



New Zealand
Occupational Hygiene Society

Guidelines for Writing
Occupational Hygiene Reports

Purpose of these guidelines

These guidelines are intended as a resource for Occupational Hygienists to use as a guide for report writing.

For persons wishing to join the society as Technician or Full members the guidelines provide some insight into the elements that the membership committee will consider in assessing competency.

Occupational Hygienists are not bound to follow a prescribed format in their reports but it is the expectation of Council that reports will address several common key areas.

Furthermore, reports will also be written primarily for clients (external or internal) and copies must be kept for at least 30 years according to the Health and Safety at Work General Risk and Workplace Management Regulations 2016. Therefore, the quality of the reports must stand up to scrutiny for a long period of time.

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1. General guidance

In general, reports should be written in plain language and should be as short and concise as needed.

Ultimately, every report is intended to be read and understood by people in a workplace and in many cases these people will not have specialist occupational hygiene training. Consequently, it is necessary for technical terms to be explained in layman's terms as much as possible.

Reports should be proof read and peer-reviewed before they are provided to the client as simple spelling and grammatical errors are distracting for the reader and demonstrate a lack of basic care and attention.

The details should assure the reader that the work was properly conducted and that appropriate conclusions were drawn based on the findings of the survey.

Reports should clearly identify any required actions.

Additional guidance on report writing, if required, is available in the British Occupational Hygiene Society guide titled "Clear and concise report writing: guidance for occupational hygienists".

2. What should be in a report?

The purpose of the report is to convey to a workplace its current health risk profile. It is also useful to the workplace to understand where it sits in relation to compliance with various exposure standards and legislative requirements.

The workplace needs to understand the processes used to assess health risk and compliance. It also needs to have confidence that the processes followed were appropriate, the results obtained were reliable and accurately reflected the conditions at the workplace at the time of the visit.

Typically, an occupational hygiene report will be divided into several areas, such as:

- Title page
- Executive summary
- Table of contents
- Introduction
- Relevant legislation, standards and exposure standards
- Workplace and workforce description
- Process description
- Health effects
- Methodology and measurements
- Results and discussion
- Conclusion and recommendations
- References
- Appendices

3. Title page

The title page should include the following elements:

- a relevant title that summarises the nature of the survey
- the date of the report (this being the date the report was provided to the client)
- the name and address of the client
- the name and work address and qualifications of the hygienist who conducted the survey
- the name and signature of the person who prepared the report (this will normally be the hygienist who conducted the survey)
- the name and signature of the person who reviewed and approved the report (usually the senior consultant, manager or hygienists with certification under a scheme recognised by the IOHA e.g. “Approved by ...” or “Reviewed by...”)

4. Executive summary

For short reports an executive summary is not necessary, but for more extensive reports – e.g. more than seven pages, an executive summary is important and particularly useful, especially to a senior manager. The executive summary should be kept to less than one page of content, and should represent an overview of the report including its aims, objectives, findings and recommendations as well as the scope of work covered in the survey. The executive summary should stand on its own, so the hygienist should avoid using complex scientific terminology. It is very important that failures to comply with legislation are covered as well as recommendations because the executive summary may be the only part of the report that is read, especially by senior management at the workplace.

5. Table of contents

Like the executive summary, the table of contents may not be necessary for short reports, but for obvious reasons it is a useful element to include in the longer reports. Table of contents should include the page numbers of the major sections and subsections within the report.

6. List of tables

The list of tables should contain a list of all the tables in the report together with the page number so the reader can find the relevant section. Use of hyperlinks within the document helps in navigating through the various sections.

7. List of figures

The list of figures should contain a list of all the figures and photographs presented in the report together with the page number so that the reader can find the relevant section.

8. Page numbering, Graphs and Tables

The page number and total pages must appear on every page (e.g. page 10 of 20).

Include tables and graphs for visual explanation, where appropriate. These should be numbered and clearly labelled.

9. List of Terms and Abbreviations or Glossary

There should be a list of all terms and abbreviations that are used in the report which need defining for the non-technical reader.

10. Introduction

The introduction is where the hygienist explains the purpose or aims and objectives of the report. It may be that the report was commissioned because of an improvement notice by an inspector, or as a part of the business's regular ongoing work-related health programme. Also, it may be a report of a follow-up survey conducted to determine whether or not modifications to the workplace, the processes or controls had resulted in lower exposures to workers. Reports of follow-up surveys should reference the original report including its title and date provided to the client.

The name and qualifications of the hygienist along with that of the person who commissioned the work should be included here. The date(s) of visit(s) and the site(s) visited should also be included at this point.

If previous surveys have been carried out on the workplace then it is useful to very briefly summarise them including those conducted by other hygienists or consultancies, if possible. Doing so will give the reader of the report a feel for how the workplace is tracking in terms of its performance in the areas relevant to the surveys.

11. Relevant legislation, standards and exposure standards

Reference should always be made to relevant legislation that sets the scene in terms of regulatory expectations. Other relevant documents that provide guidance in terms of risk management such as New Zealand standards, Joint Australian/New Zealand standards, approved codes of practice (ACOPs), industry codes of practice and published guidance material may also be useful in this area.

Exposure standards that the hygienist used in the health risk assessment must be referenced. This could equally be done within the methodology section of the report. It must be recognised that WorkSafe exposure standards may differ from other jurisdictions and may not be as protective of worker health as those other exposure standards. Therefore, the hygienist needs to be careful when referencing exposure standards that apply in other parts of the world and also in referencing non-regulatory exposure standards such as those published by the ACGIH® so that the reader understands what advice is being provided.

12. Workplace and workforce description

A full description of the workplace and the workforce should be provided. This should include descriptive information on the location of the workplace (and aerial photographs from Google® may be useful, as may a photograph taken at the front entrance to the property). It is important to know whether the workplace is rural, semirural, residential, light or heavy industrial in nature, as this can inform the reader about other potential sources of contamination, or the potential to be a source of contamination for neighbouring properties.

It is also important for the reader of the report to understand what business the workplace is involved in (e.g. what do they do there?).

Depending on the nature of the survey, it may be useful for the reader to understand the construction of the building(s). For example, for noise surveys it would be helpful to know whether or not the areas being surveyed were highly reverberant in nature. For a workplace creating airborne

contaminants it would be helpful to understand the layout in relation to both the sources of contaminants and the doors, windows and vents that may be available for general dilution ventilation.

Staffing levels should be provided as well as the duration of the shifts that are worked. Shift duration is essential for calculating adjustments to workplace exposure standards to allow for the extended work shifts.

It may be useful to note demographic information of the workforce, as certain populations may be more susceptible to health risks from certain chemicals than others, e.g. exposure to lead and female workers of child-bearing age.

Where relevant, the weather conditions at the time of the survey should be noted and included in the report.

13. Process description

The industrial processes at the workplace should be described, especially those processes that are sources of work-related health risk. It may be useful to note the duration and frequency of occurrence of the processes. In the case of an airborne contaminant survey it will be helpful to consider the raw materials, by-products or intermediates, waste products and final products that are produced by process.

It is important to make it clear in the report which areas of the plant or process were surveyed and to make the report more useful for the workplace. It may be helpful to use the terminology of the workplace to describe the various locations.

Any special points should be noted, for example: whether or not all parts of the process were operating that day, whether or not the staffing levels on the day were usual; or whether or not monitoring was being conducted to reflect a worst-case situation, etc.

Diagrams and photographs may be useful and to assist with this. The hygienist may wish to request a copy of the site plan. This can be used in the report to clarify the areas and locations involved.

Any items surveyed or examined should be noted and the serial numbers/identifier recorded.

14. Health effects

A discussion on the health effects associated with the health risk that the hygienist is assessing should be provided so that the workplace understands the reasons why the survey is being conducted. A discussion of the health effects can be useful to the workplace in training their workers so they understand the reasons behind the controls, including personal protective equipment (PPE), that are in place and required to control health risk in their workplace.

15. Methodology and strategy

This section should provide enough information to enable the work to be replicated.

It should be recognised by hygienists that the most relevant exposure data will be that which comes from personal monitoring as opposed to static monitoring. Static monitoring can have its uses, however, generally its use is limited to determining background levels and the effectiveness of controls. It is not appropriate to use results that come from static monitoring to compare airborne levels with a workplace exposure standard, or to make decisions about appropriate PPE.

Details of all sampling procedures, analytical procedures and relevant technical standards should be provided (simply referencing the standard or method without details of how you carried out the assessment is not acceptable). If a relevant published and validated method exists, it should be used in preference to a novel method. If it is necessary to use a novel method, a full explanation (including summary of validation) should be provided where available.

When detailing the equipment used in the sampling the hygienist should include the make, model and serial number of all equipment used, including calibration equipment. The date of the last calibration or statement about the calibration status should be provided and copies of calibration certificates can be provided as appendices to the report or a statement provided to indicate that calibration certificates are available on request.

Where an instrument has a total uncertainty of measurement (e.g. a sound level meter or the sound calibrator), such an uncertainty level should be reported.

The location, time and duration of personal sampling, and the names and job titles of the individuals concerned should be provided. A description of the activities of the subject personnel should be provided and it is highly recommended that hygienists remain on-site during the monitoring. This places them in a position of strength when it comes to describing the processes involved at the subject workplace and it also assists with explaining any results that may be unexpected, such as a sudden spike in a noise dosimetry chart.

The hygienist should also identify any similar exposure groups (SEGs) used in the survey.

A description of any statistical methods that will be used to estimate the variability in results for samples or SEGs should be provided.

It is also important that information on quality assurance procedures such as zeroing, field calibration and use of blanks etc. be included here.

16. Results and discussion

The results and discussion section of the report should be well laid out to make it easier to understand, as this section is usually regarded as the 'heart' of the report.

Results can be included in the body of the report or as appendices (in the case of a large amount of data it may be useful to place a summary in the body of the report).

Results should be traceable to the original field notes so that verification of supporting data can be carried out if needed.

The potential and actual sources of exposure should be discussed as they relate to the various SEGs that may be exposed, if SEGs were used.

Existing controls, including signage, and whether or not they were being used at the time of the survey should be discussed. Included amongst these are local exhaust ventilation, and the use of PPE. When considering PPE, mention should be made of the details of PPE, such as make, model and type of respirator, filter cartridge, the model and class of hearing protector, the make and type of gloves worn etc, because the results of the monitoring will help inform the hygienist in terms of whether or not the PPE is appropriate.

Tables used to show the results obtained should at least identify the task monitored, the duration of the exposure measurement and the result obtained expressed in the same units as the exposure

standard. It is useful for the exposure standard to be presented in the same table as the data that relate to it. One way to draw attention to results of concern is to use a colour-coding to highlight results that exceed the exposure standard, exceed 50% of the exposure standard (or some other 'action level'), and those results that are below the 'action level'.

Where personal sampling has been undertaken the hygienist may record the names of the individuals involved or their position or use a code system. However, the HSWA GRWM Regulations 2016 section 32(3) states that a record of exposure monitoring results made available to any person at the workplace must not contain any information that identifies, or discloses anything about, an individual worker. The decision as to which recording system will be used should be agreed with the client or employer. It is important that original notes and records are maintained and held securely by either the hygienists or the client/employer in case full details are later required.

Detailed raw data, such as start and stop times for monitoring pumps or dosimeters can be shown in this section or in appendices.

In the discussion section, it is appropriate for the hygienist to be quite specific in terms of what they believe may be the cause or causes of elevated exposures.

The use of an appropriate statistical technique will help communicate the degree of sampling variability and the likelihood that population exposures exceed or fall below the exposure standard. Tools such as the AIHA's IHSTAT can be useful in completing the statistical analysis of results as can the European standard EN 689:2018.

If previous results are referenced, or data from similar premises and/or scientific literature is used, then the citations should be appropriately referenced.

Any potential bias or limitations with the results should be discussed. For example, sample size, whether workers sampled were randomly selected, any unusual work conditions etc. Where a workplace wishes to cut costs and have the hygienist take fewer samples than is appropriate, the hygienist must address this matter as a limitation, in as diplomatic a way as possible. It will also be appropriate for the hygienist to consider the Code of Ethics and whether it is appropriate to undertake an occupational hygiene survey when there will be no scientific rigour applied.

17. Conclusions

This section should present the key information in a concise, logical and priority order. The conclusions should refer back to the aims and objectives of the task and address the questions or concerns that initiated the survey.

In this section the hygienist should draw conclusions about whether or not the relevant exposure standard(s) have been exceeded, or are likely to be exceeded, and if the exposures could harm employee health. Any issues of non-compliance with regulatory requirements should also be listed here.

Conclusions should be drawn about the adequacy of controls then further practical actions to eliminate or minimise the assessed risk so far as is reasonably practicable, recommended.

Conclusions should be clear and concise and appropriately worded. They must be readable and understandable on their own in isolation from the rest of the report as it is not uncommon for them to be taken from the report and used at a higher level by clients.

18. Recommendations and suggested plans of action

Recommendations should be selected using the hierarchy of control approach (with PPE being the last resort) and guidance on an appropriate implementation time (e.g. urgent, short, medium or long term) should be provided.

Recommendations arising from regulatory requirements or notices should reference the relevant source documents.

Although not essential the use of an action plan can be helpful for the recipient as it can be easily removed or copied from the report and incorporated into their management plan.

19. References

References to legislation, standards, codes of practice, or scientific literature should be provided along with any recommended reading that has been discussed with the client. An appropriate referencing scheme should be used. Examples include Harvard, APA, Vancouver, etc.

20. Appendices

Appendices provide additional information and detail (e.g. site plans, full sampling details, photographs, calibration certificates, raw results, glossary etc.). Appendices should be numbered, reference should be made to appendices within the body of the report and they should be listed in the table of contents.

Appendices should be used selectively to adjust the style and content of the report for the intended reader.