

NEWSLETTER

Change of Secretariat

On the occasion of the recent General Assembly in Goa/India, I handed over the office as Medichem Secretary to Robert Winker from Austria (see also minutes from the GA in this issue of the Newsletter). The Medichem Board had in its preceding meeting unanimously confirmed

Robert's appointment. It had taken some time for me to reluctantly realize that my various other obligations did not leave me enough time to invest as much energy as I would have liked and as you, the members, deserve. I want to thank the many members who, on many occasions, encouraged and supported me, and I ask you to continue to support my successor likewise. I also thank Robert for his commitment to step in, and my Board colleagues who have co-opted me to further serve on the Board until the regular end of my mandate in 2007.

Dr. Michael Nasterlack
(Ludwigshafen, Germany)



Introduction of the new Secretary

I am a Doctor for Occupational Medicine, currently working at the Medical University of Vienna. I attended 5 years of my medical specialization training at the Medical University of Vienna and additionally one year at the Finish Institute of Occupational Medicine in Helsinki (Finland).

I have been conducting research on issues relating orthostatic intolerance and on autonomic dysfunction. One of my latest projects was recently reported in the Hypertension Journal, official publication of the American Heart Association (April 2005 Edition).

I am also teaching graduate and undergraduate courses in Occupational Medicine at the Medical University of Vienna.

I know that the expectations of the Medichem-members concerning the new Secretary are very high, because Michael has done such a great job. I would like to take the opportunity to thank him once again for his great contribution and I will try to do my best to satisfy the expectations.

Dr. Robert Winker
(Vienna, Austria)



November 2005



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

Founded 1972 in Ludwigshafen, Germany

Honorary President:
Prof. Dr. med. Dr. h. c.
Alfred M. Thiess

Chairman:

Dr. Stephen W. Borron
International Toxicology
Consultants, LLC
1025 Connecticut Avenue NW,
Suite 1000
Washington, DC 20036-5417 (USA)
Phone: +1-202-588-0620
Fax: +1-202-478-0444

Secretary:

Dr. Robert Winker
Universität Wien
Abt. für Arbeitsmedizin
Klinik f. Innere Medizin IV, AKH
Währinger Gürtel 18-20
1090 Wien (Austria)
Tel.: (43) 664 5018662
Fax: (43) 1 408 8011

Treasurer:

Dr. Andreas Flückiger
F. Hoffmann-La Roche Ltd.
CH-4070 Basel (Switzerland)
Phone: +41-61-688 37 38
Fax: +41-61-688 16 51

Board Members:

Dr. P.J. Boogaard (Netherlands)
Dr. E.-N. Emmanouil-Nikoloussi (Greece)
Dr. J. Ger (Taiwan)
Prof. K. Kono (Japan)
Dr. A.B. Kotzé (South Africa)
Dr. J.A. Morales (Mexico)
Dr. M. Nasterlack (Germany)
Dr. P.S. Nmadu (Nigeria)
Prof. T. Popov (Bulgaria)
Dr. T. Rajgopal (India)
Dr. F.G. Rose (U.K.)
Dr. S.O. Salomon (Argentina)
Prof. F.W. Schmahl (Germany)
Dr. L.M. Yee (USA)

**Minutes of the
Medichem General
Assembly, September
2nd, 2005
Marriott Resort Hotel ,
Goa, India**

Present: 28 members in good standing. Chairman Stephen Borron opened the meeting at 18:00 p.m.

TOP 1: Approval of agenda for the 2005 General Assembly

The agenda as distributed by the Secretary was accepted without further amendments.

TOP 2: Approval of the minutes of the 2004 General Assembly in Paris

The minutes as published in the November 2004 Newsletter and sent out to all Members by the Secretary Michael Nasterlack were accepted without amendment.

TOP 3: Chairman's report

2004 – 2005 has been a successful year for Medichem in a number of ways. The 32nd Medichem Congress in Paris was attended by approximately 125 participants from more than 20 countries. Comments regarding the scientific quality were largely positive. In addition to our Medichem Congress, Board Members conducted a minisymposium in Sofia, Bulgaria, for occupational health professionals during our Mid-Year Board Meeting there. Attendance was very good and participants expressed great interest in the topics presented. As a result of the success of this program, the Board has decided to do 3 additional

mini-symposia in developing areas next year. The first will be in Monterrey, Mexico, in February 2006 during the Mid-Year Board Meeting. The other two will tentatively be in Russia and China. We will be calling on Medichem members in these regions for interest in presenting a lecture. As Chairman of Medichem, I was invited to participate in the 2005 IAOH Congress in Pune, India, as a keynote speaker. The Congress was a great success.

So, you can see that educational activities have formed a very important part of myself and Medichem during this year and will continue to be a major focus during my tenure as chairman. Our decision to hold the 33rd congress of Medichem in Goa was a good one. While attendance by foreigners could have been better, overall attendance has been good and the program interesting and informative. There are areas where we need improvement. Medichem made funds available for up to 20 young scholars to attend this meeting in addition to our usual Medichem prize scholarship schemes. Only 1 person benefited from this scheme in part due to our failure to disseminate information about the availability of these funds more widely. We will continue this program for Mexico 2007 and hope to put the funds to somewhat more complete use. Membership continues to be a tenuous situation as Michael will outline. We must all make efforts to encourage membership. It should be

recalled that sustaining members can benefit from a number of individual memberships depending on amount. We hope that many of the Indian colleagues who joined the congress will also join Medichem.

Another area where we have lagged behind is in follow-through with some projects. As you know, we signed an MOU with ACOEM to be of assistance in the event of chemical disasters. As a group we must decide whether this remains a worthwhile project and, if so, to follow through with establishing a database for emergency contacts. We will be sending out an application with the next newsletter. If the response is adequate, we will move forward. If interest is lacking we will drop this project.

The other projects discussed in the past include an electronic library of articles and a bulletin board for on-line consultation and news updates. I will personally attempt to launch the online library in 1 Q 2006. I would ask our members to inform the Board via the secretary if you believe a bulletin board is a worthwhile project for Medichem.

I would like to thank the Board and our officers for their contributions, provided without compensation. I particularly would like to offer my thanks to Dr. Nasterlack, who is turning over the reigns of the secretariat to Dr. Robert Winker. Michael has done an outstanding job and I'm sure Robert will carry on this tradition of hard work. I thank

Andreas Flückiger for his careful guarding of the Medichem purse and his willingness to continue this task.

Finally, I wish to recognize the contributions of our sustaining members, who provide more than ½ of our operating funds, permitting us to provide educational efforts and outreach to new members in developing countries.

TOP 4: Treasurer's report

First, Andreas Flückiger announced that Reliance Industries, India, had just committed themselves as a new sustaining member. Then he reported that with expenditures amounting to CHF 19,977.55 and revenues of CHF 28,704.00, the year ended with an increase of Medichem's assets of CHF 8,726.45. The credit balance on December 31st, 2004 was CHF 233,077.84 (US \$ 205,354.92 at the exchange rate on that day). CHF 100,000 thereof remain in a certificate of deposit. The books were revised by Walter Urbatus and found to be in good order. The General Assembly expressed their thanks to Andreas Flückiger, Walter Urbatus and the Treasurer's wife Marta for their ongoing good work in connection with the Medichem chest with a warm applause.

TOP 5: Secretary's report

Michael Nasterlack gave an update on the development of Medichem's membership since September 2004. Medichem has lost 9 members and, during the same time period, gained 13 new members. As of September 14th, 2005, Medichem had 281 listed

members from 40 countries, however, with several resignations pending by the end of the year.

Since September 2004 the Secretary has issued three Newsletters. The Handbook was last updated and distributed with the July Newsletter, 2005. Costs for printing and distribution were borne as usual by BASF Aktiengesellschaft Ludwigshafen.

On the occasion of the General Assembly, Michael Nasterlack handed over the office as Medichem Secretary to Robert Winker from Austria. The present Medichem members greeted the new Secretary with a warm applause.

TOP 6: Board elections

Seven Board Members came to the end of their term of office this year. Of these, Peter Boogaard (Netherlands), Jiin Ger (Taiwan), Frank Rose (UK), and Les Yee (USA), agreed to stand again for another term of office. After a Call for Candidates the following Medichem members were newly nominated to the secretary and consented to run for election: Elpida Emmanouil-Nikoloussi (Greece), Jorge Morales (Mexico), and André Kotzé (South Africa). Board members Hans van der Merwe, Samir Guirguis and Robert Garnier decided not to run as candidates again for personal reasons. Thus, there were as many candidates as there were vacancies on the Board, and this year's Board election went with a "silent vote". Jorge Morales and André Kotzé presented themselves to the

General Assembly and were greeted with a big round of applause.

TOP 7: Update on preparation of the Mini Symposium at the ICOH 2006 and the Medichem Congress 2007

In 2006, Medichem will organize a Mini-Symposium together with the Scientific Committee on Pesticides at the ICOH Congress in Milan, Italy (June 11 - 16). The topic will be "Use of Human Data in Risk Assessment". Organizer on behalf of Medichem is Marco Maroni. As a pre-congress event, Medichem will organize a two day HLS-course in Rome.

For 2007, Medichem has received an official bid from the Society of Occupational Medicine Physicians in Querétaro, Mexico, to co-host the Medichem Congress as a back-to-back event with the FENASTAC conference (September 14 – 16, 2007). Jorge Morales presented information about the conference and the venue. Anticipated dates would be September 12 – 14, with the Board meeting scheduled for September 11th. The Board had unanimously welcomed and approved the bid.

TOP 8: Miscellaneous

This year's Medichem Prize was awarded to Vimesh Jani for his presentation titled: "Awareness and perceived need of training for emergency preparedness among medical professionals around chemical industries."

Marco Maroni outlined the co-operation between Medichem and other ICOH Scientific Committees and discussed the

possibility of simultaneous membership.

Alan Reid referred to a proposal made earlier by him, where retired Medichem members could offer free counselling services e.g. to stakeholders in transitional economies. While there was general agreement that this was a commendable proposal, due to time restraints no Board member had been able to take up this issue.

The Board and the General Assembly thanked Shrinivas Shanbhag and Thirumalai Rajgopal for their good work in organizing this year's congress. Both received a certificate of appreciation which was signed by the Chairman and the Secretary and were greeted with a huge round of applause.

The Chairman adjourned the meeting at 19:00 p.m. The next General Assembly will be held at the ICOH Congress in Milan (see TOP 7)

Dr. Michael Nasterlack
(Ludwigshafen, Germany)



High Toll of Occupational Injury and Disease, USA

Occupational illnesses and injuries account for thousands of deaths and millions of disabling injuries each year in the United States, yet their full health, economic, and social impact remains under-appreciated, reports a study in the Journal of Occupational and Environmental Medicine, official publication of the American College of

Occupational and Environmental Medicine.

Paul A. Schulte, Professor of the National Institute for Occupational Safety and Health calls for an integrated data-monitoring and analysis system to understand the full magnitude of occupational injury and disease and to guide decisions regarding prevention and intervention programs. Prof. Schulte analyzed available research on the rates, costs, and other consequences of occupational illness and injury. Recent estimates suggest that 55,000 Americans die of occupational causes each year. If occupational injuries and diseases were classified as a separate cause, they would be the eighth-leading cause of death in the United States-just between diabetes and motor vehicle accidents. Research also indicates a high rate of disabling occupational injuries-3.8 million per year in the United States. Worldwide, occupational factors may account for 800,000 deaths and 100 million injuries. Occupational injuries and diseases impose an enormous economic burden as well. The most comprehensive available data suggest direct and indirect costs of \$155.5 billion per year in the United States alone. Based on less complete data, annual direct costs for medical care are estimated at \$14.5 billion. Nevertheless, these figures likely miscalculate the true burden of occupational illnesses and injuries, especially once the hidden "social" costs-such as their impact on labour relations,

family and community life, and mental health- are considered. Lacking a comprehensive monitoring system, researchers rely on "piecemeal" data sets to estimate the true rates and costs of work-related illness and injury. Another major challenge is that many occupational diseases have several contributing factors and a long "latency period," sometimes with many years between a toxic exposure and the first signs of illness. The limitations of the available research highlight the need for an integrated approach to assessing the rates and impact of occupational injury, Prof. Schulte believes. Such a system should maximize the collection and analysis of data on exposure to potential hazards at work, the health effects of those exposures, and the ensuing costs. Another key focus would be the extent to which the occupational illnesses and deaths are avoidable.

This type of research information is essential for guiding policy decisions regarding the effectiveness, feasibility, and impact of occupational safety and health interventions. Currently, there are relatively few data on the cost-effectiveness of such programs. Dr. Schulte concludes, "Demonstrating how workplace interventions enhance public health will help policy-makers direct resources appropriately to where they will have the greatest impact." ACOEM (The American College of Occupational and Environmental Medicine) is an

international society which consists of 6,000 occupational physicians and other health care professionals. It provides leadership to promote optimal health and safety of workers, workplaces, and environments.

Dr. Robert Winker
(Medical University of Vienna, Austria)



**William Richard S. Doll,
born 28 October 1912,
died 24 July 2005**

The doyen of the world's epidemiologists, Sir Richard Doll, died on 24 July 2005 at the age of 92. The Medichem community was especially proud that he had accepted its Honorary Membership, which was awarded to him in October 1992 at the Queen Elizabeth II Conference Centre through Chairman Sir Christopher Lawrence-Jones and Medichem's founder and Honorary President Prof. Alfred Thiess.

A brief search in the internet yields a wealth of information about this extraordinary personality, and in the following we quote parts of the obituary by *Anthony Tucker in The Guardian*, July 25, 2005.

Together with Sir Austin Bradford Hill Doll proved the link between lung cancer and tobacco smoking. His meticulous approach to the structure of studies, to the mathematics they use and to the collection, analysis and quality of information needed to render them valid, sprang from this and earlier work. Through his integrity and lifelong insistence on the

highest standards, Doll won the respect of colleagues and scientists throughout the world.

As he aged, his autocratic perfectionism led to conflicts with many scientists and medics who wanted quicker answers than Doll could allow on available information - such as his uncertainty until 1993 about increased child thyroid cancer after Chernobyl. However, what he questioned, quite properly, was the quality of the underlying information. This conservative caution did not in fact reflect a political conservatism, for Doll was quite leftwing early on, and associated with various progressive causes. Environmental pressure groups thought him so dismissive of early evidence or of a small number of cases as to be defending the interests of government and industry. Yet, as Doll pointed out, the mathematics of statistical studies is uncertain. Doll was more aware than many of his critics that an association, however powerful, does not necessarily imply causation. He never claimed a causal relationship between smoking and lung cancer on the basis of either the first case-control studies or the prospective study. Only when all other available information was brought into the picture did he feel that a true causal relationship had been shown.

However, even when it was shown that all populations with a long smoking history suffered a large increase in lung cancer, yet nowhere was there a high incidence of lung

cancer among non-smokers, the causal relationship continued to be challenged. This was a great disappointment to Doll. Until the media were convinced, he excused the failure of the public to respond, but he could not excuse the inactivity of governments.

Among many prizes, he received the UN Award for Cancer Research in 1962, the BMA Gold Medal in 1983, the Royal Society Royal Medal in 1986 and the Helmut Horten Foundation Award in 1991. Doll was made regius professor of medicine at Oxford University in 1969, retiring in 1979. He was knighted in 1971 and became a Companion of Honour in 1996. Though he would have been reluctant to acknowledge it, Richard Doll was both a great doctor and the greatest epidemiologist of our time.

Prof. Alfred M. Thiess,
Dr. Michael Nasterlack,
(Ludwigshafen, Germany)



**No cognitive deficits in
men formerly exposed to
lead**

The objective of the present study was to investigate whether reduced cognitive abilities from low to moderate long-term lead exposure below current threshold values are reversible after exposure has ceased. The detailed results will be published in the next Edition of the middle European Journal of Medicine and I will therefore only give a brief summary of the current project.

Executive functions, attention, visuospatial and visuomotor functioning in former lead-exposed subjects and controls were investigated. 48 former lead-exposed subjects with a mean current blood level (PbB) of 5,4 µg/100 ml and 48 matched controls (PbB: 4,7 µg/100 ml) out of a pool of 61 males were investigated. In general we can differentiate between two approaches to investigate reversibility of lead induced neurotoxic effects. Doubtless the best way is a longitudinal design: Subjects are tested twice, during and after lead exposition. Secondly, formerly exposed subjects can be compared with never exposed controls (cross-sectional design). This approach does not allow to investigate reversibility of lead effects on cognitive function direct. However a negative finding (i.e. no differences between formerly and never exposed) would show that there are no long-term effects of lead on cognitive functions. Assuming that formerly exposed subjects had cognitive deficits during their current exposure, a negative finding would additionally support the reversibility hypothesis. In this study we applied the cross-sectional design. We investigated cognitive abilities in a group of former exposed subjects and in a control group, which was never exposed to lead. Both groups were matched on age, years spent in education, verbal intelligence and gram alcohol consumption per week. Neuropsychological tests were carried out using Modified

Wisconsin Card Sorting Test, Block Design Test, Visual Recognition Test, Simple Reaction Time, Choice Reaction and Digit Symbol Substitution. Lead exposure was assessed by using current and cumulative measures. Main result was, that there were no significant differences in cognitive parameters between the groups. When analyzing dose-response relationships negative correlations were found between PbB and the Block Design performance, the Visual Recognition score and the Digit Symbol Substitution score. High cumulative exposure measures (IBL>5000 and duration of exposure >5years) correlated only with the wrong reactions in the Choice Reaction test.

As stated, the main result of the present study was, that we found no differences in cognitive abilities between former lead exposed subjects and controls, even when test results were stratified by exposure groups. From this we can draw two conclusions. Firstly this indicates that there are no long term neurobehavioural effects under occupational exposure limits after exposure has ceased. Secondly to a certain extent, these findings support the hypothesis of reversibility. Note that this argumentation is based on a specific premise, i.e. that current lead exposure actually diminishes cognitive abilities. Obviously we have no direct evidence that our former exposed group suffered from neurobehavioral deficits during exposure. However in

the literature are a lot of studies that demonstrated the negative impact of lead within a similar exposure range as in our group under study. The results of our study therefore indicate that cognitive deficits due to low lead exposure are reversible. Since the present study was limited to low long-term lead exposure (all PbB values were always below 55 µg/100 ml), extrapolation of these results to heavily exposed people is not possible.

Dr. Robert Winker
(Medical University of Vienna, Austria)



Effects of parathyroidectomy on lead mobilization from bone in patients with primary hyperparathyroidism

The aim of the study was to investigate release of bone lead into the circulation in diseases with increased bone metabolism. The results were reported in the October 2004 Edition of the renowned Journal Bone, of the Official Journal of the International Bone and Mineral Society.

Since lead accrued from environmental exposure accumulates in bone with a half life time between 6 and 10 years, a release of bone lead into the circulation and/or urine should be expected in diseases with increased bone metabolism such as hyperparathyroidism. These results provided evidence that bone resorption influences the release of bone

lead stores into circulation. This was also found investigating the influence of bone resorption on the mobilization of lead from bone in a normative aging study.

Since positive uncoupling of bone metabolism was observed following treatment of hyperthyroidism, similar results should be expected after surgery in patients with primary hyperparathyroidism if bone resorption has occurred.

Persistently high serum parathyroid hormone

concentrations are thought to have catabolic effects on bone, whereas intermittent mild increases have anabolic effects. In patients with primary hyperparathyroidism, the enhanced loss of bone (predominantly cortical bone) appears to be completely normalized 6 months after surgery.

Thus, differences in lead metabolism should be expected between patients with initially moderate increased or high parathyroid hormone. In vitro investigations have demonstrated that parathyroid hormone may increase lead release from bone. On the other hand, a clinical investigation in patients with primary hyperparathyroidism has shown a decreased concentration of lead in blood directly after surgery. But in this investigation, only PbB was included and not lead excretion or bone formative and resorptive parameters.

To clarify the question whether there are differences in suspected blood lead and/or lead excretion alterations in

patients with initial moderate elevated and high parathyroid hormone concentrations, 60 patients were investigated before and after parathyroidectomy along with characteristic formative or resorptive biochemical bone parameters.

We studied 60 patients with primary hyper-parathyroidism (primary hyperparathyroidism, 50 women, 10 men, aged 61.4 ± 10.6 and 64.1 ± 9.9 years, respectively) (a) before, (b) 1–6 months, and (c) 6–12 months after parathyroidectomy.

Besides lead in blood and lead in 24-h urine samples, parathyroid hormone, osteocalcin, phosphate, and serum pyridinoline cross-linked telopeptide were determined. Control data were determined in 20 healthy age-matched subjects.

Mean PbB in patients with primary hyper-parathyroidism was in the same range as in controls. A decrease of blood lead after parathyroidectomy was found in the interval beyond 6 months. In contrast, mean lead in 24-h urine initially increased after surgery ($3.05 + 1.94$ vs. $4.25 + 2.65$ $\mu\text{g/l}$, $P = 0.004$) and was not different beyond 6 months in comparison with preoperative values at (c). Investigating only patients with parathyroid hormone < 150 ng/l, no significant blood lead or lead in 24-h urine alterations were detected before and after parathyroidectomy. In patients with parathyroid hormone > 150 ng/l, the decrease of blood lead at (c) was more pronounced as was the increase of lead in 24-h urine

at (b). In these patients, blood lead and osteocalcin as well as blood lead and serum pyridinoline cross-linked telopeptide were correlated pre-operatively.

In conclusion, our data show that in environmentally lead-exposed (by food or by pollution) hyperparathyroid individuals, there is no hazardous blood lead release from bone. The preoperative correlation between blood lead and osteocalcin in primary parathyroidectomy patients with parathyroid hormone > 150 ng/l provides evidence that in fact there is a lead release from bone into the blood-pool by bone remodeling. The increase of blood urine after parathyroidectomy is suspected to be caused by PTH-dependent lead accumulation in the kidney, which seems to be restored with decreasing parathyroid hormone. Moreover, our data confirm prior findings that bone remodeling seems to be normalized 6 months after parathyroidectomy. If there is interest in the detailed results, all facts can be found in the Bone Journal. The e-mail address of the author is:

wolf.osterode@meduniwien.ac.at

Prof. Wolf Osterode
(Medical University of Vienna, Austria)



Medichem activities

On the occasion of its Board mid-term meeting next year, which will be held in Monterrey, Mexico, on February 17, 2006, Medichem will organize a Mini-Symposium for local

toxicologists, public health specialists and occupational medicine doctors. The following topics were chosen:

- 1) Preparedness for chemical mass casualty incidents,
- 2) State of the art: Cyanide poisoning,
- 3) Mass psychogenic illness in the era of terrorism.

The symposium will be organized by Medichem-Board member Dr. Jorge Morales from Mexico. If there is interest to attend this meeting Jorge Morales can be contacted via e-mail (e-mail address: morales.ja@pg.com).



Forthcoming Events

In 2006, Medichem will organize a Mini-Symposium together with the Scientific Committee on Pesticides at the **ICOH Congress in Milan, Italy (June 11 - 16)**.

The topic will be "Use of Human Data in Risk Assessment".

More information is available at www.ich2006.it/ and form the Organizing Secretariat in charge of the congress registration, which is:

Fiera Milano Congressi c/o SP.i.c., Via Costalunga, 14 25123 Brescia (BS),

E-mail:

ich2006@fieramilanocongressi.it

Occupational Epidemiology and Risk Assessment

Identifying appropriate and effective actions - including medical and workplace moni-

toring, health and safety interventions, establishing exposure limits, evaluating causation, etc. - requires understanding and integrating information from diverse fields such as toxicology, epidemiology and quantitative risk assessment. In this two-day course the essentials of occupational epidemiology and risk assessment will be reviewed, with a focus on how scientific information can be evaluated, synthesized and used to support occupational health decisions. Examples will be used to illustrate practical approaches for identifying and assessing workplace risks, including the derivation of quantitative risks assessments commonly used to support science-based policies and regulations. Evaluation of disease causation, generally and in the individual, also will be discussed. Fluency in English will be helpful.

When: Opening reception 6:00 p.m., March 7, 2006; course ends 3:00 p.m., March 9, 2006.

Where: Dorint Novotel Frankfurt am Main-Taunus-Zentrum.

Costs: Course fee: €750 (includes course materials, opening reception, lunch and coffee breaks each day).

Accommodations (includes two nights' stay at hotel with breakfast): €210

Registration deadline: January 31, 2006 (enrollment will be limited)

For more information please contact:

Martina Opey
ENVIRON Germany GmbH
Herbrueggenstrasse 106

D-45359 Essen

GERMANY

Phone: +49 201 438 830

Fax: +49 201 438 8340

email: mophey@environcorp.com

Welcome to New Members

Dr. **Jia Ning Gao**, BASF Greater China, Shanghai (CHINA),

Dr. **Edwin Whiteside**, Exxon-Mobil Oil (N2) Unilever, Wellington (NEW ZEALAND),

Dr. **Tatiana A. Tkacheva**, Research Institute of Occupational Health of Russian Academy of Medical Sciences, Moscow (RUSSIA),

Dr. **Mervyn D. Jordan**, Engen Petroleum Ltd., Durban (SOUTH AFRICA),

Dr. **Pournima Kulkarni**, Private Consultant, Nagpur (INDIA),

Dr. **Rishikesh Naik**, Reliance Industries Limited, Moti-Khavdi (INDIA),

Dr. **Avinash Verma**, Bhilai Steel Plant, Bhilai (INDIA),

Dr. **Bharat B. Sagar**, Lok Nayak Hospital, New Delhi (INDIA),

Dr. **Ashish Mittal**, Occupational Health & Safety Management Consultancy Services, New Delhi (INDIA)

Dr. **Zareen Mohamed**, Srimamachandra Medical College and Department of Environmental Health Engineering, Ramachandra nagar (INDIA),

Dr. **Vimesh Jani**, Marmada Chematur Petrochemicals Limited, Narmadanagarm (INDIA)

