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CASPIAN REGION

Best Practice Guidance In Waste Management for Waste Transportation, Storage, Treatment and Disposal Companies

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Notes:
Originator to identify whether this document is unique to a facility, can be used for more than one facility.
Also it must be considered whether the document can be utilized across various Projects, e.g. EOP, Azeri,BTC etc.

Waste Management

Azerbaijan BU Document Reference

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BEST PRACTICE GUIDANCE
FOR WASTE MANAGEMENT FOR WASTE TRANSPORTATION, STORAGE TREATMENT AND DISPOSAL COMPANIES

28 JULY, 2004

Executive Summary

Waste management is a critical component for BP HSE Policy. "No Damage to Environment" - the principal of the company, which cannot be achieved without proper management of wastes generated by company's activities.
This document is aimed at providing more detailed information to waste management providers in order that they can understand / work towards best practice and to set out standards that should be achieved at existing and potential facilities used by BP and its contractors. This document is not legally binding but it does provide guidance to the reader on the general principles against which BP audits waste. The guidance's purposes are:

- To promote best international practice in waste management within Azerbaijan and Georgia
- Provide local enterprises with better and more detailed understanding of BP's expectation in waste management
- Increase Safety & Environmental awareness among local waste management companies

BP Exploration (Caspian Sea) Ltd. is looking forward to working with local waste management service providers.

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BEST PRACTICE GUIDANCE FOR WASTE MANAGEMENT FOR WASTE TRANSPORTATION, STORAGE, TREATMENT AND DISPOSAL COMPANIES

1.0 INTRODUCTION

1.1 Purpose

BP works with local companies to promote environmentally sound and internationally acceptable waste management practices and to promote development of waste management infrastructure. Appropriate transportation, storage, processing (re-use, recycle,) and disposal of wastes is important to eliminate or minimize threats to the environment and human health.
This document is aimed:

- To promote best international practice in waste management within Azerbaijan and Georgia
- To provide more detailed information to waste management providers in order that they can understand / work towards best practice and to set out standards that should be achieved at existing and potential facilities used by BP and its contractors.
- To increase Safety & Environmental awareness among local waste management companies

1.2 Scope

This document is not legally binding but it does provide guidance to the reader on the general principles against which BP audits waste handlers. It details a set of standards for the waste management process therefore the minimum expected generic and facility specific requirements are identified. These requirements include:

- Legislative compliance
- Design and engineering standards
- Operational controls
- Contingency measures
- Documentation and record keeping

The requirements identified in this document form the basis of the audit process that BP will use to evaluate new and existing waste management companies.

This document takes into account current standards and infrastructure availability. It is recognized that standards and availability infrastructure will change over time, and this document may become outdated or may be updated as needed. If contractors ever have questions regarding current acceptable waste management practices, please contact:

Environmental manager at Central HSE – Andrew Foster
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1.3 Waste Management Approach and Principles

The Waste Management Hierarchy is a principle used as a basis to promote sustainable waste management. The following waste management approach and principles reflect BP's Waste Management strategy:

- **Waste avoidance** is the most preferred option, followed by minimisation of quantities and hazards of waste generated; in addition, reuse, recovery and recycling should be preferred over treatment of waste with disposal being a last resort (Box 1).
- **Proximity Principle**, which states that wastes should be managed as close to source of generation as practicable, and that countries and preferably regions should be self sufficient in terms of waste management.
- **Duty of Care**, whereby a waste producer has a duty to ensure that a waste is properly managed even after that waste has been transferred to a third party.
- **Use of Best Available Technology Not Entailing Excessive Cost** (BATNEEC)
- **Polluter Pays Principle**, whereby any party causing pollution should pay the cost of mitigating that pollution. Waste should not be abandoned, dumped or discharged in uncontrolled manner.

Box 1: Hierarchy of waste management practices

Each waste stream should be managed according to the following hierarchy of techniques, in which the technique chosen should be the first in the hierarchy that is safe and practicable:

- Consider waste generation and consequences from the outset of any activity
- Eliminate or minimise the quantities and hazards of waste streams by choice of project/facility design, product substitution, procurement practices, and operation procedure
- Re-use as a material
- Re-use as a fuel (when the waste provides legitimate fuel value)
- Process and re-use as a material
- Process and re-use as a fuel
- Incinerate and re-use or landfill the ash
- Landfill (not applicable to waste water). Disposal through incineration or landfill are the least desirable environmental options
- Discharge to a receiving water course (applicable only to wastewater) after appropriate treatment

2.0 WASTE CATEGORIES

Wastes generated from operational activities fall into two main categories, hazardous and non-hazardous. These can be defined as:

Non-Hazardous Waste (Source: AzBU Environmental Management System Manual and Procedures)
Wastes that do not exhibit one or more of the characteristics of hazardous waste such as ignitability, corrosivity, reactivity, toxicity, which are biodegradable or inert and cannot cause any harm to people and environment. Examples include: Paper and Card, Food, Scrap metal (no hydrocarbons), Wood.

Hazardous Waste (Source: AzBU Environmental Management System Manual and Procedures)
Wastes that exhibit one or more of the characteristics of hazardous waste such as ignitability, corrosivity, reactivity, toxicity, which are mutagenic, teratogenic, infectious, irritant carcinogenic, ecotoxic and undegradable, flammable and highly flammable, explosive, e.g. which can be harmful to health and can cause damage to the environment (land, water contamination, air pollution). Examples include: Oil Filters, Oily scrap metals, oily plastics, Oily rags/ absorbents, Diesel/Crude oil (including tank bottom sludge, oily waters), Lubricating Oils, Pigging waxes, Batteries, etc.

Note – radioactive wastes are not included in this classification but have their own class due to their specific nature.
Hazardous wastes are identified for the following characteristics: (Source: AzBU Environmental Management System Manual and Procedures)

Explosive:	substances and preparations which may explode under the effect of flame or which are more sensitive to shocks or friction than dinitrobenzene
Oxidizing:	substances and preparations, which exhibit highly exothermic reactions when in contact with other substances, particularly flammable substances
Highly flammable:	liquid substances and preparations having a flash point below 21ºC (including extremely flammable liquids), or substances and preparations which may become hot and finally catch fire in contact with air at ambient temperature without any application of energy, or solid substances and preparations which may readily catch fire after brief contact with a source of ignition and which continue to burn or to be consumed after removal of the source of ignition, or gaseous substances and preparations which are flammable in air at normal pressure, or substances and preparations which, in contact with water or damp air, evolve highly flammable gases in dangerous quantities
Flammable:	liquid substances and preparations having a flash point equal to or greater than 21ºC and less than or equal to 55ºC
Irritant	non-corrosive substances and preparations which, through immediate, prolonged or repeated contact with the skin or mucous membrane, can cause inflammation
Harmful:	substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may involve limited health risks

Toxic:	substances and preparations (including very toxic substances and preparations) which, if they are inhaled or ingested or if they penetrate the skin, may involve serious, acute or chronic health risks or even death
Carcinogenic:	substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may induce cancer or increase its incidence
Corrosive:	substances and preparations which may destroy living tissue on contact
Infectious:	substances containing viable microorganisms or their toxins which are known or reliably believed to cause disease in man or other living organisms
Teratogenic:	substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may induce non-hereditary congenital malformations or increase their incidence
Mutagenic:	substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may induce hereditary genetic defects or increase their incidence Substances and preparations which release toxic or very toxic gases in contact with water, air or an acid. Substances and preparations capable by any means, after disposal, of yielding another substance, e.g. a leachate, which possesses any of the characteristics listed above
Ecotoxic:	substances and preparations that present or may present immediate or delayed risks for one or more sectors of the environment

3.0 REQUIREMENTS FOR WASTE TRANSPORTERS

3.1 Definition

A transporter is any party that moves wastes from one site to another for treatment, storage or disposal.

3.2 Operational controls

Transporters have a duty to ensure that:

- Relevant Legislative permits and license from authorities are in place
- Vehicle design is suitable for waste transportation and appropriate maintenance is provided.
- Compliance with the Waste Transfer Note (WTN) system (Attachment 4) and appropriate documentation to track the shipment and receipt of such waste
- Packaging of wastes is appropriate to prevent unplanned release or spilling of waste (e.g. waste skips should be covered with a net to prevent loss of contents)
- Labelling, marking and placarding of the packaged waste identify the characteristics and dangers associated with its transport
- Proper handling of hazardous waste discharges, accidental spillage including reporting and cleanup so unplanned discharge is not a hazard to human health or the environment (note – discharges on BP leases or facilities should be reported to BP immediately).
- Record keeping and reporting requirements are met
- Any concerns regarding transport of waste (e.g. non-compliance report) are identified and appropriately documented
- Waste transporting personnel have appropriate competency (relevant training and etc.)

3.3 Waste Transfer Notes

Waste Transfer Notes (WTN) are numbered records of waste movements (at a minimum in triplicate), which enable tracking, and recording of wastes from cradle to grave (i.e. point of generation to final disposal).

- WTNs must accompany **all** waste consignments.
- WTNs must include: Waste type, volume/quantity, classification, hazards, special handling requirements, contact details of the Generator and person responsible, Generating site name if different, Transporting company, Driver Name & registration of vehicle.
- WTNs must be completed by the generator with the required details and the appropriate signatories.
- Transfer notes must be signed by the responsible personnel on site and transporter of the waste.
- A copy of the transfer note must be taken by site personnel (Originator) and filed.
- Original transfer note must be provided to the person collecting the waste for transport.
- The transfer note will accompany the waste during transport. Material Safety Data Sheets (MSDS) must be attached, where appropriate, as must lab analyses if relevant.
- Waste transport company is responsible to obtain a signature from the waste disposer and then return the WTN to the appropriate responsible person as a representative of the Generator
- The completed transfer notes must be retained at each site for future audit and review. I.e. Generator – Transporter – Disposal Contractor; 3 identical copies of the WTN must be completed and the loop closed back with the Generator.
- Site representatives must not release the waste, nor sign the WTN, if there are any concerns about the standard of transportation vessels/facilities or final destination of the waste. Likewise, transporters must not take control of the waste unless satisfied that the waste fits the WTN description.
- Appropriate information from all transfer notes is to be copied onto the waste register for all wastes.

4.0 REQUIREMENTS FOR TREATMENT, STORAGE AND DISPOSAL FACILITIES

4.1 Environmental Management System

All waste management treatment, storage, and disposal companies should have a documented environmental management system (EMS), preferably using the ISO 14001 structure, to enable appropriate environmental risk management and legal compliance whilst ensuring continuous improvements. Environmental Management System is a part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy.
At a minimum, key elements of the EMS should include:

Environmental Policy

- An environmental policy developed, signed and committed to by management, and kept current.

The policy should identify management support and commitment for compliance with legal environmental requirements, pollution prevention, and continual improvement.

Plan

- Identification of environmental aspects and impacts

- Legal Requirements

Do

- Roles and Responsibilities
- Operational Controls
- Training Program
- Record and Document Management

Check

- Monitoring and Verification
- Audit Program
- Reporting of Environmental Events
- Corrective and Preventive Action

Act

- Management Review

4.2 Waste management standards

All facilities should:

- Have all appropriate national / local permits to achieve legislative compliance for each type of waste handled on the site. The relevant permit identifies the standards and requirements applicable to the specific activities conducted at that facility, including both the general facility standards and standards applicable to each type of process at the facility eg Ecopassport, Technical Reglament

- Be sited appropriately: Certain types of terrain may increase the dangers associated with managing wastes. For example, waste sites should be at a safe distance from residential and commercial areas. Geological and hydrological factors should be considered in the design and siting of any new facilities to minimize the potential for release of contaminants to the environment and protect human health.

- Provide detailed plans and engineering reports describing the site location, design, construction, operation, maintenance, monitoring and mitigation plans and inspection plans.

- Identify waste and have labelling specifying chemical/physical hazards of waste and hazardous/non-hazardous waste classification of waste containers and locations. Labels should be clearly identified on each container and all old labels removed. (Attachment 2)

- Ensure that wastes are appropriately treated prior to disposal. Be able to demonstrate operational controls and efficiency of reuse/recycling/treatment/ disposal facilities

- Ensure that non-hazardous solid waste is not mixed with hazardous waste. Any hazardous waste mixed with non-hazardous means that it should all be reclassified as hazardous (this may also have cost implications).

- Ensure that wastes are not diluted (by adding water, air or soil to waste) in order to reduce concentrations of hazardous constituents, or commingled with other incompatible hazardous waste types.

- Keep records of waste managed at the facility, including registers/manifests for wastes received and dispatched (Attachment 1), WTN, and operational records to document waste management activities. Material Safety Data Sheets (MSDS) should be kept onsite where possible. (Attachment 3)

- Comply with good practice regarding the storage of wastes as described below:

- To avoid dangerous accidents; fires, or explosions, special care should be taken in handling ignitable, reactive, or incompatible wastes. Facilities handling ignitable and reactive wastes should be able to demonstrate that these wastes are protected from ignition sources. Such protection includes "No Smoking" signs placed where ignitable and reactive wastes are stored, designation of separate smoking areas away from operational areas and additional handling requirements.

- Take precautions against the combined storage of wastes that might react dangerously with one another or with the receptacle in which they are stored.

- Classify wastes. If the composition of a waste stream is unknown, or may have changed (i.e. it may have been contaminated with another waste) the waste stream should be analysed to determine its hazards and properties and it may result in reclassification.

- Have routine regular inspection provisions. The owner/operator should regularly inspect the facility for a minimum of malfunction, deterioration and operator error. The inspection should follow a written inspection schedule and checklist that identifies the areas to be inspected. Areas where spills are more likely to occur (such as loading and unloading areas), should be inspected daily when in use. Specific inspections or requirements may also be included in the schedule. Any problems identified during the inspections should be remedied in a timely manner. The owner /operator should record inspections and repairs in a log or summary.

- Monitoring of waste streams and emissions: Owners and operators of waste facilities should conduct monitoring, acceptance testing, data analysis, and inspections to ensure that the facility is in compliance with its legislative permit and performance standards. The operators should be able to demonstrate that the waste management process has minimum impact on human population and environmental media (air, surface water including wetlands), ground water, and soil. All records should be kept and maintained. Results of the monitoring should be available to the public.

- Develop a Release Prevention and Response Plan and have spill equipment- (sand bags, absorbent socks, spill kits) in order to eliminate or mitigate the potential impact of any leak or spill. The plan should outline the short and long term actions to be taken to prevent and to mitigate a leak or a spill.

- Maintain and routinely test emergency equipment, including alarms, fire extinguishers, and procedures for contacting local authorities (police, fire department, hospitals and emergency response teams) involved in emergency responses at the facility. Maintain at least minimum aisle space (to accommodate personnel and equipment during emergencies).

- Designate an emergency coordinator to guide emergency response activities, train employees in evacuation and use of extinguishers and make available contact information.

- Review Contingency plans and amend when the applicable regulations or facility permits are revised, or when there are changes to the facility, the list of emergency coordinators, or the list of emergency equipment. A valid copy of the contingency plan should be maintained at the facility.

- Provide new personnel and refresher training in the proper handling of wastes through an established training program. Training records should be kept and reviewed on a regular basis.

- Have security provisions to prevent accidental or unauthorized entry into the operational area of a facility via a barrier (e.g. a fence) that completely surrounds the area of the facility and controls entry at all times through gates or entrances. This can also be provided by a 24 hour surveillance system that continuously monitors and controls entry onto the operational areas of the facility (e.g., television monitoring, guards)

4.3 Record keeping

To keep track of waste activity at the facility the owner and operator should keep written operating records on site describing all waste received; methods and dates of treatment storage and disposal; and the location of wastes within the facility. All information should be cross-referenced with the waste transfer note number. Other information that the waste facility should keep in its operating records includes:

- Waste analysis results
- Details of emergencies requiring contingency plan implementation
- All monitoring inspection data (should be kept for three years) and resulting actions

All records and plans should be available for inspection/audits.

5.0 OUTLINE OF WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES SPECIFIC STANDARDS

Waste may be treated, stored or disposed of in several different types of facilities. The following sections describe the facility specific standards that should be adhered to at each of the following types of
waste storage, transportation and disposal facility:

- Containers (Section 7)
- Tanks (Section 8)
- Landfarming/Bioremediation Treatment Facilities (Section 9)
- Surface Impoundments (Section 10)
- Incinerators (Section 11)
- Landfill Sites (Section 12)
- Other facility types (Section 13)

These requirements form the basis of the audit process that BP uses to evaluate new and existing waste management service providers.

6.0 CONTAINERS

6.1 Definition

A container is a portable device in which a material is stored, transported, treated or otherwise handled.

6.2 Design standards

- Containers should be in good condition and suitable for the waste type. Containers that are deteriorated or damaged should not be used.

- Containers should be made of or lined with materials that will not react with, and are compatible with, the waste to be stored, so that containment of the waste is not impaired.

6.3 Operational requirements

- Wastes should be stored in such a manner in order to minimize risk to the environment and human health.
- Containers should generally be kept closed, except when adding or removing waste. In addition, containers should not be handled, opened or stored in a way that might cause them to leak.
- Incompatible wastes, or incompatible wastes and materials, should not be placed in the same container.
- Containers holding ignitable or reactive waste should be located at safe distance from the facility's perimeter. Risk assessment is required to determine the distance. i.e. A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers or tanks should be separated from the other materials or protected from them by means of a closed drainage, bund, wall, or other device.
- Waste should not be placed in an unwashed container that previously held an incompatible waste or material, as there is risk of a reaction and potential for cross contamination. Containers should be washed to minimize potential for cross contamination.
- If a container or tank holding waste is not in good condition, or if it begins to leak, the generator should transfer the waste from that container/tank to a one that is in good condition, or manage the waste in some other way that eliminates potential risk to human health or release to the environment.

6.4 Monitoring /inspections

- Owners and operators should visually regularly inspect container storage areas for leaking and deteriorating containers.
- Regular inspections should be documented. Any remedial actions should be included in the inspection notes along with planned completion dates.

6.5 Secondary Containment

Containers/tanks holding liquid hazardous wastes should have a secondary containment system at container storage areas. Secondary containment is emergency short-term storage 110% of storage capacity of largest container designed to contain leaks from containers, tanks and the like. An example of a secondary containment system is a graded walled concrete pad that contains any leaked liquids by diverting them in to a closed drainage system and then to a tank for accumulation.

A secondary containment system should be designed, installed, and operated to ensure that:

- The secondary containment system is free of cracks, has no connection with the open drainage system and is able to contain the spill.
- No waste is released to the surrounding soil, ground water or surface water
- Construction materials or liners are compatible with the waste to be stored or treated in the container or tank
- The foundation can resist failure due to normal movement of surrounding soils (settlement, compression, or uplift)

7.0 TANKS

7.1 Definition

Tanks are devices used to store or treat waste. In order to ensure that a tank can hold waste for its intended lifetime, the waste facility owner /operator should ensure that the tank is suitably designed and installed. An independent, qualified, registered engineer should certify that the tank meets engineering and regulatory requirements.

7.2 Design Standards

- Waste tanks should be installed properly and designed to protect against corrosion.
- The tank should have sufficient structural strength to prevent failure
- The tank should be capable of containing accumulated material until it is promptly removed

7.2.1 Corrosion Protection

When metal tanks are in contact with soil or water they can corrode and leak. To prevent leaks from corroded tanks there is requirement that tanks made wholly or partly of metal to be designed and installed with adequate corrosion protection. To ensure that a tank is properly protected, an owner and operator should develop a written design plan. The design should take into account information specific to the site, such as soil moisture and acidity that can affect the corrosion rate of the tank.

The unit should have corrosion protection methods consistent or equivalent to the following measures:

- Construction materials that are corrosion –resistant (e.g. fiberglass)
- Corrosion-resistant coating in combination with cathodic protection (cathodic protection prevents tanks from corroding by reversing the naturally occurring electric current in the ground that can degrade tank walls)
- Electrical isolation devices
- Other suitable means of corrosion detection/protection methods

It may not be practicable for existing tanks to meet these requirements because of the high cost of installing corrosion protection on tanks that are already in the ground. In this case, owners and operators of existing tanks may wish to more regularly assess the structural integrity of the tanks to ensure that they are designed and maintained to contain the wastes stored or treated within them without failing, collapsing, or rupturing. Such assessments should be independently certified by a qualified, registered, professional engineer.
Tanks should also be integrity tested before use.

7.3 Operational requirements

Storage tanks should be utilized in a manner that minimizes or eliminates releases to the environment.

- The compatibility of waste streams with construction and seal materials should be assessed.
- Chemicals that may cause any part of the tank's system to fail may not be used.
- Overfilling of tanks has the potential for spills or releases of waste into the environment such spills or overflows from the tank system should also be prevented by using, at a minimum:
  - Spill prevention controls, such as suitable and sufficient operational procedures or valves designed to prevent the backflow of waste during fill-up a tank, or
  - Overfill prevention controls, such as alarms that sound when the waste level in the tank gets too high, and valve systems that automatically close to prevent overfill;

- Sufficient room within an uncovered tank between the surface of the waste and the top of the tank (minimum freeboard).

7.4 Inspections

- Owners and operators should inspect their tanks regularly. Inspections should thoroughly identify leaks, deterioration, corrosion, or structural fatigue in any portion of the tank or the system components.

- Regular inspections should be documented. Any remedial actions should be included in the inspection notes along with planned completion dates.

7.5 Leak detection

In addition to visual inspection, owners and operators should also take into account any data received from leak detection monitors and other tests. Waste tanks should be equipped with either an active or a passive leak detection system. The leak detection system should be able to detect failure in either the main tank or secondary containment system generally within 24 hours. Thermal conductivity sensors, electrical resistivity sensors, and vapor detectors are commonly used active leak detection devices. Boreholes and wells are examples of passive systems. Daily visual inspections may also be used where tanks and tank components are physically accessible.

7.6 Release Prevention and Response Plan

In order to eliminate or mitigate the potential impact of any leak, facilities are required to develop a Release Prevention and Response Plan, which outline the short and long term actions to be taken to prevent and to mitigate a leak.
The release response may include leak detection system to detect leaks, and secondary containment devices to contain any leaks that might occur from the tank or ancillary equipment. All new hazardous waste tank systems should have leak detection and secondary containment before being placed in service. Existing systems should be equipped with secondary containment.

7.7 Secondary Containment for Tanks

Owners and operators should meet requirements for secondary containment for tanks by using one of the following secondary containments devices:

- An external liner that completely surrounds the unit with an impermeable material
- A vault (the tank rests in an underground chamber usually constructed with concrete floors and walls and an impermeable cover)
- A double-walled tank (the tanks is completely enclosed inside another tank with a leak detection monitoring system installed between the two)
- A government approved alternative design

In addition to the tank itself, ancillary equipment (e.g., pipes, valves, trenches connected to the tank or tank system) should have full secondary containment. Examples of secondary containment for ancillary equipment include lined trenches and jacketed or double walled piping. When inspected daily, however, the following equipment is exempt from this requirement:

- Aboveground piping (not including flanges, joints, valves, and connections)
- Welded flanges welded joints, and welded connection
- Seal-less or magnetic coupling pumps
- Aboveground pressurized piping systems with automatic shut-off devices

Despite these precautions, occasionally leak system or secondary containment will leak or spill waste. When this happens, the owner / operator should immediately take the tank out of operation and determine the cause of the release. To prevent the spill moving away from the tank, the tank owner and operator should also remove and properly dispose of any contaminated soil, ground

water, or surface water. In addition, the owner / operator should notify the relevant authorities within the required timeframe. The tank should then either be repaired or replaced.

8.0 LANDFARMING/BIOREMEDIATION TREATMENT PROCESSES

8.1 Definition

Land treatment involves the application of waste on the soil surface, or the incorporation of waste into the upper layers of the soil in order to degrade transform or immobilize hazardous constitutions present in hazardous waste.

Land farming is a bioremediation process, which involves the controlled application of waste to soil and the incorporation of these wastes into the upper soil zone by tilling

Bioremediation involves stimulating naturally occurring bacteria to degrade organic wastes in soils and groundwater.

8.2 Design standards

Land treatment units facilities should be equipped with controls for minimizing dust and run-off of leachate to prevent contamination of air, soil, and water.

8.3 Operational requirements

Maintenance of suitable soil pH, careful management of waste application rate and control of surface water run-off are all keys to the operation of a land treatment unit. The operation requirements include:

- Controls on the rate and method of waste application (e.g. oily drill cuttings, oil contaminated soil)
- Measures to control soil acidity.
- Measures to enhance microbial and chemical reactions
- Measures to control the moisture content of the area where wastes are treated.
- Treatment program and demonstration

In order to guarantee that these waste treatment practices should be conducted to properly degrade the waste, the owners of land treatment units should provide trial data that demonstrates the efficiency of the technique.

8.4 Monitoring & Inspection

The owner / operator should regularly inspect the treatment area to ensure that the facility is in compliance with the operating criteria. In addition, owner and operator should establish a soil-monitoring program (pH, H2O, of bacteria). If there is significant evidence that wastes in the unit are not responding to treatment, the treatment program should be modified.

A reuse option or a final grave for the bioremediated materials should be identified and should be achievable.

8.5 Groundwater monitoring

See 12.6

9.0 SURFACE IMPOUNDMENTS

9.1 Definition

For the purposes of this document this is either a topographic depression, or man made excavation, that is used to treat, store or dispose of waste. Examples: lined holding ponds, storage pits, settling lagoons, clay quarry.

9.2 Design Standards

To minimize the potential for leachate to leak from a surface impoundment there are the following requirements:

- Lining System
- Leachate collection and removal system where appropriate
- Leak detection system where appropriate
- Dikes, berms, and freeboard
- Construction quality assurance

9.3 Monitoring & Inspections

To ensure that the liners and leachate collection and removal system are working properly, owners and operators of hazardous waste surface impoundment should:

- Inspect liners and dikes or berms for any problems after construction or installation and continue regular inspections
- Regularly monitor leachate collection and removal system sumps to measure the amount of liquid in the sump and determine whether the upper liner might be leaking

9.4 Groundwater monitoring

See section 12.6

10.0 INCINERATORS

10.1 Definition

Incinerator is an enclosed device that uses controlled flame combustion. Wastes may be combusted for various purposes, namely volume and hazard reduction. In recent years wastes are also increasingly being incinerated to recover energy eg use in specifically designed waste to energy plants or as a replacement for fuel or raw materials in other industrial processes such as co-incineration in cement kilns, coke oven, smelting, melting and refining furnace etc. This has in turn governed the redesign of incinerators to include automatic feed, inline continuous monitoring systems and secondary burners.

10.2 Permitting

The permit granted by the competent authority for an incineration or co-incineration plant should, in addition to complying with any applicable requirements as relevant:

- List explicitly the categories & types of waste, which may be treated.
- Contain information on the quantity of waste, where appropriate;
- List the quantities of the different categories of waste which may be treated;
- Include the total waste incinerating or co-incinerating capacity of the plant;
- Specify the sampling and measurement procedures used to satisfy the obligations imposed for periodic measurements of each air and water pollutants.

- Specify the minimum and maximum mass flows of those wastes, their lowest and maximum calorific values and their maximum contents of pollutants, e.g. PCB, PCP, chlorine, fluorine, sulphur, heavy metals.
- Specify the operating conditions emission limits and risk control measures.
- Describe measures to recover heat generated during incineration as far as practicable e.g. through combined heat and power, the generating process steam or district heating (where applicable)

10.2 Operational controls

Incinerators should be designed, equipped and operated in a manner that environmental pollution prevention in the form of emission limits and management controls are safely met.

- Incineration plants should be operated in order to achieve the maximum level of incineration possible (fully controlled burning of the waste as per the design specification)
- Incinerator operators should receive a comprehensive description of any waste before they can accept it, such as information on the generating processes, information on the physical and chemical composition of waste and information on hazardous characteristics of waste.
- The company should regularly monitor certain critical parameters that will ensure compliance with the performance standards. These parameters, or operating requirements, may include:

    - Waste feed rates, gas temperatures and residence times, such as 850ºC / 2 seconds and 1100ºC / 2 seconds for hazardous wastes with greater than 1% homogenate organic substances (expressed as chlorine), combustion gas velocity, concentration of oxygen, pressure, water vapour content of the exhaust gas
    - Emission limit values for a range of parameters to air such as: NOx, CO, total dust, TOC, HCl, SO2, heavy metals, dioxin and furans
    - Operational control parameters for waste-water at least for pH, temperature, flow, total suspended solid, dioxin and furan
    - Limits on variation of system design and operating procedures

10.3 Monitoring & Inspections

The combustion process and equipment should be monitored and inspected to avoid potential accidents or incomplete combustion.
Inspections and monitoring requirements include:

- Monitoring the combustion temperature and waste feed rate
- Sampling and analysing the waste and exhaust emissions to verify that the performance standards established in the permit achieve the operating capability.
- Conducting visual inspections of the combustion unit and its associated equipment
- Testing the emergency feed cut-off system and any associated alarms
- Placing monitoring and inspection data in the operating log

Residues from the combustion of hazardous waste are also potentially hazardous waste (e.g. heavy metals). The owner/operators should determine if the ash exhibits any hazardous waste characteristics and classify the waste accordingly. Ash that exhibits a hazardous characteristic should be managed as hazardous waste. Depending upon the classification, the ash residue may be stabilized and reused for an appropriate and approved use. Failing that, the waste should be disposed of to appropriate landfill.

11.0 LANDFILL SITES

11.1 Definitions

A landfill is a disposal (ultimate grave) facility where solid hazardous or non hazardous waste is placed in (landfill) or on the land (landraise).
Leachate is the waste liquid, which comes from the waste. This includes any rain or surface water, which comes into contact with the waste and is thereby contaminated. Leachate is potentially hazardous and its characteristics will depend upon the components of the waste.
Landfill gas is gas that is generated by decomposition of organic material at landfill disposal sites. Landfill gas is approximately 50 percent methane.

11.2 Permitting

The permit granted by the competent authority for a landfill should indicate the following:

- The identity of the applicant and, in some cases, of the operator
- A description of the types and total quantity of waste to be deposited
- The capacity of the disposal site
- A description of the site
- Waste acceptance criteria -WAC
- The proposed methods for pollution prevention and abatement
- The proposed operation, monitoring and control plan
- The future plan for restoration of the site.

11.3 Design Standards

To prevent or reduce the adverse effects of landfilling of waste on the environment, in particular on surface water, groundwater, soil, air and human health, there are design standards:

- An engineered lining system for the base, side and capping of the landfill to include either / and a combination of natural eg clay and manmade eg. plastic (HDPE) materials
- Leachate and gas collection and removal systems where appropriate
- Leak detection systems as appropriate
- Construction quality assurance by experienced personnel
- Monitoring systems for gas and leachates eg a system of monitoring boreholes
- Run-on, run-off, controls
- Litter, dust, pest and vermin controls

11.4 Operational Controls

- Waste should be treated before being landfilled
- Hazardous waste that is landfilled should be disposed only at a hazardous waste landfill
- Liquid waste; flammable waste; explosive or oxidising waste; hospital and other clinical waste which is infectious; used tyres, with certain exceptions should not be landfilled.
- Regularly (eg monthly) monitor & measure the amount and quality of leachate from predetermined locations of the landfill
- Appropriate measures should be taken in order to control the accumulation and migration of landfill gas (if produced)
- Potential for dust measurement if located near to dwellings
- Daily covering of wastes to reduce odor & vector issues

11.5 Inspections & Monitoring

To ensure that the liner and leachate collection and removal systems are working properly landfill owners and operators should:

- Provide detailed independent QA throughout liner installation
- Continue regular monitoring for evidence of deterioration or damage throughout the life and aftercare of the facility

11.6 Groundwater monitoring

The treatment, storage, or disposal of waste directly on the land has the potential to generate leachate that can carry hazardous contaminants into the environment. Such contaminants can pose a serious threat to ground water resources and in-situ geology. This makes groundwater monitoring an important component of the ongoing monitoring regime for waste facilities.

- Land based treatment storage or disposal facilities (land treatment areas, landfills, surface storage areas and waste piles) should perform baseline monitoring and ongoing operational monitoring of the groundwater under the facilities to ensure that the waste management activities are not causing contamination of the groundwater.
- Land based facilities should install monitoring wells to detect contamination in the perched aquifers and the primary underlying groundwater resource. In order to ensure that the information received from the monitoring is accurate, facilities should develop a ground water monitoring program in consideration of the following points:
- Enough wells installed in the right places to accurately represent the ground water activity and characteristics under the facility
- Properly installed monitoring wells, i.e. cased, for long term use
    - Consistent regular sampling and analysis procedures eg quarterly sampling and analyses of groundwater
    - Accurate records of information collected and data analyses

12. OTHER FACILITY SITES

Other types of waste facility may exist that is different to those previously described. In these cases, the facility should comply with the general principles for all facilities (where relevant) as a minimum. Further information can also be obtained from the BP Central HSE Environmental Team.

Attachment 1 Waste Register

Waste Register													
Site										Responsible person			
Waste transfer note number	Container type	Container number	Quantity of container	Date	Waste description	UNIT	QTY	Type of waste (H/N-H)	Source of waste	Quantity (tonne)	Volume (m3)	Waste receiver site	Received blue copy (yes/no)

Attachment 2 Waste Identification Label

WASTE IDENTIFICATION LABEL

TULLANTININ TƏSVIRI ETIKETI

Do you want to have someplace here where they need to indicate if waste is hazardous or not?

Waste type Tullantinin Növü	
Waste Category Tullantının kateqoriyası	
Waste amount (by wt or vol) Tullantilarin miqdari (çəki və ya həcm)	
Known hazards (use msds) Məlum təhlükələr (materialin təhlükəsizlik pasportundan istifadə olunmalidir)	
Point of origin of waste Tullantilarin yarandiği yer	
Date received Qəbul edilmə tarixi	
Contact name and tel no. Əlaqə saxlanmali şəxsin adi və telefon nömrəsi	

LABEL TO BE FULLY COMPLETED AND AFFIXED TO OUTSIDE OF INDIVIDUAL WASTE CONTAINER IF NOT IN ORIGINAL PACKING

ILK BAĞLAMADA TULLANTI HAQQINDA MƏLUMAT OLMADIĞI HALDA ETIKET TAM ŞƏKILDƏ YAZILIB DOLDURULMALI VƏ HƏR BIR KONTEYNERIN BAYIR TƏRƏFINƏ YAPIŞDIRILMALIDIR

Attachment 3 MSDS Sheet Form

9 Methanol.pdf

Attachment 4 Waste Transfer Note

WASTE TRANSFER NOTE
TULLANTILARIN TƏHVIL VERILMƏSI HAQQINDA QƏBZ

Skip number: Badyanın nömrəsi:	Reference No: Qeydiyyat nömrəsi:

1.WASTE DESCRIPTION. Describe fully the nature and quantity of each type of waste. Attach additional sheets if necessary. Specify the containers used to hold the waste during transportation.

1.TULLANTILARIN TƏSVİRİ. Hər bir tullantının növünü və miqdarını tam şəkildə təsvir edin. Ehtiyac olduğu halda əlavə vərəq qoşun. Daşınma prosesində tullantıların saxlanılması üçün istifadə olunan konteynerin növünü göstərin.

2.GENERATOR'S DETAILS 2.TULLANTILARIN YARANMA MƏNBƏYI HAQQINDA MƏLUMAT		
A	Department (Production/Drilling/Pipeline, etc) Şöbə (Hasilat/Qazma/Boru kəməri və s.)	A
B	Facility/Site Location Obyektin/sahənin yeri	B
C	Name and signature of responsible person Məsul şəxsin adı və imzası	C
D	Contact number Əlaqə telefon nömrəsi	D
3	TRANSPORTER'S DETAILS DAŞIYAN HAQQINDA MƏLUMAT	
A	Destination of shipment Çatdırılmalı məntəqə	A
B	Date of shipment Daşınma tarixi	B
C	Name and signature of Transporter Daşıyanın adı və imzası	C
D	Contact number Əlaqə telefon nömrəsi	D
4	RECEIVER'S DETAILS Qəbul edən haqqında məlumat	A
A	Name of facility Obyektin adı	B
B	Date received Qəbul edildiyi tarix	
C	Name and signature of waste recipient Tullantıları qəbul edənin adı və imzası	C
D	Contact number Əlaqə telefon nömrəsi	D

One transfer note is required to accompany each consignment of waste Tullantilarin hər bir partiyasi üçün təhvilverilmə haqqinda qəbzin bir nüsxəsi tələb olunur White copy to be completed and retained by the generator of the waste Pink copy to be completed and retained by the transporters of the waste Qəbzin çəhrayı rəngli surəti doldurularaq tullantıları daşıyan şəxsdə saxlanılır Qəbzin ağ rəngli surəti doldurularaq tullantını yaradan şəxsdə saxlanılır Green copy to be completed and retained by the receiver of the waste Qəbzin yaşıl rəngli surəti doldurularaq tullantıları qəbul edən şəxsdə saxlanılır.

Attachment 5 Summary of Current Azeri Waste Management Legislation

Type of Legislation	Subject	Reference No.	Date	PDF
Presidential Laws				
Law	Industrial and Domestic Wastes	514-IQ	June 30, 1998	
Law	Accesion of the Azerbaijan Republic to the Basel Convension of the United Nations Organisation on the Control of Transboundaty Movements of Hazardous Wastes and Their Disposal	80-IIQ	February 16, 2001	
Resolutions of the Cabinet of Ministers				
Resolution	Rules of issue of passports for hazardous wastes	Resolution 041	March 31, 2003	
Resolution	Types of Enterprises, Which Are Not Allowed to Drain (Discharge) Industrial Wastes	Resolution 122	July 31, 2000	..\..\Info & Refs\Legislation\Azeri Legislation\ReCab 122-July 31-2000.pdf
Resolution	On Approval of the Rules of Road Carriage of Dangerous Cargoes	Resolution 010	January 27, 2000	..\..\Info & Refs\Legislation\Azeri Legislation\ReCab 10-Jan 27-2000.pdf
Resolution	On approval of Rules of Issue of Special Permission (License) for Production and Allocation of Industrial Wastes	Resolution 217	December 6, 2000	..\..\Info & Refs\Legislation\Azeri Legislation\ReCab 217-Dec 06-2000.pdf
Resolution	On approval of Rules of Issue of Special Permission (License) for Production, Industrial Use, Storage, Re-circulation and Neutralisation of Ozone Depleting Substances and Products Containing Such Substances	Resolution 218	December 6, 2000	..\..\Info & Refs\Legislation\Azeri Legislation\ReCab 218-Dec 06-2000.pdf

"Legislation Register.xls"

#	Subject	Dir No.	Title	Web	PDF
	Framework waste legislation				
1	Waste Framework	75/442/EEC	Council Directive	comm/environment/waste/legislation/a.htm	Refs\Legislation\EU Legislation\P
2	Hazardous waste	91/689/EEC	Council Directive		Refs\Legislation\EU Legislation\P
3	List of wastes	2000/532/EC	Comission Decision		Refs\Legislation\EU Legislation\P
4	Amendment to the list of wastes	2001/573/EEC	Council Decision		Refs\Legislation\EU Legislation\P
5	Control of transboundary movements of hazardous wastes and their disposal (Basel Convention)	93/98/EEC	Council Decision		
	European Union legislation on waste management operations				
1	Landfilling	1999/31/EC	Council Directive	http://europa.eu.int/comm/environment/waste/legislation/b.h	..\..\Info & Refs\Legislation\EU
2	Incineration (of waste)	2000/76/EC	Council and Parliament Directive		..\..\Info & Refs\Legislation\EU
3	Port-reception facilities for ship-generated waste and cargo residues	2000/59/EC	Council and Parliament Directive		..\..\Info & Refs\Legislation\EU
	European Union legislation on specific waste streams				
1	Disposal of waste oils	75/439/EEC	Council Directive	http://europa.eu.int/comm/environment/waste/legislation/c.h	
2	Waste from the titanium dioxide industry	78/176/EEC	Council Directive		..\..\Info & Refs\Legislation\EU
3	Batteries and accumulators containing dangerous substances	91/157/EEC	Council Directive		..\..\Info & Refs\Legislation\EU
4	Packaging and packaging waste	94/62/EC	Council and Parliament Directive		..\..\Info & Refs\Legislation\EU
5	Disposal of PCBs and PCTs	96/59/EC	Council Directive		
	Other in/directly related EU legislation				
1	Approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations	76/769/EEC)	Council Directive	comm/environment/waste/legislation/e.htm	Refs\Legislation\EU Legislation\PDF files\CoDi 76-769-
2	Protection of groundwater against pollution caused by certain dangerous substances	80/68/EEC	Council Directive		eu.int/eur-lex/en/consleg/pdf/1980/en_1980L0068_do_001.pdf
3	Assessment of the effects of certain public and private projects on the environment	85/337/EEC	Council Directive		Refs\Legislation\EU Legislation\PDF files\CoDi 85-337-
4	Urban waste-water treatment	91/271/EEC	Council Directive		Refs\Legislation\EU Legislation\PDF files\CoDi 91-271-
5	Integrated pollution prevention and control	96/61/EC	Council Directive		Refs\Legislation\EU Legislation\PDF files\CoDi 96-61-EC.pdf

Attachment 6 Summary of Current Georgian Waste Management Legislation

The *Law On Protection Of The Environment* (1996) is a framework law regulating legal relationships between the state authorities and physical bodies and legal entities (irrespective of ownership and organizational-legal forms) in the field of environmental protection and use of natural resources. It also forms the basis for the review and development of environmental legislation. It sets overall objectives for environmental protection and provides guiding principles and instruments to achieve the set objectives. This law defines the rights and obligations of the individual; delineates the competence of government agencies and sets out criteria for delineation of the areas of competence between local and central authorities in the protection of environment. The law obliges industrial facilities to undertake integrated control and monitoring of environmental pollution.

One of the key requirements of the law applicable to industrial facilities is the development and coordination of emergency response plans with relevant authorities. The law transfers environmental commitments of the former owner of a facility to a new one. Another major requirement set by this law is that any industrial or commercial activity should procure an environmental permit from the relevant government agency and licences for utilisation of natural resources such as: land, water, forest, flora, fauna and minerals.

The law defines guiding principles for all parties involved in planning and implementing activities:

Risk Reduction: a developer / proponent of an activity is obligated to implement all relevant measures to minimise or eliminate the risk of damage to human health or the environment
Sustainability: utilization of the environment and natural resources that does not pose any threat to community development and ensures protection of the environment and natural resources from irreversible quantitative and qualitative changes
Priority: an activity that affects the environment or human health should be replaced with a lower risk option, even if it is more expensive. Preference should be given to the latter if its cost is lower than that for compensation of damage inflicted to the environment by the lower-cost option
User pays: users should pay for utilisation of natural resources (land, water, forest, flora, fauna, mineral resources, etc.)
Polluter pays: polluters should bear the costs associated with the damage to the environment;
Preservation of biodiversity: activities should not lead to irreversible degradation of biodiversity
Waste minimisation: priority is given to technologies that minimise waste generation
Recycling: priority is given to substances, materials and chemicals, which are biodegradable, degrade without harm to environment or can be recycled
Reinstatement: any component of the environment degraded by an activity should be reinstated to the condition as close as possible to that before the activity
Environmental Impact Assessment: a developer should take into consideration and assess potential impacts associated with the proposed activity or development at the design or planning stage in accordance with applicable legal requirements
Public participation in decision-making: public participation should be ensured in decision-making related to important aspects of the planned activity
Access to information: environmental information should be accessible to the public.

The law sets out specific requirements in relation to waste disposal practices (*Chapter 9*), in particular:

The developer should ensure minimisation, treatment to acceptable standards, recycling / recovery, disposal of industrial, domestic / household and other types of waste in accordance with environmental, sanitary-hygiene and epidemiological standards and procedures
Disposal of household and industrial waste is permissible at specially defined places in accordance with environmental, sanitary-hygiene and epidemiological standards and procedures
Disposal of toxic, radioactive and other types of hazardous waste is permissible at specially defined and engineered places in accordance with environmental, sanitary-hygiene and epidemiological standards and procedures
No waste can be disposed in the sea or other water bodies.

The *Law Of Georgia On Environmental Permit* (1996) describes an environmental permit application and acquisition process. It also provides classification of proposed activities into four categories and defines different requirements by categories. This law classifies all activities related to waste handling and disposal (in particular, disposal of household and industrial waste, site selection and operation of non-hazardous landfills and incinerators; disposal of toxic, hazardous and radioactive waste, its treatment and site selection and operation of hazardous waste) as Category I, which requires a full scale EIA (*Article 4*).

A new edition of the *Law Of Georgia On Transit And Import Of Waste In Georgia* (1995) was adopted in 1997. Article 2 of the law states that the following is banned on the entire territory of Georgia:

Transit and import of hazardous (including toxic) and radioactive industrial, household and other types of waste for further utilization, treatment, disposal or any other purpose (including waste disposal operations listed in Appendix 4 of the Basel Convention)
Import of non-hazardous (including non-toxic) and non-radioactive industrial, household and other types of waste for further treatment, disposal or any other purpose (including waste disposal operations of group "F" listed in Appendix 4 of the Basel Convention).

Law Of Georgia On Obligation To Compensate For Harm Caused By Hazardous Substances (1999) provides for obligatory compensation of damage inflicted by contamination with hazardous substances. Compensation liability is assigned to a responsible entity, which is defined as an entity polluting the environment with hazardous substance as a result of production, treatment, storage, transportation, utilization or disposal of a hazardous substance (separately or together with other substances); or as an entity that owns or controls a hazardous substance; or as an entity, which produces, treats, stores, transports, uses or disposes a hazardous substance on behalf of another entity.

A4.3 SNIP Standards

These Russian standards and rules (SNIP 2.01.28-85) are applicable to the design of facilities for the neutralisation of hazardous waste and hazardous landfills. They do not apply to the design of landfills for radioactive, solid domestic and non-toxic industrial wastes. The standards were approved by Resolution No. 98, dated 26/06/1985, of the State Construction Agency of USSR.

Table A4.1: Applicable Waste Management Legislation

Applicable EU Waste Legislation
European Community (EC) Framework Directive on waste (91/156/EEC) Annex I
EC Directives 75/442/EEC and 91/156/EEC and other relevant EC standards for waste management
EC Directive 1999/31/EEC Landfill
EC Directive 1991/689/EEC on hazardous waste
EC Directive 2000/76/EC on Waste Incineration
EC Directive 1986/278/EEC on Disposal of treated sewage on agricultural land
EC Directive 91/689/EEC Hazardous waste classification: Article 1(4)
Directive 75/439/EEC on Disposal of waste oil
EC Regulation 259/93 on Supervision and control of shipments of waste
World Bank Standards (As default for wastewater treatment facilities, if no other standards specified)
United States Export Import Bank (US Ex-Im) standards
Project -specific standards for sewage, oily water treatment and wastewater discharges to water
European standards for waste management
EC Directive 85/337/EEC
Georgian Legislation
Law of Georgia Regulation - "Instruction on Protection of Atmosphere During the Operation of Landfill Sites", October 23, 2001
National Legislation - "Law on Transportation of Hazardous Wastes", 1998
National Legislation - "Law on Hazardous Chemicals and Law on Pesticides and Agrochemicals", 1998
National Legislation - "On Compensation of Damage Caused from Hazardous Substances", 1999
Source: Legal register developed as part of the Georgian ESIA Draft for Disclosure

A4.5 Guidelines and International Best Practice

The World Bank *Pollution Prevention and Abatement Handbook* (1998) contains detailed guidelines regarding minimization of the use of resources as well as reduction of the quantity of wastes requiring treatment and disposal. They are designed to protect human health, reduce discharges of pollutants into the environment, use commercially proven and cost-effective technologies, follow regulatory trends, and promote good industrial and environmental management practices.

Other relevant guidelines include:

IFC Hazardous Materials Management Guidelines, December 2001
World Bank Guidelines for Oil & Gas Developments (Onshore)
ExIm Environmental Procedures and Guidelines, April 2001
E&P Forum Waste Management Guidelines, September 1993.

Best Available Technology (BAT) principles should apply.