

Storage and reporting of odd samples

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Preface

The Ethekwini Health Department requested that NILU provide guidance on how to report data that are not standard monitoring data. This need has arisen from the fact that lots of data are measured for many different purposes, and these data should be reported and stored in a systematic way to simplify data retrieval.

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Summary

Reporting of non-continuous ambient air quality measurement data and information can serve several purposes, have a variety of formats, forms etc. and is therefore difficult to standardize. The objective of the measurements may vary significantly and the number of measurements is generally limited. The air quality indicators measured can also differ considerably. The interpretation and reporting of measurements are in general strongly dependent on the availability of existing additional information. The measurements should serve several purposes and it is therefore important that the information is available for all. The historical measurements are in general not systemized, and the availability of the measurements is to a large extent dependent on the presence of the persons responsible for the sampling. This makes the measurements less valuable and could lead to loss of information with time.

The most challenging issue in dealing with these types of measurements is to organize the measurements in such a way that it is possible to access them in the future. There are many ways to do this. The most advanced is a database coupled to a GIS system which is searchable on component, period and place. A more simple way is a library where the existence and locations are listed in an index and the measurements are stored in files at specific locations.

The system should be as practical and simple as possible, because it is necessary to maintain the system. The number of times that the system is going to be accessed in eThekweni is limited.

The recommendation is to make a query database for the key information and a folder to store the data files. The overview of the data files can be obtained from the database and the relevant information can be found elsewhere.

The reporting of the measurements is not standard because of the wide range of objectives. The objective should be the main focus and should be addressed. To make the measurements useful in the future, the report should contain background information. The report must contain information on the measurement site, the instrumentation used, which parameters that have been recorded, to what extent the measurements have undergone quality control and a listing of the available information. This information should be kept in the appendices and the main report should answer the objectives set out to document.

Storage and reporting of odd samples

1 Introduction

Reporting of non-continuous measurement data and information can serve several purposes, have a variety of formats, forms etc. and is therefore difficult to standardize. The objective of the measurements may vary significantly and the number of measurements is generally limited. The indicators measured can also differ considerably. The interpretation and reporting of measurements are in general strongly dependent on the availability of existing additional information. The measurements should serve several purposes and it is therefore important that the information is available for all. The historical measurements are in general not systemized, and the availability of the measurements is to a large extent dependent on the presence of the persons responsible for the sampling. This makes the measurements less valuable and could lead to loss of information with time.

To facilitate the reporting of new information and maximize the use of the measurements for other purposes than the primary objective, it is necessary to make a structure for the data storage where it is easy to get an overview of the available measurements using different key words such as pollutant, measurement place etc. This will make the historical measurements available for further use.

The reporting format will as always be dependent on the objective. This report indicates possible systems for storage of these measurements and key bullets for reporting. The list is not intended to be a full list and a cook book, but a list of items that is suggested as content. The reporting structure could change according to focus and objective.

2 Structure of storing

As mentioned in the introduction, there is a need to systemize information on measurements that are not continuous. The structure for storing the measurements must be kept simple. This means that measurements collected in a measurement campaign should be kept in one place and readily available.

One way of storing the measurements is to use EXCEL worksheets and to make a filename key with the characteristics of the measurements such as parameter, place, time, etc. These files can be stored in special folders. This type of storage is recommended as long as the quantity of information is not excessive.

The recommended solution is to equip the measurements with standardized key words that can be used for identification and sorting. The key words should primarily provide information on what, why, where, when, how and by whom the measurements were made. These key words could be divided into categories. A suggestion of categories could be:

- Pollutant measured

- Primary objective
- Representativity
- Geographical area
- Time of study
- Storage location
- List of available documentation.
- Responsible unit/person for measurements
- Quality of measurements

The categorized key words can be used to find the measurements and reports that are relevant to the study at hand.

The system should contain information on where the measurements and information can be retrieved.

The key words for each category can occur in a dropdown menu. New key-words can be added.

This can be arranged in a relation database with a library function.

3 Type of measurements

Firstly, there is a need to decide on the type of measurements that are going to be stored in the system. The characteristics of such data sets are that they are not continuous in time and therefore non-standard. The following data is seen as important to store in a structured form.

- Measurements from passive sampling
- Measurements from active sampling using the following instrumentation:
 - Sequential samplers
 - High volume samplers
 - Grab samples
 - Canisters
 - Teflon bags
- Measurements done in different matrixes such as water, air, soil

These measured datasets normally have different averaging time and focus on different pollutants. They are also dispersed geographically. This makes it difficult to standardize the storing of the data.

It is important that reports on the measurements are stored and systemized. These reports should be linked to the measurements, and thereby easy to identify and find.

4 Reporting procedure

The reporting procedures for sequential and odd samples are in general governed by the objective of the report. This means that the reporting will vary substantially.

The main challenge with reporting this type of measurements is finding relevant information to support the measurements that you have collected. These measurements could be in different matrices and different averaging times. The measurements are also normally collected at different times.

To make the measurements useful in the future, the report must have a minimum of background information. The report must contain information on the primary objective, measurement site, measurement instrumentation, which parameters that have been recorded, to what extent the measurements have undergone quality control and a listing of the measurements collected. This information is necessary for making the measurements valuable for the future.

The report should answer to what extent the objectives of the measurements were met.

The report should normally contain the following main items:

- Summary
- Introduction
- Methodology
 - Objective
 - Choice of indicator
 - Choice of instrumentation
 - Choice of averaging time
 - Siting of measurement points
- Findings
 - Data availability
 - Assimilation of the data
 - What does the measurements tell you in relation to the objective
- Conclusion
- Appendices
 - Location of measurement stations, availability, time frames
 - List of measurements
 - Description of equipment
 - Quality of measurements
 - Where the measurements can be found

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