

出國報告（出國類別：國際會議）

出席2010年國際職業衛生學會第8屆學術研討會

IOHA 2010 8th International Scientific Conference

服務機關：行政院勞工委員會勞工安全衛生研究所
姓名職稱：游逸駿/勞工安全衛生展示館研究員兼館長
派赴國家：義大利
出國期間：99/09/26~99/10/02
報告日期：99/11/12

行政院及所屬各機關出國報告提要

出國報告名稱：出席 2010 年國際職業衛生學會第 8 屆學術研討會

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出國計畫主辦機關/聯絡人/電話

出國人員姓名/服務機關/單位/職稱/電話

游逸駿/行政院勞工委員會勞工安全衛生研究所/勞工安全衛生展示館/研究員兼館長/02-26607600

出國類別：☐1 考察☐2 進修☐3 研究☐4 實習☒5 其他

出國期間：99/09/26-99/10/02

出國地區：義大利

報告日期：99/11/12

分類號/目

關鍵詞：職業衛生、義大利、勞工

內容摘要：(二百至三百字)

本次出國目的參加國際職業衛生學會(International Occupational Hygiene Association, IOHA)2010 年 9 月 28-10 月 2 日於義大利羅馬宗教大學(Universita Urbaniana)舉行之 IOHA 2010 暨第 8 屆國際學術研討會議(8th International Scientific Conference)，會議主題為「健康·工作與社會責任(Health, Work and Social Responsibility)」，並以職業衛生師及環安衛整合(The occupational hygienist and the integration of environment, health and safety)為次標題。

本次游研究員兼館長逸駿參加研討會，並發表論文 2 篇：THE CONCEPTUAL FRAMEWORK FOR SAFETY AND HEALTH AT WORK IN TAIWAN (口頭發表)、AWARENESS RAISING AND CULTURE FOSTERING (海報發表)。我國學

者專家於該次會議中學術發表超過 30 篇，佔會議論文之 6%以上，惟各自為政分散實力，實應亟思如何團結發揮應有之影響力。

本文電子檔已傳至出國報告資訊網（<http://report.gsn.gov.tw>）

目 次

壹、目的與任務.....	4
貳、行程簡介.....	6
參、IOHA 2010 大會內容概述.....	6
一、開幕典禮與專題演講.....	7
二、國際職業衛生學會(IOHA)	8
三、研討資料記述.....	9
肆、台灣學者與安全衛生研究所 IOSH 論文.....	10
伍、心得與感想.....	16
陸、建議事項.....	18
附錄一：THE CONCEPTUAL FRAMEWORK FOR SAFETY AND HEALTH AT WORK IN TAIWAN	
附錄二： AWARENESS RAISING AND CULTURE FOSTERING（海報發表）	
附件：攜回資料：會議摘要書（BOOK OF ABSTRACT）	

壹、目的與任務

職業衛生係勞工生活健康重要之一環，亦為世界衛生組織（World Health Organization）與國際勞工組織（International Labour Organization）聯合推動之重要工作之一，國際職業衛生聯盟(International Occupational Hygiene Association, IOHA)為前述兩大聯合國所屬重大組織認知的重要之非政府組織(non-governmental organization, NGO)，與 WHO 及 ILO 互動十分密切，其於三年一次之大會及國際技術會議，我國政府與相關團體參與其國際技術年會及提升參與國際事務有其必要性，IOHA2008 於台灣順利舉辦，持續而積極參與進而藉由專業實質國際合作形成普世價值之台灣貢獻。

我國應建立一個洞悉全球化潮流，並能體認自身國際角色及國際優勢地位的職業安全衛生外交策略；強調安全衛生無國界為主軸，整合國內橫向、縱向的資源，建立加強安全衛生國際事務及建構國際合作夥伴關係兩大方向，提升國際合作以擴大國際合作接軌。其概念架構主要項目如下：

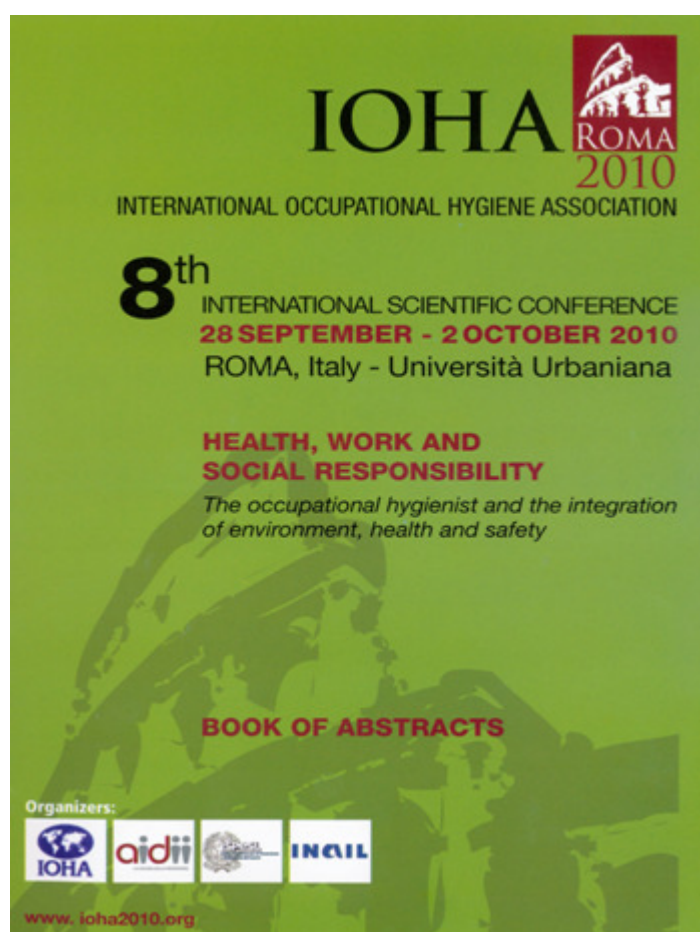
- (1)推動官方安全衛生交流與聯繫
- (2)參與國際職業安全衛生組織
- (3)整合安全衛生國際技術合作
- (4)建置技術交流平台。

在此架構下，本所主要是在非官方組織及學術技術交流部分，發揮重要的業務功能。本計畫將藉由參與國際安全衛生 NGO 年會及展覽活動，成為重要安全衛生 NGO 組織或研究機構之會員或準會員，加強已加入國際合作研究及技術交流，並開發新的 NGO 組織加入為會員，藉由這些 NGO 組織交流合作，將逐步提昇自我研究成果之國際能見度，並尋求建立持續、緊密及互利之合作機制，以研究同仁在專業的努力與成果，突破我國官方參與國際組織的國際現實之限制，實質影響國際 NGO 組織等機構，提昇我國安全衛生水準。

基於職業安全衛生問題在國際上也是一個共通的問題，各國安全衛生機構不論是政府或民間、學術研究或實務輔導等團體，都非常重視，借助國際交流，國際職業安全衛生合作本質上是一種人道關懷及永續發展，培養國際合作夥伴關係的重要工作。勞工是國家最重要的人力資本，也是國家經濟發展重要的因素之一。因此，台灣政府在這個議題必須付出較多的資源與扮演較重要的角色，共享職災風險降低及成果應用經驗，分享資訊與科技研發成果才能預防職業災害以維持社會祥和樂利與經濟永續成長。

本次出國目的參加國際職業衛生學會(International Occupational Hygiene Association, IOHA)2010 年 9 月 28-10 月 2 日於義大利羅馬宗教大學 (Università Urbaniana) 舉行之 IOHA 2010 暨第 8 屆國際學術研討會議 (8th International Scientific Conference) , 會議主題為「健康·工作與社會責任(Health, Work and Social Responsibility)」, 並以職業衛生師及環安衛整合 (The occupational hygienist and the integration of environment, health and safety) 為次標題。

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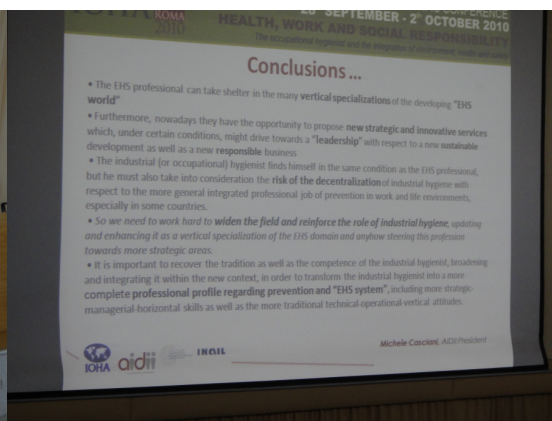
照片 1-1：IOHA2010 論文輯

貳、行程簡介

99.09.26	往程轉機（台北－阿姆斯特丹）
99.09.27	研討會發表準備（阿姆斯特丹－羅馬）
99.09.28-10.01	IOHA2010 學術研討會
99.10.01-10.02	返程（羅馬-阿姆斯特丹-台北）



照片 2-1：大會開幕活動



照片 2-2：IOHA 主席致開幕辭

參、IOHA 2010 大會內容概述

一、開幕典禮與專題演講

來自包含台灣等 50 個國家各行各業的安全健康與環境專業人士齊聚羅馬宗教大學（University Urbaniana），參與國際職業衛生學會（International Occupational Hygiene Association, ASSE）三年一度即第 8 屆學術研討會（8th International Scientific Conference），併於現場辦理展示，即為眾人週知的 IOHA 2010），自 9 月 28 日至 10 月 2 日為期五天。在義大利工業衛生協會（Italian Industrial Hygiene Association, AIDII）與義大利國家職業安全與預防研究所（National Institute for Occupational Safety and Prevention, ISPESL）及工人的補償機構（Italian Workers' Compensation Authority, INAIL）共同合作主辦，義國僱用、健康及福祉部（Ministero Italiano del Lavoro, Salute e Politiche

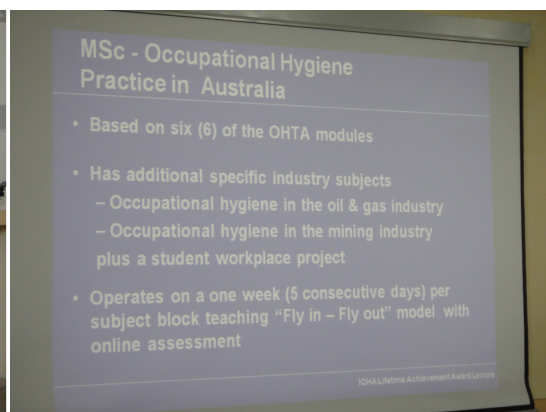
Sociali (Italian Ministry of Employment, Health and Welfare))、經濟發展部 (Ministero Italiano dello Sviluppo Economico (Italian Ministry of Economic Development)) 與 ILO、WHO 等大型國際組織機構支持，及歐陸地區科學性機關(構)、協學會參與下，如 EAA European Acoustic Association、EEA-EU European Environmental Agency、ENSHPO European Network of Safety and Health Professional Organization、Eurotox Federation of European Toxicologist and European Societies of Toxicology、IEA International Ergonomics Association、ICOH International Commission on Occupational Health、INSHPO International Network of Safety and Health Practitioner Organization、Occupational Health & Safety NETworking in EASTern Europe、OSHA European Agency for Safety and Health at Work，共有 408 場次的演講，專業發展課程。並且今年是 IOHA 有史以來最大的海報展示，計有 226 篇。

義國就業部長因方內閣改選，當選人尚未就職，無法出席本次會議，並請會議主席帶至歡迎與重視之意。

會議主席義大利工業衛生協會 AIDII 理事長 Michele Casciani 於開幕致詞中以新世代的工業衛生師角色及組織中定位特別加以闡述。隨著 EHS 專業整合一同，將有更廣泛的問題與解決面向，更趨於分散式服務，需要新的專業能力與創新性的服務樣態。



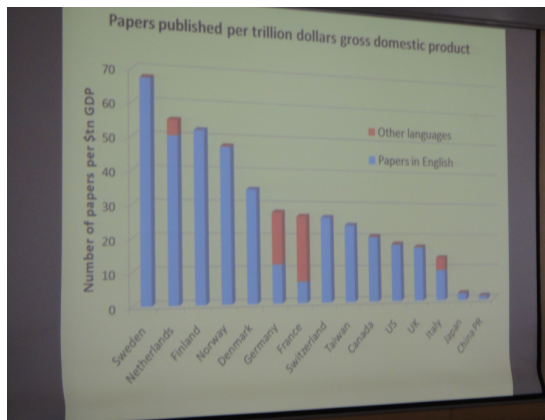
照片 3-1：職業衛生教育專題演講



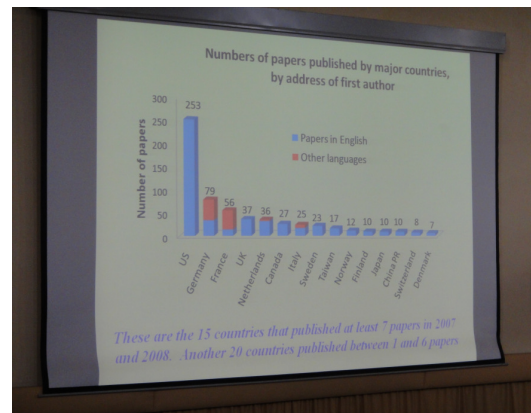
照片 3-2：澳洲的職業衛生實務碩士

專題演講邀請 2 位終身成就獎 (Lifetime Achievement Award) 獲獎者。一位建構職業衛生學位教育體系並於澳洲及智利施行。本項計畫相較我國職業衛生學系眾多，且配合教育部及本會職災保險基金與本所創立之教育資源中心 (Education Resources Center)，亦結合學術理論積極介入職場進行

改善，建構完整職業衛生人力與實務經驗，並於另一位終生成就獎得主 Trevor Ogden (Chief Editor, Annals of Occupational Hygiene) 之專題演講中得到印證。



照片 3-3：專題演講中台灣每單位 GDP 發表量世界第 9



照片 3-4：2008 年職業衛生論文台灣作者佔第 9 位

Trevor Ogden 分析歐陸納入德國以德文法國以法文發表職業衛生國際期刊中，台灣論文發表數量僅次於美國、德國、法國、英國、荷蘭、加拿大、義大利、瑞典，居亞洲首位。若以每單位 GDP 而言，雖仍居第九，但與領先群瑞典、荷蘭、芬蘭、挪威之差距不大，且與丹麥、德國、法國接近，為工業衛生專業大國。

二、國際職業衛生學會(IOHA)

國際職業衛生學會(IOHA)是在 1987 年 6 月 2 日正式在 Montreal 成立。而現在 IOHA 有超過 20 個國家職業衛生組織，從 18 個國家裡超過 2 萬名會員。而 IOHA 主要的目標在於「增進、發展世界的職業衛生到一高層次的專業能力」，可透過組織和個人間的資訊交換，更進一步的發展人類資源以及促進高標準的道德執行。並於國際上於其他國際性組織如國際職業健康大會 (International Commission on Occupational Health, ICOH) 與國際人因工程學會(International Ergonomics Association, IEA)積極合作。IOHA 的活動包括有科學會議以及刊物的發行，IOHA 分支組織的會員也自動成為 IOHA 的會員。我國以中華民國職業衛生學會 (Taiwan Occupational Hygiene Association, TOHA) 名義參與，並於 2008 年三年舉行一次之技術會議來台舉辦。

IOHA 積極推動職業衛生師國家與國際「相互性」和國家間的「交叉認證」等認證方案(Certification)，並提出一些建議來改善這些國家組織來保證專業的品質，這包括了認證除了被接受的職業衛生定義及職業衛生師的角色外，也需要建立一個可被接受的認證的方案來確立職業衛生能力和執行

標準。認證是藉正式的體制來進行一些品質或方法步驟，建立及維持此專業的知識、技巧和能力。並調合專業職業衛生師的能力和執行達到一個標準及建立一個國際性的組織來監控現有認證方案的品質。我國目前專業技師上有工礦衛生技師之考試與法令上之作業環境測定及風險評估服務等，與美國上「認可工業衛生師」(certified industrial hygienist)並無互通之交互承認，對於我國企業之國際化或專業技師為東亞地區跨國企業服務上之窘境。

三、研討資料記述

本次研討會有 ILO、WHO、美國職業安全衛生研究所，及德國、芬蘭、波蘭等歐陸各國職業衛生研究機構、大學、專業團體等國官員、專家學者發表論文。筆者之演講於 9 月 28 日開幕典禮之後的第 1 分組教室，以「THE CONCEPTUAL FRAMEWORK FOR SAFETY AND HEALTH AT WORK IN TAIWAN」為題，與會者均充分感受台灣職業安全衛生政策之思維之深度與強度；筆者與國立自然科學博物館楊中信博士合著之文章「AWARENESS RAISING AND CULTURE FOSTERING」，另於 9 月 28 日進行海報發表，參觀者對台灣運用職業災害保護基金進行博物館層級之安全衛生宣導非常感動，並就台灣勞資政三方合力推動安全與健康主題之醒悟活動充分討論。

以下就研討會相關重要文章與活動進行介紹：

(一) 石綿議題

義大利是火山噴發地區，其對石綿之討論到流行病學等均非常深入。

(二) 照明

照明議題於歐洲非常多人研究，甚至於有眼科醫師之參與，台灣相較較少。因人的工作活動均需用到眼睛，合適的採光與炫光的防止，及工作檯面照度或區域照度，眼球之疲勞等，包括風險評量計畫、環境改善計畫、現場輔導策略。

(三) 中小企業風險評估與職業安全衛生管理之策略

由於歐盟國家提出基礎健康服務觀念，多需風險評估概念法系落實於中小企業，積極發展技術工具 (toolkits)，研究創新手法來面對職業安全衛生問題。

(四) 其他活動花絮

研討會設有 25 場次的工作坊會議及各 40 場次之口頭發表研討與海

報發表，如粉塵、奈米、教育訓練、通風等等安全衛生國際關注議題；與中小企業協助其施行安全衛生管理體系、與預防意外災害或疾病之最新動向。



照片 3-5：筆者發表演講

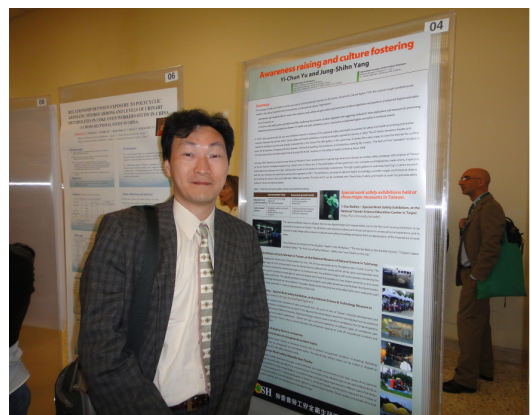


照片 3-6：筆者說明台灣職業安全衛生成就

會議空檔筆者另與四月份於 APOSHO 見面之國際勞工組織安全工作計畫主管日籍誠田君敘舊寒喧合影，另與美國職業安全衛生研究所 (NIOSH) 訊息部門主管亦兼主管奈米安全衛生研究之 Dr. Shuttel 寒喧。



照片 3-7：筆者與國際勞工組織安全工作計畫主管日籍官員



照片 3-8：筆者海報發表活動

肆、台灣學者與安全衛生研究所 IOSH 論文

根據本所 2009 年至 2012 年勞工安全衛生研究策略規劃，本所以研發成果國際交流及未來規劃方向如下：

(1)與國際性展示活動

- A.以符合國際標準產品並加以驗證
- B.參與學術性或國家工安週等活動與商業展示
- (2)成果學術發表及人員交流
 - A.加強安全衛生研究所人員互訪及交流
 - B.網路資料庫引用與技術指引中譯授權
 - C.東南亞及亞洲地區各國職業安全衛生研究機構研討會
- (3)參與安全衛生非政府組織
 - A.積極準備國際勞工組織之 CIS 計畫
 - B.參與國際重要安全衛生非官方組織
 - C.與世界各國職業衛生領域之研究機構合作
 - D.爭取將研究成果引導國際技術或標準委員

本次雖 IOHA2010 在歐陸義大利羅馬舉辦，台灣學者發表次量超過 30 篇，筆者整理如下，可能仍有疏漏。其中與本所研究計畫相關佔一半以上，直接作者本所佔 10 篇相關作者包括石前所長東生、衛生組張組長振平、陳研究員春萬、陳研究員旺儀、洪副研究員柏宸、陳代理所長秋蓉、醫學組熊研究員映美、展示館蔡副研究員維誼及筆者等。本會仍有勞工安全衛生處傅處長還然及曾技正麗靜之小企業職業衛生管理論文一篇。顯示本期程安全衛生研究策略規劃中學術發表十分成功。

表 4-1 台灣學者口頭報告的論文清單

文章標題	作者	服務單位
THE CONCEPTUAL FRAMEWORK FOR SAFETY AND HEALTH AT WORK IN TAIWAN	YU Y.C.	Institute of Occupational Safety and Health
BIOCHEMICAL STUDY OF RETIRED PENTACHLOROPHENOL WORKERS WITH AND WITHOUT FOLLOWING DIETARY EXPOSURE TO DIOXINS	CHANG J.W. ⁽¹⁾ , LEE C.C. ⁽¹⁾ , CHEN H.L. ⁽²⁾ , SU H.J. ⁽¹⁾ , LIAO P.C. ⁽¹⁾ , GUO H.R. ⁽³⁾	National Cheng Kung University-Tainan-Taiwan(1) Hung Kuang University-Taichung-Taiwan(2) National Cheng Kung University Hospital-Tainan-Taiwan(3)
OCCUPATIONAL EXPOSURE ASSESSMENT OF DI-(2-ETHYLHEXYL)PHTHALATE(DEHP)FOR WORKERS OF PVC PRODUCTIONS	FONG J.P., LEE C.C.	National Cheng Kung University-Tainan-Taiwan

MANUFACTURING FACTORIES		
INVESTIGATION OF NEW HAZARDOUS MATERIALS' RISK IN TAIWAN'S OPTOELECTRONIC INDUSTRIES	<u>LEE W.L.</u> ⁽¹⁾ , CHEN W.Y. ⁽²⁾ , CHANG C.P. ⁽³⁾ , SHIH T.S. ⁽⁴⁾	Department of Occupational Safety and Health, Chung Shan Medical University-Taichung-Taiwan ⁽¹⁾ Institute of Occupational Safety and Health, Council of Labor Affairs, Executive Yuan-Taipei-Taiwan ⁽²⁾ Ealth, Council of Labor Affairs, Executive Yuan-Taipei-Taiwan ⁽³⁾ Institute of Occupational Safety and Health, Council of Labor Affairs, Executive Yuan-Taipei-Taiwan ⁽⁴⁾
A MATCHED STUDY OF ARSENIC EXPOSURE ASSESSMENT ON TECHNICAL ASSISTOR IN SEMICONDUCTOR INDUSTRY	<u>TSAO Y.C.</u> , HWANG Y.H.	Institute of Occupational Medicine and Industrial Hygiene, National Taiwan University-Taipei-Taiwan
HOW AN OCCUPATIONAL INTERVENTION PROGRAM CAN REDUCE THE RISK OF EXPOSURE TO ANTINEOPLASTIC DRUGS OF HEALTH CARE WORKERS	<u>CHEN R.Y.</u> ⁽¹⁾ , YE H C.Y. ⁽¹⁾ , WANG H.F. ⁽²⁾ , CHIUNG Y.M. ⁽¹⁾ , CHEN C.J. ⁽¹⁾	Dr.-Taipei-Taiwan ⁽¹⁾ Miss-Taipei-Taiwan ⁽²⁾
STRATEGY ON THE PROMOTION OF OCCUPATIONAL HEALTH AND SAFETY FOR SMALL AND MEDIUM ENTERPRISES IN TAIWAN	<u>TSENG L.C.</u> ⁽¹⁾ , FUH H.R. ⁽²⁾ , LIN Y.T. ⁽¹⁾ , YU J.P. ⁽³⁾ , LIU C.P. ⁽³⁾	Council of Labor Affairs, Executive Yuan-Taipei-Taiwan ⁽¹⁾ Council of Labor Affairs, Executive Yuan-Taipei-Taiwan ⁽²⁾ Safety and Health Technology Center; Sahtech-Taipei-Taiwan ⁽³⁾

表 4-2 台灣學者發表的海報清單

文章標題	作者	服務單位
LONG-TERM PESTICIDES EXPOSURE AND ABNORMAL LIVER FUNCTION	KUO T.C. ⁽¹⁾ , TSENG Y.C. ⁽²⁾ , <u>GUO H.R.</u> ⁽¹⁾	National Cheng Kung University-Tainan-Taiwan ⁽¹⁾ Chang Jung Christian University-Tainan-Taiwan ⁽²⁾

DETERMINATIONS OF MICROBIAL VOLATILE ORGANIC COMPOUNDS BY SOLID-PHASE MICROEXTRACTION IN NON-EQUILIBRIUM SITUATION	LEE W.C., <u>TSAI S.W.</u>	Institute of Environ. Health, National Taiwan University-Taipei-Taiwan
PERFORMANCE EVALUATION OF BIOSAMPLER SAMPLING EFFICIENCY-A FIELD STUDY	<u>LAI C.Y.</u> ⁽¹⁾ , WUN S.R. ⁽¹⁾ , JENG S.H. ⁽¹⁾ , HUNG P.C. ⁽²⁾ , CHANG C.P. ⁽²⁾	Department of Occupational Safety and Health, Chung-Shan Medical University-Taichung-Taiwan ⁽¹⁾ Institute of Occupational Safety & Health, Council of Labor Affair-Taipei-Taiwan⁽²⁾
AN OCCUPATIONAL HEALTH AND SAFETY GENERAL EDUCATION COURSE-IMPACTS ON KNOWLEDGE, ATTITUDE AND BEHAVIORAL INTENTION OF TAIWAN UNDERGRADUATE STUDENTS	<u>LIN Y.W.</u> ⁽¹⁾ , TONG Y.H. ⁽²⁾ , CHEN F.L. ⁽¹⁾ , CHEN C.C. ⁽²⁾	Department of Public Health, College of Medicine, Fu-Jen Catholic University-Taipei-Taiwan ⁽¹⁾ Institute of Occupational Medicine and Industrial Hygiene, College of Public Health, National Taiwan University-Taipei-Taiwan ⁽²⁾
AWARENESS RAISING AND CULTURE FOSTERING	<u>YU Y.C.</u> ⁽¹⁾ , YANG J.S. ⁽²⁾	Institute of Occupational Safety and Health-Shijr City, Taipei Country-Taiwan⁽¹⁾ National Museum of Natural Science-Taichung City-Taiwan ⁽²⁾
PREVALENCE OF MUSCULOSKELETAL DISORDERS AMONG OYSTER SHUCKERS IN TAIWAN	<u>HSU D.J.</u> ⁽¹⁾ , YANG Y.S. ⁽²⁾ , WU J.D. ⁽²⁾	Department of Safety, Health and Environmental Engineering, National Kaohsiung University of Science and Technology Kaohsiung Taiwan ⁽¹⁾ Department of Occupational Safety and Health, Chang Jung Christian University-Tainan-Taiwan ⁽²⁾
PREVALENCE AND RISK FACTORS OF MUSCULOSKELETAL DISORDERS AMONG TAIWAN DENTISTS	<u>LIN W.H.</u> ⁽¹⁾ , CHANG C.S. ⁽²⁾ , LIU Y.C. ⁽³⁾ , HSIEH T.Y. ⁽³⁾ , HSIAO F.Y. ⁽¹⁾	Department of Dental Hygiene, China Medical University-Taichung-Taiwan ⁽¹⁾ Taiwan Society of Oral Health-Keelung-Taiwan ⁽²⁾ Department of Oral

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THE STUDY OF ERGONOMICAL INTERVENTION ON WORKPLACE DESIGN IN TAIWAN	<u>LIN Y.H.</u> , CHO W.S., SU Y.W.	Department of Occupational Safety and Health, Chung Shan Medical University-Taichung-Taiwan
EFFECT OF AEROSOL CHARGE ON REGIONAL LUNG DEPOSITION	CHANG K.N. ⁽¹⁾ , HUANG S.H. ⁽¹⁾ , KUO Y.M. ⁽²⁾ , <u>CHEN C.W.</u> ⁽³⁾ , <u>CHANG C.P.</u> ⁽³⁾ , <u>CHEN C.C.</u> ⁽¹⁾	College of Public Health, National Taiwan University-Taipei-Taiwan ⁽¹⁾ Chung Hwa University of Medical Technology-Tainan-Taiwan ⁽²⁾ <u>Institute of Occupational Safety and Health-Taipei-Taiwan⁽³⁾</u>
THE OCCUPATIONAL EXPOSURE PROFILES FOR HEALTHCARE PERSONNEL IN TAIWAN	<u>LIN Y.W.</u> ⁽¹⁾ , CHEN F.L. ⁽¹⁾ , TANG C.S. ⁽¹⁾ , CHEN P.Y. ⁽²⁾ , LIU H.C. ⁽¹⁾ , CHANG H.R. ⁽¹⁾	Department of Public Health, College of Medicine, Fu-Jen Catholic University-Taipei-Taiwan ⁽¹⁾ Department of Psychology, Colorado State University-Fort Collins, Colorado-United States
THE MORBIDITY OF NANOTECHNOLOGY INDUSTRY WORKERS	<u>YANG Y.H.</u> ⁽¹⁾ , LIOU S.H. ⁽²⁾	Fooyin University-Kaohsiung-Taiwan ⁽¹⁾ National Health Research Institute-Miaoli-Taiwan ⁽²⁾
CHARACTERIZATION OF THE NANOPARTICLES FROM FCAW AND GMAW WELDING PROCESSES AND USING NEAR/FAR FIELD MODEL TO ESTIMATE EXPOSURE CONCENTRATIONS	<u>WANG Y.F.</u> ⁽¹⁾ , TSAI P.J. ⁽¹⁾ , <u>CHEN C.W.</u> ⁽²⁾	Department of Environmental and Occupational Health, Medical College, National Cheng Kung University-Tainan-Taiwan ⁽¹⁾ <u>Institute of Occupational Safety and Health, Council of Labor Affairs Taipei-Taiwan⁽²⁾</u>
NEUTROPHIL AND MACROPHAGE ELASTASE MEDIATES ULTRAFINE PARTICLE INDUCED PULMONARY DESTRUCTION IN MICE	<u>LIU M.Y.</u> ⁽¹⁾ , CHANG C.C. ⁽¹⁾ , YANG C.Y. ⁽²⁾	Department of Environmental and Occupational Health, National Cheng Kung University-Tainan-Taiwan ⁽¹⁾ Faculty of Public Health, Kaohsiung Medical University Kaohsiung City-Taiwan ⁽²⁾

CARDIOPULMONARY EFFECTS INDUCED BY CHRONIC EXPOSURE TO ULTRAFINE PARTICLES IN MICE	<u>TSAI M.L.</u> ⁽¹⁾ , CHANG C.C. ⁽¹⁾ , YANG C.Y. ⁽²⁾	National Cheng Kung University-Tainan City-Taiwan ⁽¹⁾ Kaohsiung Medical University-Kaohsiung City-Taiwan ⁽²⁾
SKIN BARRIER FUNCTION ALTERATION INDUCED BY NOISE STRESS AND ORGANIC SOLVENT AMONG AIRCRAFT MAINTENANCE WORKERS	<u>CHOU T.C.</u> , LIU Y.H., QIU-WEI S.X., WU T.N., KUO C.T.	Department of Public Health,China Medical University-Taichung-Taiwan
URINARY TOTAL ARSENIC LEVEL AND RISK OF RENAL CELL CARCINOMA IN LOW ARSENIC EXPOSURE AREA	<u>HSUEH Y.M.</u> ⁽¹⁾ , HUANG C.Y. ⁽²⁾	Department of Public Health,School of Medicine, Taipei Medical University-Taipei- Taiwan ⁽¹⁾ Department of Urology,National Taiwan University Hospital,college of Medicine National Taiwan University-Taipei- Taiwan ⁽²⁾
A CROSS-SECTIONAL STUDY OF RESPIRATORY AND IRRITANT HEALTH SYMPTOMS IN PHOTOCOPIER WORKERS IN TAIWAN	<u>YANG C.Y.</u> ⁽¹⁾ , TSAI S.S. ⁽²⁾	Faculty of Public Health,Kaohsiung University-Kaohsiung-Taiwan ⁽¹⁾ Dept. of Healthcare Administration,I-Shou University-Kaohsiung County-Taiwan ⁽²⁾
IMPACT ASSESSMENT FRAMEWORK FOR THE REVISION AND ESTABLISHMENT OF OCCUPATIONAL EXPOSURE LIMITS IN TAIWAN	<u>SU T.S.</u> ⁽¹⁾ , CHEN W.C. ⁽¹⁾ , CHUANG K.Y. ⁽¹⁾ , <u>TSAI W.Y.</u> ⁽²⁾	Department of Safety, Health and Environmental Engineering, Central Taiwan University of Science and Technology-Taichung-Taiwan ⁽¹⁾ <u>Institute of Occupational Safety and Health,Council of Labor Affairs,Executive Yuan-Taipei-Taiwan⁽²⁾</u>
ASSESSMENT OF DERMAL EXPOSURES FOR PROPYLENE GLYCOL MONOMETHYL ETHER BY TAPE STRIPPING METHOD	<u>SHIH H.C.</u> ⁽¹⁾ , TSAI S.W. ⁽²⁾ , LUO S.P. ⁽³⁾	Department of Safety,Health and Environmental Engineering,Hungkuang University,No.34,Chung-Chie Rd.,Shalu,-Taichung-Taiwan ⁽¹⁾ Institute of Environmental

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EPITHELIAL-MESENCHYMAL TRANSITION CONTRIBUTES TO SINGLE-WALLED CARBON NANOTUBE INDUCED PULMONARY FIBROGENIC RESPONSE	<u>CHANG C.C.</u> , HUANG H.C.	Department of Environmental and Occupational Health,National Cheng Kung University-Tainan-Taiwan

台灣學者還有台灣大學陳教授志傑、蔡教授詩偉、成功大學環境衛生研究所蔡教授朋枝等、中山大學李教授文亮等、中台大學蘇教授德勝、輔仁大學林教授綺雯，及環安技術中心余榮彬總經理。



圖 4-1.台灣成功大學蔡教授朋枝



圖 4-2. 中台科大蘇教授德勝

伍、心得與感想

我國加入聯合國所屬之正式組織，因政治因素向有難度，職業安全衛生議題已是全球化之議題，運用我國過去於 SARS 期間運用職業衛生之通風設計理念，作為負壓隔離病房與發燒篩檢站之設計，另外工業通風原理上吹吸形氣罩設計與暴露評估分徑採樣技術與奈米級粉塵呼吸防護具之性能驗證等，皆為國際社會肯定，除應邀於美國工業衛生研討會發表演講外，亦屢獲國際學術期刊引為封面等。但如何運用專業技術成就，納為國際採行標準，並進而影響聯合國所屬組織採取惠我之措施，實際參與國際活動。IOHA 為國際上非常重要且為 WHO 與 ILO 認可之非政府組織。於其技術會議上宣揚

我國技術水準等科技研究成果，可收事半功倍之效。2008 年更首次協助促成在台灣主辦三年一度的 IOHA2008 國際職業衛生組織學術研討會活動，本所更以 10 個單位之整合式攤位展現近年 13 項重大研究成果予各國與會貴賓瞭解我國研究成果，獲得近 500 餘位各國參觀貴賓之肯定

運用職業安全衛生專業技術，及我國勞工安全衛生研究所之發展特色與人力，進行國際非政府組織之交流合作，及發展國際科技交流為我國，特別是本會，對外工作之重點工作。本會自於 95 年起於科技發展中綱計畫中以特別增列國際交流合作之計畫，除特別加強前往美國工業衛生研討會之商展外，並增列前往歐洲參加 ICOH、A+A 等年度出國計畫。IOHA 之成員大多為歐體國家，亦可藉由參加本次會議增加我國與歐盟之間之實質關係。本計畫預期藉由參與國際會議，來達成與職業衛生國際社團接觸之目的，並進行勞工安全衛生研究所技術研發成果之宣傳，初步已達成效果，有許多開發中國家特別需要台灣所開發之工業衛生技術。

IOHA 參與成員與台灣熱絡，極度肯定台灣職業安全衛生研究成果與見解，惟不能有長時間有計畫深入對話與論述。本次另邀約之專題演講均集結為義大利職業衛生研究期刊專輯，為不見台灣籍人士受邀。

歐陸雖職業安全衛生為世界翹楚，於會議週邊正巧進行類似工會之示威遊行活動，雖有嚴密安全防護不過似也一切正常。南歐國家如義大利其臨時性作業搭架安全防護仍有技術盲點，可以看到工人無防護進行搭架。還有另外古蹟的維護及相關安全衛生技術可以作為學術研究之議題，如可以看到以平衡負重進行懸吊式施工架上的油漆粉刷作業。



照片 5-1：街頭工會活動



照片 5-2：施工架上搭架工人

陸、建議事項

- 一、歐盟民間團體量能較充沛，相較台灣各專業團體發展學術表現仍低下，歐陸社會保險機構參與職業安全健康學術研究或論文發表。台灣職業安全健康專業團體之技術研究量能仍應評估及予以充實，建議本所可參照 ILO187 號職業安全衛生框架促進性公約提及國家職業安全衛生研究機構可與專業團體技術流動及結盟夥伴，以利落實發展安全衛生實務工作。
- 二、台灣職業安全衛生研究量能充沛，分享重要國際活動社群，由政府領軍特別加強對有實質外交功能之國際活動，予以特殊安排，實際發揮國際影響力。

The conceptual framework for safety and health at work in Taiwan

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Introduction

Follow the ILO Occupational Safety and Health Convention 1981 (No. 155), the Promotional Framework for Occupational Safety and Health Convention 2006 (No. 187), requested the formulation of national policy and programs based on the national OSH profiles. The state of Occupational Safety and Health and undertake a comprehensive assessment the OSH performance index through international benchmarks were extensively discussed after the EU/WHO country profiles project by FIOH and EU-OSHA around 2000. In the other hand, the UN International Covenant on Economic, Social and Cultural Rights 1976 insight the States should recognize the right of everyone to the enjoyment of just and favorable conditions of work which ensure Safe and Healthy working conditions; WHO workers' health global action plans called for partnership and collaboration in multi-ministries policy, prevention and control of specific risks, and the monitoring and surveillance of public health, based on the International Health Regulation, IHR 2005. And ILO announced the "Health and life at work: A basic human right" for the "World day for safety and health at work". These concepts developed issues of the "Social Determinants" and "Health Inequity". Obviously, these tasks stimulate a governmental institute to rethink the future perspectives for OSH, and the governance of national occupational safety and health provokes extensively concern. How is the mid- and long-term vision made for OSH leaded by the politics and policy decision makers? The UK Government Office for Science has run the foresight "Mental Capital and Wellbeing Project" in 2008. HSE simultaneously ran a Foresight project entitled "HSE futures scenario building; The future of health and safety in 2017 ". The final report described a completed scenario-building project for the Horizon Scanning and incorporated interviews of HSE policy-makers and outside experts to create a framework defining possible futures for health and safety in the UK in 2017. The project may echo the HSE main theme "Revitalising OSH in the Great Britain" and reducing injuries accountability, and also the scientific framework for wellbeing. It should be further discussed about these research efforts end up with the transformation to an independent agency and the merge of HSC and HSE in 2008.

And also the Singapore 2015 project leads to the reconfigure her governance structure in the government. Taiwan's Ministry of Health provided a goal "Healthy People 2020", similar to the United States' in which some aspects in OSH were covered. The state of OSH referred to the national profiles of Taiwan and further objectives to be recognized, such as outcome indicators and international benchmarks still need be constructed.

Theoretical Background

The conceptual thinking for OSH/Labor administrative could be determined by demands- supply relationship preliminarily established in "The 21st Century at Work – Forces Shaping in the Future Workforce and Workplace in the United States" by Karoly and Panis in 2004. Taiwan expertise proposed a framework for policy makers as described in Figure 1. The ILO Convention 187 and OHSMS Guideline 2001 proposed the management system based on the PDCA cycle inherently embedded the national preventive safety culture. The mandate tripartite committee is promulgated for the timely initiation or review for specific policy performance with the evidence of the indicators. The EU policy and Risk Observatory projects and website introduced the "Country Profiles" and "Monitoring" methodology. The expertise's consensus reached by Delphi's method based on the data collected from nation-wide survey or focus group study. The national Institute plays a critical role in the think tank operation with the power to do surveillance and/or monitoring. The innovation of foresight conquers the emerging issues, such as the biological and psychological hazards. In Taiwan, the ventilation technologies are extensively and promising used in the protection of infectious diseases by Institute of Occupational Safety and Health set by the research strategies 2005-2008.

"Policy and Programs" accompanied with performance evaluation hence the discussion the use of "Indicators and Composite Indicators" for the wellbeing. Reductions of occupational fatal and non-fatal injuries are equally the same important as the survey results showed. The statistics of fatal injuries showed dramatically decline to 40% in 10-year interval from 1998 to 2008. Four years mid-term plan ambitiously sets to decrease occupational injuries by 10% to 4 per thousand workers. Are the states of working environments improved and evidenced by other outcome indicators associated with psycho-social hazards? Are the workers really enjoyed the working life supported by governments? So, a composite well-being indicator shall tell us a true story.

The conceptual model for OSH policy decision making

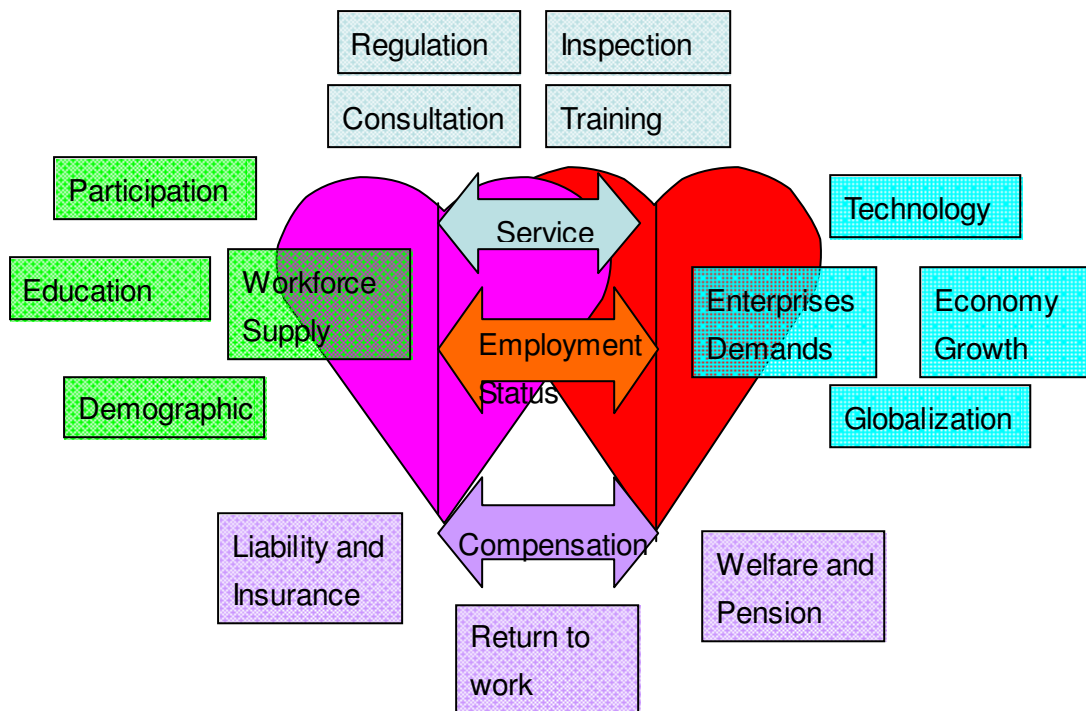


Figure 1: The conceptual model for OSH policy decision making.

Taiwan foresight and risk observatory

The Input of workforce might have following items to effectively convene the OSH policy contents.

Demographic of population: The elder people above 65 years old consisted of 1.8% workforce in 2007 and increasing quickly due to the baby boom after World War II. The labor standards was advocated and promulgated to extend the retirement to 65, the safety and health problem is involved. The birth rate has steadily declined to 0.9%, so the young worker will face the prolonged working life. For the support of national economic growth by population will be diminished.

Education: The strong dependent internet usage of young worker, then the university above consisted in the young working population. The trend of the shortage manipulating workers and the high demands in service trade are observed in Taiwan. The productivity went to so-called high tech industry or knowledge-based industry. In Taiwan, the skilled workers get older and older and the progress of behavior safety has been struggled for those sectors in the bottom layer of society. The dependent of foreign workers or alien relatives for dirty works become a habit in Taiwan.

Labor Participation: The male labor participation is about 68%, while the female labor participation is about 49% and increasing. Some parts of female workforce

work against poverty though the economic turndown. Gender issues in OSH are getting more diversified.

The output of workforce is desired to be fully employed by the strong growth of economic driven demands. The factors in the economy affecting safety and health are discussed below:

Innovation: The technology innovate new trades and industries. Extensively use of computer, internet and wireless communication creates the innovation of knowledge economy. The new opportunities are in the service industry and beneficial to female with knowledge.

Economics growth: These decades, the workforce in the service industry 58.8% is in 2007, the contributed GDP is more than 74% in 2008. Strong economic growth let job is easy to acquired, and safety is kind hindrance of trade behavior. Will lower growth remind the enterprises that safety will pay-off? The evidences of economic incentives for intervention of injuries prevention deserve more research.

Globalization: The outsourcing in a global trade leads to flexibility not only in work-hour, wages other than the organization management culture. The harmonization of standards and regulations, and international cooperative capacity building are raised in the WHO and ILO schemes.

Employ Status

Self-employed and informal sectors: The supply-demand of workers engaged in the working environment mainly express by the employment status. The unemployment group needs some training including the OSH skill for newly adopt industry. And the workforce flows into self-employed and informer sectors, then the payment security issues and responsibility for employers can be discussed. The reporting, notification, and statistics for judging injury indicators might have strong impacts and left ambiguity.

The quality of workplace, especially safety and health, in the employment is the essential to represent decent work. In the economic view, a healthy worker will have high productivity and contribute to the wealth of Nation. To promote a good preventive safety and health culture is a win-win situation for both employee and employer, also enterprises and nation. The both side of leverage, a sustainable economy growth and social security, may be oversight without bias on the basis of good S&H culture.

Services and Compensations

The services for OSH policy face the right of health and right of equal opportunity. The coverage of occupational health services is always discussed in the national profile. Social insurance and/or health insurance corporate act an important role.

The social benefit to help injured worker return to work is highlight in some European countries and New Zealand. An integrated system for prevention, compensation and rebuilding is employed. Health surveillance or monitoring system, occupational diseases reporting and notification system and following Basic Occupational Health Services, BOHS, extend the cooperation between labor and health ministries. Are safe technologies for high risk sector or operation still an issue? Disadvantage group or ethnics have to be carefully concerned. The scientific evidences support the justice for the compensation of occupational diseases with social movement, especially the fearless control of environmental pandemic.

The good governance of OSH infrastructure is essential, which should recall the "safeguard" of nation's responsibility in International Covenant on Economic, Social and Cultural Right 1976. The critical issues are list as below:

Labor/Employment: Legislation in working condition, an independent inspection, tripartism consultation, training, capacity building of trade union;

Social and Health: research institute of occupational safety and health, social insurance funds for prevention, occupational health service, health surveillance and monitoring, investigation and treatment for occupational diseases, return to work;

Science and Technology (education): technical innovation for the safety products and consultation businesses input of core competency human resources, national statistics and risk observatory, risk assessment tools, test and certification;

Commerce and Economic Affairs: platform for prevention, professional associations, trade and service industry development;

Sectors: Agriculture and fishing, public services.

Conclusion

Taiwan foresight and risk observatory have been planned in these years. The UK and Singapore experiences will be highly recommended. International benchmarks by indicators are still under construction. Hope for a good governance of OSH infrastructure being adopted for Taiwan while government reform, and also help the strong recovery in the economic downturn.

Awareness raising and culture fostering

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Summary

The concept of safety and health at work is secured at UN International Covenant on Economic, Social and Cultural Rights 1976, the cultural insight exhibitions are rooted in the Labour Inspection Recommendation of International Labour Organization:

Appropriate steps should be taken to ensure that employers and workers are given advice and instruction in labour legislation and questions of industrial hygiene and safety by such measures as:

(a) lectures, radio talks, posters, pamphlets and films explaining the provisions of labour legislation and suggesting methods for their application and measures for preventing industrial accidents and occupational diseases; (b) health and safety exhibitions; and (c) instruction in industrial hygiene and safety in technical schools.

In 1993, Taiwan government set up a new exhibitions branch in Institute of Occupational Safety and Health to oversee the safety and health promoting preventive measures followed the German DASA. Taiwan safety and health exhibitions, located at Hengkai, opened for services in 2002. The 3D stereo simulator theater and interactive exhibitions are the most popular characteristics in this Taiwan first SH gallery. In the same time, 3D stereo films were made to cover the themes for confine space, fire & explosion, emerging infectious diseases, mechanical guarding, fall protection, and hazardous working life. In them, "The Nick of Time" awarded 1st place in 7th International Film and Multimedia Festival during XVIII World Congress on the Safety at Health at Work at Seoul, 2008.

And year 2005 seemed an important year because President Chen's endorsement implying high level commitment for worker safety campaign with projects of Taiwan Go Go Go, Parents' Workplace Experiencing, Taiwan Force TV Show, etc., in the participation of local governors, city counselors and legislatures, trade unions, inspectors, and students & professors from Dept. safety/public health of universities for everybody involvement. The high quality gallery for voluntary learning in science museum and the new milestone for awareness-raising were supported in 2007. The exhibitions consisted of safe and health knowledge, scientific insight, and historical objects are touching the visitors' heart and fulfill their intellectual curiosity. The tools which can be correlated with "World day of safety and health at work" for promote safety culture in Taiwan are listed as below:

Table 1. Tools for promoting safety culture and awareness-raising

	Governments' duty	Economic growth needs
Education and cultural creative	Science and Technology Museums Film and multimedia	Workplace experiencing and training gallery Road show
Labor & social concern	Workplace safety and health exhibitions Mobile and/or virtual museum	TV show and Radio Program Trailer show for innovative protection measures



Special work safety exhibitions held at three major museums in Taiwan.

1) Our Bodies—Special Work Safety Exhibition, at the National Taiwan Science Education Center in Taipei:
(<http://fun.nmns.edu.tw/safe/>)



This special exhibition features displays that can be disassembled and reassembled, and is the first such touring exhibition to be mounted at museums in Taiwan. The exhibition uses physical evidence and virtual scenarios to convey personal experience, and its interactive video design allows viewers to absorb work safety knowledge and gives them an appreciation of the importance of work safety.

The exhibitions are divided into five displays: "Health in the Workplace," "The Human Body at Work & Risk Factor," "Citizens' Habits and Work Safety," "The Final Line of Safety Defense—Safety Gear," and "Death on the Job."

(2) Special Exhibition of Early Workers in Taiwan, at the National Museum of Natural Science in Taichung:

This exhibition displays the remains of a Chinese worker from the 17th century, excavated at the Zhongzhou site in Tainan County. The man's bones bear signs of much arduous labor; it can be inferred that he suffered from severe arthritis of the spine, and especially neck, which suggests that he customarily carried heavy loads on his head and neck. The exhibition begins with some guesses concerning the individual's work, uses his condition to shed light on work and disease, and shows how people can carry objects correctly so as to avoid injury to their muscles and bones. This special exhibition is intended to broaden work safety awareness and facilitate the dissemination of work safety knowledge extracted from the exhibition. Five paper display stands including two work safety DVDs were made and could be reproduced in large quantities in a value of approximately US\$250-300.



(3) Our Workplace—Special Work Safety Exhibition, at the National Science & Technology Museum in Kaohsiung: (<http://www3.nstm.gov.tw/ose/MainPage.html>)

This special exhibition explores the importance of labor and health from the point of view of Taiwan's industrial development and societal change. The exhibition emphasizes the concept of "Life is Beyond Price-Work Safety Comes First," and displays how occupational accidents occur in a wide range of different industries. Digital technology is cleverly used to transform workplaces into miniature gardens featuring optimal visual and auditory experiences. Viewers can get a personal experience of different types of workplaces, gain awareness of hazards, and learn how to rely on correct attitudes and preventive measures to ward off occupational accidents and become work safety gurus.

(4) Free provision of display items to companies:

- Work safety delivery boxes on occupational accident topics

These work safety delivery boxes contain six drawings showing how to prevent occupational accidents, 10 drawings illustrating work-related deaths, and six photographs of work-related deaths. The easy-to-ship delivery boxes can be mailed or shipped to companies or factories with work safety awareness needs.

- Two-in-One Taiwan Work Safety Inflatable Bear Display

This inflatable product creates awareness of unsafe working behavior and unsafe environments as the main causes of occupational accidents by integrating work safety education in an entertaining toy. The two parts of the inflatable bear can be used independently, or can be assembled together to create a single display. It is suitable for large and small display requirements in different types of exhibition space. While 11th anniversary of 921 massive earthquakes in Taiwan, a strong and healthy reconstruction implicated the mindset of rehabilitation of injured workers. So as the Morakot or other typhoon co sequencing landslides, Taiwan workers and people will re-build their lives in a safer, healthier, and more prosperous and productive ways.