

Regulatory Monitoring and Testing – Monitoring Plans Requirements

Updated April 2016¹

EPA 650/16: Where monitoring or testing is required as part of an environmental authorisation such as a licence, a monitoring plan is generally required to be submitted to the Environment Protection Authority by the licensee. This guideline sets out the requirements for monitoring plans to assist licensees meet an acceptable standard.

1 Legal framework

Under the *Environment Protection Act 1993* (EP Act) the Environment Protection Authority (EPA) can require monitoring and testing as a condition of an authorisation or environment protection order (EPO).

The most common tool the EPA uses to impose a requirement for monitoring is a condition of authorisation, including licences (section 36), exemptions (section 38) and works approvals (section 35). Section 52(1) of the EP Act, states that:

... the Authority may, by conditions of an environmental authorisation, require the holder of the authorisation to ... carry out specified tests and environmental monitoring relating to the activity undertaken pursuant to the authorisation ... and to make specified reports to the Authority on the results of such tests and monitoring....

The EPA may also require monitoring as a condition of EPOs (section 93) and clean up orders (section 99). Under clause 21 of the *Environment Protection (Water Quality) Policy 2015*, the EPA is obliged to impose monitoring where an exemption is granted.

2 Purpose of regulatory monitoring and testing

2.1 Why does the EPA require monitoring?

The EPA may impose monitoring as a condition of authorisation or order, where there is a hazard that the EPA considers to be a priority environmental risk.

Generally, the EPA will specify monitoring:

- to assist with characterising or assessing a priority environmental risk
- to assist with the management of an environmental risk, e.g. to assess performance against criteria and therefore assess compliance with a licence condition and/or requirement the EP Act.

¹ Updated according to *Environment Protection (Water Quality) Policy 2015*.

2.2 What is a monitoring plan?

A monitoring plan is a document produced as a condition of an authorisation or order. It details the actions, responsibilities and timeframes for monitoring. Monitoring may be required for more than one process. For example, some licensees may be required to monitor stack emissions, wastewater discharges and groundwater. If this is the case, then the plan needs to address each type of monitoring.

2.3 Why monitoring plans are important

A systematic and consistent approach to monitoring and testing is necessary to ensure that the results accurately reflect the facility being sampled. Without such an approach, monitoring data may be biased, misleading and of uncertain quality, resulting in data of little value and a waste of time and resources. It is unlikely that monitoring will be conducted effectively, or deliver useful data, without a plan that documents exactly how, when and where it will be done.

In essence, a monitoring plan drawn up as a condition of authorisation serves the following purposes:

- allows the EPA to determine whether the proposed monitoring methods are appropriate and if they meet the licence conditions and the requirements set out in the sampling guidelines
- enables those who monitor to conduct it effectively and consistently, and to deliver reliable, good quality data
- if independent verification is stipulated, the plan is the document against which a verifier audits the monitoring
- gives the person who does the monitoring, and the EPA, a sound basis for interpreting the results.

3 Monitoring plan requirements

The minimum requirements for a monitoring plan are listed in Table 1, after which further explanation is provided.

Table 1 Monitoring plan requirements

| Report section | Requirements |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Report identification | <ul style="list-style-type: none"> • EPA licence number • name and address of licensed site • date of submission, version number • person responsible for the monitoring plan |
| Monitoring objective | <ul style="list-style-type: none"> • monitoring objective stated in the authorisation or order • other objectives the monitoring plan is designed to address, e.g. from environmental improvement programs • the criteria against which monitoring results will be assessed |
| Background information | <ul style="list-style-type: none"> • activity or process description and processing capacities, including prescribed activities conducted • quantity and nature of emissions monitored • description of the receiving environment (e.g. topography, location in a water protection area, proximity to a watercourse, etc.) |

| Report section | Requirements |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sampling locations, frequency and parameters | <ul style="list-style-type: none"> • map showing sampling locations (including control site locations), major infrastructure, sensitive environmental receptors, scale bar and north arrow • sampling times and/or frequency • parameters to be measured and analysed, including analytical method |
| Sampling and testing procedures | <ul style="list-style-type: none"> • sampling procedures including sampling methods and equipment, calibration procedures, filtering, decontamination and preservation techniques • quality assurance systems including quality control samples (eg blanks and duplicates) |
| Reporting | <ul style="list-style-type: none"> • the method and frequency of reporting (internally, to the EPA or both) |

3.1 Report identification

The monitoring plan must be clearly identifiable, and include the licence number, name and address of where the licensed activity is conducted, the reporting period, and the name and contact details of the person submitting the report.

3.2 Monitoring objective

Monitoring is a way of collecting information for a specific purpose. The purpose must be clearly defined and the monitoring plan designed to meet its stated objective/s.

The EPA will generally specify the objectives of monitoring including monitoring criteria as a condition of an authorisation or order. In some cases, such as sites with a number of environmental issues, there may be multiple monitoring objectives. The objective(s) that the monitoring plan addresses must be clearly stated at the beginning of the plan.

There are a range of national and state standards, policies and codes which stipulate compliance criteria for air, noise and water emissions to receiving environments. These need to be considered when developing the monitoring objective(s) in order to assess facility operations against established criteria.

If the monitoring plan has been designed to address other requirements, these should be clearly stated. Such requirements may be from legislation such as the *Environment Protection (Air Quality) Policy 1994* or from other regulatory mechanisms such as environmental improvement programs.

3.3 Background information

Activity and process description

The monitoring plan must provide adequate background information for the EPA to understand the premises' activity(s) and process(s), and the risks associated with them. The type of information that would meet this requirement includes:

- a clear and concise description of the processes used at the facility, including waste minimisation and treatment
- a process flow diagram showing inputs and outputs
- key processes and volumes (volume of product produced, volume of waste produced, storage volumes, irrigation rates, etc.)
- details of factors that affect the variability of emissions, for example:
 - whether the process is continuous, cyclic or batch (or a combination) and information on scheduling, e.g. production months, plant operating or discharge hours, and peak production phases

- whether the process is affected by the weather or other conditions, and key data on variability, eg the ratio of PWWF:ADWF and its effect on effluent characteristics.
- relevant information from an environmental aspects and impacts register.

Receiving environment

A description of the site and its receiving environment is essential to put the monitoring objective and plan into context. For instance:

- If the EPA specifies noise monitoring, knowledge of the location and distance to the nearest sensitive receptors, is essential. What and how far are the nearest sensitive receptors? What is the predominant wind direction(s)?
- If monitoring wastewater discharge, it is essential to understand the receiving waterbody. Does it flow intermittently or constantly? How does the discharge volume compare with creek or river flows? What are the main values of the waterbody (and downstream waterbodies), including ecological values?
- If a substance is discharged onto land, it is essential to understand the risks it poses to groundwater. What is average and minimum depth to the water table? What is the aquifer used for (e.g. drinking water or irrigation)? Where does the aquifer discharge?

The monitoring plan must include details of the receiving environment. A map showing the location of the discharge or emission, environmentally sensitive receptors and other significant features should be included in the plan.

3.4 Sampling locations, frequency and analytes

In most cases, sampling locations, frequency and substances to be analysed will be specified as a licensing condition. The monitoring plan should detail how these requirements (and any other regulatory requirements) will be met.

In the monitoring plan the licensee must clearly:

- detail the proposed duration of sampling, e.g. whether the sampling program will be long term, or a campaign or a pilot study
- describe and map each sampling location, including control sites, and give each sampling location a unique identifier (where possible provide GPS coordinates)
- describe proposed sampling dates and/or times (e.g. compared with tide times, production schedule or rain)
- explain the sampling strategy, e.g. grab or composite sampling, flow-weighted or random sampling, surface sampling or depth profiling
- detail the analytes to be tested including the analytical method to be used. It is preferable to refer to EPA manuals (e.g. [Emission testing methodology for air pollution](#)) or other standards such as those set by the American Public Health Association (APHA) and/or American Society for Testing and Materials (ASTM).

Explanation should be provided about issues and limitations that impact upon the sampling locations, analytes or frequency, e.g. workplace health and safety considerations, precision/accuracy considerations, bias, facility operating hours and cost considerations.

Further information and advice on how to develop a sampling plan can be found in documents listed under 'References and related reading'.

3.5 Sampling and testing procedures

The licensee must clearly specify or cross reference the procedures that will be used to ensure the integrity of samples, such as:

- sampling and testing methods and equipment
- calibration procedures for field measurements

- the number and type of quality control/quality assurance (QA/QC) samples to be collected and analysed (e.g. blanks and duplicates)
- filtering, decontamination and preservation techniques.

The sampling procedures and QA/QC protocols specified by the licensee should comply with the relevant EPA sampling and testing guidelines. These documents have been designed to assist licensees to plan and conduct sampling and testing with consistency, quality and traceability.

EPA sampling and testing guidelines include:

- emission testing methodology for air pollution
- water and wastewater sampling
- groundwater sampling.

Where sampling procedures or analytical methods do not comply with EPA guidelines, the method to be used, and reason for deviation, must be clearly specified.

4 The monitoring plan process

4.1 Preparation of monitoring plans

A contractor or consultant can be employed to develop the monitoring plan. This may be advisable where the licensee does not have appropriate expertise. The responsibility for ensuring that the monitoring plan meets EPA's requirements, rests with the licensee.

4.2 What happens when a monitoring plan is lodged?

Once a monitoring plan has been lodged, the EPA will:

- assess whether the proposed plan will achieve the monitoring objective(s)
- assess the monitoring plan against EPA regulatory monitoring and testing guidelines and manuals to ensure that monitoring will be consistent and produce results that are reliable
- decide whether to approve the proposed document or request amendments.

If the plan is not accepted by the EPA, the licensee must submit an amended plan that addresses the EPA's concerns.

4.3 Amending the monitoring plan

The licensee can apply to change the monitoring plan at any time. However, the licensee may not execute the amended monitoring plan until it is accepted by the EPA.

The EPA will require the licensee to amend the monitoring plan when:

- significant flaws are noted by the licensee, EPA or independent verifier
- a risk assessment or review determines that further or reducing monitoring is required to help manage the environmental risk
- there are major changes to the licensed activity (operational, process or infrastructure) or environmental management practices.

5 Glossary

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|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Authorisation | A licence, exemption or works approval as defined under the EP Act. |
| EPA sampling guidelines | Guidelines or manuals prepared by the EPA that state the minimum standards for sampling for regulatory monitoring and testing, including sampling methods, quality control, transportation and preservation techniques. The EPA has guidelines on groundwater sampling , and water and wastewater sampling . |
| Licensee | The term licensee is used throughout this guideline as a licence is the most common authorisation, or order, that may specify monitoring. Where 'licensee' is used, it should be understood to mean the person responsible under authorisation or order of the EP Act |
| Regulatory monitoring and testing (RMT) | Collection of monitoring data as a condition of an authorisation or order, to enable an environmental risk to be assessed, or to assess the effectiveness of risk controls and management within the scope of the EP Act |

6 References and related reading

American Public Health Association Press 2005, *Standard Methods for the Examination of Water and Wastewater*, APHA, Maryland.

Australian and New Zealand Environment and Conservation Council & Agriculture and Resource Management Council of Australia and New Zealand 2000, *Australian guidelines for water quality monitoring and reporting*, National Water Quality Management Strategy No. 7, ANZECC & ARMCANZ, Canberra, viewed 12 August 2013, www.environment.gov.au/water/publications/quality/nwqms-monitoring-reporting.html.

South Australian Environment Protection Authority 2012, *Emission testing methodology for air pollution manual*, second edition, EPA, Adelaide, viewed 12 August 2012, www.epa.sa.gov.au/xstd_files/Air/Guideline/emission_manual.pdf.

—2004, *EPA Guidelines for wineries and distilleries*, EPA, Adelaide.

—2006, *EPA Guidelines—Regulatory monitoring and testing: Groundwater sampling*, EPA, Adelaide, viewed 12 August 2013, www.epa.sa.gov.au/xstd_files/Water/Guideline/guide_gws.pdf.

—2006, *EPA Guidelines—Regulatory monitoring and testing: Water and wastewater sampling*, EPA, Adelaide, viewed 12 August 2013, www.epa.sa.gov.au/xstd_files/Water/Guideline/guide_wws.pdf.

—2006, *EPA Guidelines—Regulatory monitoring and testing: Independent verification requirements*, EPA, Adelaide, viewed 12 August 2013, www.epa.sa.gov.au/xstd_files/Water/Guideline/guide_monitoring.pdf.

Disclaimer

This publication is a guide only and does not necessarily provide adequate information in relation to every situation. This publication seeks to explain your possible obligations in a helpful and accessible way. In doing so, however, some detail may not be captured. It is important, therefore, that you seek information from the EPA itself regarding your possible obligations and, where appropriate, that you seek your own legal advice.

Further information

Legislation

[Online legislation](#) is freely available. Copies of legislation are available for purchase from:

Service SA Government Legislation Outlet
Adelaide Service SA Centre
108 North Terrace
Adelaide SA 5000

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General information

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