

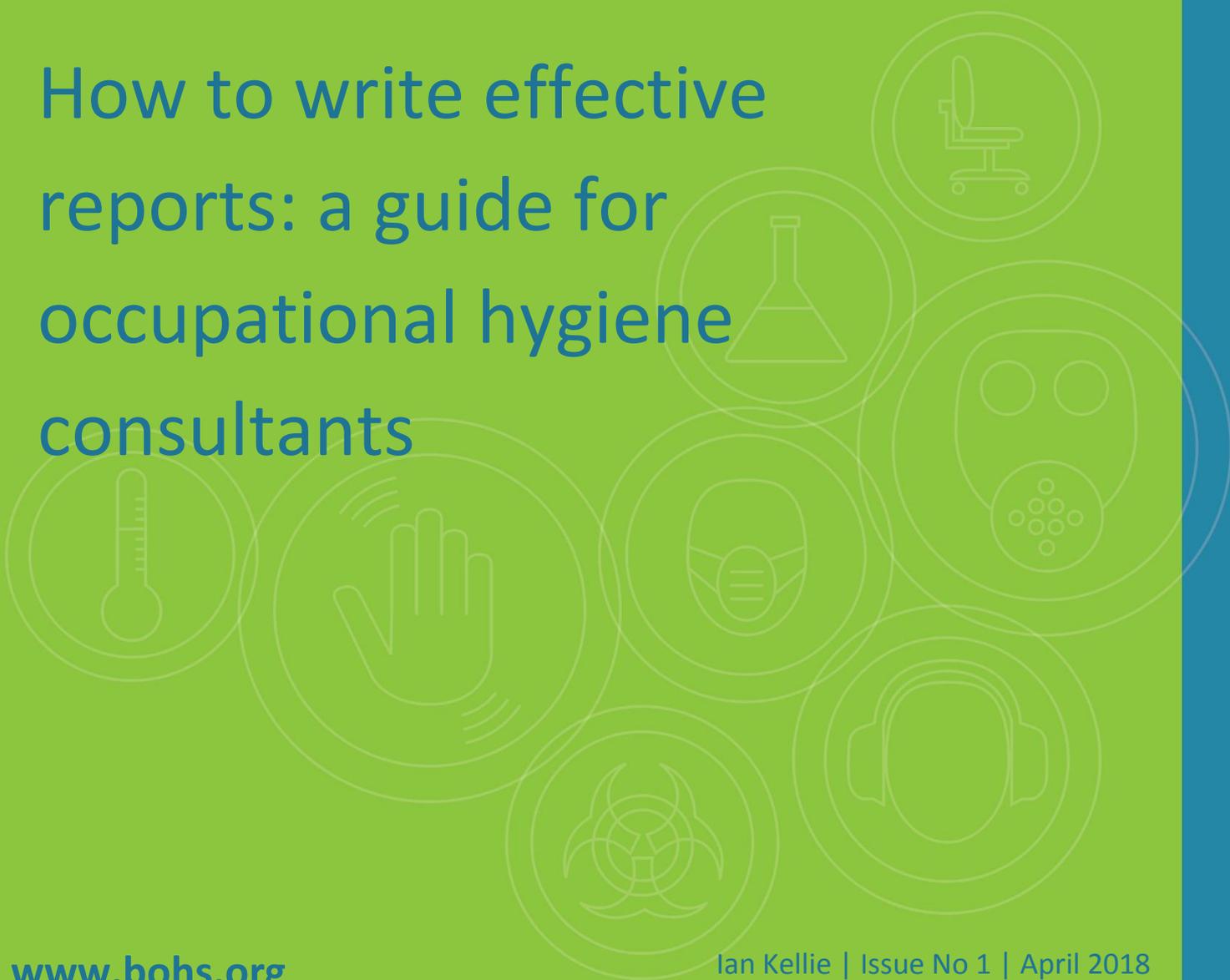


The Chartered Society for
Worker Health Protection

The British Occupational Hygiene Society

Faculties

How to write effective
reports: a guide for
occupational hygiene
consultants



Report writing is often seen as a tiresome, repetitive task that should be put off as long as possible! But unfortunately, it's also an essential task. It's the main end product of your work, and the means by which you justify your fees to the client. If your report is seen to be deficient in some way – too brief, overly complicated, incomplete, poorly written or overly delayed – your reputation will suffer. That vital source of new business for a consultant – the word-of-mouth recommendation – will disappear.

This article gives a series of tips for consultants on how to write effective reports. It's based on personal experience over a 30-year career as an occupational hygiene consultant, during which I've either written or critically reviewed several hundred reports. Report writing rarely comes naturally; the skills develop over the years and like any other repeated activity, the secret is to learn from your mistakes and aim for continuous improvement.

1. Gather your thoughts

Before you launch into report writing, take the time to work out what story you're going to tell. Sometimes it's simple: your results are so low that there's little foreseeable risk. Other times it's less straightforward, either due to shortcomings in data or time constraints, and the picture is less clear. Or you've identified a serious potential health issue that has to be dealt with as a matter of priority. Each of these scenarios (and there are many others) needs a different approach to report writing. Decide what sort of report you're going to write before you start.

2. Arrange your data

Results of monitoring are usually the nub of an occupational hygiene report. Set out your data and see if you can discern any patterns. As a consultant, you're often constrained economically by the amount of data you can collect – but that doesn't mean you can't draw conclusions from a few results. Look at your field notes and pencil in possible reasons for outliers. Think about how you're going to use the data to get a message across in the report. Be prepared to innovate in your presentation of data: will a simple table suffice, or could you use graphics to clarify the message?

3. Identify your audience

Who is going to read the report? You can probably assume the individual who commissioned it, for a start – but who else? Maybe the CEO of the client, employee representatives or third parties such as HSE or local authority inspectors. The trick is to create a report that will be understandable by all recipients. You may be asked to create separate reports for different recipients; resist this – separate reports from the same investigation inevitably cause confusion and mistrust.

4. Set out your aims and objectives

This should be the basis for the Introduction section of your report. Describe why the investigation was commissioned and what the objectives were. It's important to identify the reasons for the work being carried out – employee complaints or concerns; management's desire to comply with legal requirements; basic data on a new process; changed circumstances since the last monitoring exercise, etc. In turn, these usually dictate the objectives of the investigation. Keep this section brief and to the point.

5. Describe the process you investigated

Although the process you are reporting on is probably familiar to the primary recipient of the report, it may not be to other interested parties. So it's important to describe the process in everyday language, avoiding unnecessary acronyms or jargon. This section can be a useful in refining the author's understanding of the process, too. If there are chemicals involved in the investigation, this is the section of the report where they can be identified. Set out clearly and unequivocally the nature of chemicals involved in the process and what their role is. If it's a noise report, identify the significant sources. Use photographs in this section if you can; a good photograph replaces several dozen words.

6. Identify the existing control arrangements

Before presenting data in the report, it's important to spell out what was going on during your visit. If you're as sure as you can be that what you monitored was typical of day-to-day operations, then say so. If it was a one-off task set up to generate 'worst case' data, or any other activity that doesn't represent 'typical' exposures, it's important to specify this in the report. Refer to the controls that were in place. Include everything in the control hierarchy that is relevant to the current investigation, and comment on whether you think it was working during your visit. For example, if the LEV system wasn't controlling emissions effectively, or workers weren't using PPE properly, mention it in this section; but leave any recommendations for later in the report.

7. Describe what you did

Set out as concisely as possible what measurements you took and what methods you used. Be specific about the measurement techniques you used – cite validated methods wherever possible. Identify the type of sampling you carried out – i.e. personal and/or background. Indicate the duration of sampling – i.e. whether short-term, part-shift or full shift – and explain why you made that choice. Refer to what steps you took to ensure accuracy of measurement – e.g. instrument calibration information, use of accredited laboratories etc.

8. Set out your results

Present your results clearly and as simply as possible. For personal samples, identify the individuals and the activities that were carried out during monitoring. If you're comparing results against exposure limits, calculate time-weighted average exposures. Indicate exposure limits where it's appropriate. For background samples, identify the locations as precisely as you can (or better still, indicate positions on a plan or sketch of the work area). If you have a lot of data, consider supplementing tables with graphics.

9. Discuss the significance of your results

This is the key section of the report, when you compare your results against a limit or standard, and gauge their significance. Identify the limits you use and their provenance – i.e. whether set by UK, US, European or other authorities. If there is no 'off-the-shelf' limit, describe what steps you have taken to assess the significance of your data. Refer to regulatory requirements at this stage, if this is relevant to your assessment.

Explain the results collectively and individually. If you have a lot of data, use basic statistical analysis to improve their robustness. If you have obvious outliers, give possible explanations. Refer to sources of error outside your control, if relevant. If you can, compare results with those obtained previously in the same area, or from comparable work at a different location.

Draw conclusions on the adequacy of control, but don't rely entirely on your measurement data for this – after all, your survey report is effectively just a snapshot. Were engineering controls effective? Were there other exposure routes? Were workers aware of the hazard? Was PPE being used correctly? Were there other work activities that might paint a different picture? If you can't arrive at a firm conclusion, explain why and suggest a remedy. Refer to best practice guidelines from HSE, professional and trade organisations if relevant.

Consider possible actions to reduce risk, and ensure that these are proportionate to the risk – in other words, sufficient but not excessive. Distinguish clearly between actions that should be taken immediately, and those that can be introduced later. Use the 'hierarchy of control' to prioritise actions. Refer to official guidance or other sources of information on best practice for reducing risks to health. Indicate the pros and cons of alternative strategies for control, and justify your preference. If you can, give a basic cost/benefit consideration.

10. Summarise conclusions and recommendations

Summarise the conclusions you drew in the Discussion section of the report, and link these with appropriate risk reduction actions you recommended. Don't introduce new considerations here, but if necessary, reinforce recommendations. Make sure that your conclusions and recommendations have met the aims and objectives of the investigation.

11. Summarise the report

Finally, prepare an Executive Summary. This is designed to give senior management an overview of your report. In essence, all it needs to address are two questions: do I have a problem, and if so, what can I do about it? Keep the summary as concise as possible – limit it to at most, two short paragraphs. Briefly describe what you did, why you did it, what you found, what conclusions you drew and what you recommend the client needs to do.

12. Do a sense-check

It's the last step before the report is issued, and your last chance to correct any errors or omissions. Try to imagine yourself as the recipient; is what I've written understandable to a non-specialist? If you've cut-and-pasted sections from previous reports, double-check that they are entirely relevant to the current one. Read the report through, checking for grammar and spelling errors – remember word processing spell-checkers are not infallible. If possible, get a colleague to review the report; often, a fresh pair of eyes will pick up an issue that you've missed. Once you're happy with the report, send it out with an accompanying letter or e-mail that invites the recipient to contact you if they need any clarification on what you've written.

So that's it; a 12-point guide to writing effective reports, aimed primarily at occupational hygiene consultants. For more comprehensive information, I'd recommend referring to the 2011 BOHS publication *Clear and concise report writing: guidance for occupational hygienists* written by Adrian Hirst, Lynne Morgan and Sean Semple. I've adapted the checklist below from this guide.

OCCUPATIONAL HYGIENE REPORT CHECKLIST

Section of report	
Title	
Does the title describe the subject matter of the report?	
Executive Summary	
Does it describe what you did, and why?	
Does it identify whether the client has a problem?	
Does it summarise what the client has to do?	
Introduction	
Does it set out the objectives of the survey/report?	
Does it identify why the study was commissioned, and by whom?	
Process Description	
Have you described the process as accurately and clearly as you can?	
Are the hazards identified?	
Have you described existing control measures associated with the process?	
Have you identified any shortcomings in the controls?	
Methods	
Have you described the methodology you used?	
Have you cited validated monitoring methods?	
Have you identified who analysed samples?	
Have you described measures you took to minimise errors?	
Results	
Are your data comprehensive?	
Are your data presented clearly?	
Have you identified individuals who wore personal samplers?	
Have you described the jobs they were doing while sampling was underway?	
Have you included exposure limits for comparison with personal exposure data?	
Have you identified locations of static samplers?	
Discussion	
Have you compared your data against a valid limit?	
Have you referred to legal requirements that the client must comply with?	
Have you explained the results, including possible reasons for outliers?	
Have you drawn conclusions on whether or not control is adequate?	
Have you referred to best practice guidelines?	
Have you recommended risk reduction actions that are proportionate?	
Have you followed the hierarchy of control?	
Have you prioritised corrective actions?	
Summary of conclusions and recommendations	
Have you linked recommendations with your conclusions on risk?	
Do your conclusions and recommendations meet the objectives of the investigation?	