



Occupational Safety and Health online

How to find reliable information

Frank van Dijk
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ldoh
LEARNING AND DEVELOPING OCCUPATIONAL HEALTH

Occupational Safety and Health online

How to find reliable information

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How to find reliable information

Third edition in English

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The authors and the LDOH as the publisher of the book thank you in advance for any comments or suggestions which could improve the quality of this publication. These can be sent to frank.vandijk@ldoh.net and/or yohama.caraballo@ldoh.net.

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Coronel Institute of Occupational Health, Academic Medical Center,
University of Amsterdam, the Netherlands.*

LDOH foundation

The Learning and Developing Occupational Health foundation (LDOH) started as a nonprofit organization in the Netherlands in 2014. The aim is to develop and support occupational health education, information and development in the world.

The foundation offers courses in which this book is teaching material. Quality online lessons and courses in occupational safety and health from many sources are accessible, almost all free of charge, via our website: www.workershealtheducation.org.

For more information see the website: <http://www.ldoh.net/>.

This book is written especially for Occupational Safety and Health experts such as occupational physicians, safety experts, occupational health nurses, occupational hygienists, occupational psychologists, and committed experts in ergonomics, toxicology, social sciences, epidemiology and other disciplines.

The book can be used as basic learning material in lessons and courses organized by institutes, schools and universities responsible for the training and education in Occupational Safety and Health for students and experts.

The Foundation LDOH can support the development of a special version of the book including specific information and access to selected online sources. The result is a tailor-made tool for an institute, school, country or region.

Master International Occupational Safety and Health

The various editions of this book were prepared in close contact and cooperation with Prof. Dr. Katja Radon, Chairwoman of the Center for International Health (CIH) of the Ludwig-Maximilian's-Universität (LMU) in Munich, Germany. She is head of the Occupational and Environmental Epidemiology & Net Teaching Unit of the Institute and Outpatient Clinic for Occupational, Social and Environmental Medicine at the University Hospital Munich (LMU).

In 2012 the "Master of Science in International Occupational Safety and Health" course was launched, collaborating with many partners from Latin America (www.osh-munich.de). This book has been initiated as a support for the participants of this International Master course.

**You can receive this book free of charge as a downloadable PDF,
using <http://www.ldoh.net/>**

If you want to receive our LDOH Newsletter with news about updates or new versions of the book, and about courses in finding reliable information, send a mail with your name and e-mail address, mentioning 'Newsletter', to info@ldoh.org.

The first edition of this work, published in 2011, was presented under the title *¿Cómo buscar la evidencia en las fuentes de Internet? Salud Ocupacional*.

Yohama Caraballo-Arias and Frank van Dijk, the primary authors of the second and third edition of the book, adapted, updated and revised the first edition profoundly. The third edition is published in both Spanish and English. A translation in Turkish is in preparation.

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Introduction

Not everything that is written is true...

and not all truth is written

Anonymous

We asked several health professionals where they find guidance for far-reaching problems in their practice or where they get information to stay updated on the newest information for their practice or research. Many responded that they rely on materials found by using common search engines like Google, Yahoo and others.

Professionals answer in this way especially when they do not know how and where to look for reliable and safe sources. Accurate information is diluted among the millions of documents presented in the web, many of which are extremely outdated while others may have questionable validity. Using poor sources can cause serious problems for professionals in occupational safety and health (OSH) as they are responsible for giving high quality advice for the prevention of occupational risks and the promotion of health, safety and ability to work.

From this problem with the OSH community came the first edition of this book in 2011– printed and online – entitled, "How to look for evidence in the sources of Internet? Occupational Health". The book was published in Spanish and was widely accepted in Hispanic countries where literature in other languages takes years to be translated.

It is estimated that more than 180 countries have access to Internet and its availability is even considered by the United Nations (U.N.) to be a human right. The information revolution brought unbelievable innovation to information networks. It created new technologies in medicine, e-health (the use of information and communication technology for health services and information) and mobile-health or m-health (the practice of public health supported by mobile phones and tablets for health services and information). In a short period, international communication became affordable for everyone, boosting international collaboration and the exchange of information and materials. Finally, new tools were created to enhance learning and to support searches for the best reliable information.

The speed with which the information highway is still growing has motivated an improved, updated and expanded second edition of the book, written by a team of authors who are leaders in the OSH field. We

developed this book with the hope that it would be a tool for those who want to find the best evidence possible, using the most efficient methods, in the world of scientific literature and other evidence-based sources.

The content of this tool reveals general search advices and high quality databases of literature, guidelines and e-courses, and selected websites for professionals and graduate students in the field of OSH. In addition, the book offers a list of relevant search terms and a glossary in this area as a dynamic contribution to enhance the skills and to save time for students, practitioners and scientists in the interdisciplinary world of OSH.

Not to forget: It is in the interest of patients, workers, companies and society to receive the best advice from occupational safety and health professionals.

Objectives of this book

- To support professionals and students in occupational safety and health to obtain the best information, studies, reviews, guidelines, websites, courses or lessons, so contributing to performing as an excellent professional and to studying on a high level.
- To support the English-speaking and the Spanish-speaking public, including workers and managers, community and primary health care centers, social security and public health institutes, professionals engaged in vocation training or in continuous professional development, experts working at libraries or at national and regional institutes in all countries, to obtain the best knowledge and materials on occupational safety and health.

For this purpose of fulfilling these aims, this is a short explanation of chapters found in this book:

General advice on how to look for evidence is presented in chapter I, explaining five steps to take, different types of questions and the so called PICO format helping you to phrase your knowledge question more precisely while also supporting the selection of search terms. The use of MeSH terms, different literature databases and the 'search pyramid' is also part of this chapter. In chapter II we introduce a variety of important sources for a search within online accessible digital or virtual databases, repositories or libraries for scientific articles and reviews (PubMed/MEDLINE, Virtual Health Library (VHL), LILACS, SciELO, Cochrane Library and Cochrane Work), and online accessible collections of evidence-based guidelines (NHS Health at Work Network, NICE, NGCH, ACOEM, NVAB, GATISO).

The chapter continues with an introductory of and links to repositories for available lessons online, modules and courses (Workershealtheducation, OH learning, OER Commons, Geolibary) and a section on high quality websites (Toxnet/Hazmap, Saltra, CCOHS, WHO and PAHO).

A Toolkit for evidence-based Occupational Safety and Health practice is provided in chapter III including a comprehensive list of the most common related terms to use in PubMed (mostly MeSH terms), a glossary and the opportunity to acquire competences in searching the scientific literature (PubMed in Ten Steps).

Chapter I

1. How to search for evidence in Occupational Safety and Health

To start with, we suggest that you take your time when reading each section of this book. Practice some of the examples given to help understand the best techniques that work for you when you are performing literature searches in your specific field study or interest.

Five steps in looking for evidence (an evidence-based practice strategy):

1. Translate a problem in practice into a question that is precise enough that a concrete answer can be found, such a question is called an 'answerable question'.

2. Efficiently look for the best evidence to resolve the problem. (This step is the particular focus of this book.)

3. Evaluate the methodological quality of the evidence and its applicability.

The methodological quality of the studies is one of the main aims of *advanced courses* in Evidence Based Medicine (EBM). Critical Appraisal Tools are to find e.g. in Oxford: <http://www.cebm.net/critical-appraisal/>. You can also find recommendations how to evaluate the methodological quality of your resources found in your search in two publications mentioned at the end of this chapter.

4. Apply the evidence to the practice of occupational safety and health: decide or assess.

5. Evaluate the quality of the process in the steps 1 to 4.

1.1 Type of questions

There are two types of questions in the practice of occupational safety and health, regardless of the discipline involved:

- **General:** a general or 'background' question asks for general knowledge. General knowledge is often to find in handbooks (although containing often outdated information) but is nowadays increasingly available online. Examples of questions could be: What are the causes of a health condition? What are the ten most common safety risks in construction industry? What are typical features of one type of intervention such as a risk assessment or monitoring health of workers after exposure? What are the most common causes for occupational skin diseases?

- **Specific:** a specific or 'foreground' question asks for more exact and up-to-date information, needed for a concrete decision or activity. Such up-to-date detailed knowledge is only seldom present in handbooks, so online information sources are needed. The PICO strategy is developed for specific questions (see further). Examples could be: Does hexavalent chromium have carcinogenic properties as far as we know today?

Evidence-based search strategies are developed for a specific question that needs an answer. Sources of scientific research for such questions could be found using some of the following online resources: PubMed, Virtual Health Library or Cochrane Library. Evidence-based search strategies can also be used to look for answers on more general, overarching questions. Questions could also be related to a number of central themes or domains in occupational safety and health. Examples of such domains and related questions are:

- > *Diagnostic:* is the assessment of a disease or work disability. An example of this type of question could be: What is the best diagnostic test for post-traumatic stress disorder? What is the best diagnostic test to determine the work ability for shift work?

- > *Aetiology:* the causation of a disease, work disability or accident. Questions of this type could include: What are the possible occupational factors that may cause asthma for a hairdresser? What are the possible risks to reproduction during pregnancy from the inhalation of solvents?

- > *Interventions*: intervening activities, in occupational safety and health often used for activities to prevent, control or cure an undesirable condition. Actors can be professionals, workers themselves, supervisors or others. A variety of measures and purposeful activities is included. Examples are therapy, hazard assessment and education or supervision as a form of prevention. An example could be: What is the effectiveness of specific periodical medical examinations for agricultural workers? How protective is education on the use of a specific type disposable respirator given exposure to asbestos at a work site?
- > *Predictions*: questions about predicting. We talk about the prognosis when there is already a disease, injury or disability. An example could be: What could be the consequences of a severe depression for safe work as a lorry driver or as a pilot in commercial aviation? **What will be in general** the course of an illness, injury or disability? What are strong prognostic factors?
- > *Frequencies*: questions regarding how often a risk is present in a branch of industry, or regarding an estimation about current levels of exposure. An example could be: What are the frequencies of a number of occupational hazards and risks in a classic music orchestra (noise, allergens, mental stressors)? Or more focused: How many workers in the printing industry are exposed to high levels of solvents?
- > *Prevalence/incidence*: these are questions on the prevalence or incidence of an occupational injury or disease. An example could be: What is the incidence of occupational dermatitis in apprentice hairdressers? What is the incidence of burn injuries in mechanics?
- > *Measurement*: here we can look at all the questions concerning methods for measurement. An example could be: What are the best methods for measuring noise levels in the metal industry? What are the best methods for measuring lead pollution, taking into account several contamination routes for workers in the cable industry?
- > *Good practice*: these are questions on good practice e.g. on how to prevent a disease or injury. An example could be: What are the best preventative measures against asbestos exposure in a garage?

Different categories of questions may correspond to different types of research. For example, questions of aetiology are generally best answered by cohort type studies. Questions on the effectiveness of an intervention are often best answered by a randomized controlled trial or another form of controlled trial. Based on this understanding you can filter the results of your search after work-related causes of e.g. depression using a filter that selects all cohort studies in your sample of studies (abstracts). Mostly such filters will be used in the final stage of a search.

1.2 General search advices

1. Many search systems allow the use of operators or Boolean terms such as "AND," "OR" and "NOT."
2. To improve the search, think of terms with the help of the format developed in Evidence Based Medicine strategies (PICO):
 - Patient or problem, general situation of the workplace or type of work
 - Intervention or exposure
 - Comparison
 - Outcomes = Results

In this way, it is possible to obtain a number of useful terms to enable searches in a website, database, repository or virtual library.

An example of a PICO search could be: How can I look for articles on the cancer risk associated with working with lead?

P = work

I = lead exposure

C = without lead exposure (but in most searches there is no comparison term included in the search)

O = cancer

More examples in 'PubMed in Ten Steps' (chapter III)

3. To increase the effectiveness and efficiency of searches in virtual medical libraries we recommend that you use well-standardized medical subject terms such as MeSH terms in PubMed, or DeCS terms

in the VHL (BVS). In chapter II you can find more information about the virtual libraries PubMed/MEDLINE, VHL, LILACS, SciELO and the Cochrane Library.

In chapter III on EBM tools you can find a list with more than 500 relevant English MeSH terms for Occupational Safety and Health. Using these terms in PubMed (MEDLINE) can make a search much more effective.

4. For more common, general questions, you may use databases and search terms in non-English languages such as French or Spanish, as many not-English databases have enough content in these languages to give a decent overview. For more specific questions, we recommend to use English language databases because most new scientific studies have been written in English and are indexed only in English language databases. In searches, many scientific documents cannot be found in other languages.

Note: We support the efforts to improve the accessibility of scientific studies not written in English. For this reason we included subchapters in this book on VHL, LILACS and SciELO (Portuguese, Spanish and English). In the near future there is hope for increased global accessibility to scientific publications written in languages such as Chinese, Russian, Japanese, French, etc. New technical translation facilities can be of great help.

5. Try to search using more than one similar term. An example could be using “worker OR workers.” Here the exact words can be influential; the results can be different or additional for several reasons. Another example is using, “baker OR bakery.” Or use the word weld* (with an asterisk *) in PubMed and that will generate articles with the terms “*welder*”, “*welder’ s*”, “*welding*” and “*welders*”.

6. If the search is difficult because you find too many results, try these solutions:

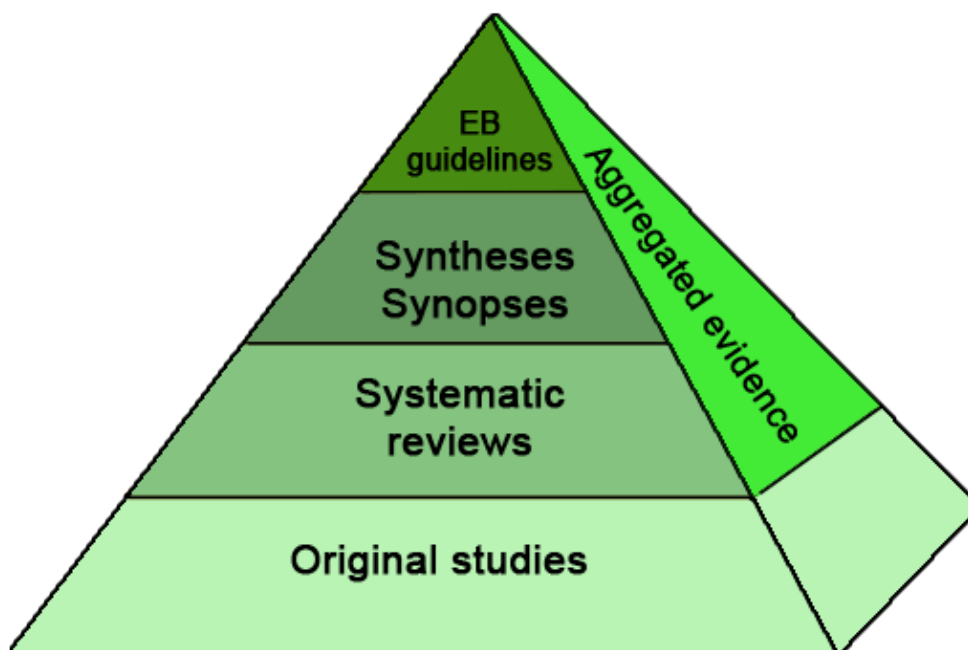
a) Try incorporating new additional terms little by little with “AND.” Do not use long phrases. Instead, only use the most relevant and specific terms.

b) Try to be as specific as possible in the search and in the choice of terms. For example, the term “chrome” is better than “heavy metals”; the term “carpal tunnel syndrome” is better than the term “neurological disorders.”

c) Refine the search if possible. For example try by searching by year of publication (from 2005) or by type of publication (cohort study). Sometimes a selection of publications from one country may be relevant (China, South Africa, Chile).

7. If the search is difficult and you cannot find many relevant documents or the documents that you find are dated, try to use less terms connected with AND or less specific search terms. Another solution is to use a more appropriate database. For example, if searching for information within the social sciences, the database PsycInfo is very useful for mental health issues. Or try an advanced search that utilizes various search engines or meta-search engines.

1.3 The pyramid



The development of knowledge over the years can be conceptualized as following distinct stages. After the first stage of completion of scientific (original) studies, (systematic) reviews are published and finally complex products such as syntheses (summaries of all evidence related to one question), synopses (brief descriptions of original articles and reviews), and evidence-based guidelines complete the process. The production of knowledge follows a route from the bottom to the top of the pyramid.

This pyramid is used by the Medical Library of the Academic Medical Center in Amsterdam to help medical students and clinical practitioners searching efficiently for evidence in scientific literature and related valid sources. A slightly different concept of a pyramid can be observed in an instruction video for public health: http://www.nccmt.ca/glossary/all_terms-eng.html . Practitioners prefer to find valid search results quickly and in a format most adequate for their practice. They first look for the availability of evidence-based practice guidelines, syntheses or synopses, or for decision-making tools.

Very popular in hospitals is the medical journal UpToDate offering evidence-based syntheses that are continuously updated (<http://www.uptodate.com/home>). UpToDate can be accessed by Mobile Apps and so used at every point of health care. As far as we know such a facility does not yet exist for the interdisciplinary domain of occupational safety and health.

In line with the clinical practice, we recommend the OSH professional to always start the search by looking for knowledge first at the top of the pyramid (guidelines, protocols and standards) as this strategy is much more adequate and efficient for a practitioner than starting the search at the bottom with millions of original articles. If you do not have success at the top, go down, look for the availability of syntheses, synopses or reviews. Most OSH practitioners look for reviews in the Cochrane library.

Only if you find few or only older results, we suggest to look for original scientific articles in PubMed/MEDLINE, in Virtual Health Library (VHL), or in another scientific literature database such as PsycInfo for mental health studies.

The pyramid tool is not recommended for scientific experts as they prefer comprehensive search strategies that generate many up-to-date original studies as well. They have more time for searching than practitioners!

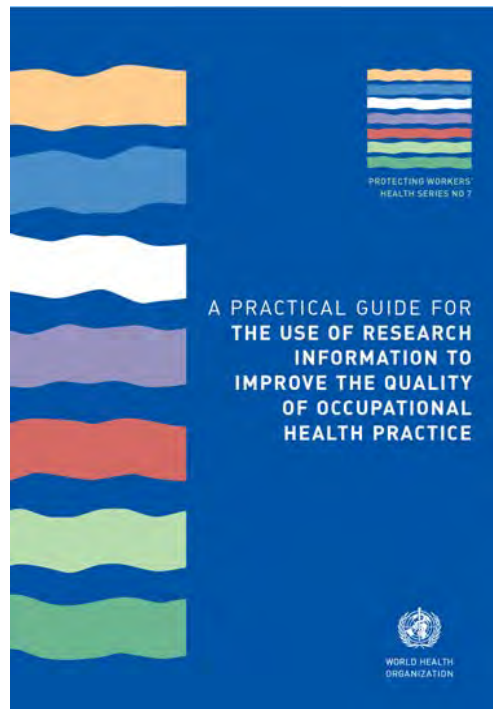
If you have a more common, general question we recommend handbook type online sources such as CCOHS in Canada: OSH Answers (chapter II). You may inspect if the information was updated at the bottom of the fact sheet at: "Document last updated..."

An alternative is to use the ILO Encyclopedia (see *Links*). Take care to watch for outdated information. Good up-to-date background information can also be found in recent systematic reviews, (background documents of) guidelines, quality websites and e-lessons or courses.

Sources to learn more:

A practical guide for the use of research information to improve the quality of occupational health practice. WHO Protecting Workers' Health Series No. 7. Edited by Jos Verbeek and Frank van Dijk (2006).

http://www.who.int/occupational_health/publications/pwh7elr.pdf (English, Japanese)



The guide helps its reader to develop skills in:

- Forming relevant questions based on professional practice.
- Reforming questions of practice in such a way that you can look for an answer in scientific or evidence-based sources of information. For example: recently produced manuals, guides, articles or reviews.
- Carrying out a specific search on the Internet in the MEDLINE database using the search engine in PubMed.
- Globally evaluating the value of scientific articles that you find with respect to their reliability and their relevance to the question.

- The formulation of a reply to the question on the basis of the information found and its application in practice.
- Presenting the result to colleagues, for example in the context of a workshop, a clinical hearing or review panel.

1.4 Introductory E- course Evidence-Based Practice (EBP) for Occupational Safety and Health.

Coronel Institute (AMC, University of Amsterdam) and Netherlands School of Public and Occupational Health (NSPOH, Utrecht, the Netherlands). Authors: Carel Hulshof, Frans Vlek, Hans Duin

<http://www.nspoh-on-line.nl/ebp> (English) The e-course is accessible since 2015, in a renewed (test) version.



NSPOH
we teach health

Online Introductory Course *Evidence Based Practise*

We are busy rebuilding our EBP course to a new platform and improve the performance. We will be online from september 2015.
The older version works with IE 8 or higher with 'compatibility option' on at:

The new Test / bèta version works on all platforms (also Tablets and Smartphones) at:

OLD VERSION

TEST VERSION

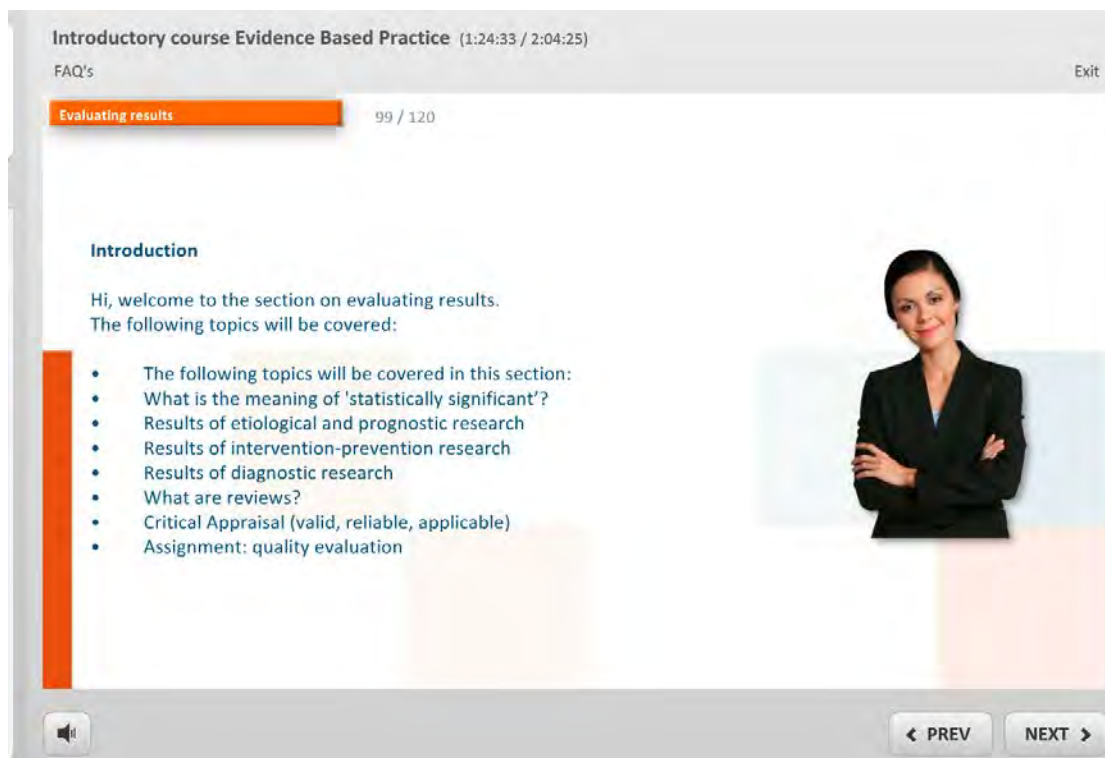
This course is developed by NSPOH and Coronel at the request of the WHO. Last update:
17 July 2013
Project leader: Dr. C. (Carel) Hulshof
All rights reserved | Utrecht © 2015

This first interactive interdisciplinary e-course for OSH, developed in 2004, forms a part of the WHO Collaborating Centers in Occupational Health Network program. An international evaluation study showed that the e-course was suitable and effective in increasing EBP knowledge (see in References: Hugenholtz et al., 2012). However, the e-course alone was not effective in improving skills and behavior. Therefore the authors recommend integrating the e-course with face-to-face education: blended learning.

The course was recently updated (2014/2015) and includes seven themes:

1. Learning objectives
2. Basic Principles
3. Types of questions in practice
4. The PICO method
5. Information sources and search strategies
6. Searching for work-related evidence
7. Evaluating results

As an illustration, you can see the issues dealt with in the theme 7 *Evaluating results*, followed by an assignment.



The screenshot shows a presentation slide titled "Introductory course Evidence Based Practice" with a timer at 1:24:33 / 2:04:25. The slide is part of a "FAQ's" section, specifically "Evaluating results" (99 / 120). The slide content includes an "Introduction" section with a welcome message and a list of topics to be covered. A woman in a black blazer is visible on the right side of the slide. The slide also features a speaker icon and navigation buttons for "PREV" and "NEXT".

Introductory course Evidence Based Practice (1:24:33 / 2:04:25)
FAQ's Exit

Evaluating results 99 / 120

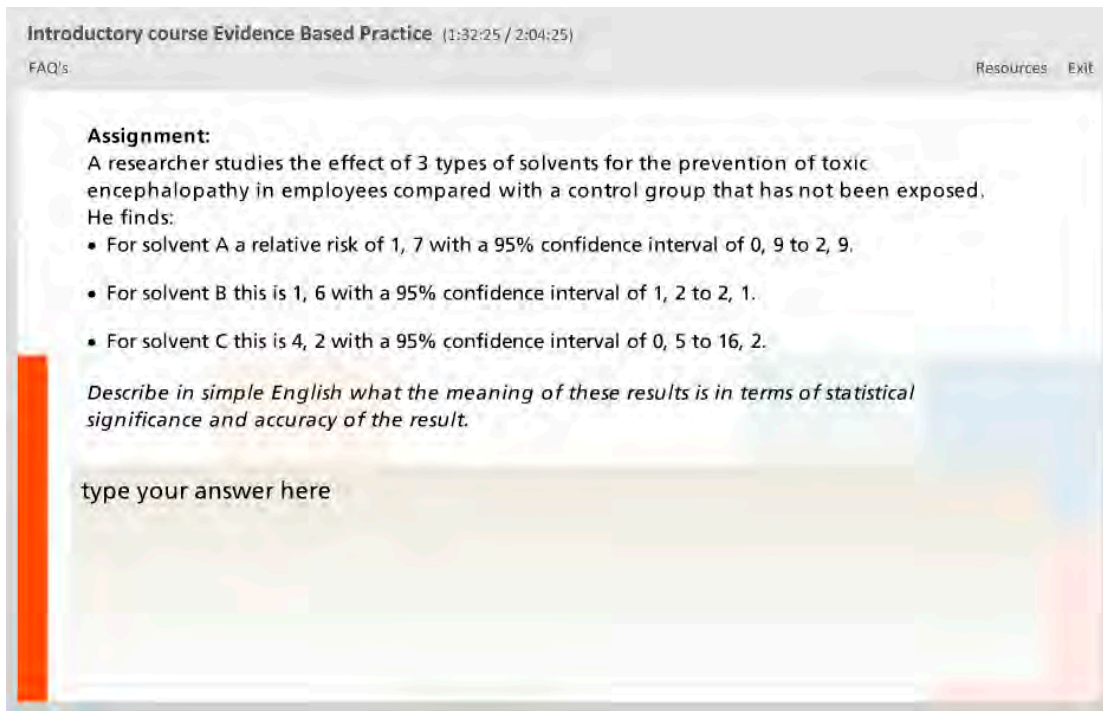
Introduction

Hi, welcome to the section on evaluating results.
The following topics will be covered:

- The following topics will be covered in this section:
- What is the meaning of 'statistically significant'?
- Results of etiological and prognostic research
- Results of intervention-prevention research
- Results of diagnostic research
- What are reviews?
- Critical Appraisal (valid, reliable, applicable)
- Assignment: quality evaluation

◀ PREV NEXT ▶

The assignment assesses your progress in the evaluation of the results of scientific studies, with answers that stimulate to study more active. An example:



The screenshot shows a web-based assignment interface. At the top, it reads 'Introductory course Evidence Based Practice (1:32:25 / 2:04:25)'. Below this are links for 'FAQ's', 'Resources', and 'Exit'. The main content area is titled 'Assignment:' and contains the following text: 'A researcher studies the effect of 3 types of solvents for the prevention of toxic encephalopathy in employees compared with a control group that has not been exposed. He finds:'. This is followed by a bulleted list of three findings: 'For solvent A a relative risk of 1, 7 with a 95% confidence interval of 0, 9 to 2, 9.', 'For solvent B this is 1, 6 with a 95% confidence interval of 1, 2 to 2, 1.', and 'For solvent C this is 4, 2 with a 95% confidence interval of 0, 5 to 16, 2.'. Below the list, a question is posed: 'Describe in simple English what the meaning of these results is in terms of statistical significance and accuracy of the result.'. At the bottom of the assignment area, there is a text input field with the placeholder text 'type your answer here'.

PubMed in Ten Steps

Another option for further studying is presented in chapter III: the lesson *PubMed in Ten Steps*. This is a lesson for a novice, supplemented by text blocks and assignments on intermediate level.

Chapter II

2. Important sources for a search for evidence in Occupational Safety and Health

2.1 Introduction

2.2 Scientific articles

PubMed/MEDLINE, USA

VHL: Virtual Health Library (BVS: Biblioteca Virtual en Salud), Latin America

LILACS: Latin American and Caribbean Health Sciences Literature, Latin America

SciELO: Scientific Electronic Library Online, Latin America

2.3 Systematic reviews (Jos Verbeek, Frank van Dijk)

Cochrane Library, international

Cochrane Work (Cochrane OHS Review Group), international (Finland)

2.4 Evidence-based Guidelines (Carel Hulshof, Frank van Dijk)

Introduction

NHS Health at Work Network, UK

NICE: National Institute for Health and Clinical Excellence, UK

NGCH: National Guideline Clearing House, USA

ACOEM: American College of Occupational and Environmental Medicine, USA

NVAB: Netherlands Society of Occupational Medicine, the Netherlands

NVAB: Multidisciplinary clinical guidelines including 'work', The Netherlands

GATISO: Guidelines for evidence-based Comprehensive Occup. Health Care, Colombia

2.5 Online lessons and courses (Paul Smits, Frank van Dijk)

Introduction

Workershealtheducation, the Netherlands

OHLearning, Occupational Hygiene Learning, OHTA

OER Commons, Open Educational Resources Commons, USA

Geolibary, USA

2.6 High quality websites

Toxnet/Hazmap, USA

SALTRA, América Central

CCOHS, Canadian Centre for Occupational Health and Safety, Canada

WHO, World Health Organization

PAHO, Pan-American Health Organization

2.1 Introduction

In this chapter you can find many different, interesting sources related to Occupational Health. Given our limitations in languages, we present mostly sources written in English or Spanish. We are aware that we are missing sources e.g. in Russian, French and Chinese. In the non-English sources presented here there is often the option to make the choice for a search in English.

First you will find several online accessible digital databases or virtual libraries, which have quite a few articles and scientific reviews. Most relevant are the recommendations and references in this chapter, which aim to help in the search strategy. Additionally, you will find online digital collections that give access to lessons, courses and to practice guidelines. Finally we will present a number of high-quality websites.

Over the course of this project, it was very difficult to choose the sources and databases we wanted to discuss since there are many interesting online sites that focus on the subject of Occupational Health.

The criteria we followed in selecting a source were as follows:

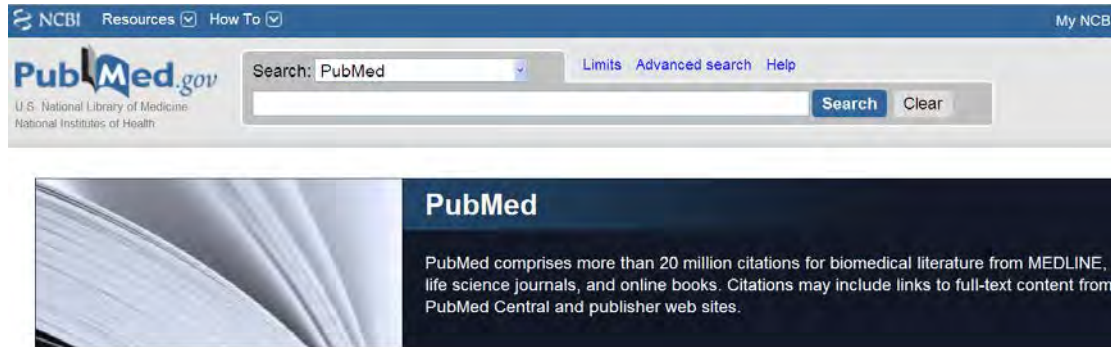
- * The source should offer concrete help in the search for evidence
- * The quality of the site
- * The presentation in the English language as the only or as one of the languages used to provide access to publications and other materials that mostly are written in English but they can also be written in Chinese, Spanish, Polish or even Dutch. In many cases, fortunately, an English abstract is present.

The following texts, covers of studies or of sources used and/or translated here, are taken and, in part, copied from the original page.

2.2 Scientific articles

PubMed/MEDLINE (USA)

<http://www.ncbi.nlm.nih.gov/pubmed/> (English)



See also the PubMed Ten Steps Search Strategy in chapter III.

Description

PubMed is developed by National Centre for Biotechnological Information (NCBI) part of the NLM (National Library of Medicine, USA). PubMed is a free of charge source that provides access to biomedical research literature such as present in the database MEDLINE and in a few other sources.

MEDLINE (also NLM) is a database of literature. MEDLINE contains approximately 25 million references of journals from the year 1950 up to the present. Currently more than 5,000 scientific health journals are indexed by MEDLINE. This phrase in square brackets is the reference; [PubMed – indexed for MEDLINE]. Bibliographical references of articles recently published and those which are in the process of being catalogued in MEDLINE have this phrase in square brackets as the reference: [PubMed – in progress]. It is important to note that not all the references in this category are going to be catalogued by MEDLINE, only references of journals chosen by MEDLINE will be checked to verify that they contain the correct information.

Tutorial

To find the tutorials in PubMed, you can click on the home page in the option *PubMed Quick Start* or *PubMed Tutorials*. There are many interactive instructions in English which last from 1 to 5 minutes.

Examples:

How do I search PubMed? How do I search by author? How do I search systematic reviews? How do I save my results? How do I focus or expand my search?

Subject descriptors: MeSH terms (Medical Subject Heading)

The search in PubMed can be made with MeSH terms that usually improve the search considerably. MeSH terms can be searched and found in a separate database of MeSH terms.

The articles are recorded by NLM experts, using a controlled vocabulary that is called MeSH—*Medical Subject Headings*. The MeSH database contains all MeSH terms, inclusive descriptions and hierarchical trees of terms. Searching in this database allows the option of identifying the most suitable MeSH term(s) for the search and the most specific terms in the tree of this descriptor.

Finding descriptors: one way is automatic mapping

To initiate a PubMed search, introduce a term (from the PICO) in the search window and click on *Search*. PubMed processes the search and finds the articles (with citations) that are hopefully relevant to your search. PubMed however uses the “automatic mapping of terms or phrases” to find articles that could not be found by the terms you typed in, but are still relevant to the terms or phrases used. If you type in “red blood cell,” PubMed will also give you articles under the MeSH term “erythrocyte” thus organizing a better list of results for your search.

After typing in the search window “red blood cell” and starting the PubMed search, the search terms will be automatically changed to:

"erythrocytes"[MeSH Terms] OR "erythrocytes"[All Fields] OR ("red"[All Fields] AND "blood"[All Fields] AND "cell"[All Fields]) OR "red blood cell"[All Fields]

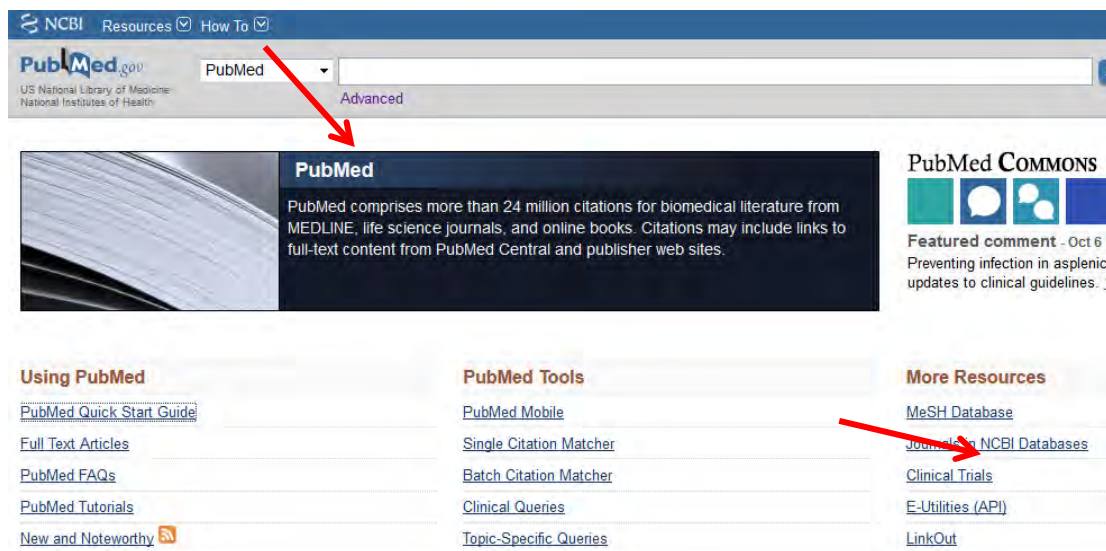
You should notice in this example that PubMed links a term or phrase—which is not a MeSH term—automatically to the MeSH term that best describes it (erythrocytes). Unfortunately, this does not always happen. In a number of cases your term may not automatically be linked to the most appropriate MeSH term. To see how PubMed interprets and performs your search, you must perform your search and then look at the column on the right of your screen in *Search details*.

Example:

Type the term "sleep walking" into the search window, start the search and PubMed will translate the terms automatically into the MeSH term "somnambulism." Inspect the terms used in *Search details*. Conclusion: keep a close eye on *Search details* after each search (right column under).

Finding descriptors: Where is the MeSH database?

To find the most appropriate MeSH term or MeSH terms for your search, go to the MeSH database on the homepage of PubMed (see both arrows), introduce the term in the search box of the MeSH database (for example: "breast cancer") and click *Search*.



The site shows more than 50 results, many of which are irrelevant terms. The first result is “breast neoplasms.” This is the MeSH term that we would prefer at first sight.

To check if this term “breast neoplasms” indeed is the most appropriate MeSH term, you can click on this result and you will be lead to a screen full of data.

- Under *Subheadings* you find various subtitles you may use to focus your search, e.g. limiting the search to epidemiology. You may also restrict the search to articles that have breast neoplasms as the main object of study: “restrict to MeSH Major Topic.” Most librarians however do not recommend using one of these subheadings when you are not experienced.
- Farther down on the screen you can inspect so called *Entry Terms* that show a large variety of similar terms that are automatically included in the search. In this case, terms that may be included could be *Breast Tumors*, *Breast Tumor*, *Breast Cancer*, *Breast Carcinoma*, etc.
- You can also find two so called trees of terms. You may decide to choose a term higher on the tree (less specific) or a term lower in the tree (more specific). If you are interested in a more specific disease or item (e.g. in *hereditary breast and ovarian cancer syndrome*) you can click on that term to focus your search.

[All MeSH Categories](#)

[Diseases Category](#)

[Neoplasms](#)

[Neoplasms by Site](#)

Breast Neoplasms

[Breast Neoplasms, Male](#)

[Carcinoma, Ductal, Breast](#)

[Hereditary Breast and Ovarian Cancer Syndrome](#)

[Inflammatory Breast Neoplasms](#)

[Triple Negative Breast Neoplasms](#)

The search (see also *PubMed in Ten Steps*, chapter III)

Each search can be performed in three possible ways.

1. One method of performing a search is to type terms into the search window that you are guessing may have a correlation to your subject. This will sometimes, unknowingly, be a MeSH term (if you are lucky).
2. A second method of performing a search can be executed by using only MeSH terms.
3. The third method is performed by using a combination of both strategies, ultimately compiling a short or long list of search terms deemed reasonable for your search.

Just typing a term into PubMed is followed automatically by the addition [All Fields] in the actual search. You will gain the great advantage of pulling recent articles that are not yet catalogued on MEDLINE or that are erroneously missed by the responsible experts working in the NLM library. *Remember: these experts are mostly well-educated in health issues but presumably not in work issues.*

Example:

The Medical Library of AMC in Amsterdam advises to perform a comprehensive search first using a MeSH term and next adding a free text word to the search assignment. An example is given for searching articles on nose bleeding. First you look for the best term in the MeSH database. This is "epistaxis" and can be entered into the search window. Next you may e.g. use the same term but now as a text word to avoid the disadvantages of using only a MeSH term.

The AMC library chooses to add after the *text word* "epistaxis" the addition [tiab]. The addition [tiab] refers to a search for terms in the title (ti) and abstract (ab) only, so avoiding hits with an author with the family name Baker when searching for e.g. asthma in bakers. The final search uses the terms: (epistaxis [Mesh] OR epistaxis [tiab]). To give you an impression about the number of results: epistaxis [Mesh] gives 3914 hits; epistaxis [tiab] 4818 hits; (epistaxis [Mesh] OR epistaxis [tiab]) gives 6466 hits (April 2015). So adding a non-MeSH term in the search increases the number of hits. It depends on several conditions to select the most adequate strategy in every situation.

The *Advanced Search* screen is found by clicking on *Advanced* just under the search window in the home page of PubMed. In this *Advanced Search* screen you can find the search history, but you can

also use the *Advanced Search Builder* that pose as a very efficient tool. (More information on the use of this literature search tool can be found in chapter III in the lesson "PubMed in Ten Steps".)

Advice for the search

To help limit and refine the results of your search you may:

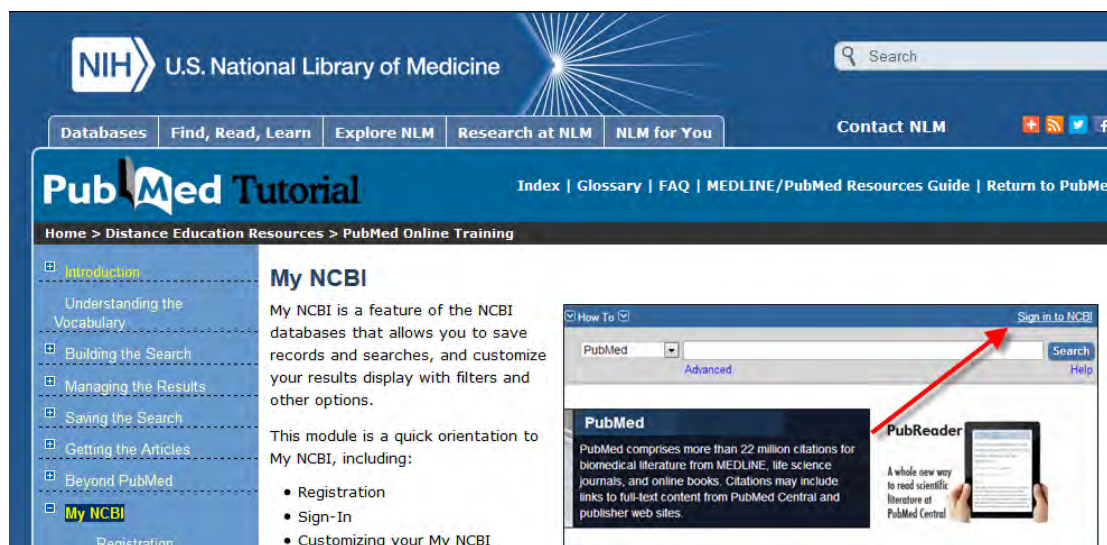
- Add new search terms, preferably using *Advanced Search Builder*
- Limit the articles to one language or to a specific time period
- Use the function *PubMed Clinical Queries* in the *Advanced Search* screen under *More Resources*. This option is designed to select clinical study categories such as on etiology, diagnosis, therapy and prognosis. It also can show you the filters used.

Advantages of My NCBI

"My NCBI" allows you to keep citations (titles, abstracts) and search strategies. You can also receive automatic updates on your stored searches by email. You just need to register in *My NCBI*, creating a user name and a password.

Here is an English guide for the use of *My NCBI*.

http://www.nlm.nih.gov/bsd/disted/pubmedtutorial/070_010.html. (See also "PubMed in Ten Steps" in chapter III)



The screenshot displays the NIH U.S. National Library of Medicine website. The main navigation bar includes "Databases", "Find, Read, Learn", "Explore NLM", "Research at NLM", and "NLM for You". The "PubMed Tutorial" section is active, with a sidebar menu listing topics like "Introduction", "Understanding the Vocabulary", "Building the Search", "Managing the Results", "Saving the Search", "Getting the Articles", "Beyond PubMed", and "My NCBI". The "My NCBI" section is expanded, showing a "Registration" link. The main content area for "My NCBI" explains that it is a feature of the NCBI databases for saving records and searches, and lists the steps: Registration, Sign-In, and Customizing your My NCBI. An inset image shows a search interface with a "Sign in to NCBI" link highlighted by a red arrow.

Virtual Health Library, VHL (Biblioteca Virtual en Salud, BVS) Latin America (Portuguese, Spanish, English).

<http://regional.bvsalud.org/php/index.php?lang=en> (English)

For a search use <http://bvsalud.org/en/> (English), <http://bvsalud.org/es/> (Spanish), or <http://bvsalud.org/> (Portuguese)

Leave a comment / Report an error ✉ Contato Español | Português

VHL
virtual health library

VHL Regional Portal
Information and Knowledge for Health

Products and Services | About | How to search

Search SEARCH

Advanced search **DeCS/MeSH**

Influenza A – H1N1

World Health Day: Beat diabetes

Infection by Zika virus

Direct access

- ▶ DeCS – Terminology
- ▶ LILACS Database
- ▶ MEDLINE Database
- ▶ Serials on Health Sciences
- ▶ Educational resources
- ▶ LIS – Sites
- ▶ Search Strategies
- ▶ Systematic Reviews

Next events

2º Congresso Brasileiro de Disfagia
Ribeirão Preto - BrazilDate: 17/06/2016 - 18/06/2016Subjects: Otorinolaringologia, Disfagia

XXVI Jornada Gaúcha de Radiologia
Porto Alegre - BrazilDate: 17/06/2016 - 19/06/2016Subjects: Radiologia, Radiologia

Encontro de Homeopatia AMHPR-EHC - 40 Anos da Homeopatia no Paraná - Atualizando a Homeopatia
Curitiba - BrazilDate: 17/06/2016 - 18/06/2016Subjects: Homeopatia, Clínica Homeopática, Terapêutica Homeopática

Description

VHL (BVS) is offered by: BIREME (Biblioteca Regional de Medicina), PAHO (Pan-American Health Organization), and WHO (World Health Organization).

VHL is a meta-search engine that works in three languages (Portuguese, Spanish & English). It contains 30 sources of information among which are LILACS, IBECs, MEDLINE, Cochrane Library, WHOLIS and SciELO.

VHL has a version in Portuguese (Biblioteca Virtual em Saúde), in Spanish (Biblioteca Virtual en Salud), and in English (Virtual Health Library). The VHL Network is now present in 30 countries from Latin America, the Caribbean, Africa and Europe.

On the top right hand side of the screen you can choose whatever language you like for the search.

All the articles and documents are assigned to DeCS terms that are subject descriptors (Descriptores en Ciencias de Salud / Descriptors in Health Sciences) that are related to the MeSH terms of PubMed (MEDLINE).

VHL uses the dynamic vocabulary of the DeCS which is also a part of the LILACS Methodology (the next database in this book) and is an integrating component of the Virtual Health Library

Tutorial

Search help can be found by clicking *Searching VHL* in the right column under *Services*. Click and you will find the option *Search tutorial*. You may go to the tutorial directly by following this URL: http://wiki.bireme.org/en/index.php/Search_tutorial.

Subject descriptors

The DeCS is a separate database and opens in a new screen. This database contains more than 30,000 "subject descriptors". Of these, more than 27,000 are from the MeSH and more than 4,500 are exclusively from the DeCS. The DeCS database contains subject descriptors in English, Spanish and Portuguese.

In the DeCS database, these descriptors are used to look through all the VHL sources of information in an orderly way. To use DeCS terms what we recommend you to do, especially at the start of the search, is to use the option *DeCS/MeSH* under the search window. Click on *DeCS/MeSH* and you can type in the window the term you are interested in. Then the suggestions are given to the term you used.

Example:

If you were to enter the term "burnout" the result of this search would give you the two suggestions of "burnout" and "burnout, professional." In both options you get a hierarchy of terms as a tree, and also a

verbal term definition. You see also the option to restrict the search to e.g. the areas economics or rehabilitation. *We do not recommend using this option when you start to learn searching.*

When you agree on “burnout, professional,” you click on *Search documents* with this descriptor. The result (keep scrolling down!) is more than 8,600 hits and you may decide to use limit filters on the right hand side in the screen to reduce this number. As an exercise, click on the heading *Country/Region* and scroll until you find *Argentina* (about 20 hits). You put a tag before Argentina and do not forget to activate the filter by pressing on the heading *Filter* at the top of the right column. You will receive these about 20 hits, many coming from LILACS (see the next database in this book) and others from MEDLINE.

Again you may use filters. If you selected *Chile* (about 25 hits) some publications on “burnout” are coming from other databases such as BIBECS.

The screenshot shows the VHL Search Portal interface. At the top, there is a dark blue bar with the text "leave a comment / report a error". Below this is the VHL logo (Virtual Health Library) and the text "VHL Search Portal Information and Knowledge for Health". The main content area has a breadcrumb "Home > Search > ()" and a section titled "Subject descriptor lookup". A search box contains "breast cancer" and a dropdown menu is open, listing various descriptors such as "Breast Cancer", "Breast Cancer 1 Gene Product", "Breast Cancer 2 Gene Product", "Breast Cancer Prevention", "Breast Cancer Prevention Campaigns", "Breast Cancer Prevention Programs", "Cancer of Breast", "Hereditary Breast and Ovarian Cancer Syndrome", and "Inflammatory Breast Cancer". To the right, there is a section titled "Breast Neoplasms / Neoplasias de la M" with a button "Search documents with this descriptor". Below this button, there is a box containing the text "Tumors or cancer of the human BREAST.", "Synonyms: Cancer of Breast, Breast Cancer, Breast Tumors", "Categories: C04.588.180, C17.800.090.500", and "Restrict search by these aspects:" with checkboxes for "blood" and "bio".

Example:

Type the word “breast cancer” into the box. The DeCS finds “breast neoplasms” as the descriptor. You may also inspect the trees by clicking on the two trees given (just as in PubMed). Click on *Search documents* with this descriptor and you will find all references to breast cancer in the VHL (more than 220,000 hits).

The search

An important point is that the subject search can be made in one of the three languages despite which portal you are using. The language of the portal does not have to be related to the language of the content. Thus, you can search in the interface in English or Spanish and find information in Portuguese.

You may decide to use a DeCS term but in many cases there is no DeCS term as an option. In addition, there are many advantages to using a self-chosen term from your PICO. Most of the time, you will find more hits with your own PICO term(s) compared to performing a search with a similar DeCS term (if there is a similar DeCS term). One reason is that there will be a few hits that you will miss when using only DeCS (or MeSH) terms: you miss recent articles that are not yet indexed by e.g. the National Library of Medicine. A more substantial reason is that you will find an article in which for example "burnout" is not regarded as the main topic by the index makers so these articles are not indexed with this term. (See also the considerations in the paragraph on PubMed on using only your own terms, or your terms in combination with the MeSH terms.)

Example:

To search for burnout articles, you just type in "*burnout*" and you will find more than 12,000 hits.

Click on *Search details* in the lower right hand corner of the screen to see the search results. You will be able to see which terms are actually used by the search engine, here: *burnout AND (instance:"regional")*.

The result of the search appears in a short or detailed format for all hits (click on *Presentation format*). Below is an example of a short format for all hits received on a search.

Title, abstract, subject

[Advanced Search](#) | [Subject descriptor lookup](#)
[Config filters](#)

Presentation format Order by 20

[RSS](#) [XML](#) [Print](#) [Email](#) [Facebook](#) [Twitter](#) [Google+](#) [Star](#) [Share](#)

Results 1 - 20 de 12,108 1 2 3 4 5 6 7 8 9 10 11 Next >>>

1. **The Person Centered approach in Gerontology: New validity evidence of the Staff Assessment Person-directed Care Questionnaire / El enfoque centrado en la persona en Gerontología: nuevas evidencias de validez del Cuestionario de Atención Dirigida a la Persona para la Evaluación de Profesionales**
Martínez, Teresa; Suárez-Álvarez, Javier; Yanguas, Javier; Muñiz, José.
Int. j. clin. health psychol. (Internet); 16(2): 175-185, mayo-ago. 2016. *tab, graf.*
Article in English | IBECS | ID: ibc-152094
[Show more](#) [Photocopy](#) [Related documents](#)
2. **¿Por qué dedicarse a la bioética? Siete razones para comenzar a hacerlo / Why dedicate yourself to bioethics? Seven reasons to get you started**
Real de Asúa, D; Herreros, B.
Rev Clin Esp; 216(5): 271-275, jun.-jul. 2016.
Article in Spanish | LILACS-Express | ID: ibc-AOT-4105
[Show more](#) [Photocopy](#) [Related documents](#)
3. **Desmotivación del personal sanitario y síndrome de burnout. Control de las situaciones de tensión. La importancia del trabajo en equipo / Burnout Syndrome and Demotivation Among Health Care Personnel. Managing Stressful Situations: The Importance of Teamwork**
García Campayo, J; Puebla Guedea, M; Herrera Mercadal, P; Daudén, E.
Actas Demosifiliogr; 107(5): 400-406, jun. 2016. *tab*
Article in Spanish | LILACS-Express | ID: ibc-SMB-11044
[Show more](#) [Photocopy](#) [Related documents](#)
4. **Addressing Burnout in Oncology: Why Cancer Care Clinicians Are At Risk, What Individuals Can Do, and How Organizations Can Respond.**
Hlubocky FJ; Back AL; Shanafelt TD.
Am Soc Clin Oncol Educ Book; 35: 271-9, 2016.
Article in English | MEDLINE | ID: mdl-27249706
[Show more](#) [Fulltext](#) [Photocopy](#) [Related documents](#) [PubMed More Resources](#)
5. **Survival of the Grittiest? Consultant Surgeons Are Significantly Grittier Than Their Junior Trainees.**

Your selection (0)
[List documents](#)
[Clear list](#)

expand all close all

Full text

Available (4944)

Collection

- International databases (11033)
- Databases of international organizations (11)
- Specialized databases (158)
- National databases (901)
 - Brazil (257)
 - Cuba (41)
 - Spain (600)
 - Puerto Rico (3)
- Terminology (1)
- Educational resources (5)

[Show more...](#)

Database

- MEDLINE (10026)
- LILACS (1003)
- IBECS (600)
- Index Psychology - Scientific journal (191)
- BDENF - Nursing (133)
- CUMED (41)
- Coleciona SUS (22)
- REPIDISCA (20)
- Index Psychology - Theses (18)
- BBO - Dentistry (9)

[Show more...](#)

Main subject

- Burnout, Professional (7423)
- Stress, Psychological (2032)

In the short format you will see the title, authors, journal, publication date, language, database source and ID. Under each publication you will see a button that says things like *Show more* (which will give you a full abstract and subject descriptors) or another button like *Full text* (which will give you the full text of a document if available) and *Photocopy* (which will bring up a screen of SCAD, a service for accessing documents with a price table). Other options are *Related documents*, and *PubMed More resources*; try these especially when you have not found enough high-quality publications in your search. *Related documents* often produces a large amount of useful information to improve your search.

If you want to have the abstracts and the subject descriptors connected with the publication in every hit you receive, you may click on the window just above the first title on the screen (left) where you see *Presentation format*, or you see *Short*. Click and then select *Detailed*.

Just above the titles found you can see many other interesting options on the right side of the *Presentation format*. The first is *Order by* (which is by date the publication was included in the database) or as alternative *Order by Relevance*. If you want to control the process yourself, we would recommend using the *Order by date*. An extra advantage is you will be able to receive the most recently included publication on top. Other options to explore in the row just above the publications found are modes of posting found publications on Facebook, Twitter or simply e-mailing the link to yourself or a friend.

In the right column under *Filters* you may notice that again you can select by language, but also on by main subject, etc.

Advanced search

An option we recommend using is *Advanced Search*. It is a tool in which you may combine several search terms into one search strategy in a transparent and flexible way. The search may be guided by the search question. To illustrate the best way to use this feature, we have chosen this question as an example: which heavy working conditions can be distinguished as (preventable) risk factors for teachers to get a burnout? The PICO could be:

P: (working) population = (the sector) education or *teachers*

I/E: intervention or exposure = heavy working conditions in teaching

C: comparison = teachers without heavy working conditions

O: outcome = *burnout*.

In most searches we recommend not to use more than two elements of the PICO, to avoid a too short number of results caused by an exceptionally stringent selection of the literature. In this example we selected only the P and O.

Click on *Advanced Search* just under the search window in VHL Search Portal. Write "burnout" in the new search window. Activate the option right of the search window by clicking on *Show Index* and you may see in the scroll down menu e.g. *title* or *subject descriptor (DeCS)*. When you select *subject descriptor* you will find as presumably the most appropriate option for "burnout" the same term "burnout". Select in the most right window *subject descriptor*. After you have chosen this option, we continue typing a second term with AND, OR and AND NOT.

We make the choice to use AND “teach” and we click on *Show Index* and select *subject descriptor* and adopt as presumably the best existing subject descriptor the term “teaching”. We click and use that DeCS term. The search is completed now and at the bottom we click on *Search*.

The screenshot shows the VHL Search Portal interface. At the top left is the logo for 'VHL Search Portal' with the tagline 'Information and Knowledge for Health'. Below the logo, the search path is shown: 'Home > Search > (mh:(\"burnout, professional\")) AND (mh:(\"teaching\")) (137)'. The search bar contains the query '(mh:(\"burnout, professional\")) AND (mh:(\"teaching\"))' and the search criteria are set to 'Title, abstract, subject'. There are options for 'Advanced Search' and 'Subject descriptor lookup'. Below the search bar, there are dropdown menus for 'Presentation format' and 'Order by' (set to '20'), along with icons for RSS, XML, and social media. The results section shows 'Results 1 - 20 de 137' with a pagination control '1 2 3 4 5 6 7 Next > >>'. Two search results are displayed:

- Supporting teachers and children in schools: the effectiveness and cost-effectiveness of the Incredible Years teacher classroom management programme in primary school children: a cluster randomised controlled trial, with parallel economic and process evaluations.**
 Ford T; Edwards V; Sharkey S; Ukoumunne OC; Byford S; Norwich B; Logan S.
BMC Public Health; 12: 719, 2012.
 Article in English | MEDLINE | ID: mdl-22935476

Buttons: Show more, Fulltext, Photocopy, Related documents, PubMed More Resources
- Qualidade de vida e esgotamento profissional entre docentes da rede pública de Ensino Médio e Fundamental no Sul do Brasil / Quality of life and burnout among public high school and primary school teachers in Southern Brazil**
 Tabeleão, Viviane Porto; Tomasi, Elaine; Neves, Siduana Facin.
Cad Saude Publica; 27(12): 2401-2408, dez. 2011. graf, tab.
 Article in Portuguese | LILACS | ID: lil-610720

Buttons: Show more, Fulltext, Photocopy, Related documents

On the right side, there is a 'Filter' section with 'Your selection (0)' and links for 'List documents' and 'Clear list'. The filter options include:

- Full text**: Available (24)
- Collection**:
 - International databases (127)
 - The Cochrane Library (5)
 - National databases (5)
 - Brazil (2)
- Database**:
 - MEDLINE (122)
 - CENTRAL-Cochrane register of controlled trials (5)
 - LILACS (4)
 - IRECS (Spain) (3)

The result of this search is 137 hits from Medline, LILACS, etc. Finally you may use filters to narrow in on one area or to simply separate the hits into clear groups. See also *PubMed in 10 steps* in chapter III.

Advantages

- VHL provides access to the most important sources: LILACS, MEDLINE, Cochrane Library, SciELO and other sources. The DeCS descriptors are a great help in searching for articles
- The results of the search can be found and shown using three languages for the search
- In Latin America you can use a library from the SCAD network in your country to ask for copies of the articles.

LILACS Latin American and Caribbean Health Sciences Literature (Latin America)

<http://lilacs.bvsalud.org/en/> (English)

<http://lilacs.bvsalud.org/es/> (Spanish)

<http://lilacs.bvsalud.org/> (Portuguese)

LILACS is the most important and comprehensive index of scientific and technical literature of Latin America and the Caribbean. For 29 years contributing to increase visibility, access and quality of health information in the Region.

LILACS in numbers

- 27 countries
- 878 journals
- 688,473 records
- 565,361 articles
- 83,417 monographies
- 32,693 theses
- 295,974 full texts

Last update: Sept., 18th., 2014

Search

Search by iAH form

All indexes Search

Topic-Specific Queries

- Social determinants of health
- Communicable diseases of poverty
- Gender and health
- Millennium Development Goals
- Controlled clinical trials
- Cohort studies
- Case-control studies
- Systematic reviews (recognized studies)

Searching in LILACS

- Starting search in LILACS
- Knowing search resources
- Exploring search fields
- Search of Controlled Clinical Trials on LILACS

Highlights

- Strengthening of LILACS Working Groups: see what's happening!
- Cooperating Center: learn more about LILACS Submission: new way to sending records to LILACS
- Recommendation for Open Access and Online Content in LILACS
- Search in LILACS bases a study about hypertension prevalence in Latin America and Caribbean

LILACS News

- redellacs: RT @bireme: BIREME realiza sessão de abertura do 4º curso de Metodologia LILACS #EaD para a rede brasileira @redellacs #LILACS http://t.co...
- redellacs: RT @Red_BVS: Começa hoje o 4º curso online de Metodologia LILACS 2014 http://t.co/f3vXmJxz7l @redellacs @Bireme
- redellacs: Confira a lista de participantes selecionados para o Curso EaD da Metodologia #LILACS 2014: http://t.co/y5RteYIAer

Description

LILACS is the most important and comprehensive index of scientific and technical literature on health in all of Latin America and the Caribbean. LILACS is provided by BIREME, PAHO and WHO.

For 29 years LILACS has been contributing towards raising the visibility, access and quality of information in Latin America. This index contains more than 725,000 records of which approximately 310,000 are full texts, more than 600,000 are articles, more than 85,000 are monographs and more than 35,000 are theses (October 2015). The database is in Portuguese. The home page and the screen for advanced search (*Search by iAH form*) are also available in Spanish and English.

LILACS uses the dynamic vocabulary of DeCS, a separate database that opens in a new window (for DeCS see also the description of the *Virtual Health Library (VHL)* in this book).

Tutorial

In the first page you can choose your language at the top right hand side of the screen. There are four instructions on how to search in LILACS:

1. Starting search in LILACS;
2. Knowing search resources;
3. Exploring search fields;
4. Search of Controlled Clinical Trials in LILACS.

The search

You can do the search by a term chosen by yourself (free text), and/or with DeCS subject descriptors in three languages (Spanish, Portuguese and English).

When you type "burnout" as a free text word in the search window and click *Search* you automatically enter the Virtual Health Library page of LILACS and you will find more than 1000 hits (June 2016).

The screenshot shows the VHL Regional Portal search results for the term "burnout". The page header includes the VHL logo and the text "VHL Regional Portal Information and Knowledge for Health". The search bar contains "burnout" and the search button is labeled "Search". Below the search bar, there are options for "Advanced Search" and "Subject descriptor lookup". The results are displayed in a list format, showing three items:

- Occupational Stress and Quality of Life in Nursing / Estresse Ocupacional e Qualidade de Vida em Profissionais de Enfermagem / Estres Ocupacional y Calidad de Vida en Profesionales de Enfermería**
Silva, Aline Moraes da; Guimaraes, Liliana Andolpho Magalhães.
Paidéia (Ribeirão Preto); 26(63): 63-70, Jan.-Apr. 2016. tab.
Article in English | LILACS | ID: lil-767720
[Show more] [Fulltext] [Photocopy] [Related documents]
- Impact of Job-Related Well-Being on the Relationship of Self-Efficacy With Burnout / Impacto do Bem-Estar no Trabalho Sobre as Relações da Autoeficácia com Burnout / Impacto del Bienestar en el Trabajo Sobre la Relación de la Autoeficacia con Burnout**
Freitas, Clarissa Pinto Pizarro; Silva, Claudia Sampaio Corrêa da; Damásio, Bruno Figueiredo; Koller, Sílvia Helena; Teixeira, Marco Antônio Pereira.
Paidéia (Ribeirão Preto); 26(63): 45-52, Jan.-Apr. 2016. tab, graf.
Article in English | LILACS | ID: lil-767721
[Show more] [Fulltext] [Photocopy] [Related documents]
- Diversos nomes para o cansaço: categorias emergentes e sua relação com o mundo do trabalho / Several names for tiredness: emergent categories and their relationship with the world of work / Diversos nombres para el cansancio: categorias emergentes y su relación con el mundo del trabajo**
Zorzanelli, Rafaela; Vieira, Isabela; Russo, Jane Araujo.
Interface comun. saúde educ; 20(56): 77-88, jan.-mar. 2016. .
Article in Portuguese | LILACS-Express | ID: lil-767677
[Show more] [Fulltext] [Photocopy] [Related documents]

On the right side of the page, there is a sidebar with the following information:

- Your selection (0)**
[List documents] [Clear list]
- Database**
LILACS [remover]
- Filter**
[expand all] [close all]
- Full text**
 Available (718)
- Collection**
 International databases (1003)
- Database**
 LILACS (1003)
- Main subject**
 - Burnout, Professional (592)
 - Occupational Health (154)
 - Stress, Psychological (128)
 - Faculty (66)
 - Occupational Diseases (64)
 - Stress, Physiological (63)
 - Health Personnel (58)
 - Working Conditions (55)
 - Nursing (45)
 - Mental Health (40)

If you want to search with a DeCS subject descriptor found in the DeCS database, first start the search with a term (e.g. 'burnout') then you will click on *Subject descriptor lookup* just under the search window.

There you should type "burnout" and you will get the 2 suggestions: "burnout" and "burnout, professional" (sometimes you have to wait for a moment). Surprisingly both suggestions are for the same DeCS term. Click on *Search documents* with this descriptor, and you will find more than 650 publications in LILACS.


In the worksheet on the right hand side of the screen under *Filter*, a number of groups appear. Among them is *Type of study*. If you are interested only in *controlled clinical trials* you put a click on that box and click on *Filter* in the top of the column.

Advanced Search

If you want to do an advanced search in LILACS, you click *Search by IAH form* (under the search window). You are invited to include search terms in several steps and connect these with AND, OR or NOT. Therefore, you can build a search based on the PICO you made before.

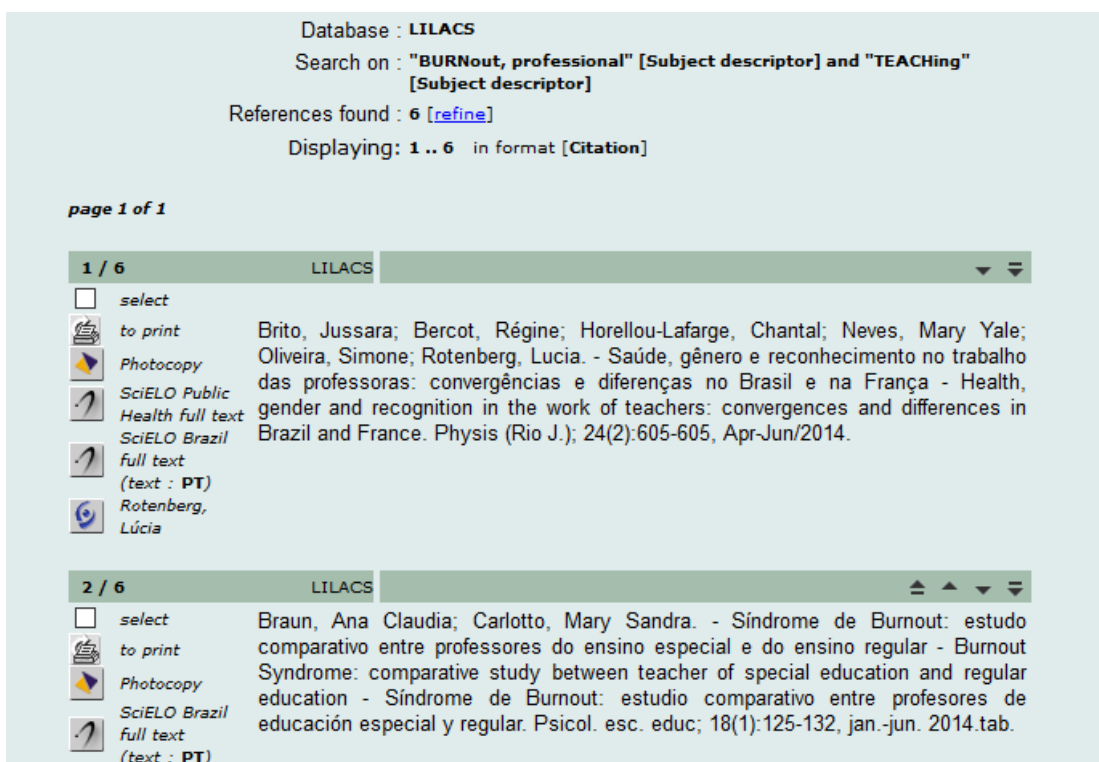
Example:

A first example is on the question: What are the causes of burnout in teachers? You decide to use only the P and O of the PICO, so to use search terms on *teachers (P)* and *burnout (O)*. You may want to search with the subject descriptor. So scroll in the window of *in field* to find the term *Subject descriptor*.

Then click on the right symbol  and in the next screen that pops up you type the first letters of the term burnout e.g. *burn*. After clicking on *Show index* you will search for the most appropriate DeCS term that will appear in the search window. Here you select "burnout, professional", you click on *Add* (to the search) and you are in the advanced search screen again. The same procedure can be followed for the terms on "teacher." Type 'teach' and then it appears that "teaching" is the best DeCS term. Click on *Add* as before and you will see the next screen.



When the search is built (and you decided to accept the default connecting term “and”) click on *Search* and you will find 6 interesting hits in LILACS (June 2016).



On the worksheet on the left hand side of the screen, you can click on one of the options for a full text.

Second example of Advanced Search:

The question is on the effects of pesticides used on the fertility of farmers. The PICO is:

P: population = *farmers*

I/E: intervention or exposure = *pesticides*

C: comparison = not exposed (C is mostly not used in the search)

O: outcome = *fertility problems*

In the LILACS home page you click on Search by iAH form (under the search window). In the first step you planned to enter the term "farmer" as a text word, but you realize that "farmers" might be a better term (*farmer* gives 110 hits while *farmers* 700 hits, June 2016). Finally you decide to use both terms, so you type "farmer OR farmers" with about 800 hits.

For the second step you decide to use the subject descriptor for "pesticides." Therefore you go to the column *In field*, scroll down to *Subject descriptor* and click on the icon for information index. In the new screen enter the term "pesticides," searching for the best index term (DeCS). A number of suggestions will appear in the window. You choose "pesticides" and click on *ADD* to the search. In the screen that opens (the advanced search screen) you can see that "pesticides" (as subject descriptor) is added to your search as a second step, connected to the first one with "and."

For the third step you are interested in fertility problems, so you try to find an appropriate subject descriptor. Again go to the column *In field*, scroll for *Subject descriptor*, use the information index symbol, and try the term "fertility." You will find a number of suggestions and you select "fertility" as a wide and potentially best DeCS term; add this term to the search. Now that the search is built, you click *Search*. Unfortunately, the number of hits in LILACS is zero.

Database : LILACS
Search on : farmers OR farmer [Words] and "PESTICIDES" [Subject descriptor] and "FERTILITY" [Subject descriptor]
References found : 0

Refine the search

Database : LILACS Advanced form

	Search	in field	
1	farmers OR farmer	Words	index
2	and	"PESTICIDES"	Subject descriptor index
3	and	"FERTILITY"	Subject descriptor index

Then you decide to avoid a search that may be too specific. First you skip the third step looking at the results after the first two steps. You find about 30 articles and decide to look for relevant studies in this collection and to search for better search terms for 'fertility' in the abstracts to improve a new search. Another good strategy could be to continue the search in VHL or PubMed with the aim to find more (recent) studies and comments. As an illustration, a search in PubMed using MeSH terms for both pesticides and fertility, and using a filter for "humans" to avoid animal studies, gives about 25 hits (the last 10 years).

Advice for searches

-Advanced search:

This is the most appropriate strategy for a complete search using a PICO.

-Specific queries from the search screen (<http://lilacs.bvsalud.org/en/>):

It is possible to search for specific studies. An example could be to select *Controlled clinical trials*, *Cohort studies* or *Systematic reviews*. Click on one of the featured topics and all the citations on the VHL database for LILACS will be shown. You can then refine the search. For example choose *Systematic reviews*. VHL finds approximately 540 systematic reviews in LILACS. Introduce the word "asthma" in the search box and click on *Search*. VHL finds 6 systematic reviews in LILACS relating to the term asthma (October 2014).

-Refine the search:

The search can be refined using the filters found on the menu bar on the right hand side of the screen. Examples of filters are: *full text available*, *main subject*, *type of study*, *language*, *clinical aspect*, and *year*.

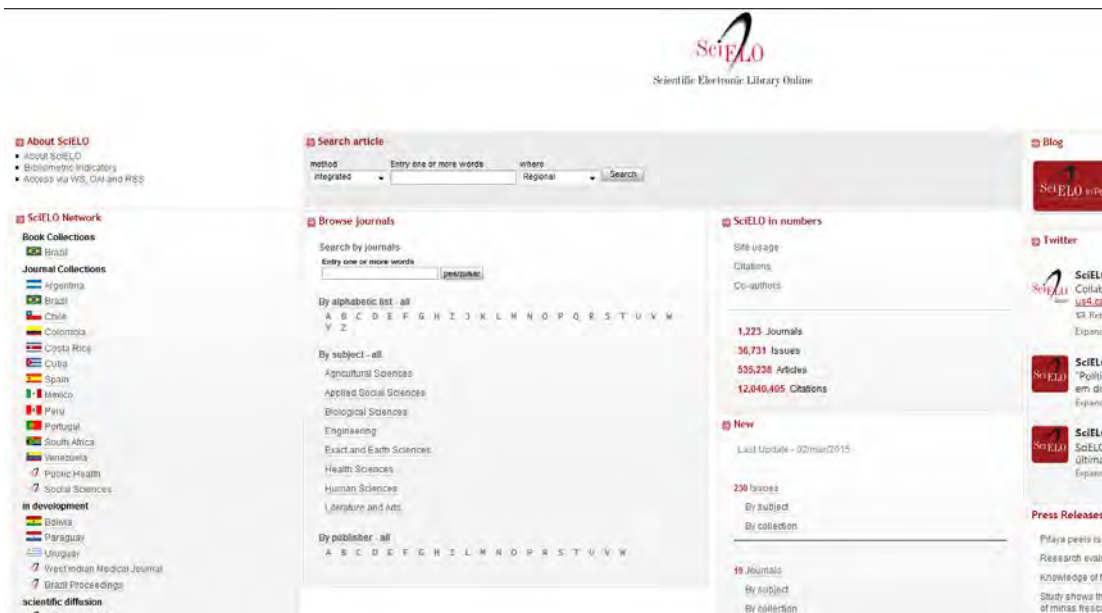
Advantages

- Many complete texts can be found in Spanish and Portuguese.
- The search builder works good
- You can find unique sources from Latin America and the Caribbean using (SciELO), the Scientific Electronic Library Online (Latin America)

SciELO Scientific Electronic Library Online (Latin America)

<http://www.scielo.org/php/index.php?lang=en> (English, Spanish, Portuguese)

or: <http://search.scielo.org/?lang=en> (for the 'integrated search')



SciELO is a model for the electronic cooperative publication of scientific journals on the Internet, following the Open Access strategy. Full text articles (in the original languages) are available from more than 1,000 scientific journals of Brazil, Argentina, Chile, Colombia, Costa Rica, Cuba, Mexico, Spain, Venezuela and Portugal, free of charge.

The SciELO model is especially developed to meet the need for scientific communication in developing countries and particularly for Latin America and the Caribbean. The SciELO model is the product of cooperation between FAPESP (the Foundation for Support of Research in the State of Sao Paulo), BIREME (the Information Centre for Latin America and the Caribbean in Health Sciences) as well as various institutions connected with scientific communication and scientific editors.

The SciELO model has three components:

The first component is the *SciELO Methodology*. This component allows the electronic publication of complete editions of scientific journals, the organization of bibliographic databases and full texts, text retrieval for its content, the preservation of electronic records and the production of statistical indicators

of use and impact of scientific literature. The complete texts are dynamically enriched with links of hypertext with national and international databases such as LILACS and MEDLINE.

SciELO contains more than 500,000 articles and more than 11,000 bibliographical citations in diverse scientific fields.

The second component of the SciELO model is the application of the *SciELO Methodology* on the operation of websites with collections of electronic journals.

The SciELO model favors the operation of national websites and also thematic websites. The pioneering application is the Brazilian SciELO website (<http://www.scielo.br>), but there are also applications operational in Chile (<http://www.scielo.cl>) and in Cuba (<http://www.scielo.sld.cu>). Other countries are evaluating or are receiving training in the SciELO Methodology.

SciELO Public Health (<http://www.scielosp.org>) is a regional thematic library that covers the area of Public Health with scientific journals from Latin America and Spain.

The third component of the Model is the development of links between national and international contributors for scientific communication, all of which aim to disseminate, perfect and maintain the SciELO Model. The operation of SciELO is strongly based on national infrastructures, which contributes to the future sustainability.

How to complete a search in SciELO?



➔ Search article

method Entry one or more words where

The search on SciELO can be carried out in three languages, independent of the language of the portal being used. SciELO does not provide instructions for the user.

You can search for literature in the indexes under *Where by regional* (from all countries) and independently *by country* (Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, Spain, Mexico, Peru, Portugal, South Africa, Venezuela). Currently in development are Bolivia, Paraguay and Uruguay. It is possible to search for the theme *Public Health or Social Sciences*. There is the option to search browsing by the title of the journal or by the publisher. Another option is to search by subject e.g. in *Health Sciences* where you can find about 400 related journals.

Starting from the page shown under the title of SciELO, under *Method* you can select the *Integrated method* which means searching in *All indexes*.

A second option is the selection of *Google Scholar* under *Method*.

Google Scholar is not yet described in this book, although we are planning a new chapter on this. A problem is that Google's search results are personalized, so they may differ per PC, per country and/or per region in the world. When we asked for information on a few issues of this kind, Google has sent us some low quality information and did not respond to our request for a contact. But you can give it a try, *after doing a search on a professional way* using PubMed, VHL, LILACS and SciELO (integral method). To give an example: on the SciELO start page you can type "pesticides and farmer", select *Google Scholar*, select in Google Scholar *Sort on date* (a preliminary recommendation) and do not select *Inclusive patents* or *Inclusive citations*, do not select on year of publication. So we could get about 40 articles, all published in 2015 or 2016, while searching with a specific PC, from the Netherlands, July 1, 2016.

After selecting the *Integrated method*, having done a search, the selections that you may decide to make can be found on the left hand side of the screen. You can combine search terms with the Boolean operators AND (Y), OR (O), AND NOT (NO). You can order the results on *Relevance*, *Year* (decreasing, increasing), *Citations and Access*. Through the title you can make the link to the complete text.

Example:

We are interested in the number of publications on “pesticides” in SciELO before starting a specific search answering a PICO question. We know that in some titles and abstracts the term ‘pesticides’ is used, in others ‘pesticide’, and sometimes you encounter both terms. We decide to use both terms to increase the number of hits. The choice is made to type “pesticides OR pesticide” as an example. The search gives about 1,600 hits, distinguished by numbers per country collection, journal, language (Portuguese more than 650, English and Spanish each about 500), year of publication, SciELO subject categories e.g. *Health Sciences* (about 600 hits), and so called *WoK thematic areas* such as *Public, environmental and occupational health* (about 200 hits) (June, 2016).

Filtering only on publications in 2011-2015 gives about 700 hits, e.g. more than 40 are from Mexico.

Sometimes unexpected results appear such as finding about 400 hits after typing “plaguicidas OR plaguicida” (All indexes) compared with finding about 1,600 hits when typing “pesticides OR pesticide.” Searching with ‘asbesto’ gives about 60 articles, with ‘asbestos’ 150 hits.

Advantages

- SciELO has the aim to meet the needs of scientific communication in developing countries, particularly Latin America and the Caribbean. They want to assure universal visibility and accessibility to scientific literature from everywhere on the world.
- The articles have the complete text in the original languages.
- You can search for literature by country.

2.3 Systematic Reviews

Jos Verbeek and Frank van Dijk

Cochrane Library

www.cochranelibrary.com/

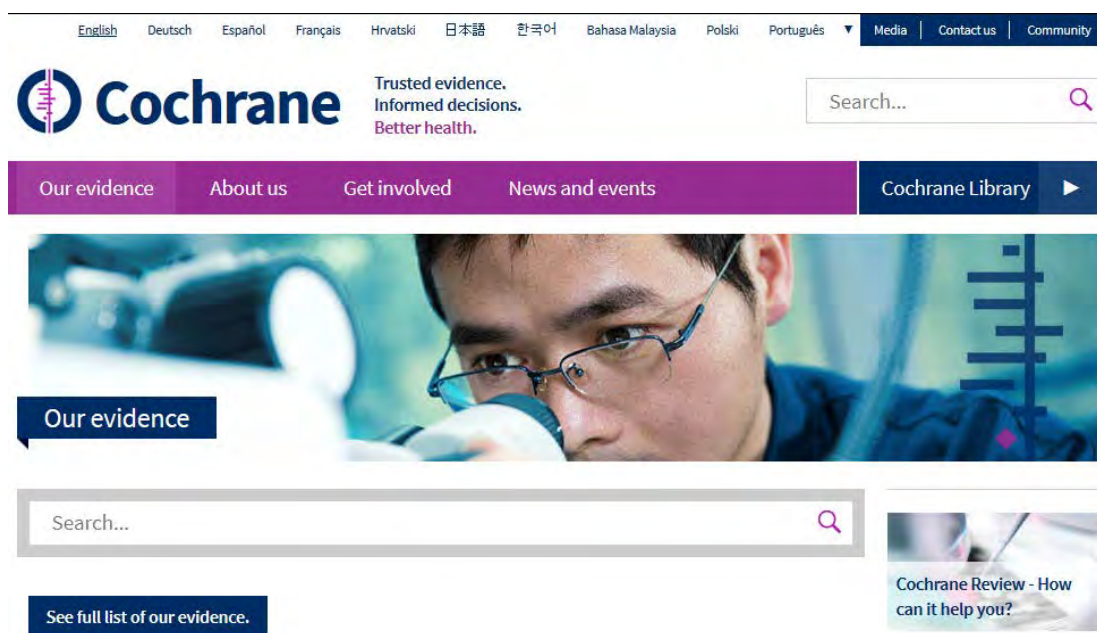
The screenshot shows the Cochrane Library website. At the top left is the Cochrane Library logo with the tagline "Trusted evidence. Informed decisions. Better health." To the right is a search bar with the placeholder text "Search title, abstract, keyword" and a magnifying glass icon. Below the search bar are links for "Advanced Search", "Search Manager", and "MeSH". A purple navigation bar contains links for "Cochrane Reviews", "Trials", "More Resources", "About", and "Help". Below this is a section for "Highlighted Reviews" with three tabs: "Highlighted Reviews", "Editorials", and "Special Collections". Three review entries are listed:

- Circulating antigen tests and urine reagent strips for diagnosis of active schistosomiasis in endemic areas**
Eleanor A Ochodo, Gowri Gopalakrishna, Bea Spek, Johannes B Reitsma, Lisette van Lieshout, Katja Polman, Poppy Lambertson, Patrick MM Bossuyt, Mariska MG Leeflang
11 March 2015
- Hormone therapy for preventing cardiovascular disease in post-menopausal women**
Henry MP Boardman, Louise Hartley, Anne Eisinga, Caroline Main, Marta Roqué I Figuls, Xavier Bonfill Cosp, Rafael Gabriel Sanchez, Beatrice Knight
10 March 2015
- Chlorhexidine skin or cord care for prevention of mortality and infections in neonates**
Anju Sinha, Sunil Sazawal, Alok Pradhan, Siddarth Ramji, Newton Opiyo
5 March 2015

Below the reviews is a blue button with a speech bubble icon and the text "comment". To the right of the reviews is a photograph of a computer keyboard with a blue "comment" key. Below the photograph is the text: "Tell us what you think. We welcome your comments on Cochrane Reviews."

Cochrane (www.cochrane.org) is an international network of health care professionals and researchers that aims to improve healthcare decisions. They gather and summarize the best evidence from research to help make informed choices about treatment and prevention.

Cochrane is regarded as a reliable and independent source of information. All evidence summaries contain plain language summaries that are easy to understand. These summaries can be searched and accessed at www.cochrane.org/evidence. Using the language button (default English) at the top of the page you will find the translations in Spanish (abstracts and full reviews), German, Russian, Chinese and many other languages (mostly abstracts).



The full evidence summaries are called Systematic Reviews and these are published in the Cochrane Library, a virtual library that contains more sources of information (www.cochranelibrary.com). The Cochrane Library can also be accessed through the VHL (chapter 3.2). The library includes the Cochrane Database of Systematic Reviews in full text in English.

The Cochrane Library also contains a database of randomized clinical trials (CENTRAL), a database of health economics studies (NHS Economic Evaluation Database, EED), and a database with summaries of systematic reviews that are not developed by Cochrane (DARE).

The systematic reviews are made according to a very structured process to minimize errors. The Cochrane organization guarantees the quality of the process. All reviews have a clear list of criteria including or excluding studies and they all assess the quality of research that is included.

Whenever possible, the results of the studies that are included in the review are combined statistically, which is called a *meta-analysis*. This increases the authority of the conclusions of the studies when each individual study is too small to produce reliable results.

Access via the VHL (chapter II) to this extensive and up to date collection of databases of healthcare evidence is the result of cooperation between the Pan American Health Organization, through BIREME,

the publisher Wiley & Sons (UK) and Cochrane, especially the Ibero-American Cochrane Center in Brazil. Access is restricted to professionals in health and information in the whole of Latin America and the Caribbean. Unfortunately in December 2015 the Cochrane was excluded from the VHL (BVS) and we do not know (June 2016) how the future will be regarding the access to the full texts of the systematic reviews.

The Cochrane Library is updated continuously.

Tutorial

Under the buttons *Help* and *How to use the Cochrane Library*, you can find online self-paced video tutorials on how to use this database.

Subject Descriptors

The Cochrane Library uses the MeSH headings as implemented in PubMed; see tutorial number 2. You can find appropriate MeSH terms in the MeSH database using PubMed. In chapter III the most appropriate occupational safety and health MeSH terms are provided.

The search

You can opt to search all the indexes in the *Cochrane Library* or to restrict the search by e.g. title, abstract and keywords.

Write the keyword in the search window e.g. "breast cancer" (about 120 hits, all Cochrane reviews) or the MeSH term "breast neoplasms" (about 70 hits, all Cochrane reviews), and click on *Search*. In the window panel at the left you will find all options to limit the results of the search such as Cochrane reviews, other reviews, trials etc. You may find more than 700 results under *Other reviews* for breast neoplasms, and more than 8000 trials.

You may use the button 'Browse' to go to the *Cochrane Occupational Safety and Health Group* where you will find all Cochrane reviews and protocols for Cochrane reviews under construction that originated from this review group. Keep in mind that there are many reviews in the Cochrane Library that are of interest to OSH professionals that are published with other review groups. Therefore, a search for a review that is not presented on the Cochrane Work (OSH Review Group) website can be a good strategy. The Cochrane Work website can be used directly.

Cochrane Work

<http://work.cochrane.org> (English)

The screenshot shows the Cochrane Work website homepage. At the top left is the Cochrane Work logo with the tagline "Trusted evidence. Informed decisions. Better health." To the right is a search bar and navigation links for "Cochrane Library", "Cochrane.org", and "Admin". Below this is a blue navigation bar with links for "Welcome", "About us", "Our evidence", "Resources", and "News". The main content area features a large banner for "Cochrane Work 2010-2015 evaluation" with a background of data charts and a bar chart. To the right is a "Tweets by @CochraneWork" section showing a tweet from @CochraneWork retweeting a post about a new blog post on #NordicEBM. Below the banner is a "Latest News and Events" section with three items: "Sign up now for 2016 Cochrane Colloquium in Seoul" with a photo of a building, "Preventing stress in healthcare workers podcast now available in Russian" with the Cochrane Russia logo, and "The Zen of creating r..." with a photo of a person.

Cochrane Work, formerly called the Cochrane Occupational Health and Safety Review Group, is one of the 53 Review Groups within Cochrane that actually guides the process and publishes the reviews. These groups are coordinated by an editorial team. Cochrane Work is fully supported by and located at the Finnish Institute of Occupational Health in Kuopio, Finland. The authors of Cochrane Work Reviews come from around the globe and contribute on an unpaid, voluntary basis.

The primary aims of Cochrane Work are to find out the best ways to protect humans against the health risks, problems and dangers that are related to working life. For example: What are the best ways to reduce stress at work or how can we enhance the experience for someone returning to work after being diagnosed with cancer?

The scope of the group covers all interventions that aim at decreasing exposure to dangerous substances or situations at work. It also covers all interventions for treating or preventing occupational diseases, disabilities or injuries, including rehabilitation, and interventions to promote a healthy lifestyle in the workplace. We have named all these together as *occupational health and safety interventions*.

The method used by the Review Group is the systematic collection and critical evaluation of all scientific research available on the effects of occupational health and safety interventions. The results of these studies are combined into reports called “systematic reviews.” To date, there are more than 140 systematic reviews in the Cochrane Library on specific Occupational Health and Safety topics available in electronic format. These are in English. From the page www.cochrane.org/evidence the reviews can be accessed in a number of different languages.

Example of a plain language summary of a recent Cochrane Review:

Review of the effects of drugs for treating people with sleepiness during shift work and sleep problems after shift work.

People who work shifts often report sleepiness at work and problems with sleep between work shifts. This is called shift work sleep disorder when the difficulties with sleep after the night shift and sleepiness during the night shift are persistent. We evaluated the effect of drugs, such as melatonin, to improve shift workers' sleep quality after night shift work. We also examined the effect of drugs, such as caffeine, to help shift workers stay awake. We also wanted to evaluate cost-effectiveness but there were no studies.

Studies found:

We performed a literature search up to 20 September 2013. We included 15 trials with 718 participants. Trials evaluated the effect of melatonin and hypnotics on sleep after the shift and the effect of modafinil, armodafinil and caffeine plus naps on sleepiness during the shift.

Effect on sleep length and quality:

People who take melatonin may sleep for 24 minutes longer during the daytime after the night shift but there may be no effect on other sleep outcomes, such as time needed to fall asleep (low quality evidence). Side effects of melatonin use were rare. For hypnotics (zopiclone), there is insufficient evidence to know whether or not they affect sleep length (very low quality evidence). We did not find reports on their side effects in shift workers.

Effect on alertness or sleepiness during the shift:

People that take modafinil and armodafinil probably have a small reduction in sleepiness and an increase in alertness during the night shift, based on evidence at three months' follow-up in people with

shift work sleep disorder (moderate quality evidence). Headache and nausea were the most common side effects both in the short and long term follow-up. However, serious skin disorders have been reported since these drugs have come on the market. We found no trials in shift workers without a diagnosis of shift work sleep disorder.

We found one trial which showed that people that took caffeine before the night shift in combination with a nap before the shift had increased alertness during the night shift.

What do we still need to find out?

The evidence was of low quality and mostly from small trials. Both sleep and alertness promoting agents have potentially serious adverse effects. Therefore, we need more trials to determine the beneficial and harmful effects of these drugs.

Authors' conclusions:

There is low quality evidence that melatonin improves sleep length after a night shift but no other sleep quality parameters. Both modafinil and armodafinil increase alertness and reduce sleepiness to some extent in employees who suffer from shift work sleep disorder but they are associated with adverse events. Caffeine plus naps reduces sleepiness during the night shift, but the quality of evidence is low. Based on one low quality trial, hypnotics did not improve sleep length and quality after a night shift. We need more and better quality trials on the beneficial and adverse effects and costs of all pharmacological agents that induce sleep or promote alertness in shift workers both with and without a diagnosis of shift work sleep disorder. We also need systematic reviews of their adverse effects.

If you want to find out what is available in a more organized way you can browse the occupational health outcomes by subtopics at the page <http://work.cochrane.org> (under OSH reviews), and you can also see the number of reviews in that subtopic between brackets:

1.1 Decreasing or eliminating harmful exposure to prevent occupational disease	(17)
1.2 Other preventive measures to prevent occupational disease	(9)
2. Management of occupational disease or symptoms	(60)
3. Affecting the onset or course of occupational disability	(21)
4.1 Reducing occupational injuries by branch of industry	(9)
4.2 Reducing occupational injuries by injury mechanism	(11)
5. Promoting a healthy lifestyle at the workplace	(13)

In addition, the website offers many resources for authors and reviewers, and information about courses and meetings.

2.4 Evidence-based guidelines

Carel Hulshof and Frank van Dijk

Introduction

This chapter refers to practice guidelines based on evidence from trials or other studies, stemming from the tradition of evidence-based guidelines as implemented in health care in countries as UK, USA and the Netherlands. Such guidelines are based on a systematic review of available evidence from the literature and an assessment of the benefits and harms of alternative care options.

The guidelines are also based on professional knowledge and experience, as well as on patients' preferences and other considerations. The aim is to improve the quality of care complemented by knowledge and experience from professionals, and from health care users. A strict stepwise development process is followed during the development of the guidelines to promote quality and transparency.

The Guidelines International Network (G-I-N) published the key components of this strict process (Quaseem et al, see References). In matters of occupational safety and health, recommendations in practice guidelines are based on scientific evidence that aims to support the quality of care for the workers and companies as delivered by Occupational Health professionals. The aims can be formulated more widely: improvement in quality of care, effectiveness, efficiency, safety and guidance for the patient, enhancing opportunities and equity. The guidelines can also improve the quality of care through the improvement of professionalism, responsibility, efficiency, and transparency.

The majority of the guidelines in health care however are not referring to causes of a disease in working conditions or to consequences of health conditions and therapy for work functioning or work ability. In this book we are going to present only those guidelines that are at least partly aimed at or referring to work or work ability.

Other guidelines

There are excellent guidelines available, often published by national commissions or institutes, or by international bodies such as WHO, ICOH, IEA, ISSA or ILO that, referring to the above given definition, cannot be classified as 'evidence-based guidelines' as used in international health care practice. Some examples are the guidelines on "Basic Occupational Health Services" written by Jorma Rantanen (2007

see *Other documents in References*) and the "Ergonomics Guidelines for Occupational Health Practice in Industrially Developing Countries" written by Scott, Kogi and McPhee (2009, see *Other documents in References*). The International Labor Office (ILO) published the still relevant, "Technical and ethical guidelines for workers' health surveillance" (1998, see *Other documents in References*).

These guidelines or guides have an important function. These guidelines are not focused on a limited number of clear questions presenting answers on those questions, what is the concept of evidence-based practice guidelines in health care, but they consider a more comprehensive complex issue or problem and offer a set of recommendations. They often present a vision and mission and offer a state-of-the-art overview of a topic based on up-to-date knowledge, experiences and international debate. In most of these interesting documents, leading experts are working together in the development of that document.

The term 'guidelines' may also be used to guarantee the transparency and quality of the internal organization instead of for recommendations to improve occupational health practice. The "Guidelines for Scientific Committees" of ICOH are a good example. They describe the internal organization of the committees, finances, organization of meetings, publications, ethical conduct and links with the umbrella organization ICOH itself.

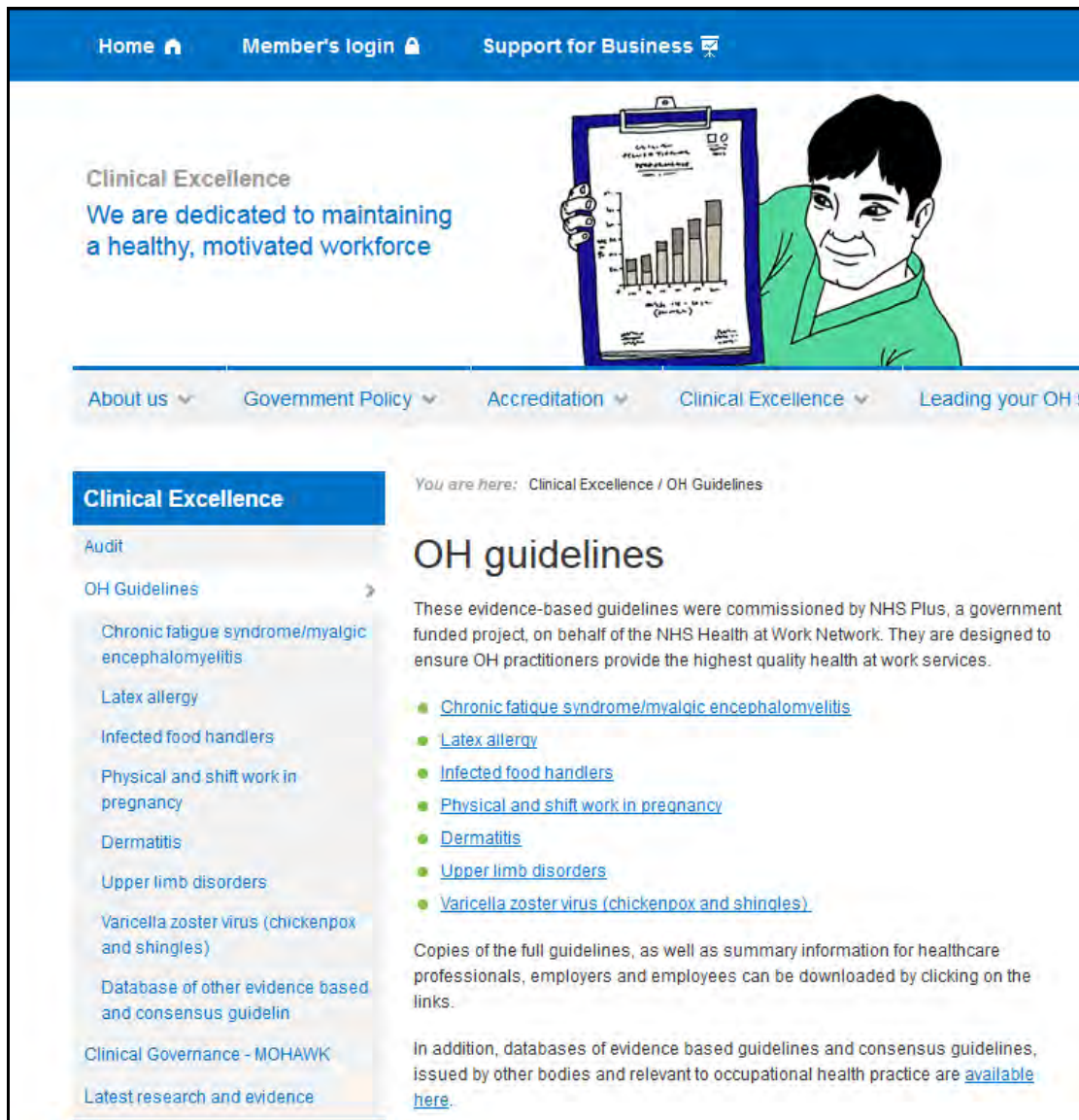
Evidence-based guidelines for practice

Throughout the world you can find good evidence-based guidelines. We will now introduce a series of guidelines from the UK, the Netherlands, USA and Colombia. Unfortunately, this presentation cannot be exhaustive and complete. A practical problem is the lack of a repository or database for guidelines relevant for occupational safety and health. In a recent review (Joosen et al. see *References*) no less than 14 national guidelines were found dealing with the management of mental disorders and stress-related psychological symptoms in an occupational health care setting. As these guidelines were difficult to find, the authors recommend that such guidelines should be accessible via established international databases, to promote sharing. A complicating factor in this is that a number of evidence-based guidelines are only published in the national language in which these are written, and not in English.

Guidelines from the United Kingdom

Source: NHS Health at Work Network (United Kingdom): OH guidelines

<http://www.nhshealthatwork.co.uk/oh-guidelines.asp>



The screenshot shows the NHS Health at Work Network website. The top navigation bar includes 'Home', 'Member's login', and 'Support for Business'. The main header area features the text 'Clinical Excellence' and 'We are dedicated to maintaining a healthy, motivated workforce' next to an illustration of a person in a green lab coat holding a clipboard with a bar chart. Below this is a secondary navigation menu with 'About us', 'Government Policy', 'Accreditation', 'Clinical Excellence', and 'Leading your OH s'. The main content area is titled 'OH guidelines' and includes a breadcrumb trail 'You are here: Clinical Excellence / OH Guidelines'. A sidebar on the left lists various topics under 'Clinical Excellence' and 'OH Guidelines', with 'OH Guidelines' expanded to show a list of specific conditions. The main content area contains a paragraph explaining the guidelines, a list of links to specific guideline documents, and a note about downloading full guidelines.

Clinical Excellence
We are dedicated to maintaining a healthy, motivated workforce

About us | Government Policy | Accreditation | Clinical Excellence | Leading your OH s

Clinical Excellence

Audit

OH Guidelines

- Chronic fatigue syndrome/myalgic encephalomyelitis
- Latex allergy
- Infected food handlers
- Physical and shift work in pregnancy
- Dermatitis
- Upper limb disorders
- Varicella zoster virus (chickenpox and shingles)
- Database of other evidence based and consensus guidelin
- Clinical Governance - MOHAWK
- Latest research and evidence

You are here: Clinical Excellence / OH Guidelines

OH guidelines

These evidence-based guidelines were commissioned by NHS Plus, a government funded project, on behalf of the NHS Health at Work Network. They are designed to ensure OH practitioners provide the highest quality health at work services.

- [Chronic fatigue syndrome/myalgic encephalomyelitis](#)
- [Latex allergy](#)
- [Infected food handlers](#)
- [Physical and shift work in pregnancy](#)
- [Dermatitis](#)
- [Upper limb disorders](#)
- [Varicella zoster virus \(chickenpox and shingles\)](#)

Copies of the full guidelines, as well as summary information for healthcare professionals, employers and employees can be downloaded by clicking on the links.

In addition, databases of evidence based guidelines and consensus guidelines, issued by other bodies and relevant to occupational health practice are [available here](#).

The NHS Health at Work Network is the network of occupational health teams dedicated to ensure that the National Health Service in the UK—with over 1.3 million staff—has a healthy, motivated workforce, able to provide the best possible patient care. This Network also provides a gateway for businesses in the broader community seeking occupational health advice and support.

All the evidence-based guidelines at this website are related to work and were commissioned by NHS Plus, a government funded project, on behalf of the NHS Health at Work Network. They are designed to ensure OH practitioners provide the highest quality health at work services.

Guidelines are available on the following themes: Chronic fatigue syndrome, Allergy to latex, Handling infected food, Physical work and shift work during pregnancy, Dermatitis, Upper limb disorders and Varicella zoster virus.

The guidelines are related to health practices in the United Kingdom and can be downloaded by clicking on the title in the webpage.

Apart from the full guideline text, also leaflets for occupational health professionals, employers, and employees can be downloaded. For some guidelines extra information leaflets are downloadable. The guideline of "Physical and shift work in pregnancy" offers concise guidance leaflets (2 pages each; February 2013) providing advice to women with healthy, uncomplicated, singleton pregnancies on the effects of: heavy lifting, heavy physical work, long working hours, prolonged standing at work, and shift work. The guideline on Varicella Zoster virus offers an extra leaflet with information on vaccination for healthcare workers.



Chronic fatigue syndrome. Occupational aspects of the management of chronic fatigue syndrome: evidence-based guide for healthcare professionals (2006)

64 pages. Findings for Occupational Health management.

http://www.nhshealthatwork.co.uk/images/library/files/Clinical%20excellence/CFS_full_guideline.pdf

Dermatitis. Occupational aspects of management: a national guideline (2009)

67 pages. Occupations at risk. Clinical features and treatment. Main focus is dermatitis in healthcare workers.

<http://www.nhshealthatwork.co.uk/images/library/files/Clinical%20excellence/Dermatitis-FullGuideline.pdf>

Infected food handlers. Occupational aspects of management: a national guideline (2008)

58 pages. Assists occupational health (OH) professionals, managers and others in determining fitness for work of food handlers, and covers returning to work issues. Reviewing the evidence on investigating and preventing disease outbreaks.

http://www.nhshealthatwork.co.uk/images/library/files/Clinical%20excellence/InfectedFood_full_guidelines.pdf

Latex allergy. Occupational aspects of management: a national guideline (2008)

62 pages. Recommendations for occupational management by professionals, managers and others on occupational health interventions to address the problem of latex allergy from both individual and institutional perspectives.

http://www.nhshealthatwork.co.uk/images/library/files/Clinical%20excellence/Latex_allergy_full_guidelines.pdf



Physical and shift work in pregnancy. Occupational aspects of managing the physical work and shift work in pregnancy: a national guideline (2009)

94 pages. Enables occupational health professionals to provide consistent evidence based advice to pregnant women exposed to hazards at work. It focuses on lifting/handling, heavy physical work, prolonged standing, long working hours and shift work.

<http://www.nhshealthatwork.co.uk/images/library/files/Clinical%20excellence/Pregnancy-FullGuidelines.pdf>

Upper limb disorders. Occupational aspects of management: a national guideline (2009)

62 pages. On musculoskeletal conditions that affect the shoulder, elbow, forearm, wrist or hand. Some are well defined with accepted diagnostic criteria, recognized risk factors and well-established medical management such as Carpal tunnel syndrome; other conditions such as non-specific arm pain are less well defined.

http://www.nhshealthatwork.co.uk/images/library/files/Clinical%20excellence/Rev_UPPER_LIMB_DISORDER_GUIDELINE_webnavigable.pdf

Varicella zoster virus. Occupational Aspects of management: a national guideline (2010)

52 pages. The aim of this guide is to offer evidence-based recommendations on the management of varicella and herpes zoster in the workplace. Recommendations refer to vaccination against varicella, the management of employees with varicella or herpes zoster and the prevention of transmission of these infections to colleagues and patients.

http://www.nhshealthatwork.co.uk/images/library/files/Clinical%20excellence/Varicella_zoster_guidelines_web_navigable.pdf

Source: NHS Health at Work Network (United Kingdom): Database of other evidence-based and consensus-based guidelines in UK

<http://www.nhshealthatwork.co.uk/consensus-guidelines.asp>

The NHS Health at Work Network website also offers a database of other evidence-based and consensus-based guidelines in English relevant to occupational health, issued by the National Institute of Clinical Excellence (NICE) and other bodies. These evidence-based guidelines can be received by downloading a paper with the titles, details, sources and links. The topics presented on the list (see below) also include most of the OH guidelines directly presented on the previous pages that can be better downloaded as presented above. The list of topics of the 'other evidence-based guidelines' includes:

Alcohol (preventing harmful drinking)
Asthma (occupational asthma)
Back pain (occupational health)
Behaviour change (general)
Chickenpox (see above; + gynaecology guideline)
Chronic fatigue (see above)
Dermatitis (see above + two other guidelines)
Diabetes (USA diabetes and employment; UK diabetes 2 prevention in general))
Diving (respiratory fitness for diving)
Infected food handlers (see above)
Latex allergy (see above)
Long term sickness and incapacity for work (for primary health care, employees and employers)
Anxiety (general)
Common mental health problems (general)
Depression (general)
Mental wellbeing (occupational; especially for employers)
Pre-employment health assessment: a review, opinions in National Health Service, recommendations
Pregnancy (see above)
Return to work (following elective surgical procedures)
Skin cancer (prevention; refers to workplaces)
Smoking (cessation, also for workplaces)
Tuberculosis (also related to occupational health)
Upper limb disorders (see above)
Vaccines (pneumococcal infection)
Walking and cycling guidance (promotion, general)
Work and health (leaflet based on evidence review of rehabilitation of common health problems; is work-related)

In addition, consensus guidelines (17 guidelines; January 2015) are available at the NHS Health at Work Network website on topics such as Protection against infection of blood-borne viruses for health care workers, Return to work after cardiac illness, and Medical guidelines for firefighters.

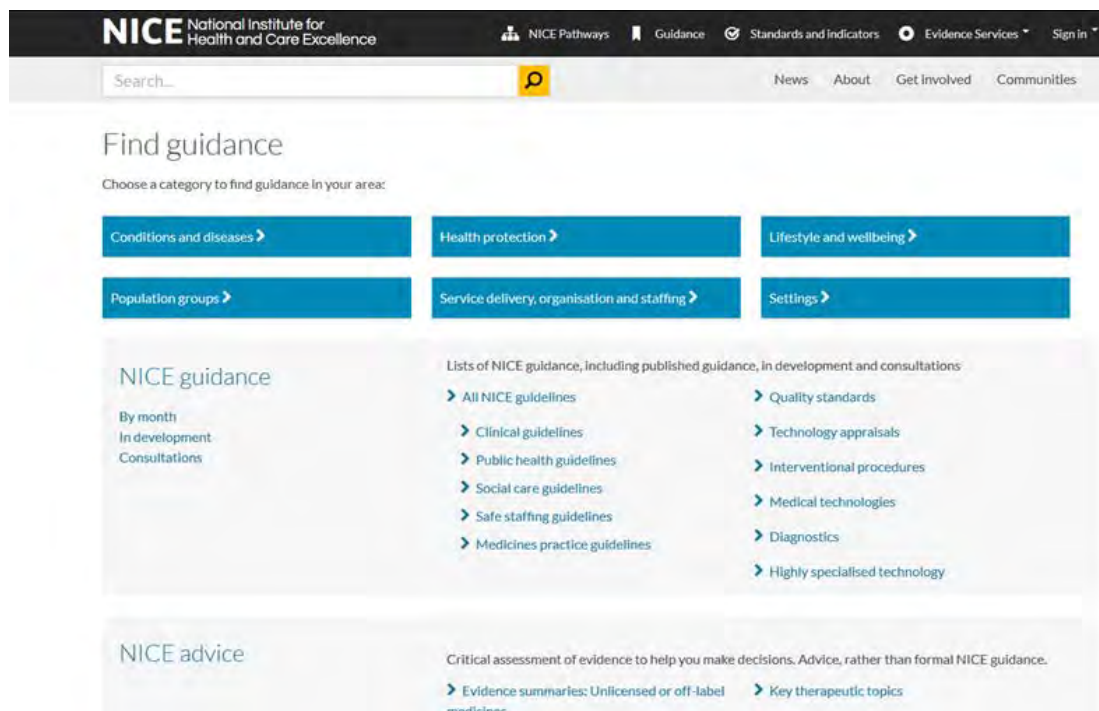
Source: NICE (National Institute for Health and Clinical Excellence)

<http://www.nice.org.uk/guidance>

The NICE guidelines are of high quality, being based on systematic reviews and extensive consultations with clinical experts, patients and others. The key aspects of the NICE guidelines are:

- They contain a complete index of national clinical guidelines for the UK
- All the guidelines are available as full texts
- You can look for a key word in the title, the summary or by specialism
- All the guidelines have a summary

The website of the National Institute for Health and Clinical Excellence (NICE) offers a few additional opportunities to find guidelines relevant for occupational health. Click on *Guidance* at the home page.



By using all NICE Guidelines you can develop a search that provides you with mostly non work-related but still interesting topics on subjects such as guidelines on “depression” (3 hits) or “low back pain” (1 hit).

Another option is to use the button *Settings* in the top lines of the *Find Guidance* page and make the choice for *Workplaces*. In that section you can find and download:

NICE guidelines:

Managing long-term sickness and incapacity for work (PH19) March 2009

Promoting mental wellbeing at work (PH22) November 2009

Promoting physical activity in the workplace (PH13) May 2008

Workplace interventions to promote smoking cessation (PH5) April 2007

Workplace health: management practices (NG13) June 2015

NICE guidelines in development:

Workplace health: older employees. March 2016

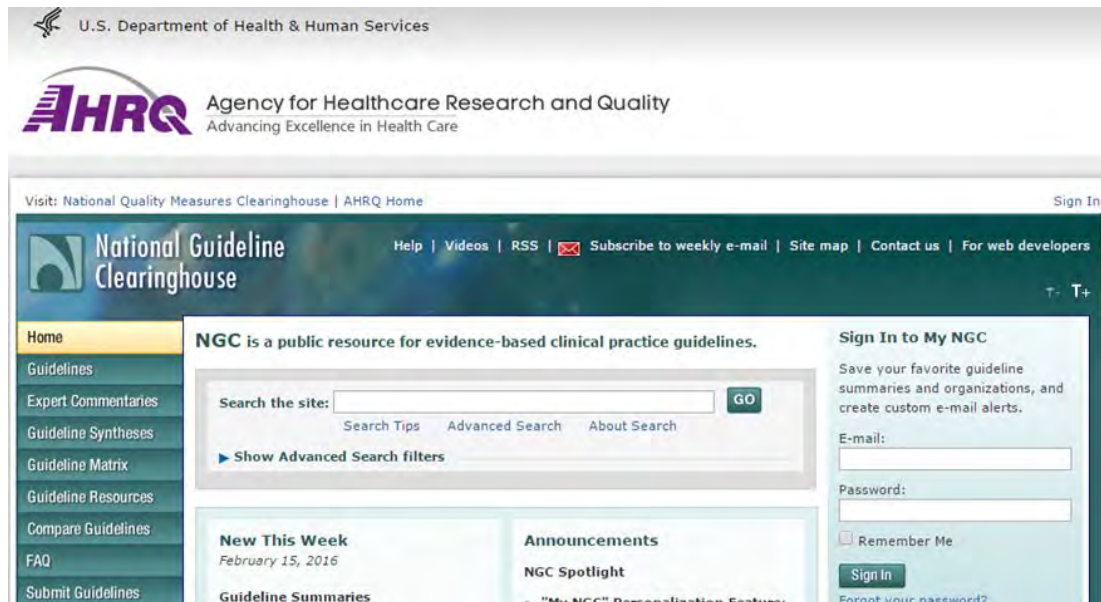
Workplace health: support for employees with disabilities and long-term health conditions. April 2017

Healthy workplaces: improving employee mental and physical health and wellbeing and lowering sickness absence. January 2017

Guidelines from the United States of America (databases)

Source: National Guideline Clearing House (USA)

<http://www.guideline.gov/>



The Clearinghouse offers the opportunity to look for clinical guidelines mostly, but not solely, from USA. If you type in "Carpal Tunnel Syndrome" you will find 35 hits (not all relevant results). If you insert the term "occupational," you find the Carpal tunnel syndrome guideline of the American College of Occupational and Environmental Medicine (ACOEM; 2011), but also the ACOEM guideline on Hand, wrist, and forearm disorders, **not** including carpal tunnel syndrome (1997, third revised edition 2011), and ACOEM guidelines on Hip and groin disorders (2011), Low back disorders (1997, revised 2011), and Ankle and foot disorders (1997, revised 2011). Other findings were guidelines from the Work Loss Data Institute, on Carpal tunnel syndrome (2003; revised 2013) and on Forearm, wrist, & hand (acute & chronic) not including carpal tunnel syndrome (2004, revised 2013).

Moreover guidelines are found published by the Washington State Department of Labor and Industries entitled, "Work-related neurogenic thoracic outlet syndrome: diagnosis and treatment" (2010), "Conservative care options for occupational carpal tunnel syndrome" (2013), and "Work-related carpal tunnel syndrome diagnosis and treatment guideline" (1995, revised 2014).

The criteria for inclusion of guidelines in the NGC were revised in 2013. From 2013 on, only guidelines that are based upon a systematic review of the evidence and that contain an assessment of the benefits

and harms of the recommended care and alternative care options are included in the Clearinghouse. Guidelines submitted and accepted before 2013 will remain on the NGC site until they are revised by the developer, withdrawn by the developer, or withdrawn by NGC because they are more than 5 years old.

Source: American College of Occupational and Environmental Medicine (ACOEM)

<https://www.acoem.org>

ACOEM's evidence-based practice guidelines are dealing with effective treatment of occupational injuries and illnesses. These guidelines are regarded by ACOEM as the 'gold standard.' The guidelines have mostly musculoskeletal disorders topics: hip and groin, knee, ankle and foot disorders; hand, wrist, forearm and elbow disorders; low back disorders, neck and thoracic spine disorders; and shoulder disorders. You can also find guidelines on chronic pain, opioids, occupational interstitial lung disease and occupational asthma.

They are intended to help improve or restore the health of workers after an occupationally related illness or injury. The guidelines focus on returning employees to work within 90 days of an injury or illness, and are developed for occupational and other physicians, health care professionals, insurers, employers, attorneys, and all others with responsibility for worker health and workers' compensation systems.



On the home page of ACOEM click on *Knowledge Centers* and you find the *Clinical Practice and Guidance Center* with information on guidelines.

The Guidelines web-based application includes a searchable interface. This is one of the few guideline databases where you have to pay for access to the guideline itself. The development of guidelines follows the international leading AGREE quality criteria as presented in detail at the ACOEM site. The development procedure that is applied to create a concrete guideline is presented as part of the results found using the National Guideline Clearinghouse. The Summary of the ACOEM guidelines also gives recommendations on how to manage the disorders that can be found in the National Guideline Clearinghouse.

Guidelines from the Netherlands

Source: NVAB guidelines (Dutch, only three guidelines are translated in English)

<https://www.nvab-online.nl/richtlijnen/richtlijnen-NVAB>


Richtlijnen NVAB

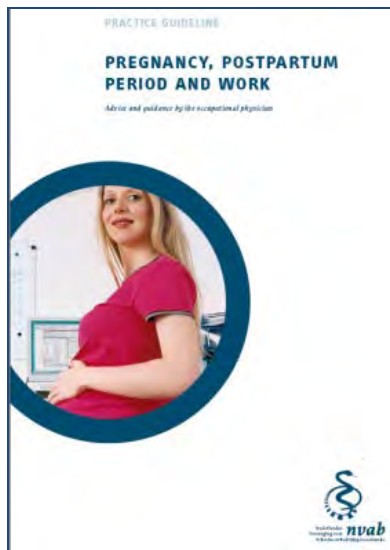
Deze richtlijnen behandelen een bepaalde aandoening (zoals astma), een probleem (zoals psychische) of een risicofactor (zoals rugklachten) en doet duidelijke uitspraken over wat adequaat handelen is. U vindt hier een overzicht van de richtlijnen.

PSYCHE

- in ontwikkelig Depressie* (NVAB, NVVG, verwacht medio 2015)
- Werkdruk (BA&O, NVAB, NVVA, NVVK, 2013)
- Werk-Privé Balans (NVVA, NVAB, BA&O, NVVK 2013)

Introductie NVAB-Richtlijnen





Review Highly accessed Open Access

An Evidence-Based Multidisciplinary Practice Guideline to Reduce the Workload due to Lifting for Preventing Work-Related Low Back Pain

P Paul FM Kuijer^{1*}, Jos HAM Verbeek^{2,3}, Bart Visser³, Leo AM Elders², Nico Van Roden³, Marion ER Van den Wittenboer³, Marian Lebbink², Alex Burdorf² and Carel TJ Hulshof^{1,2}

* Corresponding author: P Paul FM Kuijer p.p.kuijer@amc.uva.nl ▼ Author Affiliations

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The NVAB is the Netherlands Society of Occupational Medicine with about 1,800 members (around 90% of all occupational doctors in the Netherlands). One aim is to improve the professional quality and the scientific basis of occupational health doctors. In 1998, the NVAB started a programme for the development and implementation of evidence-based practice guidelines in occupational health. To professionalize these activities, a Centre of Excellence was created in 2003.

To date, 12 guidelines based on practical evidence in Occupational Health have been completed. Three guidelines are translated in English. All three are presented on the next page and can be obtained by clicking on the corresponding title in the NVAB guidelines (Richtlijnen) page.

Practice Guideline on complaints of Arm, Shoulder or Neck (2003, 2014)

The aim is the prevention of unnecessary sickness absence (sick leave) and occupational disability, and to promote the maintenance of working ability.

After problem orientation and diagnosis, recommendations are given on interventions with respect to work-related and personal risk factors and on return to work. One of the key recommendations is to advise, if the history reveals a high exposure, to perform a workplace examination to assess vibration exposure exceeding the limit value or to assess other unfavorable working conditions. A checklist on evaluation of physical load is included in an Annex to the guideline. The guideline was updated in 2014.

The English version is based on the guideline from 2003. The text will be updated in due course.

Practice Guideline Pregnancy Postpartum Period and Work (2007)

The aim is to translate risk factors into preventive policies for the protection of women during pregnancy and the postpartum period. The recommendations support guidance to women who consult occupational physicians about medical problems associated with their pregnancy or about the resumption of work following maternity leave.

The provision of information and preventive advice has health benefits for pregnant women and their (unborn) babies; this in turn means less absenteeism both during pregnancy and postpartum, and e.g. fewer premature births and low-birth-weight babies.

A key recommendation is the advice to offer the pregnant employee a (voluntary) preventive medical consultation including an analysis of the workload and work capacity. This may result in an individual risk profile, which is discussed with the woman. The employee is provided with information about how a normal pregnancy may be expected to influence working capacity. The conclusion can be that the woman is at elevated risk. In such cases, the occupational physician – in consultation with the midwife, gynecologist or GP where appropriate – needs to draw up a strategic plan to avoid or minimize the risk. The guideline will be updated in 2015-2016.

Practice Guideline to Reduce the Workload due to Lifting for Preventing Work-Related Low Back Pain (2014)

The aim is assessing the risk due to lifting and selecting effective preventive measures for low back pain (LBP) in the Netherlands. Key recommendations are that for risk assessment, loads heavier than 25 kg always have to be considered a risk for LBP, while loads less than 3 kg do not pose a risk. For loads between 3–25 kg, risk assessment shall be performed using the Manual handling Assessment Charts (MAC)-Tool or the National Institute for Occupational Safety and Health (NIOSH) lifting equation. Effective work oriented interventions are patient lifting devices (Level A) and lifting devices for goods (Level C), optimizing working height (Level A) and reducing load mass (Level C).

The guideline is published in an open access article: <http://www.aoemj.com/content/26/1/16>.

Source: Multidisciplinary clinical guidelines including work (NVAB) (Dutch)

<https://www.nvab-online.nl/richtlijnen-en-kennisdocumenten/multidisciplinaire-richtlijnen-van-derden>

The Netherlands Society of Occupational Medicine (NVAB) is also involved in the integration of work-related aspects in a large number of multidisciplinary clinical guidelines (in Dutch) used in regular health care. Guideline developers in regular Dutch health care are obliged to ask for expert assistance from the NVAB to integrate attention for the health of workers in their clinical guidelines, using a special developed Guide to integrate this topic. In total 56, regular health care guidelines contain a chapter about work-related aspects (Jan. 2015).

A few examples: guidelines on acute lateral ankle injury, alcohol misuse, anxiety disorders, non-specific low back pain, non-specific complaint of arm, neck and shoulders (CANS), constitutional eczema, COPD, diabetes and work, cardiac rehabilitation, oncological rehabilitation, obesity, needle (sharps) incidents, welding fumes, Lyme disease, early psychosocial interventions after a disaster, and Whiplash Associated Disorder. A list of all these guidelines (in Dutch) with hyperlinks to all these guidelines can be found at the website page of the link: <https://www.nvab-online.nl/richtlijnen-en-kennisdocumenten/multidisciplinaire-richtlijnen-van-derden> .

The start of the long list is copied in the box below.

Richtlijnen van derden

... met aandacht voor de gezondheid van werkenden

Voor het effectief opnemen van 'de factor arbeid' (aandacht voor de gezondheid van werkenden) dienen richtlijnontwikkelaars de [Blauwdruk Participeren en Functioneren: leidraad voor het effectief opnemen van 'participeren en functioneren in werk' in richtlijnen](#) (VGI, NVAB, CBO 2010) te hanteren.

Voor het vormgeven van de 'factor arbeid' zijn NVAB-vertegenwoordigers betrokken (geweest) bij de ontwikkeling van de volgende multidisciplinaire richtlijnen (in alfabetische volgorde):

- [Acuut lateraal enkelbandletsel](#) (bron: CBO)
- [Alcoholmisbruik](#) (bron: Trimbos)
- [Amputatie en prothesiologie onderste extremiteit](#) (bron: CBO)
- [Angststoornis](#) (bron: Trimbos)
- [Aspecifieke Klachten Arm, Nek en/of Schouders \(KANS\)](#) (bron: CBO)

Guidelines from Colombia

Source: Guidelines for evidence-based comprehensive health care in Occupational Health (Guía técnica de atención integral de Salud Ocupacional”, GATISO) (Spanish)

<http://fondoriesgoslaborales.gov.co/Contenido/Default.aspx?id=566>

Actualizado el 13/02/2016 08:56:11 a.m.

Fondo de Riesgos Laborales
De la República de Colombia

MINTRABAJO

TODOS POR UN
NUEVO PAÍS
PAZ EQUIDAD EDUCACIÓN

Inicio Quiénes somos Contáctenos Acceso ARL Servicios al Ciudadano Calendario Notiriesgos Territoriales

Usted está en

Descargas Mapa del sitio English

Escriba aquí...
Digite su consulta entre comillas
Ejemplo: "Ley 803"

Videos

Normatividad

Información Financiera

Información Estadística

Multas y Pagos

Publicaciones

Eventos y Caracterizaciones

GUIAS

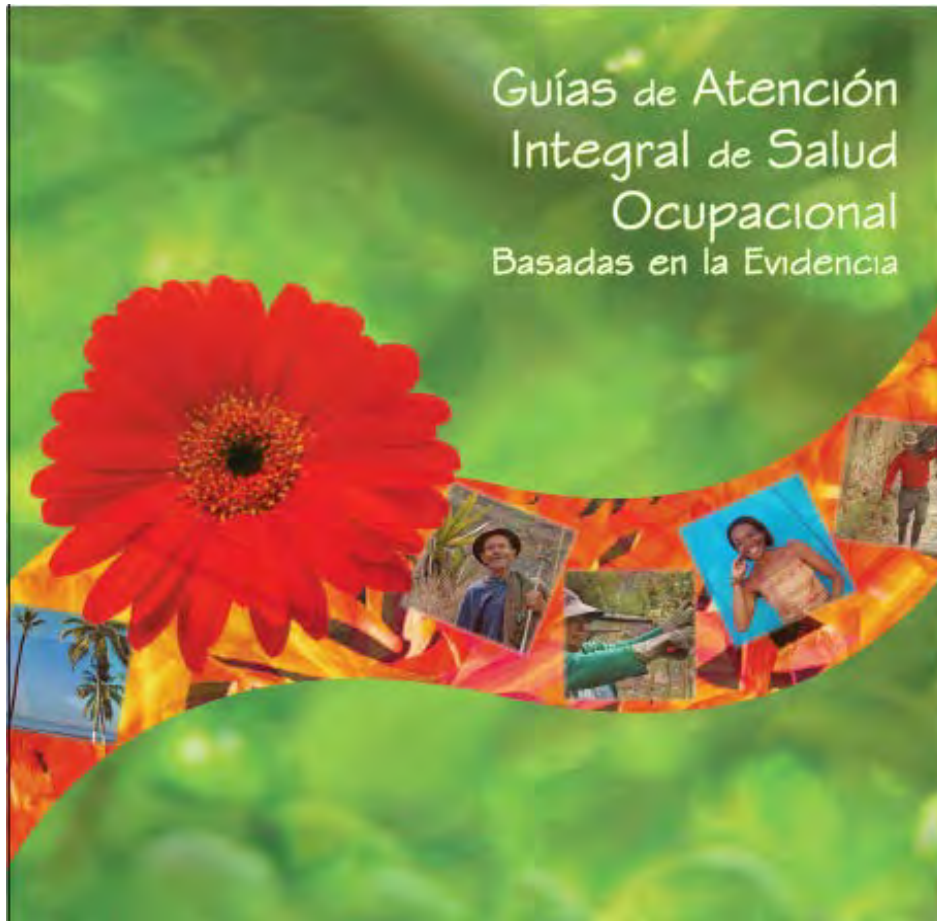
- Guía técnica de implementación del SG - SST para Mipymes
- Instructivo Simulacro nacional de evacuación - Sector Empresarial - 2015
- Guía trabajo seguro en excavaciones - 2014
- Guía técnica para el análisis de exposición a Factores de Riesgo Ocupacional - 2011
- Guía de Atención Integral de Salud Ocupacional basada en la evidencia para hombro doloroso relacionado con factores de riesgo en el trabajo

The Guidelines for comprehensive health care in evidence-based Occupational Health (GATISO) can be found on the website of the Foundation for Professional Risks which is attached to the Ministry of Social Protection (Ministerio de la Protección Social) in Colombia, the creator of the guidelines. On the page for guidelines, ten evidence-based guidelines are presented. You can also find other (not specific evidence-based) guidelines: "Technical Guide for the Analysis of Exposure to Occupational Risk Factors" (2011), "Epidemiological Guide" (2008) and "The Guide to Safety at work in telecommunications towers" (year not shown).

In 2004 the State Office for Professional Health Risks of the Ministry for Social Services published a report on occupational diseases in Columbia for 2001-2002. They designed a work plan with the main aim to improve diagnosis and prevent the most prevalent occupational illnesses in Colombia.

An overview of occupational morbidity was driving the preparation of various Guidelines on evidence-based Comprehensive Health care in Occupational Health. The Guidelines have been drawn up with a comprehensive focus: they make recommendations based on the best available evidence to prevent disease and/or ensure early diagnosis, treatment and rehabilitation of workers at risk of or already

affected by occupational diseases covered by these guidelines. The aim of these guidelines is to provide evidence-based recommendations for comprehensive management: promotion, prevention, early detection, treatment and rehabilitation.



Guideline for evidence based comprehensive health care in Occupational Health for shoulder pain related to risk factors at work (2007; 112 pages, 100 references)

One of 19 key recommendations:

The occupational risk factors that should be watched, which have been shown to be associated with shoulder pain, are the positions in which the shoulder is maintained, repetitive movement is required, force is imparted, there is exposure to vibration and psychosocial factors.

Guideline for evidence based comprehensive health care in Occupational Health for non-specific back pain and disc problems associated with lifting heavy loads and other related factors in the workplace (2007; 118 pages, 99 references)

Two of the 17 key recommendations are:

For the prevention of non-specific back pain it is recommended that the following risk factors be taken into account: heavy physical work, lifting heavy loads and unnatural posture of the spine, movements involving the flexion and rotation of the trunk, exposure of the body to whole body vibration, static posture, psychosocial factors and the organization of work.

Bed rest is not recommended for non-specific back pain when there is no important functional limitation. Promoting activity in daily life is recommended, according to the tolerance of the individual concerned, as an effective means of treatment, including cases of back pain due to disc problems without surgical indications.

Guideline for evidence-based comprehensive health care in Occupational Health for sensorineural hearing loss induced by noise in the workplace (2007; 121 pages, 85 references)

One of 10 key recommendations is:

A noise level of 85 dB[A] is recommended as the permitted level of exposure assuming 8 hours work per day (TWA, time weighted average). A hearing test is recommended before the job starts, during employment and afterwards for every worker whose activity exposes them to a background noise level of 85 dB[A] TWA or more, or its equivalent during the working day.

Guideline for evidence-based comprehensive health care in Occupational Health for musculoskeletal disorders related to repetitive upper limb movements (carpal tunnel syndrome, epicondylitis and De Quervain's disease) (2007; 121 pages, 123 references)

2 of 13 key recommendations are:

1. By identification and evaluation consider the risk factors for musculoskeletal disorders which have shown the greatest association such as: repetitive movement, force, unnatural positions and vibration.
2. The diagnosis of work related musculoskeletal disorders of the upper limbs is carried out via a systematic medical evaluation of individual symptoms. It is based on groups of symptoms whose association establishes the clinical diagnosis. The history of exposure to specific risk

factors links them with the occupation or work. Further clinical tests are not required in classic cases except for carpal tunnel syndrome, which requires electrophysiological tests for confirmation.

Guideline for evidence-based comprehensive health care for pneumoconiosis (silicosis, coal miner's pneumoconiosis and asbestosis) (2007; 122 pages, 182 references)

The aim of this guideline is to provide evidence-based recommendations for comprehensive management of three forms of pneumoconiosis (silicosis, pneumoconiosis in coal miners and asbestosis) associated with exposure at work to silica, coal dust and asbestos respectively.

Guideline for evidence-based comprehensive health care for lung cancer related to work (GATISO GAP) (2007; 138 pages, 124 references)

One of 21 key recommendations is:

Information on the physicochemical and toxic properties of products can be obtained from the printed labels or the leaflets about hazardous chemicals. Well-known ones are MSDS (Material Safety Data Sheets), actually SDS (Safety Data Sheets).

The International Agency for Research on Cancer (IARC) provides a list which identifies environmental factors that can increase the risk of human cancer. These include chemicals, complex mixtures, occupational exposures, physical agents, biological agents, and lifestyle factors. The list can be consulted at: <http://monographs.iarc.fr>.

To deal with carcinogenic agents, evaluation and monitoring of exposure at work must be ongoing.

Guideline for evidence-based comprehensive health care for occupational asthma (2007; 165 pages, 169 references)

One of 24 key recommendations is:

For the diagnosis of occupational asthma use of the following criteria is recommended:

- a) establish the diagnosis of asthma
- b) establish the start of the symptoms having linked it to work
- c) associations between the symptoms of asthma and work
- d) exposure to an agent or process known to cause occupational asthma
- e) objective documentation of the association between the asthma and work.

Guideline for evidence-based comprehensive health care for workers exposed to benzene and its derivatives (2007; 198 pages, 149 references)

The aim of this guide is to provide evidence-based recommendations for comprehensive management of central and/or peripheral neurotoxicity associated with occupational exposure to benzene, toluene, xylene and ethyl benzene (aromatic organic solvents).

The guideline refers to solvent-induced Chronic Toxic Encephalopathy (or Chronic Solvent-induced Encephalopathy, CSE). The guideline does not focus on the carcinogenic effects of benzene.

Guideline for evidence based comprehensive health care for workers exposed to cholinesterase-inhibiting pesticides (organophosphates and carbamates) (2007; 142 pages, 150 references)

The guideline relates to exposure to pesticides that inhibit the enzyme acetyl cholinesterase (acute intoxication, intermediate syndrome, delayed neuropathy induced by organophosphates).

Guideline for evidence-based Comprehensive Health care for occupational contact dermatitis (2007; 133 pages, 111 references)

The guideline relates to occupational contact dermatitis, allergic and irritant.

The summary of the recommendations includes a systematic approach to the environmental evaluation of chemical risks, a strategy for the control of occupational exposure to chemical risks and 20 more recommendations.

One of the recommendations is:

The rehabilitation of workers affected by contact dermatitis should aim, primarily, to keep them in the same work, by treating the condition and improving the working conditions. A change of activity at work would only be recommended in the case of treatment failure – after making sure that all measures have been taken to control the agent (or agents) responsible for the condition.

2.5 Online lessons and courses

Paul Smits and Frank van Dijk

Introduction

Learning and the Internet are closely linked. The potential of the Internet is almost unlimited, especially when one goes beyond websites accessed by PC's and laptops and begins to explore using apps via smartphones and tablets, using Wikipedia, etc.

The use of social media in education practice is rapidly increasing. In this section we offer you a brief overview of a few relevant databases of online digital learning materials (lessons, modules, courses) that you can find on the Internet and an explanation of some common terms.

What you can find on the Internet

Information materials

Wikipedia and YouTube are some of the best-known sources of information, but you can find all kinds of information on the Internet. For example, search engines like Google and Bing are good places to start looking for information. Information can be found on the Internet in the form of text, images, (YouTube) videos or presentations.

Another interesting source to find tons of information is on *Google Scholar*. It is a free accessible web search engine that offers access to text and other data from scientific literature published in Europe and America. However the coverage and reliability of the searches is hardly evaluated and the recently changed search algorithm is secret. The results of one and the same search may differ between persons (PCs), countries, regions and time. More information and a good evaluation are needed before we can recommend the use of Google Scholar for professional use.

Learning materials

Learning materials may contain an educational design. For example, it may contain a motivated alignment of content, teaching and assessment materials ('constructive alignment'). Online learning is also referred to as 'distance learning,' 'e-learning' and 'blended learning' (see next paragraph).

More recent developments in education are serious gaming and virtual training (virtual patients).

You can find information materials and learning materials about workers' health on www.workershealtheducation.org (see next pages).

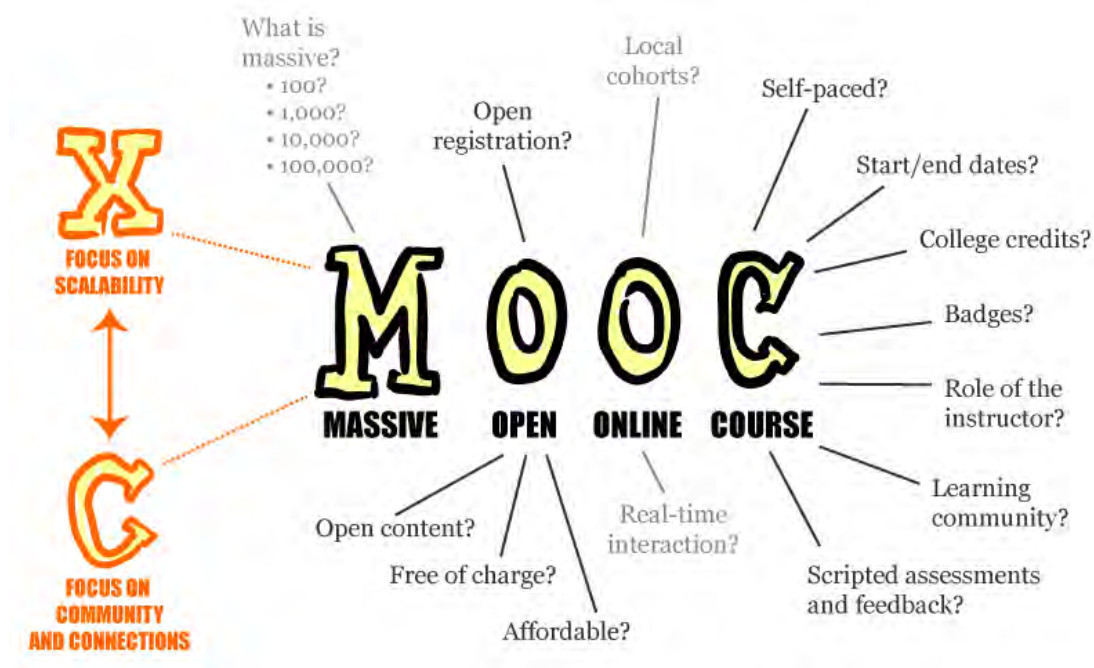
The distinction between information and learning materials is not always clearly demarcated. Some information materials are applicable as learning materials in a blended learning setting (see later).

Courses, including MOOCs

Information and learning materials can be part of a larger course or curriculum. The extent or size of a course is often expressed in a number of credit-points. One example is the ECTS that stands for the European Credit Transfer and Accumulation System. This system is a standard across the European Union and makes the performance of students of higher education more transparent and comparable. One year corresponds to 60 ECTS-credits. Depending on the country, one ECTS credit point equals on average between 25 and 30 working hours. When properly assessed, completing a course may lead to a certificate.

MOOCs, massive open online courses, are recently developed and in full discussion. These are online courses aimed at unlimited participation and open access via the web.

There are many possible kinds of MOOCs (see figure from Wikipedia).



Source: Wikipedia (accessed February 15, 2016)

Terminology

Distance learning and e-learning are used interchangeably. Both can be done at home, independent from time and place.

Blended learning is a combination of face-to-face learning and e-learning.

The terms *virtual classroom and flipped classroom* have recently arisen. A virtual classroom is a 'classroom' where the teacher synchronously communicates with the learners via the Internet. A flipped classroom is a form of blended learning. The learners learn the content at home, with online learning materials e.g. video lectures. They come to the classroom, to the teacher, who has now more time for interactive learning.

Pros and Cons of learning via the Internet

Is learning via the Internet more effective or better than classical teaching in a classroom? The answers cannot be straightforward and are also depending on the kind of learning objectives.

Of the Internet learning formats, a blended format is the most effective when it comes to learning outcomes. Classroom teaching is expected to be as effective as a blended learning format. The most mentioned pro of learning via the Internet is time and place independency and flexibility for the learner. Some of the cons are that you need self-discipline and you do the learning mostly in your own time.

In this chapter you will find some examples of Internet websites with information materials, learning materials and courses on workers' health. In addition: CCOHS in Canada offers many e-courses (chapter II).

Workershealtheducation

www.workershealtheducation.org

WORKERS' HEALTH EDUCATION
learning materials for workers' health



HOME WHE HOME PHC DESCRIPTION OF ALL MATERIAL FIELDS FORUM NEWSLETTERS CONTACT US LINKS & REFERENCE MATERIALS



Search materials

Learning Materials
Information materials & tools

Sponsors

The World Health Organization (WHO) is a specialized agency of the United Nations (UN) that acts as a coordinating authority on international public health.



Welcome to the Workers' Health Education website

Dive into the database of learning materials for safe and healthy work all over the world. Join our world-wide community to share your experiences. But also to exchange your own learning material that may help others in their struggle for better work. [Read more...](#)

Advanced search learning materials

Join the Forum

Advanced search information materials & tools

Newly Added Material

- 30-04-2014 [Forestry worker with white fingers](#)
- 27-03-2014 [Difficult decisions assessing fitness for work](#)
- 05-11-2013 [EMUTOM - European Module for Teaching of Occupational Medicine](#)
- 25-06-2013 [Improving health and work, UK Gov. response to Black's review](#)

Agenda

- 2-07-2014
[19th WONCA Europe Conference](#)
- 24-08-2014
[XX World Congress on Safety and Health at Work 2014](#)
- 15-09-2014
[Master International Occupational Safety and Health](#)

[List all >](#)

Support & Collaboration



Forum topics

The website, developed by the Coronel Institute in Amsterdam, is supported by WHO, ICOH and WONCA (family physicians). Since 2015 the site is organized by the foundation Learning and Developing Occupational Health (<http://www.ldoh.net/>).

The website offers comprehensive descriptions and access to 45 high-quality online modules and courses, mostly interactive online lessons, from more than 15 countries and in different languages. In addition, this site offers access to recent scientific articles and reports on primary health care activities on workers' health, located on a special page entitled *Primary Health Care*.

The Workers' Health Education Project is incorporated into the Work Plan of the WHO Collaborative Centers to support the WHO strategy of "Occupational Health for All."

Almost all learning materials presented on the website are free of charge. The target groups for the website are: pre- and postgraduate schools, universities, institutes, students and committed practitioners in occupational, public and primary health care.

The site offers easy access to lessons, modules and courses. A few examples:

- *Introductory lessons and modules*
 - Occupational health. A manual for primary health care workers
 - e-Course on Basic Occupational Health Services
 - Wind of change (Wind program ILO)
 - EMUTOM – European Module for Teaching of Occupational Medicine
 - A lesson in raising awareness: Making the Occupational Link
 - Advising on fitness for work and supporting rehabilitation
 - Basic principles in occupational hygiene

- *Violence, psychosocial risk factors, prevention*
 - Violence in the workplace: awareness
 - Training manual for addressing workplace violence in the health sector

- *Biological hazards, effects, prevention*
 - Biological Hazards / Riesgos Biológicos
 - Protect Patti. Practicing personal protection (mini-course)

- *Ergonomic risk factors, musculoskeletal disorders, prevention*
 - Manual Material Handling / Manipulación Manual de Cargas
 - Raising awareness in musculoskeletal disorders

- *Chemical risk factors, effects, prevention*
 - Control of hazardous substances
 - Occupational & environmental cancer: recognition and prevention
 - Introduction to asbestos learning package
 - Occupational asthma: evidence based diagnosis and management

- *Physical risk factors, effects, prevention*
 - Thermal environment
 - Noise - Measurement and its effects

- *Agriculture*
 - A Series of Trade Union Education Manuals for Agricultural Workers
 - Manual en Diagnóstico, Tratamiento y Prevención de Intoxicaciones Agudas por Plaguicidas (Manual on Diagnosis, Treatment & Prevention of Acute Pesticides Poisoning)

- *Epidemiology, statistics, evidence-based professional practice*
 - Introductory course in Evidence Based Practice (occupational health)

Primary Health Care web page located at the Workers' Health Education website

<http://www.workershealtheducation.org/primary-health-care>

The screenshot shows the website's interface. At the top, the logo reads "WORKERS' HEALTH EDUCATION" with the tagline "learning materials for workers' health". Navigation links include "HOME WHE", "HOME PHC", "DESCRIPTION OF ALL MATERIAL FIELDS", "FORUM", "NEWSLETTERS", "CONTACT US", and "LINKS & REFERENCE MATERIALS". A "Register" button and a "Login" button are present, along with a "Password forgot?" link. A main banner features a photo of a man presenting to a group, with the text "Click here for homepage Workers' Health Education" and "Workers' Health in Primary Health Care". Below this is a "Search materials" section with options for "Learning Materials" and "Information materials & tools". A "Sponsors" section lists the World Health Organization (WHO) and the United Nations (UN). A "Welcome to Primary Health Care page" section contains a paragraph about the page's purpose and a "Read more..." link. At the bottom, there are three buttons: "Advanced search learning materials", "Join the Forum", and "Advanced search information materials & tools". On the right, an "Agenda" section lists events: "2-07-2014 19th WONCA Europe Conference", "24-08-2014 XX World Congress on Safety and Health at Work 2014", and "15-09-2014 Master International Occupational Safety and Health", with a "List all >" button. A "Support & Collaboration" section features the logo of the International Commission on Occupational Health (ICOH).

This page of the website offers access to learning materials, background articles and reports that are most relevant for primary health care (PHC).

Examples of background information:

- Agricultural Medicine Education—U.S. model for occupational health in agriculture
- Workers' health in primary health care in Cuba
- Review of the health of Britain's working age population
- Promoting occupational health services for workers in informal economy through primary care
- Basic Occupational Health Services (BOHS) and Programme for Farmers in Thailand
- Basic Occupational Health Services (basic guideline)
- Primary health care—what role for occupational health?

Occupational Hygiene Learning (OHLearning)

www.ohlearning.com (English)

The screenshot shows the homepage of OHLearning.com. At the top, there is a navigation bar with the logo 'OH learning.com' and the tagline 'advancing occupational hygiene worldwide'. The navigation menu includes 'about', 'training', and 'community'. Below the navigation bar, there is a large banner image showing workers in a hazardous environment with the text 'for a healthier workplace'. The main content area is divided into three columns: 1. 'learn about protecting the health of people at work', 2. 'find training materials and events in your area', and 3. 'join a community of occupational hygiene professionals'. Below this, there is a 'Recent Activity' section with two entries: 'Vacancy deadline extended for Chair in South Africa' and 'Five year programme for OH graduate training in South Africa'. To the right of the activity section is a 'Featured training providers' section listing 'BP plc' and 'Hawkes Associates (UK) Limited'. On the left side of the page, there is a 'Careers in OH' section with a photo of a woman in a lab coat and a link to 'Learn about job roles'.

OHLearning is the Online Centre for Professional Education in Occupational Hygiene, initiated and sponsored by the International Occupational Hygiene Association (IOHA). OHLearning is an online resource with high-quality and well-respected learning resources.

The Occupational Hygiene Training Association (OHTA) was created to promote better standards of practice in occupational hygiene throughout the world. OHTA develops training materials which are available free for use by students and training providers. The OHTA also promotes a benchmark of international qualifications so that all their certified hygienists meet the highest, uniform standard recognized in all participating countries.

The OHTA started as an informal collaboration of professionals dedicated to hygiene at work, who wanted people around the world to enjoy the benefits of a healthy work environment (see Alesbury and Bailey, in *References*).

The OHTA operates with the basic aims to be inclusive, straightforward, transparent, accessible and engaging. Over time, the Association has written the international standards for a healthy work environment, and done so with the support of many national organizations concerned with hygiene at work, also including the international association IOHA.

The OHTA does not have salaried staff. All the time and effort expended in this association is a given by volunteers and supporters. The operating costs are minimal, but the essential services are financed by sponsors who share the aims of the OHTA. The information on sponsorship agreements and details of current sponsors are published on www.ohlearning.com.

The OHLearning webpage is only available in English. On the main webpage of OHLearning (www.ohlearning.com) you can click on *Find Training* and then on *Approved Training Materials* to find the plethora of learning tools available.

<http://www.ohlearning.com/training-search-pages/ViewTrainingMaterial.aspx>

The screenshot shows the OH learning.com website interface. At the top, there is a logo and navigation buttons for 'about', 'training', and 'community'. A sidebar on the left contains a 'Training' menu with options like 'Training levels', 'Approved training materials', 'Training events', and 'Approved training providers', along with a 'Register your interest' button. The main content area is titled 'Approved materials search' and includes a search filter section with dropdown menus for 'LEVEL', 'TOPIC', and 'LANGUAGE', all set to 'Any'. A 'VIEW RESULTS' button is present. Below this is a 'Search results' section containing a table of training materials.

Training material	Level	Language	Updated	
W503 Noise - Measurement and its Effects	Intermediate	English	26 Mar 2010	view >
W504 Asbestos and Other Fibres	Intermediate	English	02 Apr 2010	view >
W501 Measurement of Hazardous Substances	Intermediate	English	15 Apr 2010	view >
W502 Thermal Environment	Intermediate	English	16 Apr 2010	view >
W505 Control of Hazardous Substances	Intermediate	English	20 Apr 2010	view >
W506 Ergonomics Essentials	Intermediate	English	20 Apr 2010	view >
W201 Basic Principles in Occupational Hygiene	Principles	English	22 Apr 2010	view >
W507 Health Effects of Hazardous Substances	Intermediate	English	22 Apr 2010	view >
W501 Prøvetaking av helsefarlige kjemikalier	Intermediate	Norwegian	30 Mar 2012	view >
W201 Manual Do Aluno	Principles	Portuguese	05 Dec 2012	view >
W501 Medición de sustancias peligrosas	Intermediate	Spanish	18 Feb 2014	view >
W503 Ruido - Medición Y Sus Efectos	Intermediate	Spanish	19 Feb 2014	view >
W201 职业卫生基本原则	Principles	Mandarin	14 Jan 2015	view >

The site offers complete modules in English (and a few translations in Norwegian, Portuguese, Spanish and Mandarin). Each programme lasts 5 days and includes student assessments. The modules provided are:

- Noise – Measurement and effects
- Asbestos and other fibers
- Measurement of hazardous substances
- Thermal environment
- Control of hazardous substances
- Ergonomics essentials
- Basic principles in Occupational Hygiene
- Health effects of hazardous substances

Materials can be downloaded but you have to follow the “Terms of Use” including their own policy on intellectual property rights, as explained on the site.

A primary point stated on the website is as follows: “Most of the materials on this site are licensed under Creative Commons. You may use the materials on this website to promote occupational hygiene within the conditions of the licenses. Please check the conditions of the licenses carefully. Some licenses may allow commercial use, some may allow you to modify the contents, but not all do. In all cases, copyright remains with the originator of the materials.” And: “OHTA is not responsible for any user posts or content on the website. You must not state or imply that you or your posts represent the views of, or otherwise are affiliated with, Occupational Hygiene Training Association.”

As an example of available materials of high-quality, we present some information on the course, *Basic principles in Occupational Hygiene*.

This course is essential training for the qualification “Foundation level.” It is designed to be a five-day programme including the student evaluation.

The student manual can be used as a reference for those who prefer to study independently. The materials, which are available for downloading, include the detailed programme for the course, are well-organized course materials (37 files; 33 MB: PowerPoint slide series, Word documents, Excel files, one

PDF and one audio file), a comprehensive student manual (206 pages, 2010), a syllabus explaining the course in four pages, and one training video. To stimulate you to explore the opportunities yourself we present a print screen of only a part of one PowerPoint presentation (on measurement).

The image shows a grid of 16 PowerPoint slides, numbered 20 to 35. The slides cover various topics in air quality measurement and exposure assessment:

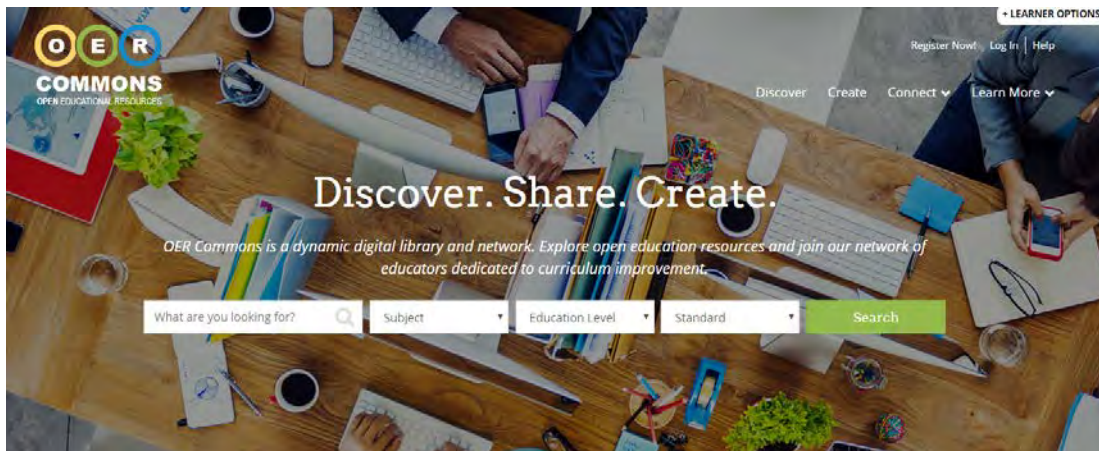
- Slide 20:** Title slide for "Calculation of Exposure".
- Slide 21:** "Calculation of Personal Exposure" with a formula: $\text{Concentration (mg/m}^3) \times \frac{\text{Personal Exposure}}{\text{Flow Rate (litres/min)} \times \text{Time (min)} \times 1000}$.
- Slide 22:** "Calculation of Personal Exposure" with sample data: Time of sample: 09:12 to 15:45; Flow Rate of Pump = 2.0 litres per minute; Weight of Filter before exposure: 25.82 mg; Weight of Filter after exposure: 27.21 mg. Question: "What is the Personal Exposure?"
- Slide 23:** "Calculation of Personal Exposure" with calculations: Time of sample: 09:12 to 15:45 = 6 hours and 33 minutes = 393 min; Sample Volume = Flow Rate of Pump x Time; Sample Volume = 2.0 litres x 393 min; Sample Volume = 786 litres; Mass of inhaled air = 27.21 - 25.82 mg; Personal Exposure = 1.33 mg; Personal Exposure = 1.33 mg/m³.
- Slide 24:** "Sampling for Gases and Vapours" listing Active Samplers (mechanical sampling pump, sorbent tubes) and Passive Samplers.
- Slide 25:** "Sorbent Tubes" showing various types of tubes.
- Slide 26:** "Passive Samplers" showing models like Biorad BA and Biorad BC.
- Slide 27:** "Equipment used for Taking Grab Sample Indicator Tubes" showing a device and a set of tubes.
- Slide 28:** "Equipment used for Taking Grab Sample Sample Bags" showing sample bags.
- Slide 29:** "Equipment used for Taking Grab Sample" with a table:
- Slide 30:** "Equipment used for taking short and long term Samplers" showing various sampler models.
- Slide 31:** "Equipment used for taking short and long term Samplers" with a table:
- Slide 32:** "Equipment used for continuous Sampling" showing a continuous sampler.

Equipment Name	Mode of operation	Advantages	Disadvantages
Direct-reading	Direct-reading	Instant results, easy to use	Not very accurate, often require calibration
Passive samplers	Passive	Simple, low cost, no power required	Not very accurate, often require calibration
Active samplers	Active	Accurate, can measure a wide range of pollutants	Expensive, require power, often require calibration
Personal samplers	Active	Can measure personal exposure, can measure a wide range of pollutants	Expensive, require power, often require calibration
Continuous samplers	Active	Can measure continuous exposure, can measure a wide range of pollutants	Expensive, require power, often require calibration

Equipment Name	Mode of operation	Advantages	Disadvantages
Indicator tubes	Passive	Simple, low cost, no power required	Not very accurate, often require calibration
Sample bags	Passive	Simple, low cost, no power required	Not very accurate, often require calibration
Short-term samplers	Active	Accurate, can measure a wide range of pollutants	Expensive, require power, often require calibration
Long-term samplers	Active	Accurate, can measure a wide range of pollutants	Expensive, require power, often require calibration
Continuous samplers	Active	Can measure continuous exposure, can measure a wide range of pollutants	Expensive, require power, often require calibration

Open Educational Resources Commons (OER Commons) (USA)

<http://www.oercommons.org/> (English)



OER (Open Educational Resources) Commons is a global training network, with teaching and learning material available free online. The materials are grouped by area and by level.

OER Commons creates a culture of sharing resources and practice which help to facilitate change and innovation in education. See OER Commons on Wiki: http://en.wikipedia.org/wiki/OER_Commons.

Examples of the OER are: complete courses, models of courses, study programs, conferences, tasks, questionnaires, laboratory and classroom activities, teaching materials, games and role plays which appear in digital media around the world.

The OER community section of the site brings together news, research reports, blogs, events and other information around OER and its uses around the world.

Insert the terms "occupational health." (Put the term in quotation marks or you will find materials on 'occupational therapy' and other not relevant materials.) You will find about 25 learning materials, some of these are certain to be interesting.

One example is the Postgraduate Diploma course in Occupational Health, "Occupational Hygiene" from Cape Town University in South Africa (2010; Jonny Myers, Mohamed Jeebhay).

<https://www.oercommons.org/courses/postgraduate-diploma-in-occupational-health-occupational-hygiene>

First, there are two online modules available for a two year distance-learning course, aimed primarily for medical doctors currently practicing occupational health. *Occupational hygiene and epidemiology*, and *biostatistics* are the topics of the first two modules. The modules are also suited to selected graduates with university qualifications in relevant health sciences, currently practicing in an occupational health setting.

Another example is a course entitled, "Occupational Health and Vulnerable Worker Populations" from the Johns Hopkins Bloomberg School of Public Health, USA (2009; Jacqueline Agnew, Sheila Fitzgerald).

<http://www.oercommons.org/courses/occupational-health-and-vulnerable-worker-populations/view>

This course discusses occupational health program considerations, (including all levels of prevention), for vulnerable populations, such as the health needs of women workers, shift workers, aging workers, families of workers, and workers with chronic diseases and impairments. The course focuses on barriers that affect health and work performance. Relevant research findings are presented on the ability of vulnerable populations to benefit from safe and healthy working lives. The course is presented in seven modules.

A third and final example is "Biological monitoring of workers exposed to pesticides - Guidelines for application in field settings," from the Occupational and Environmental Health Research Unit, Department of Community Health, University of Cape Town, South Africa (revised in 2012; Leslie London).

<http://www.oercommons.org/courses/biological-monitoring-of-workers-exposed-to-pesticides-guidelines-for-application-in-field-settings-3/view>

This guideline has the aim to support persons responsible for the maintenance of health and safety measures at agricultural workplaces where workers handle potentially hazardous organophosphate and carbamate chemicals. It is primarily aimed at those in professional nursing and other medical staff charged with monitoring workers for pesticide exposure.

Geolibary (USA)

<http://geolibary.org/Default.aspx> (English, Spanish)



The responsibility of constructing the Geolibary was assumed by Great Lakes Centers for Occupational and Environmental Safety & Health, University of Illinois at Chicago. The main aims of the Geolibary are occupational and environmental safety and health.

The Geolibary project was incorporated into the Work Plan of the Collaborative Centers to support the WHO strategy "Occupational Health for All."

Geolibary.org is an electronic library with various materials. Among these training materials in occupational safety and health that are in the public domain are free to the user. The training materials contained in this library arise from an extensive variety of sources including international organizations, government institutes and agencies, academic institutions, corporations, syndicates and non-government organizations.

Within the Geolibary it is possible to read the different categories and instructions in Spanish, French, Russian, Chinese and Arabic, but searches must be submitted in English.

Once going to the website, you will see on the left hand side of the screen that you can select the option *Occupational Materials*.

On your left hand side you see the *Occupational library*, with the chapters:

- General
- Adverse Health Effects
- Hazardous exposure
- Economic sectors
- Control strategies
- Hot topic H1N1
- Youth and hazardous work

Each of these chapters is divided into various subtitles. Another way of selecting documents is by choosing *Document type*. You may select: training materials, practice tools, journal articles, technical documents and policy documents.

Geolibary has a library that specializes in training materials and practice tools for *road safety at work*. Geolibary is a virtual library and a useful repository for diverse materials, among them is training materials. Their orientation is international but many of the materials come from the United States.

Example:

We searched for training materials for Agriculture and Forestry and found about 10 materials on the topics: a complete Curriculum on Agriculture; Tractors, Cause of Fatalities on the Farm; Safer Tractor Operations for Agricultural Employers; Tractor Operation Safety; Pesticide Exposure; What To Do In Case Of Grain Bin Entrapment; Farm Pond Safety; Dangers of Heat Stress; Chainsaw Safety; Personal Protective Equipment for Logging.

2.6 High quality websites

Toxnet/Hazmap, USA

<http://toxnet.nlm.nih.gov/> www.hazmap.nlm.nih.gov (English)

SALTRA, Central America

<http://www.saltra.una.ac.cr> (Spanish)

Canadian Centre for Occupational Health and Safety (CCOHS), Canada

<http://www.ccohs.ca> (English, French)

World Health Organization (WHO)

<http://www.who.int/en/> (Arabic, Chinese, English, French, Russian, Spanish)

Pan American Health Organization (PAHO)

<http://www.paho.org/hq/index.php?lang=en> (English, Spanish)

Toxnet / Hazmap (USA)

TOXNET

<http://toxnet.nlm.nih.gov/>

NIH U.S. National Library of Medicine TOXNET TOXICOLOGY DATA NETWORK

Mobile | Help | FAQs | TOXNET Fact Sheet | Training Manual & Schedule

Share

Welcome to TOXNET

Your resource for searching databases on toxicology, hazardous chemicals, environmental health, and toxic releases

SEARCH TOXNET Search all or select specific databases

BROWSE ADVANCED SEARCH

e.g. benzene, endocrine disruptor

ALL DATABASES Search

Environmental Health & Toxicology

Resources on environmental health and toxicology

Visit Site

Toxnet includes databases on: hazardous chemicals and drugs, environmental health, occupational safety and health, toxicology and poisoning, carcinogenic and genetic properties, reproductive and developmental toxicity, drugs & chemicals and breastfeeding, risk assessment and regulations. Toxnet is managed by the Toxicology and Environmental Health Information Program (TEHIP) of the National Library of Medicine (USA) and contains a number of databases, including:

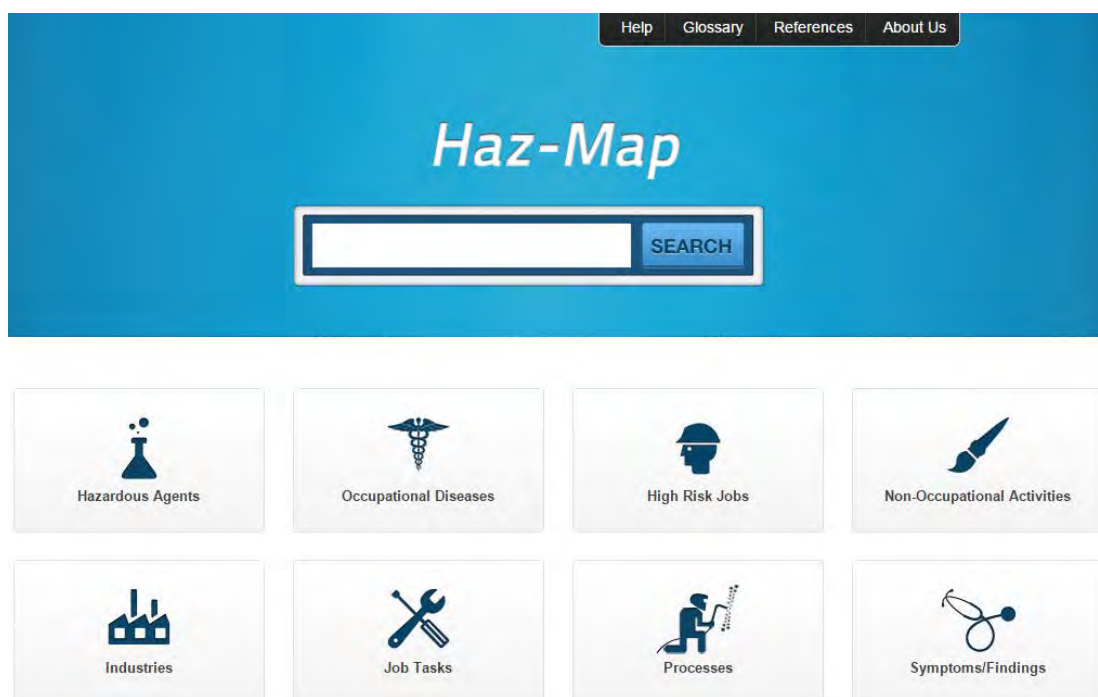
Toxline – Here you can find an extensive range of more than 5 million references on the biochemical, pharmacological, physiological and toxic effects of drugs and other chemical substances.

IRIS – An Integrated Risk Information System from the Environmental Protection Agency (EPA, USA). It is a support service for the evaluation of risks for human health. IRIS covers over 550 chemicals (2014) and is representing EPA consensus.

Haz-map – A database designed for occupational health and safety professionals and for consumers searching for information about the health effects of exposure to chemicals and biological agents. This site connects work and hazardous tasks with occupational diseases and their symptoms.

Haz-Map.

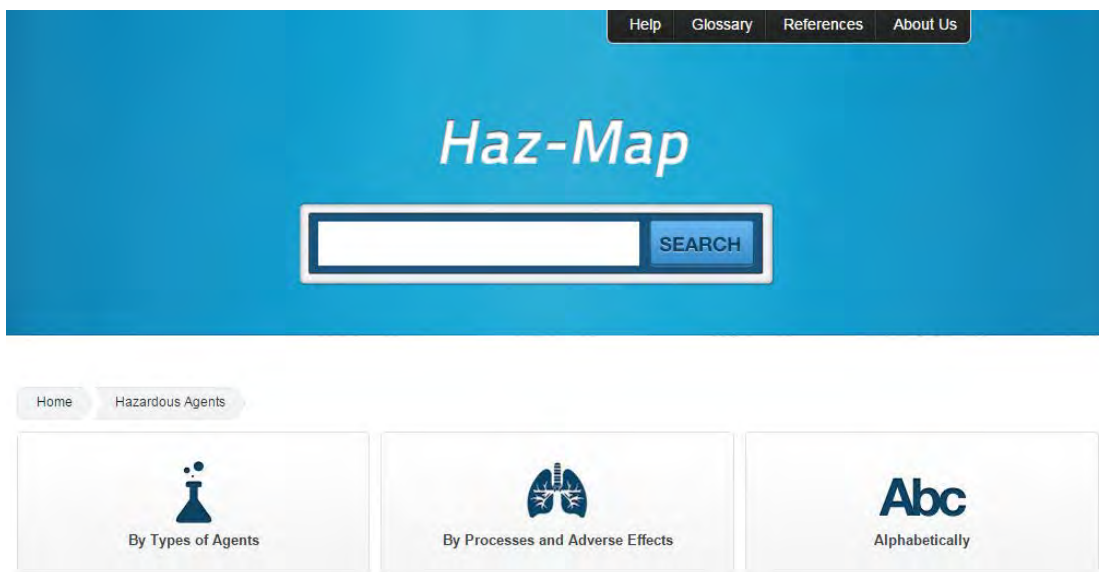
www.hazmap.nlm.nih.gov



If you click on *Haz-Map Help* on the homepage for the website you will get a detailed explanation of the different search methods you can use through this reliable information source. The search methods available are:

- Search
- Browse by categories
- Browse alphabetically
- Browse agents by adverse effects
- Find diseases by jobs and systems
- Display of related information
- Display of main record
- TOXNET search

In Haz-Map you can use eight entrees. We will illustrate the first three: Hazardous agents, Occupational Diseases and High Risk Jobs.



Hazardous agents

- *By types of agents*: as an illustration we selected *Biological agents*, next *Mycotoxins* and then you will find many different substances. You can click on e.g. *various aflatoxins*, with a lot of information.
- *By processes and adverse effects*
- *Alphabetically*

Occupational Diseases

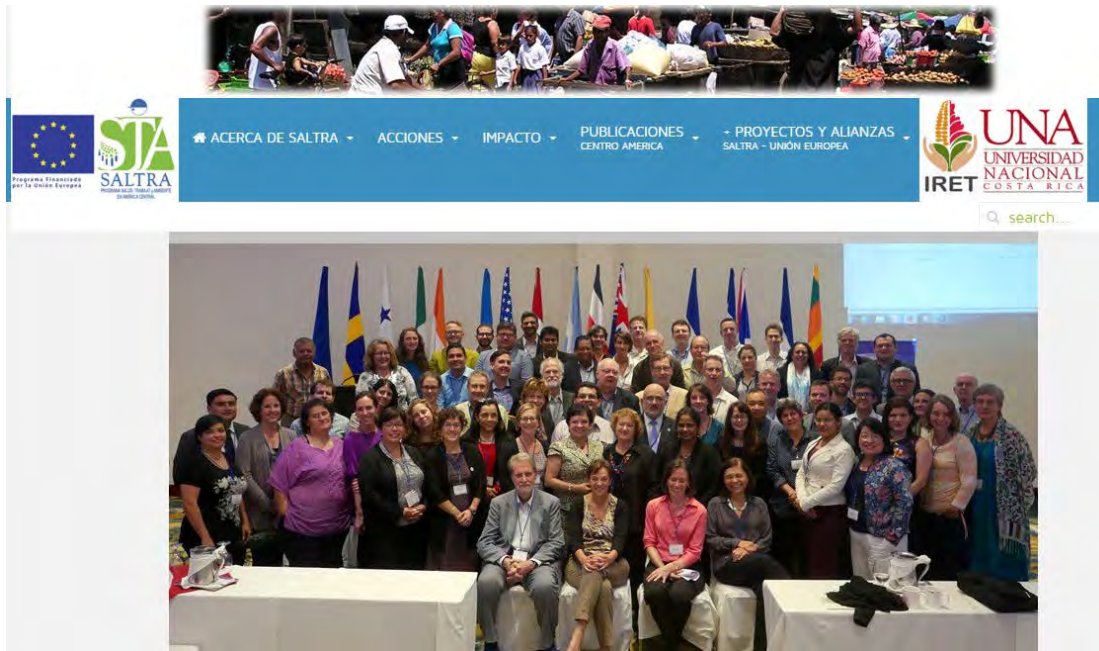
- *By types of diseases:* as an illustration we selected *Metal poisoning, Occupational* and next we chose *Mercury, elemental, chronic toxic effect* that gives you concise information including the identification of *peripheral neuropathy* and *neuropsychiatric disorders* as related occupational diseases. There is a list of symptoms/findings associated with the diseases and a list of high-risk jobs tasks. You are offered a *PubMed search* option to find recent information yourself.
- *By jobs and symptoms*
- *Alphabetically*

High Risk Jobs

- *By types of jobs:* as an illustration we selected *Farmworkers* and next we selected *Farmworkers, Farm & Ranch Animals*. About 40 high-risk job tasks are described e.g. *generate grain dust*. Information: may cause occupational asthma; COPD; grain fever. Associated jobs and industries are described.
- *Alphabetically*

SALTRA (Central America)

<http://www.saltra.una.ac.cr> (Spanish)



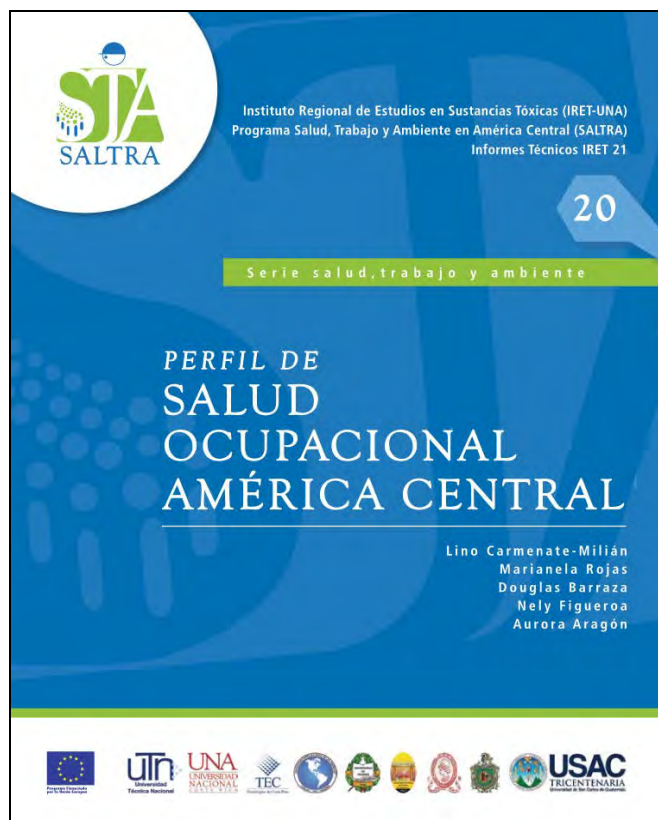
The Health, Environment and Work Programme for Central America (SALTRA) aim to develop national and regional research information and training throughout Central America. SALTRA works in six of the seven Central American countries: Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica and Panamá.

The location of SALTRA as a regional center is at the National University in Costa Rica. The key feature of SALTRA is to combine research, training and action in Occupational and Environmental Health matters. A network of universities cooperates with governmental and non-governmental groups with the aim of capacity building on all levels for a sustainable development, in favor of occupational and environmental health. Collaboration between low-income countries exchanging knowledge and resources strengthens regional contacts and efforts, but also the collaboration with high-income countries and regions is important. In this way in Saltra a so called *south-south-north collaboration* is realized.

The center publishes regularly *Noticias Centroamericanas* (Central American News) presenting a variety of recent study's results in the region.



To conduct a search for documents you need to know elementary Spanish. Click in the menu on *Publicaciones Centro America* and you may go to the *Serie Salud, Trabajo y Ambiente*. After profiles of all countries in separate publications we found a comprehensive study (Volúmen 20) with the title, "Perfil de Salud Ocupacional América Central" (Profile of Occupational Health in Central America) (2015).



Other publication types are reports, Central American News, popular publications and multimedia (videos).

Canadian Centre for Occupational Health and Safety (CCOHS, Canada)

<http://www.ccohs.ca> (English, French)

The screenshot shows the CCOHS website homepage. At the top, there is a navigation bar with the Government of Canada logo and the text "Government of Canada" and "Gouvernement du Canada". To the right, it says "Canada.ca | Services | Departments | Français". Below this is the CCOHS logo and a search bar. A main navigation menu includes "Legislation", "Hazards", "Workers", "Health and Wellness", and "Programs". A secondary menu has "I am looking for...", "HELP", and "LOGIN". The main content area features a large banner for "eCourses" with the text "Educate and Train Anytime, Anywhere" and "Choose from more than 90 eCourses". Below the banner is a carousel with "Item 1 of 4" and a "Pause" button. The page is divided into three columns: "I WANT TO" (listing actions like "Take a course" and "Develop a health and safety program"), "WHAT'S NEW" (listing recent updates like "Dust Busters, Combustibles and Explosions [podcast]"), and "FEATURED CONTENT" (listing topics like "WHMIS After GHS" and "Workplace Violence"). On the right side, there are three promotional boxes: "Got a question? GET THE ANSWER", "Day of Mourning April 28", and "Youth Video Contest". At the bottom, there is a "TOPICS TO EXPLORE" section with buttons for "WHMIS.org", "Mental Health", "Young and New Workers", "Infectious Disease Outbreaks", "Healthy Workplaces", and "CanOSH".

The Canadian Centre for Occupational Health and Safety (CCOHS) is a not-for-profit federal departmental corporation. CCOHS is governed by a tripartite council who represents the government, employers and labor.

The mission of the CCOHS is to eliminate work-related illnesses and injuries and to promote the physical, mental and psychological health of Canadians and of people elsewhere in the world. To support Occupational Health and Safety programs, the Centre offers useful tools and resources such as information, training, education, management systems and solutions. The products and services of the CCOHS are offered in English and French.

A variety of initiatives of public services are offered free to the user such as replies to matters of Occupational Health and Safety; other services such as education and training have to be paid for.

OSH Answers Fact Sheets

By clicking *Got a Question?* *Get the answer* on the right hand side of the screen you can find Safety Infoline, a free person-to-person information service for Canadians. On the left hand side of the screen you may click on *Get help with a workplace health and safety issue*. If you then click on *Health and safety fact sheets* and you will enter *OSH Answers Fact Sheets*.

The screenshot shows the Occupational Health and Safety (CCOHS) website. The header includes the CCOHS logo and the text 'Occupational Health and Safety'. Below the header is a navigation menu with dropdowns for 'Legislation', 'Hazards', 'Workers', 'Health and Wellness', and 'Programs'. There is also a search bar and links for 'I am looking for...', 'HELP', and 'LOGIN'. The main content area is titled 'OSH Answers Fact Sheets' and includes a sub-header 'Home'. Below this is a description: 'Easy-to-read, question-and-answer fact sheets covering a wide range of workplace health and safety topics, from hazards to diseases to ergonomics to workplace promotion. [MORE ABOUT >](#)'. To the right of the text is a graphic with 'QUESTIONS' and 'ANSWERS' sections. Below the description is a search bar with the text 'Search all fact sheets:' and a 'SEARCH' button. The page is organized into a grid of 12 topic categories, each with a title, a list of sub-topics, and a 'MORE >' link:

- Biological Hazards**: Hepatitis B, Hantavirus, Tuberculosis, Lyme Disease, Histoplasmosis...
- Chemicals & Materials**: MSDSs, Compressed Gases, Chemical Profiles...
- Diseases Disorders & Injuries**: Asthma, Bursitis, Ganglion Cyst, AIDS, Raynaud's Phenomenon...
- Ergonomics - Human Factors**: Lifting, Wrist Rests, Computer Mouse, Back Belts, Sitting, Standing...
- Health & Safety Programs**: Accident Investigation, Health & Safety Committees, OHS Policy Statement...
- Information Resources/ Referrals**: Books, WCBs, Gov't Agencies...
- Legislation**: Introduction, Due Diligence, WHMIS...
- Occupations & Workplaces**: Carpenter, Cook, Fire Fighter, Hotel Laundry, Landscaper, Painter...
- Physical Agents**: Noise Exposure Limits in Canada, Humidex Rating, Lasers in Health Care...
- Prevention/Control of Hazards**: Corrosive Liquids and Solids, Workplace Inspections, PPE...
- Health Promotion / Wellness / Psychosocial**: Violence in the Workplace, Workplace Stress...
- Safety**: Forklift Trucks, Ladders, Landscaping, Powered Hand Tools...

The intended users of the questions and answers on matters of occupational safety and health are not occupational safety and health professionals and experts. It is meant for the employees, managers, supervisors and members of health and safety committees, all of these being the end-users of the information in the place of work. Moreover, the employers, the politicians in charge, family members, people who live near the places of work, students and others will find that the questions on matters of occupational safety and health are useful sources of information which deal with work and environment related topics.

Specific information of interest can be found through a subdivision of the groups of subjects as presented in the window (see the print screen figure above). Each group of subjects contains many more topics. For example the group on chemicals and materials includes about 40 topics. Each topic, for example, "metalworking fluids," includes a series of questions and answers. In this case the questions were: What are metalworking fluids? Are there different types of metalworking fluids? Does the composition of metalworking fluids change with storage or use? How do metalworking fluids enter the body? What are the health concerns associated with metalworking fluids? How do you find out about the composition of a metalworking fluid? How can you work safely with metalworking fluids? What are some exposure control measures? (Latest actualization of this document was April 3, 2014.)

E-courses

http://www.ccohs.ca/products/courses/course_listing.html

Home → Products and Services

Courses (eLearning)

In an ongoing effort to educate people about workplace health and safety, we offer the following online and classroom courses.

Already an eLearning Client?
[LOGIN](#)

SAVE 10%
[Become a Member](#)

A B C D E F G H I J L M O P R S T V W

[OPEN ALL](#) Single Seat

▶ Accident Investigation	\$49.00
▶ Accident Investigation in Ontario	\$49.00
▶ AODA Accessible Customer Service Regulation	\$35.00
▶ AODA IASR Employment Standard	\$15.00
▶ AODA IASR General Requirements	\$15.00
▶ AODA IASR Information and Communication Standard	\$15.00
▶ AODA IASR Transportation Standard	\$15.00
▶ Bullying in the Workplace NEW!	\$49.00

There are 90 e-courses available. A limited number of these are free of charge (May 2015) such as Business cases for health and safety, Mental health awareness, Musculoskeletal disorders awareness, Occupational and environmental cancer, Occupational health, Safety and environmental management systems awareness, Pandemic awareness, Violence in the workplace awareness, and Workplace Hazardous Materials Information System (WHMIS) 2015 for workers.

World Health Organization (WHO)

<http://www.who.int/en/> (Arabic, Chinese, English, French, Russian, Spanish)

World Health Organization

عربي 中文 English Français Русский Español

Health topics Data Media centre Publications Countries Programmes Governance About WHO Search

New checklist for transparent, accurate and reliable health estimates
28 June 2016 – A checklist of 18 best practices developed by WHO and researchers from around the world, the Guidelines for Accurate and Transparent Health Estimates Reporting (GATHER) sets the standard for disclosing how health estimates are developed. Several estimates compiled by WHO already follow GATHER principles, including estimates on child mortality, childhood causes of death, and maternal mortality.
More about the GATHER best practices

Outbreaks and emergencies

- Ebola outbreak »
- MERS-CoV outbreak »
- Yellow fever »
- Zika virus and complications »
- Emergencies »

WHO fact sheets

The World Health Organization (WHO) is the main authority and health coordinator within the United Nations. The WHO portal gives access to health matters, data and statistics, press releases, publications, fact sheets, guidelines, programs and projects. Most of the documents are written in English.

On the main page it is possible to search using health terms such as “asbestos” or “occupational asthma” (in double inverted commas or quotes), which gives access to references. The terms appear in the search window. Among the results you can find quite a few articles, bulletins and guides.

<http://www.who.int/topics/en/> (Arabic, Chinese, English, French, Russian, Spanish)

World Health Organization

عربي 中文 English Français Русский Español

Health topics Data Media centre Publications Countries Programmes Governance About WHO Search

Health topics

The pages linked to below contain links to WHO projects, initiatives, activities, information products, and contacts, organized by health and development topics.

Type the word you are looking for

A

- Accidents, Radiation ▶
- Acrylamide ▶
- Acupuncture ▶
- see Traditional medicine ▶

F

- Family planning ▶
- Female condom ▶
- see Condoms ▶
- Female genital mutilation ▶

O continued

- Onchocerciasis ▶
- Oral health ▶
- Organ transplantation ▶
- see Transplantation ▶

On this *Health topics* page health terms are generally presented in alphabetical order. The health subjects lead to pages with information on the subject, links to related sites, related links, to projects, initiatives, activities and WHO reports. You can also find details for contacting the organization. All the links are organized by health subject or development. When you open a particular subject area, you will primarily find publications written in English. Major occupational health themes such as *silicosis*, *occupational diseases (in general)* and *asbestos* are missing, but the topics *occupational health* and *pesticides* are present.

This page on *occupational health* as a topic offers links to sites relating to occupational health in general. You can also find a link to a comprehensive list of WHO publications on occupational health.

http://www.who.int/occupational_health/topics/en/ (Arabic, Chinese, English, French, Russian, Spanish)

The screenshot shows the WHO website's 'Occupational health' page. At the top, there is a navigation bar with 'Health topics' highlighted, and a search bar. Below the navigation bar, the page title 'Occupational health' is displayed. A main image shows two men in a workshop setting. The main text describes occupational health as dealing with all aspects of health and safety in the workplace, focusing on primary prevention of hazards. It lists determinants such as working hours, salary, and workplace policies. The page is organized into several sections: 'General information' with a link to 'Q&As on stress at the workplace'; 'Multimedia' with a link to '10 facts on environmental and occupational health and cancer'; 'WHO programmes and activities' with a link to 'Occupational health'; 'Occupational health in WHO regions' with links for the Region of the Americas-PAHO, European Region, South-East Asia Region, and Western Pacific Region; 'Technical information' with links for 'Health care workers', 'Psychosocial risk factors and hazards', and 'More about occupational health'; 'Publications' with a link to 'Guidance on the European framework for psychosocial risk management' and 'More publications on occupational health'; and 'Related topics' with links for 'Chronic diseases', 'Environmental health', 'Injuries', and 'Mental health'.

WHO Occupational Health page (the principal OH page of WHO)

http://www.who.int/occupational_health/en/ (English, Russian)

http://www.who.int/occupational_health/network/en/ network page of the *WHO Collaborating Centers in Occupational Health* (English)

The graphic above is WHO's principal page on Occupational Health connected with the *network of WHO Collaborating Centers in Occupational Health*. Here WHO presents their main goals and activities.

On this page you can find links to *GOHNET* (Global Occupational Newsletter) where you can find a great deal of information about conferences, reports, news and events, websites and other subjects related to them, as well as links for contacting various programs and departments in WHO.

On the left hand side of the screen you can click on: *topics, activities, collaborating centers network, publications, regions and partners and links.*

http://www.who.int/occupational_health/topics/en/ (English)

The screenshot shows the WHO Occupational Health Topics page. The header includes the WHO logo and navigation links in multiple languages. The main navigation bar has 'Programmes' selected. The page title is 'Occupational health'. On the left, a sidebar lists categories: Occupational health, Topics, Activities, Collaborating centres network, Publications, Regions and partners, and Links. The main content area is titled 'Occupational health topics' and includes a note: 'Topics are arranged in alphabetical order. Note that for many topics there may be coverage of the occupation-related disease or safety issue, the burden of the disease, analysis of interventions (cost-effectiveness, etc.), WHO policies, and actual activities carried out by WHO and its partners. Therefore relevant materials can appear under various headings and sub-pages.' Below this is an alphabetical index: A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z. The 'A' section lists 'Asbestos-related diseases' with a 'Back to Top' link. The 'B' section lists 'Biological risk factors and hazards' with a 'Back to Top' link. The 'C' section lists 'Chemical risk factors and hazards', 'Child labour', 'Classification of disease', 'Control banding' (with a sub-link 'see Toolbox, Occupational risk management'), 'Cost-effectiveness studies and economic analyses', and 'Country profiles' with a 'Back to Top' link. The 'D' section lists 'Dust' with a 'Back to Top' link. The 'E' section lists 'Ergonomic risk factors and hazards' with a 'Back to Top' link. The 'G' section lists 'Gender and occupational health', 'Global burden of disease', and 'Good practice' with a 'Back to Top' link. On the right, there are sections for 'Contact us' and 'Essential links', which includes 'World Health Assembly Resolution 60.26 - Workers' health: global plan of action', 'Global strategy on occupational health for all', and 'Declaration on occupational health for all' with a download link for a 147kb PDF.

The list of topics on WHO's website for Occupational Health is comprehensive and relevant. The list refers directly to a variety of documents, among these WHO publications and other documents such as of ILO.

Pan-American Health Organization (PAHO) Organización Panamericana de la Salud (OPS)

<http://www.paho.org/hq/index.php?lang=en> (English, Spanish)

The screenshot shows the PAHO/WHO homepage. At the top, there are logos for the Pan American Health Organization and the World Health Organization, along with social media icons for Facebook, Twitter, Pinterest, LinkedIn, WhatsApp, and Email. A navigation menu includes Home, Health Topics, Programs, Media Center, Publications, Data, Countries and Centers, and About PAHO. A search bar is located on the right. The main content area features a large video player with a thumbnail of a woman holding a baby, and a text overlay: "Zika virus has spread to 39 countries and territories in the Americas. Learn more about the work PAHO/WHO is doing with the countries of the region to meet this new challenge. Watch video...". Below the video player is a navigation bar with tabs: Highlights, Governing Bodies, Disasters & Humanitarian Assistance, Health in the Americas 2012, and Epidemiological Alerts and Updates. The "Latest News" section includes articles such as "Nicaraguan local health systems to benefit under new project backed by Grand Duchy of Luxembourg and PAHO" and "Brazil - Health Advice for Travellers to the 2016 Summer Olympic and Paralympic Games". A "More News" section lists various updates, including a special issue of the PAHO journal, a call for applications for scholarships, and a briefing on the Zika outbreak. On the right side, there are several blue boxes: "Zika Virus/Microcephaly" with a mosquito icon, "Zero Maternal Deaths from Hemorrhage" with a large '0', "Chikungunya virus" with a mosquito icon, and "Director's Corner" featuring Carissa F. Etienne. Below these are sections for "Epidemiological Alerts and Updates" (listing a June 2016 update) and "Upcoming events" (stating no current events). At the bottom right, there is a "Tweets" section by @pahowho.

On the homepage you can find news and various WHO links, such as information and activities in all countries in the Americas. The portal gives access to publications and other resources on subjects most relevant to Public Health on the American continent. At the top of the screen you can find links to health topics and publications from the Pan-American Health Organization.

You can find the *Workers' Health* home page including contact information at:

http://www.paho.org/hq/index.php?option=com_content&view=article&id=1643&Itemid=3529&lang=en.

Chapter III

3. Tool kit for evidence-based OSH practice

- 3.1 Introduction
- 3.2 OSH terms for PubMed (MeSH terms)
- 3.3 Glossary for Occupational Safety and Health
- 3.4 PubMed in Ten Steps

3.1 Introduction

In this chapter we present a number of tools that have been proven to be useful to support searching for evidence, especially in PubMed / MEDLINE and in other databases like the Virtual Health Library, LILACS and the Cochrane Library. As MEDLINE and the access through PubMed are developed for generic medical use, it can be slightly more difficult to complete a search in specialized interdisciplinary domains such as occupational safety and health.

Searching for information on OSH topics, such as on risks at work as a teacher, or on how to support a worker with diabetes having difficulties with work performance, can be troublesome without any help.

A second issue is that search problems can become quite substantial when the searcher is not familiar with the English terms for common OSH topics. Therefore, a number of authors developed a few tools to support an effective and efficient search especially to be used for a search in literature databases as presented in this book.

The first tool is a list of the most appropriate MeSH term or MeSH terms for the most common concepts and terms for occupational safety and health. When no appropriate MeSH terms were available, other terms are presented.

The second tool is a Glossary for OSH terms, in which the authors provide explanations, descriptions and definitions of many terms used in occupational safety and health. This glossary was developed in collaboration with the Ludwig Maximilian Universität in Munich, Germany (Katja Radon), the Instituto de Salud Pública de Chile (Manuel Parra) and the Coronel Institute in Amsterdam, the Netherlands (Frank van Dijk and Inge Varekamp).

Finally, we recommend exercising searches in PubMed. When preparing a study yourself, it is constructive to start with a review of the existing literature. This lesson has been recently developed for the Master of Science course “Maestría en Seguridad y Salud Ocupacional Internacional” for Latin American OSH professionals.

3.2 OSH terms for PubMed (MeSH terms)

This list of terms was developed during EBM/EBP courses at the AMC in Amsterdam. The principal author is Frank van Dijk

This list presents the most appropriate MeSH term(s), when available, for the most common occupational safety and health topics. We also added related MeSH terms that might be worth considering. Using a MeSH term has many advantages:

- You avoid getting a disappointing low number of results, as a consequence of spelling errors (is it asthma or asthama?) or of selecting a correct but less common term such as “work-related asthma” instead of the MeSH term “occupational asthma.”
- While using MeSH terms, automatically synonyms and similar terms will be added to the search by PubMed. A term such as “musculoskeletal diseases” (MeSH) also automatically gives you publications with “musculoskeletal disease” so a choice for plural and singular is no problem when using a MeSH term: both terms will be used in the actual search. Even when you type another term such as “musculoskeletal disorders” in the search window, PubMed will give you the results of “musculoskeletal diseases” (MeSH) as well. Unfortunately, in a number of cases the search term will not automatically be connected with the most appropriate MeSH term.
- Publications that have the subject mentioned in the paper, but where the subject is not prominent, will not be presented in your search outcomes, saving you time.

In this list we offer MeSH terms but no descriptions or definitions. A number of these can be found in the glossary (chapter III). Why to also use non-MeSH terms is explained in *PubMed/MEDLINE* (chapter II) and in *PubMed in Ten Steps* (chapter III).

PubMed / Medline MeSH and other terms for OSH	PubMed / Medline Related MeSH terms for OSH
absenteeism [Mesh]; sick leave [Mesh]; sickness absence; return to work	
accident prevention [Mesh]	
accidents, occupational [Mesh]	
acquired immunodeficiency syndrome [Mesh]	
activities of daily living [Mesh]	
adverse effects [Mesh subheading]	
aggression [Mesh]	
agriculture [Mesh]	agricultural workers' diseases [Mesh]
aids; acquired immunodeficiency syndrome [Mesh]	
air pollutants, occupational [Mesh]	air pollutants [Mesh]
air pollution, indoor [Mesh]	air pollution [Mesh]
aircraft [Mesh]	
alcoholism [Mesh]	
allergens [Mesh]	
allied health personnel [Mesh]	
antineoplastic agents [Mesh]	
antineoplastic agents [Mesh]	antineoplastic agents (pharmacological action) [Mesh]
asbestos [Mesh]	
asbestosis [Mesh]	
asthma [Mesh]	occupational asthma [Mesh]
attitude of health personnel [Mesh]	
attitude to health [Mesh]	
bacterial infections [Mesh]	
benchmarking [Mesh]	
benzene [Mesh]	
biologic monitoring	environmental monitoring [Mesh]
biological factors [Mesh]	
blood-borne pathogens [Mesh]	
burnout, professional [Mesh]	

cadmium [Mesh]	cadmium chloride [Mesh]; cadmium poisoning [Mesh]
capacity	
carcinogens [Mesh]	
cardiovascular diseases [Mesh]	
career mobility [Mesh]	
carpal tunnel syndrome [Mesh]	
chemical hazards	
chemical industry [Mesh]	
child labor	employment [Mesh]
chromium [Mesh]	
chromosomal abnormality	chromosome disorders [Mesh]; chromosome aberrations [Mesh]
chromosome aberrations [Mesh]	chromosome disorders [Mesh]
chronic disease [Mesh]; non communicable diseases	
circadian rhythm [Mesh]	
clinical competence [Mesh]	
clinical nurses	nursing, supervisory [Mesh]
clinical trials; clinical trials as topic [Mesh]	controlled clinical trials as topic [Mesh]; randomized controlled trials as topic [Mesh]
cohort studies [Mesh]	
communicable diseases [Mesh]	communicable diseases, emerging [Mesh]
community health nursing [Mesh]	community health workers [Mesh]
community health services [Mesh]	
confined spaces [Mesh]	
construction materials [Mesh]	
contact tracing [Mesh]	
convalescence [Mesh]	
cost of illness [Mesh]	
cumulative trauma disorders [Mesh]	
danger	safety [Mesh]
data collection [Mesh]	
dermatitis, allergic contact [Mesh]	dermatitis, occupational [Mesh]
dermatitis, contact [Mesh]	allergic contact dermatitis [Mesh]; irritant dermatitis [Mesh]; eczema [Mesh]; dermatitis [Mesh]

dermatitis, occupational [Mesh]	dermatitis, allergic contact [Mesh]; irritant dermatitis [Mesh]; contact dermatitis [Mesh]; atopic dermatitis [Mesh]; eczema [Mesh]; dermatitis [Mesh]
diagnosis [Mesh]	
diagnostic services [Mesh]	
diagnostic techniques and procedures [Mesh]	
disability evaluation [Mesh]	work capacity evaluation [Mesh]
disability evaluation [Mesh]	
disability; incapacity	disabled persons [Mesh]
disability; incapacity; handicap	disabled persons [Mesh]
disabled persons [Mesh]	mentally disabled persons [Mesh]; mental retardation [Mesh]
disease outbreaks [Mesh]	
disease progression [Mesh]	
disease susceptibility [Mesh]	
disease transmission, infectious [Mesh]	infectious disease transmission, patient-to-professional [Mesh]; infectious disease transmission, professional-to-patient [Mesh]; infections disease transmission, vertical [Mesh]
disorders of environmental origin [Mesh]	
DNA damage [Mesh]	
dust [Mesh]	
ear protective devices [Mesh]	
early diagnosis [Mesh]	
early intervention	early intervention (education) [Mesh]
education, medical [Mesh]	education, medical undergraduate [Mesh]; education, medical graduate [Mesh]
electromagnetic fields [Mesh]	
employee performance appraisal [Mesh]	
employee; worker	

employment [Mesh]	
employment [Mesh]; work [Mesh]	
employment, supported [Mesh]; supported employment	
environment [Mesh]	social environment [Mesh]
environmental exposure [Mesh]	
environmental health [Mesh]	
environmental monitoring [Mesh]	
environmental pollutants [Mesh]	environmental pollutants (pharmacological action) [Mesh]; air pollutants [Mesh]
environmental pollution [Mesh]	tobacco smoke pollution [Mesh]
epidemiologic measurements [Mesh]	
epidemiologic methods [Mesh]	
epidemiologic studies [Mesh]	
epidemiology [Mesh]	
ergonomic hazards; ergonomic risks; ergonomic risk factors	
ethics committees [Mesh]	
evaluation studies [Mesh]	
exercise therapy [Mesh]	
exercise tolerance [Mesh]	
experimental study	
fatigue [Mesh]	
fatigue syndrome, chronic [Mesh]	
formaldehyde [Mesh]	
fume	
functional capacity evaluation	work capacity evaluation [Mesh]
genetic predisposition to disease [Mesh]	
guidelines; guideline (publication type) [Mesh]	guidelines as topic [Mesh]
hand-arm vibration syndrome [Mesh]	
hazardous substances [Mesh]	poisoning [Mesh]; air pollutants, occupational [Mesh]
health [Mesh]	
health behavior [Mesh]	

health care access	health services accessibility [Mesh]
health care evaluation; health care evaluation mechanisms [Mesh]	quality assurance, health care [Mesh]
health education [Mesh]	
health examinations for workers; health examinations for employees; workers' health surveillance	work capacity evaluation [Mesh]; mass screening [Mesh]
health personnel [Mesh]; health workers; health care workers	
health policy [Mesh]	
health promotion [Mesh]	
health questionnaires; health surveys [Mesh]	
health services [Mesh]; health care providers	
health services [Mesh]; health care	
health status [Mesh]	health status indicators [Mesh]
hearing loss, noise-induced [Mesh]	noise [Mesh]; tinnitus [Mesh]; noise, transportation [Mesh]; noise, occupational [Mesh]
hepatitis B [Mesh]	
hepatitis C [Mesh]	
HIV infections [Mesh]	
home care services [Mesh]	home care services, hospital based [Mesh]
hospitals [Mesh]	
human engineering [Mesh]	
hydrocarbons [Mesh]	
hypersensitivity [Mesh]	hypersensitivity, immediate [Mesh]; hypersensitivity, delayed [Mesh]
hypertension [Mesh]	
impacts on health	
industrial hygiene; occupational hygiene	occupational health [Mesh]
industrial safety	safety [Mesh]; safety management [Mesh]

industry [Mesh]	
infection control [Mesh]	
infectious disease transmission, patient-to-professional [Mesh]	
inhalation exposure [Mesh]	
insecticides [Mesh]	
inservice training [Mesh]	
insurance [Mesh]	
insurance benefits [Mesh]	insurance [Mesh]
Insurance claim review [Mesh]	insurance [Mesh]
Insurance coverage [Mesh]	insurance [Mesh]
insurance, disability [Mesh]	
interprofessional relations [Mesh]	
job profile	
job satisfaction [Mesh]	
labor legislation	
labor market	
latex hypersensitivity [Mesh]	
lead [Mesh]	lead poisoning [Mesh]
lead poisoning [Mesh]	lead [Mesh]
legislation	
leukemia [Mesh]	
life style [Mesh]	
low back pain [Mesh]	
lung [Mesh]	lung injury [Mesh]; lung diseases [Mesh]
lung diseases [Mesh]	lung injury [Mesh]; lung [Mesh]; lung diseases, fungal [Mesh]; lung diseases, interstitial [Mesh]; lung diseases, parasitic [Mesh]; lung diseases, obstructive [Mesh]
lymphocytes [Mesh]	
mass screening [Mesh]	health examinations for workers; health examinations for employees; workers' health surveillance
mass screening [Mesh]; health examinations for workers;	

health examinations for employees; workers' health surveillance	
medical audit [Mesh]	
mental disorders [Mesh]	
mental fatigue [Mesh]	
mental health [Mesh]	
mentally demanding work	
mercury [Mesh]	mercury poisoning [Mesh]
mesothelioma [Mesh]	mesothelioma, cystic [Mesh]
metallurgy [Mesh]	
military personnel [Mesh]	
mineral fibers [Mesh]	
mining [Mesh]	coal mining [Mesh]
models, biological [Mesh]	
musculoskeletal diseases [Mesh]	
mutagens [Mesh]	mutagens (pharmacological action) [Mesh]; mutagenesis [Mesh]
needle stick injuries [Mesh]; sharps injuries	
neoplasms [Mesh]	
neoplasms, radiation-induced [Mesh]	
nervous exhaustion; nervous breakdown; adjustment disorders [Mesh]	burnout, professional [Mesh]
neurotoxicity syndromes [Mesh]	
noise at work; noise, occupational [Mesh]	noise [Mesh]; hearing loss, noise-induced [Mesh]; tinnitus [Mesh]; noise, transportation [Mesh]
nurse administrators [Mesh]	
nurse practitioners [Mesh]	
nurses [Mesh]	
nurse's role [Mesh]	
nursing [Mesh]	nursing [Mesh subheading]
nursing staff [Mesh]	nursing staff, hospital [Mesh]
occupational asthma [Mesh]	asthma [Mesh]
occupational diseases [Mesh]; work-related diseases;	

occupational injuries [Mesh]	
occupational exposure [Mesh]	
occupational groups [Mesh]	
occupational hazard(s); occupational risk(s)	safety [Mesh]; safety management [Mesh]; risk management [Mesh]; risk factors [Mesh]
occupational health [Mesh]	
occupational health nurse	occupational health nursing [Mesh]
occupational health nursing [Mesh]	
occupational health physicians [Mesh]; occupational physicians	
occupational health services [Mesh]	
occupational medicine [Mesh]	
occupational psychology	
occupational therapy [Mesh]	
occupational toxicology	toxicology [Mesh]
occupations [Mesh]	
operating rooms [Mesh]	
pain [Mesh]	pain measurement [Mesh]
painting	paint [Mesh]
patient care team [Mesh]	
patient education	patient education as topic [Mesh]; patient education handout (publication type) [Mesh]
patient satisfaction [Mesh]	
personal protective devices	protective devices [Mesh]
personnel downsizing [Mesh]	
personnel management [Mesh]	
personnel selection [Mesh]	
personnel turnover [Mesh]	
personnel, hospital [Mesh]	
pesticides [Mesh]	pesticides (pharmacological action) [Mesh]
physical demanding work	
physical demands	
physical examination [Mesh]	
physical fitness [Mesh]	
physical hazards	

physical therapy	physical therapy modalities [Mesh]; physical therapy specialty [Mesh]
physicians [Mesh]; doctors	
pleural neoplasms [Mesh]	
pneumoconiosis [Mesh]	
poisoning [Mesh]	poisoning [Mesh subheading]
polycyclic aromatic hydrocarbons (PAH); polycyclic hydrocarbons, aromatic [Mesh]	
polymorphism, genetic [Mesh]	
population characteristics [Mesh]	
power plants [Mesh]	nuclear power plants [Mesh]
practice guidelines; practice guidelines (publication type) [Mesh]	guidelines as topic [Mesh]
pregnancy outcome [Mesh]	
prevention measures	prevention and control [Mesh subheading]
preventive health services [Mesh]	
primary health care [Mesh]	physicians; primary care [Mesh]; primary care nursing [Mesh]
primary prevention [Mesh]	
probability [Mesh]	
professional autonomy [Mesh]	
professional corporations [Mesh]; professional associations	
professional practice [Mesh]	
prognosis [Mesh]	
program evaluation [Mesh]	evaluation studies as topic [Mesh]
protective clothing [Mesh]	
protective devices [Mesh]	ear protective devices [Mesh]; head protective devices [Mesh]; eye protective devices [Mesh]; masks [Mesh]; mouth protectors [Mesh]; protective clothing [Mesh], gloves [Mesh], respiratory protective devices [Mesh]; seat belts [Mesh]; surgical gloves [Mesh]

psychological adaptation; adaptation, psychological [Mesh]	
psychosocial factors	psychology [Mesh]
public health [Mesh]	
public health practice [Mesh]	
quality assurance	quality assurance, health care [Mesh]
quality of health care [Mesh]	quality assurance, health care [Mesh]
quality of life [Mesh]	
quality-adjusted life years [Mesh]	
questionnaires [Mesh]	
radiation [Mesh]	radiation injuries [Mesh]
radiation dosage [Mesh]	
radiation injuries [Mesh]	
radiation monitoring [Mesh]	
radiation protection [Mesh]	
radioactive hazard release [Mesh]	
radiometry [Mesh]	
radon [Mesh]	radon daughters [Mesh]
randomized controlled trial [Mesh]; randomized controlled trials as topic [Mesh]	
recovery of function [Mesh]	
reference standards [Mesh]	
referral and consultation [Mesh]	
rehabilitation, vocational [Mesh]	
rehabilitation, vocational [Mesh]; rehabilitation [Mesh]	
release of dangerous radioactivity	radioactivity [Mesh]
report	research report [Mesh]; technical report (publication type) [Mesh]
respiratory protective devices [Mesh]	
respiratory tract diseases [Mesh]	
retirement [Mesh]	pensions [Mesh]
return to work	rehabilitation, vocational [Mesh]
risk [Mesh]	
risk assessment [Mesh]	risk management [Mesh]
risk factors [Mesh]	
risk map	
risk measurement	health status indicators [Mesh]

safety [Mesh]; security	safety management [Mesh]; security measures [Mesh]
secondary prevention [Mesh]	
security management [Mesh]; safety management [Mesh]	
security measures [Mesh]	
self concept [Mesh]	
self efficacy [Mesh]	
self-assessment (psychology); self-assessment [Mesh]	
sensitivity	sensitivity and specificity [Mesh] ;
sensitivity and specificity [Mesh]	
severity of illness index [Mesh]	
sheltered workshops [Mesh]	
shiftwork	sleep disorders, circadian rhythm [Mesh]
silicon dioxide [Mesh]	
silicosis [Mesh]	
sleep disorders [Mesh]	sleep disorders, circadian rhythm [Mesh]
social responsibility [Mesh]	
social security [Mesh]	
social work [Mesh]	social work, psychiatric [Mesh]
solvents [Mesh]	solvents (pharmacological action) [Mesh]
specificity	sensitivity and specificity [Mesh] ;
stress	stress, physiological [Mesh]; stress, psychological [Mesh]
stress, psychological [Mesh]	
substance-related disorders [Mesh]	
supported employment; employment, supported [Mesh]	
tertiary prevention [Mesh]	
therapy	therapy [Mesh subheading]
to smoke; smoking [Mesh]	
tobacco smoke pollution [Mesh]	
toluene [Mesh]	
toxicity	toxicity [Mesh subheading]
toxicology [Mesh]	
treatment failure [Mesh]	

treatment outcome [Mesh]	
unemployment [Mesh]	
uranium [Mesh]	
urinary bladder neoplasms [Mesh]	
vehicle emissions [Mesh]	
vibration [Mesh]	
violence [Mesh]	
virus diseases [Mesh]	
vocational guidance [Mesh]	vocational education [Mesh]
welding [Mesh]	
women, working [Mesh]	
work capacity evaluation [Mesh]	disability evaluation [Mesh]
work capacity evaluation [Mesh]; disability evaluation [Mesh]	
work disability; work incapacity	work capacity evaluation [Mesh]; professional impairments [Mesh] (for health care professionals)
work schedule tolerance [Mesh]	
workers' compensation [Mesh]	
working conditions; working environment	workplace [Mesh]
working environment surveillance; workplace inspection	
workload [Mesh]	
workplace [Mesh]	
workplace inspection; walk through survey	
work-related cancer; occupational cancer	
work-related incident	occupational injuries [Mesh]; accidents, occupational [Mesh]
wounds and injuries [Mesh]	

3.3 Glossary for Occupational Safety and Health

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Aim and process

This glossary has the aim to support professionals and non-professionals interested in Occupational Safety and Health (OSH) and in this way to support those who are involved in practice and research, and in the development of policy. This glossary, we hope, will supply the need, which we have noticed in the education and training of students and professionals in many countries.

For many terms we used an explanation or definition from an already existing source. In such cases we mentioned the original source name after the explanation between brackets: [source]. In other cases we felt the need to change the explanation slightly, or we added e.g. one sentence, without changing the original explanation substantially. In those cases we mentioned the original source name between brackets and added 'adapted' [source, adapted]. In the cases where we changed the explanation more substantially we did not mention the original source, as we had to take the full responsibility for the new explanation. In other cases we defined the terms fully ourselves.

The most elaborate glossary in OSH that we know and like to recommend is the ILO-CIS dictionary from 1993 with OSH terms in English, French, German, Russian and Spanish (see *International OSH organizations* in *Links*). However, we did not use this glossary for our list, as this 1993 ILO glossary offers translations but no descriptions or definitions.

Sources

The most frequently used sources are:

IAPA ¹ (inclusive 'adapted')	61
WHO ² (inclusive 'adapted')	19
ILO ³ (inclusive 'adapted')	22
No other source; or the original source(s) were changed substantially	17
Wikipedia	4
FIOH ⁴	3
Websites of international professional associations	3
<i>Total terms or phrases in the glossary</i>	129

Application of the glossary

This glossary can be useful for students in all disciplines connected with Occupational Safety and Health and for all professionals and experts in OSH. The glossary may also be useful as a source of reference in e.g. a website for workers and managers with the aim of disseminating knowledge on occupational safety and health.

Disclaimer

This information is developed with the utmost of care. Nevertheless, no guarantee can be made as to the correctness, suitability, fitness or sufficiency of any information contained in this material. Terms with two asterisks (**) before the term need careful consideration. It is needed to consider that the glossary represents only one interpretation of a specific term or concept, and that an interpretation is always bound to culture, time, the context, etc. We strive to select, develop and present those terms and

¹ *Glossary of Occupational Health & Safety Terms*. Toronto, Canada: Industrial Accident Prevention Association; revised May 2007

² *Occupational Health; A manual for primary health care workers*. Cairo, Egypt: WHO Regional Office for the Eastern Mediterranean: 2001. [WHO 2001]; *Healthy workplace Framework and Model: Background and supporting literature and practice* (Annex 2 Glossary of terms and phrases). Geneva, Switzerland: WHO; 2010. [WHO 2010]

³ *Technical and ethical guidelines for workers' health surveillance* (Occupational Safety and Health Series No. 72). Geneva, Switzerland: International Labor Office (ILO); 1998. Also published in French and in Spanish. [ILO 1998] See *Other documents* in *Links*; *Fundamental principles of occupational health and safety*. Benjamin O. Alli. ILO Geneva. First edition 2001 [ILO 2001]

⁴ *Guideline for Basic Occupational Health Services*. Helsinki, Finland: Finnish Institute of Occupational Health (FIOH); 3rd, revised edition, 2007. "Published as a response to the Joint ILO/WHO Committee on Occupational Health priority area for ILO/WHO/ICOH collaboration, with support of the FIOH." Author: Professor Jorma Rantanen. Editing: Suvi Lehtinen. See *Other documents* in *Links*. [FIOH]

interpretations that have a more common global significance and that are of practical value, but we do not pretend to cover each term completely and do not have the aim to present terms for legal purposes.

Please send your comments and suggestions to improve the glossary to Frank van Dijk:
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Glossary for Occupational Safety and Health

Accident

An unplanned event that results in harm to people, damage to property or loss to process. [IAPA 2007]

Acute effect

A change that occurs in the body within a relatively short time (minutes, hours, days) following exposure to a substance. [IAPA 2007]

Alma Ata Declaration

The Declaration of Alma-Ata was adopted at the International Conference on Primary Health Care (PHC), Almaty (formerly Alma-Ata), currently in Kazakhstan (6-12 September 1978). The declaration expressed the need for urgent action by all governments, all health and development workers, and the world community to protect and promote the health of all the people of the world. It is the first international declaration underlining the importance of primary health care. The primary health care approach has since then been accepted by member countries of the World Health Organization (WHO) as the key to achieving the goal of "Health for All." [Wikipedia, July 2011]

Area sampling

Collection and analysis of representative samples of air in general work areas in order to determine the concentrations of any contaminants that are present. [IAPA 2007]

Asphyxiant

A vapor or gas that can either reduce the oxygen content in the air or interfere with the body's ability to use oxygen. Exposure to an asphyxiant can result in unconsciousness or death due to being unable to breathe or by interruption of cell respiration. [IAPA 2007]

Audiometric testing

Tests that are conducted to determine a person's ability to hear. These tests may be used to establish an employee's baseline hearing, to identify any subsequent hearing loss, and to monitor the effectiveness of noise controls. [IAPA 2007]

Audit

A systematic and documented process for obtaining evidence from inspections, interviews, document reviews and evaluating it objectively to determine the extent to which relevant criteria are fulfilled. [WHO 2010]

Biological agent

Any living organism (for example viruses, bacteria or fungi) that affects the body, a part of the body, or any of its functions. The effects may be beneficial or harmful. [IAPA 2007 adapted]

Biological monitoring

Assessments in blood, urine, faeces, exhaled air, nails or hair of a chemical or its metabolite to determine whether a person has been or is being exposed to that chemical by looking for traces of the chemicals or biological indicators of chemical exposure.

BOHS

The Basic Occupational Health Services are an application of occupational health by means of primary health care principles for workers who are underserved. Many regions and economic sectors lack regular occupational health services. Basic Occupational Health Services (BOHS) is a starting point for these areas and economic sectors. [FIOH]

Carcinogen

A chemical, physical or biological agent that can cause cancer in humans or animals. [IAPA 2007]

Ceiling exposure limit

See *Threshold limit values*.

Chemical agent

A chemical substance that affects the body, a part of the body, or any of its functions. The effects may be beneficial or harmful. [IAPA 2007]

Chronic effect

A change that occurs in the body over a relatively long time (weeks, months, years) following repeated exposure or a single over-exposure to a substance. [IAPA 2007]

Cochrane Collaboration

An international, non-profit, independent organization established to ensure that current, accurate information about the effects of health care interventions is readily available worldwide, through the publication of Cochrane Reviews (systematic reviews of the literature). See also *Cochrane Work*. [WHO 2010]

Cochrane Work (Occupational Safety and Health Review Group)

It is one of more than 50 collaborative Review Groups within the Cochrane Collaboration. The group collects all the available research on the effects of specific protective measures, for as many occupational safety and health topics as possible. The results of these studies are combined in reports that are called systematic reviews. See also *Cochrane Collaboration*. [Website Cochrane Occupational Safety and Health Review Group, September 2011]

Compensation claim

A claim filed mostly in accordance with national legislation, insurance regulations or other regulations, or with a contract by or on behalf of an employee, who has suffered a disabling injury, illness, or death arising out of and in the course of work. [IAPA 2007 adapted]

Controls

Measures designed to eliminate or reduce hazards or hazardous exposures. Examples include: engineering controls, administrative controls and personal protective equipment. Hazards can be controlled at the source, along the path to the worker or at the worker. [IAPA 2007]

Convention, ILO

Legally-binding international treaties related to various issues related to work and workers. Once a Convention has been passed by ILO, Member States are required to submit it to their parliament for consideration for ratification. [WHO 2010]

Corrosive substance

A substance that will burn the skin or mucosa on contact. [IAPA 2007]

Cumulative trauma disorder

See *Repetitive strain injury*. [IAPA 2007]

Dermatitis

A general term for various types of inflammation of the skin. Symptoms of dermatitis may include: redness, itch, scaling, blisters and cracks in the skin. [IAPA 2007]

Disabling injury

An injury that prevents a person from coming to work or doing his/her usual job duties.

[IAPA 2007 adapted]

Embryotoxin

An agent that is harmful or poisonous to unborn children up to the end of the eighth week of development (the end of the tenth week of gestational age). See also *Teratogen*. [IAPA 2007]

Emergency plan

Detailed procedures for responding to an emergency, such as a fire or explosion, a chemical spill or an uncontrolled release of energy. An emergency plan is necessary to keep order and minimize the effects of the disaster. [IAPA 2007]

Engineering controls

A category of hazard control that uses physical/engineering methods to eliminate or minimize the hazard. Examples of engineering controls include: ventilation, isolation, elimination, enclosure, substitution and design of the workplace or equipment. [IAPA 2007]

Enterprise

A company, business, firm, institution or organization designed to provide goods and/or services to consumers. It may imply for-profit business, not-for-profit organizations, agencies or self-employed individuals. [WHO 2010 adapted]

Ergonomics

See *Occupational ergonomics*.

Ergonomic principles

A concept whereby the work to be carried out is organized and specified – and tools and equipment designed and used – in such a way as to be matched with the physical and mental characteristics and capacity of the worker. [ILO 2001]

Exposure records

The records kept by employees themselves, an employer, occupational physician or occupational health nurse of an employee's exposure to a hazardous material or a physical agent in the workplace. These records show the time, level and length of exposure for each substance or agent involved. [IAPA 2007 adapted]

Family - work interference

One type of work-family conflict; a form of role interference that occurs when family demands and responsibilities make it more difficult to fulfill work role responsibilities. See also Work-family interference. [WHO 2010]

Fatal occupational injury

Occupational accident or injury leading to the death of a worker.

General ventilation

See *Ventilation*.

Hazard

A physical or psychosocial condition, object or agent that has the potential to cause harm to a worker and/or to cause damage to property or environment. [WHO 2010 adapted]

Hazardous material

Any substance that may produce adverse health and/or safety effects to people or the environment. [IAPA 2007]

Health and safety committee

See *Joint health and safety committee*.

Health and safety program

A systematic combination of activities, procedures, and facilities designed to ensure and maintain a safe and healthy workplace. [IAPA 2007]

Health and safety representative

A health and safety representative is selected following mostly national legal prescriptions that are present in many countries. A health and safety representative has prescribed responsibilities and powers. See *Joint health and safety committee*.

****Health risk assessment** (the term **health risk appraisal** is regarded as a synonym)

A type of assessment tool that is usually based on clinical reports/measures (e.g. BMI, blood cholesterol) and/or self-reported information on health habits. In most cases, a health risk assessment requires a professional. The assessment usually results in individualized results and an aggregate report for the workplace. The term health risk assessment is sometimes used in Occupational Health in a different meaning to refer to an assessment of the health risks in a workplace through hazard and risk identification and exposure assessment. This assessment results in a feedback to the worker, and consequently the program offers the worker an intervention to promote health, sustain work functioning or prevent disease. See also *Risk assessment*. [WHO 2010 adapted]

Rantanen uses the term *occupational health risk assessment*, in which he includes the identification of occupational health hazards (as a result of surveillance) and the workers exposed to specific hazards. Then an analysis follows on how the hazard may affect the worker (ways of entry and type of exposure, threshold limit values, dosage/response relationships, adverse health effects that it may cause, etc.) followed by the determination of intensity (level) and magnitude (volume) of the risk. The identification of individuals and groups with special vulnerabilities is the next step, followed by an evaluation of available hazard prevention and control measures, and the formulating of conclusions and recommendations for the management and control of risks. Finally, the assessment of an individual worker's health risk is made by combining information from health surveillance and from health examinations.

[FIOH, adapted]

Hygiene practices

A broad term for personal health habits that may reduce or prevent the exposure of a worker to chemical or biological substances. Hygiene practices include e.g.: not smoking, not eating or drinking in

the work area, washing hands before breaks and meals, removing contaminated clothing before leaving work and keeping street clothes separate from contaminated work clothing. See *Industrial hygiene*, where another concept of the term hygiene is described as a science that deals with the anticipation, recognition, evaluation (measurement), and control of hazards in the physical work environment. Also known as *Occupational Hygiene*. [IAPA 2007]

International Commission on Occupational Health (ICOH)

The International Commission on Occupational Health is an international non-governmental professional society whose aims are to foster the scientific progress, knowledge and development of occupational health and safety in all its aspects. It was founded in 1906 in Milan as the Permanent Commission on Occupational Health. Today, ICOH is the world's leading international scientific society in the field of occupational health with a membership of 2,000 professionals from 93 countries. [ICOH website May 2015]

International Ergonomics Association (IEA)

The International Ergonomics Association (IEA) is the federation of ergonomics and human factors societies around the world. The main goals of the IEA are: to develop more effective communication and collaboration with federated societies; to advance the science and practice of ergonomics at an international level; and to enhance the contribution of the ergonomics discipline to global society. [IEA website July 2011]

International Labor Organization (ILO)

The International Labor Organization (ILO) is a United Nations agency that deals with matters relating to work and labor relations. The International Labor Organization has a tripartite governing structure, representing governments, employers, and workers. [Wikipedia October 2015]

International Labor Organization (ILO) convention

See *Convention, ILO*.

Incapacity for work

Inability to perform normal duties of work. [ILO 2001]

Incident

An unwanted event in which, depending on the circumstances, could have resulted in harm to a person or group, damage to property or loss to a process. [IAPA 2007 adapted]

Incident investigation

The process of systematically gathering and analyzing information about an incident. This is done for the purposes of identifying causes and making recommendations to prevent the incident from happening again. [IAPA 2007]

Industrial hygiene

A science that deals with the anticipation, recognition, evaluation (measurement), and control of hazards in the physical work environment. These hazards may cause sickness, harm to employee's health, discomfort, and inefficient performance on the job. Also known as *Occupational hygiene*. [IAPA 2007 adapted]

Informal economic sector

The non-regulated labor market, which usually involves workers with informal (unwritten) arrangements with an employer. In many countries entitlement for social benefits (such as sick or maternity leave, paid retirement, or access to health care), and applicability of legal rules (such as limits on work hours, minimum wage) require a formal job contract. [WHO 2010 adapted]

Infrastructure for occupational safety and health

OSH Infrastructure refers to both physical and non-physical facilities that support the delivery of specialized OSH services, care, information and advice. Examples are the body of rules and regulations governing OSH; government ministries or departments that are committed and equipped for occupational safety and health; Labor Inspection; providers of basic and specialized OSH care and related financial provisions; educational systems for workers, management and professionals; organizations that create OSH knowledge and develop OSH tools; knowledge dissemination facilities such as OSH websites, helpdesks, journals and congresses; national OSH institutes and associations for OSH professionals; etc. See *National system for occupational safety and health* for an ILO vision.

Ingestion

The intake of a substance in the body through the mouth.

Inhalation

Breathing in a substance.

International Occupational Hygiene Association (IOHA)

The International Occupational Hygiene Association was established to improve, promote and develop occupational hygiene worldwide through its member organizations, and to improve and maintain a safe and healthy working environment for all. From its creation in 1987, IOHA has grown to 26 member organizations, representing over 20,000 occupational hygienists worldwide. [IOHA website July 2011]

Irritant

A substance which, in sufficient quantities, can inflame or irritate the eyes, other mucosa, skin or respiratory system (lungs, etc.). Symptoms include pain and reddening. [IAPA 2007 adapted]

Job security

Security at work against unlawful dismissal, as well as against unsatisfactory work conditions and an unsatisfactory work environment. Sometimes also security against falling income due to sickness or unemployment is included. [ILO 2001]

Joint health and safety committee

In a number of countries there are so called 'joint health and safety committees' in workplaces with more than a defined number of workers. Members of the committee can be partly workers who do not exercise managerial functions, e.g. selected by the workers or, where there is one, the trade union, partly persons who exercise managerial functions or are OSH experts, appointed by management. The responsibilities and powers of joint committees can include: obtaining information on workplace hazards, identifying workplace hazards, and recommending how to make the workplace safer and healthier.

[IAPA 2007 adapted]

Knowledge infrastructure for occupational safety and health

All physical and non-physical facilities that support the creation of, access to and dissemination of reliable information (knowledge) on occupational safety and health to experts, workers and companies,

such as: the creation of knowledge by research; publication of results in journals, websites, reports and books; development of knowledge products such as reviews, guidelines, protocols, instruments, criteria documents and norms; storage in and access to (virtual, online) libraries or other repositories; education and training; knowledge transfer (dissemination) by congresses and meetings, by quality websites, and in print and by answering questions (e.g. helpdesks, online Q&A facilities).

The ultimate goal is to provide high-quality, accessible and understandable, relevant, evidence-based information and tools for workers and management/employers, so that they have access when and where they need it in order to make informed decisions about health and safety at work.

Labor inspectorate

A government authority with the task of advising and giving directions on issues concerning the protection of workers and the work environment, as well as checking that the protection is sufficient. [ILO 2001]

Material Safety Data Sheet (MSDS)

A form that contains detailed information about the possible health and safety hazards of a product and how to safely handle, use and store the product. In most countries, suppliers are required to provide MSDSs for all hazardous materials as a condition of sale. [IAPA 2007 adapted]. See also *Safety Data Sheets*.

Medical surveillance program

See *Occupational health surveillance (systems)*.

Monitoring of exposure

The systematic measurement of exposure to work related health hazards from, for instance, chemical substances, noise, vibration or radiation. There are two types of measurements that can be taken:

- **Biological monitoring**- based on assessments in biological media of the worker, such as in blood, urine, feces, exhaled air, nails or hair; the assessments are e.g. of a chemical or its metabolite to determine whether a person has been or is being exposed to that chemical, looking for traces of the chemical or biological indicators of chemical exposure.
- **Environmental monitoring** based on assessments in the working environment e.g. in the workplace air, at objects at the workplace or in fluids present at the workplace.

See also *Biological monitoring*.

Musculoskeletal disorders (MSD)

Musculoskeletal disorders are disorders of the muscles, joints, tendons, ligaments, bones and nerves. Most work-related MSDs develop over time and are caused or exacerbated by the work itself and/or by the working environment, especially by using force, repetition of movements, awkward posture, or vibration. Health problems range from discomfort, minor aches and pains to more serious medical conditions requiring time off from work and medical treatment. In more chronic cases the disorders could result in permanent disability and loss of employment.

National system for occupational safety and health

Refers to the infrastructure providing the main framework for implementing the national policy and national programs on occupational safety and health.

The national system for occupational safety and health shall include among others:

- (a) laws and regulations, collective agreements where appropriate
- (b) an authority or body responsible for occupational safety and health
- (c) mechanisms for ensuring compliance with laws and regulations e.g. inspection
- (d) arrangements to promote cooperation between management and workers (representatives)

The national system shall include where appropriate:

- (a) a national tripartite advisory body
- (b) information and advisory services on occupational safety and health
- (c) provision of occupational safety and health training
- (d) occupational health services
- (e) research on occupational safety and health
- (f) mechanisms for collection and analysis of data on occupational injuries and diseases
- (g) provisions for collaboration with insurance or social security schemes
- (h) support mechanisms for improvement of occupational safety and health conditions in micro-enterprises, in small and medium-sized enterprises and in the informal economy.

[ILO C187 Promotional framework for Occupational Safety and Health Convention 2006]

National program on occupational safety and health

A program that includes objectives to be achieved, priorities and means of action formulated to improve occupational safety and health. There must also be a means to assess progress. A national program shall promote the development of a national preventative safety and health culture; contribute to the

protection of workers by eliminating or minimizing work-related hazards and risks to prevent occupational injuries, diseases and deaths and promote overall safety and health in the workplace; be formulated on the basis of an analysis of the national situation; include objectives, targets and indicators of progress; be supported by other national programs and plans.

[Shortened from ILO C187 Promotional framework for Occupational Safety and Health Convention 2006]

Non-governmental organization (NGO)

A non-governmental organization is a legally constituted organization operating independently from any government and created by natural or legal persons. The term originated from the United Nations (UN), and is normally used to refer to organizations that are not part of a government and are not conventional for-profit business. The term is usually applied only to organizations that pursue some wider social aim that has political components, but are not overtly political organizations such as political parties.

[Wikipedia July 2011 adapted]

Noise

Sounds that can lead to so called noise-induced hearing loss, tinnitus, stress and other extra-auditory effects, or interfere with the ability to hear other sounds, to concentrate, to relax or to communicate.

[IAPA 2007 adapted]

Notification

Procedure specified in national laws and regulations that establishes the ways in which:

- The employer or self-employed person submits information concerning occupational accidents, commuting accidents, dangerous occurrences or incidents.
- The employer, the self-employed person, the insurance institution or others directly concerned submit information concerning a case of occupational disease.

[ILO 2001]

Occupational

Related to work.

Occupational accident

An accident related to work.

****Occupational disease (short version)**

A disease caused by work. This means that the disease is caused by physical, chemical, biological, ergonomic or psychosocial factors at work. In many countries there are official lists of occupational diseases, including lists of factors that may cause such diseases. ILO guides the countries by the ILO List of Occupational Diseases (revised in 2010). [FIOH adapted]. See also *Work-related disease*.

****Occupational disease (long version)**

Lesage distinguishes three categories of occupational diseases with respect to the strength of the causal relationship in the ILO Encyclopaedia of Occupational Health and Safety (1998):

Classic occupational diseases are characterized by a clear, often practically monocausal relation to a specific exposure, for example mesothelioma caused by asbestos, or asthma caused by a specific chemical substance like methylene diphenyl diisocyanate (MDI).

If the relation is less obvious, the disease is indicated as *work-related*. Most musculoskeletal diseases and mental health disorders are judged as belonging to this category. Most work-related diseases are considered as multicausal and include work as one of the factors that play a role in the aetiology. Following this line of reasoning, there is a recognizable relation between the working condition and the disease on the individual level (for example between repetitive movements and shoulder complaints), but it is often not clear whether the working conditions are the decisive factor in the development of the disease.

Finally, a third group of diseases is distinguished in which a relation between working conditions and health effects can be demonstrated only on *population level*. The incidence or prevalence of these diseases is higher in specific occupational groups, but it is, at a certain moment of time, difficult to substantiate the nature of the causal relation in, for example, biological terms. One reason may be the lack of specific signs to identify the disease as *work-related*. For example, cardiovascular diseases caused by shift work belong to this third category. [ILO 1998 adapted]. See also *Work-related disease*.

Occupational ergonomics

An applied science that studies the interaction between people and the work environment. It focuses on matching the job to the worker to ensure a healthy and productive worker. [IAPA 2007 adapted]

Occupational health (short version)

The development, promotion, and maintenance of workplace policies and programs that ensure the physical, mental, and social well-being of workers. These policies and programs strive to: prevent harmful health effects because of the work environment, protect workers from health hazards while on the job, place workers in work environments that are suitable to their physical and mental capacities and other characteristics, and address other factors that may affect workers' health and well-being. [IAPA 2007 adapted]

Occupational health (long version)

The common ILO and WHO definition of occupational health, revised in 1995, says that occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of workers in an occupational environment adapted to their physiological and psychological capabilities; and, to summarize, the adaptation of work to the workers and of each worker to his or her job. The main focus is on three different objectives: (i) the maintenance and promotion of workers' health and working capacity; (ii) the improvement of working environment and work to become conducive to safety and health; and (iii) development of work organizations and working cultures in a direction which supports health and safety at work and, in doing so, also promotes a positive social climate and smooth operation, and may enhance the productivity of the enterprises. The concept of working culture is intended in this context to mean a reflection of the essential value systems adopted by the enterprise concerned. Such a culture is reflected in practice in the managerial systems, personnel policy, principles for participation, training policies and quality management of the enterprise. [ILO 1998]

Occupational health care

Occupational health care refers to the care of the health of workers. It includes preventive health care, health promotion, in some places also curative health care, first aid and rehabilitation (where appropriate) as well as strategies for prompt recovery and return to work. [ILO 1998 adapted]

****Occupational health services**

Services entrusted with primarily preventive functions. Are responsible for advising the employer, the workers and their representatives in the undertaking on:

- (i) the requirements for establishing and maintaining a safe and healthy working environment which will facilitate optimal physical and mental health in relation to work;
- (ii) the adaptation of work to the capabilities of workers in the light of their state of physical and mental health.

[ILO C161 Occupational Health Services Convention, 1985]

Occupational health professionals

These are persons who have been certified through appropriate accreditations to practice a profession related to occupational safety and health or who provide occupational health services according to the provisions of relevant regulations. They may be occupational health physicians or nurses, occupational safety and health inspectors, occupational hygienists or psychologists, and other specialists involved in ergonomics, toxicology, accident prevention and improvement of the working environment, as well as in occupational safety and health research and knowledge transfer. Many others, in addition to occupational safety and health professionals, are involved in the protection and promotion of the health of workers, e.g. management, workers themselves and workers' representatives. [ILO 1998 adapted]

Occupational health risk assessment

See *Health risk assessment*.

Occupational health surveillance

Occupational health surveillance is the ongoing systematic collection, analysis, interpretation and dissemination of data for the purpose of prevention. Surveillance is essential to the planning, implementation and evaluation of occupational health programs and to the control of work-related ill health and injuries, as well as to the protection and promotion of workers' health. Occupational health surveillance includes workers' health surveillance and working environment surveillance. [ILO 1998]

Occupational health surveillance systems

Occupational health surveillance systems include a functional capacity for data collection, analysis and dissemination linked to occupational health programs. It refers to all activities at individual, group, enterprise, community, regional and country levels to detect and assess any significant departure from health caused by working conditions, and to monitor workers' general health. Occupational health surveillance programs record instances of occupational exposures or work-related illness, injury or

death and monitor trends in their occurrences across different types of economic activities, over time, and between geographical areas. [ILO 1998]

Occupational hygiene

See *Industrial hygiene*. [IAPA 2007]

Occupational injury

Any personal injury, disease or death resulting from an occupational accident. [ILO 2001]

Occupational safety

The maintenance of a work environment that is relatively free from actual or potential hazards that can injure employees. [IAPA 2007]

Occupational safety and health

The discipline dealing with the prevention of work-related injuries and diseases as well as the protection and promotion of health of workers. It aims at the improvement of working conditions and environment. Members of many different professions (e.g. engineers, physicians, hygienists, psychologists, nurses) contribute to "occupational safety, occupational health, occupational hygiene, well-being at work and improvement of the working environment." [ILO 1998 adapted]

Parts per million (PPM)

Parts of gas or vapor per million parts of air by volume at room temperature. For example, 1 cubic centimeter of gas in 1 million cubic centimeters of air has a concentration of 1 PPM. [IAPA 2007]

Personal data

Personal data is any information related to an identified or identifiable person. Minimum requirements for confidentiality should be established for health data. [ILO 1998]

Personal protective equipment (PPE)

Any device worn by a worker to protect against hazards or as a barrier between himself/herself and the hazardous agent. Some examples are: respirators, gloves, earplugs, hard hats, safety goggles and safety shoes. [IAPA 2007 adapted]

Physical agent

A source of energy (for example, noise, radiation, vibration, heat, cold) that affects the body, a part of the body, or any of its functions. The effects may be beneficial or harmful.

[IAPA 2007 adapted]

Physical work environment

The part of the workplace facility that can be detected by human senses or by physical, chemical, biological or ergonomic assessment including the structure, air, machines, furniture, products, chemicals, materials and processes that are present or that occur in the workplace, and which can affect the physical or mental safety, health and well-being of workers. If the workers perform their tasks outdoors or in a vehicle that location is their physical work environment. See also *Psychosocial work environment*. [WHO 2010 adapted]

Precarious employment

Employment terms that may reduce social security and stability for workers, defined by temporality, powerlessness, lack of benefits, lack of protection and low income. Flexible, contingent, non-standard temporary work contracts do not necessarily, but often provide an inferior economic status. [WHO 2010]

Presenteeism

Attending the job while being sick, physically or mentally, resulting in reduced productivity and reduced wellness.

Preventive maintenance

A system for preventing machinery and equipment failure through scheduled regular maintenance, knowledge of reliability of parts, maintenance of service records, scheduled replacement of parts, and maintenance of inventories of the least reliable parts and parts scheduled for replacement. [IAPA 2007]

Primary health care

Primary health care (PHC) is essential health care made universally accessible to individuals and families in the community by means acceptable to them, through their full participation and at a cost that the community and country can afford. It forms an integral part of the country's health care system, of which it is the nucleus, and of the overall socio-economic development of the community. Primary health

care can be delivered by PHC nurses, physicians or health professionals with a shorter medical training ("barefoot doctors", physician assistants). [WHO Alma Ata 1978]

Procedure

A step-by-step description of how to do a task, job, or activity properly. [IAPA 2007]

Psychosocial work environment

The content of work and work demands, the social relationships at work, the organization of work and the work culture, each of which can affect the mental and physical well-being of workers including management. All these work aspects are sometimes referred to as workplace stressors, which may have cognitive, emotional or motivational effects on workers. See also *Physical work environment*.

Radiation

The energy transmitted by waves through space or some medium. There are two types of radiation: ionizing (for example, X-Rays or radiation from a radioactive device), and non-ionizing radiation (for example, infra-red radiation, ultraviolet radiation). [IAPA 2007]

Reactivity

The capability of a substance to undergo a chemical reaction with the release of energy. Unwanted effects include: pressure build-up, temperature increase, and formation of harmful by-products. These effects may occur because of the reactivity of a substance to heat, an ignition source, or direct contact with other chemicals in use or in storage.

[IAPA 2007]

Repetitive strain injury

A problem with the muscles, tendons or nerves that develops over time due to overuse. Examples of repetitive strain injuries include: carpal tunnel syndrome and tendonitis. A similar term is *Cumulative trauma disorder*. [IAPA 2007]

Reproductive hazards

Any material that can affect the development of sperm and egg cells. This can lead to an inability to have children, birth defects and other harmful changes in childhood or later in life. [IAPA 2007 adapted]

Risk (related to work)

The likelihood of a harmful effect such as an accident or occupational disease occurring within a specified period or in specific circumstances such as during or after specified exposure. It may be expressed either as a frequency, such as the number of harmful effects in a certain time period, or as a probability, such as the probability of a harmful effect during or after exposure. [ILO 2001 adapted]

****Risk assessment** (related to work)

Risk assessment is the process of quantifying the frequency or probability of a harmful effect to individuals or populations (e.g. related to exposure or activities at work) and is one of the first steps in risk management.

See also *Health risk assessment* and *Risk management*. [Wikipedia adapted 2011]

Risk management (related to work)

All actions taken to achieve, maintain or improve work and working conditions so that harmful effects to individuals or populations related to exposure or activities at work will be prevented. See *Risk* and *Risk assessment*.

Route of entry

The method by which a contaminant can enter the body. There are four main routes of entry. Contaminants can be breathed in, swallowed, absorbed through the skin, or injected into the bloodstream. See *Ingestion and Inhalation*. [IAPA 2007]

Safety Data Sheets (SDS)

A Safety Data Sheet, previously called a Material Safety Data Sheet (MSDS), is a document that provides information on the properties of hazardous chemicals and how they affect health and safety in the workplace. The SDS should always be referred to when assessing risks in the workplace. An SDS includes information on

- the identity of the chemical,
- health and physicochemical hazards,
- safe handling and storage procedures,
- emergency procedures, and
- disposal considerations.

[European Chemicals Agency, ECHA, 2015]

Safety professional

A person whose basic job function and responsibility is to prevent accidents and other harmful exposures and the personal injury, disease or property damage that may ensue. [WHO 2001]

Sampling

The process of taking small representative quantities of a gas, liquid, or solid for the purpose of analysis. [IAPA 2007]

Sensitizer

It is a substance that has the potency to activate (sensitize) the adaptive immune system upon exposure. Once sensitization has taken place, repeated exposure to even very low quantities of the substance is enough to cause a marked response in humans or animals, not necessarily limited to the contact site. Skin sensitization (for example to a metal such as nickel) is the most common form of sensitization in the workplace. Respiratory sensitization to various chemicals (for example isocyanates) and biological agents (for example rodent allergens) is also known to occur. [IAPA 2007 adapted]

****Sentinel events**

Are designed to identify high-risk jobs and activities with regard to occupational health, as well as to provide pointers towards the etiology of diseases [ILO 2008].

PAHO OHS team adopted the following definition, borrowed from Mulan and Murthy (1991; PubMed PMID: 1882855): "An occupational sentinel health event is a disease, injury, disability or untimely death or hazardous exposure or event, or early manifestation including biological or psychological indicators, which is occupationally related and whose occurrence may provide the impetus for epidemiological or industrial hygiene studies, or serve as a warning signal that materials substitution, engineering control, personal protection, medical care, or a change in the work organization may be required." By this definition, an occupational sentinel health event may be a health outcome or an occupational exposure. [Choi et al, 2001; PubMed PMID:11227633]

Short-term exposure limit (STEL)

See *Threshold limit values*.

Skin notation

A notation sometimes used with Threshold Limit Value (TLV) or Time-Weighted Average Exposure Value (TWAEV) exposure data. It indicates that the substance may be absorbed by the skin, mucous membranes and eyes and thereby contribute to systemic effects. This additional exposure must be considered part of the total exposure to avoid exceeding the TLV or TWAEV for that substance. So air sampling alone is insufficient to quantify exposure accurately, and measures to prevent significant absorption by the skin may be required.

Solvent

A substance that dissolves other substances. Many solvents are flammable. [IAPA 2007]

Standard

A guideline, rule, principle, or model that is used as a means to compare, measure or judge performance, quality, quantity, etc. [IAPA 2007]

Static electricity

An electrical charge that cannot move. This charge will eventually develop enough energy to jump as a spark to a nearby grounded or less highly charged object. If sparks occur in an ignitable vapor or dust mixture, it can cause an explosion or fire. [IAPA 2007]

Stress at work

Subjective feelings and physiological responses that result from the psychosocial work environment and put an individual in a position of being unable to cope or respond appropriately to demands being made upon him or her. Physiological responses that characterize stress can also arise from the physical environment. See also *Psychosocial work environment*. [WHO 2010 adapted]

Stressor at work

A condition or circumstance in a workplace (or other setting) that elicits a stress response from workers. See also *Psychosocial work environment*. [WHO 2010]

Substitution

The replacement of toxic or hazardous materials, equipment or processes with those that are less harmful. [IAPA 2007]

Surveillance

Surveillance is the ongoing and systematic collection, analysis and interpretation of data and the appropriate dissemination of such data. [ILO 1998]

Surveillance of the working environment

Surveillance of the working environment is a generic term that includes the identification and evaluation of environmental factors that may affect workers' health. It covers assessments of sanitary and occupational hygiene conditions, factors in the organization of work which may pose risks to the health of workers, collective and personal protective equipment, exposure of workers to hazardous agents and control systems designed to eliminate and reduce them. From the standpoint of workers' health, the surveillance of the working environment may focus on, but not be limited to, ergonomics, accident and disease prevention, occupational hygiene in the workplace, work organization, and psychosocial factors in the workplace. [ILO 1998]

Surveillance of the workers' health

See *Workers' health surveillance*.

Systematic review

A literature review of a single issue or question that attempts to identify, select and synthesize all high-quality research evidence relevant to that question. Systematic reviews of, among others, high-quality randomized controlled trials are considered to be basic elements of evidence-based medicine. [WHO 2010 adapted]

Task

A set of related steps that make up a discrete part of a job. Every job is made up of a collection of tasks. For example, answering a phone or entering data into a computer are tasks of a secretary's job. [IAPA 2007]

Task analysis

A technique used to identify, evaluate, and control health and safety hazards linked to particular tasks. A task analysis systematically breaks tasks down into their basic components. This allows each step of the process to be thoroughly evaluated. Also known as *Job task analysis*. [IAPA 2007]

Teratogen

An agent that causes birth defects by harming the unborn child. See also *Embryotoxin*.

[IAPA 2007]

****Threshold Limit Values**

The airborne concentrations of a biological, chemical, or physical agent to which, it is believed nearly all workers could be exposed to without experiencing any harmful effects. With individual susceptibility or through aggravation of a pre-existing condition, a small percentage of workers may experience discomfort or will even develop an occupational or work-related disease from exposure at concentrations or levels below the threshold limit value.

TLV is a reserved term of the American Conference of Governmental Industrial Hygienists (ACGIH) and does certainly not represent a legal term. The term is, however, often used in occupational health as a more generic term for limit values. A number of specifications are important:

1. **TLV-TWA** (time weighted exposure limit) is presented as a time weighted average (TWA) exposure value, that is the time weighted average concentration or levels of a chemical or biological agent for an 8-hour day or a 40-hour week to which, it is believed, nearly all workers may be exposed, day after day, without experiencing harmful effects.
2. **TLV-STEL** (short-term exposure limit) presenting a short-term exposure value as the maximum airborne concentration of a chemical, biological or physical agent to which workers may be exposed provided that the exposure is for not more than 15 minutes and is not more often than four times in a work day.
3. **TLV-C** (ceiling exposure limit) presenting the maximum exposure to an airborne concentration of a chemical, biological or physical agent that should not be exceeded at any time.

Time weighted average (TWA)

See *Threshold limit values*.

Ventilation

The supplying and exhausting of air at the same time to an enclosed machine, room, or an entire building. There are two types of ventilation:

1. General or Dilution: The air contaminants are diluted by natural or mechanical air exchange in the plant or in the specific workplace. This method is not appropriate for highly toxic contaminants.

2. Local Exhaust: The contaminant is captured at its source and removed before dilution in the workplace air can occur, usually by the use of hoods, ducts or vents located near or directly over the source. This is the preferred method for work places, where toxic contaminants are released and there is the potential for worker exposure. The effectiveness of local exhaust ventilation is dependent on an appropriate design and an adequate use adapted to local conditions.

[IAPA 2007 adapted]

Vibration

Vibration is oscillatory motion that is alternately greater and less than some average value. It is defined by frequency and magnitude. Exposure to high levels of mechanical vibration at work can lead to hand-arm vibration syndrome or affect the whole body.

Volatility

The tendency or ability of a liquid to quickly vaporize into the air. Examples of volatile liquids include alcohol and gasoline. Liquids that are volatile must be carefully dispensed and stored. This includes paying special attention to temperature. [IAPA 2007]

Work Improvement in Neighborhood Development (WIND)

ILO program for Work Improvement in Neighborhood Development (WIND) is a model for improvement based on the idea of participatory action-oriented training. The six basic principles for WIND, WISE and WISH are: 1) Build on local practice, 2) Use learning-by-doing, 3) Encourage exchange of experience, 4) Link working conditions with other management goals, 5) Focus on achievements, 6) Promote workers' involvement. [WHO 2010 pg.71]

Work Improvement in Small Enterprises (WISE)

ILO program for Work Improvement in Small Enterprises (WISE) is a model for improvement based on the idea of participatory action-oriented training. See also *WIND*.

[WHO 2010 pg.71]

Work Improvement for Safe Home (WISH)

ILO program for Work Improvement for Safe Home (WISH) is a model for improvement based on the idea of participatory action-oriented training. See also *WIND*. [WHO 2010 pg.71]

Work-family interference

One form of work-family conflict; a type of role interference that occurs when work demands and responsibilities make it more difficult to fulfil family role responsibilities. See also *Family - work interference*. [WHO 2010]

Work practices

Procedures for carrying out specific tasks which, when followed, will ensure that a worker's exposure to hazardous situations, substances or physical agents is controlled by the manner in which the work is carried out. [IAPA 2007]

****Work-related disease (short version)**

A disease for which the work or working conditions constitute the principal causal factor, or a disease for which the occupational factor may be one of several causal agents, or a disease for which the occupational factor may trigger or worsen an already existing disease, or a disease for which the risk may be increased by work or work-determined lifestyles. See also *Occupational disease*. [FIOH adapted]

****Work-related disease (long version)**

For the category of work-related diseases, there is much more discussion regarding causal inference on the individual level in comparison with the classic occupational diseases, where there is ample evidence for the work-relatedness so that they can be attributed to work with confidence in individual patients. Criteria for the identification of work-related diseases on an individual basis for diagnostic purposes should preferably be based on evidence from epidemiological research. Examples are criteria developed for work-related upper-extremity musculoskeletal disorders and for work-related low-back pain. Lesage's third category (the relationship between work and health can be demonstrated only on population level, see *Occupational disease*) does not differ in essence from his second category *work-related diseases*, but the odds ratios or relative risks found in epidemiological studies are mostly lower. In several countries a relative risk of 2 (corresponding with an aetiological fraction of 50%) is maintained to distinguish diseases that can be recognized as (classical) occupational diseases and thus can be

included on the official national "Occupational Diseases" list, from diseases that are in general not predominantly occupational such as *work-related diseases*. See also *Occupational disease*. [ILO 1998 adapted]

Worker

A worker is a person who provides physical and/or mental labor and/or expertise to an employer (e.g. company) or other person. This includes the concept of "employee," which implies a formal employment contract, and also informal workers who provide labor and/or expertise outside of a formal contract relationship. It also includes those who perform unpaid work, either in terms of forced labor or domestic work, and those who are self-employed. [WHO 2010 adapted]

Workers' health surveillance

Workers' health surveillance is a generic term that covers procedures and investigations to assess workers' health in order to detect and identify (early) signs of abnormality. The main aim is the prevention of occupational and work-related diseases and injuries. The results of surveillance should be used to protect and promote the health of the individual, collective health at the workplace, and the health of the exposed working population. Health assessment procedures may include, but are not limited to, medical examinations, biological monitoring, radiological examinations, questionnaires or a review of health records. Preferably the starting point is a risk assessment at the workplace to identify a health hazard or risk. [ILO 1998 adapted]

Working environment surveillance

See *Surveillance of the working environment*.

Workplace

Any place where physical and/or mental labor occurs, whether paid or unpaid. This includes formal worksites, private homes, vehicles, or outdoor locations on public or private property. [WHO 2010]

Workplace design

The planning of workplace environments, structures and equipment so that the potential for injury and illness is reduced or eliminated. See also *Occupational ergonomics*. [IAPA 2007]

Workplace inspection

A regular and careful check of a workplace or part of a workplace in order to identify health and safety hazards and to recommend corrective action. Workplace factors that have the potential to cause injury or illness to employees include: equipment, materials, processes or work activities, and the environment. [IAPA 2007]

World Health Organization (WHO)

The primary role of WHO is to direct and coordinate international health within the United Nations' system. The main areas of work are: health systems, promoting health through the life-course, non-communicable diseases, communicable diseases, corporate services, and 'preparedness, surveillance and response'. WHO supports countries as they coordinate the efforts of multiple sectors of the government and partners, to attain their health objectives and supports their national health policies and strategies. [WHO website May 2016 adapted]

3.4 PubMed in Ten Steps

This module is developed by Frank van Dijk in 2014 for the “International Masters in Occupational Health” course, given by the LMU University in Munich, Germany collaborating with various Latin American universities and institutes. The aim is to train OSH experts in performing high-quality applied research.

This module is an instrument for docents and participants supporting blended learning. Therefore, to increase the effectiveness, we recommend using this learning material in face-to-face or online class meetings.

The module is designed for starters, but can also be utilized on intermediate level using text blocks and assignments.



Who should use the Starter and Intermediate level lesson in PubMed?

- When you are doing a systematic search for the first time in PubMed: follow the *Starter level lesson*
- When you are comfortable performing a systematic searching in PubMed: follow the *Intermediate level lesson*
- When you are interested in becoming an expert in systematic searching in PubMed: follow an *Advanced level lesson* or course.
- While working in PubMed, it is recommended that you use the tools provided to you in chapter III.

What knowledge & skills are needed before starting these lessons?

- Basic knowledge about PubMed, e.g. understanding the subchapter on PubMed in chapter II; practical experience with PubMed and with Boolean operators (AND, OR, NOT)
- Basic knowledge (you may use chapter I) about:
 - Evidence-based practice
 - Different types of questions:
 - a) General questions e.g. relations between work and health in general (not the focus of this course)
 - b) Specific questions on occupational safety and health (the focus of this course)
 - Different medical domains: diagnosis, prognosis, therapy/prevention (interventions), etiology, opinions of workers and patients, prevalence and incidence
 - Different study types: cross-sectional study, cohort study, case-control study, RCT, interrupted time series, qualitative study, (systematic) review
 - OSH knowledge infrastructure, including literature databases (giving access to articles and reviews), evidence-based guidelines, learning materials, quality websites/apps; knowledge about strong and weak points of elements of the infrastructure and the interrelationships; considerations about opportunities and challenges for OSH

Recommendations to study before starting this lesson

- ✓ E-course Evidence-Based Practice for OSH professionals (chapter I) or,
- ✓ WHO Protecting Workers' Health Series No. 7. A practical guide for the use of research information to improve the quality of occupational health practice (Verbeek/van Dijk, 2006) http://www.who.int/occupational_health/publications/pwh7/en/ (chapter I) and/or,
- ✓ Study chapter I of this book; read the introduction of chapter III and explore the glossary and the list of OSH MeSH terms in chapter III.

Starter and Intermediate level, list of competences

The 10 steps in this lesson are reflected in the list of competences acquired after taking the starter and intermediate level of this module.

The additional competences for the intermediate level are printed in bold.

The competencies are presented in terms of "the participant is able to..."

1. Make and use a MyNCBI account in PubMed
2. Making a PICO and use PICO for selecting search terms; **Select adequate search terms in more complicated examples**
3. Use MeSH terms for a search; **Also use text words; use Google (Scholar) and good abstracts to find better search terms; use existing search filters**
4. Combine terms in Advanced Search (PubMed), **Use brackets correctly**
5. Cope with too high number of hits (e.g. more than 1000 titles to screen); use filters for reviews, year of publication, language; **Use filters for abstract, humans**
6. Cope with too low number of hits (e.g. less than 10 or 50 relevant abstracts found); **Check references of full text articles; check 'Similar articles'; use better terms; consider using another literature database**
7. Save your searches and your collections
8. Study abstracts and select on relevance
9. Download or order full text articles; read and select the articles on relevance; **Read and select on quality, after quality appraisal (this competence includes only basic principles on how to evaluate quality)**
10. Use the Cochrane Library and Cochrane Work.

PubMed in ten steps

Elements for the intermediate level are presented in boxes.

1. Make and use your own MyNCBI account

Insert User name and Password (make a note!)

Every time you login, all your actions are stored automatically

You may store permanently:

- your searches
- your collections

2. How to develop a PICO for your main study question

For intervention and etiologic studies:

Patient or population

Intervention or exposure

Comparison [no intervention/exposure]

Outcome

Make a choice of terms

Terms of patient groups or a (worker) population

You may use terms for *specific occupations* (demolition workers) or for *specific sectors/branches of industry* (construction) or for *vulnerable groups* (elderly workers, child workers, women or men, migrants) or for *patient groups* (e.g. patients with diabetes).

Intervention or exposure terms e.g. exposure to hand-arm vibrations

Outcome = result = effect terms e.g. neurologic effects

Rarely *comparison terms* are used in a literature search

How to use PICO for a search

- Most searches use only two categories for searching, to avoid a too stringent selection
- Example for the question “Do sewage workers have a risk of getting an occupational disease?” Better: How large is the risk ...?
 - Use “sewage workers” or “sewage” for the *Population* term
 - Use “occupational diseases” as the *Outcome* term; or still much better the concrete name of an (assumed) occupational disease such as “hepatitis A” or “asthma”
- The search “sewage workers” AND “occupational diseases” gives about 40 interesting hits; the results show studies on histoplasmosis, cardiopulmonary diseases, endotoxin and hydrogen sulfide effects, effects on taste and smell perception, hepatitis A and E, Helicobacter pylori, lung cancer and others.

Intermediate level

Example problem for the following question: “How large is the risk for working children or child laborers to get in a work-related accident”?

- Use “child labor” as a ‘text word’ being a common term for the **Population**
- AND “occupational accidents” as the **Outcome**
 - If you do: “child labor” AND “occupational accidents” you will get about 30 hits, many are relevant

PM try also “child labour” as P term combined with occupational accidents (gives some new good hits)

PM try the MeSH term “child” as the P term, combined with AND “Accidents, Occupational”[Mesh], this strategy may result in new relevant publications, but generates more than 800 hits... How to cope?

3. How to use MeSH terms

When possible, always use MeSH terms (the MeSH database is located on the PubMed home page).

- The search in PubMed can be made using terms from the MeSH database. In Search Details you will see the abbreviation [Mesh] after the term. Or you may use terms that you simply type in, so called text words.
- The search in PubMed can be made with MeSH terms. This mostly improves the search considerably. MeSH terms are to be found in a separate database: the MeSH database.
- All articles are recorded by NLM experts, using a vocabulary that is called MeSH, Medical Subject Headings. This database contains all MeSH terms inclusive descriptions and one or more hierarchical trees of terms. Searching in this database has the purpose to identify the most appropriate MeSH term for the search. Mostly you select the most specific term in the tree of this descriptor for your search.
- To find the most appropriate MeSH term or MeSH terms choose the MeSH database on the homepage of PubMed, introduce the term in the search box, for example: “breast cancer” and click on *Go*.

How to use MeSH terms

- You may use the other parts of chapter III to find MeSH terms more easily:
 - inspect the *List of MeSH terms* in Occupational Health
- When no good MeSH term is available, just type the word (text word); this will be discussed in detail in the Intermediate level lesson
- Look in the **MeSH tree** of the chosen term for the best term. Chose in the beginning for a not too specific term. So, in the example of ‘low back pain’ you may decide to use the term ‘back pain’ being a less specific (more generic) term. But when you get many results it is better to use a more specific term.

All MeSH Categories

Diseases Category

Nervous System Diseases

Neurologic Manifestations

Pain

Back Pain

Low Back Pain

- Do a PubMed search *for every MeSH term separately* (only look at numbers of hits)
- Every search is now temporarily saved, to find in *Advanced search* and in *MyNCBI*

Intermediate level

How to use not-MeSH terms

- Use several similar terms to improve the search (semantic searching) Some may be MeSH terms, others will be just text words
- Use Google (Scholar) and good abstracts to find better terms
- Use search strings (filters) developed particularly for OSH, specified for
 - Population (How to search for workers with a specific disease or a chronic disease? How to search for workers in agriculture?)
 - Exposure (How to search for physical demanding work?)
 - Outcomes (How to search for mental health effects? How to search for sickness absence or work disability?)

Presumably in the future a new subchapter on search filters will be developed. See also the articles on 'Strategy and filters (search strings) for OSH searches' in *References*.

4. How to combine terms in Advanced Search

- Click on the PubMed *Advanced search* under the search window on the home page
- Use AND or OR

Intermediate level

Use or check the use of brackets () to separate parts; an example is to combine several exposure terms connected with OR between brackets, and after that combined with a population or outcome term

Exercise in good practice: sewage workers and hepatitis A

- We are interested in the risk for sewage workers to get hepatitis A
- Unfortunately we did not find a MeSH term for "sewage workers." Typing "sewage" in the MeSH database leads to "sewage" as a MeSH term. We use this term as plus minus indicating "sewage workers" (Population). We then click on *Add to search builder* and on *Search PubMed* and we find more than 20,000 hits
- We return to the PubMed home page (click on the *PubMed logo* in left upper corner) and we return again to the MeSH database
- Type "hepatitis A" in the MeSH database (you have about 20 alternatives on the screen), and place a tag before the term "Hepatitis A" as MeSH term. Click on *Add to search builder* and on *Search PubMed*, we find more than 17,000 hits
- Go to *Advanced* and combine both terms in the PubMed Advanced Search Builder, clicking on *Add* before each term; check if you see "AND" as connecting term before the second term; click on *Search*
- The search is done as "Sewage"[Mesh] AND "Hepatitis A"[Mesh], resulting in more than 85 hits, among these are relevant titles on sewage workers

Intermediate level

Use or check the use of brackets

Example: several exposure terms connected with OR between brackets

Subject: exposure to physical demanding work in nurses. There is no good MeSH term for 'physical demanding work.'

After screening good abstracts and Google, you decide combining the words: lifting, stooping, squatting, standing, reaching, posture, force and forced.

The search "Nurses"[Mesh] AND (lifting OR stooping OR squatting OR standing OR reaching OR posture OR force OR forced) is translated by PubMed automatically to (see *Search details*):

"Nurses" [Mesh] AND (("lifting" [MeSH Terms] OR "lifting" [All Fields]) OR stooping [All Fields] OR squatting [All Fields] OR standing [All Fields] OR reaching [All Fields] OR ("posture" [MeSH Terms] OR "posture" [All Fields]) OR force [All Fields] OR forced [All Fields])

Result: almost 900 hits

5. How to cope with a too high number of hits

Example: more than 1000 titles to screen. To reduce the number of hits, use filters (left column). Filters have the function to limit the numbers of hits by focusing.

You may decide to use e.g.:

- Only reviews
- Published the last five or ten years
- Language filters are present in "Show additional filters," such as: only articles in English, or Spanish, or Portuguese language

Intermediate level

You may also use:

- Only with abstract or Only humans
- Use filters (search strings): such as selecting only *etiological* studies; or selecting only *return to work* studies
 - use filters special developed for OSH (see articles on *Strategy and filters (search strings) for OSH searches* in *References*)
 - use the PubMed function *Clinical queries* in 'More Resources' in the screen of *Advanced Search* (is a part of more advanced PubMed courses). In *Clinical queries* too filters are used to refine the search.

6. How to cope with a too low number of hits

Starter level: less than 10 relevant abstracts found

Intermediate level: e.g. less than 50 relevant abstracts found

- You may have chosen a too specific term or the wrong term
 - E.g. using only "bakery"; our advice is to use "baker*", as the asterisk * gives results for baker, bakers, bakery.

Intermediate level

- use a string of relevant/similar terms, all connected with OR e.g. (baker* OR flour OR wheat OR (alpha amylase))
- Use good abstracts or Google to find better terms for your search!

- Use the OSH Glossary of ILO for translations of English technical terms in French, German, Spanish and Russian. To find this ILO glossary: type "glossary" in the ILO website search window, or use the direct link:
http://www.ilo.org/safework/info/publications/WCMS_113126/lang--en/index.htm
- You may use other parts of chapter III to find better MeSH terms or better text words:
 - inspect the *List of MeSH terms* for occupational safety and health
 - inspect the *Glossary of OSH terms*
- Use the MeSH tree to find a more generic term

Intermediate level

- Use a not-MeSH term, or type a MeSH term without [Mesh]: you will have more articles. Example type just *nurse* instead of "*nurses*" [Mesh]. Or "*asthma*" instead of "*asthma*" [Mesh]
- Consider the use of a more appropriate literature database (BVS/LILACS/SciELO for Latin American studies, PsycInfo for mental health)
- See also the example in step 7 for tips!

7. Save your Search, save your Collection

Save your search: after a good search click on "Create alert" (under the window with search terms). You may change the suggested name of the search if you want; click on "Save" and your search is saved in your MyNCBI

- You are asked in the screen if you want e-mail updates for this search; e.g. fill in "Monthly" and "Summary" and "max 20 items" and give the "sewage hepatitis" and you will receive free updates every month.
- Then, you receive the option to edit the search settings, or to return to your search, clicking on "PubMed" below.

Save your collection: first tag on all the good titles in the search, using your own inclusion criteria.

- Click "*Send to*" (how or low in the window): choose *collections* and select one of your existing collections or create a new collection with a new name. All selected titles are now in your collection.
- You can add new titles to this collection in PubMed repeating the procedure, sending a title /abstract to this collection.

Good practice, exercise on 'sewage workers and hepatitis'

Search ("Sewage"[Mesh] AND "Hepatitis A"[Mesh]) > 85 hits

As the first step you decide to explore as a first step to include in your collection:

1. only recent articles (last ten years) in English language using filters
2. only studies on "sewage workers", so excluding public health and environmental studies (selection by hand on title/abstract)
3. only etiologic studies (selection by hand on title/abstract)

Finally you find two appropriate studies and decide to save these in your new collection with the name 'sewage hepatitis A':

Montuori P, Negrone M, Cacace G, Triassi M. **Wastewater workers and Hepatitis A virus infection.** *Occup Med (Lond)*. 2009;59:506-8.

Divizia M, Cencioni B, Palombi L, Panà A. **Sewage workers: risk if acquiring enteric virus infections including hepatitis A.** *New Microbiol*. 2008;31:337-41.

Intermediate level

Too low numbers of articles on sewage workers' risk on hepatitis A, what to do

To find more articles, you decide e.g.

1. to extend the period to 20 years searching; you find > 10 new relevant articles
2. to try another search strategy, using appropriate new terms present in the two good abstracts: ("sewage workers" OR "wastewater workers" OR sewage OR wastewater) AND "Hepatitis A"[Mesh]; you find about 70 hits that have to be screened for relevant new titles
3. to look in *Similar articles* in PubMed, visible in the screen when you open an abstract. You will often find relevant new articles.
4. screen the literature lists of the appropriate articles found

8. Study the abstracts, and select the studies on relevance

Use exclusion criteria for the selection e.g. if you want only empirical studies you have to exclude non-empirical studies. You may also exclude studies that are far from your own context e.g. studies on work in countries with extreme poor workers' rights, or the opposite. The aim is to select now the appropriate abstracts that you want to download as full text articles.

9. Download or order full text articles, read and select on relevance; later select on quality

- Download the selected abstracts as full text articles
 - free articles, you can download immediately
 - If not free—order a copy using an academic or other library
 - If not possible to order a gratis copy, discuss other options with your colleagues or tutor

- Use exclusion criteria for the selection of the full text articles e.g.
 - Not-empirical studies may be excluded , or studies that are not presenting a literature review are excluded
 - studies in a context far from your context e.g. work in countries with extreme poor workers' rights, or the opposite
 - non-informative studies for your study or interest

Intermediate level

Select articles on quality

Add the quality appraisal step (critical reading) using study quality criteria while reading the *full text article* (EBM step 3 is named 'Critical Appraisal')

- Quality appraisal will be presented in this lesson only in a limited way; more information can be found in EBM text books and (in a short form) in the e-course on Evidence-Based Practice in OSH cited in chapter I.
- For each type of study, separate sets of quality criteria are developed and available e.g. one set for etiological studies, another set for intervention studies, for diagnostic studies, etc.
- For etiological studies the STROBE criteria are often used
- Examples of poor quality studies: studies with too low numbers of participants, using poor quality measurement instruments, having a large non-response, missing a control group, having a too short follow-up period, etc.

10. How to use Cochrane Library and Cochrane Work

Cochrane Library

In the Cochrane Library you can access abstracts of the systematic reviews via www.cochrane.org/evidence. With the language button (by default English) at the top of the page you can find translations in about 15 languages (mostly abstracts).

The complete systematic reviews are published in the Cochrane Library (www.cochranelibrary.com). The Cochrane Library includes the Cochrane database of complete texts of the systematic reviews in English. Ordinarily these reviews are accessible via the Virtual Health Library (VHL, BVS) see Chapter II. Recently, in the first half of 2016, this access to the complete texts of the systematic reviews has been blocked (see chapter II). We hope that the problems will be solved soon.

Under the button *Help* in the Cochrane Library itself (www.cochranelibrary.com) you find the option "*How to use the Cochrane Library*" where you can find various sources on how to use this database.

You may choose to search in all the indexes of the Cochrane Library or to limit the search to e.g. title, abstract and key terms. Type the key term in the search window and click on *Search*, e.g.: "breast cancer" (more than 120 Cochrane reviews) or better type the MeSH term "breast neoplasms" (more than 80 Cochrane reviews). In the window panel at the left many options are presented to limit the results of the search such as Cochrane reviews, other reviews, trials, etc. You will find more than 700 results under *Other reviews* for breast neoplasms, *and more than 9000 trials*.

Cochrane Work

Looking for reviews related to return to work for patients with breast cancer, you can use the website "Cochrane Work" of the previously named *Cochrane Occupational Health and Safety Review Group*, where all Cochrane reviews and protocols for the development of new Cochrane reviews are presented as organized by this group: <http://work.cochrane.org> (English). To date, there are more than 140 systematic reviews in the Cochrane Library on specific Occupational Health and Safety topics available. Translations of the abstracts are available in about 15 languages at www.cochrane.org/evidence.

To find evidence on how to promote return to work of patients with breast cancer use <http://work.cochrane.org>. Click on *Our evidence*, and next on "*Occupational health outcome*" and select as a logic choice "*Affecting the onset or course of occupational disability*". Under "*Measures to rehabilitate workers or facilitate disabled workers to stay at work or return to work*", you will find the

recent review *"Interventions to enhance return-to-work for cancer patients"* (25 September 2015). Key results are presented in the abstract:

"Results suggest that multidisciplinary interventions involving physical, psycho-educational and vocational components led to more cancer patients returning to work than when they received care as usual. Quality of life was similar."

The authors' conclusions are: "We found moderate quality evidence that multidisciplinary interventions enhance the return to work of patients with cancer compared with care as usual".

Links

1. International OSH organizations

<http://www.who.int/en/> (Arabic, Chinese, English, French, Russian, Spanish)

World Health Organization, WHO

www.who.int/occupational_health (English, Russian)

World Health Organization (WHO) Occupational Health, page showing the network of centers collaborating in Occupational Health of WHO

http://apps.who.int/iris/bitstream/10665/44307/1/9789241599313_eng.pdf?ua=1 (English)

WHO Healthy Workplaces: a model for action. For employers, workers, policy makers and practitioners.

<http://www.who.int/topics/en/> (Arabic, Chinese, English, French, Russian, Spanish)

World Health Organization Topics

http://www.who.int/topics/occupational_health/en/ (Arabic, Chinese, English, French, Russian, Spanish)

World Health Organization information on the topic Occupational Health

<http://www.paho.org/hq/index.php?lang=en> (English)

Pan-American Health Organization, PAHO

www.paho.org/saludocupacional (Spanish, English)

Pan American Health Organization (PAHO) Workers' Health

<http://www.issa.int/> (English, French, German, Russian, Chinese, Arabic)

International Social Security Association, ISSA

<http://www.icohweb.org/> (English)

International Commission on Occupational Health, ICOH

<http://work.cochrane.org/> (English)

Cochrane Work (former Cochrane Occupational Health and Safety Review Group).

<http://www.ilo.org/global/lang--en/index.htm> (English, French and Spanish)

International Labor Organization, ILO

http://www.ilo.org/safework/info/publications/WCMS_150323/lang--en/index.htm

(English, French, Spanish)

ILO list of Occupational Diseases (revised in 2010)

http://www.ilo.org/safework/info/publications/WCMS_113134/lang--en/index.htm

(English, French)

ILO International Cards on Chemical Safety

<http://www.ilo.org/dyn/cisdoc/cismain.home> (English, French, Spanish)

ILO database CISDOC

http://www.ilo.org/safework/info/publications/WCMS_113329/lang--en/index.htm

(English, French, Spanish)

ILO Encyclopedia of Occupational Health and Safety (2012)

http://www.ilo.org/safework/info/publications/WCMS_113126/lang--en/index.htm

(English, French, German, Russian and Spanish)

ILO Occupational Safety and Health Glossary. Numerous English OSH terms translated in French, German, Russian and Spanish (1993)

2. Latin America

<http://www.saltra.una.ac.cr/> (Spanish)

Program for Occupational Health and Safety for Latin America (SALTRA) (Central America)

<http://www.ispch.cl/saludocupacional> (Spanish)

Institute of Public Health, Department Occupational Health in Chile (Chile)

<http://www.isl.gob.cl/> (Spanish)

Page for the Institute of Safety at Work (Chile)

<http://www.fundacentro.gov.br> (Portuguese)

Fundacentro, Ministry for Work and Employment (Brazil)

<http://www.laseguridad.ws/> (Spanish)

Page for the Columbian Council for Safety (Colombia)

www.paho.org/saludocupacional (English and Spanish)

Page for the Pan-American Health Organization. Information relating to the health of workers

3. Europe

<https://osha.europa.eu/en> (English, more than 25 languages)

European Agency for Health and Safety at Work (EU)

<http://www.insht.es/> (Spanish)

National Institute for Safety and Hygiene at Work (INSHT) (Spain)

<http://www.ttl.fi/en/> (Finnish, Swedish, English)

Finnish Institute of Occupational Health (FIOH) (Finland)

<https://www.amc.nl/web/Research/Overview/Departments/Coronel-Institute-of-Occupational-Health/Coronel-Institute-of-Occupational-Health/Department.htm> (English)

Coronel Institute of Occupational Health, (AMC), Academic Medical Centre of the University of Amsterdam (the Netherlands)

<http://www.occupationaldiseases.nl/> (Dutch, English)

Netherlands Center for Occupational Diseases. Information about work-related and occupational diseases (the Netherlands)

<http://www.hse.gov.uk> (English)

Page for the Management of Health and Safety in the United Kingdom (UK)

<http://www.hsl.gov.uk/> (English)

Health and Safety Laboratory (UK)

http://www.baua.de/clin_137/de/Startseite.html (German, English)

The Federal Institute for Occupational Safety and Health (BAuA) (Germany)

<http://en.inrs.fr/> (French, English)

INRS, French Institute for occupational risk prevention (France)

http://www.imp.lodz.pl/home_en (Polish, English)

Nofer Institute of Occupational Medicine (Poland)

<http://www.niimt.ru/en/institute.html> (Russian, English)

Research Institute of Occupational Health, affiliated to the Russian Academy of Medical Sciences (Russia)

4. United States and Canada

<http://www.ccohs.ca/> (English, French)

Canadian Centre for Occupational Health and Safety (Canada)

<http://www.cdc.gov/niosh/> (English)

NIOSH, National Institute for Occupational Safety and Health (USA)

<https://www.osha.gov/index.html> (English, Spanish)

OSHA, Occupational Safety and Health Administration, Department of Labor (USA)

<http://www.atsdr.cdc.gov/> (English)

ATSDR, Agency for Toxic Substances and Disease Registry (USA)

<http://www.atsdr.cdc.gov/glossary.html> (English, Spanish)

ATSDR, Agency for Toxic Substances and Disease Registry; Glossary of terms (USA)

5. Africa

<http://www.nioh.ac.za/> (English)

National Institute for Occupational Health (NIOH) (South Africa)

http://www.publichealth.uct.ac.za/phfm_centre-environmental-and-occupational-health-research
(English)

Centre for Environmental and Occupational Health Research, School of Public Health and Family Medicine, University of Cape Town (South Africa)

<http://doeh.ukzn.ac.za> (English)

Department of Occupational and Environmental Health, University of KwaZulu-Natal, Durban (South Africa)

<http://www.ohsi.co.zm> (English)

Occupational Health and Safety Institute (Zambia)

6. Asia

<http://www.sph.nus.edu.sg/index.php> (English)

National University of Singapore, School of Public Health (Singapore)

http://www.uoeh-u.ac.jp/index_e/dept/kenkyusho_e.html (Japanese, English)

University of Occupational and Environmental Health, Institute of Industrial Ecological Sciences (Japan)

<http://www.jisha.or.jp/english/> (Japanese, English)

Japanese Industrial Safety and Health Association (JISHA) (Japan)

<http://www.nioh.org/> (English)

National Institute of Occupational Health (NIOH) (India)

<http://www.chinacdc.cn/en/> (Chinese, English)

National Institute of Occupational Health and Poison Control (part of CDC) (China)

<http://old.ui.ac.id/en/academic/page/academic-programs> (Bahasa, English)

Universitas Indonesia, Faculty of Public Health (Indonesia)

<http://www.niosh.com.my/v3i/index.php/en/home-en> (Malay, English)

National Institute of Occupational Safety and Health (NIOSH) (Malaysia)

7. Australia and New Zealand

<http://www.safeworkaustralia.gov.au/sites/SWA> (English)

Safe work Australia (Australia)

<http://www.business.govt.nz/worksafe/> (English)

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Epilogue

“Occupational Safety and Health online: How to find reliable information” has been written to support searching for evidence in scientific literature and other quality sources, and finding new perspectives on challenges and obstacles for occupational safety and health professionals, workers, managers and policy makers. The final aim is the prevention of occupational diseases and accidents at work, a better quality of functioning at work, good access to working life for all living with a medical condition and improvement of health and well-being of workers. These aims are at the same time of huge social and economic importance.

The serious consequences of unhealthy and unsafe conditions at work are two million men and women who die every year as a result of accidents and diseases related to work, many non-fatal accidents in the workplace and millions of new cases of occupational and work-related diseases. Furthermore, numerous workers in the world are employed informally in factories and businesses without any programme to prevent accidents, injuries or diseases.

This book contributes to the third goal of the WHO Global Plan for the health of workers 2008-2017: to promote access to high quality occupational health services and basic occupational health care.

We can now obtain a huge quantity of information through the Internet, but occupational safety and health professionals experience problems in finding good sources with reliable information.

In this book we give advice on how to find and use databases with high quality articles and reviews as quickly as possible. The same holds for finding other useful sources such as trustworthy websites, online lessons and courses, and evidence-based practice guidelines. Online information is available that can be used to prevent adverse effects of chemical, biological, physical, ergonomic and psychosocial risk factors at work.

In the initial chapters we give advice on how to manage searches for information. In the next chapters we describe a series of important sources to make them more accessible. Finally we present several tools for evidence-based OSH practice to make a search for evidence and new information. We must all take advantage of the opportunities offered by modern technology for information and communication and thus learn from each other. In this, much work still has to be done.

The WHO, the ILO, the ISSA and ICOH bring together interested parties to improve health and safety of workers in all countries and they promote collaboration across national borders. However, we need really more initiatives and well-funded large scale programming to make more progress using all the opportunities that new technologies offer us and using the social capital of all those people that want to improve working life. We need solutions for the lack of investments in the global OSH knowledge infrastructure.

On the other hand, we could see much progress in new international collaborations and in technical possibilities. And this book, the same as evidence, is far from complete. We are planning new chapters on Google Scholar and on high quality apps. We hope to be able to collaborate with many experts to improve this book and OSH practice.

It might be wise to keep in mind first the duty to deliver a high quality of care and services to workers and companies, and second the great pleasure in working as a creative, well-informed professional always looking for evidence, new information and new perspectives.

Frank van Dijk and Yohama Caraballo-Arias

Occupational Safety and Health online

How to find reliable information



Frank van Dijk



Yohama Caraballo-Arias

Occupational safety and health professionals are responsible for giving good, reliable advice that will contribute to the prevention of occupational risks and the promotion of health, safety and ability to work. From this ambition came the first version of this book, published in Spanish in 2011, "How to look for evidence in the sources of Internet? Occupational Health."

The third edition of the book, "**Occupational Safety and Health online: How to find reliable information**" is a tool for finding the best evidence possible in the ever expanding world of online research, education and information. In this book you will find various forms of advice and tutorials, helpful to both the most novice online explorer and the most advanced professional researcher.

This new updated edition, contains a collection of reliable databases and guides to search them, a glossary of occupational safety and health terms and a list of relevant search terms for PubMed and other databases. Often only one or two clicks are necessary to bring you to the newest articles, reviews, guidelines, qualified information, online lessons and courses.

The information accumulated in this book will save you a great deal of time and will help you to find most up-to-date, reliable information in the interdisciplinary world of occupational safety and health.

**"Not everything that is written is true...
and not all truth is written"**

Anonymous