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Pollution Control Procedure

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1.0 PURPOSE

Operations & Maintenance (O&M) activities can have a significant impact on the environment and as such is controlled through numerous regulations, codes and legislation at a local, regional and international level. Compliance of these is a critical and continual requirement of the O&M function. The purpose of this procedure is to identify the types of potential pollution relevant to O&M and the correct way to mitigate, manage, and control potentially harmful substance and materials from otherwise being released into the environment.

2.0 SCOPE

The scope of this procedure covers hazardous liquids, fuels, oils and fats that tend to be found in normal day to day O&M operations. However, it also covers the wider matters of air, water and noise pollution and associated mitigation. Potentially polluting substances must be stored in such a way that environmental harm does not result, nor is likely to result from leakages of materials from containment.

The scope of this procedure therefore applies to primarily to O&M works in facilities performed under all Government Operation and Maintenance Contracts executed throughout the Kingdom of Saudi Arabia. This includes a duty and responsibility for managing upstream and downstream supply chain (e.g. suppliers, sub-contractors, specialist service providers).

3.0 DEFINITIONS

Definitions	Description
AM/FM	Asset Manager and Facility Manager
Contaminant	Substance that is identified by the as having a regulatory standard.
Decibel(dB)	The decibel (**dB**) is a logarithmic unit used to measure sound level. It is also widely used in electronics, signals and communication.
Hazardous Material	Materials harmful to human health and/or the environment that is solid, semi-solid, liquid, or gas and may include hazardous wastes.
HSE	Health, Safety and Environment
Impermeable	Not allowing a fluid to pass through.
In-situ	Meaning to leave or treat in place, usually referring to earth material (soil, groundwater, sediment) during construction or contaminants during remediation.
Personal Protective Equipment (PPE)	Equipment that will protect workers against health or safety risks on the job. The purpose is to reduce employee exposure to hazards when engineering and administrative controls are not feasible or effective to reduce these risks to acceptable levels.
Pollutant	A substance, condition, or energy introduced into the environment that has undesired effects, or adversely affects the usefulness of a resource.
Potentially Polluting Substances (PPS)	Diesel, petrol and oil, or “fuels” and Liquid chemicals, such as thinners, solvents, paints, glues, acids, fertilizers and pesticides. The reference to “chemicals” here also includes unused chemicals, liquid mixtures made from dry chemicals and water or other liquids, and residues from chemical use (for example, the wash fluids resulting from cleaning of paint brushes). The reference to “fuels” here also includes waste fuels, such as waste oil, and waste emulsions (i.e. mixtures) of water and fuels. Water-based paint is also considered a chemical and therefore a potentially pollution substance
Release	Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers and other closed receptacles containing any hazardous substance, pollutant, or contaminant).
Responsible Contractor	This can be normally taken to mean the in-house Facility Manager or Operations & Maintenance function or the appointed external FM contractor responsible for delivering all the FM service activities within a facility.

Definitions	Description
Safety Data Sheet (SDS)	A document that states the material's hazardous constituents, chemical and physical properties, health hazards, permissible exposure levels, first-aid procedures, emergency procedures, and the recommended handling and use requirements. The manufacturer must provide an SDS for all potentially hazardous materials.
Secondary Containment	Safeguarding method used to prevent unplanned releases of compounds into uncontrolled areas and which is external to and separate from primary containment.
Source	The point of emission or discharge of a pollutant or effluent.
Stage	A temporary location for storage at site with the future intent to use, transport, or dispose of the material.
Wastewater	Water that (1) is or has been used in an industrial or manufacturing process, (2) conveys or has conveyed sewage, or (3) is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

4.0 REFERENCES

- Environmental General Law issued by a Royal Decree No. M/34 Dated: 15/10/2001.
- EOM-KSS-PR-000033 Job Hazards Analysis & Pre-Start Briefing Procedure
- EOM-KSS-PR-000016 Hazard Communication Procedure.
- EOM-KSH-PR-000005 Air Surveillance Program Procedure.
- EOM-KSH-PR-000009 Asbestos Management Procedure.
- EOM-KSH-PR-000010 Hearing Conservation Program.
- EOM-KS0-PR-000001 Incident Notification, Investigation and Reporting Procedure.
- EOM-KSS-PR-000014 Emergency Preparedness Procedure.
- EOM-KSE-PR-000004 Compliance evaluation procedure.

5.0 RESPONSIBILITIES

5.1 Facility Manager or Responsible Contractor

- Ensure the resources and arrangements are available for the implementation and management of this procedure. This includes the commissioning of specialist contractors for dealing with hazardous waste disposal and for large scale spill response and remediation.
- Ensure that this procedure is implemented as written.
- When the facility is operational or under maintenance, ensure that environmental responsibility is a priority.
- If an onsite Waste Management representative has not been designated, then the Facility Manager shall be responsible for coordinating with the designated Health, Safety and Environment (HSE) representative to determine requirements.
- Provide medical surveillance of workers exposed at or above permissible exposure limits for hazardous substances, conducted (1) at least annually, (2) when a worker moves to a new facility, (3) when a worker experiences exposure from unexpected or emergency releases and (4) at the end of employment.

5.2 HSE Representative

- Developing and executing health and safety plans in the workplace according to legal guidelines.
- Preparing and enforcing policies to establish a culture of health and safety.
- Evaluating practices, procedures and facilities to assess risk and compliance with Saudi law.

5.3 Supervision

- Ensure the requirements of this Procedure are adhered during Operations and Maintenance activities.

- Ensure that work areas and tasks under their responsibility have been assessed for potential sources of pollution.
- Ensure that adequate pollution control measures such as drip trays and spill kits are available throughout the work area and that these are inspected / maintained as required.
- Ensure that employees had been trained in accordance with the Facilities training requirements.
- Identify the following:
    - Oil storage locations.
    - Potential spill pathways (how can oil get into the environment and into wadis / aquifers / groundwater / lagoons / coastal / marine environment). The direction, rate of flow, and total quantity of oil that could be discharged following containment failure.
- Ensure employees receive training and participate in mentoring new employees.
- Ensure regular emergency response exercises/scenarios and drills with key personnel and in coordination with Civil Defense.
- Learn the system (layout, valves, shutoffs, etc.).
- Comprehend and follow operational procedures for the Facility.
- Ensure PPS equipment is maintained to procedures to prevent leaks and spills.
- Periodically inspect (Minimum Weekly) oil storage locations visually for container or tank condition and spills.
- Ensure personnel under their supervision follow appropriate handling procedures.
- Know spill response procedures and ensure a well-stocked cache of spill response supplies such as spill response kits are easily accessible.
- Undertake emergency response exercises / drills with key personnel / employees. Report on Drills

5.4 O&M and Responsible Contractor Employees

- Adhere to the requirements of this Procedure.
- Review Safety Data Sheet (SDS) for information regarding correct personal protective equipment, appropriate spill cleanup materials, and proper disposal of used cleanup materials.
- IF it is considered safe to do so referencing Risk assessment and wearing correct Personal Protective Equipment (PPE), THEN try to stop or control spills at the source. (STOP-CONTAIN-NOTIFY-CLEAN UP is the main premise of the spill response approach)
- Use appropriate materials in spill kit to block the flow and prevent the release from discharging into a storm drain, when required.
- Ensure all traps, silt traps, gullies and oil sumps present within a facility are regularly inspected and cleaned.
- Report if instances of containment failure, leakage, missing covers, or misuse or understocked material receptacles and any concerns regarding pollution control to their line manager.

6.0 PROCESS

6.1 Environmental Aspects and Impacts

An “Environmental Aspect” is an element of the O&M function’s activities, products, or services that can interact with the environment. An “Environmental Impact” is any change to the environment, whether adverse or beneficial, wholly or partially, resulting from a Facility’s environmental aspects.

Impacts are generally negative (threats) although there may sometimes be positive impacts opportunities. The O&M function should use a JHA (see EOM-KSS-PR-000033 Job Hazard Analysis & Pre-Start Briefing Procedure) to capture “environmental aspects” and uses that term interchangeably with the word “risk” The JHA process identifies facility activities that potentially require specific actions including integration during planning, management and monitoring, and application of specialized training, resources, and skills. Environmental aspects are to be addressed at the earliest possible phase of a facility lifecycle or the O&M functional activities. Example aspects include:

- Emissions to air (e.g., pollution sources, permitted emission rates, testing/monitoring requirements, and emission control technologies and equipment);

- Discharge of water (e.g., storm water or wastewater, treatment methods and equipment, effluent discharge standards, and testing and monitoring);
- Discharge of oils, fuels or cleaning agents arising from the cleaning and maintenance of vehicles, plant and machinery;
- Discharge of oils, fats and other hazardous wastes from catering facilities
- Water availability and approved uses and quantities;
- Land use impacts (e.g., project site, laydown and staging areas, parking areas);
- Community and social impacts (e.g., dust, noise, lighting, vibration, traffic, business access);
- Impacts to the existing environment, including natural and cultural heritage resources (e.g., sensitive habitats, wet-lands, waterways, parkland, protected flora/fauna, biodiversity);
- Waste management (e.g., generation, minimization, treatment, and disposal/recycling);
- Erosion and sediment control (e.g., temporary and permanent stabilization and re-vegetation of disturbed areas); and
- Potential for encountering pre-existing chemical or biological contamination or unanticipated discoveries (e.g., contaminated groundwater or soils).

6.2 Storage of Potentially Polluting Substances (PPS)

- All Potentially Polluting Substances, including chemicals and fuels, shall be stored at a designated area. All materials shall be used solely for their intended purpose.
- Lubricants, fuels, waste oil and chemical storage areas will be constructed on a concrete base and within an impermeable bund to contain at least 110 % of the maximum capacity of the storage facility.
- All containers of oil, fuel or chemicals shall be fit for purpose, correctly stored labeled and identified with contents and capacity.
- All materials and chemicals will be stored in a manner that conforms to their SDS requirements.
- The quantities of PPS will be minimized to the greatest extent practicably.
- Hazardous materials should not be stored in significant pollution risk locations (e.g. within 50 meters of a water surface, valleys or 50 meters well, borehole or any drains.)

6.3 Bunds

- A ‘Bund’ is a structure, such as an earth or concrete mound placed around the perimeter of the material to be contained, is used as a form of secondary containment for bulk liquid storage tanks and around static generators (normally used for office & laydown electrical power supply but may applied to portable generators).
- Secondary containment is an additional impermeable device (such as a metal tray or a fixed bund) to hold a PPS and contain any spillage from a storage vessel/receptacle in the instance of a failure (Figure 1).
- The bund must be constructed of a suitable material. Bund walls also must have sufficient structural strength to hold the weight of stored liquid, in the event of a tank failure when the tank is completely full.
- The base or wall of a bund must be impermeable to prevent water and oil escaping, and must not be penetrated by any valves, pipes or other openings which could be used for draining the bund. Do not drill, puncture or allow holes to be made in any bund walls.
- An impervious surface coating can be applied to the base and walls.
- The containment area will have the capacity to contain 110% of the total volume of stored materials. Capacity of Storage tank to be marked on the tank. Capacity of the bund to be marked on the bund.
- The walls or boundaries of the bund area must be set at sufficient distance from the walls of the tank, so that spray/puncture leaks will be contained within the bund, consideration should be made to remove rain water to maintain the bund’s capacity. Generally, walls must be positioned at least half the height of the tank away.
- Any connection point for bulk refilling of a tank by tankers must be located within the bounded area.

- Fixed pipes carrying material to or from tanks and equipment (generators, etc.) must be positioned within the bund so far as they extend along or across the bund (instead of being attached to the outside of bund walls);
- All ancillary equipment such as valves and hoses will be contained securely within the bund when not in use.
- The general storage area must have signage, specifying the type of material stored, the volume of the tank, the volume of the bund.
- Responsible Contractor shall inspect all bunds, tanks and pipework regularly for signs of damage, corrosion or leakage, and maintain records of these inspections within the maintenance system.
- To ensure the bund retains its integrity, any defects in the bund wall or lining should be repaired promptly using the appropriate materials and technique.

Figure 1 – Example of fuel containment

6.4 Fuel Tanks

- Responsible Contractor should ensure that fuel tanks are double-skinned. A double-skinned tank has a primary tank with another "skin" placed around it with a very small gap between the two, thus allowing any leaked product to be contained in the outer tank.
- Tanks shall be protected to minimize the potential for collision. Install protection (such as a concrete curb in front of bund) to stop delivery/collection tankers from reversing into and breaking bunds and/or rupturing fuel tanks.
- Hoses between generators and fuel tanks also need to be within secondary containment (such as a bounded area).
- Responsible Contractor shall provide suitable refueling facilities for site/facility, vehicles and equipment, and is to pay particular attention to the drainage of the refueling area.
- All persons involved in refueling activities must receive specific training on refueling practices and spill prevention.
- Fuel tanks should be kept closed at all times.
- Overflow pipes should discharge vertically down into the bund and should be visible from the fill point.
- Tanks should be fully drained prior to removal or decommissioning in-situ by a suitably qualified contractor
- Responsible Contractor must use the preventative maintenance program in place for tanks and pipes.
- Responsible Contractor must ensure that sight gauges are fixed, preventative maintenance program in place and properly supported and are capable of isolation from the tank with a valve.

- A suitable risk assessment and method statement for fuel delivery should be developed and deliveries should be supervised at all times.

6.5 Temporary Equipment

- All stationary temporary equipment containing PPS are to have impervious catchment trays or drip trays placed beneath them during operation.
- These impervious drip trays (usually made of metal) shall be of a sufficient size to contain any breach of primary containment and shall extend beyond the outline of the object.
- Drip trays should be water-tight and free from cracks, breaks, dents, or any damage that would impair its liquid retaining capability.
- There is to be an adequate supply of material to soak up all fuel/oil/lubricant spills.
- Responsible contractor shall ensure that any fuel to be used on site (e.g. for generators) is stored in a labeled container (tank, drum, jerry can) which is of sufficient strength and structural integrity that it is unlikely to burst or leak in its ordinary use.
- Metal drip trays will be provided for smaller chemical and fuel storage containers.
- Metal impervious drip trays must be used during maintenance work or emergency servicing on site to catch any spills.
- Metal drip trays must be provided at the time of fuel delivery to catch any fuel that could be lost during the coupling and decoupling of the delivery hose.
- Refueling, oil changing and light maintenance at facilities will be undertaken using drip trays. This will prevent any release of materials from accidental spills into the underlying soil and groundwater.
- Any spillages into the metal drip trays will be treated as hazardous waste and collected for safe disposal by an approved waste Responsible Contractor.
- Any spillage or leakage and resultant contaminated soil (if any) will be removed and disposed of using approved waste management providers as soon as practicable.

6.6 Air Quality Management

The Responsible Contractor is responsible for air quality control for the facility in compliance with applicable legislative requirements and ambient air quality standards. See EOM-KSH-PR-000005 Air Surveillance Program Procedure, for more details. In addition, contractor will implement a comprehensive plan to control dust at the site. Both plans will work in conjunction with each other to provide air quality protection and limits threats to the environment and human health.

Below are details that shall be covered but not limited to:

- The burning of any material on location, including waste, is strictly prohibited.
- Facility access roads shall be swept thoroughly and regularly to minimize the accumulation of dust and/or sand. Dust generating materials transported to and from sites should be adequately covered during transport and if they are being stored externally on site;
- Inspections, servicing and maintenance of all plants, vehicles and equipment shall be carried out in accordance with the manufacturer's recommendations to reduce noise and air pollution. All servicing and maintenance records shall be made available for inspection.
- The Responsible Contractor must instruct employees to switch off engines when not in use.
- Consideration must be given to the public and adjacent traffic routes for all spray-painting and sand-blasting facilities.
- This also includes for closing the HVAC dampers within the facility during heavy dust storms in order to minimize and clogging-up of filters that will impede good air flow during normal operation but also, reduce the risk of contamination to the internal air quality.

6.7 Water Quality

6.7.1 Erosion and Sedimentation Control

If applicable, the Responsible Contractor shall have included, in the preventive maintenance plan, maintenance activities that ensures storm water drainage is maintained in good working order during rainy seasons and the maintenance measures will be such to minimize erosion and control sedimentation. Additional inspections before and during rain events shall be added as part of the maintenance plan. Establish a system to monitor local weather and initiate inspections before predicted storm events as a way to ensure that drainage controls are operational. Sediment containing industrial waste must be removed and disposed in an appropriate way to prevent soil from returning during rain events. Keep records of all maintenance activities, including date, location and description of maintenance activities. Take digital dated photos of performed activities.

6.7.2 Wastewater Discharges

Proper wastewater planning dictates staged development of the waste water handling systems and facilities. Waste water management will focus on meeting effluent limitations and preventing/minimizing environmental impacts due to the work activities. Responsible contractor shall seek prior approval and a valid permit for any discharge to water.

Responsible contractor shall re-vegetate or maintain sealed completed earthworks as soon as possible to prevent soil erosion and contamination of aquifers. Toilet facilities, portable or fixed, are to be maintained and managed in such a way that effluent drainage has adequate capacity at all times and cannot contaminate the local environment.

6.8 Noise

This procedure relates to the following types of environmental noise:

- Noise from industrial units in areas set aside primarily for industrial facilities.
- Noise from O&M or similar work activities.
- Noise from vehicles (including motorized vessels and recreational craft).
- Noise from equipment used outdoors.
- Noise from events which may otherwise impact the local amenity / community

Responsible Contractor must conduct a noise level survey for any area using a calibrated noise/sound level meter that is suspected of reaching 85 dB(A) where people or the environment may be adversely affected. More information can be found in EOM-KSH-PR-000010 Hearing Conservation Program Procedure.

6.9 Hazardous Materials Management

The Responsible Contractor and their appointed subcontractors will manage its hazardous materials in such safe manner to minimize the potential for threats to human health and the environment. The Responsible Contractor and their appointed subcontractors will utilize the following management system for all hazardous materials.

- Hazardous materials will be managed in a manner to minimize the potential for spills and releases to the environment.
- Incompatible materials will not be stored within the same secondary containment without adequate separation between the two materials to prevent potential spills from encountering one another.

More information can be found in EOM-KSS-PR-000016 Hazard Communication Procedure.

6.10 Environmental Awareness Training

Environmental awareness training is an important part of an effective environmental compliance program. The HSE representative will perform the environmental awareness training for Project employees.

It will be stressed during the training sessions the importance of maintaining “environmental awareness”in the employee's everyday duties. The regulatory basis for *Environmental Requirements*, communication, and administrative procedures related to compliance, inspection and monitoring, and best management practices will be explained and discussed.

6.11 Hazardous Materials Management & Spill Response Training

Supervisory staff and identified craft personnel will receive additional hazardous material management training, which includes how to prevent spills and how to respond to spills. Environmental emergency drills should be periodically conducted. The employees, because of this training, will be responsible for first response to spills for the project. All attendees will be documented. Regular drills shall be held. Minimum frequency for drills is annually.