

WORLD SAFETY JOURNAL

ESP - Enhanced Safety Principles



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- **WSO International Office Reports**
- **Proceedings of WSO Global Safety Roundtable**
- **International Occupational Safety and Health**
- **Impact of Ergonomic Factors On Occupational Safety & Health of Women Transport Workers**
- **Promoting Business profits and sustain ability in industries in China by improving occupational and environmental health through the use of cleaner production, industrial ecology, health promotion and new media**



Participants of the WSO Global Safety Roundtable meeting, June 11, 2008

WORLD SAFETY ORGANIZATION (WSO)

Profile

The WSO was founded in 1975 in Manila, The Republic of the Philippines, as a result of a gathering of over 1,000 representatives of safety professionals from all continents at the First World Safety and Accident Prevention Congress. The WSO World Management Center was established in the United States of America in 1987 to be responsible for all WSO activities, the liaison with the United Nations, the co-operation with numerous Safety Councils, professional safety/environmental (and allied areas) organizations, WSO International Chapters/Offices, Member Corporations, companies, groups, societies, etc. The WSO is a not for profit corporation, non-sectarian, non-political movement to “**Make Safety a Way of Life**”.

World Safety Organization Activities

The World Safety Organization:

- ❖ Publishes WSO Newsletters, World Safety Journal - ESP, and WSO Conference Proceedings.
- ❖ Provides a network program linking various areas of professional expertise needed in today's international community.
- ❖ Develops and accredits educational programs essential to national and international safety and establishes centers to support these programs.
- ❖ Annual awards include the World Environmental/Occupational Safety Person Award, WSO James William Award, WSO Educational Award, WSO Concerned Citizen Award, WSO Concerned Safety Professional, WSO Concerned Company/Corporation Award, WSO Concerned Organization Award, Chapter/International Office of the Year Award, WSO Award For Achievement In Scientific Research and Development and International Award.
- ❖ Provides recognition for safety publications, films, videos and other training and media materials that meet the WSO required educational standards.
- ❖ Receives proposals from professional safety groups/societies for review and if applicable, submits them to the United Nations for adoption.
- ❖ Establishes and supports divisions and committees to assist members in maintaining and updating their professional qualifications and expertise.
- ❖ Chapters and International Offices located throughout the world provide contact with local communities, educational and industrial entities.
- ❖ Organizes and provides professional support for international and national groups of experts on all continents who are available to provide expertise and immediate help in times of emergencies.

Membership Benefits

The World Safety Organization:

- ❖ Publishes the “WSO Consultants Directory” as a service to its Members and to the Professional Community. Only WSO Certified Members may be listed.
 - ❖ Collects data on the professional skills, expertise and experience of its Members in the WSO Expertise Bank for a reference when a request is received for professional expertise, skill, experience.
 - ❖ Provides a network system to its Members whereby professional assistance may be requested by an individual, organization, state or country on a personal basis. Members needing assistance may write to the WSO with a specific request and the WSO, through its Membership and other professional resources, will try to link the requester with a person, organization or resource which may be of assistance.
 - ❖ Provides all Members with a Membership Certificate for display on their office wall and with a WSO Membership Identification Card.
 - ❖ Awards a certificate of Honorary Membership to the corporations, companies and other entities paying the WSO Membership and/or WSO certification fees for their employees.
 - ❖ Members receive WSO Newsletters, and other membership publications of the WSO.
 - ❖ Members are entitled to reduced fees at seminars, conferences and classes, given by the WSO. This includes local, regional and international programs. When continuing Educational Units are applicable, an appropriate certificate is issued.
 - ❖ Members who attend conferences, seminars and classes receive a Certificate of Attendance from the WSO. For individuals attending courses sponsored by the WSO, a Certificate of Completion is issued upon completion of each course.
 - ❖ Members receive special hotel rates when attending safety programs, conferences etc., sponsored by the WSO.
-

Journal Editor

Dr. Janis Jansz, F.S.I.A.
Director of the WSO
International Office for
Australia, and Member of the
WSO Board of Directors

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Issue Dates

March
June
September
December

Table of Contents

	Page
WSO International Office's and Directors	3
Application for World Safety Organization Membership	4
WSO International Office Reports	
WSO International Office For Australia	5
WSO International Office for Lebanon	6
WSO International Office for Malaysia	10
WSO International Office for Poland	12
WSO 2009 Conference Information	9
List of WSO Awards	11
Calender of Events	16
Proceedings of WSO Global Safety Roundtable <i>by: Prof. Peter A. Leggat</i>	17
International Occupational Safety and Health <i>by: Derek R. Smith and Ken Takahashi</i>	20
Impact of Ergonomic Factors On Occupational Safety & Health of Women Transport Workers <i>by Dr. Janis Jansz</i>	23
Promoting Business profits and sustain ability in industries in China by improving occupational and environmental health through the use of cleaner production, industrial ecology, health promotion and new media <i>by: Dr. Janis Jansz</i>	32

World Safety Journal ESP - Enhanced Safety Principles



ARTICLE SUBMISSION

Articles for inclusion in this journal will be accepted at anytime. However there can be no guarantee that the article will appear in the following journal issue.

All articles shall be written in concise English and typed with a minimum font size of 12 point. Articles should have an abstract of not more than 200 words. Articles shall be submitted as Time New Roman print and on a 3.5" diskette with the article typed in rtf (rich text format) and presented in the form the writer wants published. On a separate page the author should supply the author's name, contact details, professional qualifications and current employment position. This should be submitted with the article.

Writers should include all references and acknowledgments. **Authors are responsible for ensuring that their works do not infringe on any copyright. Failure to do so can result in the writer being accountable for breach of copyright.** The accuracy of the references is the author's responsibility.

References.

Articles should be referenced according to the Publication Manual of the American Psychological Association 2002. For example. Books are referenced as follows.

Author. (Year of publication). *Title of publication*. Place of Publication: Publisher.

Articles are referenced as follows.

Author (Year). Title of article. *Name of Journal*. Volume (Issue), Page numbers of article.

Internet information.

Name of author. (Year of publication). *Name of article*. [on-line]. Available WWW;http:// and the rest of the internet path address. [Access date].

Submissions should be sent to:

Debbie Burgess

World Safety Organization

106 W Young Avenue, Suite G, PO Box 518

Warrensburg Missouri, 64093, United States of America

Or Emailed to editorialstaff@worldsafety.org

Articles, where ever possible, must be up-to-date and relevant to the Safety Industry.

All articles are Blind Peer Reviewed by at least two referees before being accepted for publication.

ISSUE DEADLINES

March 31 January
September 31 July

June 30 April
December 31 October.

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WSO International Office's and Directors

Australia:

Dr. Janis Jansz
c/o School of Public Health, Curtin University of Technology, Perth
6845, Western Australia,
Phone: (61 8) 9266 3006 Fax: (61 8) 9266 2358
email: j.jansz@curtin.edu.au

Czech Republic:

Dr. Milos Palecek
c/o Occupational Safety Research Institute
Jenuzalemska 9, 11652 Prague 1, Czech Republic
email: palecek@vubp-praha.cz

Ghana:

Mr. Kofi M. Amponsah
c/o Amponsah Architects, PO Box 93883, Accra, Ghana
email: amponsah@africaexpress.com

Lebanon:

Dr. Elias M. Choueiri
c/o Ministry of Transportation, PO Box 401
Hazmieh, Beirut, Lebanon
email: eliasch@inco.com.lb

Macedonia:

Mr. Milan Petkovski
c/o Macedonian Occupational Safety Association
Makedosnko Zdruzenie Za Zastita Pri Rabota, U1
"Nevena Georgieva Dunja", Br. 13 Lokal 1
1000 Skopje Macedonia
email: kontakt@mzzpr.org.mk www.mzzpr.org.mk

Malaysia:

Dr. James C. Fernando
c/o OSHALOG Fire Safety Consultant Services SDN BHD
Lot 2331, Ground Floor, Jalan Dato Muip, Piasau
Bulatan Commercial Center, 98000 Miri,
Sarawak, East Malaysia
email: asafe@pd.jaring.my

Marianas Islands:

Mr. Marvin C. "Ike" Iseke
c/o Network CNME, Inc., Middle Road, H.K.
Pangelianna Bldg., Chalan Laulan, PO Box 7724 SVRB
Saipan MP 96950

Republic of the Philippines:

Eng. Alfredo A. De La Rosa, Jr.
Unit C., Dominion Bldg 162, B. Gonzales Street
Loyola Heights, 1101 Quezon City, Philippines
email: info@wsophil.org

Poland:

Prof. Danuta Koradecka, MD
c/o Central Institute for Labour Protection
Czerniakowska 16, 00-701 Warsaw, Poland
email: dakor@ciop.pl

Russia:

Prof. Dr. Edouard Petrossiants
c/o Research Center for Socio-Economic Studies of
OS&H, Obolenskiy per., 10 Moscow, Russia 119829 CIS
email: ohrantr@fednews.ru

Singapore:

Dr. M. Jeyaraj
c/o Dynamic Security Pte Ltd, 151 Chin Swee Road
06-15 Manhattan House, Singapore 03116
email: dynamicz@singnet.com.sg

Slovakia:

Ing. Teodor Hatina
c/o Occupational Safety Research & Educational
Institute, Trnavska Cesta 57, 814 35 Bratislava
Slovakia

Taiwan, Province of the Republic of China:

Dr. Shuh Woci Yu
c/o Safety and Health Technology Center / SAHTECH Rm. 413,
Bldg 52, No. 195, Sec 4, Chung Hsing Road
Chutung, Hsinchu 31040 Taiwan ROC 310
email: swvu@sahtech.org

Ukraine:

Dr. Konstantin N. Tkachuk
Labour Safety State Committee of Ukraine, Shevechenko
Blvd 8/26 252005, Kiev - 4 Ukraine

Membership: The World Safety Organization has members that are full time professionals, executives, directors, etc., working in the safety and accident prevention fields and include university professors, private consultants, expert witnesses, researchers, safety managers, directors of training, etc. They are employees of multinational corporations, local industries, private enterprises, governments and educational institutions. Membership in the World Safety Organization is open to all individuals and entities involved in the safety and accident prevention field. Regardless of race, color, creed, ideology, religion, social status, sex or political beliefs.

Membership Categories

- ✓ **Associate Member:** Individuals connected with safety and accident prevention in their work or interest in the safety field. This includes students, interested citizens, etc.
- ✓ **Affiliate Membership:** Safety, hazard, risk, loss and accident prevention practitioners working as full time practitioners in the safety field. Only Affiliate Members are eligible for the WSO Certification and Registration Programs.
- ✓ **Institutional Member:** Organizations, corporations, agencies and other entities directly or indirectly involved in safety activities and other related fields.

Annual Membership fee in United States Dollars is as follows:

Student Membership	\$ 35.00	Associate Membership	\$ 55.00
Affiliate Membership*)	\$ 80.00	Institutional Membership**)	\$185.00
Corporate Membership**)	\$1,000.00		

*) For your countries fee rate, please contact the World Management Center
**) In case of Institution, agency, corporation, etc., please indicate name, title and mailing address of the authorized representative.

APPLICATION FOR WORLD SAFETY ORGANIZATION MEMBERSHIP

Please print or type:

Name (Last, first, middle): _____

Complete Mailing Address (please indicate if this is a Home or Work address): _____

Work Telephone Number: _____ Fax Number: _____

Home Telephone Number: _____ email: _____

For Affiliate Members only

Only FULL TIME PRACTITIONERS in the safety/environmental/accident prevention and allied fields are eligible for the WSO Affiliate Membership. Briefly describe your present employment position, or enclose your CV. _____

Please specify your area of professional expertise. This information will be entered into the WSO "Bank of Professional Skills" which serves as a pool of information when a request for a consultant/information/expertise in a specific area of the profession is requested.

- () Occupational Safety & Health () Fire Safety/Science () Environmental Health & Safety
- () Security/Safety () Safety/Loss Control Science () Public Health/Safety
- () Construction Safety () Transport Safety () Industrial Hygiene
- () Safety Research () Aviation Safety () Ergonomics
- () Product Safety () Risk Management () Petroleum Safety
- () Nuclear Safety () HazMat Management () Other _____

Please forward Application and check/money order to:
WSO, World Management Center, 106 West Young Avenue Suite F,
PO Box 518, Warrensburg, MO, 64093, USA

WSO International Office for Lebanon Report

submitted by: Dr. Elias M. Choueiri, Director

Contact information: Dr. Elias M. Choueiri, c/o Ministry of Transportation, PO Box 401, Hazmieh Lebanon, eliasch@inco.com.lb

for the time period: May 2007 through ongoing May 2008

Road Safety Conferences: *The WSO International Office for Lebanon supported the 3rd International Road Safety Conference, which was held in Perth, Australia, 29-30 November 2007. (Please refer to the following website for further details: <http://www.roadsafetperth2007.com/supporters.html>)*

Safety Website: *The WSO International Office for Lebanon along with the Lebanese Association for Public Safety (LAPS) published a safety guide on the net to provide people with current information on safety issues that affect their daily lives. (Please refer to the following website for further details: <http://www.laps-lebanon.com>)*

Traffic / Environmental Safety Seminars / Workshops: *(Conducted by the WSO International Office for Lebanon and Lebanese Association for Public Safety [LAPS])*

Lebanon	Abou Merhi Institution, Saida, April 30, 2008
Lebanon	Center for Teachers, Saida, April 20, 2008
Lebanon	Center for Teachers, Saida, April 19, 2008
Lebanon	Center for Teachers, Tyre, April 13, 2008
Lebanon	Center for Teachers, Saida, April 5, 2008
Lebanon	Jezzine High School, Jezzine, April 1, 2008
Lebanon	Center for Teachers, Saida, March 30, 2008
Lebanon	Abbasiyeh Middle School, Abbasiyeh, March 18, 2008
Lebanon	Al Qlayleh Middle School, Al Qlayleh, March 18, 2008
Lebanon	Yater School, Yater, February 2, 2008
Lebanon	Al Qlayleh Middle School, Al Qlayleh, January 27, 2008
Lebanon	Rmeich Middle School, Rmeich, January 24, 2008
Lebanon	Al Makased Islamic High School, Saida, January 1, 2008
Lebanon	Center for Teachers, December 8, 2007

Professional Publications:

Books

Lebanon	Choueiri, E.M., Nashef, A., and Saade, W., "Traffic Accidents: Between the Experts' Reports and the Court Judgments, According to the Traffic Law," Al Ghazal Publisher, Lebanon, 2008. Number of pages: 458 pages (Arabic).
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Journal Articles

Italy	Choueiri, E.M., Valenti, R.A., Sandhu, D., Choueiri, G.M., and Choueiri, B.M., "Effectiveness of an Experimental STOP/SLOW Flag in Workzones", Advances in Transportation Studies, An International Journal, (to appear).
Lebanon	"Our Duties as Drivers on the Road", Al-Jarish, a journal issued by the Lebanese Army Directorate of Information, No. 275, May 2008, pp. 99-101.
Lebanon	"An Investigation File on: Traffic Problems", Ta'miN, a bi-monthly journal specialized in the field of insurance, February/March 2008, No. 91-92, 2008, pp. 54-55. Subject: Because Speeding is an Important Factor that Leads to Death, Herewith 7 Recommendations are Provided to Help you Come Back ... Safely ... Home, pp. 54-55.
Lebanon	"Key Factors Behind Road Accidents and Means of Avoiding Them", Al Moukawel (Lebanese Contractor), a

	journal issued by the Lebanese Syndicate of Public Works and Construction Contractors, Issue No.124, February 2008, pp. 46-49.
Lebanon	"An Investigation File on: Traffic Problems", Ta'miN, a bi-monthly journal specialized in the field of insurance, December 2007/January 2008, No. 89-90, 2008, pp. 58-59. Subjects: A Point of View, p. 58 Seatbelts and Their Effectiveness, p.58 Approximate Ratios of Driver Involvement in Accidents, p. 59 Changing Lanes Whilst Driving, p. 59 Artificial Road Bumps and Traffic Engineering in our Neighborhoods, p. 59
USA	Choueiri, E.M., Rizek, N., Choueiri, B.M., and Choueiri, G.M., "The Use of E-mail as a Qualitative Research Tool in Higher Education and Correctional Settings," The Correctional Trainer, official publication of The International Association of Correctional Training Personnel (An affiliate of the American Correctional Association), U.S.A., Winter 2008, pp. 17-27.
Lebanon	"An Investigation File on: Traffic Problems", Ta'miN, a bi-monthly journal specialized in the field of insurance, October/November, No. 87-88, 2007, pp. 64-65. Subjects: Congratulations to Us, p. 64 A Physical Checkup Before the License, p.64 Traffic Information and the Required Role, p. 64 Smoking, a Key Health Problem Even When Driving Cars, p. 64 The Role of Traffic Education, p. 65
Lebanon	Choueiri, E.M. and Rizek, N., "A Common Tool for Qualitative Research in Higher Education: The e-mail", Al-Mouhaseb Al-Moujaz (The Certified Accountant), Published by the Lebanese Association of Certified Public Accountants, No. 31, 3 rd Quarter 2007, pp. 54-60.
Holland	"Private Sector Participation in Public Transport Infrastructure and Operations: The Railway Expansion Programed of the Saudi Railway Organization (SRO)," Rail Engineering International, Edition 2007, Number 3, Veenendaal, The Netherlands, pp. 14-16.
USA	Choueiri, E.M., Rizek, N., Choueiri, B.M., and Choueiri, G.M., "The Use of Technology in Transforming the Education Culture, Even in Correctional Settings," The Correctional Trainer, official publication of The International Association of Correctional Training Personnel (An affiliate of the American Correctional Association), U.S.A., Fall 2007, pp. 16-25.
Lebanon	"An Investigation File on: Traffic Problems", Ta'miN, a bi-monthly journal specialized in the field of insurance, August/September, No. 85-86, 2007, p. 56. Subjects: Pollution Inside Vehicles, p. 56 Problems Associated with Pedestrian Sidewalks, p. 56
Lebanon	"Traffic Chaos in Lebanon", Al Moukawel (Lebanese Contractor), a journal issued by the Lebanese Syndicate of Public Works and Construction Contractors, Issue No.122, September 2007, pp. 42-45.
Lebanon	"An Investigation File on: Traffic Problems", Ta'miN, a bi-monthly journal specialized in the field of insurance, June/July, No. 83-84, 2007, p. 61. Subjects: The Dangers of Noise Are Equivalent to a ... Deadly ... Traffic Accident, p. 61 Mistakes that Lead to Traffic Accident Occurrences, p. 61
Lebanon	"The Relationship Between Public Works and Public Safety", Al Moukawel (Lebanese Contractor), a journal issued by the Lebanese Syndicate of Public Works and Construction Contractors, Issue No.121, July 2007, pp. 44-47.
Lebanon	"e-commerce", in 'A Selection of Presentations Given at LMA Premises: 2004-2006', Lebanese Management Association, Beirut, Lebanon, June 2007, pp. 51-68.

Conference Papers

Austria	Rizek, N., and Choueiri, E.M., "Changing the Education Culture through Technology," Proceedings of the International Conference on Interactive Computer Aided Learning, ICL 2007 (Sponsored by Fachhochschule Kärnten, IEEE, Siemens, IBM, ...), Villach, Austria, 26-28 September 2007, 17 pages.
USA	Choueiri, E.M., Choueiri, G.M., and Choueiri, B.M., "Experiences Gained from Reforming the Rail Freight Sector", Proceedings of the World Safety Organization's 20 th International Safety and Health Professional Development Conference, Englewood, Colorado, USA, 14-16 May 2007, pp. 11-13.

Newspaper Articles

Lebanon	"Haphazard Speed Bumps, Scary Traps", Al-Liwaa Newspaper, Tuesday, April 29, 2008, P. 17.
Lebanon	"Welcome the Person in Charge with White Flowers and not Bullets", An-Nahar Newspaper, Monday, April 7, 2008, p. 8.
Lebanon	"Traffic Education is Being Responsible", An-Nahar Newspaper, Tuesday, April 1, 2008, p. 6.
Lebanon	"Speeding is an Important Factor that Leads to Fatal Accidents", Al-Liwaa Newspaper, Tuesday, April 1, 2008, p. 8.
Lebanon	"To the Soul of Ramzi Mohamed Safadi", An-Nahar Newspaper, Wednesday, March 26, 2008, p. 7.
Lebanon	"Christ's Way, Life's Giver", An-Nahar Newspaper, Saturday, March 22, 2008, p. 8.
Lebanon	"Be a Model to your Kids by Fastening the Seatbelt", An-Nahar Newspaper, Monday, February 11, 2008, p. 7.
Lebanon	"The Importance of Traffic Statistics in Solving Accident Problems", An-Nahar Newspaper, Monday, January 14, 2008, p. 6.
Lebanon	"A Location Inside the Brain Sets Off their Dangerous Behavior: Traffic Accidents Accounts for the Highest Number of Juveniles", Al-Liwaa Newspaper, Saturday, December 1, 2007, p. 8.
Lebanon	"Recommendations Directed Towards Traffic Officers", An-Nahar Newspaper, Monday, November 26, 2007, p. 6.
Lebanon	"Raising Children's Traffic Awareness", Al-Liwaa Newspaper, Wednesday, November 14, 2007, p. 8.
Lebanon	"The Driver's License and Road Manners", An-Nahar Newspaper, Monday, November 12, 2007, p. 7.
Lebanon	"The Link Between the Brain and Traffic Accidents", Al-Liwaa Newspaper, Tuesday, November 6, 2007, p. 8.
Lebanon	"Fellow Citizen, Overtake Carefully", An-Nahar Newspaper, Monday, October 22, 2007, p. 6.
Lebanon	"Recommendations to Avoid Traffic Accidents", Al-Liwaa Newspaper, Friday, October 10, 2007, p. 8.
Lebanon	"The Safety of our Children Inside the Car", An-Nahar Newspaper, Monday, September 10, 2007, p. 7.
Lebanon	"Justice is the Basis of Ruling, and Compassion is the Basis of Unity and Love", An-Nahar Newspaper, Tuesday, September 4, 2007, p. 8.
Lebanon	"Know the Rules of Traffic Priorities", An-Nahar Newspaper, Monday, August 27, 2007, p. 7.
Lebanon	"Traffic Chaos and Poor Roadway Conditions Increased Traffic Accident Fatalities", Al-Liwaa Newspaper, Friday, August 17, 2007, p. 8.
Lebanon	"What is Needed is Courage to Enforce the Law", An-Nahar Newspaper, Thursday, August 9, 2007, p. 8.
Lebanon	"Its Types are Numerous: Warning, Regulatory and Informational; Traffic Signs and Roadway Symbols are a Way to Safety", Al-Liwaa Newspaper, Friday, July 27, 2007, p. 17.
Lebanon	"The Danger to Pedestrians from Vehicles Backing Up", An-Nahar Newspaper, Monday, July 2, 2007, p. 6.
Lebanon	"Passengers are more Susceptible to Inhale Dirt and Dangerous Gases", An-Nahar Newspaper, Monday, June 25, 2007, p. 7.
Lebanon	"Get to Know the Signs and Symbols of the Roads", Al-Liwaa Newspaper, Friday, June 20, 2007, p. 8.
Lebanon	"The Meaning of the Word Country", An-Nahar Newspaper, Thursday, June 7, 2007, p. 8.
Lebanon	"An Electronic Safety Device that Cuts Down Traffic Accidents", An-Nahar Newspaper, Monday, June 4, 2007, p. 7.
Lebanon	"Roadway Shoulders: Between Function and Improper Use", An-Nahar Newspaper, Saturday, June 2, 2007, p. 7.
Lebanon	"The Safety of our Children, and Educating Students about Traffic Safety Matters", Al-Liwaa Newspaper, Friday, May 25, 2007, p. 10.

Newsletter Articles

Lebanon	"Unusual Algorithms may be Found to Problems", Math Matters, American University of Science & Technology, No. 3, 2007, pp. 2-4.
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Television Appearances

OTV Television	"Road Safety Issues", December 28, 2007
OTV Television	"Road Safety Issues", November 18, 2007
Heya Television	"Road Safety Issues", April 19, 2007
Tele Lumière	"Back Pains While Driving", The Light is with us, February 8, 2007

Radio Appearances

Lebanese Broadcasting (Ministry of Information), Lebanon	“Taxis and Vans”, March 8, 2008
Lebanese Broadcasting (Ministry of Information), Lebanon	“Driving During the Holidays”, December 27, 2007
Lebanese Broadcasting (Ministry of Information), Lebanon	“Dirtiness of Vehicles and Safety”, November 15, 2007
Lebanese Broadcasting (Ministry of Information), Lebanon	“Pollution Inside Vehicles”, September 25, 2007
Lebanese Broadcasting (Ministry of Information), Lebanon	“Gender and Driving”, August 30, 2007
Lebanese Broadcasting (Ministry of Information), Lebanon	“Noise and Safety”, August 2, 2007
Lebanese Broadcasting (Ministry of Information), Lebanon	“Sidewalks and Pedestrian Safety”, July 27, 2007



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It will be a great time of year to make it a family event. St. Louis has a multitude of family oriented adventures. Here are some of the attractions of St. Louis:

- American Kennel Club Museum of the Dog
- Ameristar Casino St. Charles
- Anheuser-Busch Brewery Tours and Gifts
- Aquaport of Maryland Heights Center
- Argosy Casino
- Daniel Boone Home & Boonesfield Village
- The Butterfly House
- Cahokia Courthouse State Historic Site
- Casino Queen
- Center for American Archeology
- Challenger Learning Center-St. Louis
- City Museum
- Civilian Conservation Corps Museum
- Concordia Historical Institute
- Contemporary Art Museum St. Louis
- Craft Alliance
- Crown Valley Winery
- ESPN X Games Skatepark
- Everyday Circus
- St. Louis Toy Museum
- Fort Belle Fontaine
- Foundry Art Center
- Gateway Arch-Jefferson National Expansion Memorial
- Gateway Arch Riverboats
- Gateway Classic Walk of Fame
- Ghostride Tours
- Golden Eagle River Museum
- Ulysses S. Grant National Historic Site
- Grant's Farm
- Harrah's St. Louis Casino
- Historic Aircraft Restoration Museum
- Holocaust Museum & Learning Center
- Laumeier Sculpture Park
- Lewis & Clark Boat House and Nature Center
- Lewis & Clark State Historic Site
- The Magic House, St. Louis Children's Museum
- Mastodon State Historic Site
- Meramec Caverns
- Missouri Botanical Garden
- Missouri History Museum
- Museum of Transportation
- NASCAR SpeedPark
- Purina Farms
- Sacajawea Statue
- Sayers Brook Bison Ranch
- St. Louis Science Center
- St. Louis Union Station
- St. Louis Zoo
- Six Flags St. Louis
- Soldier Memorial Military Museum
- Suson Park Animal Farm
- Third Degree Glass Factory Upper Limits Rock Climbing Gym
- Wabash Frisco & Pacific Steam Railway
- World Aquarium at City Museum
- World Bird Sanctuary
- Worldways Children's Museum
- World's largest collection of Cathedral Mosaics

Fun facts about St. Louis: Did you know that in 1908 the World Fair and the Olympics were held in St. Louis?

Did you know that over 100 municipalities make up the city of St. Louis?

St. Louis is home to: St. Louis Rams football team; St. Louis Cardinals baseball team; & the St. Louis Blues hockey team.

WSO International Office for Malaysia - Annual Report

submitted by: Melinda Chan for Dr. Fernando C. James, Director

Contact information: Dr. James C. Fernando, c/o OSHALOG Fire Safety Consultant Services SDN BHD, Lot 2331, Ground Floor, Jalan Dato Muip, Piasau, Bulatan Commercial Center, 98000 Miri, Sarawak, East Malaysia, asafe@pd.jaring.my

1. Introduction

- a. The WSO International Office for Malaysia has been actively involved in organizing and conducting courses in Malaysia, Brunei, Singapore and Indonesia to meet the demand of its members and the general public (both Government and Private Sectors) respectively.
- b. The course fees are based on the economic status of Malaysia that was formulated by Dr. Senkovich. The fees were reasonable and are affordable to all members and the general public.

2. Conducted Fire Safety Training Courses

- a. From the year 2007 till to date (March 2008), the International Office has organized and conducted a total of 59 courses for 1,480 participants throughout Malaysia and Brunei, respectively. The breakdown are as follows:

<u>Year</u>	<u>Number of Courses</u>	<u>Number of Participants</u>
2007	49	1,420
2008 (Jan-Mar) (New Courses for SapuraAcergy & attended by 154 participants)	10	60
<hr/>		
Total	59	1,480

- b. Out of the 59 courses, Dr. James C. Fernando has conducted 50 courses singlehandedly and has trained 998 participants. Nine (9) courses were conducted by qualified lecturers accredited by the World Safety Organization (WSO).

3. Safety & Health Audits

The International Office has conducted two Safety & Health Audits for SapuraAcergy 3000 in Singapore and this Dynamically Positioned Vessel is owned by (SapuraAcergy SDN BHD) based in Kuala Lumpur, Malaysia on 05-06th December 2007.

The aim of this audit was to determine the level of Safety & Health standard adopted by the vessel. On the basis of the audits, the company was rated "average" as compared to other vessels with similar work activities in Malaysia. This audit was undertaken by the undersigned over a period of two days.

4. Safety & Health Publication

- a. On the basis of the Safety & Health audits, it was noted that Sejingkat Power Corporation SDN BHD needed to design and promulgate a Safety Handbook. The aim of this Safety Handbook was to familiarize direct employees and employees of sub-contractors the basic Safety & Health requirements currently adopted and enforced by the company.
- b. All employees and employees of sub-contractors were issued a copy of the Safety Handbook after attending a Safety Orientation Briefing conducted jointly by the company's Safety & Health Officer and the undersigned on 17th October, 2007.

5. Emergency Response Plan -ERP

- a. The WSO International Office has promulgated and tested the Emergency Response Plan for Sejingkat Power Corporation on 21st August 2007. The need for an Emergency Response Plan was based on the findings of the Safety & Health Audit as there were 3 major 'High' risk hazards within the plant. e.g. Hydrogen Plant, Coal Bunker Yard Area, and the Chemical Plant.
- b. The aim of the ERP was to put in place a system whereby a team of trained Fire Fighters Rescuers and First Aiders could take immediate actions to combat and contain any incipient fires and explosions within the plant before the arrival of the government Fire & Rescue Services as the location of the plant was remote and the time taken for any of the emergency services getting to the plant was about 2 hours or more.
- c. Individual and team training were conducted for the respective groups and team members over a period of one week and the Emergency Response Plan was found to be effective and adequate when tested.

6. WSO 2009 Awards

- a. Based on the requirements of the WSO 2009 Award and the Safety Promotion, training and performance of

individuals and corporation, the WSO International Office for Malaysia and OSHALOG Fire Safety Consultancy Services SDN BHD had strongly recommend the following for the respective Awards:

I. Mr. Abdul Halim Bin Abdullah WSO-CSM - WSO Concerned Citizen Award

II. Dr. James C. Fernando WSO-CSE - WSO Concerned Professional Award

7. WSO Chapters

In order to expand the activities and programs of the WSO, the International Office will be selecting suitable safety professional to set up a WSO Chapter in West Malaysia and Sabah as part of its expansion program. To date there is no suitable personnel as yet. The International Office hopes to set up at least a Chapter by the year end.

8. WSO Accredited Programs

1. The International Office intends to network with the other International Offices to have the WSO Accredited courses to be conducted in Malaysia. This will give a cutting edge for the WSO to be on par with the other courses conducted locally by the relevant authorities in Malaysia.

2. The WSO programs such as (a) Process Safety Management, (b) Hazardous Waste Operations & Emergency Response (HAZWOPER), (c) Graduate / Executive Certificate in Occupational Safety & Hygiene and (d) International Diploma in Occupational Safety & Hygiene can be marketed in Malaysia. The WSO International Office are working to promote these programs in the Malaysia including Indonesia and Brunei.

3. The WSO International Office for Malaysia is working closely with the Edith Cowan University, Perth, Western Australia and the WSO International Office for the Republic of the Philippines to have some of their courses conducted through the International Office in Malaysia.

4. The International Office sincerely hopes that through proper networking with the other International Offices these programs can be effectively conducted in Malaysia, Indonesia and Brunei with minimum costs.

9. Thanks and Appreciation

On behalf of the WSO International Office for Malaysia and myself, I would like to record my sincere thanks to two most distinguished personality Ms. Debbie Burgess and Ms. Janet Barnes for the tremendous support, encouragement and guidance rendered to the International office and of course the efficient manning of the WSO World Management Center. I thank you both and keep up with the good job. I thank you once again.

Yearly Available WSO Awards

WSO Environmental / Occupational Safety Person of the year	(one award per year)
WSO James K. Williams Award	(one award per year)
WSO Concerned Citizen Award	(one award per year)
WSO Concerned Professional Award	(two award per year)
WSO Concerned Company / Corporation Award	(six awards per year)
WSO Educational Award	(three awards per year)
WSO Concerned Company/Corporation Honorable Mention Certificate	(two awards per year)
WSO Concerned Organization Award	(two awards per year)
WSO Chapter / International office of the year Award	(one award per year)
WSO International Award	(one award per year)
WSO Award For Achievement in Scientific Research and Development	(one award per year)

The WSO Award Winners are presented their awards at our Annual Awards Banquet that is part of the annual WSO Conference, which will be July 6, 2009.

If you know of an individual, company, corporation, college, university, technical school, manufacturing plant, etc., that have done outstanding work, made remarkable trends / movements in the safety field, why not nominate them for a WSO Award. Show them that their efforts and achievements have not gone unnoticed.

If you would like one of our Award Nomination Brochures, please contact the WSO World Management Center at info@worldsafety.org and ask for one of these brochures to be sent to you. Let's work together in honoring these safety growths.

WSO International Office for Poland Report

Contact information: Prof. Danuta Koradecka, MD, c/o Central Institute for Labor Protection – National Research Institute (CIOP-PIB) Czerniakowska 16, 00-701 Warsaw, e-mail: oinip@ciop.pl, <http://www.ciop.pl>

2. The Institute's profile

The Institute is a research institution whose main activity aims at working out new technical and organizational solutions in the field of occupational safety and health (OSH), ergonomics and the working environment. In particular, CIOP-PIB's activities in the field of OSH include: research and development; determination of exposure limits; standardization taking into account the requirements of European and international standards; testing and certification of machinery and manufacturing devices as well as personal and collective protective equipment; implementation and certification of OSH management systems; certification of the competence of personnel and educational bodies active in OSH; education and training, consultations, promotion, information and publishing activity.

The Institute is also involved in foresight activities aimed at identification and assessment of future needs, opportunities and risks connected with social and economic development as well as preparation of appropriate anticipating measures.

3. Scientific research

Scientific research, the Institute's principal activity, concerns the following main areas of OSH: chemical and aerosol hazards; noise, vibration and electromagnetic hazards; occupational risk assessment and occupational safety management, safety engineering, methods for testing and advancement of personal protective equipment (PPE), and adaptation of workplaces to human psycho-physical capabilities.

2.1. In the years 2005-2007 CIOP-PIB co-ordinated works and was the main performer of the National Program "Adaptation of working conditions in Poland to EU standards":

The **strategic objective of the National Program** was to develop and disseminate legal, organizational and technical solutions that ensure the achievement of occupational safety and health level conforming to the requirements of EU directives.

In 2007, the second phase of the Program was completed: It covered:

- 27 research projects in 3 areas: identification of physical, chemical and psycho-physical factors of occupational hazards,
- 74 tasks related to the services for the state in the field of: OSH-related standards; a notified body competence to assess product conformity; personal protective equipment; system of testing machinery, tools and protective equipment as well as of voluntary certification of products and management systems; occupational hazards prevention; OSH information and education system; OSH management systems.

2.2. On 3 July 2007, the Polish Council of Ministers approved a new National Program "Improvement of safety and working conditions", Phase 1 to be realized in 2008-2010.

The strategic objective of the Program is development and implementation of innovative organizational and technical solutions, focused at improvement of human resources, new products, technologies, management methods and systems, aimed at significant reduction of occupational accidents and diseases in Poland as well as related economic and social losses. The Program is coordinated by the Central Institute for Labor Protection - National Research Institute and carried out by 22 scientific units - 14 universities and research and 8 development units.

The Program is composed of two parts:

- **Part A:** program of tasks related to services for the State (supervised by the Minister of Labor and Social Policy) 136 tasks in 8 thematic groups,
- **Part B:** program of research and development projects (supervised by the Minister of Science and Higher Education) - 75 research projects in 5 groups.

2.3. In 2007 the Commission of Scientific Research Ethics was established in CIOP. Its function is to ensure the highest ethical standard by performing scientific researches.

3. Other types of activities

3.1. Educational activity

3.1.1. Center for Education

CIOP-PIB is the major provider of training and education in OHS in Poland. Its educational and training activity is implemented by the Center for Education established within the Institute's structure in 1994. The Program Council composed of scientists and practitioners, including social partners, supervise the activities of the Center.

The Center offers the following forms of education:

- Postgraduate studies *Safety and protection of man in the working environment*
- refresher training for employers, managers, OSH services personnel, office and administration staff,
- specialist training on various OSH-related topics.

In 2007 the activity of the Center covered:

- more than **300** participants of postgraduate studies, including **162** e-learning students (OSH services personnel, personnel of sanitary-epidemiological stations, army, fire service and consulting companies, teachers),
- **37** refresher training courses for **790** participants (workers covered by the relevant regulation of the Minister of Economics and Labor, dated 27.07.2004, to undergo such training),
- **70** specialist training and courses for people interested in selected most up-to date knowledge about OSH for **1323** participants

In total, in the year 2007 more **2259** hours of lectures and classes were conducted which made **53808** person-hours.

3.3.2. Joint Educational Unit

In 2007 a Joint Educational Unit of the Warsaw University of Technology and CIOP-PIB was created.

The main tasks of the Unit are:

- organization of postgraduate studies *Safety and protection of man in the working environment*
- initiation and organization of conferences, seminars, symposiums and participation in the mentioned events
- initiation of common educational projects

3.2. Certification of personnel's competence

3.2.1. Certification of personnel's competence

CIOP-PIB is the only scientific body in Poland that is accredited to certify competence of personnel, whose activities significantly influence the shaping of safe working environment and occupational health and safety education level. The Center for Certification of Personnel's Competence, established within the structure of the Institute, is entitled to grant competence certificates to:

- OSH lecturers,
- OSH specialists,
- specialists in measurement of working conditions parameters
- auditors of an OSH management system
- consultants in systemic OSH management.

Moreover, the Center acknowledges competence of educational bodies training the above-mentioned groups of specialists. In 2007 the Center granted 69 competence certificates for individual persons (lecturers, OSH specialists, auditors). The Center supervised 361 competence certificates for individual persons and granted certification to lead OSH training to 12 educational institutions.

3.2.2. Certification of products and management systems

The Center for Certification of Products and Management Systems carries out compulsory certification of products, including machines and devices, collective protective equipment and personal protective equipment. It also performs voluntary certification of OSH-related equipment. In 2007 the Center granted 8 certificates of accordance with standards requirements for 40 products in voluntary group.

The Center also conducted the certification of management systems, which included the assessment of: compliance of OSH management systems, quality management systems and environment management systems with the appropriate standards. In 2007 the Center granted 12 certificates of management systems.

CIOP-PIB is also a notified body in the European Union in the scope of European directives relating to personal protective equipment (89/686/EEC), and machinery (98/37/EC). In 2007 the center granted **181** certificates of EC-type evaluation for **337** personal protective equipment products and supervised the production of **467** personal protective equipment products. **6** certificates for **45** products (machines) were granted that year.

3.3. Information

Information activity is a very important way in disseminating Polish and foreign achievements in OSH, which could be of great importance for both practitioners and theoreticians.

3.3.1. Library resources

The library of CIOP-PIB is a specialist library, with an extensive collection (about 30.000) of books in the area of broad

knowledge on safety and health protection of man in the working environment. The interdisciplinary nature of the subject means that the library resources cover almost all areas of science, both human sciences and technical sciences. There is also an extensive collection of books of a universal nature - dictionaries, encyclopedias, lexicons and guidebooks, as well as archive publications of historical significance from the 1920s, 1930s and 1940s. The subjects of archive publications include: psychology, physiology, medicine, chemistry, toxicology, occupational safety etc.

In 2007 the library had 200 titles of journals, including 107 - Polish and 83 - foreign scientific and specialist journals.

3.3.2. Information services

Information services for Polish and foreign users included a variety of forms such as: answering queries on publications and many problems connected with occupational safety, health, and ergonomics; preparing the lists of Polish and foreign literature on selected subjects using the Internet databases as OSH-ROM, OSH-UPDATE, FIREINF etc., and other sources; creating databases, etc.

In 2007 CIOP-PIB fulfilled its tasks the Polish National Focal Point of the European Agency for Safety and Health at Work. The Focal Point continued to cooperate with the National Information Network, which includes, following the Agency's recommendations, representatives of state institutions, research institutes, employers and trade unions. In 2007 the network was composed of 40 institutions.

The Focal Point organized and coordinated the Polish edition of the information campaign: European Week of Safety and Health at Work 2007 "*Lighten the load*" and the second part of the campaign: "*Healthy Workplaces*". The activities of "*Lighten the load*" campaign included:

- A press conference opening the campaign – Warsaw, June 2007
- Mass Media Campaign "*Say thank you to the seat*", 1 - 15 October 2007
- Meetings with students at schools
- Conference for SMEs representatives on OSH and prevention of musculoskeletal disorders (MSD).
- Seminars and trainings for enterprises and local communities
- Competitions:
 - European Good Practice Competition
 - Art competition for children
 - Knowledge competition in "Weekly chronicle" magazine
- Poster exhibition
- Information stand during XII "*Hetman Fair*", 12 June 2007
- Cooperation with mass media, press publications
- Training for labor inspectors - coordinators of the campaign "*Lighten the load*" in District Labor Inspectorates in the whole country.

The Institute fulfils the role of the Polish National CIS Center in the CIS/ILO network of network of about 155 National, Cooperative and Regional CIS Centers, located in more than 100 countries on all continents.

In 2007 the Polish National CIS Center continued its main aim of activity aimed at using the CIS network to promote internationally Polish literature and OSH achievements as well as to use the CIS international occupational safety and health information system to help Polish users to stay informed about foreign publications and data.

3.4. Publications

In 2007 publication activities of CIOP-PIB were continued, aiming at popularization of OSH knowledge and increasing the interests in occupational safety and ergonomics of the employers and employees. Printed publications were prepared: monographs, guides, handbooks, conference and training materials, brochures, leaflets, CD-ROMs, computer programs, etc. That year the Institute also continued the publication of its journals:

- *International Journal of Occupational Safety and Ergonomics - JOSE* (in English) - 4 issues,
- *Podstawy i Metody Oceny Ćerodowiska Pracy* (Principles and Methods of Assessing the Working Environment) - 4 issues,
- *Bezpieczeństwo Pracy. Nauka i Praktyka* (Occupational Safety. Science and Practice) - 12 issues.

The Institute continued publishing *Chemical Safety Data Sheets* in electronic version; it also published books, including monographs, guides and brochures. Some of the titles in 2007 were:

- *Occupational risk. Methodological basis of assessment,*
- *Selected problems of active noise reduction – power transformers,*
- *Electromagnetic techniques in health protection,*
- *Harmful agents in the working environment. Admissible values 2007,*
- *First-aid in an enterprise – a compendium,*

- *Selection of personal protective equipment,*
- *Sick building syndrome. Assessment of working environment parameters,*
- *Workplace lighting,*
- *Electromagnetic field in office and non-industrial rooms,*
- *Ventilation and air-conditioning systems in office buildings. Performance assessment,*
- *ALS and DAUF tests psychomotor characteristics,*
- *Safe work in cold microclimate,*
- *Stress in elderly workers,*
- *Elderly workers – physical capacities,*
- *Adaptation of work stations to the capacities of elderly workers,*
- *Safety of construction work,*
- *Occupational safety in mechanical woodworking,*
- *How to reduce the spine load,*
- *Good practice in agriculture,*
- *Good practice in animal handling.*

Other types of publication included: conference proceeding, training materials, information and promotion materials.

3.5. Promotion

Promotion activities of occupational safety, health and ergonomics knowledge that year included many forms as: seminars, workshops, trade fairs, exhibitions, competitions and the support of the **Safe Work Leaders' Forum** as well as the **Network of OSH Experts** certified by CIOP-PIB. CIOP-PIB also participated and organized several conferences, seminars and meetings. Some of them are mentioned below:

In 2007 CIOP-PIB continued the activity of the **Safe Work Leaders' Forum**, organized and based at the Institute. The Forum was created to build partnership contacts with enterprises that have implemented the achievements of science and technology in the field of designing working conditions according to the requirements of Polish and European legislation. In 2007 the Forum consisted of 92 participants. The Xth Conference of the Forum was organized by CIOP-PIB on 22-23 October 2007 in Wrocław. The theme of the conference was "*Lighten the load*".

In 2007 CIOP organized 5 events (seminars, workshops) for the members of the **OSH Experts Network**, certified by CIOP-PIB., aimed at improving the experts' qualifications:

- Seminar on Shaping Healthy Workplaces (23-24.04.2007, Warsaw),
- Seminar on Prevention of Musculoskeletal Disorders (MSD) (25.05.2007, Warsaw),
- Seminar "*The principles for assessing the enterprises conformity with legal requirements for work In exposure to harmful chemical agents* (11-12.10.2007, Radom),
- Seminar "*Safety of Work at Hight*" (15-16.11.2007, Poznań),
- Conference "*Healthy Workplaces*" (27.06.2007, Rybnik).

CIOP-PIB took part in many **national and international OSH events** promoting OSH problems and solutions like for example:

- Science for the economy and industrial safety exhibition at Innovations – Technologies – Machines – ITM Poland 2007 (11-14.06.2007, Poznan, Poland),
- The World Exhibition of Innovation, Research and New Technologies, 56 edition- Innova - Brussels Eureka 2007 (22-25.11.2007, Brussels, Belgium),
- International Trades: Safety, Security and Health at work (18-21 09 2007, Düsseldorf, Germany),

The Institute received a number of awards, e.g. the **Gold Medal for Filtering Respirator of the FFP3 D Class with the Moist Absorbing Layer** at 56 edition of Innova Brussels Eureka (22 - 25.11.2007, Brussels, Belgium)

In 2007 the XXXVth edition of the **National Competition for the Improvement of Working Conditions** was another promotion activity organized by CIOP-PIB. The Competition is organized every year in cooperation with relevant ministries, labor inspectorate, social partners and technical associations. In this edition 35 entries were submitted, of which 11 received awards and 9 distinctions.

The Institute's promotion activity includes organization of an annual **OSH Poster Competition**. In 2007 the subject of the competition was "*Lighten the load*". In 2007 CIOP-PIB also organized artistic competitions for children, on subject "*Lighten the load*". More than 12,000 children from almost 200 schools took part In the competition.

CIOP-PIB promotes its activities also via the Internet. The Institute portal www.ciop.pl ranked as 3rd most popular in Europe on the subject OSH. In 2007 the website was visited around 230,000 visitors. Over 940,000 pages were browsed.

4. International cooperation

In 2007 international cooperation of CIOP-PIB was carried out mainly within the Sixth EU Framework Program of the EU (5 projects), Seventh EU Framework Program (2 projects), financed directly by the European Commission (1 project), projects realized under the European Community Program PROGRESS (3 projects), projects of the European Agency for Safety and Health at Work, Bilbao (3 projects).

The Institute international cooperation was also realized in **networks**, e.g. PEROSH, EUROSHNET, and within the European Technology Platform "Industrial Safety" (ETPIS).

The Institute organized a number of conferences and other events, of which the most important include:

- Seminar *New and Emerging Risks in OSH - Overview of European OSH Research Funding Programs*, organized within the project NEW OSHERA under the Sixth EU Framework Program for Research and Technological Development on 14-15 June 2007 in Warsaw.
- CIOP-PIB co-organized meetings of ISO/TC 159 *Ergonomics*, ISO/TC 159 S.C. 1 *Ergonomic guiding principles and ISO/TC 159 SC 1/WG1 Principles of the design of work systems*, which took place in Warsaw on 5-9 November 2007.

In 2007 more than **200 CIOP-PIB employees** took part in international conferences seminars, trades and other events abroad.

Calender of Events

XVIIth International Congress for Tropical Medicine and Malaria

September 29 - October 3, 2008, Jeju Island, South Korea. URL: <http://www.ictm17.org>

29th International Congress On Occupational Health

March 22 - 27, 2009, Capetown, South Africa. URL: <http://www.icoh2009.co.za>

10th Anniversary South African Travel Medicine Course

May 6 - 10, 2009, National Institute for Communicable Disease, Johannesburg, South Africa email: admin@sastm.org.za URL: <http://www.sastm.org.za> (TBA)

11th Conference of the International Society of Travel Medicine

May 24 - 28, 2009, Budapest, Hungary. URL: <http://www.istm.org>

World Safety Organization 22nd International Conference

June 6 - 8, 2009, Sheraton Westport Hotel and Lakeside Charles, St. Louis, Missouri USA. URL: <http://www.worldsafety.org>

38th World Congress on Military Medicine

October 4 - 10, 2009, Kuala Lumpur, Malaysia. Email: wcomm.kl@mod.gov.my

Proceedings of WSO Global Safety Roundtable X 2008

Edited by Professor Peter A. Leggat, MD, PhD, DrPH FAFPHM, FACTM, FFTM ACTM, FFTM RCPSG, FACRRM, FSIA, FAICD, FACE, WSO-CSE/CSM/CSS(OSH)/CSSD, Head, School of Public Health, Tropical Medicine and Rehabilitation Sciences, and Associate Dean for Faculty Affairs, Faculty of Medicine, Health and Molecular Sciences, James Cook University, Townsville, Queensland, Australia.

Abstract

Since the Inaugural Roundtable in 1995, the World Safety Organization (WSO) Global Safety Roundtable has become a regular event and an international safety "Think Tank", drawing on international representation from the WSO's annual educational meetings. The WSO Global Safety Roundtable X 2008 was convened on the 11th of June 2008 to assist the WSO in its motto to Make Safety a Way of Life Worldwide as well as to assist in the formulation of specific proposals and resolutions for the United Nations (UN) and its agencies. It was convened during the WSO 21th International Environmental and Occupational Safety and Health Professional Development Conference, Tuscany Suites and Casino, Las Vegas, Nevada, United States of America. It sought to build on the resolutions presented at the previous Global Safety Roundtables. Eleven representatives from six countries participated. The major issues arising from the "Think Tank" discussion included: better promotion of the WSO through its conferences and through media releases and related activities, including improved presentation of conferences. Initial areas to be targeted included homelessness secondary to natural disasters, environmental safety and climate change, workers' safety, transportation safety and protection of children and seniors in the workplace. As far as possible, it was recommended that the WSO work through existing global safety campaigns.

Introduction

The World Safety Organization (WSO) Global Safety Roundtable X 2008 was convened on the 11th of June 2008 to assist the WSO in its motto to Make Safety a Way of Life Worldwide as well as to assist in the formulation of specific proposals and resolutions for the United Nations (UN) and its agencies. It was convened during the WSO 21th International Environmental and Occupational Safety and Health Professional Development Conference, Tuscany Suites and Casino, Las Vegas, Nevada, United States of America (USA). It builds on the resolutions presented at the previous WSO Global Safety Roundtables for which proceedings have been published for Roundtables I-IV and VIII-IX (Leggat, 1995; 1996, 1997; 1998; 2002; 2003; WSO, 1998). Eleven representatives from six countries participated. Present (per sign-in Registers) at Global Safety Roundtable X 2008: Peter Leggat (Chair and Editor), Marilyn Clark Alston, Luiz Antonio B. Felipe, Bob Grindley, Wayne M. Marr, James McClatchey, Dennis W. McMickens, Allen-Brown Rothrik, The-Sheng Su, Robert D. Sullivan, and Louis Young. There were also a number of additional observers, who did not complete the "sign in" sheet.

Background

On the 26th of September 1995, Dr Rashmi Mayur, Director of the International Institute for Sustainable Future, based in Bombay, addressed the delegates of the WSO 6th World Safety and Accident Prevention Congress in Memphis, Tennessee, USA, at the first WSO Global Safety Roundtable. The proceedings of this Roundtable have been published elsewhere (Leggat, 1995). The challenge was laid down for safety professionals to address the major issues in safety throughout the World. In addition to developing specific proposals and resolutions for the United Nations, it was proposed that a "Think Tank" forum be formed to brainstorm and develop 21st Century plans for the major United Nations agencies addressing all safety problems, whether in the factory, the home or the environment. Dr Mayur promoted a book entitled, *The Earth First Reader:*

Ten Years of Radical Environmentalism (Davis, 1995), and presented a copy of this to the WSO. Dr Mayur has written a preface to this new Indian Edition/reprint.

The WSO Global Safety Roundtable became an annual event drawing on international representation from the WSO's annual educational meetings to provide the basis for this "Think Tank". In 1996, the participants of WSO Global Safety Roundtable II presented several proposed resolutions targeting five (5) key areas. These areas were:

- Road safety,
- International project funding,
- Child safety,
- Global emergency response, and
- Continuance of the global "Think Tank", as part of the work of this WSO Global Safety Roundtable (Leggat, 1996).

Subsequent WSO Global Safety Roundtables presented proposed resolutions focusing on areas such as environmental compliance and development of international safety standards (Leggat, 1998; Mussett, 1998). It further proceeded to look at avenues to help the WSO interface with the UN and its agencies in order to develop an international awareness of these issues (Mussett, 1999). More recently, Global Safety Roundtables have focused on emergency preparedness (Leggat, 2004). Participants were reminded that the WSO has had Consultative Status Category II (NGOs) to the United Nations Economic and Social Council since 1987 (United Nations, Department of Public Information, 2008).

Context of the WSO Global Safety Roundtable 2008

WSO Global Safety Roundtable X was scheduled following the morning session on the 11th of November 2008 during the last day of the WSO 21th International Environmental and Occupational Safety and Health Professional Development Conference, Tuscany Suites and Casino, Las Vegas, Nevada, USA. This ensured that representatives from different countries could participate in the Roundtable without interfering with the

educational programs conducted during the Conference. As such, the Global Safety Roundtable has become an integral part of the WSO Professional Development Conferences. During the Roundtable 2008, 10 registered participants and several observers met for approximately one hour (10:30-11:30 hours). The documented registered attendance has been given above. Unlike a number of previous Global Safety Roundtables, which had representation mainly from the USA, this Roundtable had representation from six countries, namely Australia, Brazil, Canada, New Zealand, Taiwan and USA. A variety of disciplines were represented including safety management, environmental safety, occupational safety, healthcare safety, workers' compensation, medical science, transportation safety, and safety engineering. It was clear that child safety would be a consideration for the Global Safety Roundtable X, since Paul Peterson, an actor and renowned advocate for child safety, was a keynote speaker for this conference.

Discussion

Current WSO Board Member and Past WSO President/Director-General (1997-1999), Professor Peter Leggat, opened the Roundtable at approximately 10:30 with a brief review of the purpose of the Global Safety Roundtable and a review of the Proceedings of previous Roundtables; in particular the last published Global Safety Roundtable (Leggat, 2004). He also passed on the apologies of the President/Director-General, who could not attend the Roundtable.

The focus of the 2008 Roundtable discussion was initially on how the World Safety Organization could better market itself and its conferences. The discussion was wide ranging and included the recommendation that WSO mission and future direction be clearly articulated by the President/Director General. It was also recommended that:

- An improved Internet site could be considered, perhaps with industry support.
- An improved image of the WSO conferences was needed in order to compete with other conferences.
- Regional conference might be considered, e.g. United Arab Emirates, Philippines, Taiwan, Malaysia, etc.
- Improved marketing of conferences and marketing during conferences (e.g. WSO t-shirts, WSO pins, brochures, etc).
- More use could be made of email blasts to members.
- Key documents, such as membership and certification applications could be made available as electronic documents on the WSO Internet site as well as being circulated to members. It was felt that this measure alone may assist members bring in more members.
- CDs of presentations might be considered for future conferences, where presenters had forwarded these beforehand, and these could also be circulated to libraries of WSO Chapters, WSO National Offices and other interested organizations.
- The WSO Consultants Directory might be placed on line.
- Newly certified members could elect to have the WSO send a standard letter to their employers concerning their certification.
- There were a number of largely untapped markets for WSO

membership promotion, including groups such as the Transportation Safety Institute, the World Petroleum Organization and aeronautical safety, where key members could promote the organization.

There was also discussion on what the Global Safety Roundtable could effectively deliver on, given that the WSO had limited resources. It was generally agreed that the Global Safety Roundtable was a useful forum for discussing global issues. It was decided that the Global Safety Roundtable X would focus on small scale achievable marketing items, which none-the-less would require continued networking between roundtable participants, the WSO Chief Executive Officer, the WSO World Management Center, WSO Chapters and WSO International Offices for input and action. Roundtable participants would particularly focus on development of press releases for approval and promulgation through the WSO.

Considerable discussion focused on press releases and activities related to existing international or global safety campaigns. These could be tapped into in order to promote the work of the WSO internationally. The following campaign days/weeks/years/programs were generally noted and details of programs obtained from google.com search:

- World Safety Organization Year of the Child 1999 (World Safety Organization, 1999)
- World Health Day 2004, Road Safety (World Health Organization, 2004)
- World Road Safety Day, 31 August 2004 (Safe Roads Network, 2004)
- First United Nations Global Road Safety Week, 23-29 April 2007 (WHO, 2007)
- World Day for Safety and Health at Work: 28 April 2008 (International Labour Organization, 2008b)
- World Environment Day: 5 June 2008 (United Nations Environment Program, 2008)
- World Day Against Child Labour 2008: 12 June 2008 (International Labour Organization, 2008a)
- International Product Safety Week: 17-21 November 2008 (EuroSafe, 2008)

Others have been proposed, including:

- World Fire Safety Day (Fire Disaster Prevention and Safety Awareness Association of Nigeria, undated)

The Roundtable participants indicated that an initial focus for press releases and related activities to promote the work of the WSO might be on:

- Homelessness secondary to natural disasters
- Environmental safety and climate change
- Workers' safety, especially through new contacts in the United Arab Emirates
- Transportation safety
- Child safety and protecting our seniors in the workplace-a challenge provided by actor Paul Peterson during the opening keynote speech at the conference.

This item may require a resource survey to be conducted, in order to ascertain what already existed within different agencies.

It was suggested that International Offices and Chapters be surveyed to determine what their priorities were in terms of safety campaigns, membership promotion and other issues (possibly this could be achieved by email). It was also suggested that retired members might be able to assist with various aspects of these types of programs.

The meeting was closed at approximately 11:30 hours by the Chair, Professor Peter Leggat. A group photo of the participants of the Global Safety Roundtable X was then taken and is on the front cover of this journal..

Assisting the WSO Global Safety Roundtable

The WSO Global Safety Roundtable has become a regular feature of WSO regional and international conferences. It is hoped that all interested WSO members can continue to support the work of the WSO Global Safety Roundtable throughout the year, including the development of proposals for consideration at subsequent Roundtable discussions. WSO Members and other interested professionals should consider participating at the WSO Global Safety Roundtable 2009 in St Louis, Missouri, USA. WSO Members and other interested professionals who may be able to assist with the development and implementation of these proposals or resolutions or who wish to assist with the work of the WSO Global Safety Roundtable or its work with the UN should contact the WSO World Management Center, PO Box 518, Warrensburg, Missouri, 64093 USA. Telephone (660) 747 3132 Fax. (660) 747 2647 Visit: <http://www.worldsafety.org>

Acknowledgments

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International Occupational Safety and Health

The Development of English-Language Occupational Health and Safety Journals in Japan

Derek R. Smith: WorkCover New South Wales Research Centre of Excellence, Faculty of Health, University of Newcastle, Ourimbah, Australia

Ken Takahashi: Department of Environmental Epidemiology, University of Occupational and Environmental Health, Kitakyushu, Japan

Correspondence to: Professor Derek R Smith, WorkCover New South Wales Research Center of Excellence, Faculty of Health, University of Newcastle, Ourimbah, New South Wales 2258 Australia Email: derek.smith@newcastle.edu.au

Biographies

April 22 Derek Smith a Professor and Director of the WorkCover New South Wales Research Centre of Excellence at the University of Newcastle in Australia. Prior to that Dr. Smith worked at the National Institute of Occupational Safety and Health and the National Institute of Industrial Health, both in Japan; as well as the National Cheng Kung University in Taiwan. Dr. Smith's academic qualifications include two doctoral degrees in occupational health, master degrees in occupational health, public health and tropical medical science, as well as bachelor degrees in adult education and environmental science. In 2007, Dr. Smith received the Environmental / Occupational Safety Person of the Year award from the World Safety Organization for his international contribution to occupational health.

Ken Takahashi is Professor of Environmental Epidemiology and Acting Director of the WHO Collaborating Centre for Occupational Health at the University of Occupational and Environmental Health (UOEH), Kitakyushu, Japan. He has been devoting most of his professional career to epidemiologic research of occupational diseases, with special interest on occupational lung diseases and asbestos-related disease. For a number of occasions, he has served as consultant and advisor to WHO and ILO, as well as examiner and advisor to academic institutes of several Asian countries. He serves as editor of the International Journal of Occupational and Environmental Health and international board member of Occupational Medicine (Oxford). He is an elected Board Member of the International Commission of Occupational Health (ICOH).

Abstract

For safety professionals wishing to seek up-to-date English-language information on workplace issues, standards and exposure limits in Japan, the journals *INDUSTRIAL HEALTH* and the *Journal of Occupational Health* represent a treasure trove of information. Despite being Japan's premier English-language journals in the field of occupational safety and health for almost 50 years, the history and content of these periodicals is largely unknown outside the country. Founded in 1963 and 1996 respectively, *INDUSTRIAL HEALTH* and the *Journal of Occupational Health* have been two important vehicles for the dissemination of research findings, technical standards and exposure limits to the international community. This article provides a brief history and introduction to both journals, as well as describing their developmental stages and current position in the field of international occupational safety and health.

Key words: Occupational Safety and Health Journal, Japan, Publishing, History

Introduction

To a large extent, the ideal goal of science is to record and share all useful research findings with others (Seringshaus and Gerstein, 2007). In specialty areas such as occupational health and safety, peer-reviewed journals also serve to communicate the ethos of their particular field (Brandt-Rauf, 2000). Alongside this mandate, the world of journal publication is constantly changing, and with it, the entire nature of scientific research and development. Occupational health and safety journals have also had to evolve in response to external pressures, many changes of which reflect motivations of the Editor-in-Chief, as well as the enthusiasms of people who write for them (Carter, 2000).

The evolution of journals in occupational health and safety within a particular country provides an interesting insight into the development and internationalization of the discipline within that region. Japanese occupational health has had a long and interesting historical development (Smith and Fujishiro, 2001),

much of which has been recorded in professional journals of the region. A comprehensive list of Japanese occupational health and safety periodicals was listed in a previous article in the *World Safety Journal* (WSJ) (Smith and Sawada, 2007). This list however, highlighted the fact that most periodicals from Japan are written in the Japanese language, thereby limiting their usefulness for the English speaker. There are however, two journals of occupational health and safety in Japan which publish entirely in the English language, are listed in *PubMed / Medline* and also receive impact factors from the *Institute of Scientific Information (ISI) / Thomson Scientific*. Despite the fact that these periodicals, *INDUSTRIAL HEALTH* and the *Journal of Occupational Health*, have been around for almost 50 years, their history and content is largely unknown outside of Japan. The purpose of the current article therefore, is to provide a brief history and explanation of both Japanese journals, as well as describing their developmental stages and current position in the field, for the benefit of WSJ readers.

Industrial Health

The origins of INDUSTRIAL HEALTH journal can be traced back to the *Bulletin of the National Institute of Industrial Health*, which was published by the National Institute of Industrial Health (NIIH) in Japan, between 1958 and 1962 (Smith et al., 2007). Although the bulletin was essentially an English-language periodical, contributors had been restricted to those researchers working at the NIIH (Sakurai, 2000). By the 1960's however, it had become clear that contributions from external researchers would be a positive step for internationalizing the journal, which resulted in an expansion and renaming process, as well as the appointment of four editorial board members and Masayoshi YAMAGUCHI as founding Editor-in-Chief. The new journal, INDUSTRIAL HEALTH, was officially launched in October 1963 by the NIIH and contained two submissions from external authors, as well as six scientific articles written by Japanese authors and one news article (Smith et al., 2007). From a physical perspective, the original journal utilized a B5 format which remained until Volume 35 in 1997, when its dimensions increased to 'Letter' sized pages.

Cover designs also evolved over the years. INDUSTRIAL HEALTH had a black and white front cover from Volume 1 in 1963 until Volume 20 in 1982, when a red cover and back page were first adopted (Smith et al., 2007). Aside from being more visually appealing, the updated format and larger page sizes enabled the journal to fit 11 scientific articles within 65 printed pages by 2002, and 185 pages per issue by Volume 45 in 2007. Alongside this physical expansion in the twenty or so years after its inception, a major overhaul of the editorial board was also underway by the late 1980s. Between 1972 and 1982 for example, there had been only four and five editorial board members, respectively; with a slight increase by 1992, when eight editorial board members were appointed. Radical changes had occurred to the journal by Volume 45 in 2007 however, with the editorial board now incorporating a multidisciplinary and increasingly international team, including an Editor-in-Chief, two Managing Editors, three Honorary Editors, 18 Advisory Editors, 29 Editors and two Editorial Secretaries (Smith et al., 2007).

Part of this expansion was prompted by other changes in the field, namely the amalgamation of its former publisher (the NIIH) with the *National Institute of Industrial Safety* (NIIS) in 2006, to become the *National Institute of Occupational Safety and Health, Japan* (JNIOSH) (Araki, 2006). Medline indexing for INDUSTRIAL HEALTH began in 1980 (Smith et al., 2007), and by the turn of the century it had become clear that the journal should be further internationalized. In 2006, the first journal issues were linked to the *Japan Science and Technology Information Aggregator, Electronic* (J-STAGE) and to the *Directory of Open Access Journals* (DOAJ). Most recently, the periodical has been expanded from a quarterly journal to a bimonthly publication (Araki et al., 2007). By May 2008, the entire archive of back issues had been digitally converted and is now available online via the JNIOSH website.

The Journal of Occupational Health

Historical origins of the Journal of Occupational Health can be

traced to its precursor, the *Sangyou Igaku Zasshi* (Japanese Journal of Industrial Health), which was founded in 1959 by the *Nippon Sangyou Eisei Kyoukai* (Japan Association of Industrial Health). The Japan Association of Industrial Health had itself begun in 1929, with the formation of the new journal being one of its official activities. Although it was predominately founded as a Japanese-language journal, some English-language manuscripts were published from time to time. By the 1990s, the *Japan Association of Industrial Health* had changed its name to the *Japan Society for Occupational Health* (JSO). The need for an increasingly international perspective in its official journal was also becoming apparent during this period, prompting the editorial board to consider an English-language format. In November 1994, under the guidance of then Editor-in-Chief Akio SATO, a new direction for the journal was officially announced (Sato, 1994).

Changes were instigated from Volume 37 in 1995, with the first stage involving a name change from *Sangyou Igaku Zasshi* (the Japanese Journal of Industrial Health), to *Sangyou Eiseigaku Zasshi* (the Journal of Occupational Health). Both of these latter names (in Japanese and English) would now appear on the cover, with both Japanese-language and English-language manuscripts being anticipated. Its corresponding identifier on Index Medicus was also changed from "Sangyou Igaku" to "Jpn J Ind Health". From a physical perspective, the journal's overall size increased from B5 to A4, the cover design was updated, and daily administrative tasks were transferred to a commercial production company in Tokyo, all in the same year (Sato, 1994). In a 1995 editorial, the Editor-in-Chief Akio SATO, described the success of the new dual-name format, particularly noting that the number of English-language manuscripts published by the newly-formatted journal had now increased from one original article in 1993, to nine in 1995 (Sato, 1995).

As a result, the journal was officially split into two separate entities from Volume 38 in 1996: the English language: *Journal of Occupational Health* and its Japanese language counterpart: *Sangyou Eiseigaku Zasshi*. An unofficial web page with information about these journals was also created and launched in the same year. The Journal of Occupational Health was initially issued as a quarterly publication in 1996, before upgrading to a bimonthly periodical from the year 2000. *Sangyou Eiseigaku Zasshi* on the other hand, has been bimonthly since it began in 1996. Given that the original Japanese Journal of Industrial Health had been published for 37 years, both new journals commenced as Volume 38 in 1996, rather than as Volume 1. All members of the Japan Society for Occupational Health who reside in Japan receive both the Journal of Occupational Health and its Japanese language counterpart, *Sangyou Eiseigaku Zasshi*, as part of their yearly membership benefits. By 2007, the editorial board at the Journal of Occupational Health comprised one Editor-in-Chief, five Associate Editors and 58 Editorial Board members. Articles have been listed on Medline since 2003, and the journal is also included on the *Japan Science and Technology Information Aggregator, Electronic* (J-STAGE) and the *Directory of Open Access Journals* (DOAJ). One of the most important features for readers both inside and outside of Japan are the *Occupational*

Exposure Limits (OELs) designated by the JSOH for chemical substances and other items. Proposed values and their scientific basis are printed in the Sangyo Eiseigaku Zasshi (in Japanese), and official values are printed in the *Journal of Occupational Health* (in English).

Conclusion

The evolution of Japan's English-language journals in occupational health and safety provides an interesting insight into the development and internationalization of the discipline within that country. Of particular note, is the fact that neither publishes any manuscripts in Japanese language, with INDUSTRIAL HEALTH in particular, having focused solely on English-language papers since its inception in 1963. As a society journal however, the Journal of Occupational Health had always incorporated both Japanese and English articles, until 1996 when a dedicated Japanese-language counterpart was officially launched. Much of the credit for transforming these journals into their contemporary format can be attributed to their Editors-in-Chief at the time, Akio SATO and Masayoshi YAMAGUCHI. Even so, contributions from society members, authors and other associated professionals also enabled both journals to move ahead with the times. As previously noted (Carter, 2000), a journal's content will always be influenced by the desires and enthusiasms of the Editor-in-Chief and the authors who contribute to it.

In the 1960s as today, much can be learned about the workplace health issues of a particular country by reading its academic journals. For occupational health and safety professionals wishing to seek up-to-date information on Japan and elsewhere, both INDUSTRIAL HEALTH and the Journal of Occupational Health represent a good starting point to begin one's literature searches.

Disclaimer

Derek R Smith is currently on the editorial board of INDUSTRIAL HEALTH and Ken Takahashi is a former editorial board member at the Journal of Occupational Health.

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TABLE 1 Basic Information Regarding INDUSTRIAL HEALTH and the Journal of Occupational Health

	Industrial Health	Journal Of Occupational Health
Current Volumes	Volume 1 (1963) to Volume 46 (current)	Volume 38 (1996) to Volume 50 (current)
Current Editor-in-Chief	Shunichi ARAKI, M.D., Dr.Med.Sc., M.Sc.	Norito KAWAKAMI, M.D., Ph.D.
Current Publisher	National Institute of Occupational Safety and Health	Japan Society for Occupational Health
Current Frequency	Quarterly (1963-2006), Bimonthly (since 2007)	Quarterly (1996-1999), Bimonthly (since 2000)
Current circulation	Approximately 1100 (in 2007)	Approximately 7000 (in 2006)*
Former Journal Title	Bulletin of the National Institute of Industrial Health	Japanese Journal of Industrial Health
Former Print Run	8 Volumes Published between 1958 and 1962	38 Volumes published between 1959 and 1995
Founding Editor	Masayosechi YAMAGUCHI, M.D., M.P.H. (1963)	Akio SATO, M.D., Ph.D. (1996)
Founding Publisher	National Institute of Industrial Health (1963)	Japan Association of Industrial Health (1959)

(*Estimate based on 2006 membership figures at the *Japan Society for Occupational Health*)

Impact Of Ergonomic Factors On Occupational Safety & Health of Women Transport Workers

By: **Dr. Janis Jansz, PhD, FSIA**. Senior Lecturer Occupational Health & Safety / Environmental Health, Curtin University of Technology. Adjunct Senior Lecturer School of Communications & Contemporary Arts, Edith Cowan University, Western Australia. Director of the World Safety Organization International Office for Australia and a Member of the World Safety Organization Board of Directors.

Abstract

Introduction

Women are increasingly being employed in the transport industry in Western Australia but very little research has been done to identify their occupational safety and health needs.

Research Study Aim

The aim of this research was to identify the challenges and opportunities for the occupational safety and health of women in the transport industry. This paper reflects on the ergonomic factors that women reported affected their occupational safety and health.

Method

A phenomenological research method was used to obtain and analyze research interviews concerning occupational safety and health that were conducted with 13 women who worked in the road, rail and air transport industry.

Research Results

The main ergonomic concerns identified for road, rail and air, women transport workers were hours of work and physical stress. For road and rail women transport workers additional concerns were personal needs, security and physical work environment.

Recommendations

Recommendations are made for further ergonomic based research opportunities to improve the occupational safety and health of female transport workers.

1. Introduction

A woman who works in the transport industry in Western Australia said that "Everything is transported into or in this State, except the air we breathe and the land we travel on." Working in the transport industry is a very important occupation. The Commonwealth of Australia (2005) reported that 411,000 people in Australia were employed in the transport and storage industry with 24% of these workers being female. Women employed in this industry in 2005 made up 2.4% of all women employed in Australia. Of these female transport workers 69% worked full time while 31% were part time workers (Commonwealth of Australia, 2005).

The Office of the Status of Women (2004, p 53) records that in Australia "Until 1966 Section 49(2) of the Commonwealth Public Service Act read 'Every female officer shall be deemed to have retired from the Commonwealth service upon her marriage.'" This bar to employing females who were married did not apply only to Commonwealth employees, but to any women who worked for the State Government, Local Government and most private enterprises in Australia. For this reason in Australia only unmarried females were considered acceptable to work in the transport industry prior to 1966.

Even single women had difficulty gaining employment in the transport industry in Australia as is shown in the following story. The first trip was rather traumatic, because it was public news and no matter where I went people were talking and saying, "there's a woman driving a tram!" The hardest thing was to drive that tram properly and not make any mistakes, because at

first people were very, very critical, but it was very pleasing to have the comments come through the press that it was a pleasure to be sitting behind a woman driver. This made the 19 and a half years fight (to become a driver) worthwhile (Office of the Status of Women, 2004, p. 57). Having women work in the transport and other industries in Australia and other countries is now becoming more acceptable. IFT Women (2000) recorded that in the European Union more than 75% of the employee growth since 1980 was due to women entering the work force. Women have only just begun to be employed in the transport industry in many countries. For this reason there was very little information published about how their occupational health is managed and the main problems that are encountered by women in the transport industry.

The European Agency for Safety and Health at Work (2003, p.3) has as one of its top priorities "achieving gender equality in all aspects of employment." A reason for this is that the European approach to occupational safety and health has been "gender neutral" with differences between the occupational safety and health requirements of men and women being "ignored in policy, strategies and actions." This may be the case in Australia too. Previous research conducted in Europe by this agency had identified that there are gender differences as in general women have more upper limb disorders (due to manual handling or repetitive muscle use work), stress disorders (particularly when they have little control over work) and infectious diseases while men report having more accidents and injuries at work than women. These occupational health issues were reported for

employment in general, not specifically for the transport industry.

Bottomley (2003) reported that driver fatigue was a factor in 15% of fatal crashes involving heavy transport vehicles and that the annual cost of fatigue related crashes in Australia was estimated to be \$250 million. Subsequent to the above findings fatigue management legislation for transport drivers has been brought into Australian occupational safety and health legislation with the aim of making it safer for drivers working in the transport industry.

Ballard, et al (2002) conducted a retrospective cohort mortality study of Italian commercial airline cockpit crew and cabin attendants. Their research results identified that female cabin crew members reported feeling that because of their hours of work and the fact that they were frequently away from home they had insufficient time to attend to problems in their personal life. Respondents stated that they felt isolated and lonely at work and also when away from work. The health effects of this were that some female flight attendants experienced panic attacks, anxiety and depression. This research identified that female flight attendants had an elevated number of deaths by suicide to that found in the general public. Costa (2003) found that shift work could be a problem for transport workers, particularly if there were frequent changes from day to late evening and to night work because this affected employee circadian rhythms. When studying the effects of shift work on transport workers Williamson and Feyer (2000) had research findings that agreed with Costa's (2003) report.

The Commonwealth of Australia (2005, p.10) is keen to attract more women to work in the transport industry because "women instinctively have skills suitable for the industry, such as multi-tasking, an ability to priorities work, commitment to the job, a reluctance to break the law and logical thinking processes." With changes in technology, such as having automatic truck gear boxes and hydraulic lifting equipment, women are now able to fill employment positions in the transport industry that in the past would have been considered to require too much physical strength for them to do. There is also an increasingly aging workforce in many developed countries and employing more women in the transport industry is being seen as a way of meeting employment requirements (Commonwealth of Australia, 2005).

This pilot research study was conducted to identify the challenges and opportunities for the occupational safety and health of women working in the Australian transport industry. Women are increasingly being employed in this industry in Australia, but very little research has been conducted to identify ergonomic related problems that may occur for women who work in the Australian transport industry.

2. Method

2.1 Study aim

The aim of this research study was to identify the challenges and opportunities for the occupational safety and health of women who work in the transport industry.

2.2 Study design

In order to develop an understanding of the experiences of women transport workers, in relation to occupational safety and health, a phenomenological research approach was used. "The purpose of phenomenological reflection is to try to grasp the essential meaning of something. Insight into the essence of a phenomenon involves a process of reflectively appropriating, of clarifying, and of making explicit the structure of meaning of the lived experience" (Van Manen, 1990 p. 77-78). "Phenomenology is concerned with illuminating the richness of individual experience" (Baker, Wuest & Stern, 1992, p. 1358). The value of using this research method is "learning about lived experience from the informant's perspective – to capture the experience as it is lived and share it with others" (Vickers, 2001, p. 33). People who do not live the experience frequently do not understand the major occupational safety and health concerns as well as the people who work in the industry. For this reason it was important to have people who actually work in the industry describe what their major challenges and opportunities for improvements in occupational safety and health were. Using Phenomenology research method helped the researcher to gain the information required to meet the study aim.

2.3 Sample selection and setting

Government and private transport authorities were contacted by email and by telephone and asked to circulate information regarding opportunities for participation in this research study to any women transport workers in their organization. Most of the private organizations approached said that they did not have female transport workers. One participant in this study came from Queensland. The remaining 12 pilot study participants were based in Western Australia.

2.4 Procedures

Thirteen women transport workers were interviewed. They were asked the following questions.

1. Employment position
2. Main work duties performed
3. Length of time working in the transport industry
4. Age
5. What challenges do you face as a woman working in the transport industry?
6. How do you deal with these challenges?
7. What does your employer do to promote
 - a safe workplace?
 - safe work practices?
 - your physical health?
 - your mental health?
 - your social health?
8. What do you do to maintain your own occupational safety and health?
9. What opportunities are there for improvements for the occupational safety and health of women who work in the transport industry?

Information provided by each woman was written and a transcript provided to each participant, by email or by post, to check that the researcher's documentation of what the participant stated was correct. Statements were checked by the

participants to ensure accuracy and improve the validity and reliability of the data collected. Three participants were interviewed in person. Ten participants were interviewed by telephone as there was too much distance involved in traveling to meet for an interview. Interviews lasted from 3 hours to 10 minutes, depending on how much participants wanted to discuss about occupational safety and health in their workplace and industry.

2.5 Data analysis

Pattern Matching was used to analyze the information collected. From this information main themes were developed for further research to be conducted in these areas.

2.6 Sample demographics

The following table shows the distribution of the research study respondents by occupational.

Table 1. Occupation type

Transport Industry Type	No. of Women interviewed	Employee	Owner	
			Sole	Joint
Road (truck)	8 (truck drivers)	3	2	3
Rail	3 (1 train driver; 2 transit guards)	3		
Air	2 (air hostesses)	2		
Total	13	8	5	

Table 2. Age in years

Age	Number of Participants
21-30	3
31-40	5
41-50	4
51-60	1

The most common age for the research participants was 31-40 years old. Similar to this age range distribution the ABS in 1996 found that of the 90,989 women working in transport 14% were aged 15-24 years, 31.2% were 25-34 years old, 26% were 35-44, 20% were 45-54 with the remaining 8.6% being aged 55 years or older (Commonwealth of Australia, 2005).

Table 3. Length of time in years spent working in the transport industry

Management	Other employees
18x2	40
15	9
10	3
8 _{1/3}	2 1/2
8	2
7 1/2	
7	

Together these women had spent 150.3 years working in the transport industry. Average time working in the transport industry was 11.6 years.

3. Research Findings

For road, rail, and air transport workers ergonomic concerns were hours of work and physical stress. Road and rail transport workers also had concerns about security, physical work environment and personal needs. Each theme is presented under its own heading with direct quotes from the women used to highlight the ergonomic themes.

3.1 Hours of Work

Two trucking business owners, one night shift worker, three rail

transport workers and one air hostess all expressed problems with their hours of work. By contrast, one trucking business owner and one night shift worker described the advantages of their hours of work.

For the two business owners the main problems identified were having to do paperwork after driving and not having time to have a social life after work because of the amount of hours worked. For example, one woman stated:

“I spend an average of 20 to 30 hours a week doing long distance driving and an average of 30 hours a week doing paperwork.”

Employees, as well as business owners, had a problem with the hours that they worked. One truck driving night shift worker said:

“I sleep during the day because I work at night. I am in a permanent state of lack of sleep. I have tired days. I prefer working at night and would not cope with day work”

The other night shift worker who drove trucks was supremely satisfied with her ‘hours of work’, the reason being that she drove at the best time of the day “when you have the freeway all to yourself”, she could relax during her work shift when cargo was being loaded, listen to music and singing along with the radio while driving. A woman who owned her own transport company reported that having 12 hour shifts was good for her family as it allowed her husband more time to be involved with their children. People with regular working hours were satisfied with their situation unlike the air hostesses who had to do shift work with irregular hours. One air hostess commented:

“I find it hard doing early (after midnight) morning work. I spend a lot of time sleeping during my time away from work”

Costa (2003, p. 84) stated that changing hours of work forced workers to modify their “normal ‘activity-rest’ cycle” to adjust body functions to their work time. This produced continuous

stress and resulted in 'jet-lag', or more accurately, 'shift-lag' syndrome characterized by fatigue, sleepiness, insomnia, disorientation, digestive troubles, irritability, poorer mental agility and reduced performance efficiency. Reduced performance efficiency was described as an "important contributing factor to 'human error', and consequent work accidents and injuries."

As shift work has been identified as producing work and personal life conflicts the European Agency for Safety and Health at Work (2003) has recommended that work rosters should take into account work life balance to allow for the family and social needs of employees. In the transport industry this did not always occur as all 3 rail transport workers interviewed complained about the hours that they were scheduled to work. It was stated by a research participant that train drivers and transit guards may work a shift that started at 4:15 a.m. and end at 12:15 p.m. The work shift may be 3:45 p.m. to 1:45 a.m. Shifts could start at 3:45 a.m. and any time after this. On a Friday or a Saturday night the shift can end at 3:30 a.m. The train driver summed up hours of work as follows:

"For scheduling hours of work we now have a computer system that does fatigue management. You might work a morning shift; have a day off, then work a night shift. When you were going to sleep one day, you are now waking up the next day. Staff get sick because their bodies do not have time to adjust to these hours of work."

A rail transit guard described her hours of work in a similar fashion.

"With the Shift work roster at times it becomes extremely stressful, and tiring as you working early morning and then straight on to late night shifts. We have had at least 5-8 different rosters within the last 2 years and still facing a new one at the end of March. Management can't seem to settle for a working roster. They don't seem concerned that we are feeling the stress of the horrid rosters, but they are bound by the Ministers election promise to have a Guard on every train."

Costa (2003) found that shift work could be a problem for transport workers, particularly if there were frequent changes from day to late evening and to night work because this affected employee circadian rhythms. When studying the effects of shift work on transport workers Williamson and Feyer (2000) had research findings that agreed with Costa's (2003) report. As well as describing what the problems were a rail transport worker described why scheduled hours of work were a problem.

"Scheduling is a major issue. We get single days off. Have low staff numbers. Staff get very tired. We have excellent managers, but they have never had to talk someone down from being violent. It is hard for them to make informed decisions. They may have the best intentions,

but they don't understand the pressures and our work."

Other problems related to hours of work in the rail transport industry were that women were treated the same as men, "For instance, during your period cycle you are expected to ride the train for up to 4 ½ to 5 hours straight without a break." All 3 women made this complaint. There were also complaints that the work structure was set up for men with most employment positions being full time work. The lack of part time work was not due to management decisions, but was the result of the Union restricting part time workers in the rail industry to no more than 15%. Part time employees were used to cover peak hour work periods.

Particularly for train driving it was very necessary to have good concentration (Haworth, 2005). The train driver described her work as follows:

"When you are a train driver it is often 3 minutes drive to the next stop. There is a lot more to our job than people think. You have to play messages (for example "Stand back from the door") and one kilometer before the next train platform you have to start braking. When you stop at the platform you have to open the doors. You have to concentrate hard on watching the signals, the speed board and watch for any irregularities, such as a broken rail or a hole in the fence. One of the top 3 ways that people in the world commit suicide is by going in front of a train. This does not get reported in the media, because it might promote many copycat suicides. Near misses (not hitting someone who wants to die or who is on the rail track) are also very stressful. If we had more staff we could come off our train and sit to have a cup of coffee after a stressful incident. It can happen on a daily basis where people are killed on the rail lines. Sometimes you just need a break to be able to cope. "

Essenberg (2003, p 13-14) wrote that "in the United Kingdom, in 2001, 250 people were killed or seriously injured trespassing on railways. Suicides on railway tracks happens about 200 times a year in the Netherlands. Railway workers, in particular train drivers and conductors, are regularly confronted with suicides and violent deaths." As rail workers did not come to work expecting to kill people, or see people killed, or have to clean up people who were killed on the railway line, having to do this work was described as producing reactions that varied from anxiety to hallucinations. Some had fear of returning to work and post-traumatic syndrome that could last for many years. It was stated that railway employees, suffering from post traumatic stress disorder due to suicides seen while working, have been given disability pensions because they were unfit for work due to their experiences (Essenberg, 2003).

A problem with train driving is that it is a specialized skill. "You can't just ring an agency and get a competent driver when someone is sick." The answer to having trained staff available when needed was described by the driver as employing more part time staff who were willing to increase their hours of work when there was a need for this.

Another problem was that, although the rail industry had a gymnasium for its employees to use, all of the employees interviewed said that they had no time to use this. The driver also said that train drivers needed 6 monthly update training, but there was not really time for this even though the education would increase drivers' level of customer service and improve staff satisfaction with their work.

Rail industry employees have a lot of contact with members of the public. The women spoken to said that they only have 80 hours (10 days) sick leave a year.

"If you have the flu you can be off work for 2 weeks. You should not have to come in to drive a train if you are sick, but you have to come in if you have used up all of your sick leave."

In summary, all women who reported having regular hours of work were satisfied with their hours of work. The other difference between transport workers who were satisfied with their hours of work, and those that were not, could be summed up as the difference between choosing the hours that were worked and being scheduled to work the hours that the employer chose. The train driver who was not satisfied with her hours of work stated "Decisions about our hours of work are made by people who sit at desks; not the train drivers themselves." The truck driver who enjoyed driving at night said "My employer has a waiting list as long as your arm for people who apply to do my job." Hours of work are not only an ergonomic issue for the transport industry they are a recruitment and retention issue.

3.2 Physical stress

Physical stress was a problem for road, rail and air transport workers. The airhostesses found lifting heavy equipment difficult. They also stated that it was unfair that men asked them to put their heavy bags in the overhead lockers when these men were stronger than the women.

In the rail industry a transit guard found the weight of wearing the constrictive rig belt with 8 kilograms worth of security equipment attachments caused her physical stress. Women are expected to wear the same amount of weight in their belt as the male transit guards. Rail industry employees interviewed reported having a lot of physical and mental stress at times when performing their work.

An employee in the truck driving industry reported the following:

"When changing gas bottles on the forklift I have a 43 kg bottle to lift on my own. There is no machinery available to help me lift the gas bottle. I have asked if we could have half sized bottles for emergency gas exchanges for the forklifts. All gas bottles weigh between 40 to 43 kg. I have asked for 20 kg bottles for emergency situation use. When I asked for 20 kg bottles I was told if we need assistance we have to phone transport; but there is no one available to help in the middle of the night. Also because I work on my own, should I be injured at night there is

no one to come to my aid to help me."

She also complained of the following physical stress.

"I have to continually lift things inside the van in a stooped bent over position. I have had treatment for a soft tissue injury in my shoulder that is the result of work related lifting. I have put in a hazard report about the way that we are expected to do manual handling at work. Hazard reports are not acted upon. The transport safety officer for my workplace is very dogmatic. When I make a hazard report to her I ask for a reply and keep the evidence that I have put in the hazard report. I keep records for legal purposes. I have become very apathetic about safety as nothing positive is done when I report a hazard and ask for the risk of the hazard causing harm to be minimized. Due to her attitude I cannot talk to our workplace occupational safety and health officer."

All reports of physical stress came from employees. In the case of the rail and air transport workers either the employee or the employer implemented a hazard control strategy to prevent the employee being injured. In the case of the road transport employee, because physical stress remained part of her work, she was injured. Physical stress hazards that were reported by her were still not controlled at the time of the interview. The European Agency for Safety and Health at Work (2003, p. 41) reported that muscular skeletal disorders are "the most common work related health problem for both men and women, and they are on the increase." Physical stress, which exceeds the employee's ability to manage, can cause muscular skeletal disorders.

An employer who worked in the trucking industry had the following to say about controlling physical stresses.

"You need to know how your body operates to know where to start with your physical and mental health. You can do this when working for your self. "

When looking at physical ergonomic factors it was clear that women who worked for themselves had control of their work processes, but employees did not always have this and were sometimes forced to do work that caused too much physical stress if they wanted to keep their employment position. Employers were requested to act on controlling work process hazards that cause employees physical stress and implement safer work practices, particularly when safer ways to perform the work tasks have been identified by the employees doing the work. For example, an employee asked if it would cost more to have two 20 kg bottles of gas or to have a 43 kg bottles of gas and also to pay the workers compensation costs when the employee lifting the 43 kg bottle of gas was injured?

The remaining themes were only identified by women who worked in the road and rail transport industry.

3.3 Security and Physical Work Environment.

The issue of security was highlighted with the employment of women in the transport industry. Aggression aimed at the women was sometimes influenced by the type of work that

the women performed. For example one woman stated the following.

“When I commenced doing auditing there was a lot of aggression directed towards me by people in the companies that I was auditing. Having to record hours of work caused more paper work and problems for some people. These people were aggressive to the auditor because they did not want to be audited. I explained to them that whether you are working for yourself, or for a company, you still have to record your hours of work and have these audited to ensure compliance.”

There were other reasons as well for aggression being shown to women. In the rail industry all three women interviewed said that they had experienced physical harm, or the threat of physical harm, from offenders. All three women said that having “single manned trains has been a major issue for the past 2 ½ years” as there was no immediate help available when they had to deal with violence. Prior to this time there had been Special Railway Constables who worked in pairs. The train driver, who had previously been a special railway constable, told the following story.

“You also have to deal with nasty situations, like people trying to beat you up. For example, one day I arrested a guy who was throwing beer bottles at people. He was with a group of 20 mates. There were 2 of us and 20 of them. They smashed the windows and tried to climb in the office where we took their mate. When you are dealing with violence directed to you it is not too bad as you are doing something to fight back. I found it harder to deal with violence when I had a riot on the train while I was driving and passengers were beating up the Transit Guard. In the driver’s cabin I could hear what was happening, but as I was driving I could not do anything about it. It is horrible when someone is in danger and you are not able to do anything to help.”

A truck driver had a similar problem. Until 5 years ago she said that there were always two people on each truck at night for security purposes. As a cost cutting measure trucks now only have one driver in them at night. This driver told the following story.

“I work on my own. My security is affected by the hours that I work and the situations that I am placed in. I work on my own in the city from 9:30 p.m. to 6:00 a.m. I have to go into dark alleys on my own and travel off the roads on my own. There are homeless people sleeping in my work area. I frequently get spoken to by these people asking for money and/or cigarettes. While working I was recently a victim of a hold up. I was asked by a man ‘Do you want to be

shot? Do you want me to slash your face?’ The incident took place at 11:10 p.m. The police were phoned twice. It took 40 minutes for the police to turn up. After this incident I read in the West Australian newspaper that 26,000 people in Western Australia were despondent with police response time when the police were asked for help.”

Both of these women worked for government owned companies who had cut staff numbers with the aim of decreasing costs by decreasing employee numbers. Essenberg (2003, p. 8) when writing a report for the ILO about violence and stress at work in the transport industry wrote that “profit maximization and cost minimization appear to take priority over safety and health of employees.”

Mayhew (2004) conducted face to face interviews with 800 Australian workers employed in the long-haul transport industry, health and tertiary education sectors. A finding of this study was that the victims who had experienced occupational violence had a fear of recurrence of the violence. For this reason it was very important to show employees that everything possible to prevent the recurrence of similar exposure to occupational violence was done. In both cases the employees felt that their employer had not implemented appropriate hazard control measures and particularly the road transport driver had a strong fear of a recurrence of robbery with violence. Harris, Mayho & Page, (2003) had similar research findings about fear of re-victimization and the need for hazard control measures to be implemented after employees experienced work related violence or the threat of work related violence.

Security was also an issue for self employed people who worked on their own as a female company owner who drove a truck said “If I have a flat tire on the Freeway at night I worry in case someone might harm me when they stop to ‘help’.” Away from the city truck drivers seemed to find it safer with one driver reporting the following.

“I have never had any problems with security. I even find it safe to sleep on the side of the road.”

The only other environmental hazard raised as an issue, besides security, by the respondents was the presence of fumes from a workplace that one of the participants experienced when she was auditing a company’s workplace. The woman dealt with this hazard by leaving the unsafe workplace and writing the audit report in her home office.

Summary

Having a safe work environment was particularly important for women who worked in a policing role, or who worked on inner city streets at night. When performing patrols police officers usually work in pairs for greater security. These women were asking if they could work in pairs as well when working in situations that they felt their life were at risk.

3.4 Personal Needs

Road transport business owners reported that Transport Women Australia Limited filled a very valuable role in their

professional life. One small trucking business owner said, "It took me 9 years to find Sue Rowe and the transport women support group." Even though there are a lot of government departments around who supply information about legislative requirements, women business owners stated that they did not always receive all of the relevant information, or understand it, or know whom to turn to when they needed help to solve problems. Having monthly meetings with women that had the same information needs and with whom they could share problem-solving ideas was reported as being very beneficial for company management.

Both the Western Australian Government and the Australian Commonwealth Government have recognized that small businesses need help in understanding legislation and in having good occupational safety and health practices. In 2005 WorkSafe Western Australia implemented a "ThinkSafe Small Business Assistance Program" for businesses employing less than 20 employees. This program provides, free of charge to the business, the services of a Safety Consultant to do a workplace and work process safety assessment and "to develop a simple, easy action plan that is unique to the business and relevant to its industry" (WorkSafe Western Australia, 2005, p. 7). The Commonwealth Government also has a Small Business Occupational Health and Safety Advisers Program to provide a network of specialist safety advisers to "perform a dual role of adviser and educator" (Andrews, 2005).

A personal problem for female rail industry employees was the uniforms that they had to wear. A train driver summarized the problems with her uniform as follows.

"We wear the same clothes as the men, which means that we have a bulge in our pants where we don't need it, and don't have a bulge in our tops where we do need it. Our clothes are made for men's body shape. It would be good to have proper business tops and pants as in this computer age our jobs are not as dirty. We could take more pride in our appearance if we had more options and were able to dress more feminine. As government employees we have to wear long sleeved shirts, but train drivers work indoors where there are times that wearing a short sleeved shirt is more comfortable and practical. Many of the girls that I know would really like to wear tailored shirts and pants. We get a full replacement uniform to wear every year. To get a change for our uniform it would need to go through a tender process. The tender for supplying our clothes lasts for 3 years so it takes a long time for any changes to be able to be made."

In the rail industry females were not always recognized as having some physical needs that males did not. For example, one of the research participants reported the following story.

"Workmates/ Supervisors treat females exactly

the same as the males. This can be hard at times. For instance during your period cycle, you are expected to ride a train for 4 ½ to 5 hours straight without a break. PMS (pre menstrual stress) is not recognized "Just take a Nurophen and get over it." I cope by talking with female work colleagues and the Supervisors and taking Nurophen!"

The fact that at certain times of the month female employees might have the need for toilet breaks more frequently than male employees was not recognized.

Female truck drivers also had problems with having access to toilets. Having some country roadhouse's closed down and insufficient parking space in cities led to the following comments.

"You have to be good at problem solving. Guys can go to the toilet in the bush. Women have to go in the tipper bin. "

"Doing long distance driving I am often hot and sweaty. The shower facilities at truck stops are often very grotty."

"In the city, with anything bigger than a 4 ton truck, there is nowhere to pull over to be able to go to the toilet, or to get something to eat."

Truck drivers spoke about the need to have healthy fast food to eat while they were driving and reported that they needed to snack on food about every 1½ hours to keep their blood sugar at a good level for mental concentration. If there was time before work they would pack up food, but on long trips there was often a need to buy food as well. One of the transport workers described the problem as follows.

"They have been closing down country roadhouse's. Truck drivers need a large area to park their truck, so they usually buy food at roadhouse's. This option is becoming less possible because of rationalization and consolidation. Most drivers, as well as carrying their own food and drink, like to buy something to eat and drink one or two times a day. Having healthy food to eat needs to be demand led. Need to have an industry led campaign for a discount on healthy food for drivers. Need good marketing. For example have a campaign for a water drink with a salad sandwich at all BP, Caltex, Shell, Mobile, etc service stations to sell to transport workers. "

From some city truck drivers who worked at night there were the following complains about their food as their workplace manager did not understand that people do not want the same meal to eat in the middle of the night as day workers would enjoy in the middle of the day.

"We have good comradeship in the Crib Room where we eat our meal. About twice monthly we get given a BBQ by our employer. This is called 'Dibble Day - Don't bring lunch.' At night time we have different needs. We asked for our meal

to be bacon and eggs with cake for desert. Instead of what we asked for we are given steak, coleslaw, potato salad and really hard sausages. In the half an hour we have for our meal-break we have to cook this meal and clean up. This time limit does not allow enough time for eating the meal. The first person who gets to the meal break gets the BBQ going. Some people think that their wife is there to clean up. I don't eat the BBQ because there is not enough time for cooking and cleaning up. When the manager did provide the requested cake it was 'crap'. \$3.50 from Coles. This cake was hard and stale with a reduced price for quick sale. The manager did not give 'quality'."

In summary all of the truck drivers who did country driving made comments about the need for more healthy food to be available for purchase and the need to have clean toilets for use. They were requesting more variety in food and that appropriate food be made available in large workplaces in their lunchroom. For rail workers there was a need to be allowed to have more frequent toilet breaks when these were required. For the women truck drivers there was a need expressed for easy access to clean toilets and showers, particularly in the country. For city driving it was suggested that large fast food outlets, like McDonald's, have several big rig truck bays and serve healthy fast food and drinks for the truck drivers. For the country it was suggested that service stations do this. The problem of having a lack of information was being overcome through having a women's transport network association to gain and share knowledge and by having transport forums.

4. Conclusions

The research participants in this pilot research study were unusual in that five of the participants were business owners. This research identified three main ergonomic themes. For women road, rail and air transport workers the concerns were hours of work and physical stress. For road and rail transport workers an additional concern were personal needs, physical work environment and security. The research subjects who were employers had the position power to make any required changes to improve ergonomic factors in their workplace and reported using this power to make their workplace and work processes as safe and healthy as possible. The research study employees who worked for government organizations reported feeling very frustrated that it took so long to have ergonomic concerns dealt with (if they were dealt with at all) to make their paid employment safer and healthier.

For some ergonomic factors identified, such as physical stress, there were no differences for male and female transport workers, although road transport business owners did say that they gave smaller trucks to female employees to drive than they gave to male drivers as their female workers had a smaller body build and less muscular strength than their male employees. Hours of work could cause a problem for both male and female employees, however men do not get pre menstrual stress and at certain times of the menstrual cycle need a break more than every 5 hours due

to blood loss. Female rail transport workers reported finding wearing male clothing uncomfortable and would like to wear female clothing that was not as tight across the chest and not as loose in the center of the pants.

As this research was a pilot study there was only a small number of research subjects interviewed. The purpose of this pilot study was to identify areas for future research. The ergonomic problems described by women transport workers generated the following ideas for further research.

5. AREAS FOR FUTURE RESEARCH

- For the road, rail and air transport industries problems with hours of work need to be identified and ways to improve hours of work to maximize employee occupational safety and health should be found.
- Causes of continuing physical stress for transport industry employees needs to be identified and ways to decrease this stress identified and implemented.
- For the road and rail transport workers the areas of personal needs including the availability of healthy food, clean toilets and clean showers need to be checked to see if they are industry wide problems. If they are, ways to minimize ill health affects from any identified problems need to be found and implemented.
- Research should be conducted to identify the most effective ways to get industry decision-makers to listen to employee concerns in relation to employee occupational safety and health.

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Promoting business profits and sustain ability in industries in China by improving occupational and environmental health through the use of cleaner production, industrial ecology, health promotion and new media

By Dr. Janis Jansz. School of Public Health, Curtin University of Technology. Adjunct Senior Lecture in the School of Communications & Contemporary Arts at Edith Cowan University. Director, World Safety Organization International Office for Australia.

A proposed research project titled "Promoting business profits and sustain ability in industries in China by improving occupational and environmental health through the use of cleaner production, industrial ecology, health promotion and new media" proposes, through the International Labour Organization (ILO) Research Collaboration Centre in Western Australia and the World Safety Organization International Office for Australia, to bring together world experts to enable 12 PhD students from China to bring to their country research based best practice methods of promoting business profits and sustain ability for chemical industries in China by improving occupational and environmental health through the use of cleaner production, industrial ecology, health promotion and new media. The research project is comprised of three sub projects that are all concerned with reducing pollution, improving occupational health and business profits for people in China.

Sub Project 1

Enhancing sustain ability and business performance of the Beijing industrial area through industrial ecology and cleaner production practices. This sub project will be conducted through the Curtin University of Technology Centre of Excellence in Cleaner Production and the School of Public Health and through the Tsinghua University. The overall aim of this sub project is to assist industries in the Beijing Industrial Area with enhancing their business and sustain ability performance through the application of industrial ecology and cleaner production practices.

Sub Project 2

Promoting business profits and sustain ability by improving occupational and environmental health in industries in China. This sub project will be conducted through the School of Public Health at Curtin University of Technology, the Zhejiang University the Ontago University, the Bureau of WorkSafe Supervision and Administration Government of Zhejiang province Peoples Republic of China and WorkSafe Western Australia. The most common hazardous substances used in industries in the Zhejiang Province in Peoples Republic of China are lead, benzene, hydrogen sulfide and dimethylformamide. Research will be conducted in the Zhejiang Province to identify ways to improve the economic sustain ability of industries that use these four substances and to enhance the occupational health of the people who work in the workplaces where these substances are used.

Sub Project 3

Communicating best practice in occupational health, cleaner production and industrial ecology for industries in China. This sub project will be conducted through the School of

Communication and Arts at Edith Cowan University and the Chongqing Radio and TV University. The best practice research based information obtained by the above two research sub projects will be shared with the people in China using innovative new media technology that will include developing a user friendly website for employers, employees and members of the public to access and share occupational health knowledge and practices, industrial ecology and cleaner production information. The website will use discussion boards, blogs, wikis, streaming video, live web cams, RSS feeds and other Web 2 technologies to enable rapid information updates, communication and collaboration. Information will also be shared through the development and use of serious games that are educational, motivational, authentic and efficient in promoting knowledge transfer and training users about occupational and environmental health, industrial ecology and cleaner production practices. This research will be conducted in the Zhejiang Province in Peoples Republic of China, in the Beijing industrial area and through out China.

Research aims

Researchers from Curtin University of Technology, Edith Cowan University, the Zhejiang University, the Tsinghua University, the Chongqing Radio and TV University, China University of Geoscience, the Ontago University and WorkSafe Western Australia will work together with relevant Chinese government authorities for this research based business sustain ability and health promotion research project. Working through an ILO Research Collaboration Centre will allow the information gained from this Pilot Research Study to be used to expand the research throughout China, and then internationally. This will help China to be a leader in occupational and environmental health, cleaner production, industrial ecology and new media use, particularly as all PhD research students will come from China to learn research skills from universities in the Asia Pacific region under the guidance of experienced university researchers and key industry medical and occupational safety professionals.

This research study intends to:

- Identify stakeholders and provide clarity of current occupational health problems due to exposure to benzene, hydrogen sulfide and dimethylformamide used at work in the Zhejiang Province in China and incentive for the relevant industries that use these chemicals to buy in to solving these occupational ill health causes.
- Identify opportunities for improving industrial ecology and cleaner production practices for selected workplaces in the Beijing Industrial District.
- Provide a means to communicate and share the information that is obtained to promote best practice in cleaner production, industrial ecology and in occupational health.

Funding required

To conduct this research will cost \$A3,694,437 (Australian). \$A1,558,155 has been raised so far for conducting this research. To be conducted this research required a further \$A2,136,282. There are opportunities to sponsor an individual PhD research student at a cost of \$A78,420 per student (\$A26,420 per year for 3 years) and to have the scholarship for this student named after the company or person who provides the sponsorship. There are also other sponsorship opportunities for this research.

The writing of this the research proposal was sponsored by a

research grant of \$900 from Prime Health. This proposed research still requires other industry sponsorship to be able to commence. If you, or your company, are considering providing funding for this research and would like to read the full research proposal, or any of the three sub research proposals, the proposal can be obtained from Debbie Burgess at the World Safety Organization National Office at the email address debbie_burgess@worldsafety.org or from Dr. Janis Jansz at this email address j.jansz@curtin.edu.au

Please consider sponsoring this worthwhile research

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106 W Young Suite F, PO Box 518
Warrensburg, Missouri, 64093 U.S.A.
Telephone (660) 747-3132 Fax (660) 747-2647
www.worldsafety.org
info@worldsafety.org
editorial_staff@worldsafety.org