

The Global Occupational Health Network

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GOHNET NEWSLETTER

PREVENTION OF OCCUPATIONAL CANCER

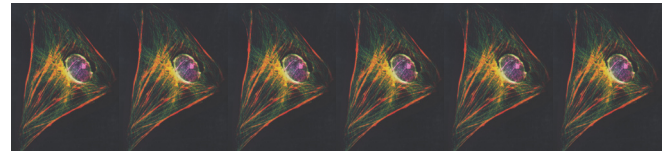
A variety of occupational risks is known to cause cancer. Every year more than seven million people die of cancer. Forty percent of these cases could be prevented which means that one in every ten cancer deaths is preventable through interventions targeted on exposure in the working environment.

The articles in this issue of GOHNET highlight some aspects of the problem and the prevention of occupational cancer. The articles draw your attention to the large number of workers exposed to specific carcinogens such as asbestos, UV radiation, tobacco smoke, as well as to those workers engaged in occupations and industries where there is an increased risk of cancer, for example, the chemical and rubber industry. The articles also deal with the serious problem of how the vital organs of workers are affected, such as the bladder, lung, skin and others.

We hope that you will enjoy your reading, and at the same time invite you to contribute to the next GOHNET Newsletter on the topic 'Elimination of Silicosis'.

References for articles are posted on the Occupational Health website at: www.who.int/occupational_health/publications/newsletter/en/index.html.

Evelyn Kortum, Editor
Kati Bozsoki, Co-Editor
World Health Organization
Occupational & Environmental Health Programme
Department of Protection of the Human
Environment
20 Avenue Appia; CH - 1211 Geneva 27
Fax: +41.22.791 13 83
ochmail@who.int
www.who.int/occupational_health



Occupational Cancer



*Ivan D. Ivanov, Occupational Health
Programme, WHO, Geneva, Switzerland
(ivanovi@who.int)*

*and
Kurt Straif, International Agency for
Research on Cancer, Lyon, France (IARC)
(straif@iarc.fr)*

Definition of the problem

Occupational cancer accounts for about 4 to 20% of the cancer cases. It affects certain groups of the society much more than others. Furthermore, occupational risks for cancer are taken involuntarily, as opposed to some major lifestyle risks. Occupational cancer is entirely preventable and interventions at the workplace can save millions of lives every year.

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Exposure to carcinogens at the workplace causes occupational cancer. At present, occupational exposure is the primary form of exposure to more than half of the chemicals, groups of chemicals, mixtures, and specific exposures in the human environment, which have been classified by IARC as carcinogenic for humans. In addition, some industries and occupations are recognized as presenting higher risk of occupational

cancer. There are synergistic effects between some occupational carcinogens and lifestyle factors, for example, occupational exposure to asbestos increases dramatically the likelihood of tobacco smokers to develop lung cancer. The main occupational causes and the proportion of cancer deaths (population attributable risk) determined by occupational factors are shown in table 1.

Table 1. Occupational causes of cancer

Cancer	Population attributable risk (%)	Examples of principal carcinogenic occupational exposures
Lung cancer	6.3 - 13.0* 24**	Asbestos; silica; nickel; indoor radon; diesel fumes; environmental tobacco smoke (ETS) at the workplace; production and refining of arsenic, beryllium, cadmium, aluminium and chromium; mining of uranium; copper smelting; iron and steel founding; vineyard workers; roofers; asphalt workers; painters
Bladder cancer	7-19* 10.3**	2-naphtylamine; benzidine; 4-aminobiphenyl; manufacturing of: magenta, auramine, p-chloro-o-toluidine, pigment chromate, and dyes; synthetic latex production; tyre curing, calendar operatives, reclaim, cable makers, gas-retort house workers
Mesothelioma	85-90*, 71.3**	Asbestos
Leukaemia	0.8-2.8*, 10.9**	External ionizing radiation, benzene, ethylene oxide, rubber industry, boot and shoe manufacturing and repair
Laryngeal cancer	1.5-20.0*	Sulfuric acid, mineral oils and asbestos, pickling operations
Skin cancer	1.5-6.0*	Intensive solar radiation; coal-tar pitches; coal tar; shale oils; arsenic; mineral oils; polycyclic-aromatic hydrocarbons (PAH); production of coke; vineyard workers; fishermen
Sinonasal and nasopharyngeal cancer	33-46*	Wood dust; nickel compounds; hexavalent chromium; boot and shoe manufacturing and repair, manufacturing of isopropanol using strong acid process; furniture and cabinet making; carpenters, formaldehyde
Kidney cancer	0.0-2.3 *	Coke production
Liver cancer	0.4-1.1 (only vinylchloride)*	Vinyl chloride; occupational infections with hepatitis B and C, health care workers

* Steenland et al. (2003) (6); **Nurminen and Karjalainen (2001) (5)

How to assess the extent of the problem

The estimates of the proportion of cancer deaths in the general population attributable to occupational exposures in developed countries are in the range of 4-20% (1, 2, 3, 4, 5, 6, 7). Lung cancer, mesothelioma, and bladder cancer are the most common types of occupational cancer. Occupational cancers concentrate among specific groups of the working population. For these people the risk of developing a particular form of cancer may be much higher than for the general population. For example, an estimate of 3% of total cancer deaths due to occupation in the general population may increase to 12% in the very broad category of male blue-collar workers and up to 80% among populations exposed to carcinogens (7).

The WHO "Global Burden of Disease" study carried out in 2002 showed that about 20-30% of the male and 5-20% of

the female working-age population (people aged 15-64 years) may have been exposed during their working lives to lung carcinogens, including asbestos, arsenic, beryllium, cadmium, chromium, diesel exhaust, nickel and silica. Worldwide, these occupational exposures account for about 10.3% of cancer of the lung, trachea, and bronchus. About 2.4% of leukaemia is attributable to occupational exposures worldwide. Occupational cancer results in 1,4 millions of disability-adjusted-life-years¹ (DALYs), primarily in countries from the Western Pacific and Europe, followed by South-East Asia and the Americas (8).

WHO has developed a special guide to facilitate countries to carry out national estimates of occupational cancer (see "Oc-

¹ For more information about DALYs see <http://www.who.int/healthinfo/bod-daly/en/index.html>

cupational Carcinogens: Assessing the Environmental Burden of Disease at National and Local level," WHO, Geneva, 2004). This guide provides practical advice for assessing the burden of disease from past and current occupational exposures to carcinogens, particularly about lung cancer, leukaemia, and mesothelioma.

What is known about strategies to address this problem

The prevention of occupational cancer is specific because it relies heavily on legislation, since the population at risk can be relatively easily identified. There is a hierarchy of preventive measures. Though occupational cancer is only a portion of the total cancer cases, its prevention is very important because among certain groups of workers occupational risk factors may determine the majority of cancer cases. Furthermore, occupational exposures are avoidable hazards to which individuals are involuntarily exposed. Giving priority to their prevention is also a matter of social justice. (7, 9).

At present, scrotal cancer caused by polycyclic aromatic hydrocarbons, nasal cancer caused by nickel or wood dust, liver cancer caused by vinyl chloride, leukaemia caused by exposure to benzene, and bladder cancer caused by aromatic amines, have practically disappeared from developed countries. Even mesothelioma and lung cancer caused by asbestos are decreasing in countries where the problem was identified early and appropriate measures were taken. The prevention of occupational cancer includes regulatory control of the use of known carcinogens at the workplace. This further encompasses systematic assessment of the carcinogenic risk of workplaces and work processes, substitution of carcinogens with less dangerous chemicals and technical measures to reduce human exposure.

Implementation step	Suggested interventions
Step 1 Core	<ul style="list-style-type: none"> - Develop regulatory and enforcement control of carcinogens - Avoid introducing known carcinogens to the workplaces
Step 2 Expanded	<ul style="list-style-type: none"> - Monitor and reduce occupational exposure to carcinogens - Organize health surveillance of exposed workers
Step 3 Desired	<ul style="list-style-type: none"> - Develop comprehensive workers health programmes based on primary prevention to improve working and living conditions - Substitute carcinogens with less dangerous substances

The assessment of occupational risk of cancer requires identification of likely workplace exposures to substances, mixtures, exposures, occupational and work processes classified by IARC as carcinogens² (10). The risk assessment includes estimation of the magnitude of exposure and its possible health consequences, the number of exposed persons, and the development of specific recommendations for prevention. In the case of industrial processes and occupations classified as carcinogenic, it is necessary to assess the particular risks of the individual undertakings.

Regulatory control of occupational carcinogens is based on occupational health and safety legislation and standards. Some countries have national regulations and decrees on the prevention and control of occupational cancer and on individual car-

² 1, 2a and 2b groups according to the IARC classification

SPOTLIGHT

Occupational Cancer Convention C139 of the International Labour Organization

The convention requires ratifying countries to:

- periodically determine the carcinogenic substances and agents to which occupational exposure shall be prohibited or made subject to authorization and control
- make every effort to replace carcinogenic substances and agents with non-carcinogenic and less harmful ones
- take measures to reduce to the minimum the number of workers exposed to carcinogenic substances, and the duration and degree of exposure and to establish an appropriate system of records
- ensure that workers who have been, are, or are likely to be exposed to carcinogens, are provided with information on dangers and relevant preventive measures
- organize medical surveillance of workers at risk during and after employment.

Up to present, the convention has been ratified by 35 countries.

cinogens, such as asbestos, benzene etc. The goals of regulatory control are to eliminate or restrict the use of carcinogens and the number of exposed workers.

Preventive measures for occupational cancer have an established hierarchy with regards to their effectiveness. The most effective strategy for control of occupational cancer is reducing the use of carcinogenic substances and processes at the workplace, in particular by replacing them in so far as is technically possible with less dangerous ones (11). If replacement of carcinogens is not possible, then, it is necessary to take measures to avoid or reduce the exposure of workers to carcinogenic hazards. This is usually achieved through capsulation and closed processes, in which carcinogens are not released into the working environment. A less effective approach is controlling the content of carcinogens in the working environment based on threshold limit values established by the competent national authority. As a last resort, if all other measures are not technically feasible or not sufficient, it is recommended to use personal protective equipment in carrying out works with increased carcinogenic risk. All working premises and processes with carcinogenic risk should be properly marked and the access of non-essential workers to such areas should be restricted. Those employed at workplaces with processes with carcinogenic risk should be informed about existing risks and trained on the proper use of health and safety protective measures for working with carcinogens.

Health surveillance of workers is the least effective strategy in terms of prevention of new cases of cancer. However, in the case of specific work processes and occupations with increased carcinogenic risk, such surveillance allows for early detection of cancer, increases the opportunities for cure, and prevents premature deaths. Bearing in mind that some occupational cancers may have a long latent period, up to 40 years and longer, medical surveillance of workers at risks should continue at regular intervals after the end of their employment. If a cancer is caused by the occupation, the patient may be entitled to

receive compensation from the social security or the insurance scheme for occupational diseases and work accidents. For this purpose, countries need to include occupational cancer in the formal list of occupational diseases and ensure that the physicians report all such cases (12). Physicians who take medical history of patients with cancer with likely occupational etiology should seek information about the details of their work and possible exposure to carcinogens. Some countries have established national registries of carcinogenic occupational exposures. Together with the national cancer registries, they provide information about most affected sectors and occupations and major causes of occupational cancer in the individual country that can be used for developing targeted preventive programmes.

How to adapt this knowledge into the reality of a country with specific focus on low and middle income countries

SPOTLIGHT

Asbestos Banned in Argentina

Every year doctors in Argentina discover between 55 and 97 new cases of asbestos-related mesothelioma. In 1997, the government gave priority to the elimination of asbestos in its National Plan for the Sound Management of Chemicals and established a Technical Task Force on Occupational Cancer. After five years of public hearings with the participation of government, workers, industry advocates, environmentalists, clinicians, scientists, and consumers, a consensus was reached that asbestos exposure represents unacceptable risk for both workers and the general population. Asbestos industry groups tried to delay the inclusion of chrysotile asbestos in the proposed list of banned chemicals. However, proponents of asbestos ban argued that Argentina should provide to its people a level of health protection comparable to developed countries. On January 1, 2003, Argentina banned the mining and import of all forms of asbestos.

(13) Rodriguez, 2004

Countries could strengthen their efforts to prevent occupational cancer by introducing legal measures for controlling import and domestic use of carcinogenic industrial and agricultural substances, preparations, technologies and work processes. However, in order to work properly, such regulatory measures require a functioning system for enforcement of occupational health and safety legislation and access of high-risk working populations to basic preventive health services at the workplace. Most developed countries have introduced already stringent measures for control of work activities with increased risk of cancer. Since the use of carcinogenic substances and technologies becomes more and more difficult in developed countries, it is very likely that they will be transferred to other countries where national legislation and its enforcement are weak or not existent. Therefore, national efforts for prevention of occupational cancer in countries with middle or low level of human development should aim to avoid additional risks of

cancer from importing carcinogenic substances, preparations, and technologies.

Such countries need to introduce legal measures to reduce carcinogenic risks at their domestic workplaces. Such regulations should stimulate the identification of carcinogenic exposures at work, the population at risks and the development of preventive measures. There are a number of low-cost solutions for replacing carcinogens with less dangerous processes.

The assessment of carcinogenic risks at the workplaces could be carried out based on the risk information contained in the labels of chemical substances and preparations and using the IARC list of carcinogenic technological processes, exposures, and occupations. The risk assessment should be followed by technical measures to eliminate carcinogens from the workplaces or if this is not feasible to reduce exposure and the number of exposed people. Training of workers at risk about measures for technical prevention and personal hygiene could reduce the risks of exposure to carcinogens. The health and safety professionals from preventive health services for working populations should be trained in proper communication of carcinogenic risks, the measures for their prevention and basic health surveillance.

SPOTLIGHT

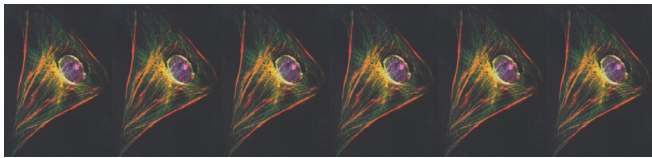
Occupational Aplastic Anaemia in China

In one Chinese shoemaking factory four cases of aplastic anaemia were detected among 211 workers over an eight-month period. The possible cause was exposure to benzene which was very high, up to several hundred times the international occupational exposure limit. A new solvent without benzene was introduced and no further case developed(13) Rodriguez, 2004

(5) Yin et al, 1987, citation in Pearce et al, 1994

There is also a need to raise the overall awareness of working people, employers, healthcare workers, health and safety professionals about occupational carcinogens, their recognition, and elimination and to encourage the reporting of cancer cases with suspected occupational etiology. The integration of the prevention of occupational cancer with the overall cancer control programmes would strengthen the capacity of the health system to respond to this challenge in a comprehensive and integrated way. It is also necessary to include specific measures for prevention of occupational cancer in the national programmes and action plans on occupational health and safety.

The references for this article can be accessed at www.who.int/occupational_health/publications/newsletter/en/index.html



Prevention of Occupational Cancer in Ukraine



Yuri Kundiyeu, Professor, Member of the Academy of Medical Sciences of Ukraine, Director (yik@nanu.kiev.ua)

Antonina Nahorna, Professor, Head, Department of Epidemiological Studies

Denis Varyvonchyk, Cand. Med. Sci., Senior Sci. Worker, Department of Epidemiological Studies (erzs70@i.com.ua)

*Institute for Occupational Health of the Academy of Medical Sciences, Ukraine
A WHO Collaborating Centre in Occupational Health*

The scope of the problem of occupational cancer in Ukraine

Studies on occupational cancer in Ukraine began in the early 1920s. In the Soviet Union, studies on the role of industrial carcinogens were published on a regular basis. These studies dealt with the high risk of exposure to occupational cancer of the workers employed in the metallurgy, chemical and oil-refining industry, coal processing, tire production, energy industry, processing of organic raw materials (coal, oil, gas), thermal refining industry (resins, coal-tars, light fractions of coal and oil refining, lubrication-cooling liquids, etc.), asbestos industry, engineering, agriculture, and others. Effective methods for prevention of occupational cancer of bladder, skin and lungs, and others were developed and widely applied at enterprises at that time.

After the independence of Ukraine in 1991, the autonomous Ukrainian state public health system faced the problem of implementing programmes for prevention and control of occupational diseases, including occupational cancer. The national list of carcinogenic substances, products, production processes, lifestyle, and environmental factors were approved in 1997 and subsequently reviewed and updated in 2006. Some occupational cancers of the skin, oral cavity, larynx, bronchi and lungs, pleura, liver and stomach, urinary bladder, bones, and blood were included in the list of occupational diseases in 2000. The Government guaranteed social protection and benefits for the workers exposed to carcinogenic hazards.

In the Ukraine, the lack of an early detection system and a unified system of registration of all cases of occupational cancer, leads to gaps in secondary prevention. These deficiencies hamper the conducting of epidemiological studies and the realization of primary prevention programmes for this pathology in Ukraine.

Morbidity of the population in occupational cancer

Occupational cancer in Ukraine is diagnosed in ten centers for occupational pathology (by medical examination) based on notifications from the sanitary and epidemiological services. These notifications consist of detailed reports on the working conditions, medical documentation, and occupational anamnesis.

From 1992 to 2005, 265 patients were diagnosed with occupational cancer (on average 7-26 new cases were discovered per year). This represents 0,004-0,16% of newly registered cancer cases. The majority of cases of occupational cancer (91,7%) occur among males. The most affected age group is 45-60 years. The length of employment in carcinogenic conditions ranges from 10 to 25 years.

The most common are the cases of cancer of the respiratory organs (67%), followed by cancer of the blood and haematopoietic organs (13%), and skin cancer (4,9%). Occupational cancer most frequently occurs among workers at enterprises in uranium mining (54,9%) and the processing industry (37,4%), particularly in chemical and ferrous metallurgy. The main causes of occupational cancer include combined action of dusts of silicon and radon dioxide and products of their breakdown (63,0%), aerosols of carcinogenic chemical substances (25,0%), and welding dusts (12,0%).

The increase in the number of the occupational cancers in Ukraine is due to unhealthy working conditions, violation of health and safety legal requirements, insufficient funding of preventive actions. In addition to this, the lack of promotion of preventive medical legislation through destruction of the system of medical and prophylactic care of workers leads to incomplete registration of occupational diseases.

In 73,6% of patients the cancer was detected at a later stage (III and IV) leading to a low survival rate (1-5 years). This is associated with decreasing access of patients to qualified medical cancer care. In most patients, the primary cancer was diagnosed when they visited a doctor on their own initiative with complaints and manifestation of morphological or functional changes. This draws attention to the significant lack of periodic medical examinations and health monitoring of workers exposed to carcinogenic substances. The problem is worsened by the lack of proper diagnostic equipment (cytological, computer, magnetic-resonance tomography, endoscope and ultra-sound facilities), as well as the impossibility to identify cancer markers. In Ukraine, the diagnosis "occupational cancer" is made mostly in scientific research institutes (88,6%). However, due to significant levels of poverty in the population, access of patients to this kind of medical care is very limited. Therefore, occupational cancers are often not detected in the first place.

International collaboration

The program for developing a system of epidemiological surveys and primary prevention of occupational cancer in Ukraine is being implemented by the National Academy of Sciences and the Academy of Medical Sciences of Ukraine within the framework of the collaboration with the WHO ("Epidemiology and prevention of occupational cancer in Ukraine"). The Programme will follow three stages:

I stage – developing an information system for data collection, epidemiological and medico-statistical analysis of the data on cancer morbidity at enterprises with high carcinogenic risk in Ukraine (2006-2007);

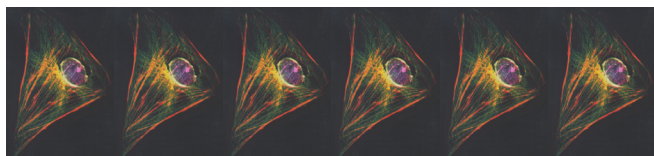
II stage – developing a system of primary and secondary prevention of cancer among workers exposed to carcinogens or engaged in processes with high carcinogenic risks (2008-2009);

III stage - implementation and monitoring of the developed systems at the governmental level (2009-2010).

This programme also aims to:

- Improve the system of hygienic standards and national registration of potential carcinogens, in line with the medical legislation of EU countries, and the recommendations of EC and WHO;
- Determine priority occupational carcinogens in regions of Ukraine and develop a system of hygienic supervision;
- Provide a scientific basis for restricting the use of carcinogenic and mutagenic substances,
- Build human capacities of occupational physicians and hygienists for early detection and primary prevention of occupational cancer;
- Improve the organization and quality of preliminary and periodical medical examinations of workers exposed to carcinogenic substances at enterprises, the control of production processes and professions aiming at earlier detection of pre-tumor and cancer diseases;
- Develop a system of recording and registration of cancer patients at all stages of medical care provision.

Further information on occupational cancer in Ukraine can be found at websites of the Ukrainian Institute for Occupational Health at <http://www.uiph.kiev.ua/ua>.



Protecting Workers from Ultraviolet Radiation



*Maila Hietanen, Task Group Leader, Finnish Institute of Occupational Health
A WHO Collaborating Centre in Occupational Health
maila.hietanen@ttl.fi*

Workers at various jobs are exposed to ultraviolet radiation (UVR) from the Sun and artificial sources, such as welding arcs and specialized light sources. Although clothing and eyewear normally protects indoor workers, the same level of protection is not generally achieved for outdoor workers. Outdoor workers are hence at increased risk of adverse consequences associated with UVR exposure of the eyes and skin. The magnitude of the risk for the skin depends greatly upon climatological factors and personal sensitivity to UVR. However, individual susceptibility does not exist for the eye, and people of all racial types are susceptible to cataract and other UVR related eye diseases.

Several methods of reducing personal exposure to solar UVR are available. Protective measures should be adequate but consistent with the type of work conducted and not impair the efficiency of the work or cause additional hazards. Trees can naturally provide shade, or canopies and semi-permanent structures, or constructed shade in areas where large numbers of workers may gather.

Because of the difficulty for an individual to estimate the relative UVR risk on a particular day, the global solar UV index (UVI) has been developed as a communication tool. Health authorities and job management can exploit the UVI to

communicate the level of ambient solar UVR and risk to the outdoor workers. Sunscreens are advised only to be used to protect those parts of the body that cannot easily be protected by clothing. Unlike clothing, it is difficult to see which parts of the body have been missed when sunscreens are applied.

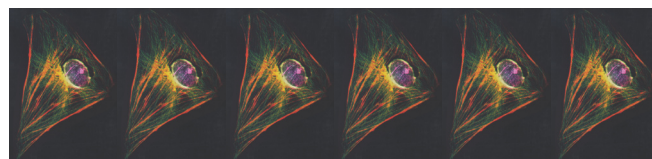
It is essential to provide easy-to-follow guidance to the worker on how to reduce UVR exposure effectively. To provide detailed practical guidance aimed at protecting workers from UVR, a Task Group of the International Commission on Non-Ionizing Radiation Protection (ICNIRP), contracted with WHO, has prepared a handbook which will be published later this year. The book includes information on:

- Occupational exposure to Solar UVR
- Occupational exposure to artificial sources of UVR
- Health risk assessments from human studies
- Occupational exposure limits and safety standards
- Engineering and administrative protective measures
- Health surveillance
- Training and awareness of workers

Please also refer to the WHO website on this topic: www.who.int/phe

Guidelines from the International Commission on Non-Ionizing Radiation Protection (ICNIRP UV) are available on-line: *Guidelines on Limits of Exposure to Ultraviolet Radiation of Wavelengths between 180 nm and 400 nm (Incoherent Optical Radiation)*. Health Physics 87(2): 171-186; 2004. www.icnirp.org

WHO Publication on UV Index available on-line: *World Health Organization (WHO), World Meteorological Organization (WMO), United Nations Environment Programme (UNEP), and the International Commission of Non-Ionizing Radiation Protection (ICNIRP) Joint Publication. Global Solar UV Index: A Practical Guide*. World Health Organization, Geneva, 2002. www.who.int/uv/publications/globalindex/en/index.html



Second Hand Smoke: an Occupational Hazard

*Ivan Ivanov, Occupational and Environmental Health, Department of Public Health and Environment, WHO, Geneva
ivanovi@who.int*

An occupational hazard is a working condition that can lead to accidents, illness or death. There are a number of medical, hygienic, and legal arguments for considering Second Hand Smoke (SHS) at the workplace as an occupational hazard.

The medical argument

Documented health effects of exposure to SHS at the workplace include cardiovascular diseases (hypertension and coronary heart disease), cancer, asthma, and low birth weight. US studies have shown that 4 to 7 per cent of the deaths from

coronary heart disease are caused by workplace exposure of non-smokers to SHS. Furthermore, SHS is recognized by the International Agency for Research on Cancer (IARC) as a human carcinogen.

Epidemiological evidence suggests that workplace exposure to SHS increases the risks of cancer by almost 20%. There is some evidence that exposure to SHS may lead to exacerbation of already existing asthma. Also, some cases of low-birth weight have been attributed to workplace exposure to SHS.

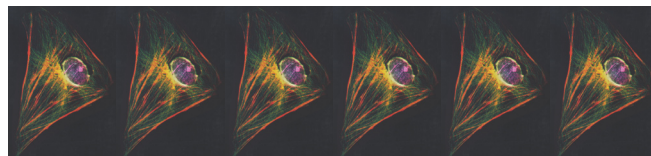
The hygienic argument

The exposure to SHS can be assessed using direct methods measuring markers of SHS in the air of the workplace or indirect methods relying on mathematical modelling of different exposure scenarios. The pattern of SHS exposure at the workplace is different from home exposure because it depends on the number of smokers at the work premise, its size, the ventilation, smoking restrictions and other factors of diversity. There are effective prevention methods for exposure to SHS at the workplace. The most effective method is the elimination of the risk at its source, which means cessation of tobacco smoking or introducing a total ban on smoking at the workplace (smoke-free workplaces). The engineering controls, for example creating special smoking lounges, ventilation, filters etc., are less effective. The organizational measures for reducing the exposure to SHS include workplace policies, programmes, and campaigns.

The legal argument

If SHS is considered an occupational hazard then its control should be based on the legislation for occupational health and safety in addition to the legislation issued under the WHO framework convention on tobacco control. Occupational health and safety legislation requires risk assessment of health and safety at the workplace, taking preventive measures, and information and participation of workers. Applying this legislation to SHS would require developing specific rules for control of this hazard, involving labour inspection in the enforcement of such rules, and mobilizing occupational health services for tobacco control at the workplace.

For these reasons, in July 2006, the UN Economic and Social Council adopted a special resolution recognizing second hand tobacco smoke at the workplace as an occupational hazard. This means that the specific legislation for occupational health and safety and the respective enforcement mechanisms should apply to SHS as to any other occupational hazard, e.g. noise, chemicals, etc. The possibility to have pollution of the working atmosphere with SHS should be included in the schemes for risk assessment and management. The introduction of complete bans on smoking at indoor workplaces is the only efficient way of preventing SHS. WHO will be developing special guidelines to assist countries and enterprises in introducing workplace-smoking bans.



Pressure Increases on Asbestos Producers and Users

Paris, 20 June 2006



*Edited by: Peter Orris, Professor and Associate Director
(porris@uic.edu)
Great Lakes Centers for Occupational and Environmental Safety and Health
University of Illinois at Chicago School of Public Health
A WHO Collaborating Centre in Occupational Health*

When the French Government announced two weeks ago that it would join the call for a world-wide ban of asbestos, it capped a series of closely-timed events that saw the ILO adopting a key asbestos resolution in Geneva, and two Global Unions, the International Confederation of Free Trade Unions (ICFTU) and the Trade Union Advisory Committee (TUAC). They reached agreement that they would work with a Network of 65 WHO Collaborating Centres in Occupational Health around the world to pursue a ten-year plan of action for occupational health that would also include asbestos.

Asbestos is an issue for all countries as it is still being used extensively in industrial sectors throughout the world, especially in building construction and manufacturing in developing countries. The ILO estimates that asbestos kills about 100,000 workers every year, and is a source of widespread suffering by many more. Asbestos remains a threat to children in schools communities where both old and new buildings contain and release the fibers into the air as they age. This ubiquitous environmental pollutant accounts for an enormous number of as yet uncounted asbestos related cancer deaths and these are estimated to be continuing to increase even in Europe where the use is severely limited.

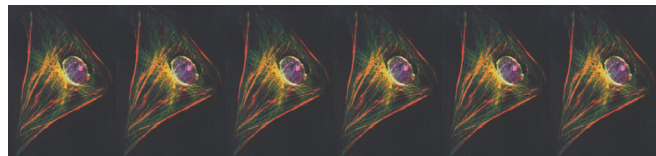
Since the Global Unions kicked off their 'ban asbestos' campaign one year ago, they have been conducting an extensive lobby in which they contacted all labour, environment and health ministries of every government with a request to ban asbestos in their own country (if not already banned) and to join the campaign for a global ban. Governments have also been asked to promote employment transition measures to protect workers that would be displaced by such a ban.

The campaign was joined in the initial days by the International Commission on Occupational Health (ICOH), the largest international organization of occupational health physicians, and the World Federation of Public Health Associations, representing some 60 national public health associations globally. The effort was complimented by a process to establish organizing contact points for the campaign, country-by-country, and trade unions mobilized actions in many countries around the 28 April International Commemoration Day (ICD) for Dead and Injured Workers to highlight their lobby and emphasize the need for effective government action.

The Workers' Group at the ILO Conference in June introduced an asbestos resolution containing a clear statement that all types of asbestos, including chrysotile, are cancer-causing. The most effective way to protect workers, the resolution says, is to eliminate the substance, putting to rest the argument that

some types of asbestos might safely be utilized under so-called “controlled uses”.

The Resolution encourages the elimination of any future use of this product, and the ratification of ILO Conventions 162 on Asbestos and 139 on Occupational Cancer, and contains a clear imperative for all governments of asbestos producing and importing countries to adopt asbestos-free solutions as a matter of urgency.



Occupational Exposure and Cancer of the Urinary Bladder



Klaus Golka and Barbara Griefahn

Institute for Occupational Physiology at Dortmund University (IfADo),
Leibniz Research Centre for Work Environment and Human Factors,
Dortmund (griefahn@ifado.de)
A WHO Collaborating Centre in Occupational Health

Abstract

A classical cause of occupational bladder cancer is exposure to carcinogenic aromatic amines, especially benzidine and β -naphthylamine in the chemical and in the rubber industry. Also some occupations with much lower exposures to carcinogenic aromatic amines, namely to complex mixtures of substances containing combustion products (e.g., polycyclic aromatic hydrocarbons) or nitrosamines are at risk. In recent decades, elevated bladder cancer risks have also been observed in professionals applying azo dyes like painters and hair dressers. To promote the identification of persons at higher risk, a questionnaire developed at Institute for Occupational Physiology must be further translated for application world wide.

Introduction

Currently, a considerable discrepancy must be stated between the number of identified occupational bladder cancer cases and the estimations of experts (1, 2) thereafter 10 % of bladder cancer cases in men and 5 % in women are related to occupational exposure. The present article highlights important occupational exposures, especially under aspects of improved safety measures.

β -Naphthylamine and the rubber industry

β -Naphthylamine formerly widely used as an antioxidant in the rubber industry has been banned in many countries. The extraordinary carcinogenic potential of β -naphthylamine in humans has been confirmed by Case et al. (3), reporting on a 200-fold elevated bladder cancer risk for British workers exposed to β -naphthylamine at that time.

Even nowadays, occupational bladder cancer in (former) rubber workers is still an issue, confirmed by the largest study ever performed in the rubber industry (4). In this cohort study

on more than 11,000 workers, elevated standardized mortality ratios (SMR) for bladder cancer were observed for “storage and shipment” (SMR 253; 95% CI 93-551) and for “general work” in this industry (SMR 159; 95% CI 92-279).

4-Aminobiphenyl

Another carcinogenic aromatic amine which also had been used in the rubber industry in the past was 4-aminobiphenyl. Melick et al. (5) observed 19 cases in 171 workers in a 4-aminobiphenyl producing facility. It appears notable that 5 of the 19 cases reported had occurred in subjects exposed only for less than 2 years.

Benzidine and dye production

Benzidine has been used primarily in dye production at very large scales. In Germany, as of 1991, 92 out of 331 workers ever exposed at a benzidine production facility until 1967 had finally suffered from bladder cancer (6, 7).

From China, Bi et al. (8) reported a 30-fold elevated occupational bladder cancer risk in 2000 Chinese workers. In another Chinese study (9, 10) these data were principally confirmed, with elevated risks at exceptionally high exposures even up to 75-fold.

4-Chloro-o-toluidine and chlordimeform production

Another highly carcinogenic aromatic amine is 4-chloro-o-toluidine that was used for the production of chlordimeform. Stasik (11) was the first to publish an increased bladder cancer risk. In different subsequent studies (12, 13) the increases in bladder cancer risks were quantified to be between 38- and 90-fold.

Aromatic amines and bladder cancer in workers applying azo dyes or colorants

It is very important to emphasize that only bioavailable (water-soluble), azo dyes are cleaved to aromatic amines in the living organism (14).

Dyers in textile and leather industries

Several professions in which azo dyes based on carcinogenic aromatic amines had been used, have revealed increased bladder cancer risks in different studies. Among these, due to intensive dermal contact and inhalation exposure, have been dyers in the textile and leather industries (15, 16).

Painters and varnishers

The publication of Bethwaite et al. (17) based on the New Zealand cancer registry as well as the results of four German studies showed an elevated bladder cancer risk for painters (18, 19, 20, 21), the results were later also confirmed by Steenland and Palu (22) investigating the mortality by bladder cancer in a cohort of more than 42,000 American painters (SMR 1.23, 95% CI 1.05-1.43, compared to the U.S. population; SMR 1.77, 95% CI 1.13-2.77, compared to a control of more than 14,000 organized non-painters), and a meta-analysis of 13 case-control studies, ((23), SMR 1.3).

For painters and varnishers the bladder cancer risk is obviously dependent on the individual exposure which is determined by a broad spectrum of working materials and techniques. This was different between countries. Due to the varying past exposure conditions between countries, it is understandable that a number of studies did not show a significant bladder cancer risk for painters.

Hair dressers

A large population-based case-control study on incident bladder cases in Los Angeles (24) showed a 5-fold increased risk (95% CI 1.3-19.2) for hair dressers who had performed their jobs for more than 10 years, compared to those who did not use hair dyes. This finding is in line with the findings of other studies. For instance, two studies in Germany also reported on a 5-fold increased bladder cancer risk (20, 21).

Other occupations with intensive contact to carcinogenic aromatic amines and/or azo dyes based on carcinogenic amines

It can be stated that persons with intensive contact to aromatic amines or azo dyes, also in professions not explicitly listed above, have an increased bladder cancer risk such as for instance a teacher who had demonstrated the synthesis of benzidine-based azo dyes in chemistry school courses for years or a woman who had weighted and sold powdery colorants without protective means (such as, gloves and paper mask) for years.

High exposure to combustion products

Several studies have shown elevated bladder cancer risks in Söderberg electrolysis facilities (25, 26, 27).

Doll et al. (28) reported elevated bladder cancer mortality, for coke oven workers. The death incidence rate from bladder cancer was described as 2 ½ times higher than the national incidence. This is in line with the findings of, for instance, Manz (29).

Intermediate types of exposure to combustion products, like tar pitch or similar products

Numerous studies have been performed on different workplaces with exposures to tar and/or tar products. These workplaces are characterized by much lower concentrations of combustion products than those occurring at coke ovens and in pot rooms of the Söderberg electrolysis process. Nevertheless, elevated bladder cancer risks were reported.

Hammond et al. (30) reported elevated bladder cancer mortality for those having worked as a roofer in the U.S. for more than 20 years (O/E 13/7.72, ratio 1.68), probably due to considerable exposure to tar products used for flat roofs. This is in line with a more recent study (31). Tar and related materials contain polycyclic aromatic hydrocarbons (PAH) and, at least certain tar related products, also small amounts of carcinogenic aromatic amines (32).

Regarding the carcinogenicity of tar and related materials to the human bladder, a study performed in the largest European tar processing chemical facility is of particular interest (33). In a total cohort of 568 male workers with tar-related skin alterations, 20 cases of bladder neoplasm had been noted.

Low exposure to combustion products

Professional drivers, mechanics, and other professions are exposed to elevated levels of emissions from combustion engines. It appears doubtful that exposures to combustion exhausts are nowadays a significant risk of human bladder cancer.

Chlorinated hydrocarbons

Three large studies on bladder cancer in U.S. dry cleaners have revealed elevated bladder cancer mortality between 1.7 and 3.0-fold (34, 35, 36).

Coal miners

Several case-control studies have reported an elevated bladder cancer risk in coal miners treated in hospitals of New York city (37), in the Belgian Charleroi and Liège areas (38), the

adjacent French mining area (39) and in the German Ruhr area (40).

Miscellaneous

Studies on Danish and French foundry workers (41, 42, 43) claimed elevated bladder cancer risks.

Workers exposed to the explosive dinitrotoluene have also been reported to have an elevated risk (44).

Gustavsson et al. (45) reported an elevated risk for bladder cancer based on a cancer incidence study on 5,266 Swedish chimney sweepers, later confirmed in a follow-up study (SIR 2.47, 95% CI 1.31-4.22; (46))

Bladder cancer risks in subjects from oil and related industries have been investigated in different studies (47). Until now, the results of the studies have been inconclusive.

Discussion and conclusions

In many countries, the production of benzidine was banned in the 1970s or in the 1980s. There were, however, a few exceptions, for example in South Korea, where benzidine production increased in the 1990s, until it was finally banned in 2000 (48). The high carcinogenic potential of benzidine to the urinary bladder is fundamental to elevations of bladder cancer risks also in workers exposed to benzidine-based dyes and colorants with much lower exposures. It must be also noticed that azo dyes are rather expensive and therefore the ban of production is not identical with the end of application of the stocks.

Bladder cancer due to aromatic amines is still an issue. This is only in part due to very long latency times of bladder cancer with often more than twenty years. It is noteworthy that research on aromatic amines has made progress. For instance, low levels of aromatic amines and/or metabolites thereof have been reported in urine samples from non-exposed general populations (49). Origin and possible health impact of these background levels remain unclear. And it is well known that bladder cancer risk in Caucasian but not in Chinese workers exposed to aromatic amines is modified by the polymorphic enzyme N-acetyltransferase 2 (50).

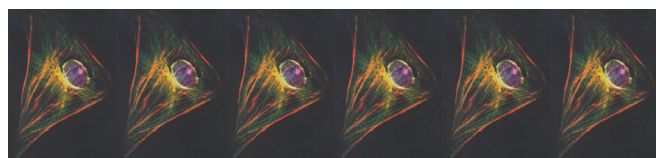
Furthermore, interactions between occupational bladder carcinogens and smoking might become more important. Thus, even exposures to low levels of carcinogens could contribute substantially to bladder cancer risk. Information on the carcinogenic potential of different aromatic amines is growing. Most recently, the aromatic amine o-toluidine has been recommended to be classified as a substance carcinogenic to humans by the MAK¹-Commission in Germany.

Compared with other malignancies, urinary bladder cancer has a favourable prognosis. Thus, on the one hand, studies based on mortality clearly underestimate occupational risks, compared to studies on cancer incidence rates or hospital-based studies, leading to a considerable discrepancy between the number of estimated occupational bladder cancer cases and the number of the identified ones. On the other hand, this prognosis encourages the development of screening programs of workers under elevated risk and early detection of individuals with respective alterations in the earliest stage. A questionnaire was developed at the Institute for Occupational Physiology. This enquiry is already available in several languages but must be further translated for world wide application.

¹ "Maximale Arbeitsplatz-Konzentration" - values set by the German Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area

It is important that the physician requests, when taking the patients history, information on all professions ever performed for six months or longer. In general, it is easy to identify an occupational cancer case, if the physician is familiar with the occupations and/or exposures at risk. A challenge remains to identify elevated cancer risks connected with unusual exposures.

The references can be accessed at www.who.int/occupational_health/publications/newsletter/en/index.html



GOHNET NEWS

Elimination of asbestos-related diseases

The work of WHO and IARC work on assessment of the health risks of different types of asbestos and its substitutes led to the conclusions that: (1) all types of asbestos cause asbestosis, mesothelioma and lung cancer; (2) there is no safe threshold level of exposure; (3) safer substitutes exist; (4) exposure of workers and other users of asbestos-containing products is extremely difficult to control; and (5) asbestos abatement is very costly and difficult to carry out in a completely safe way. Based on these conclusions, we are currently developing recommendations on interventions for the elimination of asbestos-related diseases.

A summary is downloadable from http://www.who.int/occupational_health/publications/asbestosrelatedisease/en/index.html

Meeting of the

Global Network of WHO Collaborating Centres in Occupational Health

8-9 June 2006 in Stresa, Italy

*A summary prepared by Susan Wilburn,
Occupational Health Programme*

(wilburns@who.int)



The Global Network of WHO Collaborating Centres in Occupational Health held its seventh meeting on 8-9 June 2006 in Stresa, Italy, immediately prior to the ICOH Centennial World Congress held in Milan, Italy. The purpose of the meeting was to *finalize and adopt the WHO Collaborating Centre Network 2006-2010 Workplan*. Previous meetings of the Network had been held in 1992 in Moscow, in 1994 in Beijing, in 1997 in Bogotá, in 1999 in Helsinki, in 2001 in Chiang Mai, and in 2004 in Iguassu Falls.

The meeting was chaired by U.S. National Institute for Occupational Safety and Health (NIOSH) and organized by the International Centre for Pesticide and Health Risk Prevention (ICPS) in Italy under the leadership of Marco Maroni. In total, 120 people attended, representing 45 of the 65 Collaborating Centres, as well as the three non-governmental organisations in formal relations with WHO (International Commission on Occupational Health, International Occupational Hygiene Association, International Ergonomics Association). Representatives also attended from the WHO Commission on Social Determinants of Health, the United Nations Environment Programme, the International Confederation of Free Trade Unions, and Sustain Labour.

Maria Neira, Director of the WHO Department of Public Health and Environment (PHE) provided a summary of WHO's work on occupational health and introduced the Global Plan of Action on Workers Health defining the linkages with the CC Network Workplan and inviting the Collaborating Centres to participate in its review, which will be forwarded to the WHO Executive Board in January 2007. This will be followed by consideration by the World Health Assembly in May 2007.

Key presentations during the meeting included a review highlighting the successes of the past 5 year work plans and a presentation from Matias Tuler, from the WHO Programme on Knowledge Management and Sharing, describing the importance of the Network as a model for networks in other areas within WHO.

The following Activity Areas (AAs) and Activity Area Managers were finalized and include a total of 164 projects:

AA1: Global situation analysis - Manager: Kaj Elgstrand, National Institute of Working Life (NIWL), Sweden

AA2: Evidence for action to support national policies and delivery plans - Manager: Dr Jo Harris-Roberts (nee Elms), Health and Safety Laboratory (HSL), UK

AA3: Practical approaches to identify and reduce occupational risks - Manager: Stavroula Leka, Institute of Work, Health and Organisations, Nottingham, UK

AA4: Education, training and technical materials - Manager: Leslie Nickels, University of Illinois, Chicago, USA

AA5: Development and expansion of occupational health services - Manager: Timo Leino, Finnish Institute of Occupational Health (FIOH), Finland

AA6: Communication and Networking - Manager: Claudina Nogueira, National Institute of Occupational Health (NIOH), South Africa

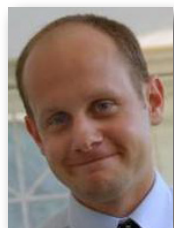
A key emphasis within the work plans was on the implementation of practical solutions to protect workers' health and the creation of synergies; grouping projects and centres into multi-centre, multi-region projects.

Declaration on Workers' Health

The Collaborating Centres endorsed a Declaration on Workers Health to emphasize the importance of occupational health and safety on the agenda of WHO and all Member Countries. The Declaration is accessible at www.who.int/occupational_health/Declarwh.pdf.

The plan of the Network for 2006 - 2010 can be accessed on the web at www.who.int/occupational_health/network/2006compendium/en/index.html

The Benefits of Being Part of the Collaborating Centre Network



Matias Tuler, Technical Officer, Knowledge Management and Sharing, World Health Organization, tulerm@who.int

During the meeting of WHO Collaborating Centres for Occupational Health held in Stresa, Italy, on 8 and 9 June 2006, I carried out a set of short interviews with representatives from some of the participating centres. The objective was to learn more about the benefits of the designation as a collaborator and the participation in the Network. The results are summarized as follows:

All participants in the survey considered the overall collaboration between their institutions and WHO to be satisfactory or very satisfactory. When asked how we could make the collaboration more productive, it was suggested that the Global Strategy on Occupational Health (www.who.int/occupational_health/publications/globstrategy/en/index.html) and the plan of action of the centres could be submitted to the World Health Assembly 2007 for endorsement. It was also mentioned that simplified paperwork requirements and electronic databases, including the annual reports of the institutions, would be beneficial. Video conferencing was also suggested as a complement to the meetings. More support from Regional Offices in dealing with the Ministries of Health of the Member States was also mentioned as being desirable.

There was consensus that the institutions had benefited from the designation as a WHO Collaborating Centre. Most centres mentioned more recognition and visibility at the international level and the scientific exchange with counterparts in other parts of the world as the main benefits. More influence at the political level was mentioned by some respondents, in particular, when holding discussions with their own national authorities. It was mentioned that the fact that several institutions around the world are designated as WHO Collaborating Centres for Occupational Health has helped the area of Occupational Health gain academic and professional credibility as a discipline.

All participants in the interview emphasized that being part of the Network is one of the most relevant benefits of their relation with WHO. Beyond the typical benefits of networking, the very wide and powerful representation of this Network allows to create a strong collective representation of views, philosophy and strategies in Occupational Health.

On average the respondents mentioned that they often (at least once a week) interact with each other by e-mail or telephone.

WHO Public Health and Environment Department and Global Trade Unions:



*Edited by Peter Orris, Professor and Associate Director (porris@uic.edu) Great Lakes Centers for Occupational and Environmental Safety and Health
University of Illinois at Chicago School of Public Health
A WHO Collaborating in Occupational Health*

The First Meeting of the Trade Union Assembly on Labour and the Environment, Nairobi, 15–17 January 2006 (WILL2006) made a number of recommendations in the area of workers health and called upon WHO, ILO and UNEP to work jointly on certain topics of strategic importance for workers. The Assembly agreed to link occupational health to environmental and public health policy and practice, particularly with regards to the campaigns to fight HIV/AIDS, the prevention of workers death, injury and illness from the effects of chemicals or dangerous substances, such as asbestos, as well as to ensure the right to reproductive health for women and men.

In follow up representatives of the International Confederation of Free Trade Unions and the Sustain Labour Foundation met with Dr Maria Neira, the Director of the Public Health and Environment Department (PHE) and other staff members of the PHE Department at WHO Headquarters in Geneva on 21 April 2006.

Specific collaboration between WHO and Trade Unions are planned in the short-term on the following topics:

- elimination of asbestos related diseases;
- prevention of chemical risks at the workplace;
- HIV/AIDS at the workplace;
- national profiles for occupational health and safety;
- occupational health services;
- prevention of work-related stress;
- smoke-free and alcohol-free workplaces.

Such collaboration would consist of exchange of available information, participation in events organized by WHO or the Trade Unions and developing joint projects. Trade Unions would welcome further strengthening of the collaboration between WHO and ILO on occupational health. WHO is encouraged to take the initiative to that extent.

Further synergies between WHO and the Trade Unions can be established under the other international fora, such as those provided by the International Labour Organization (ILO), the International Social Security Association (ISSA), the Intergovernmental Forum on Chemical Safety (IFCS), the Strategic Approach for International Chemical Management (SAICM), the European Union (EU) and the Organization for Economic Cooperation and Development (OECD), as well as under the WHO Commission on Social Determinants of Health.

Publications

Cancer control: knowledge into action: WHO guide for effective programmes

Prevention module



Andreas Ullrich
Medical Officer Cancer Alliances
Department Chronic Diseases and Health
Promotion CHR, WHO
(cancercontrol@who.int)

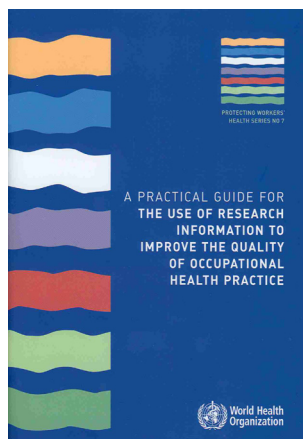
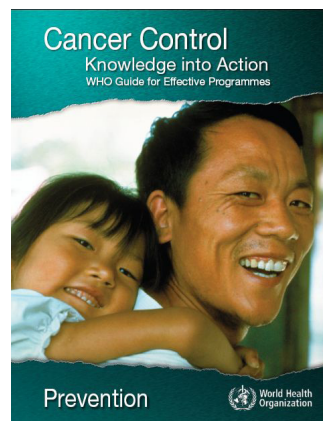
Cancer control: knowledge into action: WHO guide for effective programmes is a series of six modules offering guidance on all important aspects of effective cancer control planning and implementation.

Over 40% of all cancers can be prevented and in the Cancer Prevention Module programme managers are provided with effective strategies and approaches to implement a national cancer prevention plan.

The module covers a breadth of prevention areas, including tobacco, alcohol, dietary factors, infectious risk factors, and occupational and environmental carcinogens. The Prevention Module offers a practical systematic advice for country approaches, including for low resource settings.

Here you can access the module:

www.who.int/cancer/modules/en/index.html



Protecting Workers Health Series no. 7 has arrived!

A Practical Guide for the Use of Research Information to Improve the Quality of Occupational Health Practice

Jos Verbeek & Frank van Dijk (eds). ISBN 92 4 159423 3.

This new book in the Protecting Workers' Health Series is an informative and concise document to learn more about evidence-based techniques.

It addresses the needs of occupational health professionals who are interested in improving the quality of their services by using techniques developed in evidence-based medicine.

The evidence-based approach described in the 72 pages of the book is skillfully applied to the field of occupational health by the authors who all have a long standing experience in occupational health practice. The book is full with practical and real life examples from occupational health practice. Even though it is directed mostly towards occupational physicians, it does

not take much effort to apply the same principles to the work of occupational health nurses, occupational hygienists or other occupational health professionals.

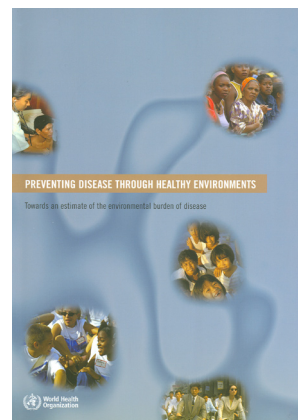
What makes the evidence-based approach different from the traditional way of learning? The basic idea is that you try to recall and formulate what questions you did not know the answers to when you were dealing with a certain patient or problem in practice. This is the point where you can learn and improve the quality of your work. That is quite different from the times that experts, especially doctors were supposed to know everything and never had any questions. However, nowadays the amount of information is so big that it is impossible to know everything by heart. This means that we have to manage our knowledge in a different way. That is what the guide's intention is: how to improve your personal knowledge management.

You might, for example, not know what interventions work best to promote hearing protection or if stress management is a helpful technique in reducing stress symptoms. Answers to these questions can improve the quality of your work considerably. The next step is that you locate research information that could provide answers to these questions. This implies that you acquire skills in searching electronic databases such as Medline through PubMed. Subsequently, you are expected to critically appraise the value of the information found and to apply it to your practical problem. The book guides you through these different steps and provides exercises with which you can practice what you have read and learnt.

The approach has become feasible because of the revolutionary changes in medical informatics. Nowadays, information on almost any medical topic can be found in Medline that is freely accessible through PubMed for anyone with an Internet connection. Ten years ago it took three weeks and a lot of money to find information that can now be located in minutes free of charge. The book helps you make the best use of these changes.

Thanks to the work of the work of WHO and the Collaborating Centers Coronel Institute and Finnish Institute of Occupational Health the book can be downloaded free of charge from: http://www.who.int/occupational_health/publications/pwh7/en/index.html

We recommend it to all professionals that are active in the field of work and health.



Preventing Disease through Healthy Environments: Towards an Estimate of the Environmental Burden of Disease

In June, WHO launched the report "Preventing disease through healthy environments: towards an estimate of the environmental burden of disease". This report reviews how much of global disease is due to the environment. By considering

only the modifiable parts of the environment, it focuses on the disease burden that could actually be prevented by creating more supportive environments.

Malignant neoplasms at several sites of the body have been

associated with exposures to occupational and environmental risk factors. Although cancers from environmental causes cannot be distinguished from cancers from other causes, as for many other diseases, the contributions of environmental causes have been highlighted by analysing differences in cancer incidences by geography and over time, and by studying cancer rates in migrant populations. The report states that smoking may have an additive or multiplicative effect with some environmental exposures. Evidence shows that the largest risk factor for lung cancer is smoking. Lung cancer causes the largest disease burden of all cancers globally, or about 15% of the burden of all cancers. About 9% of the disease burden of lung cancer could be attributed to occupation.

The report further states that an estimated 42% of chronic obstructive pulmonary disease, a gradual loss of lung function, is attributable to environmental risk factors such as occupational exposures to dust and chemicals, as well as indoor air pollution from household solid fuel use.

Link to the report: http://www.who.int/quantifying_ohimpacts/publications/preventingdisease/en/index.html

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The English version of the Fourth Edition of the ILO Encyclopaedia of Occupational Health and Safety and the CISDOC bibliographic database on OSH are available free to the world on the ILO Web site. Internauts are invited to point their browsers at <http://www.ilo.org/encyclopaedia/> and http://www.ilo.org/dyn/cisdoc/index_html.



The Occupational Health Programme in WHO Geneva, Switzerland

From left : Kati Bozsoki (Administrative Assistant) - Gerry Eijkemans (Scientist); Ivan Ivanov (Scientist); Evelyn Kortum (Technical Officer); Carlos Corvalan (Coordinator); Susan Wilburn (Technical Officer)

IN MEMORIAM

Professor Marco Maroni



Our friend and colleague Professor Marco Maroni passed away on 29 June 2006. As Director of the International Centre for Pesticide Safety (ICPS), a WHO Collaborating Centre in Occupational Health, Marco had always been a strong supporter of the WHO Collaborating Centre Network in Occupational Health, and a strong voice for the importance of occupational health in Europe and globally.

Marco and his colleagues co-organized the seventh meeting of the Network in Stresa, Italy, from 8-9 June. Many of us will remember this meeting for its perfect organization, its vibrant energy, and the wonderful surroundings.

Marco served enthusiastically as Chair of the Network for some years and was an active member of the Advisory Committee. It was our privilege to work with Marco and it is difficult for us to imagine the next meetings without him.

Marco was also a key organizer of the International Commission on Occupational Health (ICOH) 2006 Centennial Congress held in Milan from 10-16 June. He embodied Italian charm, and constantly displayed passion and enthusiasm for the important work of promoting workplace health around the world. The world has lost a champion for a worthy cause. We will always remember Marco's joy for all the good things in life, which he perfectly expresses on the photo taken while celebrating the successful end of the Stresa meeting. And his smile.... such a smile!

Though the loss of this great man is painful for all who knew him, we have much reason to be proud of him. We have received many expressions of sympathy from Collaborating Centres around the world and this message reflects some of their input.

Marco will be sorely missed by all of us. Our deepest sympathy goes out to his family, friends and colleagues.

GOHNET Newsletter - Contributors' Information

General

- GOHNET is a vehicle for information distribution and communication for all who are involved, active and interested in the subject areas of occupational health.
- The Editor reserves the right to edit all copy published.
- Contributors of all material offered for publication are requested to provide full names, titles, Programmes or Departments, Institute names, and e-mail addresses.

Why write for GOHNET?

All experts have a professional responsibility to disseminate their views and knowledge. The Network of occupational health experts is constantly growing, and the Newsletter can therefore help you reach a large audience in the occupational health community. This can help you make new contacts, exchange views and expertise.

What kinds of article do we publish in GOHNET?

Our diverse audience means that articles should not only be informative but also engaging and accessible for the non-specialist. We do not accept articles based on data that has not been accepted for publication following peer review. Such articles are more appropriate for submission to a journal. Articles may provide a broad overview of a particular area; discuss theory; add a critical commentary on recent articles within a GOHNET Newsletter; or debate applied, practical and professional issues.

You can view examples of issued Newsletters, which are available at http://www.who.int/occupational_health

How should I go about writing my article?

Articles should be written as for an intelligent, educated but non-specialist audience, as the majority of readers will not necessarily be familiar with the topic of any individual article. Articles need to be written in clear, non-technical language, and aim to engage the interest of the membership at large.

Sexist, racist and other discriminatory or devaluing language should be avoided.

Articles can be of any length from 800 up to a maxi-

mum of 2000 words (excluding references), double spaced, with complete references and a precise word count (excluding references). Relevant high-quality scanned image materials is also welcome.

How do I submit my work?

Send your article as an attachment to ochmail@who.int.

Counterpoint articles

If you have a view on an article we have published, your best route is an e-mail or a letter to the Editor. If you wish to add a substantial amount of evidence on a significantly different angle, we welcome commentary pieces of up to 1000 words, submitted within four months of the original piece.

Conference or workshop reports

Brief reports on conferences or workshops of interest to a wider audience (any length up to 700 words) should be sent, within a month of the event, to the Editor. Focus on what is new and of general interest, rather than including a lot of background information about the conference.

Reference style

Below is an example of the reference style to be used:

1. Herbert R, Gerr F, Dropkin J. Clinical Evaluation and Management of Work-Related Carpal Tunnel Syndrome. *Am J Ind Med* 2000 37:62.
2. Pelmeur PL. Hand-Arm Vibration Syndrome. An Overview. In: *Hand Arm Vibration Syndrome*. HHSC Handbook No. 24. 1999. P 2.
3. Piligian G, Herbert R, Hearn M, Dropkin J, Lansbergis P, Cherniak M. Evaluation and Management of Chronic Work-Related Musculoskeletal Disorders of the Distal Upper Extremity. *Am J Ind Med* 2000 37:75.

CONTACTS

WHO headquarters

(www.who.int/occupational_health)
Department of Public Health and Environment
Occupational and Environmental Health Programme
Geneva, Switzerland
Fax: (41) 22 791 1383
E-mail: ochmail@who.int

WHO Regional Advisers in Occupational Health

Regional Office for Africa (AFRO)

(www.whoafr.org/)
Brazzaville, Congo
Fax: (242) 81 14 09 or 81 19 39
Attention: Mr Thebe Pule
e-mail: pulet@afro.who.int

Regional Office for the Americas (AMRO)

(www.paho.org/)
Pan American Health Organization (PAHO)
Washington DC, USA
Fax: (202) 974 36 63
Attention: Dr Luz Maritza Tennessee
e-mail: tennasm@paho.org

Regional Office for the Eastern Mediterranean (EMRO) (www.who.sci.eg)

Cairo, Egypt
Fax: (202) 670 24 92 or 670 24 94
Attention: Dr Said Arnaout
e-mail: arnaouts@emro.who.int

WHO/EURO Centre for Environment and Health

(www.who.euro.int)
Bonn, Germany
Fax: (49) 228 2094 201
Attention: Dr Rokho Kim
e-mail: rki@ecehbonn.euro.who.int

Regional Office for South-East Asia (SEARO)

(<http://www.who.sea.org/>)
New Delhi, India
Fax: (91) 11 332 79 72
Attention: Dr Alexander Hildebrand, Acting
e-mail: hildebranda@searo.who.int

Regional Office for the Western Pacific (WPRO)

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Manila, Philippines
Fax: (63) 2 521 10 36 or 2 526 02 79
Attention: Dr Hisashi Ogawa
e-mail: ogawah@wpro.who.int

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