

# Pollution Operations

# Prevention

## Environmental Issues | Pollution Prevention Operations

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Practical measures related to operational aspects vary from planning considerations and integration of environmental issues into engineering design, to application of onsite procedures aimed at reducing the risk of pollution.

A proactive and preventive approach is effective when measures are coordinated through a special program that has a high visibility with personnel.

Programs of pollution prevention and cleaner production are common within the companies, and they include a coordinator and a plan of action that has been developed with the participation of employees at all levels.

Engineering and operational techniques are now available to avoid or reduce pollution, and these cover:

- Produced water treatment technologies;
- Atmospheric emissions reduction techniques;
- Water/oil-based drilling mud wastes.

A practical approach to implementation encourages managers to conduct operations in an environmentally sound manner.

### **Waste treatment and disposal techniques**

Total elimination of waste is not possible, thus waste

management must be accomplished through application of measures of reduction, re-use, recycling, recovery, treatment and disposal.

A waste management plan relates the choice of waste handling and disposal options to the ecological sensitivities, regulatory requirements and available facilities/infrastructure of the geographical area involved.

The plan should provide guidance for handling each waste stream.

Waste management planning, implementation and review support:

- Protection of the environment and ongoing compliance with regulatory requirements;
- Ongoing training of field personnel;
- Minimization of the volume and toxicity of the wastes.

## **Oil spill contingency planning**

All operations should properly examine the risk, size, nature and potential consequences of oil spills and develop appropriate contingency plans,

The bases of contingency planning are:

- The identification of risk;
- The planning and implementation of actions to manage risks;
- Procedures for reviewing and testing of preparedness;
- Training of personnel.

Contingency planning should facilitate the rapid mobilization and effective use of manpower and equipment necessary to carry out and support emergency response operations.

Plans should clearly identify the actions necessary in the

event of a spill:

- The communications network;
- The organization structure;
- The individual responsibilities of key emergency personnel.

Responsibility for contingency plans, their implementation, training and exercise and periodic audit and review should be clearly delegated to site staff as required under the environmental management system.

## **Decommissioning and rehabilitation**

Site decommissioning and rehabilitation is an important part of environmental management.

The main purpose is to rehabilitate a site to a condition that meets certain agreed objectives.

Rehabilitation plans need to be developed early in the planning process using information gathered during the assessment phase.

A preliminary decommissioning and restoration plan identifies disposal options for all equipment and materials, including products used and wastes generated on site.

For example, the plan should consider the removal of oil from flowlines, the removal of surface equipment and facilities, well abandonment, pipeline decommissioning and reinstatement.

The plan should be further developed during field operations and fully defined in advance of the end of field life, and should include details on the provisions for the implementation of decommissioning activities and arrangements for post decommissioning monitoring and aftercare.

The site needs to be prepared and managed in such a way as to ease eventual rehabilitation.

In general reclamation should be based on a risk assessment process to ascertain the level required, and in some cases no rehabilitation or partial rehabilitation may be appropriate.

## **Monitoring**

Monitoring provides the means of measuring performance against established requirements through inspection, surveillance and analysis.

The detail and frequency of measurement should reflect the nature and extent of the risks involved.

Environmental monitoring programs should be implemented to address all activities that have been identified to have potentially significant impacts on the environment, during normal operations and upset conditions.

Environmental monitoring activities should be based on direct or indirect indicators of emissions, effluents, and resource use applicable to the particular project.

Monitoring frequency should be sufficient to provide representative data for the parameter being monitored.

Monitoring data should be analyzed and reviewed at regular intervals and compared with the operating standards so that any necessary corrective actions can be taken.

Other key elements of implementation and monitoring include reporting mechanisms, record systems, and follow-up.

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**Environmental management in oil and gas exploration and production, UNEP Technical Publication**

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