

REPORTS

THE II INTERNATIONAL COLLOQUIUM ON INDUSTRIAL MEDICINE IN THE CONSTRUCTION INDUSTRY (20—22 October, 1992, Baden-Baden)

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The II International Colloquium on Industrial Medicine in the Construction Industry was organised by the Association of Construction Industry Societies of the Federal Republic of Germany with the support of the International Commission on Occupational Health (ICOH/CIST) and the International Section of the IVSS for the Prevention of Industrial Accidents and Occupational Diseases in the Construction and Civil Engineering Industries (AISS/ISSA).

The Colloquium was attended by over 320 participants mostly from Germany, France and Austria. There also were representatives from the Netherlands, Belgium, Sweden, Poland, Italy, Denmark, Switzerland, Finland and the United States of America.

The program of the Colloquium covered the following main topics:

1. New European and international standards in industrial medicine,
2. Industrial medical investigation programs for insured persons in the construction industry,
3. Dangerous substances in the construction industry,
4. Lifting and carrying heavy loads in the construction industry.

Topic 1

The opening session which took place on October 20, was followed by working sessions devoted to the first topic. During an inter-session break the exhibition was opened. Nineteen companies presented medical and measurement equipment, computers, protective clothing and equipment, and other devices.

Professor H.J. Raithel presented in his introductory lecture the essential directives of the European Community and two regulations on health and safety at work issued in 1989.

Dr M. Blaizot (France) described French regulations which have been in operation since 1946 and compared them with the WHO recommendations of 1985 not yet signed by France. He pointed out convergences and divergences between those two documents.

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Dr G. Köhler (Germany) discussed perspectives of work safety in the construction industry based on the WHO and ILO recommendations. He stressed that the industrial medical care should also cover medium and small business. He informed the audience that the international risk register and a dangerous substances information system (GISBAU) had been established.

H.J. Bieneck, Eng. (Germany) focussed on the consequences of the German reunification and the necessity for harmonisation of regulations especially in regard to medium and small business.

Dr A. Englund (Sweden) presented a 25-year experience of doctors and other specialists taking care of 180 000 workers. He stressed that reduced governmental financial support and cancelled agreements between the unions and employers makes the future difficult to forecast.

Dr J.C. van Duivenbooden (Netherlands) spoke about physical and psychological stresses in the construction industry in the light of regulations which define the rights and duties of workers and employers in the case of work incapacity and which are still mandatory in the Netherlands. He mentioned a new 5-year contract recently concluded with the Federation of General Industrial Health Services.

Dr F. Vermeiren (Belgium) presented the program of accident and occupational disease prevention which had been operating since 1968. The program embraces individual and inter-company preventive measures in the case of similar hazards.

Dr H. Untner (Austria) demonstrated a model for the industrial health care covering 1 700 employees of an Austrian building company in Vienna. Having in mind often changes of building sites, an examination bus has been designed. The bus is equipped in medical facilities and medical records of workers.

Dr H.M. Schian (Germany) discussed technical and organizational changes arising as a result of membership of Germany in the European Common Market, taking into account existing regulations as well as the need for reviewing present standards and system of budget allocations for work safety.

Dr B. Spannhake (Germany) turned attention to the fact that a considerable increase in the average age of the construction industry workers proves that this industry fails to attract new young people. The combination of physical and psychological stresses with a continuous introduction of new technologies explains probably this observation. Therefore, there is a need for better prevention of accidents at work and occupational diseases. Among others, she mentioned an increased number of industrial robots which on one hand, diminish physical strain but on the other, make work more monotonous.

Topic 2

Professor F. van Dijkl (Netherlands) entitled his paper "Atlas of work and health problems in the Dutch building and construction industry". He stressed the significance of work-related musculoskeletal diseases, occupational skin disorders and psychic problems. The Atlas mentioned in the title had been constructed on the basis of periodical examinations of health condition in over 11 000 workers carried out in 1990.

Dr P. Roto (Finland) discussed the occurrence of occupational diseases in the Finnish construction industry during the years 1981–1990. He observed a tripled increase of the rate per 1 000 workers. This increase was partly caused by including (1987) epicondylitis and tenosynovitis into occupational diseases.



Dr J.H. Elliehausen (Germany) together with his co-workers displayed the outcome of studies on 111 583 construction workers, covered by the Bavarian industrial health service, held during the years 1985–1988. Statistical evaluation of data obtained was brought to participants attention.

Dr J.P. Choquet et al. (France) informed us about monitoring 200 000 employees during a period of 10 years. The results were processed in the computer system.

H. Stahlmann and W. Stroh (Germany) referred to data on the health condition of construction workers obtained from studies carried on since 1977. The hardware consists of networked PCs linked with various medical units.

Dr J. Hooisma et al. (Netherlands) has been involved in working out list of questions on encyphalopathy and psycho-organic syndrome in workers exposed to organic solvents. A questionnaire of 51 questions has been developed and used to examine a group of 75 solvent-exposed painters and 75 bricklayers. As the first step in developing a preliminary set of threshold values in a defined population at risk for neurologic illness, the questionnaire was administered to a group of haemodialyzed uraemia patients.

Dr D. Beaumont et al. (France) presented the question of measuring damages of hands and arms in workers exposed to vibration transmitted by vibrating hand-tools. Digital tactilometry is a useful tool for tracking and follow-up of harmful health effects by supplying an objective and quantitative evaluation of vibration-induced alterations in sensitivity.

M. Adelman, W. Bunk and G. Linke-Kaiser (Germany) spoke about skin diseases and disorders of the locomotor system (spine, knees) in tilers. A group of 130 tilers was examined. Studies revealed much higher occurrence of these health problems in this group than in a general working population.

E. Tesch et al. (Germany) dealt with health condition of cleaning workers. About 600 persons were examined and interviewed. It was confirmed that skin diseases, infection risks and consequences of exposure to substances used as cleaning agents or as a result of the environment at the workplace are most common in this group of workers.

The final paper presented by Dr H.M. Schian (Germany) under Topic 2 was devoted to rehabilitation in the light of the EEC regulations.

Topic 3

Dr R. Paur (Germany) justified the need for reassessing of various materials and material mixtures used in the modern construction industry in view of a continuous technological progress in this field.

Doz. N. Winker and E. Baumgartner (Austria) studied the exposure of construction workers to various chemical substances such as acids, alkali, glues, paints, dyes and lacquers. There are two top risks: one is a damage of an exact body site by organic peroxides. There is a particular danger if they are splashed into a person's eye as this can cause blindness unless the eye is properly rinsed out with water within the first 30 sec. The other is the risk of fire and explosion. Inhaling solvent vapours leads to disorders of the nervous system. New hazards appeared together with the use of the polyester resin and polyurethane materials containing

isocyanate hardeners. They can cause irritation in the throat and even bronchial asthma. The isocyanate asthma always necessitates a job change for the person affected.

Professor J.J. Kolk (Netherlands) presented the harmful effects of mineral fibre isolation material. These materials can irritate the skin and an irritating effect of airborne fibres on the lung membrane cannot be excluded. Measurements of air pollution at work-places where mineral fibre isolation materials are used is strongly recommended.

Dr C. Lebaupain et al. (France) instructed how to introduce new chemical substances into the construction industry (labelling, training, etc.).

Paper presented by Dr C. Vigneron (France) was devoted to a very interesting question of exposure to lead linked to the renovation of historical monuments.

Professor G. Triebig et al. (Germany) presented studies, initiated in 1990 and expected to be completed by the beginning of 1993, on neurotoxic risks in painters employed in the construction industry. The question whether symptoms which occur are caused by stress or by chronic exposure to organic solvents still remains without any clear answer.

Doz. E. Baumgartner et al. (Austria) discussed risks from radon whose high concentrations with peaks up to $300\,000\text{ Bq/m}^3/\text{t}$ were discovered in the Umhausen district of Otztal. Data available until now does not permit us to give a definite reply on what levels of radon concentration should be recognized as carcinogenic.

G. Praml, Eng. et al. (Germany) dealt with exposure to dust among workers employed in the underground gunned concrete construction. They stressed very high level of dust which can be detected by individual measurement device worn by workers. An average level of dust was equal to 12 mg/m^3 with peak values up to six times higher depending on a cycle of concrete production. Differences in dust levels also depend on ventilation conditions in tunnels.

Doz. U. Knecht (Germany) described emissions of carcinogenic, polycyclic, aromatic hydrocarbons during restoration work on flat roofs with welded bitumen sheeting.

Dr R. Ruhl and W. Bunk (Germany) presented principles of toxicological information on materials used in the construction industry.

Dr J.C. van Duivenbooden (Netherlands) dealt with a similar issue as well as with the Dutch and German cooperation in the field of toxicological information for the construction industry.

E. Teich, Eng. and H.W. Gerner (Germany) displayed results of the studies on exposure to solvents among painters. During simulation readings they determined concentration levels of numerous substances during typical work procedures and using a wide variety of products. They also discussed low-solvent products and their potential applications.

Dr R. Rühl and K. Jansen (Germany) spoke about low-chrome cements. During the years 1980–1990, cement was identified as being the cause of an occupation-related skin diseases in 3 385 persons. Low-chrome cements have been used for years in Denmark and Sweden. Due to that chrome-induced skin diseases decreased considerably.

S. Ludwig and R. Rheinhard (Germany) presented new developments in the field of low-toxicity construction materials – adhesive, bonding and stripping agents used in floor laying. The data proved that workers employed in this sector of the



construction industry should be examined in view of adverse effects of methanol and benzol homologues, and that they should be insisted on wearing devices protecting them against inhaling gases and vapours.

Dr R. Rumler and K. König (Germany) stressed that occupational doctors should be involved in taking care of workers employed on contaminated sites e.g. old building renovation. The skin and respiratory tract are mostly exposed to contamination, although, consumption of vegetables from contaminated areas cannot be neglected. The use of light protective clothing was another question which requires further analysis in order to decide when it is beneficial and when it causes cardio-pulmonary or heat stress.

Another presentation, given by M. Rastettera (Germany) also dealt with contamination. The whole area of the Fahlbush industrial plant was contaminated by dioxins or dioxin-containing dust during the process of metal and cable remelting. Protective covering of cables not removed before remelting was the source of dioxin. In 1989 the redevelopment of the Fahlbush company commenced. There is still some uncertainty regarding health risks caused by dioxin-containing dust to which workers are exposed during the redevelopment of the plant.

Dr K.G. König (Germany) in his presentation addressed again the question of personal protective equipment when working in contaminated areas. Since deficiencies in the use of protective equipment are not recognized, effective physical protection is often only a misconception. Furthermore, the cardio-pulmonary stress caused by wearing protective equipments is considerably underestimated. This was one of the conclusions drawn by the speaker.

Topic 4

Professor H. Kristen (Austria) concentrated on strains caused by the lifting and carrying of loads as well as on risks resulting from wrong estimation of required effort needed for these operations.

Professor D. Steeger (Germany) spoke about statics and function of the spinal column during work-related strain and everyday activities. He presented the mechanism of the intervertebral disc function and ligament disorders as well as the role of these elements in protecting the spine against overloading, vibration and other work-related risk factors. He also stressed the adverse effect of monotonous work procedures.

Dr E. Holmström (Sweden) presented methods for preventing musculoskeletal disorders in construction workers including physiotherapeutic aspects. She stated that the low back pain syndrome is most common among construction workers.

W. Rohmert, J. Wakula and B. Schildge (Germany) described methods used in recording stress in selected activities within the construction industry and applied in the Institute for Manpower Studies at the Darmstadt College of Engineering. More recent methods are based on a computer analysis and all of them pay regard to ergonomic aspects.

K. Schultz et al. (Germany) compared two methods for analysing posture at work: one based on ergonomics and the other on activity process. According to the authors, the method based on an ergonomic analysis is better for the detection of an improper posture at work.

Doz. U. Redehr (Germany) discussed a five-year project on construction workers now in progress in Hamburg. During the initial stage about 350 persons were covered by orthopaedic and epidemiological surveys. The group of workers included such professions as bricklayers, carpenters, tilers, painters and varnishers. Typical work situations will be simulated in a movement analysis laboratory and quantitatively evaluated by means of electromyography.

Dr D. Gross and D. Steppuhn (Germany) dealt with the telemetric examination of pulse rates at work and the amount of energy expended during the work process. Special attention was focussed on heavy manual work which may induce occupational diseases of a degenerative nature. The occurrence of degenerative illnesses also depends on the duration of exposure to a considerable physical effort. A group of 8 200 bricklayers and stone plasters was covered by the study. The authors stressed that international literature could not provide any exhaustive answer to the evaluation of physical demands in the construction industry.

G. Hoffmann et al. (Germany) carried out studies on manual workers who layed large-size slabs with their hands or by means of lifting devices. The type, weight and dimensions of slabs were registered for the load analysis and heartbeat frequency, blood lactate concentration and musculoskeletal complaints were analysed. It is the opinion of the authors that the laying of large and heavy slabs require appropriate lifting devices.

K. Kaiser, Eng. (Germany) concluded on the basis of his studies that laying bricks with hands should be forbidden especially when the weight of one brick exceeds 25 kg. Bricks which weigh 50 kg cannot be layed manually since such an effort evokes intensified musculoskeletal pains. According to the author the weight of a brick handled with one hand cannot exceed 6 kg and with two hands — 25 kg.

The presented report on the II International Colloquium on Industrial Medicine in the Construction Industry points out several new and essential issues: there is need for new European and international standards concerning labour conditions in the construction industry, having in mind, at least, the migration of workers from one country to another. They should take into account not only large enterprises but also medium — size and small ones where facilities for the protection of workers are limited.

New health hazards resulting from continuous development of new technologies in the construction industry require new, appropriate analytical methods employing special equipment, questionnaires, simulation of work processes, etc.

Much attention was turned to chemical effects in the construction industry associated with the introduction of new building materials which contain heavy metals and new types of dusts. Presentations on renovations of historical monuments and on work in contaminated areas deserve a special mention.

Presentations on lifting heavy objects and its consequences for the locomotor system were also very interesting. An increasing number of occupational diseases of the epicondylus (epicondylitis) and wrist in Sweden were stressed. In the studies on work related spine diseases one should remember that long-term observations lasting sometime 20 years cannot exclude the natural adverse effect of the ageing process.

