



**Volume 11, No. 5 October, 1997.**

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## Editorial

Two events have taken place since my last editorial. Both should have positive consequences for our profession.

The first event was anticipated. I'm referring to the final meeting of the competency based standards steering committee on September 14 in Melbourne. Jim Carmichael has provided a brief summary of the day which appears [below](#), but as I was a member of the committee I'd like to share my perspective also. The meeting began with a draft document describing core competencies for an ergonomist. This draft was the outcome of process which started with a 2 day meeting of the steering committee almost 2 years ago, and included a lengthy period of consultation with members, including workshops in each state facilitated by members of the steering committee. The draft document included several alternative versions of units suggested by state branches at these workshops. The main aim of the meeting was for those attending to agree on a final version to be presented to council (I admit to having doubts at the time about the feasibility of this aim!).

But we did agree, and the final document will be presented to members shortly. The discussion was robust at times, as the pollies would say, but there was a real determination by all in attendance to finish the job, and to do it well. The problem with the draft document (as another member of the committee remarked) was not

so much that it was prepared by a committee, but that it was prepared by a number of sub-committees! However, this is also the final document's greatest strength. I believe that the document is a major achievement of the society, and one which every member who contributed should be proud. Jim Carmichael deserves acknowledgement for all his efforts in undertaking the arduous task of coordinating the process. Thanks Jim, and well done.

The second event was unanticipated, at least by me. The Australian Research Council (ARC) provides advice to the Minister for Employment, Education, Training and Youth Affairs on national research priorities and the coordination of research policy and related matters. They are also responsible for recommending the allocation of about \$120 Million of competitive research grants each year. As part of this process the ARC identifies thematic priority areas. Thematic priorities are areas judged either to be in need of specific encouragement or to be areas of particular importance in delivering benefits. These priorities are reviewed every three years.

The priority areas identified by the Council for grants in 1998 were: citizenship; exploration geophysics; food science and technology; minerals processing science and technology; optics; and technological change. The results of this round are as yet unknown, but for 1997, 163 grants totalling \$8.6 Million were allocated to applications in thematic priority areas.

According to the September 1997 Australian R&D Review, the ARC has circulated to industry and higher education institutions proposed thematic priorities for the Large Grants Scheme during the next triennium. The proposed new priorities, which would be added to the current research priorities, include: Intelligent Automation, Neural Development and Function, Marine Geoscience, and (drum roll please) **Ergonomics**.

Now while I might quibble about how the ARC have defined ergonomics ("interdisciplinary research into the human interface of engineering and design, involving engineers, occupational health and safety specialists, occupational therapists, psychologists, computer scientists"), I'm not going to argue about its inclusion as a thematic priority. My question is - how did it happen? If anyone has any insights I'd love to know.

Finally, welcome to the October issue. Highlights include an article by Maurice Oxenburgh discussing [cost-effectiveness of OH&S interventions](#), and a paper by Jon Tyson on [operator visibility in load-haul-dump mining equipment](#).

Don't forget to get your conference registration in early to take advantage of the early bird discounts, see you there.

Robin Burgess-Limerick

Email: [robin@hms.uq.edu.au](mailto:robin@hms.uq.edu.au)

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**ESA Council News**

The Council met by teleconference on Monday 22 September and decided, among other things, the following:

**Nominees to Outside Bodies:** Some Guidelines were developed and will be published in the next issue of *Ergonomics Australia*

**Hospital Ergonomics:** IEA has convened a working group on hospital ergonomics. Members will be asked to express their interest in the next issue of *Ergonomics Australia*.

**Logo:** Designs for a new logo have been scrutinised and the three best chosen. One of these will be selected by the Council for presentation to the members at the 1997 Annual General Meeting.

**Copyright of Conference Papers:** Rules for Copyright of papers used at the Annual Conference and published in the Proceedings, were approved for incorporation into the Conference Guidelines.

**Competencies:** Jim Carmichael (Convenor of sub-committee) reported on the final meeting of the Steering Committee on 14 September in Melbourne. The document will be edited and presented to the Society, at the 1997 Annual Conference on the Gold Coast. Financial members will be entitled to a free copy, on application.

**Financial Situation:** A sub-committee examined the current financial situation and proposed some options including the idea of the costs of Council meetings being shared by the national and Branch budgets.

**Constitutional changes:** Changes in the nomenclature of the "Council" (to Board) and "Councillors" (to Directors) are to be considered at the AGM. Provision is also being sought in the Constitution for the President to chair all Society, Council and Executive meetings and a process to be implemented which would allow the appointment of a substitute in the event of the President being unavailable.

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### Competency Based Standards Update

The steering committee had their second face to face meeting in Melbourne on 14 September 1997. The aim of the meeting was to finalise the competencies project undertaken by the ESA and the New Zealand Ergonomics Society. The meeting was a very positive one and by the end of the day a consensus was gained regarding the final format of the competency-based standards document.

Each branch of the ESA was represented. Unfortunately, the NZES representative had to send her apologies.

Those representing the branches are listed below:

Mark Hennessey VIC

Verna Blewitt SA

Robin Burgess-Limerick QLD

Margaret Head ACT

Leon Straker WA

Barbara McPhee (sitting in for Neil Adams) NSW

Jim Carmichael Project Manager

In July the IEA released their document entitled Core Competencies for Practitioners in Ergonomics. The ESA and NZES had input into this document. The IEA document was considered by the steering committee at their meeting and a few amendments were made to the Australian and New Zealand version accordingly.

One of the major challenges of the project was to ensure that the diverse scope of ergonomics was captured by the standards. The steering committee believes that this has been achieved and emphasise that the competency-based standards be interpreted by the user of the document with this breadth of scope in mind.

It is also acknowledged that any set of competencies has a limited shelf life and that the ESA/NZES version will be reviewed on an ongoing basis.

Council is yet to determine the exact method of dissemination of the competency-based standards document. Council has committed that it must be made available to all full members and certified practising ergonomists. Council anticipates that the product of this national project be launched at the Annual ESA conference on the Gold Coast in November.

Jim Carmichael

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### **Branch News**

#### **WA**

The President is to attend the next conference of the South East Asian Ergonomics Society thanks to a generous contribution by the West Australian Branch which voted to pay half the costs of Ian Gibson's registration, accommodation and fares.

The President is joined by the Society in saying "Many thanks to the WA Branch for its assistance."

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#### **NSW**

Dr Austin Adams gave a very interesting presentation about "Cognitive Ergonomics and Warnings" on 23 July, which proved a totally interactive experience for those present, who obviously identified with his material. Our next scheduled meetings involve:

20 August - John Brotherhood talking about "Work Physiology and Project Acquarius";

17 September - Roger Hall and Jonathan Talbot discussing "Designing for Usability"

22 October - Neil Adams and Mike Stevenson presenting the latest information on "Slipping and Falling - the Measurement Debate and Forensic Issues".

All meetings will be held as usual at "Worksafe" Auditorium, 92-94 Parramatta Road, Camperdown and any visitors are most welcome to join us.

Our AGM is planned for Wednesday, 19 November - again it will be a dinner meeting at a venue yet to be advised.

A brochure has been forwarded from a group of former "Worksafe" employees (including Prof Wai-On Phoon, Barbara McPhee and Marcia Lusted) who have now joined forces to present a series of seminars. The first one was held on August 14 - "Update on chemical safety and management"; to be followed on 11 September by "Back Injuries, Manual Handling and the Legislation" at the Masonic Centre, 279 Castlereagh Street, Sydney;

18 November "Update on Rehabilitation and Stress Management" at ACT Emergency Services Bureau, 123 Carruthers Street, Curtin, Canberra ACT; and 11-12 December, a two day seminar: "Update on Industrial Ventilation" at the Masonic Centre, 279 Castlereagh Street, Sydney.

Further enquiries and registration forms are available from: ATI CONFERENCES: Telephone: 02- 9449 3116 or Facsimile: 02 9449 7278.

Glena Ellitt, who is the last survivor of the Worksafe Ergonomics Unit is currently reported to have been seconded to the Censorship Board and is watching incredible videos! She has sent the following item of general interest about her principal ergonomic activity.

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### **"Occupational Furniture" -New Standards**

Glena Ellitt

Former Manager Ergonomics Laboratory Worksafe Australia.

I shall attempt a very brief summary of one of this year's new standards. Furniture that is generally referred to as office furniture, which comes under the Standards Australia Heading of "Commercial Furniture", is most often used in an office environment but not always. The newest adjustable chair standard does not mention "Office" in its title but the desks and workstation standards do. This small point may be used for or against what is seen as the necessity for compliance with these standards. Published in February they are:

AS/NZS 4438:1997. Height adjustable swivel chairs

AS/NZS 4443:1997. Office panel systems - Workstations

AS/NZS 4442:1997. Office desks

In particular the swivel chair standard has been bled over for about 4 years and as a member of the Australasian Furniture & Research Institute, Tasmania, technical

committee and also the CS/88 accreditation committee at Standards Australia, this is a politically correct description of what has been going on. AFRDI had an Memorandum of Understanding with Standards Australia to expand on its existing Industry Standard by including Ergonomics, design and OH&S requirements to produce the standard for publication (accreditation) by the Standards Associations in Australia and New Zealand.

The 4438 standard is based on an existing draft standard compiled by Committee for European Normalisation (Anglicised version) which is made up of a group of European countries who cannot agree long enough to publish it as a full standard. As Standards Australia cannot publish a new standard while there is an existing "like" International Standard, and there are a few incomplete ones around, the draft CEN standard was chosen as a more comprehensive, basic structure for 4438.

In the final rounds of accreditation of 4438, one previously silent negative vote was cast on the grounds that 4438 presented a barrier to trade under the General Agreement on Trade & Tariffs Treaty. Because the CEN standard was still only in draft form the publication of 4438 was only allowed if two other less comprehensive, existing overseas standards were listed as alternatives for compliance.

If the alternative overseas standards, listed in 4438, are cited for compliance with 4438 the specified combination of the parts of those standards must be met. In general, the defacto swivel chair standard for Ergonomics and OH&S inclusions in chair design (Worksafe's Chair Selection Criteria - Ergonomic Principles and Checklists for the Selection of Office Furniture and Equipment. Worksafe Australia. [Commonwealth Govt.Printer]) is still more rigorous, for these factors, than any of the standards produced.

Hence, 4438 is not as rigorous as a majority of the technical committee had worked for and since publication, has grown a few more whiskers. One of those problems is the still existent AS 3590:1990- Workstations group of standards. The new standards deal with compliance based on one specific component of a workstation, the older standards are a conglomerate of workstation components in much less detail. As the new standards, as yet, do not cover all the components mentioned in 3590 it has not been superseded or declared obsolete. So 3590 is still being cited for compliance by manufacturers. However, we do have a swivel chair standard which is more than comparable with any overseas standard and if a product has been tested here in Australia for compliance with 4438 then there is no question that the most rigorous standard available, has been met.

Happy sitting,

Glena Ellitt

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### **Conference Update**

Productivity, Ergonomics and Safety: The Total Package.  
International Occupational Health and Safety Forum and  
33rd Ergonomics Society of Australia Conference  
Gold Coast, Queensland, 24-27 November

Highlights include:

### **The Ron Cummings Memorial Lecture**

Roger R. Hall MSc, FESA (Australia)

The Ron Cummings Memorial Lecture is awarded to and presented by a prominent member of the ESA each year.

Roger is a lecturer in ergonomics and co-ordinator of the Ergonomics course with the Department of Safety Science at the University of New South Wales. He is a fellow and former president of the Ergonomics Society and remains an active member of New South Wales branch of the ESA. Roger is also the current chair of the Human-Computer interaction (HCI) Special Interest Group of the ESA.

Roger has a strong background in experimental psychology and visual ergonomics. His particular interest now is ergonomics and design issues related to the usability of new technology such as "smart" computer products.

### **Keynote Speakers**

Professor Stuart McGill Ph.D. MSc BPHE (Canada)

Stuart is a spinal biomechanist and professor in the Department of Kinesiology at the University of Waterloo, Ontario where his laboratory explores low back mechanics of both intact humans and harvested tissues. He has been the author of numerous scientific papers on lumbar function, low back injury mechanisms, investigation of tissue loading during rehabilitation programs and the formulation of work related injury avoidance strategies. In 1986 he was awarded the "Volvo Bioengineering Award for Low Back Pain Research".

Professor Penny Sanderson BA (Hons) MA PhD (Australia)

Penny held an eleven year appointment at the University of Illinois, USA, and is now Professor in the School of Computer Science and Software Engineering at Swinburne University of Technology. Penny's work is predominantly in mechanical and industrial engineering and maintains her involvement in psychology. The title of her keynote address is Cognitive Ergonomics of Information Technology in Critical Care (the green gas goes in the front hole). She will also run a workshop in the area of cognitive ergonomics.

Two other keynote speakers have been invited to present by the joint organiser, the Queensland Division of Workplace Health and Safety. They are Carin Sundstrom-Frisk from Sweden who has expertise in the realm of humans and risk behaviour and Professor Dennis Else, Chair of the National Occupational Health and Safety Commission. Further details on these two speakers can be found on the full conference registration brochure.

### **Mock Trial**

A prosecution of a workplace manual handling matter will be presented as a mock trial by Brisbane barrister Ralph Devlin. The "production" will give life to

ergonomics, health and safety in the workplace, with an emphasis on legal obligations and outcomes.

[editors note: Ralph Devlin is well known in local theatrical circles, and I'm sure this will be an entertaining, as well as enlightening, session.]

For more information contact the conference organisers:

Conference Secretariat, PO Box 177, RED HILL QLD 4059 AUSTRALIA

tel: 07 3368 2644 (international callers: + 61 7 3368 2644), Freecall: 1 800 811 510 (Australian callers from outside Brisbane only), Facsimile: 07 3369 3731 (international callers: + 61 7 3369 3731), e-mail: [carillon@ozemail.com.au](mailto:carillon@ozemail.com.au)

<http://www.carrillon.com.au>

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### **Grapevine**

Congratulations to Airdrie and Ian Long who have an addition to their family: a son, Toben, to be known as Toby, born on 29 July 1997.

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### **No Lifting Policy in the Health Industry**

Stroma Lawson

I work in the Occupational Health Department within a large teaching hospital and would be interested to hear from any hospitals or other health organisations that have a No Lifting Policy.

What does your policy really mean?

How did you go about implementing it?

How does it work in practice?

What did it cost in terms of equipment and training?

What has been the impact on patient handling injuries to staff?

I can be contacted at Sir Charles Gairdner Hospital in Perth, Western Australia on

Tel: (08) 9346 2384

Fax: (08) 9346 3100

E-mail: [stroma.lawson@health.wa.gov.au](mailto:stroma.lawson@health.wa.gov.au)

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### **International interaction anyone?**

From: [ergohelp@texas.net](mailto:ergohelp@texas.net) (David Damico)

Dear Robin,

..... I would like to know if you or any of your hf/ergo colleagues would be interested in joining my local chapter of the Human Factors & Ergonomics Society for a meeting? Perhaps over the internet with PC cams or over a room video conferencing system. I am President of the Alamo Chapter (San Antonio, TX, USA) and will do all I can to coordinate this project.

Please let me know if you're interested. Perhaps you could pass this request on to some of your colleagues if you haven't the time for the project.

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### **Cost-effectiveness in Occupational Health and Safety**

Maurice Oxenburgh (e-mail 100400.1620@compuserve.com)

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Over the years a few of us have been saying that OH&S will not be accepted as part of normal management structure until we talk about profit rather than health and injuries. It is true that a few large companies, especially in the petrochemical industries, take health seriously but the vast majority of people work for small companies who do not take OH&S seriously or do not integrate it into their normal work activities and strategies.

The economic rationalist argument that one only does something if it shows a financial advantage can be turned on its head - if we can show that good working conditions are conducive to increased productivity and quality then we should be able to put into practice OH&S programmes. We may yet reverse the degradation of working conditions that economic rationalism has brought along (see Mayhew, Quinlan and Bennet. The effects of subcontracting/outsourcing on occupational health & safety, UNSW, 1996) Over the past year there have been three international conferences in which cost-effectiveness in OH&S has played a major role; in fact one conference was devoted solely to that topic.

At the International Conference on Occupational Health in Stockholm in September 1996 one of the keynote speakers, the sociologist Professor Björn Gustavsen from the Swedish Institute for Working Life, spoke about the integration of productivity and good working conditions. In his words "If health and safety can be a part of an overall process of improvement and be integrated with the efforts to promote productivity there is a clear management motivation". He then gave some results of his research work that showed a correlation between workplace democratic participation, reduction of sick leave and injuries, improvements in the physical work environment and increase in productivity (both in industry and service sectors).

The second conference, with the awkward title of the European Conference on Costs & Benefits of Occupational Safety & Health 1997, was held at The Hague in June. As this was the first conference specifically on the subject of costs and benefits in OH&S it was a good beginning. It attracted about 450 participants,

mostly from Europe but two from Australia.

Much of the conference was taken up with the costs to governments and industry of poor OH&S practice but there were too few examples of how to cost effectiveness in OH&S. Although many governments, including Australian governments, require economic analysis of regulations before they are promulgated, there were no papers that described the methodology, let alone the validity, used in such analysis. One of the keynote papers was of especial interest. Dr Peter Dorman (Michigan State University) spoke on internalisation of the costs of occupational injuries and illnesses. By "internalisation" Dorman means that all the costs of injuries should be borne by those (the companies) who cause them. This goes well beyond workers compensation and loss of productivity; it goes to the heart of the social costs. At present the State and the injured worker and family bear much of the cost, particularly for long-term injury and disease. Dorman presented a very elegant argument in favour of cost internalisation (an idea first put forward over 150 years ago by Chadwick in England). With the movement away from enforcing regulations to self-regulation, away from stable employment (increasing employment "flexibility" which means part-time and contract work) towards the free market economy for people as well as materials, if society is not to go back to the excesses of unbridled capitalism then perhaps full internalisation of costs will be necessary.

Internalisation is an attractive idea, very logical but fraught with political difficulties. Internalisation certainly accords well with the generally held view amongst health and safety practitioners that improvements in OH&S only come when the senior managers are personally held responsible for health and safety. It also accords well with the basic tenants of economic rationalism - the hackneyed expression "user pays" may become "injurer pays".

Although it is frequently realised that, to be effective, OH&S needs to be integrated and not separate from company systems, many people charged with OH&S responsibilities are employed in that capacity and as such keep OH&S separate from the workplace systems. This was especially noted with some Government speakers and also some speakers from large industry. Dr Paula Liukkonen (Stockholm University) presented her computer model ("OSKAR") which analyses many factors in a company's system, including personnel and OH&S factors. This model's analysis can then indicate areas where corrective factors are required to improve profitability - in fact, a sensitivity analysis. The value of such a complete model is that OH&S factors are integrated into the company systems. There is little doubt that Dr Liukkonen is on the right track trying to integrate OH&S into enterprise objectives but there is still too little recognition of that. Unfortunately her model is available only in Swedish and thus is limited in its general effectiveness.

Dr Guy Ahonen (Swedish School of Economics, Helsinki) was very much down to earth as far as industry is concerned. He described a survey of over 340 companies, including small companies, in which personnel parameters (absence, productive hours, wage costs, etc.) were analysed using Oxenburgh's computer model for cost benefit analysis. By comparison of sick leave absences between the companies he was able to demonstrate the value of prevention measures to increase productivity. Feedback on absence and productivity measures was instrumental in stimulating

many companies to invest in OH&S to gain productivity improvements. His point was that it is little use saying to companies that your real costs are many times your apparent (hidden) costs; each company needs to see its own case (the "we are different from everybody else!" syndrome).

The third conference was the IEA97 (International Ergonomics Association) in Finland where there was a special session organised by the IEA Technical Group on Cost-effective Ergonomics (Maurice Oxenburgh was the organiser). The keynote paper for the session was given by Dr H Hendricks and his paper was a version of his 1996 Presidential address to the American Human Factors and Ergonomics Society.

Dr Kaj Frick (from Stockholm) gave his views on why management is so resistant to change and, in particular, to implement fairly obvious ergonomic/economic solutions. According to Frick, it boils down to the structure and quality of management. It is only recently that quality has become a strategic management objective rather than something left to the factory floor. Similarly, OH&S needs to be integrated into strategic management planning rather than pushed down to the lower levels of management and operations.

Dr Christian Koch (from Denmark) discussed new concepts within Europe to make insurance effective in prevention. At present, insurance costs (Workers Compensation premiums) are the stick but often ignored as it is only perceived as a small stick or one that you can live with. The new concept is to use insurance money not just as a carrot in reduced premiums for past good performance, but as capital assistance for (small) companies so that they can implement good OH&S programmes for the future. Insurance looking ahead rather than backwards.

David Alexander, an engineer/ergonomist from USA, has developed a simulation model to predict the success of ergonomic programmes and the cost of alternative resource allocation. His model has four major areas: surveillance (active or positive), training, medical management and solution development. The latter examines the costs associated with implementing a solution to an ergonomics problem. The costs include both time and materials for engineering solutions and personnel costs for administrative solutions.

Down-to-earth papers were given from participants from England, Australia and New Zealand. David Caple from Melbourne showed a series of ergonomic solutions to OH&S problems that met the criteria of worker participation, good ergonomic solutions and cost effectiveness both in the reduction of injuries (actual or potential) and production. Dr Davis Stubbs of the Robens Institute, UK, was concerned with monitoring English beer production and considered the poor handling system that draymen (beer deliveries) had to contend with. After convincing management that the musculoskeletal injury costs were the smaller part of the costs and that other aspects (container damage, product loss, high staff numbers, vehicle damage, etc.) were in the order of six to ten times higher, management started to take notice. The investment cost to successfully reduce injury had a pay back period of about three years. From New Zealand: Glyn Jones works for a small foundry where the ergonomics problems were anthropometric (the workforce consists of Maoris, Pacific Islanders, Europeans and Asians). Relatively inexpensive changes were made to the workplace to accommodate this

anthropometric diversity. The author showed that it is feasible for small businesses to implement an integrated holistic system to reduce injury and illness and at the same time to increase productivity and quality.

Thus the general tenor of the meeting was that there are concepts developing that can be used routinely that link ergonomics (and OH&S) to economics for the benefit of both workers and companies. So there is a ray of hope that, in these stringent times of economic rationalism and reduction in workplace inspection ("smaller government"), OH&S will not be forgotten but can be revitalised as an aid to increased productivity and profit in industry. It may not be a moral argument but it may have to do until society again realises its obligation to its people.

So what will be the future developments on cost benefit analysis? At the government regulation level accurate analysis will remain a difficult and problematic exercise. It is possible to use cost benefit analysis when the industry is highly defined; for example, reduction in lead exposure in lead acid battery manufacture can be costed and the benefits reasonably accurately forecast. However, for some regulations which span many industries and workplaces, although it is possible to forecast expenditure (the present author has done this exercise for manual materials lifting regulation) one cannot be certain of the effectiveness in terms of reduced injuries and increased productivity: there are just too many variables and uncertainties.

All is not lost; at the enterprise level it is not difficult to estimate the costs and benefits of introducing better working conditions. The workplace is defined, there are few variables and the productivity benefits are usually measurable shortly after the changes are introduced. If you will excuse my mixed metaphor, my forecast is that if OH&S practitioners grasp the nettle and measure costs and benefits in their enterprises they will be able to push their OH&S barrow forward.

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### **Book Review - Manual Handling Risk Assessment**

Jenni Miller

Ergonomica PO Box 83 Nedlands 6909 Western Australia ([jennim@cantech.net.au](mailto:jennim@cantech.net.au))

"Critical Review of Manual Handling Risk Assessment Literature" by Dr. Leon Straker. The International Ergonomics Association Press. Louisville, KY (1997)  
ISBN 0-646-32303-2

This book reviews the literature in relation to risk assessment of manual handling tasks, evaluating the approaches and methods proposed by a wide variety of authors. It aims to give the ergonomics' practitioner a sound basis for choosing which risk assessment method (or methods) they will use in evaluating the safety of any manual handling task. It also provides the student of ergonomics with a comprehensive literature review and a distillation of ideas from the current knowledge in the field. The book begins by defining in detail the key terms of hazard, risk and acceptable risk and of course, manual handling. It discusses the relationship of manual handling to work-related back disorders, one of the most

common and costly conditions seen in Australia and around the world. A model of manual handling risk assessment considers the multifactorial nature of the situation, leading on to a discussion of the different approaches to risk assessment. Straker also comments on the methods of risk control that could arise from the assessment process.

Much of the literature to date has dealt with single manual handling tasks. However in the work place, much manual handling is a combination of tasks, such as pull, lift, carry, lower and push. The book considers risk assessment approaches to both single and combination manual handling tasks.

The logical flow details the psychological, physiological, biomechanical and alternative approaches to risk assessment of single manual handling tasks in Chapters 2 - 5, with a comparison of the various approaches given in Chapter 6. Straker concludes that "a range of approaches and methods are needed to adequately capture the risk in any single task manual handling situation".

Chapters 7 and 8 investigate the approaches to combination manual handling tasks. The literature in this area is scarcer, with some of the information drawn from Straker's own work in the field. He has attempted to redress some of the flaws he sees in earlier studies, in an attempt to validate (or otherwise) the research. He concludes that it may not be valid to take measures from a single manual handling task and extrapolate the findings to a combination of tasks. However, the lack of validated data on combination tasks is something that "needs to be addressed urgently by the scientific community".

Chapter 9 summarises the information in the book and makes some recommendations for which approaches to use when investigating single tasks. The ergonomist's choices will be influenced by the resources at their disposal, the frequency and importance of the manual handling task and the time available. A table gives a quick view summary.

For combination tasks, the choice again depends on similar factors, but the practitioner should be aware that where direct measurement is not possible, they should allow for a large margin of error.

This book is a very useful addition to the library of the busy ergonomics' practitioner who does not have the time to review the range of literature published, but who is often asked for an expert opinion of the risk of a manual handling task. I would also recommend it to students who are looking at manual handling, as well as the researchers who are hopefully out there working on the next step in providing validated methods and data, particularly for combination manual handling tasks.

Available from:

Dr. L. Straker, Curtin University of Technology, Selby Street, Shenton Park. WA 6008 Australia.

Phone: +61 8 9266 3634 Fax: +61 8 9266 3636 Email:  
L.Straker@info.curtin.edu.au

Cost - within Australia Book A\$20 and A\$10 postage.

Cost - outside Australia

If payment is in Australian dollars - book A\$20 and airmail postage A\$20

If payment NOT in Australian dollars make payment equivalent to Book A\$30 and airmail postage A\$30 (extra to cover bank currency conversion fees).

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### **To see or not to see ... that is the question! Designing to maximize operator visibility in Load-Haul-Dump equipment.**

Jonathan Tyson, MASc, CPE Ontario Natural Resources Safety Association North Bay, Ontario, Canada [jtyson@onlink.net](mailto:jtyson@onlink.net)

#### **Abstract**

Each year, Ontario mining experiences approximately 160 accidents/incidents involving underground Load-Haul-Dump (LHD) equipment. A significant contributing factor to many of these accidents and injuries is the restricted visibility from the operator's work space. More specifically, since 1986 there have been five fatal accidents in Ontario mining where the lack of good visibility for the operator of an LHD has contributed to the death of a miner; either the operator or a pedestrian struck by the vehicle. Also, two Coroner's Juries, one in 1994 and another as recently as April 1997, have recommended that the visibility from the LHD operator's compartment be improved (Ontario Ministry of Solicitor General, 1994 & 1997). A review of the literature related to LHD design and visibility indicates that this problem is not isolated to Ontario mining, but is an inherent problem with the design of LHD equipment. This literature also shows that steps can be taken to improve the operator's visibility. Some of the different approaches and changes that can be made to improve the operator's visibility are discussed in this paper.

[Full paper](#) available also.

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### **Professional Development Resources**

A selection of electronic resources.

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**Jones' Tender Points and Travell's Trigger Points** R. E. Brossman, A. B., D.D.S., M.S. <http://www.ovnet.com/userpages/rebross/strain.html>

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**Dynamic Muscular Stabilization in the Nonoperative Treatment of Lumbar Pain Syndromes** Jeffrey A. Saal, MD  
<http://www.silcom.com/~dwsmith/saal890.html>

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Hardin Meta Directory web page for **Physical Medicine and Rehabilitation**.

<http://www.arcade.uiowa.edu/hardin-www/md-phys.html>

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Victorian ESA member **Mark Dohrmann** maintains a web site "**Ergonomics in Australia**" at <http://www.ergonomics.com.au>

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**Managing Ergonomics in the 1990's: A Discussion of the Science and Policy Issues** was held June 17-20, 1997, in Cincinnati, Ohio. A Login name and Password to the electronic proceedings may be purchased for US \$30.  
<http://www.ergoweb.com/Pub/Info/manergo.html>

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### **Disability-Related Resources on the Internet**

[http://weber.u.washington.edu/~doit/Brochures/internet\\_resources.html](http://weber.u.washington.edu/~doit/Brochures/internet_resources.html)

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Adobe Acrobat versions of the following papers are available from the **Centre for Product Ergonomics, University of South Florida**.

<http://com1.med.usf.edu/cpe/cpe.htm>

Gross C, Lloyd JD, Nelson A & Haslam RA: **Carpal Tunnel Syndrome : A review of the literature with recommendations for further research**, Florida Journal of Public Health (In Press)

Gross C & Lloyd JD & Tabler R: **Ergonomic Analysis of Pen Comfort and Wrist Dynamics While Writing**

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Not strictly a resource I guess, but the **Human Factors Association of Canada** has a nice web site with news of activities which makes for interesting reading (<http://www.hfac-ace.ca/eng/index.html>).

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## **Conference Calender**

### **1997**

- Nov 6-8, **ASEAN ERGONOMICS 97** - 5th SEAES Conference, Kuala Lumpur, Malaysia. Contact [asean97@unimas.my](mailto:asean97@unimas.my); ph +6 082 672311; fx +6082 672312.
- November 20, 28th NSW OH&S Conference and Convention. Advance Safe 97, Parramatta. Contact Conference Secretariat ph 02 9363 9858; fx 02 9362 0265
- **November 25-27. ESA National Conference Gold Coast** Contact conference secretariat, PO Box 177, Red Hill, QLD 4059; ph 07 33682644; fx 07 3369 3731; Freecall for Australian callers outside Brisbane 1 800 811 510; email: [carillon@ozemail.com.au](mailto:carillon@ozemail.com.au)
- November, 25-28, Third Australian Conference on Technology for People with Disabilities. University of Canberra. Contact ARATA 1997 Conference

Committee, PO Box 60, Curtin, ACT, 2600; fx 06 281-3488, email [acrodnat@ozemail.com.au](mailto:acrodnat@ozemail.com.au);

<http://www.iinet.net.au/~sharono/arata/arata3rdconf.html>

### 1998

- January 28-30, The Second conference of the **Australian and New Zealand Society for Biomechanics**. The University of Auckland, New Zealand. Contact: Ms. Patria Hume, Sport and Exercise Science, The University of Auckland, P.B. 92019 Auckland, NZ; ph +64 9 373 7599 ext 6859, fx +64 9 373 7043, email [phume@tmknov1.auckland.ac.nz](mailto:phume@tmknov1.auckland.ac.nz)  
<http://www.ait.ac.nz/news/conf/biomech/>
- February, 25-28, Safety in Action, The **International Safety Exposition**. Melbourne. Abstracts due July 1, 1997. Contact The Conference Organisers Pty Ltd, P.O. Box 1127 Sandringham, Victoria 3191. Ph. (03) 9521 8881; Fx (03) 9521 8889; email: [conforg@ozemail.com.au](mailto:conforg@ozemail.com.au)
- April 1-3, **UK Ergonomics Society Annual Conference**, Cirencester, UK. Abstracts due Sept. 26. Contact Sandy Robertson Ph. +44 171 391 1589  
<http://www.ergonomics.org.uk/cfp.htm>
- September, 9-11 **Global Ergonomics Conference**, Cape Town, South Africa. Information from Bob Bridger UCT Medical School, Observatory 7925, South Africa; fx +27 21 4486263. email: [deborah@medicine.uct.ac.za](mailto:deborah@medicine.uct.ac.za). Abstracts due 30 Nov, 1997.
- May 11-15, Fifth International Congress - **Australian Physiotherapy Association**, Hobart, Tasmania; Contact: APA (Tas), PO Box 432, Moonah 7009, Australia.
- July 5-8, Sixth International Conference on **Human Aspects of Advanced Manufacturing: Agility and Hybrid Automation**. Hong Kong. Contact: <http://www.spd.louisville.edu/~ergonomics/haamaha98.html>
- July 11-14, XIIIth Annual International **Occupational Ergonomics and Safety Conference**. Ann Arbor, USA. fx. +1 403 492 1626.
- July 21-24 . The 5th **Pan-Pacific Conference on Occupational Ergonomics** Kitakyushu, Japan. fx +81 474 70 2083 email [misawa@cc.it-chiba.ac.jp](mailto:misawa@cc.it-chiba.ac.jp)  
Deadline for abstracts Dec 15, 1997.
- August 2-8. Third **World Congress of Biomechanics**. Sappora, Japan. Fax: +81-6-850-6171 E-Mail: [office@wcb98.me.es.osaka-u.ac.jp](mailto:office@wcb98.me.es.osaka-u.ac.jp),  
<http://wcb98.me.es.osaka-u.ac.jp/>
- August 14-18, The Third **North American Congress on Biomechanics**, University of Waterloo, Ontario, Canada; Contact Stuart McGill email [mcgill@health.waterloo.ca](mailto:mcgill@health.waterloo.ca)
- September 15-18th, IFPS'98 International **Fall Protection Symposium**, Wuppertal, Germany. Abstracts due August 1, 1997. Contact Roger Kahler, The InterSafe Group, PO Box 7338, East Brisbane, 4169. Ph. (07) 3895

8111; Fx. (07) 3895 8222.

- September 22-26th, 41st Annual Meeting of the U.S. **Human Factors and Ergonomics Society**, Albuquerque, New Mexico. Contact <http://hfes.org>; P.O. Box 1369, Santa Monica, CA 90406-1369 USA; 310/394-1811, fax 310/394-2410, email: [hfes@compuserve.com](mailto:hfes@compuserve.com).

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### Information to contributors

The preferable form of submission is via email, either in the body of a message, or as an attachment. Files may also be mailed on floppy, (or Zip disc if very large). Virtually any format of files can be accommodated. Otherwise contributions should be printed in a large (14 pt preferred) non-serif font (such as Helvetica) and faxed to +61 07 33793545. Printed pages of similar specification may also be sent by post. Handwritten submissions will only be accepted in exceptional circumstances.

Intending contributors are invited to contact the editor to discuss potential submissions.

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All enquiries or feedback should be addressed to the editor, [Robin Burgess-Limerick PhD](#).

Email: [robin@hms.uq.edu.au](mailto:robin@hms.uq.edu.au)

These pages are hosted by the [Department of Human Movement Studies](#), [The University of Queensland](#), AUSTRALIA

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