MEDICHEM

NEWSLETTER

July 2009

MEDICHEM - Occupational and Environmental Health in the Production and Use of Chemicals

Message from the Secretary

Dear Colleagues:

In this issue we feature articles by two Medichem members as well as information from some recent publications. Please consider a brief item of interest for a future newsletter!

You will also find a ballot enclosed for one Medichem Board member vacancy 2009-2012. A brief bio of each candidate is included in the newsletter. Please vote for one candidate and return to me by mail, fax, or email at: dmundt@environcorp.com.

Also note that the call for abstracts and symposia to the Medichem 2010 meeting in Taipei, Taiwan has been announced. More details are included here.

Dr. Diane J. Mundt
(Amherst, MA USA)

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Meet the Candidates

Two Medichem members – Martina Piasek and Robert Winker -- are running for the Board, and a brief bio for each candidate follows. Please vote for one person, and submit your ballot to Dr. Diane Mundt, Medichem Secretary. We wish both candidates well.

Dr. Martina Piasek

Dr. Martina Piasek was born in Zagreb, Croatia. She received her MD, MSc and PhD degrees from the University of Zagreb. She has worked as a general practitioner in the Occupational Health Care Unit for Construction Workers in the Medical Centre of Varaždin, Croatia. Since 1982 she has been employed at the Institute for Medical Research and Occupational Health in Zagreb. From 1991-1994 she was a visiting scientist at the U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, in the Reproductive Toxicology Branch. In 2006 she was nominated as a national expert member in the Croatian delegation in the Programme Committee for the EU Framework Programmes; FP7. Her research interests involve health effects of metals and metalloids, in particular reproductive and perinatal toxic effects and methods for reducing heavy metal retention. She is the author or co-author of about 70 scientific papers. She is an active member of several scientific journal editorial boards, and member of national and international professional associations. Dr. Piasek participated in the organization of the annual midterm meeting of the Medichem Board meeting and Mini-Symposium in Zagreb, Croatia in January 2007.

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Dr. Robert Winker

Robert Winker was born in Vienna and studied medicine at the University of Vienna. Since 2000 he has worked for the Clinical Department of Occupational Medicine, and completed the rotation program for specialists at Vienna General Hospital. During this period worked abroad; including a year at the Autonomic Dysfunction Center, Vanderbilt University in Nashville, Tennessee, US and the Department of Neurotoxicology of the Finnish Institute of Occupational Health in Helsinki. He is qualified as a specialist in Occupational Medicine and Internal Medicine. Dr. Winker has been awarded the Egmont-Baumgartner Prize for his scientific work on three occasions.

Dr. Winker has published more than 30 scientific papers in peer-reviewed journals. His main research areas are orthostatic intolerance, neurocardiac syncope, reproductive toxicology, biological monitoring, stress and strain phenomena and substances, in collaboration with colleagues at Vanderbilt University and the Finnish Institute of Occupational Health, Helsinki.

In 2003, Robert Winker founded and is assistant editor to the journal 'Austrian Forum for Occupational Medicine' (in German), which appears periodically and is addressed towards work in occupational medicine in Austria..

Dr. Winker is a member of a number of scientific organizations, including National Secretary of the International Commission of Occupational Health, Medichem Board member from 2005-2007 (Secretary). He has been a member of the scientific advisory council of the Austrian Society for Occupational Medicine and of the publisher Prometus.

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Sewage water contains a complex mixture of pathogens and toxins, including potential mutagens and carcinogens. Wastewater workers may be exposed to such agents mainly through inhalation of gases or aerosols and through dermal contact. In the further process of wastewater treatment, handling and incineration of the sewage sludge may lead to additional possibilities of exposure. Studies on long-term health outcomes of working in wastewater treatment plants, namely on cancer incidence and mortality, have rarely been conducted in the past, possibly owing to comparatively small numbers of workers usually involved.

We have conducted such a study in response to concerns raised by employees of BASF's wastewater treatment plant at Ludwigshafen, Germany, after two active employees died from cancer (stomach and lung) at the beginning of 2004. This plant serves the world's largest chemical site with more than 200 production plants and currently some 33,000 employees, and also treats the effluents from three of the neighboring communities with about 200,000 inhabitants.

The study was descriptive in nature and designed to assess whether or not the overall cancer experience of waste water treatment employees was comparable to that expected for the corresponding general German population.

Cancer incidence in the wastewater treatment plant of a large chemical company

M. Nasterlack, P. Messerer, D. Pallapies, M.G. Ott, A. Zober (2009), Int. Arch. Occup. Environ. Health 82:851-856 (DOI 10.1007/s00420-009-0397-6)

OBJECTIVES: To evaluate cancer incidence among employees assigned to BASF's wastewater treatment plant.

METHODS: We conducted a retrospective cohort study including 477 male employees who had ever worked in the facility for at least 1 year since the start of operations in 1974. Cancers were identified by review of occupational medical records and a standardized questionnaire completed by the participants or their next of

kin. Confirmation through hospital records was sought for all reported cases after obtaining informed consent.

Standardized incidence ratios (SIR) and 95% confidence intervals (CI) were computed using comparison data provided by the Saarland Cancer Registry. Further comparisons were made between three different subgroups of employees, working in maintenance, wastewater processing, and sewage sludge treatment.

RESULTS: A total of 50 cancers were observed (SIR 1.14, CI 0.85-1.51). Colorectal (1.14, 0.42-2.48), bronchial (1.40, 0.67-2.57) and prostate (1.15, 0.42-2.50) were the most frequently observed cancers. Five cases of bladder cancer were found in the total cohort (1.75, 0.57-4.09), with four of them occurring in the sewage sludge treatment area (6.82, 1.86-17.46). Allowing for a 10-year lag did not significantly change the results.

CONCLUSIONS: The overall cancer experience among employees of the wastewater treatment plant was similar to that of the corresponding general population. The finding of an excess risk for bladder cancer in one subgroup of workers was unexpected with regard to the available literature.

There is no straightforward explanation for this finding, and it may be due to chance. An extended follow-up of this cohort will take place after 5 years. Annual bladder cancer screening is offered to active and retired employees from this plant for the time being.

The current working conditions and work practices have been re-assessed by occupational hygienists and deemed to be safe.

The overall cancer incidence in this small cohort of wastewater treatment plant workers was not significantly different from that of the general population in the neighboring region. While we are still cautious about assuming a causal relation between work in BASF's wastewater treatment plant and bladder cancer for the time being (and we say so in our paper), we have shared our findings with the scientific public for further assessment and discussion.

We believe this to be the appropriate way to respond to concerns of, and assume responsibility for, our employees. There is currently no basis for these bladder cancer cases to be acknowledged as occupational disease (OD). According to German OD law sufficient published evidence must be available in order to allow a disease entity, which has not been listed as an OD before, to be considered as such in the future.

Possibly provoking additional observations or studies to be brought forward is thus an important aim of our publication.

Dr. Michael Nasterlack
(Ludwigshafen, Germany)

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Archives of Industrial Hygiene and Toxicology: News about Journal

Archives of Industrial Hygiene and Toxicology (original title Arhiv za higijenu rada i tokikologiju; officially abbreviated as Arh Hig Rada Toksikol; ISSN 0004-1254) is a peer-reviewed biomedical scientific quarterly that publishes contributions relevant to all aspects of environmental and occupational health and toxicology.

The Institute for Medical Research and Occupational Health in Zagreb publishes the journal since year 1950. It is the second oldest medical journal in Croatia. Contributions are published predominantly in English, and partially in Croatian and Slovene languages.

The journal is an official periodical of several professional associations: Croatian Medical Association - Croatian Society on Occupational Health, Croatian Toxicological Society, Slovenian Society of Toxicology, and Croatian Radiation Protection Association.

For years several Medichem members have taken part in editing the journal; at present they act as Advisory Editorial Board members (Stephen W. Borron, USA; Miroslav Cikrt, Czech Republic; Jasminka Godnić-Cvar, Austria; Marko Saric, Croatia; Robert Winker, Austria) and Executive Editorial Board member (Martina Piasek, Croatia).

As of 2008 the journal has been indexed in Science Citation Index Expanded® by Thomson Reuters (available at http://www.isinet.com/cgi-bin/jrnlst/jlresults.cgi?PC=D&ISSN=0004-1254). Other index bases abstracting the journal contributions are: PubMed/Medline, Scopus, Animal Science Database, Biological Sciences (CSA), BIOSIS Previews, GreenFile, INIS, Pollution Abstracts, Veterinary Science Database, Water Resources Abstracts.

There is no impact factor at this point; the journal will receive an impact factor in the 2010 Journal Citation Reports, to be published in late spring/early summer 2011. We believe that by publishing a number of attractive review articles we could boost our impact worldwide, and your role could prove invaluable to this end.

We are confident that your review articles would cause such a response in the scientific community that it could be measured in terms of impact by the end of this year.

The journal can offer a leading e-publishing technology (MetaPress), global circulation and worldwide presence, open access to full-length articles, fast and transparent peer reviewing, possibility of online preprint publishing (after acceptance), free language advice/copyediting services (after acceptance) and other options.

Detailed information about Archives, instructions for authors and full-length papers free of charge are available online: at http://www.versita.com/science/medicine/aiht or http://hrcak.srce.hr/aiht.

Editors encourage colleagues to consider Archives for publication of their papers in the future including papers and congress communications *in extenso* presented at the Medichem Congress. Feel free to contact us with any questions.

Dr. Martina Piasek
(mpiasek@imi.hr)

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Effectiveness of flushing with water as first aid measure after chemical eye contamination

M. Nasterlack, M. Yong, B. Scheuermann, S. Lang (based on a presentation given at the 29th ICOH Congress, Capetown, South Africa, March 2009)

Introduction

In case of a chemical splash involving the eyes, immediate flushing with copious amounts of water is the most widespread recommendation for first treatment. With respect to the sometimes detrimental consequences of such incidents for eyesight, this approach has been challenged and the introduction of new and allegedly better treatment methods has been requested. We conducted a retrospective assessment in a large chemical company of chemical eye injury outcomes over an eleven year period in order to identify the extent of damage caused, and the potential benefit resulting from "optimal" treatment in turn.

Methods

BASF's medical files were searched for the time period between 01.01.1995 and 31.12.2005 for cases of occupational accidents or incidents, with contact with chemicals, involving head or face, and having triggered initial treatment of flushing the eyes at the site of the accident or in our outpatient clinic.

From a total of 2,069 incidents conforming to this definition, 566 had been rated by the first treating physician as "not obviously trivial" and reported to the German Statutory Insurance Fund (Berufsgenossenschaft). From these ones, after specialist examination, 138 were rated as "potentially severe". We identified a subset of 64 cases out of the 138, for which a full set of visual acuity (VA) test results was available from before, at the day of, and some time after the incident. VA was tested using Landoldt rings with the results expressed as decimals.

To represent the change of VA over the time period between first examination and day of accident (T1) and the day of accident and post-accident examination (T2), respectively, the intra-eye differences of test results between two points in time as well as the intra-individual change between two eyes were calculated, and a signed-rank test for dependent samples was used for the statistical analysis. To estimate the impact of the accident on VA, a generalized linear model (GLM) was used to adjust for the duration between two tests, considering the biological decline of visual acuity with increasing age and taking into account the intra-individual correlation between left and right eyes.

In addition to the evaluation on group basis we individually reviewed the medical files of persons where a long-term damage could not be ruled out confidently.

Results

Of the 64 cases, 24 involved only the left eye, 14 only the right eye, and in 26 cases both eyes had been affected. Only 2 (3%) of them were female, 50 (78%) were aged over 40 at the time of accident and 46 (72%) had been employed for more than 5 years in BASF. The duration of T1 varied between 218 and 1847 days, and that of T2 between 707 and 4006 days.

In T1, the injured left eyes had about 19% excess decline of VA, compared to the non-injured right eyes. This effect was independent of time. In T2, the injured left eyes had 13.6% improvement of VA, as compared to the non-injured right eyes. Both differences were statistically significant. Across the whole observation period, the change of VA was attributable to a time effect. The injury did not cause a significant impact on the decline of VA.

The same pattern, although not reaching statistical significance, was observed for the “only right eye” cases. In the sub-group of bilateral injuries, the effect of duration between the VA tests was estimated. Because there was no control, namely no non-injured eye, the effect of duration comprises both the effect of injury and the effect of time. In T1, a significant decline of VA was observed.

In T2, no significant change of VA could be found, although a slight improvement was suggested in comparison with the VA change in T1. Across T1 + T2, an overall decline of VA was observed.

Discussion

The average incidence of 4.8 accidental chemical eye contacts per 1,000 employees per year corresponds to approximately 1 incident per 344,000 hours worked, and is thus comparatively low in this population. Only a fraction of these incidents required more than the initial treatment, which consisted of immediate flushing with water and, eventually, a second rinsing with NaCl solution on the ambulance car or after arrival at our outpatient clinic. The average decline in visual acuity observed on the day of the accident appeared to be transient. Possibly, the mechanical irritation caused by flushing may have contributed to this finding. An apparent recovery occurred between the day of the accident and the next examination, independent of time. A long-term impact of the injuries on the eyesight of the affected individuals was thus not evident in our data. While these results obtained on group-basis do not rule out a potential benefit from an “optimal therapy” in unfortunate individual cases, the existence of such cases in our population could not be confirmed after individual review of the medical files of persons deemed at special risk for long-term damage.

Dr. Michael Nasterlack
(Ludwigshafen, Germany)

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World Health Organization Issues Update on H1N1 Pandemic Monitoring

This article is modified from the WHO Global Alert and Response website page. This Pandemic Update was issued 16 July 2009.

As the 2009 pandemic evolves, the data needed for risk assessment, both within affected countries and at the global level, are also changing.

At this point, further spread of the pandemic, within affected countries and to new countries, is considered inevitable. This assumption is fully backed by experience. The 2009 influenza pandemic has spread internationally with unprecedented speed. In past pandemics, influenza viruses have needed more than six months to spread as widely as the new H1N1 virus has spread in less than six weeks. The increasing number of cases in many countries with sustained community transmission is making it extremely difficult, if not impossible, for countries to try and confirm them through laboratory testing. Moreover, the counting of individual cases is now no longer essential in such countries for monitoring either the level or nature of the risk posed by the pandemic virus or to guide implementation of the most appropriate response measures.

Monitoring still needed

This pandemic has been characterized, to date, by the mildness of symptoms in the overwhelming majority of patients, who usually recover, even without medical treatment, within a week of the onset of symptoms. However, there is still an ongoing need in all countries to closely monitor unusual events, such as clusters of cases of severe or fatal pandemic (H1N1) 2009 virus infection, clusters of respiratory illness requiring hospitalization, or unexplained or unusual clinical patterns associated with serious or fatal cases.

Other potential signals of change in the currently prevailing pattern include unexpected, unusual or notable changes in patterns of transmission. Signals to be vigilant for include spikes in rates of absenteeism from schools or workplaces, or a more severe disease pattern, as suggested by, for example, a surge in emergency department visits. In general, indications that health services are having difficulty coping with cases mean that such systems are under stress but they may also be a signal of increasing cases or a more severe clinical picture.

A strategy that concentrates on the detection, laboratory confirmation and investigation of all cases, including those with mild illness, is extremely resource-intensive. In some countries, this strategy is absorbing most national laboratory and response capacity, leaving little capacity for the monitoring and investigation of severe cases and other exceptional events.

Regular updates on newly affected countries

For all of these reasons, WHO will no longer issue the global tables showing the numbers of confirmed cases for all countries. However, as part of continued efforts to document the global spread of the H1N1 pandemic, regular updates will be provided describing the situation in the newly affected countries. WHO will continue to request that these countries report the first confirmed cases and, as far as feasible, provide weekly aggregated case numbers and descriptive epidemiology of the early cases.

For countries already experiencing community-wide transmission, the focus of surveillance activities will shift to reporting against the established indicators for the monitoring of seasonal influenza activity. Those countries are no longer required to submit regular reports of individual laboratory-confirmed cases to WHO.

Monitoring the virological characteristics of the pandemic virus will be important throughout the pandemic and some countries have well-established laboratory-based surveillance systems in place already for seasonal influenza virus monitoring. Even in countries with limited laboratory capacity, WHO recommends that the initial virological assessment is followed by the testing of at least 10 samples per week in order to confirm that disease activity is due to the pandemic virus and to monitor changes in the virus that may be important for case management and vaccine development.

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Business Pandemic Influenza Planning Checklist

In anticipation of worsening of the influenza pandemic, the US Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) have developed various checklists to assist companies in developing a Business Pandemic Influenza strategy for managing business and workflow in the event of widespread illness. More detailed information can be found at http://www.pandemicflu.gov/plan/workplaceplanning/businesschecklist.html *The information included below has been taken from this website.*

The following sections are included in the checklist for the Business Pandemic Influenza Plan. More details can be found at the website above.

- Plan for the impact of a pandemic on your business
- Plan for the impact of a pandemic on your employees and customers
- Establish policies to be implemented during a pandemic
- Allocate resources to protect your employees and customers during a pandemic
- Communicate to and educate your employees
- Coordinate with external organizations and help your community

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IARC Monograph 100: A Review of Human Carcinogens

The International Agency for Research on Cancer (IARC) has held meetings since October 2008 to re-evaluate new scientific evidence pertaining to substances reviewed in previous IARC Monographs as human carcinogens. Meetings held to date have reviewed pharmaceuticals; biological agents; metals, particles and fibers; radiation; and lifestyle factors.

October 20-27, 2009, the Committee to evaluate Chemical Agents and Related Occupations will meet in Lyon, France. Chemicals and occupations to be considered include: aflatoxins (naturally occurring mixtures); 4-aminobiphenyl; benzene; benzidine; dyes metabolized to benzidine; bis (chloromethyl) ether and chloromethyl methyl ether (technical grade); 1,3-butadiene; ethylene oxide; formaldehyde; 4-4′-methylene bis (2-chloroaniline) (MOCA); mustard gas (sulfur mustard); 2-naphthylamine; 2,3,7,8-tetrachlorodibenzo-*para*-dioxin; *ortho*-toluidine; vinyl chloride; PAHs and RELATED OCCUPATIONS INCLUDING: benzo[*a*]pyrene; soots; occupational exposures during coal gasification; coal-tars; coke production; paving and roofing with coal-tar pitch; mineral oils, untreated and mildly treated; shale-oils; aluminum production;

OTHER RELATED OCCUPATIONS: auramine production; iron and steel founding; isopropyl alcohol manufacture (strong-acid process); magenta production; occupational exposure as a painter; rubber industry; strong-inorganic-acid mists containing sulfuric acid (occupational exposure).

In 2008, the Advisory Committee to Recommend Priorities for IARC Monographs during 2010-2014 included the following chemicals as HIGH PRIORITIES:

- Acetaldehyde
- Acrylamide and furan
- Asphalt and bitumen
- Carbon-based nanoparticles
- Crystalline fibers other than asbestos
- Growth hormone
- Iron and iron oxides

- Motor vehicle exhaust emissions
- Nucleoside analogue antiviral drugs
- Perfluorooctanioic acid (PFOA)
- Statins
- Testosterone
- Ultrafine Particles
- Welding

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Welcome to New Members

Dr. **Thomas Kraus**, Institute for Occupational and Social Medicine, University Hospital, Aachen (Germany)

Dr. **Christina Rohne**, DOW Germany, Stade (Germany)

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Upcoming Events

CALL FOR PRESENTATIONS AND INDIVIDUAL SCIENTIFIC ABSTRACTS

The American College of Occupational and Environmental Medicine (ACOEM) is pleased to announce that they are now accepting session proposals and individual scientific abstracts for the **2010 American Occupational Health Conference** (AOHC), to be held at Rosen Shingle Creek in Orlando, Florida, May 2-5, 2010. (http://www.rosenshinglecreek.com/)

ACOEM is the largest medical society dedicated to promoting the health of workers through the preventive medicine, clinical care, research, and education.

AOHC is the premier national forum for physicians, policymakers, and other health care professionals interested in occupational and environmental medicine.

To submit a session proposal or abstract, please visit http://aohc2010.abstractcentral.com. Submission will close on **August 16, 2009**, at 11:59pm Central Time (USA).

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2010 EPICOH-MEDICHEM Congress "Occupational Health under Globalization and New Technology Taipei, Taiwan

A joint meeting of **EPICOH** and **MEDICHEM** will be held in Taipei, Taiwan **20-25 April, 2010.** Prof. Jung-Der Wang is the Chairperson for the EPICOH portion of the program, and Prof. How-Ran Guo will chair the MEDICHEM.

Broad topic areas for the Congress include: Globalization, New Technology, Methodology, Exposure Assessment, Health Outcomes, and Interventions.

Important dates:

July 1 , 2009 Call for symposium and submission of abstracts

Sep 30 , 2009 Deadline for symposium proposals

Oct 31, 2009 Deadline for submission of abstracts

Nov 30, 2009 Deadline for early bird registration

Dec, 2009 Abstract acceptance notification

For more information, visit the meeting website at: http://www.epicohmedichem2010.tw, or send an email to: epicohmedichem2010@gmail.com.

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