

**Australian Exploration Drilling Co.**



# **Safety and Environmental Management Plan**

**Australian Exploration Drilling Co.**

Level 1 125C The Parade, Norwood SA 5067

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## Australian Exploration Drilling Co.

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# HEALTH AND SAFETY POLICY

Australian Exploration Drilling Co. is fully committed to achieving the highest standard of safety performance, by creating and maintaining a safe work place for all personnel associated with the business's activities.

Australian Exploration Drilling Co. are committed to:

- Compliance with all relevant legislative requirements including regulations, standards and codes of practice, and where appropriate legislative requirements do not exist, implement standards that reflect the company's commitment to safety and health.
- Providing adequate personal protective equipment (PPE) to carry out the required tasks.
- Providing safe systems of work to minimise the risk of injury to personnel.
- Identifying work place hazards and providing a system of hazard control to ensure work areas and equipment are safely maintained.
- Providing a system of continuous improvement in safety and health performance through ongoing monitoring, auditing and review of our safety, health and environment management systems.
- Providing appropriate information, instruction and training to employees so that they are able to carry out their roles safely and in a manner consistent with the company's high standards.
- Communicate openly with employees and the government on occupational health and safety issues; ensure that all employees, contractors and visitors are informed of and understand their obligations in respect of this policy.

All Australian Exploration Drilling Co. employees have a responsibility to protect the health and safety of themselves and fellow workers. Employees are expected to follow safe work practices, report workplace hazards, wear appropriate PPE, and report incidents and near misses immediately.

All employees have the right, and obligation, to cease work immediately if they believe the workplace is unsafe.

Every employee of Australian Exploration Drilling Co. is encouraged to contribute to the improvement of the company's safety system.

*Peter Bennett*

**Peter Bennett**  
**Director**  
**Australian Exploration Drilling Co.**



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# **ENVIRONMENTAL POLICY**

Australian Exploration Drilling Co. is committed to achieving the highest standard of environmental performance.

We are dedicated to:

- Achieving zero harm to the environment.
- Compliance with all relevant legislative requirements and industry guidelines.
- Providing systems of work to minimise the risk of environmental damage.
- Identifying environmental hazards and providing a system of hazard control.
- Providing a system of continuous improvement.
- Providing appropriate information, instruction and training to employees to ensure they can carry out their roles in a manner consistent with the company's environmental standards.
- Communicating openly with employees and clients on environmental issues.
- Ensuring all employees, sub-contractors and visitors are informed of, and understand their obligations, under this policy.

*Peter Bennett*

**Peter Bennett**  
**Director**  
**Australian Exploration Drilling Co.**



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# **DRUG AND ALCOHOL POLICY**

Australian Exploration Drilling Co. is committed to achieving a drug and alcohol free workplace.

Australian Exploration Drilling Co. is dedicated to:

- A zero tolerance for drugs and alcohol in the workplace.
- Ensuring the workplace is free from personnel under the influence of drugs and alcohol.
- Providing systems to ensure testing is conducted and employees are able to report personnel suspected of being under the influence of drugs and alcohol.
- Providing a system of disciplinary action and employee assistance following positive testing.
- Compliance with all relevant legislative and client specific requirements.
- Providing appropriate information, instruction and training to employees to ensure they understand the effects of alcohol and drugs.
- Ensuring all employees, sub-contractors and visitors are informed of, and understand their obligations, under this policy.

*Peter Bennett*

**Peter Bennett**  
**Director**  
**Australian Exploration Drilling Co.**



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# FATIGUE MANAGEMENT POLICY

Australian Exploration Drilling Co. understands fatigue is a considerable risk and as such is committed to achieving zero harm to personnel due to the effects of fatigue.

Australian Exploration Drilling Co. is dedicated to:

- Zero harm to personnel.
- Ensuring a system is in place to recognise fatigue related risk associated with the business in general, and with specific projects.
- Provide a system to implement controls to manage fatigue risks in the workplace.
- Ensuring systems are in place to manage fatigue-related risk associated with working conditions. In particular shift duration, roster systems, accommodation and travel arrangements.
- Compliance with all relevant legislative and client specific requirements.
- Providing appropriate information and communicate openly with employees and clients on fatigue related issues.
- Ensuring employees understand their right and obligation to cease work if they believe fatigue is compromising the safety of themselves or others.
- Ensuring all employees, sub-contractors and visitors are informed of, and understand their obligations, under this policy.

*Peter Bennett*

**Peter Bennett**  
**Director**  
**Australian Exploration Drilling Co.**

## 1.0 INTRODUCTION

Australian Exploration Drilling Co. was established in 2007 and is based in Norwood, South Australia. The company is co-owned by Peter Bennett, Colin Ludwig, Terry Betts and Roger Lord.

Whilst the company is newly established, the owners have extensive experience in drilling projects throughout Australia and overseas, as well as prior experience in successful former drilling companies.

Australian Exploration Drilling Co. specialise in exploration and grade control drilling projects (both open cut and underground) throughout Australia and overseas.

## 2.0 COMPANY DETAILS

Trading Name	Australian Exploration Drilling Company
Address	Level 1, 125C The Parade Norwood, 5067 South Australia
Phone	(08) 8333 2155
Fax	(08) 8364 5737
Contact	Peter Bennett Director
Email	pbennett@aedco.net

## 3.0 SCOPE

The Safety and Environmental Management Plan (SEMP) is applicable to all work carried out by Australian Exploration Drilling Co. and applies to employees, visitors and sub-contractors.

For specific projects requiring additional safety or environmental controls a Project Management Plan will be developed in addition to this SEMP to address these issues.

## 4.0 STANDARDS AND LEGISLATION

The following standards and legislation were consulted in the preparation of the SEMP:

- Mining Act.
- Industry Codes of Practise.
- Manufacturers Guidelines.
- Environmental Protection Act.

## 5.0 POLICIES AND OBJECTIVES

### 5.1 Company Policies

Australian Exploration Drilling Co. has the following company policies:

- Health and Safety Policy.
- Environmental Policy.
- Drug and Alcohol Policy.
- Fatigue Management Policy.

### 5.2 Company Objectives

In line with their commitment to providing the highest standard of health, safety and environmental performance, Australian Exploration Drilling Co. has set the following company objectives.

- Zero harm to people and the environment.
- Compliance to the Company SEMP.
- Compliance to relevant legislation and site specific requirements.
- Reporting of all incidents, accidents and near misses.
- Reporting of all workplace hazards.
- Continuous improvement of the SEMP.

### 5.3 Sustainability

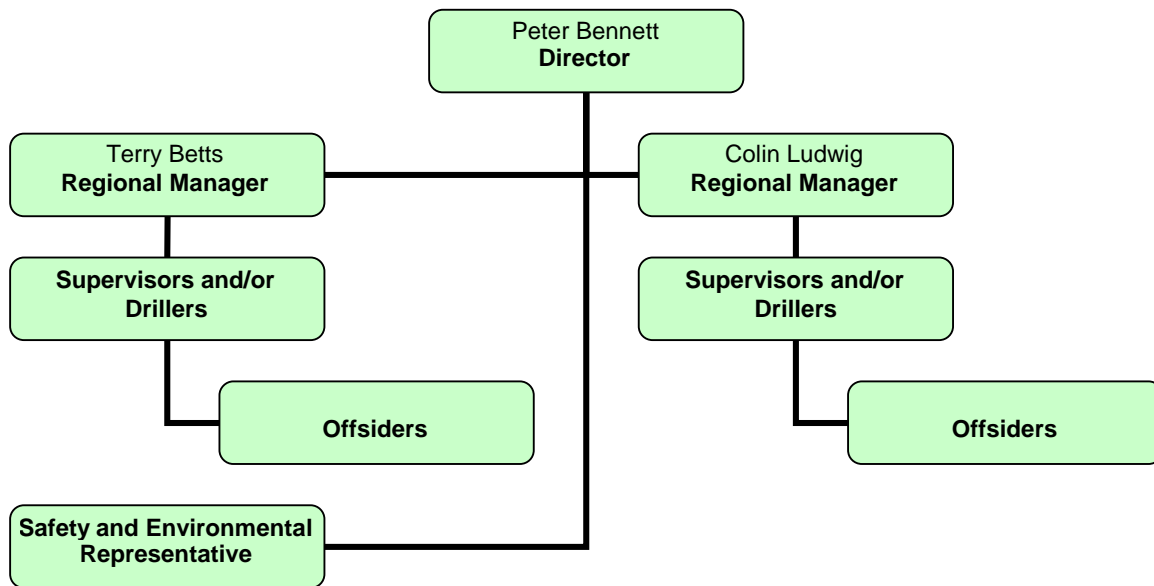
Sustainability is the process of introducing business practices today to ensure the living conditions of future generations are as good, if not better, than the conditions experienced at present.

Australian Exploration Drilling Co. actively incorporates the following sustainable practices into their operation:

- Supporting local businesses (i.e. buying local supplies).
- Supporting suppliers who incorporate sustainable practices into their business.
- Actively seeking environmentally friendly, and energy efficient products.
- Consider sustainability principles when introducing new Safe Work Procedures.

## 6.0 ORGANISATIONAL STRUCTURE

The organisational structure of Australian Exploration Drilling Co. can be represented as follows:



## 7.0 ROLES AND RESPONSIBILITIES

### 7.1 Director

The Director has the following responsibilities under the SEMP:

- Implementation and support of the SEMP and compliance to all legislative requirements.
- Set company safety and environmental objectives.
- Ensure all personnel are aware of their duties and responsibilities in regard to safety and the environment.
- Ensure the Safety and Environmental Representative is given the resources and support necessary to undertake their required duties.
- Provide adequate training, resources, services, facilities and initiatives to ensure all personnel are able to undertake their roles in accordance with the SEMP.
- Ensure the completion and corrective action of all audit, inspection and hazard identification action items.
- Monitor performance against company objectives and the implementation of strategies following poor trends in performance.
- Demonstrate leadership commitment through personal participation.
- Investigate all identified hazards, incidents, accidents and near misses.
- Ensure all employees understand they have the right to cease work immediately if they feel the workplace is unsafe, or is putting the environment at significant risk.

## 7.2 Regional Managers / Supervisors

Reporting to the Director, the Regional Managers and Supervisors have the following responsibilities under the SEMP:

- Ensure compliance to the SEMP and site specific requirements.
- Ensure company safety and environmental objectives are being met.
- Ensure site personnel are aware of their duties and responsibilities in regard to safety and the environment.
- Ensure training, resources, services, facilities and initiatives provided by the company are being utilised as intended.
- Ensure hazards identified in the work area are immediately rectified and/or reported immediately to the Director.
- Demonstrate leadership commitment through personal participation.
- Investigate all identified hazards, incidents, accidents and near misses, with guidance from the Director.

## 7.3 Drillers

Reporting to the Regional Managers, the Drillers have the following responsibilities under the SEMP:

- Ensure compliance to the SEMP and site specific requirements.
- Ensure company safety and environmental objectives are being met.
- Ensure completion of daily inspections.
- Ensure a high standard of housekeeping is maintained at all times.
- Ensure safety equipment is available and maintained.
- Ensure the Safety and Environmental Representative is informed of all relevant matters regarding safety and environmental issues.
- Understand they have the right to cease work immediately if they feel the workplace is unsafe, or is putting the environment at significant risk.

## 7.4 Offsiders

Reporting to the Driller, Offsiders have the following responsibilities under the SEMP:

- Ensure compliance to the SEMP and site specific requirements.
- Follow direction of the Driller, and carry out tasks in accordance with Safe Work Procedures.
- Complete daily inspections as directed by the Driller.
- Ensure a high standard of housekeeping is maintained at all times.
- Use as directed, and maintain, company supplied Personal Protective Equipment.
- Inform the Safety and Environmental Representative all relevant matters regarding safety and environmental issues.
- Understand they have the right to cease work immediately if they feel the workplace is unsafe, or is putting the environment at significant risk.

### 7.5 Safety and Environmental Representative

The Safety and Environmental Representative has the following responsibilities under the SEMP:

- Assist the Director with ensuring compliance to the SEMP.
- Provide a channel of information of safety and environmental related issues for employees.
- Demonstrate leadership commitment through personal participation.
- Assist in the investigation of all identified hazards, incidents, accidents and near misses.

### 7.6 Visitors

Visitors are deemed as persons who have not been formally inducted and who only intend to remain at the work place for short periods of time (i.e. less than 3 days).

The following restrictions apply to visitors:

- Must have approval from the Director prior to entering the workplace.
- Must be accompanied at all times by a fully inducted employee.
- Must receive the Australian Exploration Drilling Co. Visitors Induction.
- Must not operate equipment unless authorised by the Director.
- Must be in a fit state for work.
- Is responsible for an appropriate level of personal safety and the safety of personnel around them.
- Must wear provided Personal Protective Equipment as directed.
- Must follow instructions of the Australian Exploration Drilling Co. representative.
- May be required to present for random drug and alcohol testing, at the discretion of Australian Exploration Drilling Co. or the client.

### 7.7 Sub-Contractors

Prior to engaging a sub-contractor the following criteria must be satisfied:

- The Director must approve the sub-contractors access to the workplace. The Director will ensure the sub-contractor is reputable, licensed or qualified (if required) and competent to complete the required tasks.
- If the sub-contracting company has a management plan, it must be submitted to the Director. The Director will ensure the plan is of an acceptable standard. If the sub-contractor does not have a management plan, or it is not deemed to be of an appropriate standard, they will be provided with a copy and required to comply with the Australian Exploration Drilling Co. SEMP.
- Sub-contractors may be required to present for random drug and alcohol testing at the discretion of Australian Exploration Drilling Co. or the client.

## 8.0 PRE-EMPLOYMENT REQUIREMENTS

To ensure prospective Australian Exploration Drilling Co. employees are suited to the high standards required by the company, the follow pre-employment requirements have been implemented:

- Interview processes include questions to assess the candidate's attitude towards safety and the environment, their level of commitment, perception of risk and behavioural attributes.
- Reference checks from previous employers to ensure appropriate experience and safety performance.
- Complete pre-employment medical.

## 9.0 INDUCTIONS

### 9.1 General Induction

All permanent employees must undergo the Australian Exploration Drilling Co. General Induction.

The induction is presented by the Director, or his delegate, and adheres to the following format:

- Overview of the company policies, objectives and commitment to safety and the environment.
- Introduction to key personnel, explanation of the company structure, and the expected responsibilities of the new employee.
- Review of the SEMP.
- Overview of Safe Work Procedures, hazard identification, JHA's, risk assessment and tagging.
- Familiarisation with the equipment and instruction of the safe operation of equipment.
- Recall test to ensure the new employee understood the concepts of the induction.

All new employees will be required to read the SEMP and sign off to accept their specific responsibilities within the plan.

### 9.2 Visitors Induction

Visitors are deemed as persons who have not been formally inducted and who only intend to remain at the work place for short periods of time (i.e. less than 3 days).

Visitors are required to undergo a Visitors Induction, which can be presented by any inducted Australian Exploration Drilling Co. employee.

The Visitors Induction includes the following components:

- Ensuring the Visitor remains with their host at all times.
- Location of the muster areas, first aid kits, fire extinguishers and facilities.
- Location of the equipments emergency features (i.e how to shut down equipment).

- Location of emergency contact methods (i.e. phones or radio), emergency contact numbers and emergency procedures.
- PPE requirements.

At the completion of the induction the visitor will be required to sign off on the induction format to accept their specific responsibilities as outlined in the induction.

### **10.0 LICENCES, TRAINING AND COMPETENCY**

#### **10.1 Drivers Licence**

A current Drivers Licence for the type of vehicle to be operated is required for all Australian Exploration Drilling Co. employees. Licence details will be recorded on the Australian Exploration Drilling Co. Training Register.

#### **10.2 Senior First Aid**

All Australian Exploration Drilling Co. employees are required to have current Senior First Aid certificates. Training will be conducted within three months of employment.

Current certificates are kept on file at the office, and details recorded on the Training Register.

#### **10.3 Competency Assessments**

To ensure drillers are competent to operate Australian Exploration Drilling Co. equipment, a Competency Assessment will be conducted by either the Director or Regional Manager.

The process involves a practical assessment to ensure the employee is capable of operating machinery in a safe manner.

#### **10.4 Additional Training**

As deemed appropriate by the Director, additional training may be required for specific work projects or circumstances. Such additional training may include:

- Defensive 4x4 Training.
- Crane and/or dogging.
- Fire extinguisher training.
- Cross cultural training for employees who interact with people from different cultures.

#### **10.5 Training Register**

Australian Exploration Drilling Co. maintain a Training Register which includes details regarding employee licensing and completed training. The register also serves as a tool to ensure ongoing training requirements are met.

## 11.0 FITNESS FOR WORK

### 11.1 Drugs and Alcohol

As outlined in the Australian Exploration Drilling Co. Drug and Alcohol Policy, the company is committed to providing a workplace free from the influence of alcohol and drugs.

As such, Australian Exploration Drilling Co. is dedicated to:

- A zero tolerance for drugs and alcohol in the workplace.
- Ensuring the workplace is free from personnel under the influence of drugs and alcohol.
- Providing systems to ensure testing is conducted and employees are able to report personnel suspected of being under the influence of drugs and alcohol.
- Providing a system of disciplinary action and employee assistance following positive testing.
- Compliance with all relevant legislative and client specific requirements.
- Providing appropriate information, instruction and training to employees to ensure they understand the effects of alcohol and drugs.
- Ensuring all employees, sub-contractors and visitors are informed of, and understand their obligations, under this policy.

In accordance with the Policy, all employees must present themselves in a state that allows them carrying out their work safely.

Employees are required to advise the Director before commencing work of any existing medical conditions, current medications which may affect drug testing, and any social or family issues that may influence their ability to carry out their work safely.

Australian Exploration Drilling Co. may instigate random drug and alcohol testing at the discretion of the Director. Alternatively employees who suspect work colleagues are under the influence of drugs or alcohol are obliged to report the situation to their supervisor or the Director. All employees will be required to co-operate fully with testing conducted by Australian Exploration Drilling Co. or their client.

A test will be considered positive if above 0% blood alcohol concentration (BAC), and above the detection limit for drugs. Disciplinary action (which could result in dismissal) will be taken for any employee testing positive to alcohol or drugs, and will be at the discretion of the Director. Disciplinary action will be determined on a case by case basis dependant upon the circumstances of the incident. Blatant disregard of company policy, or knowingly putting oneself or others at risk will result in instant dismissal.

Assistance with rehabilitation may be supplied by the company for employees with drug and alcohol dependency, at the discretion of the Director.

### 11.2 Fatigue Management

As outlined in the Australian Exploration Drilling Co. Fitness for Work Policy, the company is dedicated to:

- Zero harm to personnel.
- Ensuring a system is in place to recognise fatigue related risk associated with the business in general, and with specific projects.
- Provide a system to implement controls to manage fatigue risks in the workplace.

- Ensuring systems are in place to manage fatigue-related risk associated with working conditions. In particular shift duration, roster systems, accommodation and travel arrangements.
- Compliance with all relevant legislative and client specific requirements.
- Providing appropriate information and communicate openly with employees and clients on fatigue related issues.
- Ensuring employees understand their right and obligation to cease work if they believe fatigue is compromising the safety of themselves or others.
- Ensuring all employees, sub-contractors and visitors are informed of, and understand their obligations, under this policy.

Australian Exploration Drilling Co. understand that fatigue is a significant risk to its employees, and as such is committed to identifying and reducing fatigue related risk.

Fatigue can be the result of:

- Overwork.
- Insufficient sleep or insufficient relaxation time.
- Stress (from work or home).

Information to employees regarding fatigue will be provided during the General Induction and periodically via safety alerts.

Australian Exploration Drilling Co. will aim to minimise fatigue related risk as far as practicable. However, all employees must present themselves in a state that allows them to carry out their work safely, and must advise the Director before commencing work if fatigue may influence their ability to carry out their work safely.

Australian Exploration Drilling Co. will assess fatigue related risks on a project by project basis. Work involving considerable fatigue-related risk will be risk assessed prior to commencement to ensure risk reduction controls are implemented.

### **11.3 Working Conditions**

Working conditions (including working hours, shift requirements and rosters) may vary depending upon the length of the project, the location of the project and specific site requirements.

Specific conditions will be discussed with employees prior to projects. However the following conditions must be adhered to for all Australian Exploration Drilling Co. projects:

- Maximum of 14 hours work per day (including travel to site).
- Minimum of 10 hours break between work days, including shift change.

## **12.0 INJURY REHABILITATION PROGRAM**

### **12.1 Employee Rehabilitation**

Australian Exploration Drilling Co. is committed to assisting injured personnel back to work as quickly as possible, and to support employees following personal tragedy.

Following a workplace injury Australian Exploration Drilling Co. will provide:

- Rehabilitation as soon as practicable following injury, consistent with medical advice.

- Alternate duties for personnel able to return to the workplace in a limited capacity, consistent with medical advice.
- Support for the employee and their family during the rehabilitation process.
- Open communication between the injured employee, their treating doctor and the Director.
- A rehabilitation program, in accordance with medical advice.

### 13.0 RESOLUTION OF HSE ISSUES

Employees are required to raise any HSE issue with the Director. Resolution of the issue will involve the following considerations:

- Can the hazard or risk be isolated?
- What are the numbers and locations of employees affected?
- Are appropriate temporary measures possible?
- Is environmental monitoring an option?
- What will the time lapse be until the hazard or risk can be permanently corrected?
- Who will be responsible for rectifying the issue?

Discussions between the employee and Director shall ensure both are satisfied with the outcome.

As soon as possible after the resolution, the issue must be communicated to all employees, and reported to the client / government agency / community as required.

Where there is any threat to the health and safety of any persons at the workplace, the Director may request work to cease, and possible issue alternate duties for employees.

### 14.0 SAFETY AND ENVIRONMENTAL INITIATIVES

Initiatives will be provided for employees to promote a healthy, safe and environmentally aware workplace.

At the discretion of the Director, incentives will be given for innovative suggestions that reduce the risk to people and the environment, improve sustainable practices, enhance the business, or reduce costs.

### 15.0 PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment (PPE) will be provided by Australian Exploration Drilling Co., appropriate for the work being conducted.

PPE (where appropriate) will comply with Australian Standards.

Typical PPE requirements include:

- Long sleeved collared shirt (in high visibility colour if required by the site) and long trousers.
- Steel capped safety boots.

- Safety glasses.
- Hard hat whilst outside of vehicles and offices.
- Hearing protection whilst operating machinery.
- Dust masks whilst working in dusty conditions.

It is the responsibility of all employees to ensure PPE equipment is worn correctly and properly maintained.

### **16.0 MEETINGS AND COMMUNICATION**

#### **16.1 Project Kick-Off Meeting**

Prior to commencing work on a new site a Project Kick Off Meeting will be carried out involving all employees working on the project.

The Kick Off Meeting will provide a forum to discuss the following:

- Discussion of the project requirements.
- Site specific safety and environmental issues.
- Emergency procedures specific for the project area.
- Emergency contact details.
- Communications (ie radio channels, phone numbers of key personnel).
- JHA and procedure requirements.
- Waste disposal.

#### **16.2 Daily Pre-Start Meetings**

Daily Pre-Start Meetings are aimed at identifying potential hazards and discussing methods to manage the risk.

Issues typically discussed during the Daily Pre-Start Meetings include:

- Specific tasks for the day.
- Maintenance issues.
- Emergency response plan (for new sites).
- Work site hazards (safety and environmental).
- Safety equipment.

Safety and environmental hazards identified during the Daily Pre-Shift Meeting must either be addressed immediately, or added to the HSE Action Register.

#### **16.3 Monthly Health, Safety and Environmental Committee Meeting**

The Health, Safety and Environmental (HSE) Committee includes the Director, Safety and Environmental Representative and Drillers and/or Offsiders.

The meetings are held monthly and provide a forum for joint discussion on all health, safety and environmental issues, with the aim of improving management practises.

The HSE Committee Meeting agenda shall use the following format:

- Review of previous action items and the HSE Action Register.
- Review of relevant incidents.
- Review of procedural changes, JHAs, risk assessments, and hazards identified during the previous month.
- Inspection / audit findings.
- Review of performance against the company objectives.
- Any new business.

Minutes from the Monthly HSE Meetings are recorded in kept on file at the Australian Exploration Drilling Co. office.

### **16.4 HSE Alerts**

Any HSE issues, such as incidents within the company; incidents involving similar equipment to that used by Australian Exploration Drilling Co., changes to Safe Work Procedures, safety information provided by suppliers, or general information will be communicated with employees via an HSE Alert.

Depending upon the severity of the information, the HSE Alert will either be discussed immediately with the work group, or during the following Pre-Shift Meeting.

Copies of HSE Alerts will be maintained at the Australian Exploration Drilling Co. office.

## **17.0 INSPECTIONS AND AUDITS**

### **17.1 Daily Rig and Equipment Inspections**

Inspections are conducted on light vehicles, support vehicles and the rig daily to identify any maintenance issues or hazards to personnel or the environment.

Daily equipment checks include:

- Visual inspection of the equipment.
- Check fuel, water, battery and oil levels. Check for leaks.
- Check condition of hoses, cables, hooks and shackles.
- Check first aid kit and extinguisher.
- Operation of lights, beacon, horn and seat belts.
- Check condition of spare tyres, jack, tools.
- Identify any new hazards.

Daily Equipment Inspections are the responsibility of the driver of the vehicle or the operator of the machine (i.e. Driller).

Significant issues arising from the inspection must be reported to the Driller immediately. Issues which cannot be rectified immediately must be reported to the Director and added to the HSE Action Register.

### 17.2 Equipment Maintenance Schedules

All Australian Exploration Drilling Co. equipment and vehicles are serviced regularly to ensure the in-built safety systems are operating correctly and the machines are in good working order.

All servicing is conducted by qualified mechanics, and conducted in accordance with, and at intervals consistent with, manufacturers recommendations.

Servicing information is maintained in the Australian Exploration Drilling Co. office.

### 17.3 Safety and Environmental Audits

The Director, Regional Manager or Safety and Environmental Representative will periodically conduct Environmental and Safety Audits.

The audits will be conducted quarterly (unless otherwise required by the client) and will involve:

- Inspection of the safety equipment (such as first aid kit supplies, fire extinguishers, PPE and safety signage).
- Inspection of environmental equipment (such as spill response kit supplies).
- Inspection of the workplace for housekeeping and trip hazards.
- Inspection of the condition of tools and equipment.
- Ensuring MSDS's are available and sufficient.
- Behaviour observations to ensure procedures are being followed, and at-risk behaviour is minimised.

Audit reports will be kept on file at the Australian Exploration Drilling Co. office.

### 17.4 HSE Systems Audit

On an annual basis a review of the HSE management tools will be conducted.

The audit will review the following items:

- SEMP.
- Safe Work Procedures.
- Forms.

The audit will be conducted by the Director or the Safety and Environmental Representative.

Audit reports will be kept on file at the Australian Exploration Drilling Co. office.

### 17.5 HSE Action Register

The HSE Action Register is used as a tool to track the completion of identified hazards or items from inspections or audits requiring action.

The Register includes the name of the person nominated to action the issues, and an accepted completion date. The progress of items on the Action Register are discussed during the Monthly HSE Meetings.

## 18.0 SAFE WORK PROCEDURES

Safe Work Procedures are prepared for routine tasks conducted by Australian Exploration Drilling Co. employees, including:

- Mobilising to site.
- Conduction Pre-Start Inspections.
- Drilling.
- Changing and Sharpening the Bit.
- Lifting Using the Hiab.

It is the responsibility of all employees to carry out work in accordance with the Safe Work Procedures.

New employees will be trained in the Safe Work Procedures applicable to their role and work activity.

Safe Work Procedures will be reviewed during the HSE Systems Audit and amended as required.

New or amended Safe Work Procedures will be circulated to all employees. All employees will have ready access to Safe Work Procedures applicable to their role.

## 19.0 CHANGE MANAGEMENT

### 19.1 Procurement Purchasing

Prior to purchasing new equipment the following procedure will be undertaken:

- A thorough study will be undertaken by the Director to assess how the new equipment will affect employees and current practises (including an assessment of ergonomics, maintenance requirements, manual handling etc).
- Discussions with current clients may be undertaken to determine site specific requirements with regards to the proposed equipment.
- A detailed risk assessment will be conducted by the Director to identify the risks associated with the new equipment. Controls will be discussed to minimise the risk as required.
- If the new equipment is deemed acceptable, and will result in an improvement to the existing method of completing the task, the new equipment will be purchased.
- Existing procedures and safety systems will be amended.
- Prior to commissioning the new equipment training will be conducted to ensure all employees are aware of the features of the new equipment and modifications to the existing procedures.

### 19.2 Other Changes

Additional changes which may require change management, such as a risk assessment and procedural amendment, include:

- A significant change in materials (i.e. new chemical with different handling/usage/disposal requirements).

- A significant change in techniques (i.e. a new drilling method).
- An amendment to the manufacturers specification.
- An amendment to work practices due to an incident involving equipment or techniques used by Australian Exploration Drilling Co.

## 20.0 HAZARD ANALYSIS AND RISK ASSESSMENT

### 20.1 Hazard Identification

Hazards can be defined as something that has the potential to cause harm (meaning health, safety or environmental harm).

Hazards can be identified through a Job Hazard Analysis (JHA), during daily inspections or throughout the course of a day.

All employees must report hazards immediately to their supervisor.

### 20.2 Job Hazard Analysis

A JHA is a process of breaking down a task to identify potential hazards (both safety and environmental). JHA's must involve all members of the work group, and should be completed on the standard Australian Exploration Drilling Co. JHA form.

JHA's involve listing the individual tasks of a job and identifying the hazards associated with those tasks. The listed tasks are then risk assessed (using the risk assessment process discussed below) to identify at-risk tasks. Controls are then implemented to reduce the risk to an acceptable level.

JHA's MUST be completed for all tasks not covered by a Safe Work Procedure, or when a particular work place has hazards which vary from the usual working conditions.

Training in identifying when to use and how to complete a JHA is provided to employees during the General Induction.

Completed JHA's are filed in the office.

### 20.3 Risk Assessment

Risk Assessment is a process of quantifying the risk associated with a particular hazard. Risk Assessment is conducted by the employees carrying out the work as well as the Safety and Environmental Representative or the Director.

Risk Assessment is completed during the JHA process to determine the level of risk (called the risk ranking) associated with an identified hazard. The risk ranking is determined by the likelihood and the possible consequence of the risk.

Likelihood can be defined as:

Likelihood	Description
Very Likely	Could happen regularly
Likely	Could happen occasionally
Unlikely	Could happen, but only rarely
Very Unlikely	Could happen, but probably never will

Consequence can be defined as:

<b>Health and Safety Consequence</b>	<b>Environment and Heritage Consequence</b>
First aid treatment	Limited damage to area of low significance
Medical treatment injury	Minor short term damage to environmental or heritage area
Lost time injury	Moderate effect on environment or heritage
Fatality or permanent severe disability	Significant environmental or heritage damage, with long term effect

The likelihood and consequence can then be plotted on the risk assessment matrix to rank the risk.

		<b>Consequence</b>			
		<b>First Aid / Limited Damage</b>	<b>MTI / Short Term Damage</b>	<b>LTI / Moderate Damage</b>	<b>Fatality / Long Term Damage</b>
<b>Likelihood</b>	<b>Very Likely</b>	Medium	High	Very High	Very High
	<b>Likely</b>	Low	Medium	High	Very High
	<b>Unlikely</b>	Very Low	Low	Medium	High
	<b>Very Unlikely</b>	Very Low	Very Low	Low	Medium

Interpretation of the risk ranking is as follows:

<b>Risk Ranking</b>	<b>Interpretation</b>
Very High	Immediate action required. Risk Unacceptable.
High	High priority.
Medium	Medium priority.
Low	Low priority.
Very Low	Very priority. Perhaps risk acceptable.

If the risk ranking is very high, work must cease immediately until the risk is reduced.

A risk ranking of very low will generally not require the implementation of controls. However, this will be judged on a case by case basis during the JHA process.

The next step is to implement management controls to reduce the risk ranking of each particular hazard. The following hierarchy of controls should be used as a guide to suggest

potential risk-reducing control measures. The controls should be investigated in the order shown below, so that PPE is last control to be investigated.

### **Hierarchy of Controls**

**Eliminate.** The complete elimination of the hazard.

**Substitute.** Replacing the material or process with a less hazardous one.

**Redesign.** Redesigning the equipment or work process.

**Separate.** Isolating the hazard by guarding or enclosing it.

**Administrative.** Providing controls for hazards which may include such actions as limiting the time of exposure, rotating personnel, training / re-training of personnel and the use of procedures.

**Personal Protective Equipment.** Use properly fitted PPE where other controls are not practical; impact minimisation equipment such as spill clean up material or dust suppression measures.

Once the controls are in place the risk analysis process must be re-evaluated to determine the new risk ranking, with the implemented controls. The new risk ranking is termed the "residual risk".

If the residual risk ranking is still too high, then further controls must be implemented.

## **21.0 INCIDENT INVESTIGATION AND REPORTING**

All incidents including injury, equipment damage, environmental damage, breach of safety requirements, non-conformance, or near misses must be reported using the Australian Exploration Drilling Co. Incident/Accident Report. Incident must be reported immediately, with the forms completed by the end of the shift in which the incident occurred.

The Director, and client representative must be notified immediately of all incidents.

Following an incident work must not resume until actions have been taken to reduce the risk of re-occurrence.

For incidents involving significant injury/damage the Director will conduct an investigation.

The investigation will determine the root causes of the incident and instigate the implementation of controls to minimise the risk of the incident re-occurring.

Incident / Accident Report Forms will be filed at the office.

## **22.0 CRISIS AND EMERGENCY PROCEDURES**

### **22.1 First Aid Kits and First Aid Training**

First Aid kits are available at all Australian Exploration Drilling Co. work sites, and within all company vehicles.

It is the responsibility of the Driller to ensure the first aid kits are adequately stocked.

Senior First Aid training will be provided for all employees, within three months of employment.

## **22.2 Fire Extinguishers**

Fire extinguishers will be available in all mobile equipment and must be maintained and serviced as required.

It is the responsibility of the Driller to ensure the fire extinguishers are maintained appropriately.

## **22.3 Emergency Response Plans**

The emergency response plan will vary for the specific workplace and will be discussed during Kick Off Meetings at the commencement of new projects. Employees will be given emergency contact phone numbers and will be equipped with suitable communication methods (such as mobile phones, satellite phones or radios).

Muster points will be determined based on the specific site but will take into consideration access and egress and prevailing wind conditions.

## **22.4 Fire Emergencies**

The following summarises the issues employees must consider when faced with a fire emergency:

- Raise assistance immediately.
- Fire extinguishers should only be used when safe to do so.
- If possible isolate fuel to starve the fire.
- Consider a safe means of exit when fighting a fire.

## **22.5 Vehicle Accident Procedure on Public Roads**

The following steps should be taken if faced with a vehicle accident on a public road:

- Stop and activate emergency hazard lights.
- Protect injured personnel from further harm (i.e. turn engine off, stop fuel leaks).
- Call 000, give all details and remain in contact with emergency personnel.
- Secure the area to prevent public harm.
- Render assistance to the casualties.
- Record all details of the accident.

## **22.6 Lightening Procedure**

Operating equipment and outdoor work should stop if lightening is considered a danger.

If personnel are caught in an electrical storm they must lower the mast (if time permits), cease work and retreat to the vehicle, office or camp until the storm passes.

Personnel should not leave the vehicle, stand under a tree, or stand in flat open areas during an electrical storm.

## **23.0 LIGHT VEHICLE SAFETY**

### **23.1 Vehicle Requirements**

All Australian Exploration Drilling Co. vehicles are registered, roadworthy, and comprehensively insured. Registration and insurance details are kept on file in the office.

All Australian Exploration Drilling Co. employees must abide by state road rules, and the traffic rules implemented by the specific site.

When vehicles are unattended, the engine must be switched off, the park brake applied and the vehicle left in gear. Vehicles must never be left idling unattended.

### **23.2 Journey Management Plan**

If Australian Exploration Drilling Co. employees are required to travel long distances or to remote locations a journey management plan must be implemented.

Journey management involves the employee notifying a responsible person (usually the Director, or his delegate) of the planned route, estimated time of arrival and contact details should the employee not arrive at the nominated time.

The responsible person must initiate a search if the employee does not call within 2 hour of the estimated time of arrival.

The search will first involve contacting the employee, or a representative at the destination. If confirmation of safe arrival cannot be attained the responsible person must either arrange a search or contact the local police station.

## **24.0 MACHINERY, TOOLS AND ELECTRICAL EQUIPMENT**

### **24.1 Machinery and Tools**

The following applies to the use of machinery and tools:

- All hand tools must be fit for the purpose and maintained in a safe working condition.
- Defective tools must be removed from the workplace.
- Correctly rated discs must be used on portable grinders at all times.
- Portable grinders must have dead-man switches.
- Cutting discs cannot be used for cutting unless fixed and fully guarded.
- All guarding must be in accordance with Australian Standard AS 4024.
- Tools must be inspected on a regular basis as part of the inspection process.

### **24.2 Electrical Equipment**

The following applies to the use of electrical equipment:

- Persons working on electrical plant or equipment must possess appropriate qualifications.
- All electrical equipment must comply with Australian Standards AS 3000 (installations), AS 2790 (portable generators) and AS 3199 (electrical cables).
- All electrical equipment must be tagged.

- All portable electrical equipment must have earth leakage protection and must be inspected, tested and tagged.

### 24.3 Welding

The following applies to welding:

- Welding must only be conducted by employees approved by the Director.
- Suitable PPE must be worn at all times whilst welding (including face shield and gloves).
- All combustible materials must be removed from the workplace prior to welding.
- A fire extinguisher must be readily available.
- If necessary a spotter should be used.
- A screen should be used if there is a risk to other persons.

### 24.4 Pressure Vessels

The following applies to pressure vessels (i.e. compressors):

- Pressure vessels must be maintained and tested for integrity as stipulated by the manufacturer, and/or legislative requirements.
- Modifications to pressure vessels (unless carried out by a qualified person) is not permitted.
- Any damage to pressure vessels must be reported to the Director immediately and, if necessary, repaired prior to further use.

## 25.0 CONFINED SPACES

By definition a confined space is an enclosed area which is not a usual place of work, has only one entry and exit point, and has the potential to cause harm due to a lack of oxygen, an explosive atmosphere, or poisonous gases.

Confined spaces include trenches, tanks and pressure vessels.

While it is considered unlikely Australian Exploration Drilling Co. employees would be required to work in a confined space, the following applies should a confined space situation arise:

- No person can enter a confined space unless a permit (obtained through the client) has been authorised.
- A JHA must be completed.
- A stand-by person must be used and a confined space log must be completed.
- Adequate training in confined space has been provided.
- The Director has given approval to proceed with the work.

## **26.0 ISOLATION PROCEDURES**

### **26.1 Danger Tags**

Danger Tags are used to protect people from harm, and must be used when a piece of equipment has the potential to cause injury (to either the person working on the machine, or the person potentially operating the machine).

A Danger Tag must be attached to the isolation point (i.e. the ignition), and can only be removed by the person placing the tag or the Director.

### **26.2 Out of Service Tags**

Out of Service Tags are used to identify equipment requiring mechanical repairs.

A completed Out of Service Tag must be placed on the isolation point (i.e. the ignition) to notify other employees of the repairs being conducted.

The Tag must be removed following completion of the repairs. Anyone can place an Out of Service Tag, and the Tag can be removed by any person qualified to deem the equipment serviceable.

## **27.0 WORKING AT HEIGHTS**

When a person is at risk of falling from any height, effective measures must be taken to prevent that fall. Effective measures include:

- Guard rails.
- Fall arrest equipment (safety harness and lanyards).

Fall arrest equipment must be secured to an approved object (NOT chain and block devices), and inspected on a regular basis.

Employees required to use fall arrest equipment will be adequately trained in the use and care of the equipment.

## **28.0 LIFTING LOADS**

### **28.1 Hiab Lifts**

Lifting using a hiab can only be conducted by employees who have been deemed competent by the Director. All lifting must be conducted in accordance with the Safe Work Procedure.

As part of the competency process the employee is shown the correct lifting technique, and has read and understood the Safe Work Procedure.

### **28.2 Manual Handling**

Australian Exploration Drilling Co. employees must not lift anything heavier than they can safely lift. Where possible use mechanical aids for lifting heavy items, or ask for assistance.

When required to lift objects, employees must consider the following techniques:

- Keep the load close to your body.
- Keep the natural curve in your back when lifting and carrying objects.

- Bend your knees instead of bending over to pick up objects.
- Minimise twisting motions when carrying objects.

Training in manual handling is provided to employees during the General Induction.

## **29.0 HAZARDOUS GOODS AND DANGEROUS SUBSTANCES**

### **29.1 General Hazardous Materials**

Training in the correct use, transportation and disposal of hazardous substances commonly used in the workplace will be provided during the General Induction.

Prior to bringing a new hazardous material to the workplace the material must be reviewed and, if necessary, risk assessed to determine any potential safety or environmental issues.

Once approval has been granted by the Director the Material Safety Data Sheet (MSDS) must be added to the Hazardous Material Register, located in the office.

A copy of the MSDS is also required at the location in which the substance is being used.

Prior to use employees must read and understand the MSDS.

All hazardous materials must be used, stored, transported, handled and disposed in accordance with the MSDS.

### **29.2 Aerosol Cans**

Aerosol cans must never be stored loose inside equipment or vehicles. Aerosol cans must be stored in secure boxes in the tray of the support vehicles.

## **30.0 CALL-IN PROCEDURE**

To ensure the safety of employees, and to provide a means of communication of safety and environmental information, a call-in procedure specific to the work site will be implemented. The procedure will be at the discretion of the Director, but will generally involve daily contact between the Regional Manager and the Driller.

The specific details of the call-in procedure will be discussed during the Kick Off Meeting.

## **31.0 WEATHER EXTREMES**

### **31.1 Heat Stress**

To prevent heat stress employees will:

- Carry and drink plenty of water each day.
- Where possible avoid strenuous activity during the hottest part of the day.
- Take regular rest breaks.
- Wear appropriate clothing.
- Protect skin from direct sunlight (protective clothing and use of SPF 30+).
- Take time to acclimatise.

### 31.2 Cold Related Illness

To prevent hypothermic illness employees will:

- Wear appropriate clothing.
- Keep dry and protected from the wind.
- Eat regular meals each day.

## 32.0 ENVIRONMENTAL MANAGEMENT

### 32.1 Flora

Vegetation is not to be disturbed unless authorised by the Director.

Employees must only travel on existing tracks, and never drive across undisturbed ground.

When working in environmentally sensitive areas where the transfer of weeds or disease is an issue (i.e. national parks or weed infested areas) all equipment **MUST** be thoroughly washed before leaving a site, and before entering another site. Vehicle washing must include the underside of the vehicles, and spare tyres.

### 32.2 Fauna

Killing native animals (including snakes) intentionally is not permitted. Road-kills should be removed from roadways.

No pets are permitted in work areas.

### 32.3 Dust

Dust generation should be minimised, where possible, to prevent harm to local flora and disturbance to local communities. This can be achieved by minimising dust during drilling, reducing speed on unsealed roads, or contacting the mine site to arrange road watering if conditions become extreme.

Dust masks will be provided to all employees, and must be worn when conditions necessitate (in accordance with AS 1715).

### 32.4 Noise

Noise must be minimised as far as practicable to minimise disturbance to local residents.

Work conducted in close proximity to local residents may be required to be conducted during daylight hours only. This will be discussed with the client prior to commencing the project, or during the Kick Off Meeting.

Any noise disturbance complaints from the community must be communicated to the Director immediately.

Periodically the Director may initiate noise surveys (in accordance with AS 1269) to determine the noise level for operators and personnel in proximity to the machines.

Hearing protection will be provided, appropriate for the noise level of the equipment. Hearing protection must be worn at all times during drilling.

### **32.5 Water Management**

Extreme care must be taken to ensure the groundwater is not contaminated with hydrocarbon or other toxic products.

Waste products shall NEVER be disposed down drill holes.

Only biodegradable drilling additives will be used.

Saline groundwater will usually need to be collected into sumps, and not discharged to the environment.

Groundwater should never be used as a potable water supply, unless it has been tested and deemed fit for human consumption.

Bore caps must be placed on all drill holes immediately after completion to minimise the risk of groundwater contamination, or injury to fauna.

### **32.6 Waste Minimisation**

Where possible, waste should be minimised. This can be achieved by choosing packaging-free products, re-using waste products, or recycling materials.

### **32.7 Domestic Waste**

Domestic waste should be stored in securely lidded bins to prevent littering and harm to foraging animals. Typically domestic waste can be disposed to licensed landfill facilities.

This must be discussed with the Director or Safety and Environmental Representative before commencing work, and /or at the Kick Off Meeting.

### **32.8 Industrial Waste**

Inert industrial waste such as rubber, wood, cement and metal can typically be disposed of to licensed landfill facilities.

However regulations vary so this must be verified with the Director or Safety and Environmental Representative prior to commencing work, and/or at the Kick Off Meeting.

### **32.9 Hazardous Waste**

Hazardous waste such as batteries, paints and chemicals may not be accepted at landfill sites. Disposal options of these materials must be discussed with the Director or Safety and Environmental Representative prior to the commencement of work.

### **32.10 Hydrocarbon Waste**

Most mine sites or town waste management facilities have hydrocarbon waste collection drums. Waste hydrocarbons must be transferred to these drums regularly to prevent accumulation and potential contamination at the work site.

### 32.11 Hydrocarbons

Hydrocarbon products have the potential to cause harm to the environment.

Hydrocarbon contaminated soil can cause death to vegetation and fauna.

Contamination to surface water and groundwater can cause death to aquatic fauna, harm to land animals relying on the water source, and is a potential health risk to nearby communities.

To prevent spills, hoses will be visually inspected regularly to identify wear, drip trays must be used when servicing equipment, and all hydrocarbons must be stored appropriately (i.e. in bunds if necessary). Only auto cut off fuel nozzles will be used.

Where possible hydrocarbon supplies at the workplace should be kept to a minimum, and waste oil containers must be emptied (to an approved facility) regularly.

All hydrocarbon spills over 20 L or as deemed necessary at the site induction, must be reported as an environmental incident. A risk assessment of the task should be completed following a spill (before resuming work) to minimise the risk of re-occurrence.

Spill response kits (including absorbent material, rags, a shovel and a bucket) will be available at all Australian Exploration Drilling Co. workplaces.

Immediately following a spill the area should be secured to prevent the hydrocarbons entering waterways and groundwater aquifers (this can usually be achieved by building a bund around the spill). The contaminated soil will then need to be collected.

Most mine sites will have a bioremediation facility for treating hydrocarbon contaminated soil. The site representative will need to be contacted to determine the disposal method for the contaminated soil.

### 33.0 DOCUMENT CONTROL

The following documents are held on the file at the Australian Exploration Drilling Co. office:

- Safety and Environmental Management Plan.
- Safe Work Procedures.
- Standard Forms File.
- Hazardous Materials Register.
- Training Register.
- HSE Action Register.
- Meetings and Communication File.
- Inspection File.
- Equipment Maintenance File.
- JHA and Risk Assessment File.
- Incident, Accident, Near Miss and Investigation File.
- Business Registration
- Equipment Registration.
- Insurance Policies.

**The following standards apply at AEDCO operations to ensure the highest level of protection against malaria**

## **1.0 PURPOSE & SCOPE**

### **Intent**

To eliminate or minimize the risk of contracting diseases carried by mosquitoes. This protocol requires the various interventions including medical screening, the use of some medications as prophylaxis and the use of insecticides and insect repellents.

If you know or suspect that you may have adverse medical reactions to any of these items, you must consult your doctor regarding alternate life-saving options at your pre-employment or pre-travel medical examination.

The medical information may determine if you are suited to travel to malaria endemic areas.

### **Application**

This standard applies to all AEDCO activities in malaria and mosquito-borne disease endemic areas.

## **2.0 DEFINITIONS**

### **What is malaria and how do we get malaria infected ?**

Human malaria is an infectious disease caused by four species of the Plasmodium parasite namely – (*Plasmodium = parasite that causes malaria*)

- Plasmodium falciparum
- Plasmodium malariae
- Plasmodium ovale
- Plasmodium vivax

Malaria is referred to as vector-borne infectious disease. So what is a vector?

**Vector** = In this case **Anopheles** mosquitoes that transmits an infectious agent, the malaria parasites, from an infected mosquito to a human host.

Only Anopheles mosquitoes can transmit the malaria parasite.

The life cycle of the malaria parasite involves two hosts.

During a blood meal, a malaria-infected female anopheles mosquito inoculates sporozoites (see glossary) into the human host.

The sporozoites infect liver cells and mature, are released into the blood stream where they infect red blood cells.

It can take an incubation period of 7 to 30 days from the time a person is bitten until the infection of the blood cells begins.

Once in the blood the parasite reproduces very rapidly and destroys red blood cells inducing disease symptoms.

The most serious forms of the disease are caused by [Plasmodium falciparum](#)

### **Other mosquito borne diseases**

In the course of AEDCO's business activities, AEDCO requires personnel to be in areas with possibly endemic mosquito borne diseases.

These diseases include Yellow Fever, Dengue Fever and Malaria  
Left untreated, these diseases have the potential to kill you, some faster than others.

If you are going to be visiting or working in a mosquito borne illness endemic area, you must follow this standard

## **3.0 ROLES & RESPONSIBILITIES**

<b>Role</b>	<b>Responsibilities</b>
Employees	Following malaria controls explained during the induction Reporting malaria hazards and incidents
Paramedics	Conduct weekly inspections of malaria controls
HSE Superintendent	Coordinating a 6 monthly spraying program
Operations Manager	Support the malaria protocol

## **4.0 PROCEDURE**

### **Procedural Requirements for travellers and employees**

This applies to all AEDCO employees, who normally reside or work in areas that are non-endemic in relation to mosquito-borne diseases

A pre-travel and pre-employment medical is a prerequisite for travel approval to malaria endemic areas

- Inform the doctors where you are travelling to and where you will be working
- Ensure that all inoculations and medications are current and valid for the region
- Carry appropriate levels of medication and prophylaxis for the duration of the trip and post trip application.
- Be familiar with the risks, symptoms, tests and treatment.
- Carry and conform to the site personal protection requirements

## Physical control measures and procedures

- Mosquito nets are made available to all employees.
- Regular assessments and inspections are in place to verify the effectiveness of netting and other control measures.
- Mosquito nets, curtains, shall be soaked in Permethrin (or similar non-toxic insecticide) at least quarterly (every 3 months).
- All grass in and around the camp is cut regularly
- Pools and puddles of standing water is either drained or filled with soil
- Personal insect repellent is used by all site personnel.
- Each room in the camp must be sprayed with insecticide at dawn and dusk daily.

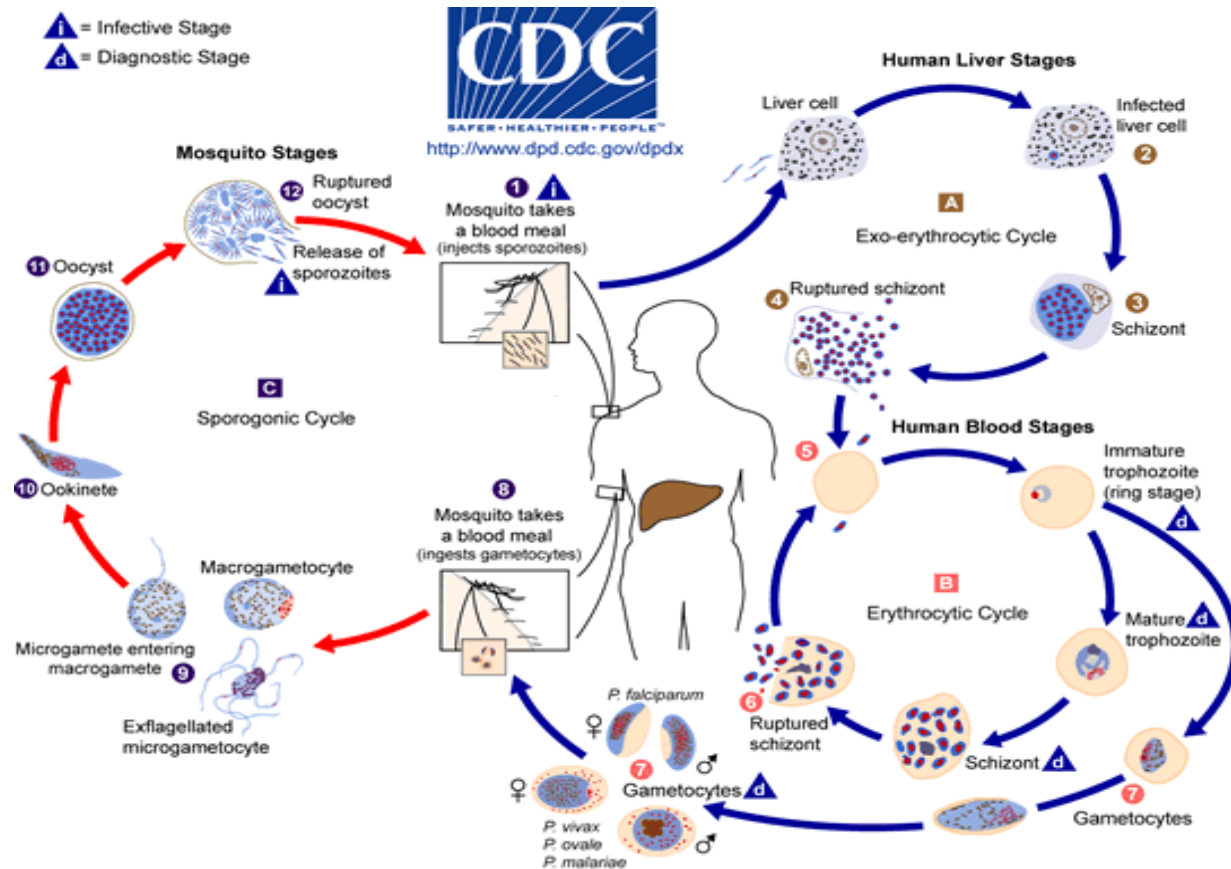
## Personal requirements

All employees are made aware of the risks of mosquito borne diseases and the appropriate mitigations through the following requirements

- Pre-employment and pre-travel medical consultation and examination with a certificate of fitness
- A recorded inoculation regime appropriate to the risk exposures for the areas to be visited or worked in
- Personal medically appropriate prophylaxis in sufficient quantities for duration of stay and post endemic area visit dosage.
- Insect repellent of a personal choice (encouraged as there may be allergy or skin sensitivity considerations)
- Appropriate clothing which requires wearing long sleeved shirts, long trousers, closed shoes.
- Monitoring own health and awareness of symptoms that may develop that may indicate malaria infection or other infection
- Site specific inductions

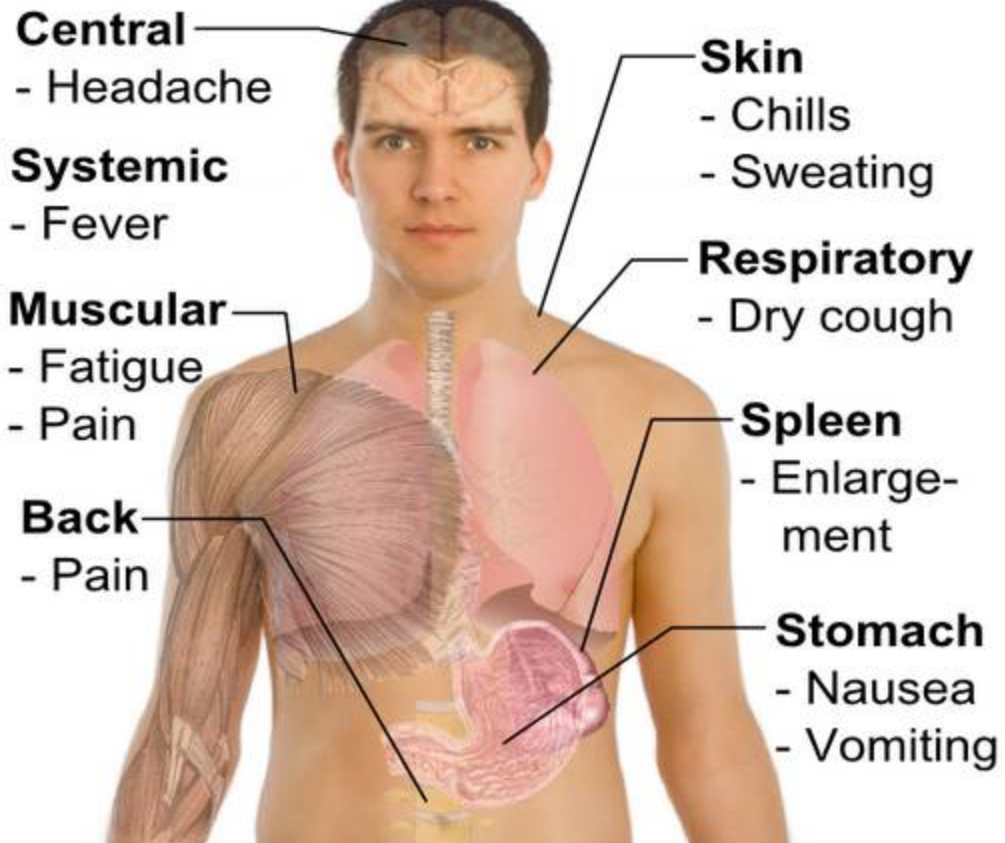
## The essentials of malaria protection

- **Be aware of and understand malaria risk**
- **Avoid getting bitten by mosquitoes**
- **Comply with AEDCO prophylaxis requirements**
- **Comply with AEDCO evening and night time dress code**
- **Ensure early detection of malaria – check and report if you experience symptoms as described above**
- **Ensure effective treatment**



- A mosquito infects a person by taking a blood meal.
- First, sporozoites enter the bloodstream, and migrate to the liver.
- They infect liver cells where they multiply into merozoites, rupture the liver cells, and escape back into the bloodstream.
- Then, the merozoites infect red blood cells, where they develop into ring forms, then trophozoites (a feeding stage), then schizonts (a reproduction stage), then back into merozoites.
- Sexual forms called gametocytes are also produced which, if taken up by a mosquito, will infect the insect and continue the life cycle

## Symptoms of **Malaria**



## CHOLERA

### The Disease

Cholera is an intestinal infection. The bacterium is spread through food or water that has been contaminated by the feces of an infected person. One to five days after infection, patients develop severe, painless, watery diarrhea, often called "rice-water" stools and vomiting also occurs in most patients.

Usually, the symptoms are relatively mild and respond to oral rehydration. Severe cases of cholera (10-20%) can cause life-threatening dehydration. Treatment involves oral and/or intravenous fluid replacement and antibiotics, which reduce the volume and duration of diarrhea.

### Vaccine

An injected cholera vaccine is available in many countries but is rarely recommended; immunity is unreliable and may only last a few months. This vaccine is no longer available in the United States. Two more effective oral vaccines are available in an increasing number of countries, including Canada and a number of European nations. One is an oral live vaccine used specifically against cholera.

*E.coli* is one of the more common causes of traveler's diarrhea. However, travelers who use this vaccine should also carry self-treatment remedies in the event that they develop diarrhea that is not caused by *E.coli*

### Precautions

Travelers to Liberia should pay strict attention to hygiene and be careful in their choice of food and water. Drink only boiled or bottled water, water that has been treated with chlorine or iodine, or carbonated beverages.

- Avoid ice, as it may have been made with unsafe water.
- Choose food that has been thoroughly cooked while fresh and is served hot from reputable sources.
- Avoid street vendors, pre-peeled fruit, salad, fish and shellfish.
- Wash fruit and vegetables thoroughly in a weak Bleach or Chlorinated water source before eating
- Report sick at the first onset of diarrhea
- DO NOT take local traditional preparations available from unqualified personnel for Cholera or any illness you may contract.

# Herpes (HSV)

## Symptoms

- Blisters, sores on genital area
- Pain or burning while urinating
- Sores on lips, tongue

There are two kinds of herpes. HSV-1 causes cold sores and fever blisters on the mouth but can be spread to the genitals; HSV-2 is usually on the genitals but it can be spread to the mouth.

Nearly two-thirds of people who are infected with herpes don't even realize it. An outbreak can cause red bumps that turn into painful blisters or sores on the vagina, penis, buttocks, thighs, or elsewhere. During the first attack, it can also lead to flu-like symptoms, including fever, headaches, and swollen glands. Symptoms usually appear within two weeks of infection but can take longer in some cases. The first outbreak is usually more severe than later recurrences.

**What it is:** Viral infection of the genital area and/or around the mouth.

## How many get it

About 1 million new cases each year; an estimated 45 million cases already exist.

## How it's spread

By touching an infected area or having unprotected vaginal, oral, or anal intercourse.

Warning: some people may be contagious even when they don't have symptoms.

## Treatment

There is no cure. An antiviral drug can help the pain and itching and also reduce the frequency of recurrent outbreaks.

## Possible consequences

Recurrent sores (the virus lives in the nerve roots and keeps coming back), as well as increased risk of HIV infection. Transmission of herpes to newborns is rare. Most mothers with a history of herpes have normal vaginal deliveries. However, an infant who gets herpes can become very ill, so some precautions are advisable

# HIV

## Symptoms

Many people who have HIV don't even know it because symptoms may not appear for 10 years or longer. Others may experience:

- Vaginal yeast infections (severe or recurring)
- Unexplained weight loss
- Persistent night sweats or fevers
- Flu-like symptoms
- Diarrhea, fatigue
- Headaches, mental disorders

**What it is:** The human immunodeficiency virus (HIV), the cause of AIDS.

## How many get it

An estimated 40,000 Americans are infected with HIV each year, most of whom were infected sexually, and an estimated 800,000 - 900,000 people in the U.S. are living with HIV/AIDS.

## How it's spread

Through body fluids such as blood, semen, vaginal fluids and breast milk—in other words, during vaginal, oral or anal intercourse; by sharing contaminated needles; or via pregnancy or breast-feeding. During vaginal intercourse, the risks of becoming infected are higher for women than for men, because HIV is more easily transmitted from man to woman.

## Treatment

There is no cure and AIDS is considered fatal. Several new antiviral medications can slow progression of the infection and delay the onset of AIDS symptoms. Early treatment can make a big difference.

## Possible consequences

It is the deadliest STD of all and can weaken the body's ability to fight disease, making someone with HIV vulnerable to certain cancers and infections such as pneumonia. Babies born to HIV-positive mothers may become infected with HIV if the mother is not receiving treatment, but treatment can reduce that rate significantly

# Hepatitis B

## Symptoms

Many people don't have any symptoms. Within one to six months of exposure others may experience:

- Abdominal pain or tenderness
- Yellowing of the skin or whites of the eyes
- Nausea, vomiting, loss of appetite

- Very dark urine
- Severe fatigue, achiness

**What it is:** A viral infection primarily affecting the liver.

#### **How many get it**

About 77,000 new cases a year through sexual transmission; about 750,000 people are already infected with Hepatitis B as a result of sexual transmission.

#### **How it's spread**

Through unprotected vaginal, oral, and anal sex. It can also be transmitted through sharing contaminated needles, or through any behavior in which a person's mucus membranes are exposed to an infected person's blood, semen, vaginal secretions, or saliva. (Don't worry... the chance of getting Hepatitis B through kissing is slim, unless your partner likes to bite!).

#### **Treatment**

Most cases clear up within one to two months without treatment, during which complete abstinence from alcohol is recommended until liver function returns to normal. Some people are contagious for the rest of their lives. A three-dose vaccine is now available to prevent this STD.

#### **Possible consequences**

Chronic, persistent inflammation of the liver and later cirrhosis or cancer of the liver; plus, if you're pregnant, your baby must be immunized at birth.

## **Syphilis**

#### **Symptoms**

In the first phase, sores (chancre) may appear on the genitals or mouth several weeks to three months after exposure, lasting for one to five weeks. Often, however, there are no noticeable symptoms. In the second stage, up to 10 weeks after the initial sore has disappeared, a variety of symptoms can appear, including a rash (often on the palms of the hands, soles of the feet, or genital area).

**What it is:** An infection caused by small organisms, which can spread throughout the body.

#### **How many get it**

About 70,000 new cases each year.

#### **How it's spread**

Through unprotected vaginal, oral, or anal sex — and also through kissing if there is a lesion on the mouth.

**Treatment**

Antibiotic treatment can cure the disease if it's caught early, but medication can't undo damage the disease has already done. Both partners must be treated at the same time.

**Possible consequences**

Increased risk of HIV infection. If syphilis is left untreated, the symptoms will disappear, but the germ will remain within the body and progress into the third stage, which may seriously damage the brain, heart, and nervous system, and possibly cause death. It can also seriously harm a developing fetus during pregnancy.

## Gonorrhea

**Symptoms**

Most women and many men who get it have no symptoms. For those who do get symptoms, the following can appear 2 to 10 days after infection:

- Discharge from the vagina or penis
- Pain or burning while urinating
- Irritation in the genital area
- Painful intercourse
- Pelvic Pain

**What it is:** A bacterial infection of the genital area.

**How many get it**

Approximately 650,000 new cases a year; teens have higher rates of gonorrhea than do sexually active men and women aged 20-44.

**How it's spread**

Through unprotected vaginal, oral, or anal sex.

**Treatment**

Oral antibiotics. Both partners need to be treated at the same time to prevent passing the infection back and forth — and both partners need to abstain from intercourse until the infection is gone.

**Possible consequences**

PID, tubal (ectopic) pregnancy, sterility, increased risk of HIV infection. The infection can spread into the uterus and fallopian tubes. It can also cause complications during pregnancy (including stillbirth) or infant blindness or meningitis (from an infected mom during delivery)

# HPV - Human Papillomavirus

## Symptoms

Many people have no symptoms but are still contagious. Following symptoms can appear after 2 weeks to 3 months after exposure:

- Irritation/itching in the genital area
- Warts or bumps on the genitals, lips, tongue and/or mouth.

**What it is:** Human Papillomavirus Infection. A viral infection with more than 100 different types, primarily affecting the genital area, both the outer and inner surfaces.

## How many get it

An estimated 5.5 million new cases each year; at least 20 million people already have it.

## How it's spread

Through unprotected vaginal, oral, or anal intercourse, or by touching or rubbing an infected area (infected areas may not always be noticeable).

## Treatment

There is no cure. Warts can be removed through medication or surgery. Even with such treatments, the virus stays in the body and can cause future outbreaks.

## Possible consequences

Increased risk of genital cancer for men and women. Some virus types cause the most common form of cervical cancer in women

# Chlamydia

## Symptoms

There are no symptoms in most women and many men who have it. Others may experience:

- Bleeding from vagina (other than period)
- Discharge from the vagina or penis
- Pelvic pain
- Irritation in the genital area
- Pain or burning while urinating

**What it is:** A bacterial infection of the genital area.

## How it's spread

Through unprotected vaginal, oral, or anal intercourse

## Treatment

Oral antibiotics cure the infection; both partners must be treated at the same time to prevent passing the infection back and forth, and both partners need to abstain from unprotected intercourse until the infection is gone.

## Possible consequences

Pelvic inflammatory disease (PID) in women, tubal (ectopic) pregnancy, infertility, and increased risk of HIV infection.

## TYPHOID

Typhoid fever, also known as *Salmonella Typhi* or commonly just typhoid, is a common worldwide illness, transmitted by the ingestion of food or water contaminated with feces from an infected person. *Salmonella Typhi*, more correctly called *Salmonella Enterica Serovar Typhi*, will then alter its structure to resist destruction. The organism is then spread via the lymphatic system. This gives them access to the different organs throughout the body. The bacterium grows best at 37 °C/99 °F (*human body temperature*)

### Symptoms

Typhoid fever is characterized by a slowly progressive fever as high as 40 °C (104 °F), profuse sweating, gastroenteritis, and non-bloody diarrhea. Less commonly a rash of flat, rose-colored spots may appear.

Classically, the course of untreated typhoid fever is divided into four individual stages, each lasting approximately one week. In the first week, there is a slowly rising temperature with relative bradycardia (*slow heart rate*), malaise (*weakness*), headache and cough. A bloody nose (epistaxis) is seen in a quarter of cases and abdominal pain is also possible. The classic Widal test is negative in the first week.

In the second week of the infection, the patient lies prostrated with high fever in plateau around 40 °C (104 °F) and bradycardia. Delirium is frequent, frequently calm, but sometimes agitated. This delirium gives to typhoid the nickname of "nervous fever". Rose spots appear on the lower chest and abdomen in around 1/3 patients. There are rhonchi (*rattles*) in lung bases. The abdomen is distended and painful in the right lower quadrant where borborygmi (*wind*) can be heard. Diarrhea can occur in this stage: six to eight stools in a day, green with a characteristic smell, comparable to pea-soup. However, constipation is also frequent. The spleen and liver are enlarged and tender. The Widal reaction is strongly positive with anti O and anti H antibodies. Blood cultures are sometimes still positive at this stage. (*The major symptom of this fever is the fever usually rises in the afternoon up to the first and second week.*) In the third week of typhoid fever a number of complications can occur:

- \* Intestinal hemorrhage due to bleeding can be very serious but is usually non-fatal.
- \* Intestinal perforation in distal ileum: this is a very serious complication and is frequently fatal. It may occur without symptoms until septicemia or diffuse peritonitis sets in.
- \* Encephalitis (*Brain infection*)

The fever is still very high and changes very little over 24 hours. Dehydration begins and the patient is delirious (*typhoid state*). By the end of third week the fever has started reducing. This carries on into the fourth and final week.

### Diagnosis

Diagnosis is made by any blood, bone marrow or stool cultures and with the Widal test (*demonstration of salmonella antibodies against antigens O-somatic and H-flagellar*). In epidemics and less wealthy

countries, after excluding malaria, dysentery or pneumonia, a therapeutic trial with chloramphenicol is generally undertaken while awaiting the results of Widal test and cultures of the blood and stools

Oral rehydration therapy provided a simple way to prevent many of the deaths of diarrheal diseases in general.

Where resistance is uncommon, the treatment of choice is ciprofloxacin otherwise; a third-generation cephalosporin such as ceftriaxone or cefotaxime is the first choice. Cefixime is a suitable oral alternative.

Typhoid fever in most cases is not fatal. Antibiotics, such as ampicillin, chloramphenicol, trimethoprim-sulfamethoxazole, amoxicillin and ciprofloxacin, have been commonly used to treat typhoid fever in developed countries. Prompt treatment of the disease with antibiotics reduces the case-fatality rate to approximately 1%.

When left untreated, typhoid fever persists for three weeks to a month. Death occurs in between 10% and 30% of untreated cases. In some communities, however, case-fatality rates may reach as high as 47%.

#### **TYPHOID ENDEMIC AREAS**

