

DEPARTMENT OF ENVIRONMENT
ANNOUNCEMENT ON THE REQUIREMENT TO ENGAGE QUALIFIED
CONSULTANTS TO PREPARE DETAILED DESIGNS OF POLLUTION
CONTROL SYSTEMS AT THE EIA STUDY STAGE

1. The purpose of the announcement

The purpose of this announcement is to inform the project proponents and the EIA study team leaders on the new requirement to engage IETS, LTS, STS, and APCS consultants at the EIA study stage to handle the design of the pollution control systems associated with the development project.

(Note:

IETS: Industrial effluent treatment system; LTS: Leachate treatment system;
STS: Sewage treatment system; APCS: Air pollution control system)

2. The background

Currently, the EIA reports of industrial projects, solid waste transfer stations and landfills or centralized sewage treatment system do not address the aspects of pollution control in sufficient detail or in an acceptable manner. Typically, loose statement on the commitment to comply with the discharge or emission standards is given. Details of treatment technologies to be adopted are not given nor the design calculations of the IETS, LTS or APCS provided. Generally, no assessment is made whether the pollution control systems proposed are of the 'state of the art' or 'best available technology'. Additionally, in some cases, the treatment units of the entire IETS, LTS or APCS are not clearly defined and detailed features of the systems are not given. The very purpose of the EIA as a tool to integrate the measures to prevent and mitigate adverse impact on the environment, which includes environmental pollution is not achieved. The weakness of the current procedure where the pollution control aspects are treated only in a cursory manner in the EIA reports will be overcome with the new requirement on the engagement of IETS, LTS and APCS engineers at the EIA study stage.

3. The new requirement

For an EIA project involving an industrial manufacturing facility, the EIA study team leader shall include on his team a qualified IETS consultant and APCS consultant at the EIA study stage to be part of the EIA study team. For a solid waste or scheduled waste landfill or a solid waste transfer station project, a LTS consultant must be included on the EIA study team. Similarly for a centralized sewage treatment project, a STS consultant must be engaged to be part of the EIA study team. All the consultants must be professional engineers who hold a current registration certificate issued by the Board of

Engineers. (NOTE: The consultants also need to be certified as a competent person under section 49A of the EQA. A certification course for the consultants is planned to be introduced at the end of 2017).

The assignments to be tasked to the consultants are spelt out in the following paragraphs.

4. EIA projects involving industries generating effluents

4.1 The IETS consultant

The IETS consultant on the EIA team is required to study, prepare, and present the following:

a) Effluent information

- Identification of all the sources of **effluent** generation from the all stages of production. A **manufacturing (or production) process flow chart** identifying all the effluent generation points must be provided. **Reliable estimates** of the **flowrate** and **quality** of the effluent generated from each source must be given. The **sources of information** must be identified (e.g. previous studies, books, research papers, field sampling at existing industries, etc.).
- Discussion of the **significant effluent parameters** (maximum and average concentration) that will require treatment prior to discharge.

(b) IETS information

- Description of the **IETS technologies** proposed
- Discussion and statement that the IETS technologies proposed are of the type that can be described as "**best available technologies**" or "best available technologies not entailing excessive cost" or "state of the art technologies"
- Discussion and explanation that the proposed IETS treatment technologies are **appropriate** for the effluent to be generated. The IETS treatment components must be able to remove all the **significant parameters** to compliant levels prior to discharge. The EIA report must provide reliable **operational data** from existing IETSs operating elsewhere as evidence of the applicability of the proposed IETS technologies to the treat the effluent to comply with the discharge standards.

- Information on **process engineering design** of the entire IETS which includes the following:
 - An **IETS flowchart** (block diagram) showing the entire IETS **treatment components** proposed to remove all the significant effluent parameters and **mass balance** of the significant parameters.
 - **Detailed IETS engineering design** involving process engineering design calculations of the entire IETS based on the estimated effluent **flowrate** and **characteristics**. Other documents include working engineering drawings, process and instrumentation (P&I) diagram, drainage system layout plan, and performance monitoring procedure and instruments. The detailed design will also be used for the purpose of **budget allocation** which will also include costs related to performance monitoring requirements (instruments, laboratory facilities and personnel). At the **notification stage** the detailed engineering design can be used as a part of the documents to be submitted in the notification package to the DOE*)

(*Note: Under regulations 4 and 5 of the IER the IETS design must **comply** with the design specifications specified in the **IETS Design GD**).

5. EIA projects involving development of solid waste transfer stations and landfills

Landfills and transfer stations are a **high-impact project** which involves several major issues such as facility siting, leachate collection and removal, leachate treatment, landfill gas collection and disposal, stormwater collection, and site operation and maintenance. All these aspects need to be addressed in the EIA study and reported in the EIA report.

5.1 The LTS consultant

The LTS consultant on the EIA study team is required to study, prepare, and present the following:

a) Leachate information

- **Reliable estimates** of the **flowrate** and **quality** of leachate generated from the landfill or transfer station. The method used for leachate

flowrate estimation must be thoroughly discussed. The raw leachate quality must be based on reliable **existing data** or **field sampling**. The **sources of information** must be identified (e.g. previous studies, books, research papers, field sampling at existing landfills, transfer stations, etc.)^{*}.

- Discussion of the **significant leachate parameters** (maximum and average concentration) that will require treatment prior to discharge.

(b) LTS information

- Description of the **LTS technologies** proposed
- Discussion and statement that the LTS technologies proposed are of the type that can be described as “**best available technologies**” or “best available technologies not entailing excessive cost” or “state of the art technologies”
- Discussion and explanation that the proposed LTS treatment technologies are **appropriate** for the leachate to be generated. The LTS treatment components must be able to remove all the **significant parameters** to compliant levels prior to discharge. The EIA report must provide reliable **operational data** from existing LTSs operating elsewhere as evidence of the applicability of the proposed LTS technologies to the treat the leachate to comply with the discharge standards.
- Information on **process engineering design** of the entire LTS which includes the following:
 - A **LTS flowchart** (block diagram) showing the entire LTS **treatment components** proposed to remove all the significant leachate parameters and **mass balance** of the significant parameters.
 - **Detailed LTS engineering design** involving process engineering design calculations of the entire LTS based on the estimated leachate **flow rate** and **characteristics**. Other documents include working engineering drawings, process and instrumentation (P&I) diagram, drainage system layout plan, and performance monitoring procedure and instruments. The detailed design will also be used for the purpose of **budget allocation** which will also include costs related to performance monitoring requirements (instruments,

laboratory facilities and personnel). At the **notification stage** the detailed engineering design can be used as a part of the documents to be used in the notification to the DOE.

(Note:

Detailed engineering designs of the following are also required in the EIA report: leachate collection and removal system (LCRS), landfill gas collection and disposal system (LGCDS), stormwater collection system (SWCS), and site operation and maintenance procedure (SMOP) (SMOP is meant to address the waste acceptance criteria, scheduled waste control program, site supervision and security, waste disposal and covering activities, odor and dust emission mitigation measures, site monitoring, complaints response plan. These technical areas may not be under the responsibility of the LTS engineer, but rather they are more appropriate to be assigned to the landfill consultant)**

(Note:

* **Leachate flowrate estimation** is a critical step in the landfill design which affects several **landfill structures** such as the LCRS, LTS, etc. hence the method used for leachate flowrate estimation must be thoroughly discussed in the EIA report.

** All these items (and others) are required in the notification requirements - see **Regulation 4** and the **First Schedule** to the "Landfill Regulations".

- A notorious leachate parameter is ammonia nitrogen which is required to be monitored on a continuous basis using on-line instrumentation system to be linked to the state DOE-see regulation 8(a) of the "Landfill Regulations".

- Landfill Regulations is a short acronym for the "Control of pollution from solid waste transfer station and landfill" Regulations.

6. EIA projects involving development of centralized sewage treatment systems (STSs)

6.1 STS consultants

The STS consultant on the EIA team is required to study, prepare, and present the following:

- A **flowchart** (block diagram) showing the entire STS **components** proposed to remove all the significant sewage

parameters and **mass balance** of the significant parameters.

- **Detailed STS design** involving process engineering design calculations of the entire STS based on the estimated **sewage flowrate** and **characteristics**. The detailed design will also be used for the purpose of **budget allocation** which will include costs related to performance monitoring requirements (instruments, laboratory facilities and personnel).
- Discussion of the **significant effluent parameters** (maximum and average concentration) that will require treatment prior to discharge.

7. EIA projects involving emission of air pollutants and noise

All aspects of air pollution resulting from the implementation of the project will be addressed. These include all types of air emission such as the emission of air pollutants from the manufacturing processes, fugitive sources, emission of noise, and emission of air pollutants from incinerators and other fuel burning equipment.

7.1 The APCS consultant

The APCS consultant on the EIA team will study, prepare, and present the following:

a) Emission information

- Identification of all the sources of **emission of air pollutants** from the all stages of production. A **manufacturing (or production) process flow chart** identifying all the emission generation points must be provided. **Reliable estimates** of the air emission **flowrate** and emission **quality** from each source must be given. Discussion and quantification of **noise** emission and **fugitive emission** sources are also required. The **sources of information** must be identified (e.g. previous studies, books, research papers, field sampling at existing industries, etc.).
- Discussion of the **significant air emission parameters** (maximum and average concentration) that will require to be removed prior to discharge to the atmosphere.

(b) APCS information

- Description of the **APCS technologies** proposed
- Discussion and statement that the APCS technologies proposed are of the type that can be described as “**best available technologies**” or “best available technologies not entailing excessive cost” or “state of the art technologies”
- Discussion and explanation that the proposed APCS treatment technologies are **appropriate** for the effluent to be generated. The APCS components must be able to remove all the **significant air emission parameters** to compliant levels prior to discharge. Engineering and management techniques to reduce **noise emission** and **fugitive emission** must also be proposed. The EIA report must provide reliable **operational data** from existing APCSs operating elsewhere as evidence of the applicability of the proposed APCS technologies to the treat the air emission to comply with the emission standards.
- Information on **process engineering design** of the entire APCS which includes the following:
 - An **APCS flowchart** (block diagram) showing the entire **APCS treatment components** proposed to remove all the significant air emission parameters and **mass balance** of the significant parameters.
 - **Detailed APCS engineering design** involving process engineering design calculations of the entire APCS based on the estimated emission **flowrate** and **characteristics**. Other documents include working engineering drawings, process and instrumentation (P&I) diagram, and performance monitoring procedure and instruments. The detailed design will also be used for the purpose of **budget allocation** which will also include costs related to performance monitoring requirements (instruments, laboratory facilities and personnel). At the **notification stage** the detailed engineering design can be used as a part of the documents to be submitted in the notification package to the DOE*)

(*Note: Notification is required under regulation 5 of the CAR. Under regulation 7 the APCS design must comply with the design specifications as determined by the Director General).

8. EIA REPORTS NOT CONFORMING TO THIS DIRECTIVE

The EIA reports submitted to the DOE which do not comply with the requirements stated in this Directive will be rejected.

9. ENFORCEMENT OF THIS DIRECTIVE

The Directive stipulated in this announcement is effective immediately.

ISSUED BY:

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