International Occupational Hygiene Association
NEWSLETTER

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Contents

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Letter from the Editor

Dear Colleagues,

As you may see, our Newsletter received many contributions, which I am sure will bring you up to date on important developments in our field. Discussions on the possibilities for application of the Control Banding approach continue, more meetings have taken place and the World Health Organization will hold a workshop in this respect this month. There is interesting news from Japan and we hope that other member associations will also inform us about occupational hygiene developments in the ir respective countries.

IOHA did it again! The excellence of our colleagues in the IOHA Board and Presidency is a fact. Three IOHA Past Presidents had already been honoured with the William P. Yant Award, namely Michel P. Guillemin in 1998, Paul Oldershaw in 2001, and Brian Davies in 2002. Now, our colleague Kurt Leichnitz, also IOHA Past President, received the 2004 William P. Yant Award; although this was announced in the previous Newsletter, we congratulate him once more. His Yant Lecture, given at the AIHCE 2004 in Atlanta, is presented in this issue of the Newsletter.

A colleague from the Netherlands sent a very important contribution concerning the risk of occupational cancer among asphalt workers. As always, I would like to request readers s end contributions (even short notices) on relevant occupational hygiene subjects they are working on, to be shared with colleagues from other parts of the world, as well as comments and suggestions to the Newsletter. Thank you very much in advance.

Please, kindly note the changes in the IOHA Website.

Best greetings to all and have a wonderful Summer.

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Highlights from Meetings around the World

AIHCE 2004, Atlanta

It is no longer news that this outstanding Conference was a great success. In fact, much i nformation about the AIHCE 2004 is available online at the AIHA site and a direct link is: **http://www.aiha.org/aihce04/aihce.htm** This includes the Electronic Proceedings, whose direct link is: ***http://www.aiha.org/aihce04/handouts.htm***

This year I was honoured to be selected for the Jeffrey S. Lee Lectureship; the lecture " A Realistic Approach to Occupational Hygiene " will soon be posted in the IOHA Website.

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2004 William P. Yant Award Lecture

Occupational Hygiene in Nursing Homes, *by Kurt Leichnitz*

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1. Introduction

Part of health care - and this with considerable growth - is care giving in nursing homes. In these establishments, occupational safety and health is a very special subject. Here the workers - the caregivers - do have to take care of human beings. These are persons showing a wide variety of behaviour, often helpless but sometimes aggressive. We can say, in comparison with other workplaces these situations may be quite different.

2. Risk factors in nursing homes

Violence is one of the risk factors. Not only care givers are attacked by aggressive residents of nursing homes. Also handicapped persons are the target for aggression, such as the young girl who was injured when the aggressor bit off part of her ear.

In Germany it is not easy to take suitable action in order to control a dangerous person. This is due to the German law, which usually protects the perpetrator better than the victim. Often the victim has to prove that he/she did not provoke the aggressor.

In addition to violence there are several other risk factors in nursing homes such as:

- Poor working postures, heavy loads.
- Biological agents e.g. micro-organisms, viruses.
- Chemical substances.
- Work rhythms.
- Falls, cuts, needle punctures.

Particularly one stress factor has to be taken in consideration, the confrontation with handicapper's pain and with dying persons.

3. Legislation in the European Union (EU)

The European Treaties require that the Member States of the European Union have to bring into force their national laws and regulations necessary to comply with EU Directives; this includes legislation related to occupational health and safety where more than 30 EU Directives do exist, such as the so-called Framework Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work.[1]

> One requirement of this Directive deals with the cooperation of the employer in implementing the safety, health and occupational hygiene provisions. It further requires that the employer shall designate one or more workers to carry out activities related to the protection and prevention of occupational risks for the undertaking. If such protective and preventive measures cannot be organized for lack of competent personnel in the undertaking, the employer shall enlist competent external services or persons. The Directive does not specify the qualification of the competent person; this is up to the employer to make the right selection. But it is not in contradiction to the Directive, when the respective national government defines the "competent person" in its national law.

In the EU Directives occupational health and safety requirements are formulated related to workers. There is as yet no individual EU Directive or Guideline covering the situations of caregivers in nursing homes.

4. Occupational health and safety management

Occupational hygiene could be the key to preventing exposure to hazards of persons working or living in nursing homes. This could be supported by a health and safety management system. Such a program can be based on the ILO Guidelines on Occupational Safety and Health Management Systems (ILO/OSH).[2] The advantage of these ILO Guidelines is that they can easily be applied as a basis for tailored management systems on national level.

But we should not forget the AIHA Guidance Document "Occupational Health and Safety Management System".[3] This document, published in 1996, was taken into consideration when the Guidelines ILO/OSH were drafted.

5. Situation in Germany

a. Occupational Hygiene

Germany has brought into force the laws and regulations in compliance with the mentioned European Framework Directive 89/391/EEC. According to this Directive the employers shall cooperate in implementing the safety, health and occupational hygiene provisions. But occupational hygiene is still no part of German regulations. This is due to the existing more than 30 year old law. The respective act states that the employer must appoint a medical doctor as so-called company doctor and a safety expert.[4]

In nursing homes in Germany the company doctor often has a double function, namely looking after the caregivers and treating the handicapped people. In Germany many medical doctors are doing an excellent job of looking after the caregivers as well as treating the handicapped persons. But there are also situations where the medical work is concentrated on the treatment of the handicapped residents; not enough time is spent on preventing occupational health problems.

b. Quality assurance

There are many excellent nursing homes in Germany, but we have also nursing homes – sometimes the expensive ones - where the situation is really bad. The equipment is in bad shape; the willingness and the capability of the caregivers to do their job is poor.

Quality assurance might help to improve the situation. There is a German act concerning the quality of nursing homes,[5] but the requirements relate to the quality of care giving and not to the working conditions of the caregivers. Poor working conditions are usua lly not the basis to do a decent job.

One thing is extremely important in Germany, the real-time documentation of all work the caregivers are doing with and for the handicapped persons. Exactly in minutes they have to document every single activity, such as washing, tooth-brushing, changing of napkin.

Much time is needed for the paperwork. There are nursing homes where the caregivers spend more time with documentation than with care giving; so everything looks good on paper.

c. Personnel

According to German regulations, in general one caregiver has to be employed for three and a half handicapped persons. But there are several possibilities to manipulate this ratio; even a ratio of one to twelve has been observed.

6. Situation in the U.S.A.

In the U.S.A the situation in healthcare seems to be difficult, too. In 2001 on the President's Page of the AIHA Synergist an article was published with the title "An Industry that Safety and Health Forgot: Healthcare".[6] A patient, by the way a highly qualified industrial hygienist, reported about his experience in a hospital and nursing home. This article deserves to be put into a frame and then placed in front of each person responsible for occupational health in the healthcare sector.

But we should mention U.S. OSHA's efforts to improve occupational safety and health in nursing homes; such as the Guidelines "Ergonomics for the prevention of musculoskeletal disorders" (MSD). [7] Of particular value are examples of solutions employers can use to help to reduce MSDs in the workplaces, such as resident lifting and repositioning.

Also the very helpful OSHA Guidelines for "Preventing Workplace Violence for Health Care and Social Service Workers" should be considered.[8] OSHA suggests in these Guidelines that work place violence policies indicate a zero-tolerance for all forms of violence from all sources.

Recently NIOSH has issued an Alert "Preventing Occupational Exposures to Anti-neoplastic and other Hazardous Drugs in Healthcare Settings.[9] Because this Alert contains important information that is urgently needed by the public, NIOSH has placed a pre-publication copy on its web site. The purpose of this Alert is to increase awareness among healthcare workers and their employers about the health risks posed by working with hazardous drugs and to provide them with measures for protecting their health.

7. Conclusion

The wide variety of risk factors in nursing homes requires in the work environment very special measures to protect and promote caregivers' health and wellbeing. Occupational hygiene could be the key to cope with this task.

It should also be pointed to the necessity that occupational health in nursing homes – especially in Germany - receives more governmental attention. At least guidelines should b e issued by official organizations, such as already done in the United States by OSHA and NIOSH.

And according to Prof. Steve Levine's statement in the mentioned Synergist article: Let us dedicate ourselves as health and safety professionals to protect those who live and work, every day to care for and protect patients. This can be done using our traditional tenets of anticipation, recognition, evaluation, control and communication, and good and profitable business practices.

8. References

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News from Member Associations

Japan Association for Working Environment Measurement (JAWE)

The Expert Committee on Risk Assessment and Risk Management of Chemical Substances (whose Chairman is Dr. Haruhiko Sakurai, Professor Emeritus of Keio University and also Chairman of the Subcommittee on Occupational Safety and Health of the Labour Policy Council, Ministry of Health, Labour and Welfare, Japan), which was created last September by JAWE (whose Chairman is Mr. Kunioki Kubo, Senior Vice President of JFE Steel Corporation), finished the final report for the fiscal year of 2003 on 29 March 2004, after four meetings, and published it in April, 2004. This is a report regarding the curriculum of a specialized continuing education training course for licensed Industrial Hygienists in the field of Working Environment Measurement, and the framework of a new continuing education training course, as well as a new certification system for the title of "Professional Industrial Hygienist, specialized in the field of risk assessment and risk management of chemical substances etc."

Expert Committee of 29 March 2004

The main contents of this report are the following:

The curriculum should cover the broad fields of risk assessment and risk management of chemical substances as well as biological agents, both in the work place (for Occupational Safety and Health) and in the general environment (for Environmental Protection). It should include :

- Explanations of related conventions, protocols, EU Directives, international and domestic laws, standards, regulations, guidelines, etc.
- Identification and evaluation of dangerous and t oxic chemical substances as well as biological agents
- Monitoring and evaluation of exposure to these chemical substances as well as to biological agents

- Risk assessment
- Risk control
- Health surveillance
- Risk communication
- Related medical sciences (including Occupational health, Public health, Toxicology, Physiology, Pathology, Epidemiology, etc.)

Some parts of the domains, subjects and items in the curriculum are presented on the following table.

Domains	Subjects	Items
Comprehensive control and management of chemical substances and biological agents by companies and organizations.	Background, concept and principles of sound control and management of chemical substances as well as biological agents	• Occupational Safety and Health Management System • Problems of control and management of chemical substances and biological agents • Related international conventions, protocols, Directives, standards, recommendations, guidelines, • Domestic laws, regulations, standards, guidelines and recommendations (including ones in industries) • Good cost and benefit performance of cost of prevention of hazards rather than cost of compensation for victims of hazards • International and domestic sources of information regarding chemical safety data as well as biological agents safety data, etc.

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News from WHO - Update on the Control Banding Approach

Planning Meeting Control Banding: The practical Application in Developing Countries, Utrecht, the Netherlands, 13-16 June, 2004

This meeting is being organized by WHO, Geneva, with the following objectives:

- To plan pilot projects for the implementation of the chemical safety toolkit and industrial hygiene in selected countries
- To develop effective twinning strategies with the implementing agencies in the pilot countries
- To plan the training activities on the chemical safety toolkit in the selected countries
- To develop a network of experts that will support the implementation of the project in the selected countries

In the next IOHA Newsletter, we will present the outcome of this meeting. Also in the next Newsletter, there will be an article on proposals for the application of this methodology for Noise; this effort is being coordinated by Gustav A. Sehrndt, from Germany, accounting for different approaches that have so far been developed.

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News from the EU

EU Document on the practical implementation of the provisions of the Health and Safety at Work Directives 89/391 (Framework), 89/654 (Workplaces), 89/655 (Work Equipment), 89/656 (Personal Protective Equipment), 90/269 (Manual Handling of Loads) and 90/270 (Display Screen Equipment)

The Commission of the European Communities has issued an excellent report - COM(2004) 62 final - on health and safety at work.

This report examines how the Framework directive of 1989 and five of its individual directives have been transposed and are applied within the EU Member States. It also draws conclusions from the application – and in some domains rather the lack of proper application for Europe's health and safety legislation and its impact on the economy and society.

The 1989/391 directive lays down the principles for the introduction of measures to encourage improvements in the safety and health of workers and provides a framework for specific workplace environments, developed in individual directives.

The EU legislation reportedly has had a positive influence on the national standards for occupational health and safety. At the same time, the health and safety measures at the workplace are reported to have widely contributed towards improved working conditions, boosting productivity, competitiveness and employment.

The statistical evidence as well as the national reporting on achievements point to an important improvement in terms of health and safety protection. They show that the implementation and application of the EU legislation played a crucial role in bringing down the figures. The data is convincing: a real structural change has been fostered.

Preliminary estimations based on Eurostat data for 2000 highlight that the number of accidents per 100,000 workers, resulting in more than three days' absence from work, fell from 4,539 in 1994 to about 4,016 in 2000. The decline of this headline indicator clearly points to an improvement in bringing down accidents, even taking into account a shift in the economic structure and the typology of jobs as well as considering new risks.

However, in absolute numbers, every year nearly 5200 workers lose their life as a result of a work related accidents. In total, there are still about 4.8 million accidents per year. This means also that about two thirds of the accidents lead to an absence of more than 3 days at work. Almost 14% of workers suffered more than one accident in a year. Annually about 158 million days work are lost.

The high risk areas largely coincide with the sectors and types of jobs on which the report underlines major shortfalls in proper application, showing the case of a consolidation of compliance with the health and safety regulations to further bring down the number of accidents.

Many problems still exist in Small and Medium Sized Enterprises. Also the public sector shows significant shortcomings. High-risk workers are also found amongst the young, the ones on temporary contracts and those with low qualifications. This evidence clearly underlines the scope and importance of the priority attached to quality in work as a policy vehicle for implementing the EU's social policy agenda.

The fact that about 7% of those who are involved in an accident cannot return to the same job and that about 4% must reduce their working hours or cannot work any longer, is a major setback for working towards the EU full employment goal. It is also evidence for the fact that 'more and better' jobs are two sides of the same coin. Every year, nearly 300,000 workers will get various degrees of permanent disabilities, resulting from a workplace related accident or disease.

It is estimated that the total costs to the economy amounts to between 2.6% and 3.8% of GNP. All this data is testimony to the high economic costs of not having appropriate social policy in place. The still high levels of accidents and diseases, backed up by a wide range of gaps as documented in detail in this report, underline the need for reinforced attention to the sectors and workers concerned to bring about the necessary changes.

To clarify and solve misunderstandings and to correct any defective situation that may occur in the application of the legislation is an urgent task. Labour inspectorates have a crucial role to play here: using labour inspectors as agents of change to promote better compliance in SME's, first through education, persuasion and encouragement and through increase of enforcement, where necessary.

A high level of protection of the safety and health of workers which is the overriding objective of the Framework Directive 89/391 and its five first individual directives, can only be achieved if all actors concerned, employers, workers, workers' representatives, national enforcement authorities, make the efforts necessary for an effective and correct application and engage in a co-operative interaction.

The reinforced commitment to address the miscellaneous flaws identified in this report will bring about the changes that will improve the implementation and application levels of the Health and Safety Directives and make the health and safety protection a tangible reality for all workers, contributing in this way to the improvement of productivity and quality of work.

Information issued by the European Agency for Safety and Health at Work on
"The practical prevention of risks from dangerous substances at work"

This publication and the Agency's website show that risks from dangerous substances can be solved in many ways. They provide examples of how companies and organisations have made interventions and sought to reduce exposure to dangerous substances.

The 29 examples of good practice on the prevention of dangerous substances presented here are all award winners or commended entries in a European competition, run as part of the European Week for Safety and Health at Work 2003. The aim of this Agency initiative is to support the dissemination of good practice information about risks from dangerous substances and promote the application of 'practical solutions' in workplaces in Member States and across Europe.

The examples come from 14 EU Member States and include small and medium sized enterprises, large companies and intermediary organisations operating in very different sectors. Some examples aim to tackle risks at source through technical solutions to prevent exposure or implementing organisational measures; others aim to substitute a hazardous substance for a less hazardous substance.

Examples include the following:

- Dust capture in metal grinding
- Protecting maintenance staff
- Safety for chemistry students
- Chemical risk prevention in school laboratories
- Environmental assessment and chemical management
- Metal degreasing: from solvents to demineralised water
- Chemical safety on merchant sea vessels
- 24-hour safety: a cooperative approach between social partners
- Training in safe and environmentally-friendly use of chemicals
- Chemical products 'use/sector' matrix
- Labelling raw materials
- GISBAU: an information system for small companies in construction
- Electronic risk prevention tool for craft trades
- BITUMEN forum: low-temperature asphalt
- An automatic lubrication system for an extrusion chamber
- Galvanising: modified degreasing process to reduce fume exposure
- Eliminating methylene chloride from bitumen binder testing
- Reducing ethylene oxide exposure during sterilisation
- Preventing exposures in vehicle repair
- Elimination of N-N dimethylacetamide: semiconductor manufacturing
- Reducing dermatitis among hairdressers
- Automated management system
- Reducing risks from glue vapours
- Training cleaning workers to prevent chemical risks
- Managing hazardous waste from university laboratories
- Eliminating isocyanates during hot work on polyurethane
- Hospital equipment sterilising: glutaraldehyde substitution
- Removing alcohol from lithographic printing
- Reducing airborne particles in clay preparation

Further information on occupational safety and health and dangerous substances is available from the Agency's European week 2003 website http://osha.eu.int/ew2003/ where the full text of all Agency publications can be downloaded free of charge. Additional information on the elimination and substitution of dangerous substances is available through the Agency's website at:
http://europe.osha.eu.int/good_practice/risks/ds/
Information on occupational exposure limits is available at:
http://europe.osha.eu.int/good_practice/risks/ds/oel/
These sources are being continually updated.

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OECD Guidance on Safety Performance Indicators (SPI)

Guidance for Industry, Public Authorities and Communities for developing SPI Programmes related to Chemical Accident Prevention, Preparedness and Response (Interim Publication scheduled to be tested in 2003 – 2004 and revised in 2005) OECD Environment, Health and Safety Publications - Series on Chemical Accidents No. 11

This comprehensive Document has been designed to assist industrial enterprises, public authorities, and communities near hazardous installations world-wide develop and implement a means to assess the success of their chemical safety activities. It provides guidance on how to develop and use safety performance indicators.

In reviewing this Document, it is important to keep in mind that not all elements of the guidance will be appropriate in each situation. It is up to users to create a Programme that is appropriate for their particular organisation by:

- reviewing the guidance carefully;
- selecting those elements that are relevant in their circumstances;
- adapting the elements to be consistent with their organisations' vocabulary, policies
- and procedures; and
- developing metrics for measuring trends over time.

For purposes of this Document, the term "indicators" is used to mean observable measures that provide insights into a safety concept that is difficult to measure directly. Examples of two types of indicators are included in the Guidance: "activities indicators" and "outcome indicators":

- activities indicators are designed to help identify whether enterprises or organisations are taking actions believed to lower risks, and
- outcome indicators are designed to help measure whether such actions are, in fact, leading to less likelihood of an accident occurring and/or less adverse impact on human health or the environment from an accident.

The following is a list of general outcome indicators that apply to all stakeholders. These can, if measured over time, show if chemical safety has improved:

(a) Reduction of chemical risks at hazardous installations (as measured by, e.g.: risk assessments; reduction of chemical inventories; reduction of adverse impacts from accidents; improvement in processes and process techniques; reduction of vulnerability zones; and improved transportation).
(b) Extent of interaction and collaboration of public authorities, industry, and communities leading to improved safety of hazardous installations and reduction of chemical risks to local communities.
(c) Reduction of the frequency of accidents and near-misses, and their severity.
(d) Reduction of injuries and fatalities from chemical accidents.
(e) Reduction of environmental impacts from chemical accidents.
(f) Reduction of property damage from chemical accidents.
(g) Improvement in response to chemical accidents (reduction of delay and increased efficiency).
(h) Reduction of the impact zone of chemical accidents (distance).
(i) Reduction of the number of people affected by chemical accidents (e.g., numbers subject to evacuation or shelter in place orders).

While enterprises have primary responsibility for the safety of the installations they operate, each of the three stakeholders groups (industry, public authorities and communities) have key roles in promoting chemical safety and implementing measures with the objective of reducing the likelihood of chemical accidents and/or improving accident preparedness and response.

To be able to assess their success in improving safety, the first step to be taken by industry, public authorities, and communities is to establish chemical safety goals and objectives for their organisations, as well as infrastructures for implementing those goals and objectives.

It is important to emphasise that implementing an effective SPI Programme requires a clear commitment by the management of an enterprise/organisation, along with an allocation of financial and human resources. It will involve representatives of different parts of the enterprise/organisation. Furthermore, it is not a one-time activity; an underlying premise of this Document is that an SPI Programme needs to be applied periodically in order to measure improvements and other changes over time. It is also important to review the SPI Programme and revise/update it as experience is gained.

Industry, public authorities, and communities should work together in a co-operative and collaborative way. Industry can then achieve the trust and confidence of the public that they are operating their installations safely, public authorities can stimulate industry to carry out their responsibilities to ensure the safe operation of their installations by encouraging risk reduction, and communities can provide chemical risk and safety information to the potentially affected public thereby providing a basis for motivating industry and public authorities to improve safety.

Thus, the SPI guidance provides a tool for prioritisation and a basis for improving effectiveness of spending on safety-related expenditures and allocation of human and other resources. In addition, experience has shown that just implementing an SPI Programme leads to improvements because it raises awareness and understanding of safety-related issues among staff.

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Contributions from Members around the World

Cancer risk among asphalt workers with exposure to bitumen fumes - *an international retrospective cohort study* –Summary of the PhD thesis of Mariëtte Hooiveld, Institute for Risk Assessment Sciences (IRAS), Utrecht University, the Netherlands, 14 january 2004.

For questions or a copy of this thesis, please contact the author by e-mail:
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Since several decades, experimental animal studies and human epidemiological studies have raised suspicion about the carcinogenic properties of bitumen. Bitumen is used on a large-scale as binder in asphalt mixes in road paving, but has also applications in waterproofing and roofing. Epidemiological studies among workers with potential exposure to bitumen have been conducted, but have not been able to address specifically the adverse health effects of bitumen, and separate these from the recognized carcinogenic effects of coal tar.

To address the carcinogenic effects of bitumen fumes, IARC assembled an international retrospective cohort of 29,820 male workers exposed to bitumen fume in road paving, asphalt mixing, and roofing, 32,245 ground and building construction workers unexposed to bitumen, and 17,757 workers not classifiable as bitumen workers, from seven European countries (Denmark, Finland, France, Germany, the Netherlands, Norway and Sweden) and Israel. Data for the Dutch cohort were collected in six companies involved in asphalt production and road construction, and included 3,707 workers with at least one season of employment between 1927-1999.

The primary goal of the study was to assess whether an increased risk for cancer – particularly of the lung – was associated with bitumen exposure. Exposures to coal tar, polycyclic aromatic hydrocarbons, organic vapour, silica dust, diesel engine emissions, and asbestos were estimated for the cohort members through the combination of individual job histories and the Road Construction Workers Exposure Matrix (ROCEM). This ROCEM was built on the basis of available occupational hygiene measurements and questionnaires administered to participating companies.

Standardized mortality ratios (SMR) with 95% confidence intervals (CI) were calculated, to compare the observed mortality in the cohort with that of the general population. Using the Poisson regression analysis, the mortality of bitumen workers was compared to that of ground and building construction workers.

The results of the pooled cohort are presented (Chapter 2). The analyses based on job titles showed that the overall mortality was below expectation in the total cohort (SMR 0.92; 95% CI 0.90 –0.94) and in each group of workers. The SMR from lung cancer was higher among bitumen workers (1.17; 95% CI 1.04 –1.30) than among workers in ground and building construction (SMR 1.01; 95% CI 0.89 –1.15). This difference was partially due to confounding by country. In the internal comparison, the relative risk (RR) of lung cancer mortality among bitumen workers, compared to workers in building and ground construction, was 1.09 (95% CI 0.89–1.34), after adjustment for age, calendar period, country and total duration of employment .

Results of the Dutch sub-cohort were in concordance with the results from the pooled international data (Chapter 3 and Appendix). Both the group of bitumen workers, building or ground construction workers, and the group of unspecified workers, had non-statistically significant higher risks for lung cancer mortality as compared to the general population. Internal comparison of asphalt workers with building or ground construction workers showed a statistically non-significant increased risk for lung cancer.

It was concluded that European workers employed in road paving, asphalt mixing and other jobs entailing exposure to bitumen fume might have experienced a small increase in lung cancer mortality risk, compared

to workers in ground and building construction. However, exposure assessment was limited and confounding from exposure to carcinogens in other industries; moreover, tobacco smoking, and other lifestyle factors cannot be ruled out.

Chapter 2.2 reported the results based on assessment of exposure to bitumen fume and other agents in the pooled cohort. The SMR of lung cancer among workers exposed to bitumen fume (1.08; 95% CI 0.99 –1.18) was comparable to that of non-exposed workers (SMR 1.05; 95% CI 0.92–1.19). In a sub-cohort of bitumen-exposed workers without exposure to coal tar, the SMR of lung cancer was 1.23 (95% CI 1.02–1.48). The analysis based on the semi-quantitative ROCEM-based exposures in the whole cohort did not suggest an increased lung cancer risk following exposure to bitumen fume. However, in an analysis restricted to road pavers, based on quantitative estimate of bitumen fume exposure, a dose-response was suggested for average level of exposure, applying a 15-year lag, which was marginally reduced after adjustment for co-exposure to coal tar.

Results of the Dutch sub-cohort also showed a positive trend of semi-quantitative average exposure estimates to bitumen fume with lung cancer, but not for cumulative exposure (chapter 3). Analyses with quantitative exposure estimates were not meaningful due to small numbers. The results of the analysis by bitumen fume exposure was considered to be inconclusive for the presence or absence of a causal link between exposure to bitumen fume and risk of cancer of the lung.

In order to evaluate the possible confounding effect of smoking, an indirect type of adjustment was performed, using aggregated information on smoking habits from a sample of the Dutch cohort (chapter 3). This information was obtained from self-administered questionnaires during medical evaluations by occupational health services in the past. Results showed that smoking habits differed between occupational title groups and there was a positive association between semi-quantitative cumulative exposure estimates and smoking. Internal analyses using the non-exposed subjects as reference category had shown a positive association between semi-quantitative bitumen fume exposure and lung cancer risk. After adjusting for differences in smoking habits, all relative risks were reduced, but a weak positive association could still be observed. It was concluded that confounding by smoking on the association between exposure to bitumen fume and lung cancer mortality is possible, although the observed positive trend with semi-quantitative cumulative exposure (not statistically significant) for lung cancer mortality remained.

In chapter 4, a more refined analysis of the exposure-response relation between semi-quantitative cumulative exposure to bitumen fume and lung cancer mortality was explored within the Dutch sub-cohort. Poisson regression models with continuous and categorical exposure variables, as well as non-parametric cubic spline models were fitted. Results showed a positive log-linear association of lung cancer mortality with semi-quantitative cumulative exposure to bitumen fume (15-years latency period, ß = 0.016, 95% CI 0.003–0.029). The results provided additional and stronger evidence for a positive association, which was obscured in the classical categorical analyses due to the broad exposure categories.

Chapter 5 describes a quantitative risk assessment for lung cancer mortality within the Dutch sub-cohort. Exposure-response relations for semi-quantitative cumulative exposure estimates for bitumen fume were fitted by Poisson regression, using a log-linear model and a linear model with no intercept. Excess lifetime risks through age 75 were calculated by a life table method. Working lifetime cumulative exposure to bitumen fume was calculated under different scenarios, representing past and future exposure scenarios. For workers with exposures accumulated in the past, excess risks for lung cancer varied from 7.8 to 14.3 percent. Calculations for future exposures resulted in considerably lower excess risks ranging from 0.6 to 2.6 percent. The calculated excess risks for lung cancer mortality after working lifetime exposure to bitumen fume depended strongly on when exposure was experienced and to some extent on the exposure-response model chosen, while confounding by smoking could not be ruled out. Nevertheless, the excess lifetime risk for lung cancer in the Dutch cohort of asphalt workers was above benchmark risks as applied by the Dutch Health Council. Current exposure levels have decreased this risk considerably, but further exposure control may be required.

A limitation of the study was misclassification of exposure for a substantial part of the workers that was coded only as unspecified worker, because the information extracted on the job held was not sufficient to code them more specifically. Confounding exposures from jobs held in companies other than those included in the study (both within and outside the asphalt industry), as well as non-occupational confounding factors could not be ruled out. These issues will be taken care of in a nested case-control study, which will be completed within several years.

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IOHA Website

IOHA Website Moves to www.ioha.net

by David Bloor – IOHA Webmaster – webmaster@ioha.net

Those of you who have visited the IOHA website since March 2004 will have noticed that it has changed both its web address and appearance.

When the website was first set up with its own domain name only the ioha.com name was available. Ideally (as .com names are usually used by commercial organisations) we would have liked a .org domain but this was already taken as was the .net domain. When the ioha.net dom ain became available later in 2001 Doo Yong Park (of Hansung University, Korea) kindly registered it and offered it to IOHA. We were not able to take up his very kind offer at the time due to restrictions on transferring it to our server host but in late 2 003 it became evident that IOHA might need to change server hosts and that a move to using ioha.net as our preferred domain name would then be possible. These actions took a while but in January 2004 the ioha.net domain was finally registered in IOHA's nam e with a new server host and work began on building a new website.

The new website allows us to offer more facilities to users than the old site could. We now have more room for our publications files and new ways to allow interaction with visitors. The f irst innovation that I would urge you to join in with is the IOHA forum at www.ioha.net/iohaforum this is a place to discuss items of interest to occupational hygienists worldwide. Other website facilities are being investigated and we would welcome your input on these through the forum.

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IOHA 6th International Scientific Conference

Let's keep in mind the *IOHA 6th International Scientific Conference*, to be held in the Pilanesberg National Park, North West Province, South Africa, 19-23 September 2005. Detailed information and updates online at: ***http://www.saioh.org/ioha2005/***
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