

Technical Guidance Document for Monitoring Reports

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List of Abbreviations

| | |
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| AD EHS Center | Abu Dhabi Environment, Health, and Safety Center |
| CEMP | Construction Environmental Management Plan |
| CEHSP | Construction Environment, Health and Safety Plan |
| DMP | Discharge Management Plan |
| EAD | Environment Agency–Abu Dhabi |
| EAP | Environmental Action Plan |
| EHS | Environment, Health, and Safety |
| EHSMS | Environment, Health and Safety Management System |
| EIA | Environment Impact Assessment |
| EMP | Environmental Management Plan |
| EMS | Environmental Management System |
| EPA | Environmental Permit Application |
| MSDS | Material Safety Data Sheet |
| NOC | No Objection Certificate |
| ODS | Ozone-Depleting Substance |
| PCB | Polychlorinated Biphenyls |
| PER | Preliminary Environmental Review |
| SRA | Sector Regulatory Authority |
| UN | United Nations |

Definitions of Terms

Chemical Abstract Service Number—An internationally recognized registration number assigned by the Chemical Abstract Service (CAS) to uniquely describe either a chemical, a group of similar chemicals, or a mixture. The CAS Number (sometimes described as a Registry Number) consists of up to nine digits and provides an accurate way of retrieving a substance from a computer database. The CAS Number is simply a reference number, and unlike the United Nations Number, cannot be linked to any particular chemical or physical properties.

Chemical—Any element, compound, or mixture of elements and/or compounds. A substance that possesses hazardous properties, including, but not limited to, flammability, toxicity, corrosivity, or reactivity.

Continuous Emissions Monitoring System—The total equipment necessary for determining a gas or particulate matter concentration or emissions rate using pollutant analyzer measurements and a conversion equation, graph, or computer program to produce results in units required by the applicable emissions limit or standard.

Emission—The direct or indirect release of substances, vibration, heat, or noise from an installation into air, water, or land.

Environment, Health, and Safety Management System—An integrated series of elements for establishing policy, objectives, plans, and arrangements for implementation and continuous improvement in environment, health, and safety performance.

Environmental Impact Assessment—Systematic process of evaluating the environmental impacts of an activity or process on the environment.

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Environment—Surroundings in which a nominated entity operates, including air, water, land, natural resources, flora, fauna, and humans and their interrelation.

Exceedance—A measurement or reading that indicates the value is higher than the applicable limit for a particular pollutant or measurement.

Mitigation—Measures taken to reduce or limit the consequences or undesirable effects of a potential hazardous event.

Monitoring Program—A planned set of discharge monitoring activities.

Monitoring—Measurement of the properties of a material (such as a discharge) or (usually) the sampling of a material together with immediate or subsequent analysis or other form of measurement.

Pollutant—Generally, any substance introduced into the environment that adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems.

Pollution—Generally, the presence of a substance in the environment that, because of its chemical composition or quantity, prevents the functioning of natural processes and produces undesirable environmental and health effects.

Procedure—A documented series of steps to be performed in a logical order for a defined operation or in a given situation.

Proponent—The developer, permit applicant, company, or agency associated with the proposed project.

Responsible Person—A person designated by the proponent who, through the appropriate training and experience in health and safety, is competent to implement, oversee, and manage the employer's health and safety program.

Solid Waste—Rubbish, debris, garbage, and other discarded solid materials resulting from the project that are not classified as hazardous waste.

United Nations Number—The identification serial number assigned to any chemical or hazardous material by the United Nations (UN) Committee of Experts on the transportation of these materials and published in the UN's recommendations on the transport of dangerous goods.

Waste—Any material or by-product that is discarded by being abandoned (i.e., disposed of, burned, incinerated, recycled), or considered inherently waste-like.

Purpose of This Guidance Document

This Technical Guidance Document outlines the requirements for developing a periodic Monitoring Report (MR) for submission to the Environment Agency–Abu Dhabi (EAD). This guidance document is intended to provide guidance to project proponents, facility owners, and consultants on the preparation of an MR as required by EAD. Particularly, this guidance document provides an overview of the proper format and contents of an MR to meet EAD's requirements, help the proponent and/or consultant prepare the report, and make the review process easier and consistent for EAD. Most monitoring reports are required to be submitted to EAD on a quarterly basis. If a monitoring report is required by EAD for another time period, i.e. monthly or biannually instead of quarterly, this guidance should also be used when preparing the reports.

Section I of this Technical Guidance Document provides background information, the definition of an MR, the objectives of an MR, and information on how to prepare and submit an MR. Section II describes the appropriate contents and format of an MR.

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Section I. Background Information

The MR is a summary report that provides the findings from continuous or periodic monitoring. The MR is required to be submitted to EAD for review and approval on a regular basis (e.g., quarterly) as outlined in a permit, a Construction Environmental Management Plan (CEMP), Operation Environmental Management Plan (OEMP), or another EAD–required document. EAD requires monitoring of certain facilities that discharge into the air, water, or soil because these discharges can contain concentrations of pollutants in excess of established limits. The following sections provide more detail on the definition, objectives, and preparation and submission requirements of an MR.

Definition of a Monitoring Report

An MR documents the compliance with emission limits and operating conditions by an industrial facility or development project. The MR is used to document the implementation of a facility's required environmental monitoring. Typically, monitoring is required for emissions from a particular process or point to the air or water. MRs should be clear, timely, concise, and objective; provide a fair summary of all relevant data; and demonstrate conformity with the related EAD–approved environmental studies. If exceedances of pollutant limits are identified, the report must also include a description of all actions taken to identify the cause and to mitigate, control, and prevent the same problem from occurring again. An MR should

- Describe the process being monitored
- List the findings associated with monitoring for the previous monitoring time period (e.g., quarter or month)
- Detail the monitoring procedures that were followed
- Identify the relevant environmental monitoring requirements that were used during the assessment.

Objectives of a Monitoring Report

The purpose of an MR is to provide interested parties (e.g., EAD) with a clear indication of the environmental performance of the project or facility for the previous quarter or specific time period. The primary objectives of the MR are to

- Provide an analysis of the environmental impacts arising from a project or facility
- Determine that mitigation measures are effective in minimizing or removing environmental impacts
- Identify opportunities and make recommendations for improvements in environmental performance of the project or facility.

The usefulness of an MR is measured by how well problems are identified, evaluated, documented, and addressed by adequate and straightforward mitigation measures and corrective actions.

Preparation and Submission of a Monitoring Report

The facility owner or project proponent is responsible for preparing all MRs. EAD should outline the timing of monitoring in the facility or project permit, in the No Objection Certificate (NOC), in the CEMP or OEMP, or via another directive. The facility owner or project proponent is responsible for submitting the MR to EAD within 30 days of completion of each quarter or other specified time period. If, however, an exceedance is identified at any time it must be reported to EAD immediately.

Section II of this Technical Guidance Document discusses the minimum contents and required format for an MR. This framework of information presented should be followed for all MRs submitted; however, depending on the particular issues identified, some sections of an MR may be expanded upon or indicated to be “not applicable” as is relevant to specific project or facility issues.

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Section II. Required Content and Recommended Format

The MR should communicate the relevant information clearly and concisely and should therefore

- Be presented to make information accessible to the non-specialist, avoiding technical terminology where possible
- Have information presented in summary table format to the extent possible and use quality maps, charts, diagrams, and other visual aids whenever possible
- Be presented in a logical and easy-to-understand manner, with a clear Table of Contents to allow the reader to find and assimilate information quickly.

The following sections describe the minimum content and format requirements for an MR.

Table of Contents

The MR should have a title page and a Table of Contents. The Table of Contents should adhere to the outline provided in **Table 1**. The length and detail of the MR may vary depending on the size and nature of the project or facility; however, it is recommended that the MR follow the format indicated as closely as possible. Following the format will allow EAD to provide a prompt and expeditious report review and minimize the potential for any submittals and clarifications that may be subsequently needed.

Table 1. Standard Table of Contents for an MR

| Table of Contents | | |
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| List of Tables | | |
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| Definitions of Terms | | |
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| Chapter 2 | Monitoring Commitments and Standards | 2.1 Monitoring Commitments 2.2 Monitoring Standards |
| Chapter 3 | Monitoring Programs | 3.1 Method(s) 3.2 Monitoring Time and Frequency 3.3 Monitoring Locations 3.4 Monitoring Instrument(s) and Test Methods 3.5 Monitoring Results 3.6 Quality Assurance/Quality Control |
| Chapter 4 | Noncompliance | 4.1 Exceedances 4.2 Corrective and Preventive Actions Taken |
| Chapter 5 | Conclusions | |
| Monitoring Report Annexes | | |
| Annexes | Test Results, Maps, or Other Supporting Documents | |

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List of Tables

This section should include a list of all tables presented within the main body of the MR and should indicate table numbers, table titles, and associated page numbers.

List of Figures

This section should include a list of all figures presented within the main body of the MR and should indicate figure numbers, figure titles, and associated page numbers.

Reference Information

In addition to the Table of Contents, an MR should provide reference tables that allow for quick reference to abbreviations and definitions.

List of Abbreviations

This section should include a list of abbreviations and acronyms used in the MR. The list should be presented in a tabular format using a format similar to that on Page 4 of this Technical Guidance Document.

Definitions of Terms

This section should include a list of terms used in the MR and their definitions. This information should be presented in a format similar to that used on Page 5 of this Technical Guidance Document.

Chapter 1: Executive Summary

Chapter 1 should summarize the overall scope of the MR and the significant findings. The types of monitoring that are required should be described. Any changes in directives since the last MR should be identified and described (i.e., changes to OEMP).

The Executive Summary should concisely and clearly state the results of the monitoring and any corrective actions or preventive actions that are needed.

The Executive Summary should be written in English only and include the following specific sections:

1.1 Project or Facility Name and Contact Person

This section should include the name, address, telephone number, and fax number of the project proponent or facility owner or manager and the name and designation of the contact person who is responsible for monitoring.

1.2 Description of the Project or Facility

This section should describe the project or facility and the activities to be monitored. The descriptions should be brief, yet provide enough information for readers to understand the type, size, and location of the project or facility, as well as sources of emissions.

This section should also include the progress made on the project or facility since the last monitoring report and any changes that may have occurred.

1.3 Reporting Requirements

This section should describe the monitoring report requirements that have been established in the project or facility or project permit, in the NOC, in the CEMP or OEMP, or via another directive.

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1.4 Summary of Findings

This section should summarize if any monitoring results exceeded mandated discharge or emission limits. The section should include the following information:

- A summary of exceedances identified during the current monitoring period (the use of tables is recommended)
- A list of exceedances, which are still ongoing and not yet closed, that were identified in the previous audit reports
- Conclusions and recommendations, including any corrective actions required or taken.

Chapter 2: Monitoring Commitments and Standards

Chapter 2 should describe the monitoring required by EAD and committed to by the project or facility, as well as the environmental standards and/or emission limits that apply. These should be described in the following sections:

2.1 Monitoring Commitments

This section should list what type(s) of monitoring are required and where the requirement is presented (e.g., operating permit, CEMP, or OEMP).

2.2 Monitoring Standards

This section should include the applicable standards for the criteria to be monitored, for example, air or wastewater emission limits (see **Annex 1**). International standards may be used if applicable United Arab Emirates or EAD standards do not exist; refer to the directive that requires the monitoring for clarification of what limits must be met.

Chapter 3: Monitoring Programs

Chapter 3 should describe the project or facility's monitoring program in detail. All types of required monitoring (i.e., air, water, waste) should be described in the following sections:

3.1 Method

This section should include detailed descriptions of the monitoring methods being implemented at the project or facility. An environmental monitoring procedure must be technically sound or in accordance with the relevant standard methods promulgated by the competent authority. In addition, sampling protocol must involve some basic practices, for example, sample size, sample labeling, sampling equipment, sampling container, sampling method, sampling site (e.g., depth from the surface sea water), and sampling preservation technique. In this section, photographs taken during sampling procedures should be included with clear descriptions. Environmental conditions during the sampling collection should be noted because it is useful for data analysis.

When Continuous Emissions Measurement Systems (CEMS) are being used to monitor a source, procedures detailed in EAD's *Standard Operating Procedure for Compliance Monitoring Using CEMS, June 2010* must be followed. Also, wastewater and marine water quality monitoring must be performed in accordance with EAD's *Technical Guidance Document for Wastewater and Marine Water Quality Monitoring, April 2011*. If other specific types of environmental monitoring are performed, applicable EAD guidance must be followed.

3.2 Monitoring Time and Frequency

This section should include details about when and how often monitoring is being performed.

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3.3 Monitoring Locations

This section should include detailed descriptions of the monitoring locations and maps that show the locations of the project or facility, discharge points or stacks, and monitoring points. All maps should include a north arrow and scale. Projects or facilities that are required to conduct air monitoring must also include a wind rose in this section.

3.4 Monitoring Instrument(s) and Test Methods

This section should include descriptions of the equipment used for monitoring and their maintenance and calibration schedules. This section should also discuss the test methods used to analyze samples (if applicable). Accordingly, the operator must ensure that relevant measuring equipment is calibrated, adjusted, and checked at regular intervals, including prior to use, and checked against measurement standards traceable to international measurement standards. Records of the results of calibration and authentication must be retained onsite.

3.5 Monitoring Results

The monitoring results of the pollutant's discharge or emission should be provided electronically in units of the relevant standard, and monitoring data should be presented in a tabular format. Should EAD make available a standard format for reporting environmental data such as an XML schema or an electronic data deliverable template in spreadsheet form, the monitoring results will be provided electronically in the format specified by EAD.

In the analysis of the monitoring results, a change in the concentration or loading of the pollutant being monitored should be reported and discussed. The change of the pollutant concentration or loading discharged should be shown graphically, at least for the past 1 year. Possible cause(s) of the change should be investigated. In the case that the change has a tendency to increase significantly or approach the pollutants' emission and/or discharge limit, a thorough Monitoring Plan should be proposed with possible means to correct the problem.

3.6 Quality Assurance and Quality Control

This section should describe the quality assurance and quality control procedures that provide the basis for assessing and maintaining the monitoring data. To report the analyses of environmental samples or environmental quality, accurate analytical quality controls must be evidently shown. Where sampling is performed, this section should specify the names of the sampling collector, analyst, and laboratory, and a report quality controller; and the date and time of sampling collection and sample analysis. This section should also include a copy of the analytical laboratory certification issued by an authorized governmental organization (the certification must indicate environmental quality parameters on which the laboratory is authorized to perform its analyses). This section should also describe the analytical procedure and analytical methods, which must be in accordance with the relevant standards, guidelines, and other guidance. If the concentration of the analyte cannot be detected by using the present analytical technique performed, the analyte's detection limit must be indicated, and other techniques should be recommended.

Chapter 4: Noncompliance

In Chapter 4, the monitoring results of the pollutant's discharge or emission should be compared with its relevant EAD standards. If a pollutant's discharge or emission is found to exceed its relevant standard or level, possible causes of the problems must be investigated, and plans or actions to alleviate or correct the problems must be proposed.

4.1 Exceedances

This section should include documentation of excess emissions, including the following:

- The date when each exceedance occurred
- Details (e.g., coordinates) regarding where the exceedance was found
- Magnitude of each exceedance of applicable limit (report exceedances in the units of the standard and averaging)

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- Nature or cause of each exceedance of the applicable standard and averaging period
- Monitoring criteria or the specific NOC, OEMP, or regulatory requirement applicable to the noncompliance.

4.2 Corrective and Preventive Action Taken

Where exceedances of discharge or emission limits have been identified, an Action Plan to resolve or alleviate the problem(s) should be proposed. Accordingly, this section should include a summary table that provides details on the corrective and preventive action(s) taken and/or planned in response to exceedances identified in Section 4.1. This section should also include any corrective actions planned or taken to address exceedances identified in recent MRs, particularly those that have been or are ongoing issues at the site or facility. In particular, the summary of the Corrective Action Plan should include the following:

- The type of required corrective and preventive actions
- The time allocated for each corrective and preventive step taken
- Expected date of achievement
- Names of the responsible person or party
- The current status (e.g., open, closed) of action(s) taken.

Chapter 5: Conclusions

Chapter 5 should include the conclusions of monitoring with regard to the status of the conformity of the site or facility with the facility or project permit, the CEMP, the OEMP, or other requirements, as well as the effectiveness of the overall monitoring program in meeting environmental objectives.

Monitoring Report Annexes

The annexes of the MR should include all information necessary to support the findings of the monitoring that are not provided in the main text of the MR. Typical annexes in MRs should include references, a copy of each laboratory's certificate issued by an authorized governmental organization, applicable EAD standards, photographs or illustrations of environmental sampling devices, and other relevant information or data.

References

EAD (Environment Agency–Abu Dhabi). 2011. Technical Guidance Document for Wastewater and Marine Water Quality Monitoring. April.

EAD (Environment Agency–Abu Dhabi). 2010. Standard Operating Procedures for Compliance Monitoring Using CEMS. June.

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Annex 1: Environmental Standards in the United Arab Emirates and Abu Dhabi

The following are sources of environmental standards that all facilities are required to meet. Monitoring should meet the limits presented in the following documents for the pollutants and/or parameters specified by EAD.

Air

- Federal Law No. 24 of 1999, Chapter 4: Protection of Air from Pollution.
- The following sources must be in compliance with the maximum allowable limits set forth in *Decree No. (12) of 2006: Regulation Concerning Protection of Air from Pollution*:
 - All stationary sources
 - All hydrocarbon fuel combustion sources
 - All solid waste incinerators
 - All hazardous and medical waste incinerators.
- All entities must be in compliance with the maximum allowable limits for dust in working areas and the maximum allowable limits for chemical substances in working areas as set forth in *Decree No. (12) of 2006: Regulation Concerning Protection of Air from Pollution*.
- Entities that are required to operate a Continuous Emissions Monitoring System (CEMS) must use the guidance provided in *Standard Operating Procedure for Compliance Monitoring Using Continuous Emissions Monitoring Systems* when evaluating and reporting CEMS data. The CEMS guidance is available at https://www.ead.ae/data/global/714_2_rti_sop_cems_0310_v3.pdf.
- Entities conducting air quality modeling are required to follow the methods described in the document titled *Air Quality Modeling Guidance*. The modelling guideline is available at <https://www.ead.ae/data/global/air%20quality%20modeling%20guidance%2023nov08.pdf>.
- All entities must refer to the EAD NILU Handbook: How to Develop a Quality System for an Ambient Air Quality Monitoring Network.

Water

- Federal Law No. 24 of 1999 Chapter 2, Section 2: Protection of the Marine Environment.
- Federal Law No. 24 of 1999 Chapter 2, Section 3: Protection of Drinking and Underground Water.
- *Technical Guidance Document for Wastewater and Marine Water Quality Monitoring*. The guidance is available at https://www.ead.ae/data/global/402_1_tgd_watmonitor_0112v2.pdf.
- Technical Guidance Document Standards and Limits for Pollution to Air and Marine Environments, Occupational Exposure, Pesticides and Chemical Use. Technical Guidance Document TG-0003R Environment Agency-Abu Dhabi, UAE.

Noise

- Decree No. (12) of 2006: Regulation Concerning Protection of Air from Pollution.

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Document Change History

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