British Occupational Hygiene Society

FACULTY OF OCCUPATIONAL HYGIENE

Diploma of Professional Competence in Occupational Hygiene

The Researched Essay

What is the researched essay?

The researched essay is an opportunity for you to show how you use original scientific evidence and technical information and apply it to real-world problems. This part of the Diploma is particularly important to those Occupational Hygiene professionals who have not undertaken or had the opportunity for review and feedback of research-informed communication, as you might in a University setting. It also provides the opportunity to explore occupational hygiene issues in depth or ones that go beyond the scope of your day-to-day working environment.

The researched essay assessment consists of two stages:

1) The submission and approval of a topic for research (Proposal) and proposed way of researching it (Methodology);
2) Your submission of a final researched essay, outlining your findings.

What sort of writing is it?

The researched essay is not an advanced research thesis, but it is set at Level 7 (Masters level coursework). There are some basic indicators about how you should go about writing at this level:

1) This is an assessment of how you think and communicate as an individual professional, so it should be authentic (i.e. you should write it in your own words without the assistance of other people or technology, such as AI).
2) In order to show you understand and synthesise original scientific material, it should draw on published scientific material that you have found and read for yourself – not on someone else's summary in a textbook or guidance document.
3) You should be able to show that you can find all of the relevant material which relates to the subject of the essay and you should have read it, even if you decide it is not something you need to specifically draw upon to support your written findings. All materials consulted should be accurately and comprehensively recorded in a bibliography.
4) Authentic writing and research are also a test of your professional ethics in terms of honesty and integrity. You need to be scrupulously honest about this being your own work and the material which you consulted.
5) You should be able to support your statements by direct reference to well-chosen and authoritative scientific sources. This will be demonstrated by the use of referencing in line with Harvard referencing standards. Your referencing will indicate an understanding of the relative reliability of different sources of scientific knowledge.
6) Your writing should be succinct, structured and sufficiently detailed to convey your findings to the reader in an effective way. Operating within the word count for the main body of the essay is a test of this.
7) Your hypothesis, methods, discussion and conclusions should reflect the nature of scientific writing. Your writing and methodology should express degrees of probability and uncertainty in line with good statistical and scientific method.
8) Your conclusions should naturally flow from the nature of the inquiry you started out on and reflect what you have discovered and what is yet to be discovered.

If you've never written a scientific researched paper before, some very good style advice can be gained from Microsoft Word - PDF_science_essays_script_v3 (ox.ac.uk). An excellent and systematic guide to writing at Level 7 can be found at WRITING POSTGRADUATE ASSIGNMENTS (ed.ac.uk).

How will I be assessed?

Researched essays will be assessed to determine whether you have met all of the minimum competency standards. The assessors may determine that you fall short of demonstrating some of the standards, but that with feedback, you can resubmit your work. They may, rarely, conclude that the work falls short of demonstrating the standards required, and that a better course of action would be to submit a fresh piece of work.

Although not assessed, your work should be of a standard that demonstrates competence in the following outcomes (A to E):

A Can demonstrate highly specialised or advanced knowledge and original thinking in one or more field(s) of occupational hygiene practice.

Successful submissions will:

- demonstrate a sound knowledge and understanding of material within a specialised field;
- demonstrate an understanding of current theoretical and methodological approaches and how these affect the way the knowledge base is interpreted;
- provide evidence of relevant and sound analysis within the specialised area, with some critical evaluation;
- demonstrate the ability to analyse complex issues and make appropriate judgements.

Submissions requiring further work before they meet the competence standard will:

- demonstrates some knowledge of the field and awareness of current evidence and issues, but with some notable weaknesses;
- lack knowledge and understanding of some key areas;
- offer some appropriate analysis, but with some significant inconsistencies which affect the soundness of argument and/or conclusions; and/or
- demonstrate very limited critical ability.

Unsuccessful submissions, requiring a full fresh submission will:

- demonstrate little knowledge of the field;
- demonstrates significant weaknesses in the knowledge base, and/or simply reproduce knowledge without evidence of understanding;
- shows little or no critical ability; and
- show poor, inconsistent analysis.

B Can engage in specialised or advanced enquiry and original thinking in relation to field/fields of occupational hygiene practice which is/are at the forefront of the discipline.

Successful submissions will:

- demonstrate understanding of and skills in selected techniques/ approaches applicable to own research or advanced scholarship;
- shows some originality in the application of knowledge, and some understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the discipline; and
- show the ability to communicate effectively with a given audience.

Submissions requiring further work before they meet the competence standard will:

- demonstrates some skill in selected techniques and/or approaches applicable to own research or advanced scholarship, but with significant areas of weakness; and
- lacks sufficient understanding of how established techniques of research and enquiry are used to create and interpret knowledge.

Unsuccessful submissions, requiring a full fresh submission will:

- show little or no skill demonstrated in selected techniques applicable to own research or advanced scholarship; and
- lacks any understanding of how established techniques of research and enquiry are used to create and interpret knowledge.

C Can demonstrate expert critical insights into the knowledge issues in the field of occupational hygiene science and at the interface with other professional or scientific disciplines.

Successful submissions will:

- critically evaluate examples of literature relating to current research and advanced scholarship in the field; and
- makes consistently sound use of appropriate referencing conventions and show honesty about the use of materials and sources.

Submissions requiring further work before they meet the competence standard will:

- evidence and discuss/apply examples of literature relating to current research but lack critical engagement;
- make reference to appropriate literature/ evidence, but use of referencing conventions is insufficient and/or inconsistent.

Unsuccessful submissions, requiring a full fresh submission will:

- fail to evidence or discuss/apply appropriate examples of literature relating to current research and advanced scholarship in the field; and
- contain significant numbers of references to literature/ evidence and use of academic conventions that are flawed/irrelevant.

D Can demonstrate specialised problem-solving skills required in practice or research in order to develop new knowledge and procedures in the field of occupational hygiene science.

Successful submissions will:

- demonstrates capabilities to support effective communication relevant to the audience for the work;
- shows consistent ability in tackling and solving the elements of the problem, resulting in a systematic, coherent and complete response to it; and
- will be able to identify areas of uncertainty and the limits of knowledge, and the impact that these have on the conclusions that can be drawn.

Submissions requiring further work before they meet the competence standard will:

- demonstrates some effective skills, including communication and problem-solving, but with some notable or problematic areas of weakness;
- show limited ability to adapt skills and knowledge to address the challenges of the problem; and

- shows limited understanding of the impact of the limits of knowledge on the conclusions that can be drawn.

Unsuccessful submissions, requiring a full fresh submission will:

- demonstrate significant weaknesses evident in key areas such as use of technical guidance and standards, communication and problem-solving;
- demonstrate inability to apply knowledge and skills to the challenge of the problem at hand; and
- show little appreciation of the limits of knowledge on the conclusions that can be drawn.

E Can provide guidance and governance in relation to occupational hygiene ethics, and can address complex and novel ethical and professional challenges.

Successful submissions will:

- demonstrates understanding of the constraints of confidentiality, including commercial confidentiality, data protection and the Faculty's Code of Ethics;
- shows consistent understanding of the regulatory and professional constraints that apply to the area of research; and
- will clearly identify areas of potential conflict or difference in relation to issues raised by the research.

Submissions requiring further work before they meet the competence standard will:

- demonstrates only partial understanding of the constraints of confidentiality, including commercial confidentiality, data protection and the Faculty's Code of Ethics;
- shows inconsistency in the understanding of the regulatory and professional constraints that apply to the area of research; and
- insufficiently identify areas of potential conflict or difference in relation to issues raised by the research.

Unsuccessful submissions, requiring a full fresh submission will:

- demonstrate significant weaknesses in the context of ethical research;
- demonstrate inability to apply regulatory or professional standards in a credible way; and
- show little or no appreciation of potential conflict or difference in relation to issues raised by the research.

What question should I answer?

Proposal stage information

Part of an effective assessment of independent skills at this professional level is the ability to identify areas which require further inquiry. The purpose of the researched essay is not to represent information that is already known. Nor is this an academic exercise to show that you can write a good academic essay. The researched essay is the opportunity for you to demonstrate your ability to independently use original scientific, technical and other materials to resolve and explain real-world problems.

You may choose to investigate a problem that is in your current area of practice or it may be in a completely different area which you would like to better understand. Identifying a suitable problem is not easy at first, but over the years you will have come across gaps in professional knowledge and areas of scientific uncertainty.

If you find yourself asking someone else for a researched essay question, you are not engaging with the assessment properly. However, you should discuss your ideas with a mentor, and can seek further support from the Head Office team.

What tips are there on choosing a suitable area for the researched essay?

The following tips should help you:

1) choose an area which you feel you already have a sound understanding of the basic principles. We don't want you to explain them in the submission, but if you don't know the area, it will show.
2) choose an area which is capable of being investigated within a manageable time period and capable of being expressed within the word limit. Asking whether the societal benefit measure in HSE's ALARP pack is justifiable would be more suited to a PhD, but questioning whether a reduction in the OEL for respirable crystalline silica would reduce the number of cases of silicosis in the engineered stone industry is probably achievable, for example.
3) choose an area where there is sufficient material to support your research, but not a mountain. It is therefore sensible to do a search of the *Annals of Workplace Exposure and Health*, as a minimum. If there is nothing there, you may struggle to find anything anywhere else. If it has been the subject of hundreds of papers, narrow your focus or pick something else.
4) choose a focus which can be delivered through a viable methodology. If the investigation requires a whole new set of real-world data, then unless you have got ethically-allowable access to the resources or data sets, then this is unlikely to be sustainable. If your methodology is going to be crunching papers using Google and ChatGPT, then that is also going to present ethical problems in terms of demonstrating authenticity.
5) choose an area that interests you. You need to maintain motivation and a passion to find out.
6) read other people's good quality research writing, e.g. in the *Annals* to get familiar with referencing practices and to stimulate ideas and approaches to research.
7) Once you've chosen something, stick to it. Narrow your focus if it turns out to be too much and broaden the focus if the research resources dry up. Be honest in your written pieces about what you have done differently to address issues, and be honest about the limitations of the study in the end.

What should go into the proposal?

A proposal sets out what you are going to research into and why. This may expressed be in the form of a hypothesis that you wish to test, e.g. "An investigation to determine the likelihood that standard control measures are insufficient to control respirable crystalline silica dust when processing high silica content (above 70%) artificial stone." At the heart of your title should be a clear statement of the question which your research seeks to answer.

You should set out:

- what you propose to investigate (simple, but accurate phrasing will help you and the examiner);
- the time period which forms the focus of your research (publications after 2000) and the rationale for that time period (change in regulations occurred);
- the context of where the investigation takes place (is it UK? A specific sector or industry? A particular part of a process?)
- the reason why the question needs to be answered (what is the gap in knowledge or reason why the uncertainty needs to be resolved?)

- who might be involved (including other co-workers, clients, reference sources etc.?)

The proposal should be carefully crafted to be clear and succinct and should reflect the limits of what can be achieved in the research process in the time available.

What is a methodology?

A methodology is the process of how you are going to research a subject. The approach that you take to research, like a process of monitoring and measurement, will have an impact on the reliability of results. It is important to be precise and plan how you are going to research a subject.

Research draws on primary material (that is information that is derived from your own observation and investigation, such as measurements, surveys and interviews) and secondary material (that is information that is derived from articles and published materials created by others base upon their observations and investigations). Primary evidence is regarded as being of superior value to secondary evidence as you can be aware of all the variables that affect the gathering and evaluation of it. However, the use of primary evidence often involves the maintenance of high standards of scientific practice and also needs careful consideration in relation to ethics and confidentiality.

The decision as to whether you use some primary evidence for your research should be based upon your ability to assure yourself that you can do so in an ethical manner with suitable levels of scientific accuracy to derive valid conclusions.

Most candidates choose to write a researched essay based upon secondary material.

Currently, a lot of essay-writing is being influenced by the use of AI, including special academic research AI. While AI can be useful to undertake timely and elementary research, the use of AI for a Diploma researched essay is not acceptable. This is because an AI engine makes decisions about the value, weight and meaning of the material that it finds. Part of what Diploma candidates need to demonstrate is their own ability to make these judgements. When you submit your essay, you commit to stating that it is your own work. If you have used AI for research or drafting, then it will not be your own work.

Online search tools, such as Google Scholar can provide a simple basis to compile resources quickly and efficiently as the basis of a researched essay. To use tools like this, you will need to decide on a date range and search terms. You should report the date range chosen (and the reason for that range) and also each of the search terms used, as well as the reason for your choice of online search tools. Typically, one search source will be limited in scope and it is often advisable when searching for secondary materials to use a few data sources, e.g. Google Scholar and Medline.

The search tools should be ones designed for scientific research, rather than general search engines. Some databases and articles are only accessible via library access. However, you can access the *Annals of Workplace Exposure and Health* for free as a member of BOHS. This is the Society's research journal and contains significant published research in our field. It is unlikely that your subject of research has not had something published about it in the *Annals.*

It is important that all of the materials that you consult during your research are recorded. This list of materials consulted will form your Bibliography. This is a list of consulted materials, whether or not you refer to them directly in your final written piece. Any statements in your

researched essay should always be backed up by evidence. This evidence is your reference material and should be present in footnotes.

Submitting your Proposal and Methodology

Once you have completed your proposal and methodology, you may decide you want to refer to a mentor for any further views on it. The Proposal and Methodology can be submitted to an Examiner for feedback and approval. We want to help you to avoid spending time investigating an area that is not appropriate. Feedback on your proposal should assist with this. If your proposal is appropriate, you will be told that you should proceed. If your proposal needs amendment or is not appropriate, you will get feedback and you will be invited to resubmit.

Your final submission of your researched essay should include your proposal and methodology. You may choose to revise your methodology, but your proposal should remain unchanged from the one approved.

What structure should I use for the Researched Essay?

It is important that, at this level, you understand the structure and approach of research papers – so that you can navigate them, critique them and use them for what they are worth.

Encouraging words

A very good reference source to help with professional communication for occupational hygienists writing for a scientific audience is to be found at Scientific Papers | Learn Science at Scitable (nature.com)

Some helpful advice on starting out can be found here: Writing a research article: advice to beginners | International Journal for Quality in Health Care | Oxford Academic (oup.com)

The assessors will not, however, be looking for rigid adherence to academic conventions, apart from integrity in referencing. The effectiveness of your professional communication is also important. Most research papers are aimed at an audience of other researchers. An occupational hygiene professional may sometimes need to explain a research problem to a sceptical technical audience. There may well be an element of persuasion required.

The following guidance may help shape a persuasive presentation of the outcomes you have researched:_structure_of_a_paper.pdf (harvard.edu).

However, scientific research proceeds in scepticism. The author can set up a hypothesis to explain something, but their research should aim to tackle the features that might undermine or disprove that hypothesis through objective analysis of evidence. By contrast, lawyers, sales people and journalists want to win the argument through the persuasive use of language. It is permissible for a piece of research to conclude in uncertainty and statement of what more is needed to resolve a question.

What is the word limit?

3,000 words, excluding footnotes, references, diagrams and tables should be sufficient to explore a relevant topic. Should you find yourself exceeding this length, it is highly likely that you have either picked too broad a subject or you are insufficiently focused on the relevant issues. Significantly shorter pieces may evidence that your inquiry is of insufficient research challenge or depth or that you have been insufficiently analytical.

While you will not be directly penalised for variation from the word limit, these indicators should encourage you to ensure that you manage your communication skills to be effective within this word count.

What if I have additional support needs?

If there are reasons why a written submission may provide challenges, such as because of a disability, please contact professionalqualifications@bohs.org to discuss what support arrangements we may be able to put into place.