensure, as far as practicable, that employees working on contaminated sites are not exposed to hazards. This 'duty of care' also applies to consultants, landowners and other people when they engage contractors and their employees to work on a contaminated site.

See Sections 19(1) and 23D of the Act and Section 1.3 of this document.
See also Regulation 3.1 of the Regulations.

Additionally, employers, main contractors, self-employed people, people having control of a workplace or a person having control of access to a workplace must carry out the three-step risk management process (ie identify hazards, assess risks and control risks) as far as practicable.

This risk management process must be *site-specific* to address all the hazards and risks at a particular site, including, for example, preparation of a Site-Specific Safety and Health Plan that is made readily available onsite.

Constantly monitoring and reviewing the control measures implemented to eliminate or reduce the risks is important to ensure they continue to prevent or control exposure to hazards or hazardous work practices.

Precautions on contaminated sites

As work on contaminated sites may involve risks from hazardous substances in an uncontrolled state, with little or no information on their identity and concentration:

- precautions must be taken *prior* to any contaminants being encountered during the course of work, with the assumption made that the site may contain significant risks to safety and health; and
- substances found should be viewed as hazardous, unless proved otherwise by testing.

When it is suspected or known a site is contaminated

From the outset:

- the DoE must be notified according to the *Contaminated Sites Act 2003*;
- the DoE guidelines in the contaminated sites management series should be consulted;
- where appropriate, competent persons and State Government agencies should be contacted for specialised information. Agencies’ responsibilities are summarised in Figure 1 below; and
- the recommendations in this document for safety and health management for each stage of development of a contaminated site should be followed. These are summarised in Figure 2 on the following pages.

FIGURE 1. GOVERNMENT AGENCIES’ RESPONSIBILITIES FOR CONTAMINATED SITES ISSUES

| Contaminated sites management issues | Occupational safety and health issues | Mine site issues | Specialist advice on contaminants | Site history and/or underground infrastructure queries |
|--|--|--|---|--|
| <p>The DoE is the primary State Government agency to consult on contaminated sites management issues.</p> <p>When there are human health or occupational safety and health issues, the DoE consults with the Department of Health and/or WorkSafe.</p> | <p>WorkSafe is the primary State Government agency to consult for occupational safety queries about contaminated sites work.</p> | <p>When a site is a mine site (or an abandoned one), the Department of Industry and Resources (DOIR) is the agency to consult.</p> | <p>For contaminants such as unexploded ordnance, radioactive substances, cytotoxic wastes (body parts), biologically pathogenic materials and waste and contaminated sediments, specialist information will be required and the DoE and/or the Department of Health (where applicable) should be contacted.</p> | <p>Contact the local government authority.</p> <p>Dial 1100 Before You Dig may also provide information, as well as the site owner/occupier.</p> |

FIGURE 2. KEY REQUIREMENTS AND RECOMMENDATIONS FOR SAFETY AND HEALTH MANAGEMENT FOR SITE DEVELOPMENT STAGES

A site is suspected or known to have contamination.

1. NOTIFICATION TO THE DoE

Under the *Contaminated Sites Act 2003*, sites suspected, or known to be contaminated, must be reported to the DoE. Refer to the DoE guidelines in the contaminated sites management series for legislative requirements and general guidance.

2. PRELIMINARY SITE INVESTIGATION

The requirements and recommendations include:

- (i) site owners/employers should engage **competent** consultants to carry out the Preliminary Site Investigation;
- (ii) where onsite work is involved, site owners/consultants (when they are 'the principal') and/or employers must ensure that **before work starts**:
 - the risk management process of identifying hazards and assessing and controlling the risks is carried out, as far as practicable, addressing potential contaminants and other hazards. Refer to the planning list in Appendix 2 for issues to be addressed; and
 - site-specific safety and health information, instruction and training, including safety and health procedures, are provided to all workers/consultants so they are not exposed to hazards;
- (iii) work should be conducted according to the DoE guidelines for contaminated sites work. Where appropriate, information should be sought from a competent person/government agency;
- (iv) as much site detail as possible to be obtained to assist in risk management considerations during any further work;
- (v) **as work progresses**, the risk management process must be repeated whenever circumstances change. It should be conducted on an ongoing basis to check the control measures are working and no new hazards have been introduced as a result of them and whether new hazards and risks have arisen from any changes in the work environment; and
- (vi) **upon completion** of the Preliminary Site Investigation, site owners/consultants/employers should provide safety and health information, such as a Site-Specific Safety and Health Plan, together with any other information and reports obtained or prepared during the investigation, for workers carrying out work for a Detailed Site Investigation (if planned).

Refer to Section 1.3.1 for an explanation of the principal's responsibilities.

If a Preliminary Site Investigation identifies contamination or potential for contamination, then a Detailed Site Investigation should be conducted.

3. DETAILED SITE INVESTIGATION

The requirements and recommendations include:

- (i) site owners/consultants/employers should ensure competent contractors, employees, drillers (when drilling is required) and other workers are engaged to carry out the Detailed Site Investigation;
- (ii) site owners/consultants (when they are 'the principal') and employers must ensure that **before work starts**:
 - the risk management process of identifying hazards and assessing and controlling the risks is carried out, as far as practicable, addressing potential contaminants and hazards. Refer to the planning list in Appendix 2 for issues to be addressed; and
 - safety and health information, instruction and training are provided to all workers so they are not exposed to hazards, including, for example, a Site-Specific Safety and Health Plan that is made readily available for workers onsite, and course materials;
- (iii) work should be conducted according to the DoE guidelines for contaminated sites work. Where appropriate, information should be sought from a competent person/government agency;
- (iv) site owners/employers/consultants should ensure that a thorough review of the site is undertaken; and
- (v) **as work progresses**, the risk management process must be repeated whenever circumstances change. It should be conducted on an ongoing basis to check the control measures are working and no new hazards have been introduced as a result of them and whether any new hazards or risks have arisen from changes in the work environment.

Where remediation is required, the following stages should also be followed.

4. REMEDIATION (ACCORDING TO A SITE MANAGEMENT PLAN)

The requirements and recommendations include:

- (i) remediation should not commence until the level of contamination has been determined and a Remediation Action Plan has been developed by a competent person;
- (ii) site owners/employers/consultants should ensure competent contractors, drillers, employees and/or other workers are engaged to carry out remediation;
- (iii) work should be conducted according to a Site Management Plan prepared in accordance with the DoE guidelines and requirements. Where appropriate, information should be sought from a competent person/government agency;
- (iv) site owners/consultants (when they are 'the principal') and employers must ensure that **before work starts**:
 - the risk management process of identifying hazards and assessing and controlling the risks is carried out, as far as practicable, addressing potential contaminants and hazards. Refer to the planning list in Appendix 2 for issues to be addressed; and
 - safety and health information, instruction and training are provided to all workers engaged so they are not exposed to hazards, including, for example, a Site Management Plan (containing a Remediation Action Plan and a Waste Management Plan), a revised or newly prepared Site-Specific Safety and Health Plan that is made readily available for workers onsite, and any other information or reports prepared or obtained during the Preliminary and Detailed Site Investigations; and
- (v) **as work progresses**, the risk management process must be repeated whenever circumstances change. It should be conducted on an ongoing basis to check the control measures are working and no new hazards have been introduced as a result of them and whether any new hazards or risks have arisen from changes in the work environment.

If new or changed hazards are identified, the Remediation Action Plan and Site-Specific Safety and Health Plan should be newly prepared or revised and the recommendations (above) for the Detailed Site Investigation and Remediation stages addressed.

5. WASTE MANAGEMENT (ACCORDING TO A WASTE MANAGEMENT PLAN)

The requirements and recommendations include:

- (i) site owners/consultants/owners should ensure **competent** contractors, employees and/or other workers are engaged to carry out the waste management;
- (ii) site owners/consultants/employers must ensure that the waste management and disposal is carried out according to the DOE requirements. Where appropriate, information should be sought from a competent person/government agency;
- (iii) work should be set out in a Waste Management Plan in a Site Management Plan;
- (iv) site owners/consultants (when they are the 'principal') and employers must ensure that **before work starts**:
 - the risk management process of identifying hazards and assessing and controlling the risks is carried out, as far as practicable, addressing potential contaminants and hazards. Refer to the planning list in Appendix 2 for issues to be addressed; and
 - safety and health information, instruction, training and supervision are provided to all workers engaged so they are not exposed to hazards, including, for example, a revised or newly prepared Site-Specific Safety and Health Plan that is made readily available for workers onsite;
- (v) **as work progresses**, the risk management process must be conducted whenever circumstances change. It should be conducted on an ongoing basis to check the control measures are working and no new hazards have been introduced as a result of them and whether any new hazards or risks have arisen from changes in the work environment.
- (vi) If new or changed hazards are identified, the Waste Management Plan should be revised.



6. WASTE DISPOSAL AT LANDFILL SITES OR WASTE FACILITY

The requirements and recommendations include:

- (i) landfill site owners/employers should ensure that competent contractors, employees and/or other workers are engaged to carry out the waste disposal;
- (ii) site owners/employers must ensure the disposal is carried out according to the DoE requirements;
- (iii) site owners (when they are 'the principal'), employers and/or people having control of the site must ensure that before work starts:
 - the risk management process of identifying hazards and assessing and controlling the risks is carried out, as far as practicable, addressing potential contaminants and hazards. Work must be based on identification of hazards from wastes so risks can be controlled and there is safe handling, transport and disposal of wastes. Refer to the planning list in Appendix 2 for issues to be addressed; and
 - safety and health information, instruction, training and supervision are provided to all workers engaged so they are not exposed to hazards, including, for example, safety and health procedures for dealing with different wastes; and
- (iv) **as work progresses**, the risk management process must be conducted whenever circumstances change. It should be conducted on an ongoing basis to check the control measures are working and no new hazards have been introduced as a result of them and whether there are changes in the work environment.



7. ONGOING MONITORING OR MANAGEMENT OF THE SITE

Where ongoing monitoring or management of the site is required, site owners/employers must ensure that before work starts:

- there are safe systems of work and the risk management process of identifying hazards and assessing and controlling the risks is carried out addressing potential contaminants and hazards; and
- safety and health information, instruction, training and supervision are provided to all workers engaged to carry out any monitoring so they are not exposed to hazards, including, for example, safety and health procedures.



8. SITE DEVELOPMENT

If further contaminants are found during development, all work that may lead to exposure to contaminants must cease until the safety and health issues have been addressed.

1.3 General ‘duty of care’ obligations

Employers

The Act places a ‘duty of care’ on people who have control of a contaminated site. These people must, as far as practicable:

- provide a workplace and safe system of work so that employees are not exposed to hazards;
- provide employees with information (such as specific site information on current or past land uses, when available), instruction, training and supervision to enable them to work in a safe manner without exposure to hazards;
- consult and cooperate with employees and safety and health representatives (if any) on matters related to safety and health at the workplace;
- provide adequate personal protective clothing and equipment, without cost to the employee, where hazards cannot be reduced to an acceptable level;
- ensure plant is installed or erected so it can be used safely; and
- ensure use, handling, processing, storage, transportation and disposal of substances at the workplace are carried out in a manner that does not expose employees to hazards.

In determining the training to be provided, the employer must consider the functions performed by employees and the capacities in which they are employed.

Employees

Employees must take reasonable care to ensure their own safety and health at work and the safety and health of others affected by their work.

It is important to ensure employees understand they must comply, so far as they are reasonably able, with instructions given by their employer, where those instructions are for their own safety and health or for the safety or health of other people.

Self-employed people

Self-employed people must take reasonable care to ensure their own safety and health at work and, as far as practicable, ensure their work does not affect the safety and health of others.

1.3.1 Engaging contractors and their employees

The Act places a clear obligation on people to ensure the safety and health of contractors they have engaged to carry out work. In such cases, under Section 23D of the Act, these people (referred to in the Act as ‘the principal’) are considered to be the employer of the contractor and the contractor’s employees (if any). The principal has an employer’s ‘duty of care’ to contractors and the contractor’s employees for matters over which they have control.

Further to this, when a contractor (who has been hired by a ‘principal’) hires employees, the contractor in turn has, as an employer, a ‘duty of care’ for the safety and health of their employees for matters over which they have control.

In the example of contaminated sites work, when a consultant or owner engages contractors, they would be considered to be ‘the principal’ and have a ‘duty of care’ for the safety and health of contractors engaged and the contractors’ employees (if any). At the same time, contractors who have hired employees to work on the site would also have a ‘duty of care’ for the safety and health of their employees for matters over which they have control.

See Subsections 19(1) and 19(2) of the Act.

See Sections 20 and 21 of the Act.

Obligations for the safety and health of contractors

When a person who would be deemed to be 'the principal' under the Act (eg a consultant or land owner) engages drilling contractors, the principal's obligations include but are not limited to:

- making adequate enquiries in sufficient detail to reveal (or discount) the presence of contamination or other hazards and risks associated with the site;
- informing contractors and subcontractors of any hazards or risks which may arise as a result of work to be carried out. Therefore, if a principal is aware of any contamination affecting a site, or it would be reasonable to suspect that previous activities could have led to contamination of the site, there is a clear legal obligation to:
 - inform contractors and subcontractors of any hazards or risks which may arise;
 - ensure contractors and subcontractors, employees and any other workers have received any information prepared by consultants before they start work; and
 - provide instruction and training to enable contractors, subcontractors, employees and any other workers to perform their work so they are not exposed to hazards;
- ensuring there are adequate safety systems in place to ensure the safety and health of the contractor and any people employed or engaged by the contractor to carry out or assist with the work. Refer to the planning list in Appendix 2 for issues to be addressed;
- providing adequate supervision to ensure contractors meet their safety and health obligations according to the Act; and
- consulting with contractors with respect to safety and health planning.

See Section 23D and Subsection 19(1)(b) of the Act.

1.3.2 The risk management process: hazard identification, risk assessment and risk control

The Regulations require employers, main contractors, self-employed people and people having control of the workplace or control of the access to the workplace to identify hazards, assess risks and control the risks.

See Regulation 3.1 of the Regulations.

The Regulations outline a three step process:

1. **identify hazards** – this involves recognising things or processes that may cause injury or harm to the health of a person, such as toxic materials, plant and operating machinery in the vicinity of contaminants;
2. **assess risks** – this involves assessing the risk of injury or harm to a person resulting from each hazard identified in the above step; and
3. **control risks** – this involves implementing control measures to eliminate or reduce the risk of a person being injured or harmed by using the hierarchy (preferred order) of control measures (outlined in the following table).

TABLE 1. HIERARCHY (PREFERRED ORDER) OF CONTROL MEASURES

| | | |
|--|--------------------------------|---------------------------------|
| 1. Elimination – removing the hazard or hazardous work practice from the workplace. | Most effective control measure | |
| 2. Substitution – substituting or replacing a hazard or hazardous work practice with a less hazardous one (eg providing safer plant, equipment or work process). | | |
| 3. Isolation – isolating or separating the hazard or hazardous work practice from people involved in the work or people in the general work areas (eg enclosing systems, relocating employees and installing physical barriers). | | |
| 4. Engineering control – if the hazard cannot be eliminated, substituted or isolated, introducing an engineering control is the next preferred measure. This may include modifications to tools or equipment, or providing guarding to machinery or equipment. | ↓ | |
| 5. Administrative control – this includes introducing work practices that reduce the risk, such as implementing measures to ensure procedures, instruction, training and warning signs are in place. It may include the preparation and distribution of a Site-Specific Safety and Health Plan to all workers prior to work commencing. | | |
| 6. Personal protective clothing and equipment – these should be considered only when other control measures are not practicable or to increase protection. While essential for some work procedures, these should be last in the list of priorities. | | |
| In some instances, a combination of control measures may be appropriate. | | Least effective control measure |

An additional (fourth) step in the process of hazard identification, risk assessment and risk control is **monitoring and reviewing the control measures** to ensure they are continuing to prevent or control exposure to hazards or hazardous work practices.

The risk management process should be conducted as an ongoing process because workplaces are usually constantly changing environments with new hazards being introduced; for example, when new equipment/plant is introduced or the work environment or standards are changed.

In determining the frequency of the monitoring and review processes, consider such things as:

- the level of risk (high-risk hazards need more frequent assessments); and
- the type of work practice or plant involved (there may be particular stages in the life of a piece of equipment where more frequent assessments are appropriate).

Employers must consult with employees, contractors, safety and health representatives (if any) and any other workers on site during these four steps.

1.4 Information and training

The Act requires employers to provide information, instruction, training and supervision so employees are able to perform their work without being exposed to hazards.

This means employers must ensure that:

- information on all identified hazards at the workplace is provided to all workers on a site to whom it is relevant. Information relating to contaminants to be provided to all workers in the contaminated area;
- all workers know how to identify hazards and report them to a supervisor;
- induction, information, instruction, training and supervision in safe procedures, including the use of personal protective clothing and equipment, are provided to all workers;
- training is provided for workers who will work with hazardous substances. This should include the potential health effects, control measures, correct use of protective clothing and equipment and details of health surveillance (when it is needed and what it will involve). In determining the training requirements, employers must consider the functions performed by the employees and the capacities in which they are employed, that is the training covers the requirements for the job to be performed;
- records are kept of all induction and training undertaken for work with hazardous substances;
- all workers are trained in emergency evacuation procedures;
- all workers not fluent in English are provided with information in a language they understand and increased supervision if necessary; and
- training is provided for spill clean up, if workers are required to do this work.

See Subsection 19(1)(b) of the Act.

See Regulation 5.21 of the Regulations and Subsection 19(2) of the Act.

1.5 Supervision

Employers must provide adequate supervision to ensure employees are not exposed to hazards and take reasonable care of their own safety and health and that of others.

Employers should:

- ensure people in supervisory positions have the skills, knowledge and authority to undertake the roles;
- ensure training is ongoing, with regular revision of safe procedures;
- include sufficient monitoring of the work to ensure agreed safe work practices are followed; and
- ensure that personal protective equipment, such as respirators, gloves, footwear, garments and eye and hearing protection, are used and kept in adequate working condition.

1.6 Storage and transport controls for contaminants

The general principles for storage and transport controls include:

- store contaminants in a cool, secure, ventilated area with signage;
- monitor atmospheric contamination and temperature levels in storage areas to ensure they are within appropriate levels;
- choose an appropriate container for storage (eg corrosion-resistant or immune to solvent degradation);

- ensure all containers and packaging are labelled correctly and labels are kept intact. Where contaminants are decanted into smaller containers for storage, the new container must be adequately labelled. As a minimum, the label must contain the name of the product, risk phrases and safety phrases in full text;
- ensure all containers holding unknown substances are labelled as: **UNKNOWN SUBSTANCES – TREAT WITH EXTREME CAUTION;**
- check the compatibility of substances stored together or closely together – store incompatible substances separately and avoid any risks of mixing and cross contamination;
- check all containers against leakage or seepage and keep lids and caps tightly sealed;
- limit access to contaminant storage areas to authorised people only;
- ensure flammable, explosive or toxic substances are stored away from possible sources of electric spark, heat or flame;
- treat samples of contaminants the same as larger quantities;
- ensure appropriate fire fighting and emergency equipment are provided and maintained;
- ensure there is a well developed evacuation procedure with regular drills for situations such as fires, explosions and accidents;
- ensure contaminants are securely contained before and during transport; and
- ensure plant and equipment leaving the site are decontaminated.

The transport of contaminated soils and liquids must be according to the requirements under the Environmental Protection (Controlled Waste) Regulations 2001 administered by the DoE.

Chemicals classed as ‘dangerous goods’ must be stored in accordance with regulations¹ administered by the Resources Division of the Department of Consumer and Employment Protection (formerly administered by the Department of Industry and Resources).

1.7 Workplace amenities and first aid facilities

Providing workplace amenities is part of the employer’s general ‘duty of care’ under the Act. They include, but are not limited to, providing washing facilities, toilets, change rooms and drinking water.

Specific requirements for amenities at the contaminated site should be established as part of the overall site-specific safety and health planning.

Employers should ensure amenities are located away from hazards.

For further guidance, refer to the Commission’s *Codes of practice: First aid facilities and services, workplace amenities and facilities, personal protective clothing and equipment*, available on the internet at www.worksafe.wa.gov.au and from WorkSafe.

¹ Under the *Dangerous Goods Safety Act 2004*, people involved directly or indirectly in storing, handling or transporting dangerous goods are required to take reasonably practicable measures to minimise the risk to people, property and the environment from the goods. There are also requirements for people involved in storing, handling or transporting dangerous goods, such as licensing, reporting and preparation of safety management documents. Consult this legislation for further details.

Decontamination facilities

Safe systems of work must be developed for the decontamination of both workers and equipment.

Where applicable, employers should ensure clean decontamination facilities are provided. These include but are not limited to:

- showers;
- handwashing facilities;
- eye wash facilities;
- a separate clean area;
- areas for the decontamination of all equipment, including washdown areas for trucks; and
- other facilities as appropriate.

If there is a high level of contamination, a separate decontamination unit should be provided for workers, in addition to and separate from other sanitary and washing amenities.

First aid facilities

The Regulations require the employer to provide first aid facilities.

Specific requirements for first aid facilities should be established as part of the overall site-specific safety and health planning.

These should be appropriate for all the hazards identified at the workplace and comply with the Commission's *Codes of practice: First aid facilities and services, workplace amenities and facilities, personal protective clothing and equipment*.

1.8 Personal protective clothing and equipment

If personal protective clothing and equipment have been identified as one of the control measures to minimise exposure to a risk, the employer must make sure these are provided, and should ensure they are kept in a fully operational condition and stored in clean facilities.

Employers should also provide training and instruction in the use of the personal protective clothing and equipment to ensure employees receive the desired level of protection.

Items should be manufactured, selected and used according to an appropriate Australian or Australian/New Zealand Standard or equivalent overseas standard. Appendix 1 of this document contains a listing of some relevant Australian or Australian/New Zealand Standards.

Refer to the Commission's *Codes of practice: First aid facilities and services, workplace amenities and facilities, personal protective clothing and equipment* for further guidance.

1.9 Exposure monitoring

The Regulations include specific requirements for employers, main contractors and self-employed people to assess and reduce the risks from exposure to hazardous substances.

Exposure monitoring is a means of measuring the exposure to contaminants to people working on the site through positional and personal monitoring.

Where a risk assessment indicates exposure monitoring should be carried out:

- the monitoring regime should be determined by a competent person; and
- the monitoring should comply with recognised monitoring standards.

The results of monitoring must be given to anybody who is likely to be exposed to the hazardous substance at the workplace, as soon as the results are available, and also made accessible at all reasonable times to these people.

See Regulations 5.15, 5.20 and 5.22 of the Regulations.

1.10 Health surveillance programs for some hazardous substances

In addition to the requirements for hazardous substances outlined above, under the Regulations, employers, main contractors and self-employed people must provide health surveillance programs for certain scheduled hazardous substances.

'Health surveillance' is the monitoring of a person for the purpose of identifying changes in their health status resulting from exposure to hazardous substances.

This means that, if the health of a person is at risk as a result of exposure to one of the hazardous substances set out in Column 1 of Schedule 5.3 of the Regulations, then the employer, main contractor or self-employed person must ensure that health surveillance of the type set out opposite the substance in Column 2 of Schedule 5.3 is provided at no cost to the person and is supervised by an appointed medical practitioner.

The hazardous substances for which health surveillance must be provided include asbestos, inorganic arsenic, inorganic chromium, benzene, cadmium, creosote, inorganic mercury, polycyclic aromatic hydrocarbons (PAH), crystalline silica, thallium and organophosphate pesticides.

Under the Regulations, the appointed medical practitioner supervising the health surveillance for a person must notify them of the results.

See Regulation 5.24 of the Regulations.

Other hazardous substances

In addition to the hazardous substances listed in Schedule 5.3 of the Regulations for which health surveillance must be provided, there may be other substances on a site which may result in possible health effects from exposure, such as those previously used but now banned, eg organochlorine.

If a risk assessment identifies that these other hazardous substances are present and are likely to result in exposure and affect the health of a person, then the employer must provide health surveillance programs to all people identified as being at risk, if there are methods available to detect indications of disease or health effects.

See Regulations 5.15, 5.23 and 5.19 of the Regulations.

Health surveillance must also be provided where a risk assessment indicates exposure is likely to be in excess of the national exposure standard for a hazardous substance.

1.11 Working alone

The risk of injury or harm for people who work alone may be increased because of difficulties arising during the work (eg drillers on landfill sites hitting pockets of volatile vapours) and when coming into contact with underground services. Emergency situations may also arise because of the sudden onset of a medical condition or from occurrence of a work-related injury.

The mandatory requirement to identify hazards, assess risks and control risks, as far as practicable, includes addressing the hazards and risks when a person will be required to work alone. In some situations, the level of risk may be controlled by avoiding the need for people to work alone.

A means of communication for emergencies, and a procedure for regular contact, must be provided for employees who are isolated because of the time, location or nature of their work.

See Regulation 3.3 of the Regulations.

The Commission's *Guidance note: Working alone*, available on the Internet at www.worksafe.wa.gov.au, should be consulted for further guidance on developing procedures for employees working alone.

2. The Site-Specific Safety and Health Plan

The risk management process of hazard identification, risk assessment and risk control must be carried out by the employer (or the consultant or owner if they are the 'principal') to address the site-specific safety and health hazards and risks.

As part of the risk management process, consider preparing a Site-Specific Safety and Health Plan² to specify how employees' safety and health will be managed.

The Site-Specific Safety and Health Plan should be prepared or revised prior to work commencing on a Preliminary Site Investigation, Detailed Site Investigation, Remediation and Waste Management, addressing information obtained on the contaminants and other potential hazards.

In preparing Site-Specific Safety and Health Plans:

- include a comprehensive risk management process with hazard identification, risk assessment and risk control for each stage of work, including a detailed review of the site and the contaminants and other hazards based on a thorough collection of available data;
- where appropriate, include specialised information from competent environmental consultants and other people and State Government agencies on the contaminants and/or the site history, particularly wherever there is any uncertainty about the site or the contaminants;
- include information from any investigation and assessment reports and plans;
- include site-specific planning of all work activities by a competent person; and
- develop detailed descriptions of safe work practices rather than general safety and health statements.

Consultation between employer and employees and safety and health representatives (if any) must take place during the development and implementation of safe work procedures.

Key issues in the use of Site-Specific Safety and Health Plans include:

- the Site-Specific Safety and Health Plan should be viewed as a working document to be revised as more information is obtained, as not all of the hazards may have been identified. It should be revised or newly prepared before each stage of site development;
- if any uncertainty about contaminants arises, all work that may lead to exposure to the contaminants must stop until the risk management process of identifying hazards and assessing and controlling the risks is carried out and the safety and health information and instructions in the Site-Specific Safety and Health Plan are revised;
- there is a clear intention to provide relevant safety and health information, such as the Site-Specific Safety and Health Plan. This should be made readily available to all workers onsite to ensure quick access to information; and
- Job Safety Analysis (JSA) forms should be prepared by contractors, in consultation with any workers and safety and health representatives (if any), after receipt of the Site-Specific Safety and Health Plan.

See Section 1.3.1 for an explanation of who is considered to be the 'principal'.

See also issues to be addressed in the Site-Specific Safety and Health Plan outlined in Appendix 2.

See definitions section at the beginning of this document for a definition of a 'competent person'.

² These plans are recommended in the DoE guidelines, *Reporting of site assessments* and *Development of sampling and analysis Programs* (in the DoE's contaminated sites management series) and *Schedule B(9) guideline on protection of health and the environment during the assessment of site contamination* (part of the National Environment Protection (Assessment of Site Contamination) Measure 1999), available at www.ephc.gov.au.

3. The Preliminary Site Investigation

See also the planning list for Preliminary Site Investigations in Appendix 2.

See definitions section at the beginning of this document for definitions of 'contaminated' and 'competent person'.

Once indications suggest a site is contaminated, a Preliminary Site Investigation must be carried out to determine the nature and extent of the contamination.

As the Preliminary Site Investigation forms the basis for further work, gathering as much information as possible will assist the risk management processes for further investigation and remediation.

The risk management considerations for the Preliminary Site Investigation include:

- work to be conducted assuming the site may be contaminated with unknown substances;
- work to be carried out by competent environmental consultants with appropriate qualifications and experience due to the complexity of environmental and safety and health hazards and risks;
- work to be conducted according to the DoE requirements and the DoE guidelines for site assessment, management and reporting for contaminated sites in the contaminated sites management series; and
- as much site detail to be obtained as possible (such as the location of stored chemicals) by:
 - examining the topography, site records and local site history and plans;
 - interviewing current and past employees, as practicable;
 - inspecting current site activities;
 - contacting State Government agencies about any relevant records, sampling, investigation reports and complaints relating to the site. The DOIR may be able to assist with information on mine sites or abandoned mine sites; and
 - conducting an investigation into underground storage tanks and associated infrastructure, including pipes. Where applicable, undertake further investigations once infrastructure has been removed.

Before work commences on the Preliminary Site Investigation:

- site owners (when they are ‘the principal’) and/or employers must ensure the risk management process of identifying hazards and assessing and controlling the risks is carried out, as far as practicable, addressing potential contaminants and hazards that may be encountered on the site;
- site owners (when they are ‘the principal’) and/or employers must ensure safety and health information, instruction and training are provided to all consultants/workers, including safety and health procedures; and
- the training provided should include site-specific information on the hazards, use of personal protective clothing and equipment and emergency procedures.

Ongoing risk management:

As work progresses:

- whenever circumstances on the site change, such as when unidentified contaminants are found, a risk assessment must be carried out and the safety and health planning (such as a Site-Specific Safety and Health Plan) must be revised; and
- the risk management process should be conducted on an ongoing basis to check the control measures are working and no new hazards have been introduced as a result of the control measures and whether any new hazards or risks have arisen from changes in the work environment.

Before work commences on the Detailed Site Investigation:

- safety and health information and procedures, such as a Site-Specific Safety and Health Plan, should be supplied to all contractors and workers; and
- any other information collated or reports prepared should also be supplied to contractors and workers.

See Section 1.3.1 for an explanation of the ‘principal’.

4. The Detailed Site Investigation

See also the planning list for Detailed Site Investigations in Appendix 2.

See Section 1.3.1 for an explanation of the legislative obligations for 'the principal'.

Once the Preliminary Site Investigation is complete, a Detailed Site Investigation may be required. This is a more detailed investigation to determine the quantity, location and nature of the contaminants.

The 'principal' (the person engaging contractors) must provide drillers and/or other workers contracted or employed with information (eg consultants' reports and a Site-Specific Safety and Health Plan), instruction and training on possible contaminants and other hazards on site so they are not exposed to hazards and are aware of appropriate controls to be implemented to safeguard safety and health.

The risk management considerations for the Detailed Site Investigation include:

- work to be conducted assuming the site is contaminated. All practicable means must be provided to allow employees and other people involved to work safely;
- work in accordance with:
 - this guidance note's recommendations;
 - information provided in a consultant's report and a Preliminary Site Investigation Report (if prepared);
 - DoE requirements and the DoE guidelines for site assessment, management, sampling and analysis programs and reporting in the contaminated sites management series; and
 - a Site-Specific Safety and Health Plan that is made readily available onsite;
- when drilling or excavation is required, a thorough review of the site to be undertaken, with the development of a sampling and analysis program that is site-specific and has appropriate numbers, depths and locations of samples to comprehensively examine the contaminants on site;
- where appropriate, competent people and other State Government agencies to be consulted who can advise on the contaminants and contaminated sites work; and
- work to be carried out by competent drillers (when drilling is required), contractors and other employees.

Consultation between employers, consultants, employees, safety and health representatives (if any), contractors and any other workers on site must take place during the development and implementation of safe work procedures.

See definitions section at the beginning of this document for a definition of a 'competent person'.

Before work commences on the Detailed Site Investigation:

- site owners/consultants (when they are ‘the principal’) and employers must ensure the risk management process of identifying hazards and assessing and controlling the risks is carried out, as far as practicable, addressing potential contaminants and hazards that may be encountered on site; and
- site owners/consultants (when they are ‘the principal’) and employers must ensure contractors, employees and any other workers are provided with safety and health information, instruction and training on the contaminants and other hazards so they are not exposed to them, such as, for example:
 - a sampling and analysis program that is site-specific and outlines the objectives and correct methodologies for sampling and sample preservation, transportation and storage, when drilling is to be conducted;
 - when drilling or excavation is to take place, drilling rig or excavation specifications and instructions (eg procedures for the safe operation, set up and take down of the rig, safe movement of equipment and safety of other workers on site);
 - plans showing the location of the underground services (with a double check of details, where possible). If drawings are not available, they should be prepared and compared with Dial 1100 Before You Dig details and other information from power and gas utilities, the local government authority and the owner/occupier;
 - plans for the control of movement of vehicles, plant and pedestrians, including establishment of zones, such as an identified and clearly marked exclusion zone. Refer to Appendix 2 (number 18 in the further explanation list) for more information on zones;
 - a Site-Specific Safety and Health Plan that includes information obtained from the Preliminary Site Investigation and is made readily available onsite; and
 - where risks are considered hazardous, JSAs should be prepared for different processes, setting out the method that will be used and the ways the hazards will be managed.

Ongoing risk management:

As work progresses:

- whenever circumstances on the site change, such as when unidentified contaminants are found, a risk assessment must be carried out and the safety and health planning (such as a Site-Specific Safety and Health Plan) must be revised; and
- the risk management process should be conducted on an ongoing basis to check the control measures are working and no new hazards have been introduced as a result of them and whether any new hazards or risks have arisen from changes in the work environment.

Before work commences on any remediation:

- a newly prepared or revised Site-Specific Safety and Health Plan should be supplied to all the workers and made readily available onsite at all times; and
- any information collated or reports prepared should also be supplied to contractors and workers.

Refer to the DoE guideline, Development of sampling and analysis programs, available on the internet at www.environment.wa.gov.au

The DoE guidelines for collection and analysis of samples must be followed, which recommend samples be analysed by a National Association of Testing Authorities accredited analytical laboratory.

When Detailed Site Investigation Reports are prepared, they should include:

- details of all the investigatory activities (see the following section on classification of contaminants);
- comprehensive information on all contaminants at the site;
- details of the occupational and environmental standards used in the assessment of the soil, sediment and water;
- information on safety and health issues arising at the site, such as decomposing gases from landfill; and
- details of factors that will make remediation of the site more hazardous, such as risks from rising groundwater.

Once the Detailed Site Investigation is completed, the DoE requirements for site classification should be consulted.

4.1 Classification of contaminants and the site

After the Detailed Site Investigation is complete, remediation should not commence until the level of contamination has been determined and a remediation plan has been developed by a competent person who can advise on the contaminants and contaminated sites work.

Where appropriate, contact State Government agencies for specialised information.

The results of laboratory tests of samples must be compared with DoE guidelines for assessment levels for soil, sediment and water. These guidelines should assist with determining the presence and level of contamination at the site, the risks to human health and the environment, and the response levels for particular contaminants.

If no guideline levels have been developed for a specific contaminant, then site-specific investigation and response levels should be developed and approval of these must be gained from the DoE and other State Government agencies (as appropriate). The investigation and response levels should be based on accurate and appropriate laboratory and field results and adequate assessment of the risks to human health and the environment.

The investigation and the laboratory results should be included in a Detailed Site Investigation Report (if prepared).

As part of the obligations under the Act to provide safety and health information, details on the levels of contamination must be provided to all workers carrying out the remediation and addressed in their safety and health training.

Refer to Section 1.3.1 of this document for more information on the obligations to provide safety and health information and training.

5. Remediation

Remediation of a site is the activity undertaken to eliminate, contain, correct, control or remove any contaminant with risks to the environment or human health.

Substantial remediation may be involved at a contaminated site, such as engineering work. Wastes may be dug out, sealed or decontaminated and liquid and mud wastes may be extracted through drilling and/or pumping of wells.

The risk management considerations for the remediation include:

- work according to:
 - this guidance note's recommendations;
 - information provided in a Preliminary Site Investigation Report and a Detailed Site Investigation Report (if they are prepared);
 - the DoE requirements and DoE guidelines for site management and reporting for contaminated sites in the contaminated sites management series;
 - a safe system of work that does not place people at risk of exposure to hazards; and
 - a Site Management Plan and a newly prepared or revised Site-Specific Safety and Health Plan that is made readily available onsite;
- where appropriate, competent people and State Government agencies to be consulted on the contaminants and contaminated sites work;
- work to be carried out by competent drillers (when drilling is required), contractors and employees; and
- the Site Management Plan should be prepared according to DoE requirements and include:
 - a thorough review of the site based on adequate data collection to assess the contaminants and the safety and health risks, with indications of any data gaps;
 - validation of soil, sediment and groundwater remediation by systematic sampling across the walls and base of all excavations; and
 - a Remediation Action Plan and a Waste Management Plan.

Consultation between employer, employees, safety and health representatives (if any), contractors and any other people appointed who will be on site must take place during the development and implementation of safe work procedures.

See also the planning list for remediation in Appendix 2.

See definitions section at the beginning of this document for a definition of a 'competent person'.

See Section 1.3.1 for an explanation of the 'principal'.

Before work commences on the Remediation:

- site owners/consultants (when they are 'the principal') and employers must ensure the risk management process of identifying hazards and assessing and controlling the risks is carried out, as far as practicable, addressing potential contaminants and hazards that may be encountered on site;
- site owners/consultants (when they are 'the principal') and employers must ensure contractors, employees and any other workers are provided with safety and health information, instruction and training on the contaminants and other hazards so they are not exposed to them, such as, for example:
 - a Site Management Plan containing a Remediation Action Plan and Waste Management Plan;
 - a newly prepared or revised Site-Specific Safety and Health Plan that is made readily available onsite; and
 - where risks are considered hazardous, JSAs for different processes, setting out the method to be used and the ways the hazards will be managed.

Ongoing risk management

As work progresses:

- when further investigation on any contamination is required, all work on the site that may lead to exposure to the contaminants must cease until:
 - a risk assessment has been carried out on the newly identified hazards and exposure risks and all safety and health issues have been addressed and the safety and health planning (such as the Site-Specific Safety and Health Plan) has been revised to include new information obtained on the contaminants; and
 - a revised Site Management Plan containing a revised Remediation Action Plan and Waste Management Plan is developed according to DoE recommendations/requirements; and
- the risk management process should be conducted on an ongoing basis to check the control measures are working and no new hazards have been introduced as a result of them and whether any new hazards or risks have arisen from changes in the work environment.

6. Waste management

Wastes from a contaminated site include liquid and drilling fluid wastes extracted from drilling and/or pumping of wells, spoils from excavations, cuttings from drilling, water from bores, pits or excavations, samples, washdown water, protective clothing and equipment and other wastes. These wastes may be stored on site until analytical results are received.

All measures must be undertaken to prevent transport of stored material from entering the environment. Waste material should be disposed of at an appropriately licensed landfill site or waste facility.

The safety and health issues for workers involved in the final waste disposal, such as workers at landfill sites, are addressed in the next section.

DoE requirements for waste management and disposal

Waste management and disposal must be according to the DoE requirements under the Environmental Protection (Controlled Waste) Regulations 2001. These include:

- the transporter having a DoE licence to transport the particular waste; and
- the waste disposal facility having an appropriate DoE licence to take the particular waste where relevant.

The risk management considerations for the Waste Management stage include:

- work in accordance with:
 - information provided in the Preliminary Site Investigation Report and the Detailed Site Investigation Report (if prepared);
 - DoE requirements for waste management (see above) and DoE guidance for sampling from soil material to be taken to landfill (in the DoE's *Guidelines for landfill acceptance of solid waste to landfill*);
 - a safe system of work that does not place people involved at risk of exposure to hazards. The principal must consult people involved in the removal processes in the development of safe work procedures; and
 - a Remediation Action Plan and Waste Management Plan in a Site Management Plan developed according to any DoE recommendations/requirements and a newly prepared or revised Site-Specific Safety and Health Plan;
- work to be based on detailed information on the contaminants to ensure appropriate precautions are taken;
- where appropriate, specialised information should be obtained from a competent person and State Government agencies on the contaminants and contaminated sites work; and
- work to be carried out by competent contractors, employees and other workers.

Consultation between employer, employees, safety and health representatives (if any), contractors and any other people who will be working on site must take place during the development and implementation of safe work procedures.

See also the planning list Waste Management in Appendix 2.

See Section 1.3.1 for more information on the principal's legal obligations for safety and health at a workplace.

See definitions section at the beginning of this document for a definition of a 'competent person'.

See Section 1.3.1 for an explanation of the 'principal'.

Before work commences on the Waste Management:

- site owners/consultants (when they are 'the principal') and employers must ensure the risk management process of identifying hazards and assessing and controlling the risks is carried out, as far as practicable, addressing potential contaminants and hazards that may be encountered on site;
- site owners/consultants (when they are 'the principal') and employers must ensure contractors, employees and any other workers are provided with safety and health information, instruction and training on the contaminants and other hazards so they are not exposed to them, for example:
 - a Waste Management Plan that includes assessment of the life cycle of contaminants and their particular packaging, handling and transport requirements; and
 - a newly prepared or revised Site-Specific Safety and Health Plan that is made readily available onsite; and
- where risks are considered hazardous, JSAs should be prepared for different processes, setting out the method that will be used and the ways the hazards will be managed.

Ongoing risk management

As work progresses:

- when further investigation on any contamination is required, all work that may result in exposure to the contaminants must cease until:
 - a risk assessment has been carried out on the hazards and exposure risks and all safety and health issues have been readdressed and the safety and health planning has been revised to address new information obtained on the contaminants; and
 - a revised Waste Management Plan and Remediation Action Plan is developed in consultation with a competent person and an accredited DoE auditor; and
- the risk management process should be conducted on an ongoing basis to check the control measures are working and no new hazards have been introduced as a result of them and whether any new hazards or risks have arisen from changes in the work environment.

7. Waste disposal at landfill sites or waste facilities

Wastes from contaminated sites are disposed of at landfill sites or other facilities licenced by the DoE.

Employers must ensure that waste disposal work is based on:

- provision of relevant information obtained during initial assessment of the wastes;
- the safe handling, transportation and disposal of substances so employees are not exposed to hazards; and
- disposal of wastes in compliance with licences issued by the DoE.

Waste disposal work must be carried out by competent contractors, employees and other workers.

Consultation between employer, employees, safety and health representatives (if any) and any other people working on site must take place during the development and implementation of safe work procedures.

See also the planning list for Waste Disposal in Appendix 2.

See definitions section at beginning of this document for a definition of a 'competent person'.

Before work commences on the Waste Disposal:

- site owners (when they are 'the principal'), employers and/or people having control of the workplace must ensure the risk management process of identifying hazards and assessing and controlling the risks is carried out, as far as practicable, addressing potential contaminants and hazards that may be encountered on site;
- employers and/or people having control of the workplace must ensure contractors, employees and any other workers are provided with safety and health information, instruction and training on the wastes and other hazards so they are not exposed to hazards, such as, for example:
 - safety and health procedures for dealing with different wastes that are in accordance with DoE guidelines;
 - information on the contaminants to ensure appropriate precautions are taken. This should include assessment of the life cycle of contaminants and the particular packaging, handling and transport requirements;
 - adequate personal protective clothing and equipment as is practicable to protect against the hazards and as detailed in the safety and health procedures; and
 - training and supervision for any work dealing with substances; and
- where risks are considered hazardous, JSAs should be prepared for different processes, setting out the method that will be used and the ways the hazards will be managed.

Ongoing risk management

As work progresses:

- where new hazards are identified, or the working environment changes, the employer must again conduct the risk management process (identify hazards, assess risks and control risks) and provide necessary information, instruction, training and supervision; and
- the risk management process should be conducted on an ongoing basis to check the control measures are working and no new hazards have been introduced as a result of them and whether any new hazards and risks have arisen from changes in the work environment.

8. Ongoing monitoring or management of the site

In some instances, ongoing post-remediation monitoring may be required to avoid problems associated with contamination rebound. It may also be required to assess the success of the remediation, or when the groundwater was contaminated or the remediation strategy involved containment of the contamination.

The development of an ongoing post-remediation monitoring program must include the risk management process to identify the hazards and assess and control the risks for contractors, employees and any other workers carrying out the monitoring.

Before monitoring commences, contractors, employees and any other workers involved in the program must be consulted in the safety and health planning. They must also be provided with information and training on the contaminants and other hazards and safe work practices.

9. Site development

Work on the redevelopment of the site should only commence once clearance is obtained from the DoE that the site has been cleaned up according to State Government standards.

Reports prepared by environmental consultants and records on the remediation should be retained and transferred to new owners when the land is sold.

Signage should be placed on the site to indicate the contaminants found and the processes undertaken to remove the contaminants.

If further contaminants are found during development, all work that may lead to exposure to the contaminants must cease until the safety and health issues have been addressed in accordance with the recommendations in this document for each stage of site development.

Appendix 1: References and further information

Contaminated sites and waste management documents

Documents in the Department of Environmental Protection's contaminated sites management series, available on the internet at www.environment.wa.gov.au

National Environment Protection Council (Australia) (1999). *Schedule B(9) guideline on protection of health and the environment during the assessment of site contamination*. Canberra. Available on the internet at: www.ephc.gov.au

Waste Management Association of Australia (WA Branch) (1999). *Code of practice for safety and health within the waste management and recycling industries*. This was approved by the Minister for Labour Relations in November 1999 as a code of practice under Section 57 of the *Occupational Safety and Health Act 1984*.

Commission for Occupational Safety and Health documents

Code of practice: Excavation

Code of practice: First aid facilities and services, workplace amenities and facilities, personal protective clothing and equipment

Code of practice: Managing noise at workplaces

Code of practice: Manual handling

Guidance note: Election of safety and health representatives, representatives and committees and resolution of issues

Guidance note: General duty of care in Western Australian workplaces

Guidance note: Preparing for emergency evacuations at workplaces

Guidance note: Safe movement of vehicles at workplaces

Guidance note: Working alone

Plant in the workplace: Making it safe: A guide for employers, self-employed persons and employees.

Powered mobile plant: Making it safe: A guide for employers, self-employed persons and employees.

These are available on the internet at www.worksafe.wa.gov.au and from WorkSafe.

Australian and Australian/New Zealand Standards for personal protective clothing and equipment

AS/NZS 1269 Occupational noise management

AS/NZS 1270 Acoustics – hearing protectors

AS/NZS 1336 Recommended practices for occupational eye protection

AS/NZS 1337 Eye protectors for industrial applications

AS/NZS 1338 Filters for eye protectors

AS/NZS 1715 Selection, use and maintenance of respiratory protective devices

AS/NZS 1716 Respiratory protective devices

AS/NZS 2161 Occupational protective gloves

National exposure standards for hazardous substances

Refer to the National Occupational Health and Safety Commission's:

- Hazardous Substances Information System (HSIS) database at www.nohsc.gov.au;
- *Adopted national exposure standards for atmospheric contaminants in the occupational environment* [NOHSC:1003(1995)]; and
- *Guidance note on the interpretation of exposure standards for atmospheric contaminants in the occupational environment* [NOHSC:3008(1995)].

Advice from a competent person should be sought on the interpretation and application of national exposure standards due to their technical nature.

Appendix 2: Site-specific safety and health planning list

This list outlines some of the safety and health issues that should be addressed as part of the risk management process of identifying hazards and assessing and controlling the risks for each stage of development of a contaminated site. It is provided as a general guide – specific safety and health issues for a particular site must be addressed, as failure to fully address all the issues may present serious risks to workers.

Consultation between employer, employees, safety and health representatives (if any), contractors and any other people who will be working on site must take place during the development and implementation of safe work procedures.

Uncertainty about contaminants – in the advent of any uncertainty about contaminants on the site, work that may lead to exposure to the contaminants must cease until further information and advice is obtained and the safety and health planning is revised.

Guide to reading the planning list

- (i) boxes with shading indicate issues to be addressed, eg
- (ii) boxes with shading and a black dot indicate issues where particular attention should be paid in the planning, eg •
- (iii) further information – for those items with a footnote number (eg site assessments²), further information is provided at the end of the planning list.

Using the list – when using this list for planning and/or a Site-Specific Safety and Health Plan, issues not applicable for a particular site should be clearly indicated. When using it for an induction program, items should be reviewed before work starts.

| SITE-SPECIFIC SAFETY AND HEALTH PLANNING LIST – for use in planning contaminated sites work | | | | | | |
|---|------------------------------|-----------------------------|-------------|------------------|----------------|--|
| | Prelimin. Site Investigation | Detailed Site Investigation | Remediation | Waste Management | Waste Disposal | |
| Safety and health issues to be addressed or considered include: | | | | | | |
| 1. Information from government agencies/organisations/competent people | | | | | | |
| Information to be obtained includes: | | | | | | |
| • DoE guidelines for contaminated sites/waste management | | | | | | |
| • local government authorities for site history/underground infrastructure queries | | | | | | |
| • competent persons who can advise on the contaminants, contaminated sites work and previous activities on the site. Dial 1100 Before You Dig may assist with infrastructure queries. | | | | | | |
| • State Government agencies (as appropriate) for specialist information | | | | | | |

Appendix 2: cont'd

| SITE-SPECIFIC SAFETY AND HEALTH PLANNING LIST – for use in planning contaminated sites work | | | | | | |
|--|------------------------------|-----------------------------|-------------|------------------|----------------|---|
| | Prelimin. Site Investigation | Detailed Site Investigation | Remediation | Waste Management | Waste Disposal | |
| 2. Consultation with all people onsite | | | | | | |
| People to be consulted include: | | | | | | |
| • employees and employers | • | • | • | • | • | • |
| • contractors and any other people appointed | • | • | • | • | • | • |
| 3. Planning for all people on site | | | | | | |
| People to be addressed in the planning include: | | | | | | |
| • environmental consultants | • | • | • | • | • | • |
| • surveyors | | • | | | | |
| • drillers | • | • | • | • | • | • |
| • drivers/front end loader drivers/operators of earthmoving equipment | | | • | • | | |
| • crane drivers | | | • | • | | |
| • workers at waste disposal facilities/landfill sites | | | | | • | |
| • visitors | • | • | • | • | • | • |
| 4. Development of site preparation procedures (eg building stabilisation) before work proceeds¹ | • | • | • | • | • | • |
| 5. Preparation of a Site-Specific Safety and Health Plan for each stage of site development See Sections 6-9 (below) for issues to be addressed in the plan | | | | | | |
| 6. Provision of general site information | | | | | | |
| Information to be provided includes: | | | | | | |
| • site history details and information on previous uses of site | • | | | | | |
| • site condition details | • | | | | | |

Appendix 2: cont'd

| SITE-SPECIFIC SAFETY AND HEALTH PLANNING LIST – for use in planning contaminated sites work | | | | | |
|--|------------------------------|-----------------------------|-------------|------------------|----------------|
| | Prelimin. Site Investigation | Detailed Site Investigation | Remediation | Waste Management | Waste Disposal |
| <ul style="list-style-type: none"> • site information such as maps, location of chemical stores and results of any site assessments² • statements on the objectives and scope of the work • establishment of roles, responsibilities and supervision on site • name and contact details of a site safety officer • relevant legislation, guidelines and standards • State Government agencies to be notified • project arrangements, including plans for continuity of work and revision of safety and health planning when work is delayed | • | | | | |
| <p>7. Implementation of the risk management process (ie hazard identification, risk assessment and risk control)</p> <p>Hazards and risks to be addressed during the risk management process include:</p> <ul style="list-style-type: none"> • chemical hazards and their location, exposure risks and control measures³ • procedures for workers finding contaminants known to be on the site⁴ • procedures for workers finding unidentified contaminants⁵ • Material Safety Data Sheets (MSDS) for any hazardous substances used, such as those used in drilling rig operation • biological hazards and the exposure risks and control measures⁶ • radiological hazards and the exposure risks, control measures and location⁷ • physical hazards, exposure risks and control measures⁸ • environmental hazards (such as those arising from work activities and changes in the weather) and the exposure risks and control measures⁹ • health risk assessment, medical examinations and exposure monitoring¹⁰ | • | • | • | • | • |

Appendix 2: cont'd

| SITE-SPECIFIC SAFETY AND HEALTH PLANNING LIST – for use in planning contaminated sites work | | | | | | |
|---|------------------------------|-----------------------------|-------------|------------------|----------------|--|
| | Prelimin. Site Investigation | Detailed Site Investigation | Remediation | Waste Management | Waste Disposal | |
| • procedures for working alone and/or in remote locations | • | | | | | |
| • personal protective clothing and equipment specifications and details of conditions under which they are to be worn | • | • | • | • | • | |
| • equipment list | | | | | | |
| • plant safety with details of safe operation of plant and schedule for regular safety checks of plant | | | | | | |
| • sampling and analysis program ²⁰ | • | • | • | | | |
| • drilling rig operation procedures ²¹ | | • | | | | |
| • well and bore construction procedures ²² | • | | • | | | |
| • excavation and heavy machinery procedures ²³ | | • | • | | | |
| • degassing and/or decommissioning of underground storage tanks ²⁴ | | | • | | | |
| • loading and unloading techniques | | | • | | | |
| • backfill materials verification and assessment according to DoE guidelines | | | • | | | |
| • waste management and contamination control procedures ²⁵ | | | • | | | |
| • details of DoE permits/licences for waste management, transporter and waste disposal facility ²⁶ | | | | • | | |
| • decontamination procedures for personnel, equipment and the site ²⁷ | • | • | • | • | • | |
| • provision of clean amenities (eg toilets, lunchrooms and showers) and drinking water facilities | | | | | | |
| • plans and procedures for dismantling and disposal of buildings and structures | | | | | | |
| • schedule for regular review of systems of work | | | | | | |

Appendix 2: cont'd

| SITE-SPECIFIC SAFETY AND HEALTH PLANNING LIST – for use in planning contaminated sites work | | | | | | |
|--|------------------------------|-----------------------------|-------------|------------------|----------------|--|
| | Prelimin. Site Investigation | Detailed Site Investigation | Remediation | Waste Management | Waste Disposal | |
| <p>9. Provision of training, induction and supervision The requirements include:</p> <ul style="list-style-type: none"> • prerequisite training and qualifications for the specific work²⁸ • project-specific safety training for site entry, personal protective clothing and equipment and cleaning procedures²⁹ • appropriate supervision for the hazards involved • training and supervision for work with hazardous substances • induction program for all employees • checks that the safety and health procedures and site-specific safety and health plan (if prepared) are understood by all workers | • | • | • | • | • | |
| <p>10. Preparations for emergencies Procedures and plans to be developed include:</p> <ul style="list-style-type: none"> • emergency procedures including evacuation and rescue³⁰ • details and location of emergency equipment • procedures for any unexpected problems that might arise from ground being disturbed, particularly for inactive sites³¹ • precautions against fire or explosion • details of first aid facilities to be provided • contact details for the nearest medical centre, hospital and the Fire & Emergency Service Authority of Western Australia | • | • | • | • | • | |
| <p>11. Establishment of reporting and record keeping Requirements or considerations include:</p> <ul style="list-style-type: none"> • notification of injuries and diseases to WorkSafe according to requirements of Regulations 2.4 and 2.5 of the Regulations | | | | | | |

Appendix 2: cont'd

| SITE-SPECIFIC SAFETY AND HEALTH PLANNING LIST – for use in planning contaminated sites work | | | | | | |
|--|------------------------------|-----------------------------|-------------|------------------|----------------|---|
| | Prelimin. Site Investigation | Detailed Site Investigation | Remediation | Waste Management | Waste Disposal | |
| <ul style="list-style-type: none"> recording of all induction and training for work that involves hazardous substances as per Regulation 5.21 of the Regulations recording of activities, such as movement of waste on site and offsite to its final destination³² recording of all contaminants found on site a safety and health log book for the recording of all work activities, the weather, site monitoring data and notes on problems plans for the maintenance, control and preservation of all records | | | | | | |
| 12. Provision of safety and health information to workers | | | | | | |
| Considerations include: | | | | | | |
| <ul style="list-style-type: none"> distribution of safety and health information, such as a Site-Specific Safety and Health Plan, to all workers access to site documents for all workers on site, including ready access in the event of emergencies | • | • | • | • | • | • |
| | • | • | • | • | • | • |

Appendix 2: cont'd

SITE-SPECIFIC SAFETY AND HEALTH PLANNING LIST FURTHER EXPLANATION OF ITEMS

1 **Site preparation procedures**

Before work starts, site preparation procedures should be prepared to address issues such as the stabilising of building structures and elimination of ignition sources in flammable hazard areas.

2 **Site information**

Detailed site information should be provided including title details, geological survey maps, location of chemical stores and underground and aboveground services (eg gas lines and electricity) and the results of any site assessments.

3 **Chemical hazards**

The safety and health planning must address the identification of potential chemical hazards, the exposure risks and control measures. It must include details of the types of contaminants present and their characteristics (such as form and concentrations), the toxicity and exposure risks to health (via all exposure routes into the body) and other safety and health hazards that may arise and details of appropriate control measures.

4 **Procedures for finding contaminants known to be on the site**

Procedures must be provided for workers finding contaminants known to be on the site. They could include the following steps:

- (i) where there are risks of exposure to the contaminants, cease work activities and disturbance of the site;
- (ii) secure the area against unauthorised entry;
- (iii) consult the environmental consultant's report and the Site-Specific Safety and Health Plan (if prepared);
- (iv) assess the amounts and toxicity of the hazardous substances and the potential exposure routes into the body;
- (v) consult DoE guidelines before containing drilling spoils and fluids;
- (vi) review the work practices and control of the hazards based on information gained from the above steps and from conducting the risk management process; and
- (vii) amend work practices, with consultation with all workers onsite in the revision of safety and health procedures and the Site-Specific Safety and Health Plan (if prepared).

5 **Procedures for finding unidentified contaminants**

Procedure must be provided for workers finding unidentified contaminants. They could include the following steps:

- (i) where there are risks of exposure to contaminants, cease all work activities and disturbance of the site;
- (ii) secure the area against unauthorised entry;
- (iii) contact the site manager and site safety officer;
- (iv) obtain advice and information from the environmental consultant;
- (v) where appropriate, contact a competent person or a State Government agency who can provide specialised information on the potential contaminants and contaminated sites work;
- (vi) review the work practices, the sampling and analysis program (if applicable) and control of the hazards based on information gained from the above steps and from conducting the risk management process; and

Appendix 2: cont'd

(vii) amend work practices, with consultation with all workers onsite in the revision of the sampling and analysis program, the safety and health procedures and the Site-Specific Safety and Health Plan (if prepared).

6 Biological hazards

The planning must address the identification of potential biological hazards (including such hazards as bites and stings, dust, allergic reactions and infections from contact with, or exposure to, contaminated soil or wastes), assessment of the exposure risks, and provision of adequate control measures, including, where appropriate, heat stress management procedures.

7 Radiological hazards

The planning must address the identification of potential radiological hazards, the exposure risks and provision of adequate control measures.

8 Physical hazards

The planning must address the identification of any physical hazards (eg confined spaces, manual handling and slips, trips and falls), assessment of the exposure risks, and details of adequate control measures.

9 Environmental hazards arising from work activities control measures

The planning must address the identification of environmental hazards arising from changes in environmental conditions, assessment of the exposure risks, and details of adequate control measures, including instructions for safe work during adverse weather conditions.

10 Health risk assessment, medical examinations and exposure monitoring

Where applicable, guidelines should be provided for baseline medical examinations, checks of fitness for use of personal protective clothing and equipment, annual medical examinations and specific health monitoring for particular hazards. Where a detailed health risk assessment is necessary, it should be indicated that the Department of Health has been contacted with regard to the specific work. Under the Regulations, certain substances require health surveillance (see Section 1.10 Health surveillance programs of this document for more information).

11 Soil and dust management procedures

Procedures should be provided for soil management and dust suppression and checks on dust build-up in plant and vehicles.

12 Gases, fumes and air emissions management procedures

Where necessary, control measures must be provided to ensure a safe atmosphere, effective ventilation, proper testing of the air and regular monitoring.

13 Vibration management

Where necessary, the planning must include identification of hazards from vibrations from drilling or excavation work, assessment of the risks, and provision of control measures.

14 Information on landfill and waste disposal location

As there may be uncertainty over landfill content, information must be provided on the landfill and the risk management process carried out with regard to its specific hazards and risks.

Appendix 2: cont'd

15 **Site monitoring details**

Details should be provided on necessary site monitoring, such as guidelines for:

- monitoring equipment and the operating requirements and frequency of readings;
- locations where samples should be taken;
- action to be taken when contamination readings reach predetermined levels;
- reviews of work when there is identification of potential exposure to danger pathways, such as those from flammable gases;
- estimation of the safe perimeters;
- checks on access and control of movements; and
- identification of a drilling rig and heavy equipment exclusion zone.

16 **Identification of prohibited activities and limitations of work**

A list of prohibited activities and limitations of work should be provided. Smoking must be banned while using power tools on asbestos cement sheeting and using non-intrinsically safe electrical equipment.

17 **Underground and above ground services clearance and isolation**

Plans should be provided for the establishment of safe operations within the vicinity of the services. If drawings are not available onsite from the owner/occupier, they should be prepared by a competent person and compared with Dial 1100 Before You Dig details and other information from the power and/or the local government authority. Note that, in some instances, Dial 1100 Before You Dig and the local government authority will not have any details on the underground services. Specialist advice and staff, in some instances, will be required to advise on locating underground services.

18 **Access, security and control of movement arrangements and establishment of zones**

These should include:

- access procedures;
- plans for the control of movement of vehicles, plant and pedestrians;
- establishment of work zones, such as a rig exclusion zone, decontamination zone and support zone;
- the isolation of hazardous areas; and
- necessary signage.

19 **Communication system procedures**

Procedures should be established for:

- onsite communications;
- offsite communications;
- communications between workers and work zones; and
- the set of signals to be used.

20 **Sampling and analysis program**

Prior to any work commencing, a site-specific sampling and analysis program should be prepared, based on a thorough Preliminary Site Investigation that has examined:

- the type and characteristics of actual and potential contaminants;
- the extent and migration pathways of actual and potential contamination;
- the site characteristics such as soil type; and
- the requirement for work in stages, as more site information is gained.

The DoE guidelines should be consulted for recommendations on sampling and developing a program.

Appendix 2: cont'd

21 **Drilling rig operation procedures**

Drilling rig procedures should be provided and include:

- general safety precautions for all workers within the vicinity of rig, including a site-specific induction;
- evidence of rig maintenance and rig inspections in compliance with relevant standards and manufacturer's instructions; and
- the safe operation, set up and take down of the rig.

22 **Well and bore construction procedures**

These should include:

- safe drilling techniques;
- installation of bores by drillers with adequate training in contaminated sites work;
- procedures developed according to the DoE guidelines, development of sampling and analysis programs; and
- minimisation of risks from disturbance of contamination or extraction of contaminated water.

23 **Excavation and heavy machinery procedures**

These should include procedures for the safe operation of excavators and other machinery. With excavation, control measures should be provided to prevent the collapse or failure of a trench or open excavation, such as ensuring the stability of support systems and adjacent structures, backfilling and placement of materials and loads.

24 **Degassing and/or decommissioning of underground storage tanks**

Procedures should be provided for safe flushing of all product lines and removal of any residual products by an appropriate contractor. Tanks that have contained petroleum should be removed according to guidelines administered by the Resources Safety Division of the Department of Consumer and Employment Protection.

25 **Waste management and contamination control procedures**

Before work with wastes proceeds, information must be provided on the types and levels of contamination to ensure appropriate precautions are taken, such as:

- assessment of the life cycle of contaminants; and
- details of the particular packaging, handling and transport requirements.

Safe work procedures must be provided for:

- sampling of wastes to determine appropriate disposal or remediation options;
- record keeping to track the movement of wastes on the site and to their final destinations;
- the custody and placement/temporary storage of wastes;
- the handling of wastes such as waste drums;
- dealing with spillages;
- the transport of wastes around the site and offsite;
- the clean up; and
- the disposal of waste materials and used equipment.

26 **DoE permits and licences**

Compliance with requirements for DoE licences/permits should be checked, such as:

- the transporter having a DoE licence to transport the particular waste; and
- the waste disposal facility having an appropriate licence to receive the particular waste material.

Appendix 2: cont'd

27 Decontamination procedures for personnel, equipment and the site

For recommendations for contamination facilities, refer to Section 1.7 Workplace amenities and first aid facilities.

28 Prerequisite training and qualifications for the specific work

Operators of heavy machinery, such as cranes, drills and excavators, must have an appropriate certificate of competency and be competent in contaminated sites work.

29 Project-specific safety training and induction

Safety and health training and induction must be provided for:

- the type of work;
- the specific hazards;
- the personal protective clothing and equipment to be used; and
- the plant to be used.

30 Emergency procedures including evacuation and rescue

Details should be provided of the circumstances under which emergency services should be used.

31 Procedures for unexpected problems

Procedures should be provided to deal with any problems that may arise when the ground has to be disturbed, especially if it is an inactive site (such as those with underground services or tanks).

32 Recording of activities

Procedures should be provided for the documenting of activities including:

- training provided;
- all health monitoring;
- waste disposal; and
- reports and notifications to State Government agencies.