

October 28-30, 2002 • Baltimore, Maryland, USA

**Best Practices
in Occupational
Safety and Health,
Education,
Training, and
Communication:
Ideas That
Sizzle**

**6th International Conference
Scientific Committee on Education and Training in
Occupational Health, ICOH
in cooperation with
The International Communication Network, ICOH**



NIOSH

Best Practices in Occupational Safety and Health
Education, Training, and Communication:
Ideas That Sizzle

*6th International Conference
Scientific Committee on Education and Training in
Occupational Health, ICOH*

in collaboration with

*The University of North Carolina
School of Public Health
Occupational Safety and Health Education and Research
Center*

*Johns Hopkins Bloomberg School of Public Health
Education and Research Center in Occupational Safety and
Health*

National Institute for Occupational Safety and Health

and

in cooperation with

The International Communication Network, ICOH

*October 28-30, 2002
Baltimore, Maryland, USA*

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Hotel Floor Plans

Best Practices in Occupational Safety and Health Education, Training, and
Communication:
Ideas That Sizzle

*6th International Conference
Scientific Committee on Education and Training in
Occupational Health, ICOH*

*October 28-30, 2002
Baltimore, Maryland, USA*

Dear Colleague:

As we know, occupational injury and illness remain a daunting public health problem. According to the World Health Organization, each year worldwide, an estimated 160 million cases of work-related diseases occur and work-related injuries and diseases kill an estimated 1.1 million people. Economic losses are equivalent to 4% of the world's gross national product.

The occupational safety and health community faces increasing challenges to protect workers. Therefore, it is necessary to insure that occupational safety and health trainers and practitioners have the education and training to meet these rising demands. Enhanced and innovative approaches in education, training, and communication for occupational safety and health practitioners, for those doing worker training, and for the general workforce and public need to be developed and utilized. Many issues pertinent to worker training must be addressed, including the appropriate application of new technologies, use of train-the-trainer strategies, and methods for promptly identifying and responding to new information needs, given varied geographic locations.

This conference will help to meet these educational and informational needs by inviting participants to share, debate, and further develop important strategies. In addition, participants will identify and critically examine state-of-the-art practices that target these developing issues. This international, multidisciplinary conference will stimulate cooperation and collaboration among worldwide representatives responsible for worker health and safety. We look forward to your participation.

Dr. Piet Kroon, Chair, Scientific Committee on Education and Training in Occupational Health, SCETO

Dr. Bonnie Rogers, Secretary and Lead Conference Organizer, Scientific Committee on Education and Training in Occupational Health, SCETO

Scientific Committee on Education and Training in Occupational Health

Dr. Piet J. Kroon, MD

Chair, SCETOH

Professor, Netherlands School of Occupational Health
Netherlands

Bonnie Rogers, DrPH, COHN-S, LNCC, FAAN

Secretary, SCETOH and Conference Lead Organizer

Director, Occupational Health Nursing

Professor, School of Public Health

University of North Carolina at Chapel Hill

Chapel Hill, North Carolina, USA

Organized Under the Auspices of:
The International Commission on Occupational Health (ICOH)
Scientific Committee on Education and Training in Occupational Health (SCETOH)
in cooperation with the International Communication Network (ICOH)

ORGANIZING COMMITTEE

Dr. Piet J. Kroon, MD
Chair, SCETOH
Professor, Netherlands School of Occupational Health
Netherlands

Bonnie Rogers, DrPH, COHN-S, LNCC, FAAN
Secretary, SCETOH and Conference Lead Organizer
Professor, School of Public Health
University of North Carolina at Chapel Hill
Chapel Hill, North Carolina, USA

Jacqueline Agnew, PhD, COHN-S, FAAN
Conference Co-Organizer
Professor, Johns Hopkins University
Bloomberg School of Public Health
Baltimore, Maryland, USA

Giorgio Assennato, MD, ScD
Professor, School of Occupational Health Medicine
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Course Coordinator
Inter University Diploma Course in Occupational Health
APROFOST
Paris, France

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Conference Co-Organizer
Associate Director
Office of Communications
National Institute for Occupational Safety and Health
Washington, DC, USA

André Weel, MD, MOccH, PhD
Program Coordinator, Netherlands School of Occupational Health
Netherlands

CONFERENCE SPONSORS

ICOH, Scientific Committee on Education and Training in Occupational Health

North Carolina Occupational Safety and Health Education and Research Center
University of North Carolina at Chapel Hill
School of Public Health
Chapel Hill, North Carolina, USA

Johns Hopkins Bloomberg School of Public Health
Education and Research Center in Occupational Safety and Health
Baltimore, Maryland, USA

National Institute for Occupational Safety and Health (NIOSH)
Washington, DC, USA

in cooperation with

ICOH, International Communication Network

CONFERENCE CO-SPONSORS AND SUPPORTERS

US Army Center for Health Promotion and Preventive Medicine

American Association of Occupational Health Nurses

American Industrial Hygiene Association

American Society of Safety Engineers

US Department of Energy

US Department of the Navy

CONFERENCE AGENDA

Sunday, October 27, 2002

4-6:30 pm **Registration**
Promenade Lobby
Lobby Level

7 pm **Reception at Rusty Scupper, Baltimore, MD**

Scientific Program

Monday, October 28, 2002

7:30-8:30 am **Registration and Continental Breakfast**
Promenade Lobby
Lobby Level

8:30 **OPENING SESSION**
International Ballroom 'D'
Lobby Level

Moderator: *Bonnie Rogers, DrPH, COHN-S, LNCC, FAAN*
Secretary, Scientific Committee on Education and Training in
Occupational Health and Conference Lead Organizer
Director, North Carolina Occupational Safety and Health Education
and Research Center
School of Public Health
University of North Carolina at Chapel Hill, USA

8:30-9:15 am **Introductions**
Bonnie Rogers, DrPH, COHN-S, LNCC, FAAN

Welcome from ICOH
Bengt Knave, MD, PhD, President, International Commission on
Occupational Health (ICOH)
Chairman, International Committee and Secretariat
National Institute for Working Life
Stockholm, Sweden

**Global Impact of Occupational Health Education, Training and
Communication**

Piet Kroon, MD, Chairman, Scientific Committee on Education and
Training in Occupational Health, ICOH
Professor, Netherlands School of Occupational Health, Netherlands

**9:15-10:00 Opening Keynote Session: Occupational Safety and Health
Education, Training and Communication: Needs and Priorities
for the Future**

John Howard, MD, MPH, JD, LLM

Director, National Institute for Occupational Safety and Health
Washington, DC, USA

10 am Break
Promenade Lobby
Lobby Level

10:30-12:30 pm Concurrent Scientific Sessions

Communicating Hazard Prevention

McKeldon Room

Cabana Level, South

Moderator: *Sergio Iavicoli, MD, PhD, Italy*

- Trends and Priorities in Occupational Safety and Health in the European Union. *Sergio Iavicoli, MD, PhD, Italy*. Coauthor: *C. Grandi*
- Hazard Communication in the Workplace. *Jinky Leilanie D. Lu, Philippines*
- The European Campaign 2001 for OSH - Using an International Communication Code in a Regional Reality in Italy. *Idillio Tagliaferro, MD, Italy*. Coauthor: *Marco Nardi*
- Supervisory Training Practices in the Construction Industry. *Jacqueline Villnave, MHS, CIH, USA*. Coauthors: *Steven Hecker, MSPH; Marc Weinstein, PhD*
- Communicating Risk: A DOD Perspective. *R. Craig Postlewaite, DVM, MPH, USA*

Targeting Risk Communication

Lincoln Room

Cabana Level, North

Moderator: *Donald Eggerth, PhD, USA*

- Applying Communication Theory to Workplace Safety Messages. *Donald Eggerth, PhD, USA*
- Theoretically-based Eye Injury Prevention Messages: Working with Carpenters. *Catherine Inman, MD, MPH, USA*. Coauthors: *Vickie Lewis, MA; Larry Jackson, PhD; Doug Landsittel, PhD; Laura Blanciforti, PhD*
- Evaluation of a NIOSH Alert to Reduce the Risk to Fire Fighters from Structural Collapse. *Jennifer Wellbourne, PhD, USA*. Coauthor: *Steve Booth-Butterfield, EdD*

- Examining Imagery and Individualism-Collectivism in Workplace Violence Prevention. *Sherrilyn Robertson, BA, USA*. Coauthors: *Jennifer Wellbourne, PhD; Joseph Scotti, PhD*
- Culture and Family: Targeting Health Communication to Hispanics. *Chris Hawkins, PhD, USA*

Hazard Recognition and Risk Communication Tools: Examples from Mining, Construction, and Emergency Response

Hopkins Room

Lower Lobby Level

Moderator: *Ted Scharf, PhD, USA*

- Introduction: Hazard Recognition and Risk Communication Tools: Examples from Mining, Construction, and Emergency Response. *Ted Scharf, PhD, USA*. Coauthors: *Kathleen Kowalski, PhD; Bill Wiehagen, MS, CMSP; Raja Ramani, PhD, PE, CMSP; G.T. Lineberry, PhD*
- Hazard Recognition: Fall Prevention in Construction. *Raja V. Ramani, PhD, PE, CMSP, USA*. Coauthors: *Joseph Flick, MS, CMSP; Mark Radomsky, PhD, CMSP; Garold Russell, BA, CMSP; Bobbie Calhoun, MEd; John Haggerty; Kathleen Kowalski, PhD; Lynn Rethi, MS, CMSP; Carol Merry Stephenson, PhD; Bill Wiehagen, MS, CMSP; Ted Scharf, PhD*
- Ladder Simulation Exercise for Construction, Mining, and Other Industries. *Bill Wiehagen, MS, CMSP, USA*. Coauthors: *Raja V. Ramani, PhD, PE, CMSP; Bobbie Calhoun, MS, CMSP; Joseph Flick, MS, CMSP; Mark Radomsky, PhD, CMSP; Garold Russell, BA, CMSP; John Haggerty; Kathleen Kowalski, PhD; Lynn Rethi, MS, CMSP; Carol Merry Stephenson, PhD; Bill Wiehagen, MS, CMSP; Ted Scharf, PhD*
- Progress Toward A Multi-use Educational Intervention for Reducing Injury Risk in the Set-up and Use of Extension Ladders. *G. T. Lineberry, PhD, USA*. Coauthors: *Bill Wiehagen, MS, CMSP; Ted Scharf, PhD; Mike McCann, PhD, CIH*
- Discussant. *Henry P. Cole, EdD, USA*

The Importance of Risk Communication

Schaefer Room

Lower Lobby Level

Moderator: *Marilyn Null, BA, USA*

- The Washington, DC War-Related Illness and Injury Study Center (WRIISC): A Comprehensive Approach to Caring for America's War Veterans., *Hang Kang, DrPH, USA*. Coauthors: *Mitchell T. Wallin, MD, MPH; Aaron I. Schneiderman, PhD, RN, MPH; Andrew B. Lincoln, ScD, MHS; Michelle K. Prisco, ANP-C, MSN*

- Health and Safety - The Hidden Aspects of Call Centers. *Sunita Kaistha, MPhil, PhD, India*
- Post Traumatic Stress and the Work Place: Experiences of the 2001 Foot and Mouth Disease Epidemic. *Ian Convery, RN, BSc (Hons), MSc, United Kingdom.* Coauthors: *Maggie Mort, PhD; Josephine Baxter; Cathy Bailey, PhD*
- A Risk-Communication Revolution: Process Versus Event. *Marilyn Null, BA, USA*
- Variations in Industry Compliance with the OSHA Bloodborne Pathogens (BBPs) Standard in the US. *Guang Xiang Chen, MD, MS, USA.* Coauthor: *E. Lynn Jenkins, MA*

Training Issues in the Mining Industry

Pratt 'B' Room

Lower Lobby Level

Moderator: *Gabriela Moreno, MD, Chile*

- Learning from the Master: Effective Training for Miners. *Elaine Cullen, BA, MBA, CMSP, USA*
- Biologically Effective UV B Doses in Miners at High Altitude in Northern Chile, SA. *Gabriela Moreno, MD, Chile.* Coauthor: *Sergio Cabrera, PhD*
- Toolbox Training for Sand and Gravel Miners. *Lani Boldt, MS, CMSP, USA.* Coauthor: *Floyd Varley*
- Evaluating the Role of Positive and Negative Emotion in Promoting Hearing Conservation Behaviors Among Coal Miners. *M. Stephenson, PhD; USA.* Coauthors: *Charles Vaught, PhD, CMSP; K. Witte, PhD,*
- A Training Strategy that Involves All Employees in Workplace Communication/Risk Management. *Launa Mallett, PhD, USA.* Coauthors: *Michael J. Brnich, Jr., CMSP; Charles Vaught, PhD, CMSP*

Curriculum Development in Occupational Health and Information Effect

Calhoun Room

Cabana Level, South

Moderator: *Raphael Masschelein, MD, PhD, Belgium*

- Curricula Development for Agricultural Occupational Health: The Kentucky Experience. *Robert McKnight, MPH, ScD, USA*
- Towards a Harmonised Training Program for Occupational Health Physicians in Europe: The Ambitions and Limitations of EASOM. *Raphael Masschelein, MD, PhD, Belgium*
- Core Curriculum for an Occupational Medicine Specialization Course. *Jose Miguel Ramos, MD, Mexico.* Coauthor: *Silvia Ramirez, MD*
- Training Information of Different Complexities. *Natalia Bobko, PhD, Ukraine*

Communicating Risk of Occupational Diseases and Workers Participation in the Decision Making Process

Pratt 'A' Room

Lower Lobby Level

Moderator: *Maria Pavlova, MD, PhD, USA*

- Video Materials Addressing Medical Issues in the Risk Communication Process. *Maria Pavlova, MD, PhD, USA*. Coauthor: *Rob Nicholas, MA*
- An Integrated Approach to Health Risk Communication with Workers and Community. *Maureen Cadorette, RN, MPH, USA*. Coauthors: *Barbara Curbow, PhD; Patrick Breysse, CIH, PhD; Kathleen Garcia, RN; Virginia Weaver, MD, MPH; Brian Schwartz, MD, MS*
- The Affected Worker's Perspective on Chronic Beryllium Disease. *Bob Immele, USA*. Coauthor: *Ann Immele*
- The Role of Affected Workers in Training. *Patricia Aldridge, MS, USA*
- Risk Communication, Terrorism, and the Federal Care Provider: Results from a Multi-Agency Effort to Improve Clinical Communication of Risk. *Charles C. Engel, Jr. MD, MPH, USA*. Coauthors: *Maria Pavlova, MD, PhD; Vivian Sheliga, DSW*

12:30-2 pm Lunch – On Your Own

2-3:30 pm Concurrent Scientific Sessions

Effectiveness of Multimedia Technology

Hopkins Room

Lower Lobby Level

Moderator: *Bonita D. Malit, MD, MPH, USA*

- Introduction to Occupational Epidemiology and Industrial Hygiene: A Web-based Case Study on Silicosis in Sandblasters. *Bonita D. Malit, MD, MPH, USA*. Coauthor: *Thomas J. Lentz, PhD*
- The Effectiveness of a NIOSH Multimedia Training Program. *William Bowles, Jr., USA*. Coauthor: *Thomas R. Waters*
- Producing Your Own Video Training Material Using Digital Camcorders and Non-Linear Editing Systems. *Thomas Ouimet, MPH, CIH, CSP, USA*
- Making the Connection: Bringing Classroom Training to the Internet at The George Meany Center Hazardous Material Railway Training Program. *Henry Jajuga, BA USA*

Evaluation of Training Practices in Occupational Health

Pratt 'A' Room

Lower Lobby Level

Moderator: *Henry Rothstein, DrPH, United Kingdom*

- Best Practices in Community-Based Approaches to Protecting Youth in the Workplace. *Robin Dewey, MPH, USA*. Coauthors: *Christine Miara, MS; Diane Bush, MPH*
- Home Care Worker Health and Safety Program. *Leslie Nickels, MEd, USA*. Coauthors: *Joseph Zannoni, MILR; Rita Mosley, CSP, CHCM, MA; Paul Seidlitz, RN; Nancy Quick, CIH, CSP*
- Explaining Variety and Failure within Risk Regulation Regimes - Some Institutional Dimensions. *Henry Rothstein, DrPH, United Kingdom*
- Stress Evaluation in Shiftworkers of Mental Activity. *Natalia Bobko, PhD, Ukraine*

Hazard Awareness and Assessment

Pratt 'B' Room

Lower Lobby Level

Moderator: *Álvaro Durão, MD, OHSS, Portugal*

- A Management Model for Workplace Health Promotion Communication. *Álvaro Durão, MD, OHSS, Portugal*. Coauthor: *Manuela Sarmento, PhD*
- Flexible Academic Occupational Safety and Health Programs: It's Time To Meet The Needs of Working OSH Professionals. *John N. Zey, MS, CIH, USA*. Coauthor: *Justin Erickson, BS*
- Screening in Occupational Health: Department Labour Government of Karnataka, India. *Shashikala Manjunatha, MBBS, DIH, MD, India*
- Using a Patient-Centered Structured Medical Note for Health Risk Communication and Establish a Safety Profile of Anthrax Vaccine at a Mass Immunization Site. *Kenneth Hoffman, MD, MPH, USA*. Coauthors: *Cory Costello, MD; Mark Menich, MD; John Grabenstein, PhD; Renata Engler, MD*

Trends and Issues in Education and Training in Occupational Health

Schaefer Room

Cabana Level, South

Moderator: *Giorgio Assenato, MD, MPH, ScD, Italy*

- Effectiveness of Training in Co-operation as an Element of Postgraduate Training for Occupational Physicians and General Practitioners. *André Weel, MD, MOccH, PhD, Netherlands*. Coauthors: *A.P. Nauta; Peter C. Buijs, MD, MOccH, PhD*

- How to Train Occupational Physicians and General Practitioners to Cooperate at Specific Diseases. *Peter Buijs, MD, MOccH, PhD, Netherlands*. Coauthor: *André Weel, MD, MOccH, PhD*
- Effectiveness of Peer Training for Prevention and Management of Housestaff Bloodborne Pathogen Exposures. *Jonathan Lieske, MD, MPH, USA*. Coauthors: *Robin Wilkening, MD, MPH; Robyn Gershon, DrPH, MHS; Jill Guidera, RN; Clifford Mitchell, MD, MS, MPH*
- An Interactive Training Model and Quality Assurance in a School of Occupational Medicine. *Giorgio Assennato, MD, MPH, ScD, Italy*. Coauthors: *A. Lo Izzo; V. Corrado; L. Bisceglia*

Health Solutions in Occupational Health

Calhoun Room

Cabana Level, South

Moderator: *Michael Silverstein, MD, USA*

- Occupational Safety and Health Regulations in Plain Language. *Michael Silverstein, MD, USA*. Coauthor: *Gail Hughes*
- Work Improvement in Small Enterprises (WISE). *Jose Maria Batino, MBA, Philippines*. Coauthors: *Tsuyoshi Kawakami; Toru Itani*
- Implementation of Health and Safety IT Solutions. *Jeannie K. Hanna, RN, MSN, COHN-S, USA*. Coauthor: *Karin S. Frederick, RN, MBA, COHN-S*
- The Water Supply Management Program. *Thomas C. Timmes, CPT, USA*. Coauthors: *T.E. Richards, PE; J.A. Valcik, PE; K.K. Phull, PE, PhD*

Communicating Occupational Safety and Health to Spanish Speaking Workers and their Employers

Lincoln Room

Cabana Level, North

Moderator: *Marie Haring Sweeney, PhD, USA*

- Communicating the Safety and Health Message to a Multilingual and Multicultural Workforce. *Marie Haring Sweeney, PhD, USA*
- Barriers to Translating Information in a Multilingual and Multicultural Workforce. *Susan Feldmann, BA, USA*. Coauthor: *Anne C. Hamilton*
- Educational Materials for Spanish-Speaking Workers: Getting it "Right." *Marianne P. Brown, MPH, USA*
- Occupational Safety and Health for Spanish Speaking Workers: Training Development and Evaluation. *Suzanne Teran, MPH, USA*
- OSHA's Hispanic Outreach Program. *Bonnie Friedman, BA, USA*

Note: This session continues to 3:45 pm

3:30-4:00 pm **Break**
Promenade Lobby
Lobby Level

4:00-4:40 pm **Plenary Session:**
International Ballroom 'D'
Lobby Level

**Integrating Occupational Safety and Health
Content into Education, Training, and Communication**
Janine Bigaignon-Cantineau, France
Course Coordinator
Inter University Diploma Course in Occupational Health
APROFOST
Paris, France

Adjourn Until Dinner

6:30-9 pm **Dinner**
Liberty Ballroom
Lobby Level

Imagining Work
Guest Speaker: *David Parker, MD, MPH*
Physician and Epidemiologist
Park Nicollett Medical Center
Minneapolis, MN, USA

Tuesday, October 29, 2002

Session Chair: *Jacqueline Agnew, PhD, RN, USA*
Member, SCETOH and Conference Co-Organizer
Director, Occupational Safety and Health Education and Research
Center
Johns Hopkins Bloomberg School of Public Health
Baltimore, MD, USA

8:30-8:45 am **Day's Review**
International Ballroom 'D'
Lobby Level
Session Chair: *Jacqueline Agnew, PhD, RN, USA*

8:45-9:30 am **Plenary Keynote:**

International Ballroom 'D'
Lobby Level

**Best Practices in Meeting the Needs of Occupational
Safety and Health Professionals and Workers in Training and
Education**

Elise Handelman, RN, MEd, USA
Director, Office of Occupational Health Nursing
Occupational Safety and Health Administration
Washington, DC, USA

9:30 am **Break**
Promenade Lobby
Lobby Level

10-12 noon **Concurrent Scientific Sessions**

**Critical Factors of Risk Communication: Lessons Learned from Partnering with
Stakeholders**

Hopkins Room
Lower Lobby Level

Moderator: *Donna L. Orti, MS, MPH, USA*

- Communication with Local Communities about Health, Safety, and Environmental Issues. *Charles Franks, BS, USA. Coauthor: Marion Cox*
- Addressing Risk Communication in Environmental Justice Communities. *Francisco A. Tomei-Torres, PhD, USA. Coauthor: Rueben C. Warren, DDS, MPH, DrPH*
- Community Outreach Following the Attack on the World Trade Center. *Reena Mahajan, MHS, USA. Coauthors: Roger Hayes, MA; Rachel Kramer, ScD, Andrew Goodman, MD, MPH*
- Empowering Stakeholders in Health and Safety Communications. *Rob Nicholas, MA, USA*
- Some Lessons Learned from Working with Tribal Stakeholders Concerned about Exposures and Risks to Hazardous Substances. *Jane Michaud, MPH, USA. Coauthor: John Persell*

Risk Communication in Bioterrorism

Pratt 'A' Room
Lower Lobby Level

Moderator: *Clifford Mitchell, MD, MPH, USA*

- Risk Communication during Biological Response Incidents. *Lieutenant Colonel Donald F. Archibald, MS, USA*. Coauthors: *Lori S. Geckle, BS, USA*
- US Department of Veteran's Affairs Terrorism/Bioterrorism Education Program: What Every Health Care System Worker Needs to Know. *V. Troy Knighton, EdS, LPC, USA*. Coauthors: *Constance Raab; Lawrence Deyton, MSPH, MD*
- A Stepped Health Care Delivery Strategy for Optimizing Provider-Patient Discussions of Health Risk Following Possible Military or Occupational Exposures. *Charles C. Engel, Jr., MD, MPH, USA*. Coauthors: *Joyce Adkins, PhD; David Cowan, PhD; James R. Riddle, DVM, MPH*
- Workplace Health Defense. *Richard Ennals, MA, United Kingdom*
- Terrorism Preparedness Training for Non-Clinical Hospital Workers: Addressing the "Hazard + Outrage." *Craig D. Thorne, MD, MPH, USA*. Coauthors: *Barbara Curbow, PhD; Marc Oliver, RN, MPH, MA; Mohamed Al-Ibrahim, MD; Melissa McDiarmid, MD, MPH*

Learning from Evaluation of our OSH Efforts: Expected and Unexpected Results

Lincoln Room

Cabana Level, North

Moderator: *Catherine Heaney, PhD, MPH, USA*

- Paying Attention to Evaluation. *Catherine A. Heaney, PhD, MPH, USA*
- Evaluation of a Best Practices Back Injury Prevention Program in Nursing Homes. *James W. Collins, PhD MSME, USA*. Coauthors: *Laurie Wolf, MS, CPE, BJC; Jennifer Bell, PhD; Bradley Evanoff, MD, MPH*
- Evaluating a Farm Safety Training Program with Rural High School Students. *Ted Scharf, PhD, USA*. Coauthors: *Henry Cole, EdD; Pamela Kidd, PhD, FNP-C, FAAN; Joan Mazur, PhD; Susan Westneat, MA; Stacey Phillips, BS; Steve Bayer, CEO; Pauline Elliott, AA; Michael Colligan, PhD; Dave Chrislip, BA*
- Effective Safety Committee Training. *Ivan G. Most, ScD, PE, USA*. Coauthor: *John Dodge, CSP*
- A Four Year Intervention to Promote Safer, More Profitable Production Practices to 4,300 Dairy Farmers. *Larry J. Chapman, PhD, USA*. Coauthors: *K. Gunnar Josefsson; Christopher M. Brunette; Robert H. Meyer; Marcia G. Miquelon*

Health Threats: Communicating the Risk

Calhoun Room

Cabana Level, South

Moderator: *Margaret M. Farrell, MPH, RD, USA*

- Glove Use and Traumatic Hand Injury Prevention. *Gary Sorock, PhD, USA*. Coauthors: *David A. Lombardi, PhD; David K. Peng; Russ Hauser, MD, ScD; Ellen Eisen, ScD; Murray A. Mittleman, MD, DrPH*

- Cancer Education and its Impact on Risk Reduction. *Mariann Cameron, RN, BSN, USA*. Coauthor: *Jessica Herzstein, MD, MPH*
- Public Health Focus: Legionella Threat in an Occupational Health Setting. *Jacqueline Owens, RN, BSN, COHN-S, USA*
- Risk Communication for Fallon Nevada Cancer Cluster. *Mary Ann Simmons, NEHC, USA*
- Telling the Story: Reaching Native American Audiences with Targeted Risk Communication Messages. Lessons Learned from the National Cancer Institute. *Margaret M. Farrell, MPH, RD, USA*. Coauthors: *E. Handley; A. Cotler; S. Spengler; C. Handler*

Outcomes Effectiveness

Pratt 'B' Room

Lower Lobby Level

Moderator: *Henry P. Cole, EdD, USA*

- Evaluation of an Educational Booklet Aimed at Preventing Hand Dermatitis Among Health Care Workers. *Christy Curwick, MPH, USA*. Coauthors: *David Bonauto, MD, MPH; Marty Cohen, ScD, CIH*
- Multidisciplinary Employee Wellness Initiative Yields Cost Effective Outcomes. *Norman DePaul Brown, EdD, APN, USA*. Coauthors: *Dan Peterson; Janet Fisher, OHN; Nancy Thomas, RN, MNSc, PhD(c); Edwin Watson, MD*
- Tuberculosis Surveillance: Innovative Program Design for a Comprehensive Cancer Center. *Michelle Newton, BScN, RN, COHN-S, USA*. Coauthors: *Melissa Gutierrez-Gonzalez, BS; Elizabeth Frenzel, MD, MPH; Georgia Thomas, MD, MPH*
- Occupational Epidemiological Surveillance System (OESS) for Workers Exposed to Physical and Chemical Risk Agents in Chilean Safety Association (ACHS), Chile. *Gabriela Moreno, MD, Chile*

The Development of a Satisfaction Survey as a First Step in Evaluating NIOSH Publications. *Vern Anderson, PhD, USA*. Coauthors: *Michael Colligan, PhD; Alex Cohen; Nancy Muturi*

Practical Educational Experiences in Occupational Health Education

Schaefer Room

Cabana Level, South

Moderator: *Alain Cantineau, MD, PhD, France*

- Optimization of the Learning Experience for Occupational Medicine Residents Rotating at a Large Tertiary Navy Hospital. *Neal Naito, MD MPH, USA*
- The New Basic Training for Safety Specialists in Germany - A Combination of Seminar and Computer Based Training. *Sabine Herbst, Dipl.-Päd., Germany*

- Integrating Farm Safety Information into Social Studies Classrooms in Rural Public Schools: A Report from the Field. *Joan M. Mazur, PhD, USA*. Coauthor: *Henry P. Cole, EdD*
- Evaluation of Pedagogical Tools Used Within the Inter University Diploma Course (DIUST) in France: How to Acquire Knowledge but also and Especially Know Competencies. *Maria Gonzalez, MD, France*. Coauthors: *Janine Bigaignon-Cantineau; Alain Cantineau, MD, PhD*
- The Relationship of Training to Patient Assaults Against Mental Health Staff. *Kathleen McPhaul, RN, MPH, USA*. Coauthors: *Jane Lipscomb, RN, PhD, FAAN; Karen Soeken, PhD*

12 noon **Lunch – Provided**
Liberty Ballroom
Lobby Level

1:30-3 pm **Concurrent Scientific Sessions**

Reducing Ergonomic-Related Risk Through Education and Training

Lincoln Room

Cabana Level, North

Moderator: *Judith Ostendorf, RN, MPH, COHN-S, USA*

- Experience of New Teaching Strategies of Occupational Health and Ergonomics at Tallinn Technical University. *Virve Siirak, MD, Estonia*
- Utilizing a Multidisciplinary Ergonomic Educational Program: The New York Harbor Healthcare System Experience. *Margaret L. Eichler, MSN, FNP, COHN-S, USA*
- Highly Effective Training Results in Reduced Ergonomic Risk. *Shonna Cole, CEA, COHC, USA*. Coauthor: *Mark Klemmer, LLC*
- Implementing Mechanical Lifts and Training Programs in Acute Care Hospitals and Nursing Homes. *Laurie Wolf, MS, CPE, USA*. Coauthors: *Liz Aton; Jason Canos; Jim Collins; Bradley Evanoff, MD, MPH*

Intervention Effectiveness Strategies in Education and Training

Pratt 'A' Room

Lower Lobby Level

Moderator: *Roberto Lucchini, MD, Italy*

- Improving Farmer's Self-Protective Behavior with a Narrative-Based Tractor Safety Community Education Program. *Henry P. Cole, EdD, USA*. Coauthors: *Larry Piercy; Tim Struttman; Susan Westneat*

- Effectiveness of Educational Intervention on Lead Workers at Different Times After the Program. *Roberto Lucchini, MD, Italy*. Coauthors: *Paola Materzanini, MD ; Marco Gelmi; Federick Zannol; Lorenzo Alessio, MD*
- Computer-based Hearing Screening Tests and Personalized Feedback. *Oi Saeng Hong, PhD, RN, USA*. Coauthors: *Delbert M. Raymond, MS, RN; Jamie Decker, BSN, RN; Julie Wilner*
- Examining the Impact of Narrative Case Studies in Toolbox Talks for Building Construction. *Terri Heidotting, EdD, USA*. Coauthors: *Carol Stephenson, PhD; Herb Linn; Paul Keane*

Risk Communication Strategies

Calhoun Room

Cabana Level, South

Moderator: *André Weel, MD, MOCCH, PhD, Netherlands*

- Deriving Human Risks and Its Significance for Risk Managers and Regulatory Toxicologists. *Henryka U. Nagy, PhD, USA*
- A Study of the Risk Communication Needs of War Veterans. *Aaron Schneiderman, PhD, RN, USA*. Coauthors: *Barbara C. Curbow, PhD; Han K. Kang, DrPH*
- Health-e Voice: A Randomized Controlled Trial of Web-based Training to Improve Risk Communication Between Health Care Providers and Patients with Military-related Health Concerns. *Charles C. Engel, Jr., MD, MPH, USA*. Coauthors: *Terry J.W. Sjoberg, BSc; Ambereen Jaffer, MPH; Joyce Adkins, PhD; Tim Tinker, DrPH, MPH; Samar DeBakey, MD, MPH; David N. Cowan, PhD, MPH*
- VA Communication Program on Environmental Hazard Exposure in Military Service. *Donald J. Rosenblum, BS, USA*

Risk, Risk Perception, and Psychosocial Issues

Hopkins Room

Lower Lobby Level

Moderator: *Julie Hayes Seibert, MA, MPH, USA*

- Risk Perception- Psycho-Social Determinants-Inclusion in OSH Education. *Richard A. Lippin, MD, FACOEM, USA*
- Occupational Mental Health Issues in Light of September 11, 2001: Implications for Policy and Research. *Julie Hayes Seibert, MA, MPH, USA*. Coauthor: *Thomas R. Konrad, PhD*
- Homicide on the Job. *Charles Morgan, JD, CSP, USA*
- Violence at Work: Occupational Injuries and Fatalities in Mexico. *Jose Miguel Ramos, MD, Mexico*

Teaching Strategies in Occupational Health and Safety

Pratt 'B' Room

Lower Lobby Level

Moderator: *Janine Bigaignon-Cantineau, France*

- Use of Internet Among Occupational Health Practitioners in France. *Jean-Francois Gehanno, MD, MSc, France*. Coauthors: *D. Nicholas, MD; L. Boitel, MD; J.F. Callard, MD*
- Project Based Learning in Occupational Safety and Health. *Dennis George, PhD, CIH, USA*. Coauthor: *Rodney G. Handy, PhD, CIH*
- The University of Florida's Safety in Agriculture Course: The Cornerstone of a Best Practice Approach for an Agricultural Safety Program. *Carol Lehtola, PhD, USA*. Coauthor: *Charles M. Brown*
- Occupational Health Psychology: A New Specialty that Integrates Training in Psychology and Occupational Safety and Health. *Steven L. Sauter, PhD, USA*. Coauthors: *Heather R. Fox, PhD; Michael L. Colligan, PhD; Joseph J. Hurrell, Jr., PhD, Jen Schmit*

3-3:20 pm

Break

*Promenade Lobby
Lobby Level*

3:20-4 pm

Plenary Session:

*International Ballroom 'D'
Lobby Level*

Sharing Occupational Safety and Health Information and Knowledge Through National and Global Partnerships

S. Len Hong, BSc, MHSc, Canada

President and Chief Executive Officer

Canadian Center for Occupational Safety and Health

Ontario, Canada

Adjourn for Day

4-5 pm

SCETOH BUSINESS MEETING

Pratt 'A' Room

Lower Lobby Level

Piet Kroon, MD, Chairman

Bonnie Rogers, DrPH, COHN-S, LNCC, FAAN, Secretary

Wednesday, October 30, 2002

Session Chair: *Max Lum, EdD, MPA USA*
Member, ICN and Conference Co-Organizer
Director, Office of Health Communication
National Institute for Occupational Safety and Health
Washington, DC, USA

8:30-8:45 am **Day's Review**
International Ballroom 'D'
Lobby Level
Max Lum, EdD, MPA USA

8:45-9:30 am **Plenary Keynote:**
International Ballroom 'D'
Lobby Level

International Health Risk Communication from a Military Perspective

Brigadier General William T. Bester
Commander, U.S. Army Center for Health Promotion
Aberdeen Proving Ground, MD, USA

9:30 am **Break**
Promenade Level
Lobby Level

9:45-11:15 am **Concurrent Scientific Sessions**
Pratt 'A' Room
Lower Lobby Level
Internet-Based Education

Moderator: *Ian Eddington, PhD, Australia*

- Occupational Health and Safety Education, Sustainable Development, and Social and Responsible Business. *Ian Eddington, PhD, Australia*
- Lessons Learned in Developing Web Education for OSHA Confined Space Entry Training. *Mark Hodges, MS, USA*. Coauthors: *Sandra Tillett*
- Examination of the Railway Workers Hazardous Materials Advanced Training Technologies Program Completion Rate. *Gregory Petkosh, BA, USA*
- Occupational Safety & Health Online: University as Information Center. *Katherine Hall, MC, USA*

Training and Effectiveness

Pratt 'B' Room

Lower Lobby Level

Moderator: *Paul A. Schulte, PhD, USA*

- Whole Brain Safety Systems: Making Sure Employees Get It. *Linda Sennett, JD, USA*. Coauthor: *Henry Smahlik, CIH, CSP*
- Strategy for Improving Dissemination of Occupational Safety and Health Information. *Paul A. Schulte, PhD, USA*. Coauthors: *V. Morgan; A. Okun, DrPH; C.M. Stephenson, PhD; M. Colligan, PhD; D. Dankovic, PhD; H. Ahlers, JD; C. Gjessing, MPH; G. Loos, EdD; R. Niemeier, PhD; L. Stayner, PhD, M. Sweeney, PhD*
- Improving Safety and Health in a Developing Country: Best Practices Versus Regulatory Compliance. *Deborah R. Roy, MPH, RN, COHN-S, CET, CSP, USA*. Coauthors: *Peter Lees, PhD, CIH; Georgine Price, MPH, RN*
- Incorporating Respirator Research Results in Training Programs. *Arthur Johnson, PhD, USA*. Coauthor: *William H. Scott, Jr.*

Cultural Issues in Effective Training

Schaefer Room

Cabana Level, South

Moderator: *Fernando Marroquín, MD, MSc, USA*

- Eye Injury Prevention in Latino Farmworkers Using a Community Health Educator Model. *Joseph Zaroni, MILR, USA*. Coauthors: *Leslie Nickels, MEd; Linda Forst, MD, MPH; Susan Bauer, MA, MPH; Sara Skinner, MPH*
- Integrating Socio-Cultural Influences on Occupational Health Education and Training. *Jinky Leilanie D. Lu, Philippines*
- Reaching Spanish-Speaking Workers and Employers with Occupational Safety and Health Information. *Tom O'Conner, MPH, USA*
- Let's Communicate Effectively with the Hispanic Worker! *Fernando Marroquín, MD, MSc, USA*. Coauthors: *Jeffrey D. Buckley, MA; Fernando Antón-Tay, MD; William Weems, DrPH, CIH; Raquel B. Vázquez Moreno, Mtra.*

Computer Technology in Training

Hopkins Room

Lower Lobby Level

Moderator: *Tim Tinker, MPH, DrPH, USA*

- Web-Based International Occupational Health Nursing Resource Network. *Kenneth Culp, PhD, RN, USA*. Coauthor: *Pamela Willard, MS, RN*
- Quality e-Learning: Key Elements Effective e-Learning Must Have. *Robin Monegue-Pickens, MPH, MS, USA*

- OSHA eProducts: Using Technology for Compliance Assistance and Training. *Rhett Thomas, BS, USA. Coauthor: Bob Curtis*
- Academic Preparation for ISO 14001. *Linda D. Lee, MS, REM, USA.*

Video and Risk Communication-Lessons Learned

Calhoun Room

Cabana Level, South

Moderator: *Rob Nicholas, MA, USA*

- Video Lessons Learned for Reaching Specific Stakeholders and a Wide Audience. *Rob Nicholas, MA, USA*
- Tell Me A Story: Using Narrative to Teach Miners. *Elaine T. Cullen, BA, MBA, CMSP, USA*
- Lessons Learned from Working with Communities to Improve Risk Communication within the Superfund Program. *Jayne Michaud, MPH, USA*

Young Workers At Risk

Lincoln Room

Cabana Level, South

Moderator: *Linda McCauley, RN, PhD, FAAN, USA*

- Reducing Injury Risk of Students in Vocational-Technical Schools and Young Workers in Small Business. *John Palassis, CIH, CSP, CHMM, USA. Coauthor: Marie Haring Sweeney, PhD*
- Getting the Training They Need: Worker Training for Adolescent Migrant Farmworkers. *Linda McCauley, RN, PhD, FAAN, USA. Coauthor: D. Sticker; J. Scherer; M. Lasarev; K. Anger*
- Assessment of Sight and Hearing Protection Use in High School Vocational, Technical and Industrial Education Programs. *John M. Williams, Sr., MD, MPH, USA. Coauthor: David H. Garabrant, MD, MPH*
- Best Practices in Agricultural Safety Education for Teenagers. *Deborah Reed, RN, PhD, USA. Coauthor: Pam S. Kidd, PhD, FAAN*

11:20-12 pm Plenary Session:
International Ballroom 'D'
Lobby Level

**Visioning the Future of Communication Strategies in
Occupational Safety and Health**
Jorma Rantanen

12:10 pm Lunch with Closing Keynote Speaker:

International Ballroom 'D'
Lobby Level

Making Best Practices Happen: Sizzling the Ideas

Antonio Grieco, MD, Italy

Professor Occupational Preventive Medicine and Director,
Clininca del Lavoro
University of Milan
Milan, Italy

1:30 pm

Closing Comments

Piet Kroon, MD

Chairman, Scientific Committee on Education and Training in
Occupational Health

1:35

Wrap-up

Bonnie Rogers, DrPH, COHN-S, LNCC, FAAN

Secretary and Lead Conference Organizer

Scientific Committee on Education and Training in Occupational
Health

OPENING SESSION

Moderator: *Bonnie Rogers, DrPH, COHN-S, LNCC, FAAN*



INTERNATIONAL COMMISSION ON OCCUPATIONAL HEALTH - ICOH

COMMISSION INTERNATIONALE DE LA SANTE AU TRAVAIL - CIST

Founded in 1906 as Permanent Commission



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Prof J T Spickett (Australia)
Prof D H Wegman (USA)

Stockholm, September, 2002

Letter from the President

Dear Fellow Members of ICOH,

Time runs fast, now we have September 2002 and it is time for mailing my second letter to you. Since my previous letter one year ago we have witnessed horrible events on the world scene, with bearings also for ICOH activities: the more and more recognised violence at work takes different shapes.

On the more narrow ICOH outlook much has happened during the past year showing ICOH as a living and progressive organisation. Suffice to mention here and comment are the:

- activities of the Scientific Committees and Networks,
- preparations for the ICOH Congress in Iguassu, Brazil, February 2003,
- co-operation with WHO, ILO, ISSA, IOHA, IEA, Collegium Ramazzini and the European Union (EU),
- Board & Scientific Committees Mid-term Meeting in Rome, March 1-3 2002,
- ICOH homepage and website,
- campaign of recruiting new ICOH members,
- ICOH budget and economy,
- candidates for the next mandate period of ICOH Officers and Board,
- reports of the ICOH Board Task Groups,

Let me below give you some more details...

Scientific Committees and Networks

As I have said before the group of 35 SCs is the core of ICOH, and as such much is expected of them. From the report by the Senior Vice President Malcolm Harrington it is clear that they really are active bringing knowledge and experience forward within their fields of expertise.

I will not go further into details here, but would like to mention two SC conferences for special reasons. After the conference "Safety, a human right" (organised by the SCs on OH and Development and Accident Prevention together with the Faculty of Medicine, Hassan II-Ain Chock University in Casablanca) 51 persons from Morocco have sent in

their applications for membership in ICOH! So, I urge all SC meeting organisers to make a similar effort as part of our "increase membership" campaign.

The other conference was an EU Conference under the Danish EU Presidency, hosted by the Danish Labour Ministry together with the SC Accident Prevention as an inaugural event for launching a world-wide network for Prevention of Accidents and Trauma at Work. This is the first time ICOH appears as a co-organiser of an official EU event, and thereafter acting together with EU in a sustained, practical and appreciated project!

Needless to say I am very pleased to note such aftermath of SC activities. I would not be surprised if it exists other similar examples within the SC world, at least I hope so. The reason for mentioning the ones above is simply that I happened to be there when it happened.

With pleasure I also note that the three newly launched ICOH networks have taken their first steps. I am very thankful to Max Lum and the ICT Network for designing the two brand new ICOH brochures, which you find, enclosed to this letter.

The 27th ICOH Congress

Arranging an ICOH Congress is like making a six year long journey, often with clear sights and waters but from time to time with insidious hidden rocks. The Brazilian team has succeeded excellently so far, and I have no doubts that at the end of the journey ICOH will have all reasons to be very proud of its 27th Congress. Incoming reports from the organisers are reassuring; a large number of free and SC papers has been received, and invited contributors to the "Equity" theme have responded positively.

Dear ICOH Member, I have done it before, and I do it again now: Don't miss the Iguassu Congress! The contents are exciting, and so is Brazil!

Co-operation with other organisations

In the end of the 90'ies ICOH started - more actively than earlier - to communicate and co-operate with other international organisations, a development that have been continued purposefully during these first years of 2000. Many of the ICOH SCs are extensively engaged in the WHO Collaborating Centres activities, and with ILO special co-work has been initiated e.g. as to the world-wide problem of child labour. We exchange promising experiences with ISSA, IOHA and IEA, and as said above quite recently also with the EU. We have had collaborative meetings and discussions with the Collegium Ramazzini, and are delighted to have the Collegium to participate as keynote presenter and session chair at the ICOH Congress in Iguassu. The Collegium also participated in our Mid-term Meeting in Rome, presenting an overview of the Collegium's history, on-going and future activities.

Our co-operative efforts will by all means continue, and a fair tribute should then be given Past President Jean-François Caillard who personally took many of the initial steps in this matter.

2002 Mid-term Meeting

Since the beginning of the 90'ies ICOH Officers, Board and SC Officers have had so-called mid-term meetings between the triennial congresses for discussions of different internal and external matters, e.g. the planning of the coming congresses. The first was held in Paris in 1995, the second in Milan in 1999, and the third now in Rome in March 2002.

The Rome Mid-term Meeting was generously hosted by the Italian National Institute of Safety and Prevention, ISPESL (Istituto Superiore per la Prevenzione e la Sicurezza del Lavoro) and organised in one of the beautiful, ancient buildings of Rome; the Palazzo Colonna. The minutes of the Board meeting are published on our homepage, and are partly commented below under the Board Task Groups Reports, so I do not repeat the outcomes of the agenda here.

ICOH Homepage and website

The vast majority of you, dear ICOH members, are most probably already acquainted with our homepage and website, because by now we have each month about 1,000 unique, new visitors, and totally since the start one year ago about 10,000 visitors. Thus, we have had a break-through on the Internet, and I congratulate Editor-in-Chief Tar Ching Aw for brilliant editing and Web-master Bruno Hanneman for constantly and skilfully innovating the web design and function. If you have not visited the homepage yet, here is the address: www.icoh.org.sg !

Campaign of recruiting new ICOH members

Since the mid-90ies there has been a decline of OHS activities in many of the industrialised countries in the world. The main reason has been a world-wide economic recession leading to "slimmed" national budgets and increasing unemployment rates, and OHS has been one of the first areas to suffer from it. This development was further reflected in a diminishing ICOH membership falling from – let's say – 2000 to 1600 members. Another contributing factor could be the increasing age among members, and consequently also the increasing age retirements among "old" members. Still another factor of possible importance is "the changing world of work" with a transfer from the industry society to the ICT society, and with the ICOH main points still within industry.

Now, whatever reasons there might be to the falling membership, at the Singapore Congress the Board agreed upon starting an analysis and a campaign of recruiting new members. The Vice President Ruddy Facci was appointed to lead these activities, and he has done an energetic and thorough job, the results of which he will present in his report.

I will just mention two positive things in this connection: firstly, the 51 new members from Morocco as a result of a tempting SC meeting (see above); secondly, more than 20 new potential members from Sweden due to a campaign started by the Swedish national ICOH Secretary. As a matter of fact, there are factors pointing in the right direction, like (a) in many countries there is a revival of positive interest in OHS, and (b) the ICOH Board decision taken, that there will now be a differential fee for different countries based on individual country specific salaries or GNP. This will enhance the possibilities for recruiting new members from developing and newly industrialised countries.

ICOH Budget and Economy

Of course, the ICOH economy is more or less directly correlated to the falling number of members. This means that also ICOH expenses must be based on a "slimmed" budget, which also has been the case during the on-going mandate period. Furthermore, when we a year ago realised that the coming Officers and Board would be quite different from the "old regime" we decided to practice an extra strict economy. I will not go into details but refer to the budget report by Secretary General Kee Seng Chia.

Officers and Board elections

It is with satisfaction I note the distinguished and highly qualified candidates for the ICOH Officers and Board posts. For the President and Secretary General posts, respectively, there is one candidate; for the two posts as Vice President there are three candidates; and for the 16 Board posts there are 25 candidates. By all means this vouches for a promising and strong future ICOH lead.

Reports of the ICOH Board Task Groups

The reports have been published on the homepage during 2001, and the continued Officers and Board handling is reported in the enclosed "Summary of the Strategy for the Management of ICOH in practice during the triennium 2000-2002". The Board decisions are as follows for the different Task Groups (TG) Reports:

- **Finance Committee Report**

The Report was endorsed with the following changes / amendments:

The transfer between various budget lines in excess of 2000 CHF would require approval by the Finance Committee.

Only Board members can be members of the Finance Committee.

- **Transparency within ICOH TG Report**

The Report was endorsed.

(The Board decided also that the Task Group together with two other participants would prepare a proposal of changes in the Bye-laws to be delivered at the next Board meeting.)

- Newsletter TG Report
The Report was endorsed with the following comment:
The TG Newsletter, TG Homepage and the ICT Network should together further develop the Report and present the result at the next Board meeting in Iguassu.
- Website TG Report
The Report was endorsed and it was decided that Tar Ching Aw continues to act as Editor-in-Chief of the ICOH Website.
- Constitution and Bye-Laws TG Report
The Report was endorsed.
- Language matters in ICOH TG Report
The Report was not endorsed. It was decided that the language issue needed further analysis, and that Board members should write and express their views which would be summarised and discussed at the next Board meeting.
- ICOH Membership Fee TG Report
The Report was endorsed in principle. Further analysis was needed, however, to decide on number of reduced fee levels. The final decision was to be taken at the next Board meeting.
- Code of Ethics TG Report
The Report was endorsed.
- ICOH National Secretaries TG Report
The Report was endorsed with the following changes / amendments:
Board members Annette Jörgensen and Thirumalai Rajgopal will further discuss the survey results with Ruddy Facci, and report in Iguassu.
- Asbestos matters TG Report
The Report was endorsed.
- ICOH Network on tobacco-free workplaces TG Report
The Report was endorsed.
- Co-operation with WHO, ILO, ISSA, IOHA and IEA TG Reports
The Reports were endorsed.
- ICOH Network for OH Education in Developing Countries Report
The Report was endorsed.
- ICOH ICT Network Report Report
The Report was endorsed.
- ICOH Network on Women, Work and Health Report
The Board did not address the Report as the Network leader could not attend the Board meeting. The ICOH Officers have earlier endorsed the report, however.

Dear Fellow Members,

So, it's time to finish my 2002 letter and mail it to you. Using the traditional mail means that all of you, dear Members, will get my information and messages even if you don't happen to have access to Internet. That all of you get my letter is very important just this time because it is less than half a year until we

- hopefully – meet in Iguassu at the 27th ICOH Congress, and also, the day before the Congress, at the General Assembly (Sunday, February 22, 2003). All of the things I have brought up will be on the Assembly agenda, and I have tried to write the letter to make it easy and tempting for you to participate and comment the different items on the agenda. If you will not attend the General Assembly you are most welcome to send / e-mail me your comments well before Iguassu.

Finally, I would like to sincerely thank the Vice Presidents, the Secretary General and the Board Members for their invaluable efforts in making the ICOH administration work. Special gratitude goes to Ms Saadiah Awek and Ms Gunborg Jungeteg, who whole-heartedly supported me and the other Officers during the 2000-2002 mandate period for the best of ICOH.

Looking forward to seeing you - in Iguassu!

All the best,

Bengt Knave
ICOH President

GLOBAL IMPACT OF OCCUPATIONAL HEALTH EDUCATION, TRAINING AND COMMUNICATION

**OCCUPATIONAL SAFETY AND HEALTH
EDUCATION, TRAINING AND COMMUNICATION:
NEEDS AND PRIORITIES FOR THE FUTURE**

Occupational Safety and Health Education, Training and Communication: Needs and Priorities for the Future

John Howard, MD, MPH, JD, LLM

The American workforce is becoming more diverse in age, gender, race and nationality. Moreover, changes are occurring in work organization as a result of changes in economic conditions, technology, corporate employment practices, and demographics. These changes complicate the implementation of workplace health and safety programs and necessitate more comprehensive, multi-disciplinary training and new types of training programs and delivery systems.

Training is a critical part of the NIOSH mission. NIOSH supports 16 education and research centers (ERCs) at universities in every section of the U.S. to provide professional training in the core Occupational Safety and Health disciplines. These programs are critical for meeting the increasing demand for occupational physicians, occupational nurses, and other professionals. NIOSH also supports Training Project Grants (TPGs), which provide training in occupational safety and health training areas. In 2000, 280 courses were offered to 8,501 trainees through these TPGs. NIOSH also funds more than 1,000 continuing education courses each year with up to 30,000 participants.

In addition to training professionals, NIOSH provides workers, employers, and the public with information, training, and capacity to prevent occupational diseases and injuries. We produce and disseminate a variety of documents, such as Alerts and Hazard IDs, educational documents, and small fact sheets/pamphlets to provide employers and employees with effective preventive measures. Our web site is an increasingly used and evolving resource. We added a Spanish-language section to the site last year to better serve the country's growing Spanish-speaking population.

NIOSH explores the role of training in preventing accidents and what type of training would be most effective for a particular industry or population. NIOSH believes future efforts need to explore and support the special needs of older, female, and ethnic/cultural groups of minority workers, and to encourage alternatives to traditional education and training programs. We will also be looking at what types of new training should we be promoting, such as just-in-time training or web-based distance learning.

COMMUNICATING HAZARD PREVENTION

Moderator: *Sergio Iavicoli, MD, PhD, Italy*

TRENDS AND PRIORITIES IN OCCUPATIONAL SAFETY AND HEALTH IN THE EUROPEAN UNION

Iavicoli S., Grandi C.

National Institute of Occupational Safety and Prevention (ISPESL) – Department of Occupational Medicine

Study purpose and aims. The working conditions are rapidly changing in the European Union (EU). Besides the traditional Occupational Safety and Health (OSH) concerns (of paramount importance especially in the southern Europe), new challenges are given by the assessment and management of psychosocial factors at work and by the changing of labour market. Also, the next enlargement of the EU shall require in candidate countries (13 at all) an harmonisation of OSH practise with the EU one. The aim of the study is to define trends and research priorities in OSH field in EU.

Methodology. Documents from EU Commission (COM 118/2002) and European Foundation for the Improvement of Living and Working Conditions (Dublin Foundation, Annual Report 2001) as well as results of a survey carried out with regard to research activity in 13 EU National Research Institute in the OSH field were examined.

Results. It seems there is no significant improvement in trends in risk factors or overall conditions in the workplaces in EU over the period 1990-2000. The survey within the 13 EU Institute displayed that, besides research agendas of the past years focused mainly on toxicology, manual load handling and work environment, the future research priorities are addressed with regard to cost of lack of prevention, information technology society, psychosocial risk factors, small-medium enterprises, labour market an musculoskeletal disorders. The EU Commission states that, besides a continuing improvement in well-being at work, some important objectives are: continuing reduction in occupational accidents and illness, assessment and management of gender dimension at work, prevention of social risks (including stress and drug abuse at work), taking account of demographic changes in OSH terms, taking account of changes in forms of employment. Also, EU Commission remarks the

importance of a better applications of existing regulations (with special reference to EU directives in OSH field).

Conclusions. These results may be subjected to an intensive discussion, but two aspects have to be remarked. Firstly, the application of EU directives in OSH field has to be improved and harmonized (this is of paramount importance in view of the enlargement of EU to additional 13 countries). Secondly, once defined priorities, research in OSH has to involve an increasing contribution and a better integration of several disciplines. Additionally, an extensive cost-benefit analysis of research activity has to be developed.

HAZARD COMMUNICATION IN THE WORKPLACE

By: Prof. Jinky Leilanie D.P. Lu, Associate Prof. 1, National Institutes of Health,

University of the Philippines, Pedro Gil St., Manila, Philippines

Abstract:

This study looked into the necessity of hazard communication as a very important component of preventing occupational illnesses and injuries. The clarity and importance of health practices is communicated not only to supervisors and managers, but moreso to the production workers. This study involved an industry with 400 workers involved in manufacturing plastics and packaging materials. The workers are exposed to noise, solvent fumes, heat, and ergonomic hazards. The strategy for hazard communication included massive information dissemination and training sessions for workers to know the safety and health practices at work. The clarity of the effects and the hazard rating of exposures were explained. After the education and training, great improvements were noted in their practices such as: no more open chemical containers, no more solvent spills at work, wearing of personal protective equipments, no more washing of hands with solvents, and correct posture and biomechanics. The following table shows the content of the hazard communication given them:

Agent	Form and Exposure route	Frequency (How Often?)	Duration (How Long?)	Magnitude (How High?)	Exposure Rating
Toluene	Vapor through inhalation	3 - 4 times per load	4 - 5 minutes per exposure	200 PPM	D

Heat	Whole body	once per shift	one (1) hour	Medium	C
Foul Gas	Inhalation	once daily	one (1) hour	Low	B
Musculo-skeletal	Whole body	once per shift	one (1) hour	High	B

Exposure Rating	DEFINITION
Very Low (A)	Exposures are negligible
Low (B)	Exposures are controlled because of effective engineering, medical, and environmental control measures.
Medium (C)	Exposures are under control but strategies of control are not completely assured to prevent adverse exposures and health effects.
High (D)	Exposures are not adequately controlled and exceeds the recommended level and exposure time.
Very High (E)	Exposures are excessive due to absence of control and prevention strategies and the adverse health effect is of high probability.

Best Practices in Occupational Safety and Health, Education, Training and Communication: Ideas that sizzle.
6th International Conference – October 27-30, 2002, Baltimore, Maryland, USA

The European Campaign 2001 for OSH – Using an international communication code in a regional reality (Italy)

Idillio Tagliaferro, ISPESL, Rome (Italy)
Marco Nardi, University "La Sapienza", Rome (Italy)

Every year nearly 5 million people in the European Union suffer workplace accidents resulting in more than 3 days absence, amounting to around 146 million working days lost. Work-related accidents occur in all industries, but many of the problems can be prevented with good management.

Health and safety requires strong *management commitment*; good *employee involvement* and a well-structured *management system*.

Management should drive health and safety by:

- Setting policy and health and safety objectives
- Providing adequate resources to implement the policy
- Including health and safety at all levels of management functions and decisions
- Consulting with employees
- Monitoring and reviewing to check effectiveness of policy and the whole system

The European Agency for Safety and Health at Work coordinates an information campaign in the EU to point out to people about accident prevention culture. In 2001 the Agency focused the need of a managerial approach to safety.

“SUCCESS IS NO ACCIDENT” was the slogan all the nations had to transfer to their languages and cultures.

But the Italian translation did not succeed because it reproduced - insufficiently the impact, double meaning and immediate understanding of the true significance of the original slogan.

Four creative agencies were requested to make proposals both for new slogan and graphics. The Italian focal point Agency ISPESL undertook to advertise the winner of the creative work in the main national newspapers.

At the Conference, we would like to present the results of this experience.

Using the categories of significance and/or communication, the paper explores theoretical possibilities and social functions that the OSH promotion could have for improving work conditions.

Every communicative process starts with a rule and arrives at a sign production made of words and images.

In this case the concept of sign isn't an abstract entity but has a specific function, because it is the bearer of the message and is able to act on the behaviors of receivers by socio-relational communication dynamics.

In the first part the requirements of a communicative process are defined. They must be recognized socially and precede the process itself: in this way they can be marked as rules and so are an integral part of a code.

In the second part we are going to identify the cultural and social factors that impregnate every "language" component. These facts set up a frame of reference recognized and accepted by everyone.

The starting point is that the person who wishes to communicate a concept must not impose it but make it emerge by itself.

Research has shown that the construction foreman has great influence on the health and safety of a crew, yet typically foremen are selected based on their personality and skills in the trade, not their ability to supervise people. Given the hazards associated with construction, and the transient nature of the work assignments, supervisory training for foremen is critical in this industry.

This paper presents the findings from a review of existing construction supervisory training programs and curricula. The objectives included identifying where foremen receive training, how it is paid for, the content of the programs, and needs that go unmet by current training and education practices. Information has been gathered through interviews, detailed curriculum review, and classroom observation. The study identifies gaps between needs identified in the research literature and existing programs.

A recent trend among the programs is a focus on leadership and management skills, such as communication, motivation, and problem-solving, which recognizes needs beyond technical skills associated with the trade. Yet we observed a 'disconnect' between the teaching of management skills and the inclusion of safety and health concepts. For example, it is not uncommon for a written program or a trainer to state that most accidents in construction are caused by inappropriate worker behavior. However, there is usually no discussion of the system and organizational barriers that result in unsafe behavior, even though it is the foreman, together with other levels of management, who can often remove the barriers and reduce the risks. In order to be able to manage crew safely, foremen need a better understanding of accident and injury causes.

We propose a model curriculum that connects leadership and management skills with an understanding of safety and health. Examples of the topics are: 1) the real (indirect) costs of accidents, 2) involving crew members in the safety program, 3) preventing hazards at the planning and scheduling stages, and 4) getting the support of upper management. These topics are supported with skill development such as effective communication and understanding how people are motivated. The program is meant to provide the foremen with a basic understanding of safety and health, as well as information on how to get additional expertise from both within the company, and from other organizations.

The delivery of the curriculum must meet the needs of the participants to be effective. We advocate the use of adult education pedagogy, which actively involves the participant in the education process. Methods used to achieve this involvement include small group activities and material that focuses on practical information that the participant can put to use immediately.

We have identified challenges to implementation of such a curriculum. The traditional culture of the construction industry is usually extremely resistant to any program that can be perceived as an impediment to production or an additional cost. Foremen themselves often work long hours and cannot easily attend training outside working hours. Therefore, this curriculum is designed to acknowledge these issues and to begin to dispel the myth that safety programs result in decreased production and increased costs, and to recognize the payoff of investing in training for foremen. We believe that construction foremen are in a position to have a very powerful impact on the health and safety of their crew once they have both leadership skills and an understanding of health and safety concepts.

“Communicating Risk: A DoD Perspective”

R. Craig Postlewaite, DVM, MPH

U.S. Department of Defense Health Affairs/Deployment Health Support Directorate

This presentation explores critical aspects of communicating risk to populations potentially exposed to harmful substances by incorporating concepts of scientific risk assessment as well as perceptions and concerns generated by those affected. The Deployment Health Support Directorate within the Department of Defense initiated investigations of potential chemical, biological and other environmental exposures experienced by Gulf War veterans. They were also responsible for communicating to the veterans and the American public the associations between such exposures and adverse health effects. The various exposures included depleted uranium, pesticides, immunizations, chemical warfare agents, and smoke from oil well fires. For the veterans, these were areas of high concern. DoD was viewed with low trust because of its failure to listen to the veterans immediately after the Gulf War and the legacies of previous veteran exposures to nuclear radiation and herbicide orange. Communicating scientifically technical risk information in terms that are understandable to non-technical audiences is a challenge.

Communicating the risk in a way that results in an appropriate level of concern is the goal. If risk is perceived as too low, then populations may not take adequate protective measures when faced with such exposures, and funding for additional research may be imperiled. If risk is perceived as too high, then populations may develop anxieties from previous exposures or demand such agents be removed from use, and research dollars

may be inappropriately directed outside the scientific peer review process. Often times perceived risk and the scientifically calculated risk estimates are different. It's important to realize that perceptions and concerns cannot be ignored in favor of the scientific "solution". Because "perceptions do, in fact, equal reality", scientists themselves have an obligation to address those perceptions and the concerns emanating from them. Scientists, physicians, and other technical experts must become skilled risk communicators to effectively accomplish this task. They are obliged not to leave it up to others such as public affairs personnel because they, themselves, are the most credible source.

Scientists influence levels of concern about environmental exposures when they communicate risk in professional publications, at scientific meetings, in press interviews or on the Internet. When communicating risk, it is wise to adhere to the medical professional dictum, "first, do no harm." It is also important to tell the truth, tell the whole truth, and to tell it early and often. All significant levels of uncertainty must be clearly identified. Risk communication messages should be targeted to specific audiences so that they are understood correctly. Communicating technical aspects to non-technical audiences requires understanding the other sources of information they use and incorporating supportive risk information from sources that they deem credible.

TARGETING RISK COMMUNICATION

Moderator: *Donald Eggerth, PhD*, USA

Applying Communication Theory to Workplace Safety Messages

**Donald Eggerth, Ph.D.,
National Institute for Occupational Safety and Health,
Centers for Disease Control and Prevention
& West Virginia University**

Health promotion and injury prevention campaigns are familiar features in many workplaces and can play an important role in increasing compliance with safety recommendations. However, there has been surprisingly little systematic research investigating which communication elements and methods will optimize the impact of an occupational safety message. This presentation will discuss the efforts of the NIOSH Health Communications Research Branch to implement a systematic program of research in this area. This presentation will provide a primer for those unfamiliar with the area of Health Communications Research. An overview of the applicable models of persuasion and behavior change will be presented, as well as a discussion of their translation from the laboratory to the field. Finally, the NIOSH “Standard Model”, a synthesis of elements from two of the leading theories of persuasion and attitude change will be discussed.

Theoretically-based Eye Injury Prevention Messages: Working with Carpenters

Catherine Inman¹, Vickie Lewis², Larry Jackson³, Doug Landsittel^{4,2}, and **Laura Blanciforti⁵**

The reduction of worker exposure to hazards is a concern of many researchers. Changing workplace practices, management policies, and behavioral recommendations are ways occupational risk can be improved. However, little information exists on the combination of interventions with behavioral modifications at work and whether the recommended behavior is properly performed. This study examined whether poor compliance with the use of personal protective equipment, specifically eye protection, in the workplace, can be improved by incorporating the expressed needs of the workers and by using this information to improve the tools of safety communication.

This project examined the safety eye wear usage of a group of carpenters. Focus groups were convened and survey data were collected to determine the carpenters' attitudes, concerns, and problems related to the use of eye protection. This data collection was guided by the Theory of Planned Behavior (TPB) and the information collected was incorporated into the study's safety interventions. An advantage of addressing the concerns of employers and workers is that the safety and health interventions generated are far more likely to be perceived as practical and acceptable for use in the workplace by both workers and employers. Thus, it provides an opportunity to examine the interventions' intended effect of better self-protection. The

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effectiveness of the approach was assessed by field observations collected before and after the intervention. The results indicate that a theory-based approach, such as TPB, can be successfully implemented in an occupational environment and can supply practitioners with practical and effective eye injury prevention program.

Evaluation of a NIOSH Alert to Reduce the Risks to Fire Fighters from Structural Collapse

Jennifer Welbourne, Ph.D.¹,

Health Communication Research Branch, Health Effects Laboratory Division,
National Institute for Occupational Safety and Health

Steve Booth-Butterfield, Ed.D.

Department of Communication Studies, West Virginia University

Deaths and injuries due to structural collapse during fires represent a significant problem among fire fighters. Between 1988 and 1997, structural collapse accounted for 65 of the total 335 fire fighter deaths occurring at structure fires. The National Institute for Occupational Safety and Health (NIOSH) Alert entitled Preventing Injuries and Deaths of Fire Fighters due to Structural Collapse provides scientific documentation of this hazard and provides recommendations that fire fighters can engage in to reduce their level of risk. An evaluation was conducted of a national dissemination of this Alert to American fire chiefs.

Method. The NIOSH Alert was sent to 36,000 fire chiefs, and a sample of 1,000 was then randomly selected to participate in a survey to evaluate the impact of the Alert on attitudes, intentions, and beliefs toward the NIOSH recommended safety behaviors for structural collapse situations. The Theory of Planned Behavior (Ajzen, 1991) and a stage

¹ The first author is now affiliated with the University of North Carolina at Charlotte, Department of Psychology

model of persuasive message impact based on work by McGuire (1985) were used to evaluate the impact of the NIOSH Alert among this national sample of fire chiefs.

Results and Discussion. Regression analyses based on the Theory of Planned Behavior indicated that fire chiefs' attitudes toward engaging in safe behavior during structural fires ($b=.305$, $p<.01$), their perceptions of how others felt about them engaging in safe behavior ($b=.249$, $p<.01$), and their perceptions of control over these behaviors ($b=.317$, $p<.01$) were significant predictors of whether they intended to engage in specific safe behaviors during the next structural fire they were involved in. Analyses of the persuasive impact of the NIOSH Alert were also conducted. Using a stage model of persuasion, the percentage of respondents who reached each stage was calculated. Results suggested that the Alert is well liked (by 93.9% of respondents who recalled being exposed to the Alert), is easy to read and understand (93.9%), captures attention (82.8%), and leads fire chiefs to think about the dangers of structural collapse (81.5%). However, weaknesses occurred at the following stages: exposure to the Alert, recall of information in the Alert, and action taken with regard to the Alert. Very low percentages of participants reported reaching these stages of persuasion (exposure: 31.2%; recall: 19% of those who were exposed; action: 18% of those exposed). Implications of these findings for developing future safety documents for firefighters will be discussed.

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Title: Examining Imagery and Individualism-Collectivism in Workplace Violence Prevention

Theme: Risk Assessment/Crisis Communication/Risk Communication

Primary Author: Sherri Robertson, BA ^{1,2}

Co-Author: Jennifer Welbourne, Ph.D ²

Co-Author: Joseph Scotti, Ph.D. ¹

Abstract

This study integrated prior research on imagery and Individualism-Collectivism (IC) by examining the effectiveness of different types of imagery (Self, Collective, None) in workplace violence prevention messages given to members of ethnic groups typically considered Individualistic (Caucasian) and Collectivistic (Asian). It was predicted that messages containing imagery would be more effective at changing attitudes and behavioral intentions than messages without imagery. In addition, an interaction was predicted between the Imagery in the brochure (Self, Collective) and Cultural Orientation (Individualism, Collectivism), such that imagery messages that matched a participant's cultural orientation would be more effective than messages that did not match their orientation. Examining the IC dimension cross-culturally, no significant differences were found, although a number of variations did occur between Asians and Caucasian participants. However, an examination of IC on an individual level showed that when the type of imagery was incongruent with an individual's IC orientation, this caused them to think more about the messages. On the other hand, imagery messages that did match participants' IC orientation elicited more positive attitudes in Individualists and the belief that arguments were more convincing in Collectivists. In addition, imagery processing, overall, produced more positive attitudes and beliefs towards the stimulus.

¹ West Virginia University

² NIOSH Health Effects Laboratory Division

Culture and Family: Targeting Health Communication to Hispanics

Chris Hawkins, Ph.D.

National Institute for Occupational Safety and Health

Past research has shown that Hispanics in the United States feel stronger ties of obligation to their families than non-Hispanics. To test the effectiveness of appeals to familism, we developed two silicosis prevention brochures that differed only in the mention of family in the text and the inclusion of photos of families. Hispanic and non-Hispanic construction workers in three Texas cities were randomly assigned to read the one of the brochures or to be in a no-brochure control condition. Their knowledge, attitudes, and intentions regarding silicosis prevention behaviors were measured. Results, implications, and limitations are discussed.

**HAZARD RECOGNITION AND RISK COMMUNICATION
TOOLS: EXAMPLES FROM MINING, CONSTRUCTION,
AND EMERGENCY RESPONSE**

Moderator: *Ted Scharf, PhD, USA*

Symposium/Session title: Hazard Recognition and Risk Communication Tools: Examples from Mining, Construction, and Emergency Response.

Authors:

Ted Scharf, Ph.D. Research Psychologist, DART, NIOSH, Cincinnati
Kathleen Kowalski, Ph.D. Research Psychologist, PRL, NIOSH, Pittsburgh
Bill Wiehagen, M.S., CMSP Industrial Engineer, PRL, NIOSH, Pittsburgh
Raja Ramani, Ph.D., PE, CMSP Prof. of Mining Engineering and Geo-Environmental Engineering, Pennsylvania State Univ., State College
G.T. Lineberry, Ph.D. Prof. of Mining Engineering and Assoc. Dean for Commonwealth and International Programs, Univ. of Kentucky, Lexington

Discussant:

Henry Cole, Ed.D. Prof. of Educ. & Counseling Psych., Univ. of Kentucky, Lexington

Symposium Abstract and Introduction:

Many hazardous work environments require careful attention and quick reactions to changing conditions. Workers must attend to surrounding hazards while they are actively engaged in the production processes (or a rescue). The requirement for active, dual attention places a high cognitive demand on workers. This symposium will provide concrete examples of hazard recognition and risk communication training tools to promote and maintain workers' awareness of dynamic hazards.

Whether the emergency is a mine fire or a burning building, first responders face rapidly changing conditions of imminent danger. They tend to focus on the rescue, and personal safety becomes a secondary priority. The introductory presentation to this symposium considers the types of hazards and the consequences for responders working in these extreme circumstances.

The second presentation illustrates a three-dimensional, hazard recognition training procedure first developed for the mining industry and more recently tested in heavy construction. The third presentation describes the use of simulation exercises in mining and construction to help workers experience making time-critical decisions in realistic work settings. The final presentation describes two checklists for extension ladder set-up and use. These checklists have been designed to decrease the observed variability in work practices with ladders. The checklists are suitable for: 1) tool-box training, 2) pocket reminders, and 3) injury investigation and follow-up.

The materials presented illustrate concrete methods to improve worker recognition of hazardous conditions and judgment and decision-making in a changing environment. The discussant will address these issues to promote more effective OSH training.

Symposium Presentation Order:

1. Ted Scharf Introduction
2. Raja Ramani Hazard Recognition
3. Raja Ramani Ladder simulation
4. G.T. Lineberry Extension Ladder Set-up and Use Checklist
5. Henry Cole Discussant.

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Symposium/Session title: Hazard Recognition and Risk Communication Tools:
Examples from Mining, Construction, and Emergency Response.

Presentation #2, title: Hazard Recognition: Fall Prevention in Construction.

Authors:

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Joseph Flick, M.S., CMSP	Asst. Dir., Field Services and Senior Instructor, Miner Training Program, Dept. of Energy and Geo-Environmental Engineering, Pennsylvania State Univ., State College
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John Haggerty	Visual Information Specialist, PRL, NIOSH, Pittsburgh
Kathleen Kowalski, Ph.D.	Research Psychologist, PRL, NIOSH, Pittsburgh
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Bill Wiehagen, M.S. CMSP	Industrial Engineer, PRL, NIOSH, Pittsburgh
Ted Scharf, Ph.D.	Research Psychologist, DART, NIOSH, Cincinnati

Abstract:

This presentation demonstrates the use of stereoscopic (3-D) degraded images of heavy construction to train workers to better recognize fall hazards in their work environment. The purposes of the training program are to enhance: 1) the knowledge of construction workers regarding fall hazards, 2) the adoption of work practices which can result in eliminating the hazards, or reducing the frequency and severity of exposure to risks for falls, and 3) the advancement of health and safety at construction worksites.

The training program consists of an instructor's manual, a PowerPoint presentation, two 3-D View Master Reels including 14 separate images, a multiple-choice quiz, and handouts for the students. This 3-D training method has been used successfully with miners, construction workers who work at mine sites, and with safety trainers in construction.

This short presentation will highlight one or two stereo images as an example of how this training is best conducted. The key to the training is to help construction workers visualize themselves in the stereo scenes. Relevant aspects from the entire context of a construction worksite may be brought into the discussion. Then the workers are asked to describe the safety and production issues that they would be thinking about under the circumstances depicted. Quality and longevity of the training is enhanced when a lively discussion is provoked. The purpose is to promote carryover of this type of awareness and analysis of workplace hazards into the everyday construction environment.

Symposium/Session title: Hazard Recognition and Risk Communication Tools: Examples from Mining, Construction, and Emergency Response.

Presentation #3, title: Ladder simulation exercise for construction, mining, and other industries.

Themes: 1. Risk communication 2. Multidisciplinary teaching 3. Hazard recognition

Authors:

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Ted Scharf, Ph.D.	Research Psychologist, DART, NIOSH, Cincinnati

Abstract:

Falls from ladders are a significant cause of occupational injury in the US construction industry, and ladder safety is a common topic in worker training. Much of this training is prescriptive in nature - workers are taught correct procedures in the use of ladders by reviewing safety rules and principles. This training is valuable as awareness of rules and guidelines allow for workers to generalize and make specific decisions in the selection and use of ladders.

This presentation explores an innovative, experiential method of teaching "ladder safety" that may enhance a worker's understanding of risk and increase transfer of safety knowledge and skills to the work place. It builds upon a large volume of training research conducted by the Pittsburgh Research Lab (NIOSH), in conjunction with the University of Kentucky.

Characteristics of this training require participation from the trainees. Simulations developed for mining, construction and agriculture found that this method of teaching can foster much dialog about key safety and health issues within the context and predicaments of every day work life. Trainees interact with the story (a problem to be solved) and work their way through the simulation. As the story unfolds, they are asked to make a series of decisions concerning completion of a welding task working from a ladder. The simulation seeks to mirror real life and the kinds of decisions that a welder might make in performing the task, including how to integrate safety with the production demands.

Symposium/Session title: Hazard Recognition and Risk Communication Tools:
Examples from Mining, Construction, and Emergency Response.

Presentation #4 title: Progress Toward A Multi-use Educational Intervention for Reducing
Injury Risk in the Set-up and Use of Extension Ladders.

Authors:

G.T. Lineberry, Ph.D.	Prof. of Mining Engineering and Assoc. Dean for Commonwealth and International Programs, Univ. of Kentucky, Lexington
Bill Wiehagen, M.S. CMSP	Industrial Engineer, PRL, NIOSH, Pittsburgh
Ted Scharf, Ph.D.	Research Psychologist, DART, NIOSH, Cincinnati
Mike McCann, Ph.D., CIH	Dir., Safety & Ergonomics, Center to Protect Workers' Rights, New York, NY

Abstract:

A vast majority of adults use extension ladders, either at home or at work, but only rarely are individuals offered training in safe extension ladder set-up and use. Furthermore, extension ladders are used in many different ways, under a variety of work and environmental conditions, and for many different construction and repair tasks. A multiple-use educational intervention for extension ladder set-up and use, in the form of two sets of guidelines, has been developed at the University of Kentucky. Members of the project team included representatives from the University of Kentucky, NIOSH, Kentucky Employers' Mutual Insurance (KEMI), the Center to Protect Workers' Rights, and the Werner (Ladder) Company.

Focus groups composed of workers from small construction companies have identified conflicting knowledge about procedures to set-up and use extension ladders and especially about their assessment of risk in the context of ladder use, both for access to an upper level and for use as a working platform. Based on these interviews, the co-authors have created a practical training intervention in the form of two sets of simply-worded guidelines, each grouped into manageable numbers of tasks and subtasks. Practical uses of the guidelines will be offered and results of a recent prioritization of these subtasks by experienced safety professionals familiar with ladder safety will be summarized. Lessons learned during application of these guidelines in tool-box sessions (field trials) with two experienced groups of ladder users employed by small construction companies in Kentucky will be briefly described.

THE IMPORTANCE OF RISK COMMUNICATION

Moderator: *Marilyn Null, BA, USA*

The Washington, DC War-Related Illness and Injury Study Center (WRIISC): A Comprehensive Approach to Caring for America's War Veterans

Kang, H.K., DrPH, Wallin, M.T., MD, MPH, Schneiderman, A.I., PhD, RN, Lincoln, A.I., ScD, MHS, Prisco, M.K.

Public Law 105-368: The Veterans Program Enhancement Act of 1998, Sec.103, mandated the Secretary of Veterans Affairs to develop centers for the study of war-related illnesses and post-deployment health issues, promoting research and policy development to address etiologies, diagnosis, treatment, and prevention of combat-related injury and illness. In response, **War-Related Illness and Injury Study Centers (WRIISC)** have been established in Washington, D.C., and East Orange, N.J. The primary mission of the DC WRIISC is to create a center of excellence where advancement and integration of **clinical care, research, risk communication, and education** will improve the health of military personnel and veterans of combat or peacekeeping missions. The Washington WRIISC is based at the DC VA Medical Center and has collaborative relationships with local universities and DoD clinicians and research professionals. The primary focus of the **clinical care program** is the evaluation and treatment of veterans who report difficult to diagnose or unexplained war-related medical problems. The clinical program offers both inpatient and outpatient general clinic services to combat veterans. The primary goal of the **research program** is the initiation and implementation of epidemiological and applied research to better understand the health outcomes and healthcare needs of deployed veterans. The **risk communication program** conducts research and develops materials that are responsive to the health information needs of veterans and their families. The **educational** component of the WRIISC facilitates the dissemination of knowledge regarding etiologies, diagnosis, and treatment of war-related illnesses and injuries and research findings pertinent to the combat veteran population.

Health and Safety - The Hidden Aspects of Call Centers

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PURPOSE

India, because of its time-zone and a plethora of English- speaking youth is the preferred area for outsourcing work for both the U.S.A. and Australia. Unfortunately both these advantages, of time and cheap labor are the cause of most of the health & safety problems at call centers. Desperation for employment especially in India where there is scarcity of well-paid jobs tends to make employees overlook any other aspect except money.

OBJECTIVES

Prima facie evidence shows that though health is a critical indicator of job satisfaction, it continues to be the most neglected factor. The traditional health factors, which have been subject of research includes those associated with vision, noise, posture, etc. The recent psycho- social /mental problems including depression and job monotony have not been researched in the call-center scenario. Our study is relevant as working mainly in shifts at odd hours is relatively new concept in the socio- economic scenario in India, especially for urban youth. The psychological and sociological barriers need to be studied. Besides, the impact on the safety, mental & physical health of employees in this type of jobs needs to be looked into.

TARGET GROUP

Since call centers normally employ either high school or young graduates, we would be looking into the problems of the age group of 18- 24 years and 24- 35 years, both male and female.

FOCUS

Our study will deal with problems due to working at night. It will look into the change in the urban outlook, where it was taboo for girls to travel alone after dark and now they are encouraged to work and do night shifts at call centers. Also their coping with the increasing lack of social interaction with their family & friends will be looked at. In the present transitional developmental state of the economy, the safety factors on the job and off the job must be taken into consideration both for female and male employees.

RESULTS/ EVALUATIONS

As the call center is concerned with e- business, growth with increased employment opportunities is expected. But do graduates continue to work in call centers as a career option or is it merely a foothold into the job market? So what are its benefits? Does the monetary reward compensate for the deterioration in health conditions? Is the Safety factor looked after adequately? Job monotony leading to early burn out would be some of the queries to be answered.

Post Traumatic Stress and the Work Place: Experiences of the 2001 Foot and Mouth Disease Epidemic

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The 2001 UK Foot and Mouth Disease (FMD) crisis was the world's largest ever epidemic of the virus, with 2030 confirmed cases nationally and 6 million animals slaughtered. In order to deal with an epidemic of this magnitude, The Department of Environment Farming & Rural Affairs (DEFRA) needed to co-opt and reassign staff (many from other government organisations such as the Environment Agency) to work on the 'front line' of the crisis, often in dangerous and highly stressful environments.

These workers typically received little training or counselling to prepare them for their 'roles', and what limited preparation they did receive often contrasted strongly with practical experiences, they thus found themselves working in unpredictable and chaotic situations. As Mullins (1996) indicates, role-related problems (including role conflict and role ambiguity) can lead to stress, damage interpersonal relationships and have a detrimental effect on health. A number of studies have identified that workers involved in disaster response are susceptible to a variety of stress-related illnesses, including symptoms of post-traumatic stress disorder (PTSD) (Hammond & Brooks, 2001; al-Naser & Everly, 1999; Alexander & Klein, 2001; Koniarek & Dudek, 2001).

Our research (conducted 1 year post-FMD) indicates that repeated experiences of distress and suffering has led some of the front-line workers in the UK FMD crisis to experience symptoms of post traumatic stress, defined as repetitive, intrusive recollection or re-enactment of the event in memories, daytime imagery or dreams (WHO, 1993).

This paper therefore seeks to examine post traumatic stress through the experiences of workers on the 'front line' of the FMD outbreak. Whilst our work is specific to FMD in the UK, the experiences of our respondents nevertheless raise a number of issues relevant to the evolving concept of occupational health in an increasingly fractured and ambiguous workplace, including the role of occupational health in disaster and post-disaster situations.

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A Risk Communication Revolution: Process vs. Event

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Ask any 10 people for a definition of “risk communication,” and you will get 11 different answers. A revolution is taking place in the practice of risk communication, and you can be on the front lines of the shift! To date, risk communication has been defined as a method for identifying and addressing stakeholder concerns in governmental decision-making processes. Commonly, risk communication efforts amounted to “educating and informing” stakeholders. The paradigm is changing. Risk communication is a process, not an event! It is not issuing a press release, distributing fact sheets and brochures, developing messages, or holding a public meeting. It is a strategic planning process to identify and establish strategic partnerships for jointly addressing the complexities and uncertainties of risk concepts in risk management decisions. Strategies define the tools for collaborative problem-solving and coordination across agencies and with the American people. This session will provide a forum for discussion and dialogue about this important shift in the way we all perceive the field of risk communication.

Variations in industry compliance with the Occupational Safety and Health Administration (OSHA) bloodborn pathogens (BBP) standard in the U.S.

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Background: In 1992, OSHA issued the BBP standard requiring employers to provide annual training, personal protective equipment (PPE), and hepatitis B vaccination to all employees with potential occupational exposures to BBPs.

Methods: Telephone interviews were conducted with workers who had work-related exposures to blood or other at-risk biological substances treated in hospital emergency departments(EDs) from March 1, 2000 to August 31, 2001. The workers were identified through the National Electronic Injury Surveillance System, a stratified probability sample of hospital EDs in the U.S. and its territories.

Results: Of the 593 completed interviews, 377(64%) were from hospitals, 51(9%) from emergency medical service(EMS)/firefighting, 74(12%) from other healthcare settings (i.e., doctors' office, nursing homes, etc.), 22(4%) from law enforcement, and 69(12%) from non-healthcare settings (i.e., schools, hotels, etc.). Significantly fewer workers in non-healthcare settings (59%; $p<0.0001$) reported that BBP training was available in their workplaces compared to hospitals (94%), EMS/firefighting (90%), other healthcare settings (85%), and law enforcement (86%). There were significant differences in worker reported PPE use at the time of exposure with only 25% from law enforcement and 36% from non-healthcare settings compared to 79% for hospitals, 80% for EMS/firefighting, and 57% for other healthcare settings. Workers from hospitals (84%), EMS/firefighting (92%), other healthcare settings (81%), and law

enforcement (86%) were much more likely to report that hepatitis B vaccination was available in their workplaces compared to non-healthcare settings (57%; $p<0.001$).

Conclusions: This study suggests that there is great variation in compliance with the OSHA BBP standard, especially in non-healthcare settings.

TRAINING ISSUES IN THE MINING INDUSTRY

Moderator: *Gabriela Moreno, MD, Chile*

Learning From the Master: Effective Training for Miners

By Elaine T. Cullen, Principle Investigator
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Mining in the U.S. has made great improvements in safety since the Mine Safety and Health Act of 1977 that strengthened safety and training requirements. None-the-less, mining remains one of the most dangerous occupations in the country, primarily because of the inherently dangerous environment where it must be carried out. All U.S. miners have a requirement of a minimum of 8 hours of safety training annually. In addition, new workers must have a minimum of 40 hours of training before beginning work if they are underground miners, and 24 if they are surface miners. In a series of stakeholder meetings carried out in 1997 by NIOSH researchers, industry safety professionals agreed that materials available for non-coal trainers were out of date or non-existent, and that new miner training materials were largely inadequate.

In mid-1998 NIOSH funded a project to investigate whether training materials could be developed that were relevant, interesting, and educational. An investigation into the literature on adult non-traditional learners and on the mining population indicated that these people were not “seat work” learners, and that their primary method of learning tasks or new skills was through a master-apprentice relationship with an older miner. Using this information, a series of videos has been created that uses master miners to teach the skills and attitudes necessary to surviving, and thriving, as a miner. The series follows the mining cycle, starting with safe handling of explosives, through supporting the ground, the loading of the broken ore, and to the actual mining of the ore. Two of the videos in the series are

narrative descriptions of what happens when things go wrong, and are very powerful reminders of the dangers of working in the mining industry.

The master miners in the videos are all professional miners, who were selected because of their knowledge and reputation in the industry. Several of the videos include a young, naïve trainee who would be in serious trouble without the guidance of the master. Research has shown that the use of this “transitional character” is quite effective as a training device. As he gains knowledge and experience, through making bad choices and the mentoring relationship he has with the master, the trainee learns to be both safe and productive. He also gains an understanding of the underlying culture of the mining community, which provides him cues about “how we do things around here”, and how he is expected to behave. Most experienced miners associate strongly with this pattern, having learned their craft, and their culture, from other masters. New hires, it has been shown, react positively as well because they admire and respect the masters and desire to be like them.

The NIOSH mining videos have been widely distributed, with copies in over 30 countries. An independent evaluation has shown that their popularity comes from the high quality, the relevant content, the credibility of the master miners, the realism of shooting in operating mines, and the use of humor or interesting stories. If no other criterion to determine value to the miners is used, it might be noted that a pattern has shown up where miners are stealing the videos from the safety rooms to take them home and show their families. High praise indeed.

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BIOLOGICALLY EFFECTIVE UV B DOSES IN MINERS AT HIGH ALTITUDE IN NORTHERN CHILE, SOUTH AMERICA

Most important economical activity, in Chile, South America, is mining. The work is developed Northern desert at altitudes over 3000 up to 5000 meters above sea level (masl). These conditions are unique environments that mean hypoxia and extremely high Ultraviolet B radiation (UVB).

In this paper we try to 1) to understand the UVB behavior in altitude 2) Convert physical UVB irradiances into biologically effective UV doses quantifying UV Erythral Daily Doses (DD).

Data was collected with a PUV 500 multichannel radiometer from sea level to 4200 masl at latitude 18° and 22° South.

Variations in ozone cover were standardized by linear multiple regression model. Using a mathematical inversion method, continuous spectral irradiances from 280 to 400 nm were obtained.

Ratio of high altitude irradiance to sea level was calculated for each wave length from 280 to 400 nm.

In order to quantify DD to wich miners are exposed, calculated spectra were covoluted with the CIE action spectrum for erythema, and integrated from 8 AM to 18 PM.

The results we obtained are:

UVB ratio from sea level to 3460 masl was 1.46 at 296 nm and 1.18 at 400 nm.

DD ranged from 3548 to 8964 Joule m⁻² at 3640 masl.

UVB irradiance increases in high altitude and has a particular behavior in terms of discriminating by wave length. In fact, the biologically more active UVB shorter wave lengths increase more than the longer UVA

DD has an increasing gradient up to 3000 masl. Above this, the gradient is lower.

Toolbox training for sand and gravel miners

C.M.K. Boldt¹ and F.D. Varley²

In general, thousands of small companies do not have the number of employees nor resources to warrant an on-site safety professional to identify and apply risk and prevention information relevant to their operations. In particular, these small companies seldom possess the facilities or resources to provide their workers on-going training programs to address workplace safety and health. Sand and gravel mines fit into this small company profile. Sand and gravel mines average less than six employees per mine site with locations scattered over large distances. In addition, sand and gravel mining has suffered 37% of the U.S. mining fatalities over the last five years. Tailgate training is one approach being investigated to improve safety and health of workers in small work groups.

Tailgate training, short (usually 10- to 15-minute), weekly sessions conducted on-site prior to work shifts and involving work crews, is a popular mode of worker occupational safety and health training employed by many field-based companies. A National Institute for Occupational Safety and Health (NIOSH) research project prepared a series of tailgate talks for sand and gravel miners using expert input to develop a format for the training material. The input came from focus groups representing safety trainers and managers, state and federal mine inspectors, and sand and gravel miners.

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After a format was developed, eight tailgate topics were pilot tested at an operating sand and gravel mine to determine the use and practicality of the training format. Minor modifications were made after the pilot test. This presentation summarizes what was learned from the expert focus groups and pilot test.

A PROJECT TO EVALUATE THE ROLE POSITIVE AND NEGATIVE EMOTION PLAYS IN PROMOTING
HEARING CONSERVATION BEHAVIORS AMONG COAL MINERS

K. Witte, Ph.D., C. Vaught, Ph.D., M. Stephenson, Ph.D.

Presenter: Charles Vaught

The goal of this project, which is in the data collection phase, is to study the role of positive emotion in health communications, specifically in encouraging the adoption of hearing protection behaviors among coal miners. Coal miners are a population of particular interest for the present study. Twenty-five percent of the nation's miners continue to work in an environment where time-weighted average noise levels exceed 90 dBA. Although these noise levels are subject to regulation by the Mine Safety and Health Administration, enforcement of hearing protector use by underground miners is difficult to achieve. In addition to the enforcement issue, many miners do not appreciate that removing hearing protection for 15 minutes of an 8-hour work shift can cut protection effectiveness in half. By age 64, 80% of coal miners will have moderate to profound hearing loss, compared to only 20% of those non-occupationally exposed to noise. It is therefore apparent that among occupational groups, coal miners are at particularly high risk of losing their hearing.

Some studies suggest that positive emotion increases awareness and recognition of topics but has little, if any, impact on producing behavioral outcomes. Yet, many practicing health communicators have a stated preference that when possible, they would like to avoid inducing negative emotion and promote positive emotion instead. The present study design uses a tested theoretical framework (the Extended Parallel Process Model) to compare the effectiveness of positive vs. negative emotional arousal in encouraging hearing conservation behaviors among coal miners. The EPPM identifies both when and why fear-arousing risk messages work (promote

self-protective behaviors), as well as when and why they fail to work (promote maladaptive responses like denial, reactance, or defensive avoidance).

We are testing, with direct mail products sent to miners' homes, the question of whether positive emotion motivates action regarding hearing loss just as well as negative emotion, and more specifically whether positive emotion works as well as negative emotion to underscore the need for hearing tests. Products will be varied to produce high and low levels of either positive or negative emotion and we are examining the effect of both types of emotional arousal on health behaviors. Generally, our research objectives are to determine the effect of positive versus negative emotion in creating the following:

- Increased attention to the information in the materials.
- Increased comprehension of risk.
- Increased comprehension of recommended response.
- Positive or negative emotion (manipulation check).
- Retention of message.
- Attitudes toward recommended health behaviors.
- Intentions to engage in recommended health behaviors.
- Self-reported health behaviors (hearing tests, wearing hearing protection devices).
- Fear control responses (defensive avoidance, denial, reactance).

As this is one of the first studies of its kind on inducing positive emotion in an experimental intervention, extensive pilot-testing and message validation has been undertaken to ensure that each message varies only on the dimensions of emotion, and assess whether both positive and negative emotions vary in ways other than in intensity.

A Training Strategy That Involves All Employees in Workplace Risk Assessment

Launa Mallett, Ph. D., Michael J. Brnich, Jr., CMSP, and Charles Vaught, Ph. D., CMSP

Prevention of unsafe and unhealthy conditions in the workplace starts with defining and analyzing hazards. Although all hazards should be addressed, resource limitations usually do not allow this to happen all at once. Risk assessments are used to establish priorities so more dangerous situations are addressed first, leaving those less likely to endanger workers for later. Safety professionals can use elaborate risk assessment strategies, but time and resources limit these individuals in their ability to recognize all hazards in all parts of the operation. One way to expand a risk assessment program is to involve employees beyond the traditional safety staff. A model for site-wide risk assessment was developed and implemented by NIOSH researchers and safety professionals at Twentymile Coal Company.

The risk assessment program was built on the underlying precept that everyone at a work site is responsible for emergency prevention and response. At the underground coalmine where the program was developed there are approximately 300 employees. There are two specially trained teams of volunteers. One is a fire brigade and the other is a mine rescue team. Team members were included in the program and employees who are not part of the special teams were also included as key participants. The risk assessment program was one portion of a larger prevention and response effort aimed at reducing fire risk. While the assessments at the test mine targeted fire, any hazard could be addressed with the system.

The first step of the program focused on the fire brigade. These specially trained employees were taught basic risk assessment concepts and skills. The training materials that were used are available at http://www.cdc.gov/niosh/mining/training/cat_fra.html and can be employed to introduce risk assessment to other designated groups. The fire brigade conducted a mine-wide fire risk assessment and documented their priorities for prevention efforts. Their findings targeted certain areas of the mine and specific mine activities as high risk. They completed forms found in the training mentioned above and placed them in a

notebook that was prioritized, with higher risk areas or tasks placed first. As these risks were addressed, the related form was shifted to the back of the notebook, and prevention efforts continued.

The second step of the program involved training all employees in basic risk assessment. The earlier training and experience of the fire brigade was used in the creation of a brief training video. A fire brigade member introduced the concepts of likelihood and severity and explained that the fire brigade members were being trained to assess fire risk throughout the mine. The brief video was shown at pre-shift meetings to all employees. Later, at crew-level safety meetings, supervisors continued the theme by leading discussions about fire risks in their specific work areas. The safety talks included these questions:

1. List at least 5 sources of ignition in this work area.
2. From your list on question 1, which two sources are most likely to cause a fire?
3. From your list on question 1, which one source could cause the most severe fire?
4. For each of the sources of ignition listed in question 2, how can we make it less likely that a fire will start there?

Supervisors or someone they designated gave the safety talks and documented the crews' answers. They submitted this information to the safety department. This activity resulted in lists of fire risks specific to each area of the mine, and means to reduce those risks.

In summary: The risk assessment strategy enlists all employees in the task of identifying and prioritizing hazards. The strategy is implemented through training at two levels. The level first targets special groups like supervisors, fire brigades, or other special teams. The second level is designed for use with all employees. Safety professionals analyze the results of both levels of assessment.

The program was designed to focus on a given work site and a specific hazard. In this case, the hazard of fire was of interest, but any hazard could be targeted. During the implementation of the program, every employee was exposed to the concept of risk assessment and made aware of fire risks in his or her work area.

CURRICULUM DEVELOPMENT IN OCCUPATIONAL HEALTH AND INFORMATION EFFECT

Moderator: *Raphael Masschelein, MD, PhD, Belgium*

CURRICULUM DEVELOPMENT FOR AGRICULTURAL OCCUPATIONAL HEALTH: The Kentucky Experience

Robert H. McKnight, MPH, ScD, Associate Professor, University of Kentucky, College of Medicine – School of Public Health

In 2001, the University of Kentucky's NIOSH-funded Southeast Center for Agricultural Health started a 5-year effort to place agricultural health and safety into the curriculum of a new MPH program. The purpose of this curriculum is to design, implement, and evaluate a Health of Agricultural Populations "emphasis area" in a MPH program. It is administered as an optional trans-departmental offering. The agricultural curriculum is open to Master of Public Health students in any of the school's five departments: Epidemiology, Biostatistics, Health Services Management, Occupational and Environmental Health, and Health Behavior. Students are recruited from a wide range of disciplines, including agricultural engineering, agricultural cooperative extension, persons working with migrant workers, and others. Seven objectives for the track have been established, including identification of occupational and farm lifestyle risks, working with multi-disciplinary groups, and prevention for special populations in the agricultural workforce. The total number of semester hours for the MPH program is 33-36. Of these, a minimum of 15 hours of agricultural health coursework is required, including courses in Health of Agricultural Populations, Injury Control, a seminar in Agricultural Health, plus a 3-to 6-hour practicum in research, practice, or service related to the health of agricultural populations. This small innovative program might serve as a curriculum model for other occupational health programs which could target other high-risk industries, such as construction, health care, and mining.

Title:

Towards a harmonised training programme for occupational health physicians. The ambitions and limitations of EASOM.

Theme topic: teaching strategies/distance education

Prof.Dr. Raphaël Masschelein, Chairman of EASOM, Occupational and insurance medicine K.U.Leuven, Belgium

Introduction:

Since 1993 a number of university departments and schools of occupational medicine took the initiative to start an European Association for Schools of Occupational Medicine. Among the aims of the Association are the development and improvement of the training programs and methods of occupational health physicians, the harmonisation of curricula and training programs by defining common core competencies within the EU regulations, the stimulation of collaboration between schools and institutions by exchanges of educational experiences, course ware, teachers and students.

Aim: to evaluate critically the results of 10 years of EASOM activities and to explore new strategies and actions in the future.

Results: As an organisation EASOM has succeeded in bringing together a substantial number of schools and institutions of occupational medicine within the EU and recently also from the other European countries. The participation rate is varying for the different countries, the limited financial resources being the critical factor for a further increase of the membership. During the past ten years EASOM has organised a broad variety of meetings, workshops and conferences on different educational topics. Curriculum construction, quality assessment of training programs, defining the required professional competencies for occupational health physicians were among the most important themes. The latest activities have been two Summer Schools. The

first Summer School was organised in August 2001 in Dresden, Germany as a concluding activity of a EU sponsored Leonardo da Vinci project on “Communication of occupational Physicians with workers on health and safety issues”. The second has been organised in Newcastle upon Tyne, United Kingdom in July 2002 on “problem-based Teaching in Occupational Medicine”.

Conclusions: Critical evaluation of 10 years of EASOM activity reveals both negative and positive outcomes. It is difficult to maintain and to improve an active participation among the many schools and institutions for occupational medicine in the EU and the other European Countries and to keep a reliable and updated overview of the current training programs and activities. EASOM has enhanced a good debate about important educational issues for the training and education in occupational medicine and has gained some position and prestige in the European field of occupational medicine. EASOM has stimulated the interest for education and training in occupational medicine in the central and eastern European Countries. As a regional organisation EASOM can play a complimentary and supportive role in the ICOH Scientific Committee on Education and Training in Occupational Medicine.

Core curriculum for an Occupational Medicine specialization course:
A consensus proposal.

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1. Background: Formal training in Occupational Medicine (OM) in Mexico began in 1968 at Mexican Institute of Social Security. This is a medical residence, 2 years long, full time program, its covering was so small and its contents were oriented mainly to workers' compensation activities. Up to date, there are less than 900 graduates on OM in Mexico.
2. Purposes: This proposal is oriented to satisfy needs and challenges for OM in workplaces and for all modalities of practice. It was originated from the 1st National Forum on Occupational Medicine carried out by the Mexican Council on Occupational Medicine last April 12th and 13th, 2002. Professional competencies for occupational physicians in Mexico were defined. More than 150 occupational physicians attended this forum.
3. A proposal with 26 issues assembled into 6 groups was obtained. It requires 1,100 hours for lessons, besides outclass time for practical activities. Groups and issues are **1) Introductory:** bioethics, biochemistry, pharmacology, computation, bibliographical search, scientific papers writing.
2) Theoretical: Public health, epidemiology, biostatistics, medical research.
3) Workers health and well being: Sociology, anthropology, work

physiology, nutrition and fitness. **4) Health hazard prevention:** Environmental health, occupational safety, occupational hygiene, ergonomics, medical response to emergencies. **5) Workers medical care:** occupational injuries, work related illnesses and diseases; general (not work related) illnesses and diseases, rehabilitation, legislation. **6) Management of OM services:** health services administration, health economy. This proposal has wider scope than traditional OM current programs, it is oriented to health and economic outcomes.

4. Further activities: Mexican Council on Occupational Medicine and 20 OM societies in Mexico built a program to send this proposal to Schools of Medicine in the country, in order to promote the establishment of new and flexible medical specialization program for occupational physician currently working, but without a formal course. The aim is to improve OM practice in Mexico.

TRAINING UNDER DEALING WITH INFORMATION OF DIFFERENT COMPLEXITY

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The objective was to reveal the peculiarities of training process in different parameters of processing of different complexity information flood.

Ten modifications of computer based tests with an absent element were used. Tests were given successively in the order of complexity increase during 1-3 minutes. The 1st test consisted of 3 element alphabet tasks, given one by one in 3 seconds. The 2nd-9th tests consisted of 3-10 element tasks correspondingly, given successively under time pressure regime. The 2nd and 10th tests conditions were the same. Each of 10 volunteers took part in 20 investigations.

The number of correct answers within each test increased during 1-20 investigations. Training effect was caused mainly by the velocity improvement while the quality showed itself as more conservative characteristic of performance.

The training effectiveness in the 2nd and 10th tests was higher than in 1st one for 35% that reflects the better training effectiveness under time pressure regime. The training effectiveness in tests of 3-6 elements alphabet was 30% better compared to tests of 7-10 elements alphabet. Under simple tasks fulfilment subjects allotted longer time for the rest. This can reflect the higher extent of activity automatisation.

Thus, intensive tests of information flood processing are more preferable from the point of view of the training effectiveness. Complex tests decrease the level of actions automatisation under training. Training effect is caused mainly by the velocity improvement.

**COMMUNICATING RISK OF OCCUPATIONAL
DISEASES AND WORKERS PARTICIPATION IN THE
DECISION MAKING PROCESS**

Moderator: *Maria Pavlova, MD, PhD, USA*

Video Materials Addressing Medical Issues in the Risk Communication Process

Primary Author: Maria Pavlova, MD, PhD, US Department of Energy

Co-Author: Rob Nicholas, MA, Los Alamos National Laboratory

The development of training materials, addressing the risk of contracting a disease, is a complex process. One of the possible approaches towards this process is the use of the principles of risk communication and public involvement. The Department of Energy developed training materials related to chronic beryllium disease based on these principles. Task Force was formed representing wide community (government agencies, research and industry groups). Members included diverse disciplines and represented diverse interests (workers, union representatives, industrial hygienists, physicians, managers, risk communication specialists, and trainers). The members contributed their ideas for the design and guided all stages of the development of the video materials.

The contribution of the workers with chronic beryllium disease was invaluable. Because audiovisual media is by nature a language of metaphor, it offers an effective tool to communicate values and information. By combining the language of words and numbers with the language of metaphor, emotion, and personal values, the video helps viewers make informed decisions based upon their own personal lives and values.

This presentation describes one of the video modules, which explains chronic beryllium disease, its pathology, and its effects on the lives of workers, coping with the disease.

Viewers would understand the consequences of contracting this illness and the impact it can have upon lifestyle, family, and community. The process of development of this video could be used as a model for planning training materials related to any other disease.

An Integrated Approach to Health Risk Communication with Workers and Community

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Patrick Breysse, CIH, PhD; Kathleen Garcia, RN; Virginia Weaver, MD, MPH;
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In 1997, the Department of Energy awarded a cooperative agreement to the Johns Hopkins Bloomberg School of Public Health to perform a Needs Assessment at Los Alamos National Laboratory (LANL). The objective was to identify former workers at risk for occupational disease and determine if medical screening would be beneficial. Based on this Needs Assessment, a medical screening program was recommended and began in 2000. Some of the objectives for the former workers programs outlined by DOE in the original request for proposals were important for the risk communication piece of this program and include: (1) assess the exposure and health concerns of former workers; (2) locate and communicate with former workers; (3) determine the factors that will affect participation or barriers to participation in the medical exam program; (4) providing workers with information about the health effects of exposures at the workplace and providing information to individual workers on medical exam program results; (5) include the community and stakeholders in the program.

The target population for this program includes all former workers from LANL including the main contractor, the University of California, and all the subcontractors who worked at LANL since its founding. As of 4/30/02, we completed 14,343 mailings, 1896 interviews, and 1406 examinations. Sixty-eight percent (68%) of former workers

are very satisfied with their examinations. The medical screening program is scheduled to end in 2003.

The Risk Communication piece in this program endeavors to assess exposure and health concerns of former workers, locate and invite former workers into the program, inform these workers of health risks and the results of exams, and involve former workers and the community in all aspects of the larger program.

In order to accomplish these objectives, the Risk Communication piece of this program completed the following: conducted focus groups of former workers to determine exposures and health concerns; convened a Risk Communication Panel of former workers to help develop program materials, conducted additional focus groups to review final materials and to answer questions about the program as well as to assess exposure and health concerns, developed program materials that are sensitive to education level and culture, and invited stakeholders and community members to serve on the program Steering Committee.

This presentation will include the following topics: (1) an overview of the model used for the Risk Communication program; (2) the tools used to accomplish the objectives of this program; (3) our experience working with the LANL site and the local unions; (4) our efforts to communicate with former workers and the community; (5) evaluation of the program; and (6) the lessons that we learned.

Title of Paper: The Affected Worker and Family's Perspective on Chronic Beryllium Disease

Theme of Topic: Health Risk Communication for Current and Former Workers

Primary Author: Bob Immele, Journeyman Electrician, Pacific Northwest National Laboratory

Co-Author: Ann Immele, Executive Secretary, Fluor Hanford, Inc.

My name is Bob Immele, and this is my best friend and wife of 32 years, Ann.

I work at Pacific Northwest National Laboratory (PNNL) in Richland, Washington.

Ann currently works for Fluor Hanford who is also a subcontractor to DOE on the Hanford site. We speak to you today as a Beryllium Affected worker/trainer and spouse and not as a representative of PNNL or Fluor Hanford. Our feelings and thoughts come from our heart and do not necessarily reflect PNNL's or Fluor's viewpoints. We are going to share with you how this Occupational disease Chronic Beryllium Disease or Berylliosis has affected not only myself but also how it has very much affected our entire family.

In January 2000, I became the first Beryllium affected worker at PNNL, when I was diagnosed as being Be sensitized. I was number 10 for the Hanford Site at that time and I will always remember that day. I had that feeling you get way down in your gut that I would turn up with the disease.

As for me, before Bob was tested for Be, I was already seeing changes. So when he came home and said they're testing him for Be exposure, well before anything was confirmed with the disease, I was all ready sure of the outcome. I honestly believe if the doctors would have said he's fine - I would have argued with them. Now the family must deal with not only day-to-day effects such as fear, dealing with the unknown, dealing with multiple doctors' visits and all the testing and lab work.

Lets not forget that the families of affected workers are also people that are affected by Beryllium.

They do not show up on the numbers on charts or graphs, but they are also affected people. And they should be treated with respect and a caring attitude.

We need to turn the negative into something positive that is one of my personal goals. I am trying to do everything that I can to make it easier for the workers that follow along this path I find myself going down. And hopefully reduce or prevent Beryllium exposures both in the work place and at home. My management at PNNL has been supportive of my efforts to help my fellow workers with education and support. We need to ensure that the individuals involved have the help and support of caring professionals to make these lifestyle changes for both the affected worker and their families. We need to keep the affected workers involved in workshops and in conferences where their viewpoint, brings a new perspective to complete the puzzle. Managers, safety people, industrial hygienists and work control people need to be trained on Beryllium, and for those managers that have affected workers working for them, they need some special training in patient rights, patient confidentiality and to be sensitive to the needs of the affected workers. By having all parties involved in the appropriate level of training, trust and understanding between the affected worker and their management will build the necessary foundation for a safer work environment for everyone.

The result of all this becomes one thing – you learn to handle life because you have no choice. Your faith becomes stronger – because no one else has the answers, you learn patients because you live on hope; and yes, some days you don't feel you're going to make it but some how you do. You do because you receive a lot of help from ABOVE.

Today we've shared our life with you. Not the plan we had 32 years ago, but the truth about what it's like to be and live with a spouse with Chronic Beryllium Disease. We hope you recognize that there are several areas where we need help and we hope you see the maze can be broken but it's going to take all of us working together to make it happen. We're counting on that help from you.

Title of Paper: The Role of Affected Workers as Trainers

Theme of Topic: Health Risk Communication for Current and Former Workers

Author: Patricia Aldridge, Manager, Conduct of Training for HAMMER/Hanford Training; BA in Education

The importance of worker trainers to teach courses has been a staple of the HAZWOPER, Respiratory Protection, and Beryllium programs offered at the HAMMER Facility on the Hanford Nuclear Reservations for over five years. Worker instructors bring to the classroom the credibility of having worked in positions that deal with the hazards and equipment they are teaching about. For example, they have experienced wearing a respirator in a confined space on a 105 degree day.

The experiences and knowledge of a person who has not only performed the work, but who also is suffering from the effects of beryllium exposure lends credibility to instruction on beryllium. Worker instructors and students develop a two-way communication that helps the students feel at ease and open a dialogue about the subject. This dialog helps workers learn about the affects such a disease, the impact on the family, how the affected worker deals with it, and the personal type of information that might help them adjust.

Expertise in both teaching skills and subject matter are important for instructors. The worker instructors acquire such skills, and also bring the real life experiences to support the knowledge-based facts. HAMMER's programs that are taught by workers have also helped to increase safety, and improve the relationship between management and workers. When these instructors

return to work, they are more aware of the hazards and their responsibility to set a good example for fellow workers. Management and their peers respect them and value their input.

TITLE: Risk Communication, Terrorism, and the Federal Care Provider: Results from a Multi-Agency Effort to Improve Clinical Communication of Risk

SESSION: Communicating Risk of Occupational Diseases and Workers Participation in the Decision Making Process

DATE/TIME: Monday October 28, 10:30-12:30

PRESENTER: Charles C. Engel, Jr., MD, MPH, Associate Professor of Psychiatry, Uniformed Services University, Bethesda, Maryland

CO-AUTHORS: Maria Pavlova, MD, PhD, Medical Officer, Office of Health Studies, Department of Energy, Washington, DC
Vivian Sheliga, DSW, Department of Defense Deployment Health Clinical Center at Walter Reed, Washington, DC

DISCLAIMER: The views expressed in this article are those of the authors and do not reflect official policy or position of the Department of the Army, The Department of Defense, the U.S. Government, or any of the institutional affiliations listed.

During the week of the anniversary of the September 11, 2001 terrorist attacks on the United States, the Departments of Defense and Energy will co-host a major medical meeting intended to stimulate interest in and to improve the clinical risk communication skills of providers caring for military personnel, their families, and workers in the aftermath of terrorist events. The meeting, entitled, "Risk Communication & Terrorism: New Clinical Approaches" builds upon Department of Defense and Department of Veterans Affairs efforts to communicate health risk due to chemical or biological warfare exposures after the Gulf War. The meeting also builds on Department of Energy experience meeting the medical and information needs of government workers with concerns following beryllium and possible radiation exposures. During the three-day meeting, the diverse clinical risk communication experiences of these agencies along with the accumulated expertise of the National Aeronautics and Space Administration, Centers for Disease Control and Prevention, the National Institutes of Health, and internationally respected risk communication authorities will be shared, compared, and discussed. A conference transcript and proceedings are planned. This presentation will review major conference findings and recommendations.

EFFECTIVENESS OF MULTIMEDIA TECHNOLOGY

Moderator: *Bonita D. Malit, MD, MPH, USA*

Introduction to Occupational Epidemiology and Industrial Hygiene: A Web-Based Case Study on Silicosis in Sandblasters

Bonita D. Malit, M.D., M.P.H. and T.J. Lentz, Ph.D.

National Institute for Occupational Safety and Health, Cincinnati, Ohio, USA 45226–1998

Recognized as a longstanding occupational hazard, silicosis (a preventable occupational disease) affects the health of workers worldwide. China reports 6,000 new cases annually, while the cumulative number of diagnosed cases has reached 9,000 in Vietnam and more than 4,500 in one region of Brazil alone. Within the United States, exposure to airborne crystalline silica affects at least 1.7 million workers, accounting for more than 200 silicosis deaths yearly and an unknown number of deaths from related diseases such as tuberculosis and lung cancer. Workers who perform abrasive blasting using silica sand are especially at risk for developing silicosis.

Focusing on this occupational health hazard, NIOSH researchers developed an Internet-based educational module that presents occupational epidemiology and industrial hygiene concepts. The module was developed for the Centers for Disease Control and Prevention (CDC) EXCITE web site, an educational resource for high school teachers. The EXCITE program is designed to introduce high school students to epidemiology and public health. Using the example of a silicosis outbreak among sandblasters in Texas, the module describes how a multidisciplinary team of investigators traced the disease to an occupational exposure source. Students are challenged with questions about the investigation and possible hazard control strategies.

Illustrations indicate analytic techniques, engineering controls, personal protective equipment, and work practices. The module is written in an easy-to-read format, and provides the basis for a

NIOSH worker education publication to address the risk of silicosis for sandblasters and methods to control hazards. Information from the module has been published as DHHS (NIOSH) Publication Number 2002-105, *Silicosis in Sandblasters: a case study adapted for use in U.S. high schools*. The document is also available by downloading from the NIOSH Web site at www.cdc.gov/niosh.

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The Effectiveness of a NIOSH Multimedia Training Program

Lifting tasks are a required part of many of the normal everyday jobs performed by workers.

These work related tasks involve the lifting, moving, and/or relocation of objects varying from the small and lightweight to the very large and heavier objects. Low back pain and back injuries are the most frequently reported occupational injuries consistently attributed to improperly designed manual lifting-related activities. The consequences of improperly designed lifts can be increased worker injury rates. The costs resulting from worker injury can be decreased overall productivity, increased worker medical leave time with the associated medical costs and possibly the replacement costs associated with the loss of a worker.

The National Institute For Occupational Safety And Health (NIOSH) has created the Revised NIOSH Lifting Equation to assist in the determination of the recommended limits for a lifting task. This equation is used to create and evaluate the best design for a lifting task. After a design is chosen, the multipliers used in the lifting equation can be interpreted to make the decision “is this the best possible design for the lifting task?” Thus, the NIOSH Lifting Equation helps address the challenge facing both employers and safety professionals to implement, evaluate and alter lifting tasks in the field. NIOSH has created an interactive multimedia training program to assist employers and safety professionals in the correct use of the Revised NIOSH Lifting Equation. The study described in this presentation will examine the efficacy of three methods used to train safety professionals in the correct application of the Revised NIOSH Lifting Equation.

To accomplish this research NIOSH will use a self-directed CD-ROM-based multimedia instructional program to instruct end-users in: (a) precise measurement of parameters needed for the lifting equation, and (b) use of the automatic calculator (incorporated in the CD) to correctly compute the recommended weight limit and lifting index required to evaluate the proposed lift. The research design consist of three groups: (a) a control group consisting of subjects given written instruction (text and graphic representations only) on the use of the lifting equation; (b) a traditional classroom group, with training provided by an instructor skilled in the use of the lifting equation; and (c) a group given the self-directed CD-ROM-based multimedia instructional program. All three groups will be evaluated, after their training is completed, with respect to competency and understanding of the lifting equation.

This study is expected to show that the easy-to-use calculator and interactive multimedia instructional program for the Revised NIOSH Lifting Equation have increased the proper use of the equation. This should generalize well to employers and safety professionals in the field, thereby reducing the risk of injury from lifting tasks. The correct use of the lifting equation will (positively) contribute to job-redesign, thereby lowering the incidence of work-related lower back pain and injury that results from hazardous lifting tasks. It is also expected that the correct use of the Revised NIOSH lifting equation will be reflected in both formative and summative workplace design, and redesign, so as to facilitate greater safety awareness and creation of more worker-friendly environments.

This multimedia instructional program will be available for broad distribution on CD-ROM and will be translated into a “smart system” for the NIOSH web site.

Producing Your Own Video Training Material Using Digital Camcorders and Non-linear Editing Systems
Thomas C. Ouimet MPH CIH CSP, Yale University, 135 College Street, New Haven, CT 06510

Humans are a visual species and can assimilate information rapidly through visual media. Yet many EH&S training programs often do not take advantage of this media because it is expensive to produce and commercial products are often too generic or do not sufficiently cover the topic. Three years ago a technological breakthrough occurred which will change the way EH&S professionals communicate and train. Yet few of us are aware of it or understand its importance. In 1999 the equipment – digital camcorders, high speed computer data links, video computer editing workstations, and associated software - required to produce professional quality video training materials became readily available for less than \$6,000. This allows amateur videographers (such as safety professionals) to produce professional quality videos that send the right messages, are technically accurate, are tailored to the specific location or target audience, and can be shown or distributed using a wide variety of technologies. But what is truly exciting is what can be accomplished with this new technology. In-house produced video can:

- (1) demonstrate best practices for high risk tasks as well as site-specific procedures;
- (2) create a virtual tour of a workplace illustrating the potential hazards and controls;
- (3) compare and contrast appropriate and inappropriate practices;
- (4) test comprehension by having training participants identify inappropriate and appropriate practices; and
- (5) document exposure assessments and combine video with exposure monitoring data.

Setting up to produce video is not difficult. There are two major equipment components – a DV camcorder and computer editing station. To transfer digital video back and forth a fire wire or IEEE 1394 connection is required on both the camcorder and computer editing station. Cameras may be purchased for as little as \$800 but by spending \$2,000 or more extremely high quality images can be captured. Once images are captured they can be easily reordered, mixed with narration, music, and overlaid with graphics on a common desktop or even laptop computer editing station with inexpensive software packages such as Adobe Premiere or Apple's Final Cut Pro. Compatibility is still a major problem if you are working in a PC environment. It is essential that you research your equipment and make sure your camcorder, video editing package, fire wire card, operating system and other computer components, such as the graphics card and hard disk drives, are all compatible and up to the job of moving

and storing the high data throughputs associated with video. Purchasing your capture card and editing software as a bundle and making sure your computer system meets the minimum requirements of the bundle will help avoid compatibility problems.

The learning curve to produce high-quality video is steep and production of video is time consuming, typically 3-10 hours per minute of finished video. The longer development times are associated with the production of training materials that contain complex graphics, overlaid images, and animation. Simpler projects, such as creating a minimally narrated demonstration of a “best practice” may take as little as 2-3 hours per minute of finished video. In all cases the three-step production process is similar to that followed in documentary and film production. During pre-production the project concept and outline are defined, a budget is estimated, the narrative, script and storyboard are developed, shooting locations are chosen and casting decisions made. This is the longest step of video production but if it is done well the next two steps go quickly and smoothly. The second step is production. In this step the visual and audio components that will make up the video are shot or collected. Visuals may include video, still images, animation, and graphics. Audio components may include narration, voiceovers, music, and other sounds. In the final step, post-production, the various visual and audio components are assembled so that the story or message can be conveyed effectively. Properly edited video can convey in a matter of seconds what paragraphs of text or speech could not.

Once developed the video can be distributed in many different formats such as VHS tape, DVDs, one or more of the computer based CD-ROM format, or streamed on the internet depending on the audience and their technical capabilities. The video can be distributed as a full-length training program but it can also be cut up into short clips that emphasis or illustrate specific points and inserted in PowerPoint presentations. Since there are no copyright issues with in-house produced materials one is free to use the material in many ways.

Making the Connection: Bringing Classroom Training to the Internet at The George Meany Center Hazardous Material Railway Training Program

Authored by: Henry Jajuga-BA, Labor Education and Labor Safety and Health

Abstract

With the rapid advance of technology in the arena of web-based, on-line educational courses, the labor movement must recognize the opportunity for increased membership education and awareness programs. The barriers to reaching a geographically dispersed, under served target population of rail workers could be overcome through the use of web-based learning.

This study records the development of a pilot project prepared by the George Meany Center's Railway Workers Hazardous Materials Training Program. The purpose of the project has been to introduce and provide an effective health and safety-training course via the Internet. The documentation of the design, implementation and evaluation phases of the on-line training pilot is discussed and a comparison of the program with traditional classroom presentation identifies some of the strengths and weaknesses of the approach used by this group of rail-workers and program staff.

The steering committee in conjunction with the Instructional System Design Unit of the National Labor College created the training modules used in the pilot project. These modules were further streamlined by the members of the steering

committee and presented as an educational on-line Hazardous materials awareness course that would be the equivalent of a traditional eight-hour class.

As labor educators, we strive to provide programs to members that will meet the technical and regulatory requirements in a manner that engages the participant. The Rail Program's steering committee set out to develop a course that would be just as effective and engaging for the trainee sitting in front of a computer as one sitting in a traditional classroom. Although challenging, the design committee knew that an on-line course could prove to be a valuable tool for training. Providing the labor movement with an interactive educational program that incorporates learning centered methods was the primary goal of the pilot project.

EVALUATION OF TRAINING PRACTICES IN OCCUPATIONAL HEALTH

Moderator: *Henry Rothstein, DrPH*, United Kingdom

Best Practices in Community-Based Approaches to Protecting Youth in the Workplace

Primary Author: Robin Dewey, Program Coordinator, Labor Occupational Health Program, UC Berkeley.

Co-Authors: Christine Miara, Project Coordinator, Education Development Center, Inc. and Diane Bush, Program Coordinator, Labor Occupational Health Program, UC Berkeley.

Every year, over 200,000 U.S. teens age 17 and younger are injured on the job, half of them seriously enough to end up in the hospital emergency room – 70 of them die.

Surprisingly, youth are injured at a higher rate than adult workers even though child labor laws are in place to protect working teens.^{i, ii} Federal and state laws restrict the types of jobs teens can do and the hours they can work. Nonetheless, at least 19% of all injuries to young workers treated in emergency rooms involved working in illegal jobs. Most injuries, however, occur when teens are working in compliance with child labor laws.ⁱⁱⁱ

Although the safety of young workers is primarily the responsibility of their employers, many others at the state and community level also have a role. Schools, job trainers, parents, youth-serving organizations, health care providers, and the media are just some of the groups that can initiate or participate in a young worker project. Local and state level agencies and organizations throughout the country have developed effective educational tools, policy initiatives, and other strategies to protect working teens.

Examples of these best practices include development of curricula targeted for teens for use in schools and job training programs; training of teachers and job trainers; educational materials for employers, parents and youth; media outreach activities; and collective efforts to improve state child labor laws.

In 2000, the U.S. Occupational Safety and Health Administration funded the Young Worker Safety Resource Center to disseminate some of these best practices to other states. The Resource Center is housed at the University of California's Labor Occupational Health Program on the west coast and at the Education Development Center, Inc.'s offices on the east coast. The Resource Center's unique approach builds on developing partnerships among key agencies and organizations, including state departments of labor, education, and health, as well as other organizations representing educators, employers, parents and youth. To date, the Center has helped initiate and support the work of agencies and organizations in California, Maine, New Hampshire, Massachusetts, Connecticut, New Jersey, New York, Vermont and Rhode Island to launch new young worker health and safety activities. Efforts targeting additional states will begin this fall.

ⁱ CDC. Surveillance of occupational injuries treated in hospital emergency rooms, MMWR, 32(2SS): 31SS-37SS, 1983.

ⁱⁱ Miller M. Occupational injuries among adolescents in Washington State. Technical Report. 1995.

ⁱⁱⁱ Knight EB, Castillo DN, Layne LA. A detailed analysis of work-related injury among youth treated in emergency departments. Am J Ind Med 27: 793-805.

Home Care Worker Health and Safety Program

Leslie Nickels, MEd Program Director Continuing Education, University of Illinois at Chicago School of Public Health; **Joseph Zandoni**, MLR Associate Director for Continuing Education, University of Illinois at Chicago School of Public Health, **Rita Mosley**, CSP, CHCM, MA, Manager, Training & Promotions, Division of Industrial Services On-Site Consultation Program, Illinois Department of Commerce and Community Affairs, **Paul Seidlitz**, RN, Occupational Safety Consultant, **Nancy Quick**, CIH, CSP Senior Compliance Specialist OSHA

The purpose of the Homecare Worker Health and Safety Program is to provide homecare employers with tools for program planning and implementation. It was developed in cooperation with homecare employers, employees and OSHA over a two year period.

The objectives of the Home Care Worker Program are to reduce injuries and illnesses sustained by home care workers by 1) increasing recognition of hazards, 2) developing strategies for controlling and preventing exposure in a changing work environment, and 3) developing a comprehensive program for recognizing and preventing injuries and illnesses. This program is targeted at homecare agency employers.

The focus of the project is to distribute the Health and Safety Advisor (assessment tools, study guides, training materials), a train the trainer curriculum and an awareness training video. The Advisor has been distributed to employer and employee groups and three train-the-trainer courses have been conducted. The Advisor includes self assessment tools and study guides on 11 program components. The 24 hour curriculum focuses on case studies, problem solving and discovery exercises to recognize and control hazards.

Each activity is less than one hour long so that employers can use the materials for training in their workplaces.

Program evaluation included participant satisfaction critique and implementation effectiveness assessment. The participant satisfaction critique revealed that participants found the training materials and tools excellent resources and the training methods were exciting. Implementation evaluation was assessed by asking each train-the-trainer participant to complete a four month implementation plan at the end of the class. Each participant was then contacted at the end of the four months to determine their success in implementing their plan.

Explaining Variety and Failure within Risk Regulation Regimes

- Some Institutional Dimensions

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Risk regulation comes in many different varieties, but there has been little systematic analysis of the character of that variety and its causes. This presentation draws on recent research conducted at the London School of Economics that set out to map and explain variety in risk regulation regimes across UK policy domains (Hood, Rothstein and Baldwin, 2001; Rothstein 2003). The presentation focuses in particular on UK occupational health and safety regimes, using the contrasting case-studies of radon and benzene. Both radon and benzene are carcinogens, but whilst benzene is efficiently regulated, little regulatory effort is put into implementing regulatory standards on radon despite estimates that radon may be responsible for up to 250 lung cancer deaths each year- a similar number to conventionally recorded workplace fatalities in the UK.

In order to analyse and explain that regulatory variety, the paper presents a systems-based concept of a 'risk regulation regime' and considers the role of three conventional external shapers on the individual components of each occupational regime. Those shapers include market-failure factors, mass public opinion and concentrated interest group pressures. Those shapers go some way to explain differences between the regimes, but consideration also needs to be given to the 'inner-life' of the regimes. The presentation will argue that the

implementation of radon controls in the workplace suffers from an institutional apathy that parallels the widespread public apathy towards radon in the home. In particular, the slow pace of implementation of radon controls can be related to the distribution of inspector expertise, inspector working cultures and practices, and misaligned institutional pressures.

Hood, C., H. Rothstein and R. Baldwin (2001) *The Government of Risk: Understanding Risk Regulation Regimes*. Oxford: Oxford University Press <http://www.oup.co.uk/isbn/0-19-924363-8>

Rothstein, H. (Forthcoming, February 2003) 'Neglected Regulation: the institutional attenuation phenomenon'. [Health, Risk and Society](#). Volume 5.

STRESS EVALUATION IN SHIFTWORKERS OF MENTAL ACTIVITY

Natalia Bobko, PhD

Institute for Occupational Health, Kiev, Ukraine

Subjects of this study were electricity distribution network controllers whose working is characterised by springing up situations they have to cope with to provide the continuous supply to consumers with electricity. The purpose was to reveal the peculiarities of subjective and objective stress evaluation in shiftworkers of mental activity.

There were examined 17 controllers working by 12 hours under 2-day shift rotation. Measurements of short-term memory and attention were acquired. Heart rate, systolic and diastolic blood pressures were registered, haemodynamic parameters were calculated (altogether - 1224 subject observations). In the end of every shift subjects were asked to estimate the perceived level of stress experienced over a shift using 5-point scale.

It was shown, that subjective stress evaluation does not reflect simply the psychophysiological body reply, and, hence, can not be used as a sufficient. Effect of stress on cognitive performance and cardiovascular system work was the most pronounced at the first day shift, less pronounced – at the first night shift. It was suppressed during second consecutive shifts. Every parameter's specific reactions to stress were revealed, as well as their correlations at different times of shift, day or working week. Diastolic blood pressure and attention were shown to be the most sensitive to stress effect.

So, the complex approach to stress evaluation can be recommended, using subjective scores and psychophysiological measures, as well as complex computer-based data processing.

HAZARD AWARENESS AND ASSESSMENT

Moderator: *Álvaro Durão, MD, OHSS, Portugal*

A Management Model of Communication applied to Workplace Health Promotion

Álvaro Durão MD, Occupational Health Specialist. Advisor on Occupational Health, Directorate General of Health, Ministry of Health, Lisbon
Manuela Sarmento PhD. Strategic Management Department at the Technical Superior Institute, Technical University of Lisbon, Portugal, Portugal

Nowadays, to assess and improve the Management model of any organization it is necessary to consider the level of its programs on Occupational Health and Safety (OHS) and Workplace Health Promotion (WHP). We consider that to classify an organization it is necessary to identify and evaluate the implementation degree and standards of OHS and WHP adopted strategies.

More than ever before, in our Global World, it is recognized the importance of the concept and necessity of assuring the development sustainability and it is clearly accepted that, in order to achieve it, the financial success should be combined with the human development and environmental preservation.

It is assumed that more than health maintenance we now expect ambitious interventions on WHP. And, in order to achieve it, it is necessary to create an advantageous communication plan under an efficient management. Among the methodologies to accomplish a profitable communication plan and to facilitate the participation needed on WHP we have to offer special attention to the following:

Awareness: Awareness is essential to be utilized as a tactic for improving people's knowledge and to motivate healthier and safe behaviors. In result of a preliminary study we have been able to plan new communication strategies and interventions for achieving highest levels of understanding, a generalized involvement and a interested participation.

Management obligation: The manager should be the leader of the WHP taking into account that this is a responsibility as valuable as the quality control, the productivity, the management of financial resources and other vital company tasks. The manager should know the health determinants, the work related risk factors and be prepared to communicate, to achieve support from information experts and to motivate a generalized involvement on WHP.

Expertise on WHP: Although WHP is an obligation of every manager, the expertise in WHP should be recognized.

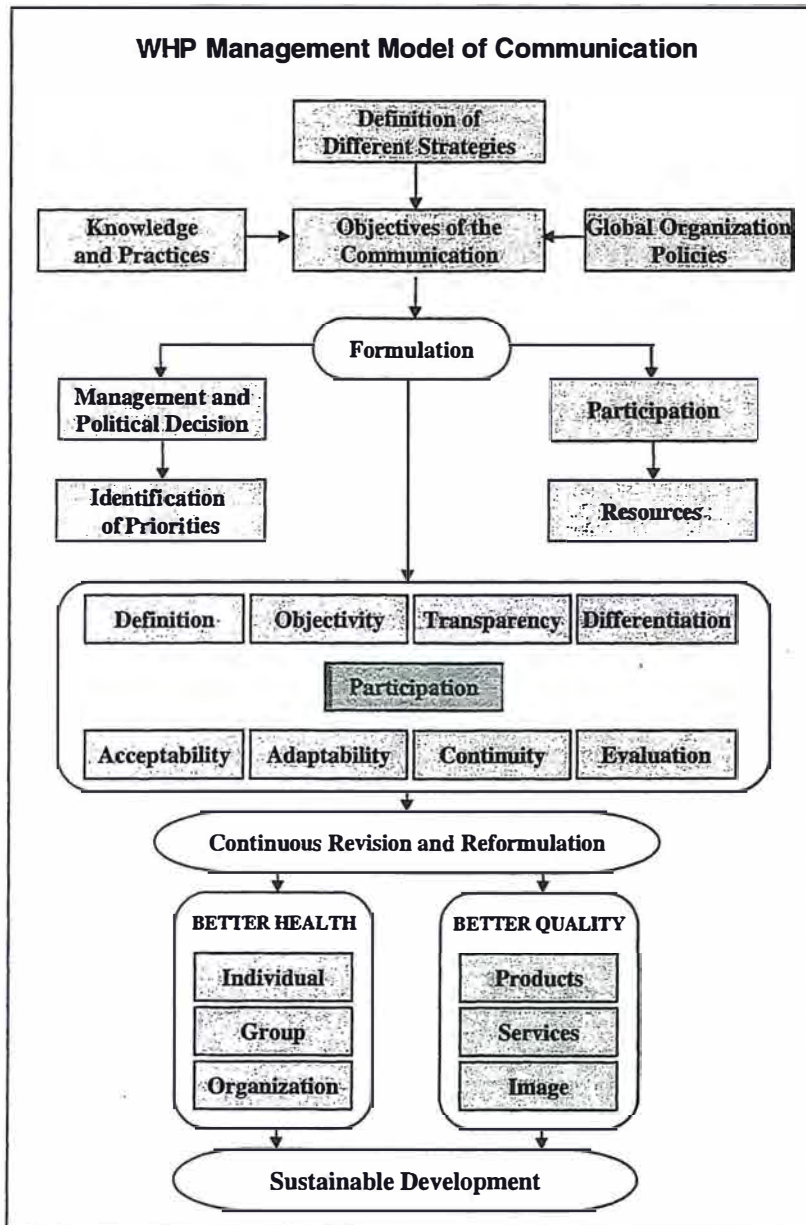
Adoption of communication models:

Communication is an essential support for WHP. The fundamental principles of a successful communication on WHP are based on a combination of different strategies:

- *Participation:* involving all stakeholders and other actors. It is essential the generalised and informed participation.
- *Definition:* presenting and disseminating with rigor the participative decision. Should have good acceptance and be announced by management. It is essential the budget and the attribution of all means necessary.
- *Objectivity:* considering the real situation and mobilising the necessary resources.
- *Transparency:* to be simple, understandable and supported by strong key ideas.
- *Differentiation:* to be specific and well characterized, taking into consideration the workers' interests, working environment and conditions, the main risks, potential health problems and health determinants.
- *Acceptability:* must be innovative, attractive, voluntary and adopted by everyone in the organization.
- *Adaptability:* supported by a continuous process of evaluation and revision to adapt the plans to the progresses and emerging priorities. The integration of experiences and good use of results is basic for improvement.
- *Continuity:* should last and resist to the organizational internal and external changes.
- *Evaluation:* a continuous process to know the results, to propitiate the revision and sequential improvement of communication strategies.

These strategies contribute for the individual and collective wellbeing, for the improvement of the organization image as well as for a better quality of the products produced and services provided.

Figure 1 represents the WHP management model of communication.



A. Durão and M. Sarmento, 2002

Figure 1 - the WHP management model of communication

Flexible Academic Occupational Safety & Health Programs: It's Time To Meet The Needs Of Working Occupational Safety Health Professionals. Zey JN, Erickson J. Central Missouri State University. Warrensburg, Missouri.

Academic Programs in Occupational Safety and Health (OSH) are lagging behind other academic disciplines in offering alternatives to the Monday through Friday 8:00 AM to 5:00 PM course offerings. The demand for occupational safety and health professionals to pursue additional academic degrees above the bachelors is growing.

Several hundred students have taken advantage of part-time masters programs offered by Central Missouri State in St. Louis and Kansas City, MO, in Albuquerque, NM and on campus via weekend and night courses. These individuals work their regular job, take 1-2 classes a semester, pay higher fees than on-campus students and spend 2-6 years pursuing their degree. In addition to night and weekend classes, a few web-based courses and some combination courses are offered. Students who take two courses each semester (including summer) can complete a masters degree in 2-3 years although often student spend 4+ years before obtaining their diploma. Determination to complete the degree and patience to overcoming problems that arise are key character traits for successful part-time students. Careful time management is critical for anyone attempting to earn a masters degree while working full-time.

Extended campus programs offer universities an avenue to meet the increasing desire for working OSH professionals to obtain advanced degrees. SS&Ts extended campus programs have provided such an opportunity since 1975. Based on the number of OSH professionals who have obtained advanced degrees via SS&T's program, other OSH academic departments should consider offering similar programs. A directory of industrial hygiene programs published in 1993 by AIHA titled, "Balancing Work, Health, Technology and Environment: Careers In Industrial Hygiene" lists over colleges and universities offering industrial hygiene degrees.

Today, only a handful of those programs offer substantial number of courses via alternative formats.

Some universities are developing or have produced on-line masters programs. Such programs often charge high fees for the convenience of on-line course offerings. Many students, at least at CMSU, prefer face-to-face student-teacher interaction. This is especially true for non-traditional (older) students. Individuals promoting the on-line programs sometimes are reluctant to discuss the problems of down-time, non-compatible software and the heavy workload for the faculty member who teaches the course.

One example of the potential impact of weekend colleges courses is the Principles of Industrial Hygiene (SS&T5120) course taught in the CMSU industrial hygiene masters program. Previous offerings (2 or 3 days per week) had six or less students. When the course was offered as a weekend college and on-line combination ($\frac{1}{2}$ on campus and $\frac{1}{2}$ on line) eighteen students enrolled. Three students dropped the class, even though they lived in the local area. The fifteen students who completed the course traveled from up to 200 miles away. As we proceed further into the 21 Century, it appears that a market exists for more part-time academic OSH programs. The number of students who have utilized CMSU's extended campus offerings number in the hundreds. Realistically, the maximum distance that students could travel for a weekend college is about 200 miles. This suggests that other universities could benefit from increased student numbers by offering alternative format courses.

Screening In Occupational Health: Department - Labour – Government Of Karnataka - India.

Primary Author: Dr. Shashikala. Manjunatha. Mbbs. Md. Dih.

Demographic Profile depicts India with a population of 1,027,015,247 & population density (per sq. km) of 324. At present India is spending about 3% of GNP, on health & family welfare development. Health services, by Government health system is unable to meet health demands of proliferated work force, underprivileged communities. Poor sections are jammed between bureaucracy & commercial health system. The role of Private health sectors in Public & National health programmes is greatest need of the hour.

Indian Constitution has State occupational health policy operating through Department of Health & Labour. Important Legislative Measures are Indian Factories Act. Employees State Insurance Act, Mines Act, Plantation Act, Maternity Benefit Act, etc. There is no comprehensive occupational health service. Research & academic institutes are few & not in proportion to meet occupational health needs. There is accelerated pace of industrialization, industrial revolution & boom of economic development & internal adjustments to strengthen the National competition power to enter the globalized markets. There is, inadequacy of law & poor enforcement, lack of information, education, communication on occupational hazards, under – estimate of morbidity, (physical, chemical, biological) hazards, absenteeism, psycho-social problems, working women, child labour, etc, due to lack of a comprehensive National occupational health programme. Only 5- 10 % of working force have access to occupational health services. These penalize poor communities, perpetuate poverty through work loss, school drop-out, decreased financial investment and increased social instability – sizeable social and economic costs.

Karnataka state, India has population of 52,733,958 and population density of 275/sq. km. Administrative, industrial, commercial, educational centre, occupies a vantage position in

southern peninsula. Occupational health reflects that of the country. Karnataka has 9404 registered factories. Workers employed: Male: 7,53,973 Female: 1,78,000. Total: 9,31,973. Factories: Chemical: 486, Engineering: 2034, Textile: 1447, Others: 5473, apart from many unorganized sectors.

The focus of the project is to initiate an *Occupational health programme*, incorporated in various Occupational health Acts, like Factory Act, Employees State Insurance Act, etc. For example, regular pre-placement & periodic examination, enforced in these legal measures by the government can be modified into *screening programme*, data documented by organized information linkage system. Implementation plans: Health promotion, Equitable accessibility Workers participation, Intersectoral co-ordination, Appropriate technology, Evaluation.

This shall evolve into the development of *National Occupational Health Programme*.

International Collaboration: ILO, ICOH, NIOSH, GOHNET – WHO, North Carolina Occupational Safety & Health Center, John Hopkins School of Public health, etc can act as nodal agencies, by development of a data bank for information exchange, to monitor & evaluate occupational health programme, conduct studies, training, etc. Occupational health advocates, co-coordinators, could be designated or appointed for representation, co-ordination & feedback. Some of their job responsibilities shall be to assist in assignments & projects, planning & reporting, technical feedback , evaluation, develop occupational health modules, etc.

Using a Patient-Centered Structured Medical Note for Health Risk Communication and Establish a Safety Profile of Anthrax Vaccine at a Mass Immunization Site

Kenneth Hoffman, MD, MPH

Cory Costello, MD

Mark Menich, MD

John Grabenstein, PhD

Renata Engler, MD

Background: The Anthrax Vaccine Immunization Program requires military personnel to be educated about the threat from anthrax weapons and immunized with an FDA-licensed vaccine.

Objective. To use a structured medical note, initiated by the soldier, to enhance discussion and answer questions between soldier and health care provider prior to receiving an anthrax immunization and to establish a self-reported adverse-event profile.

Design. Cohort study of 2824 soldiers immunized against anthrax at one military clinic between August 1998 and July 1999 who completed a structured medical note that was reviewed by a clinician.

Main Outcome Measures. Self-reported adverse events and consequences after the previous anthrax vaccination was the main intent. Enhanced communication should improve knowledge of adverse events, allowing active surveillance.

Results. Over three immunizations, more women than men reported adverse events (range 59.9%-67.9% v. 31.5%-39.7%, $p<0.01$), and individuals taking medication

reported more adverse events (range 59.4%-66.1% v. 32.9%-42.3%, $p<0.01$). Nodules and injection-site erythema were common. The rate of injection-site reactions exceeding 12 cm diameter were more than 10-fold higher than cited in the vaccine's package insert. Women experienced this reaction more commonly than men (range 2.0%-4.1% v. 0.4%-1.1%, $p<0.05$). Individuals reporting prior adverse events were highly likely to report adverse events to the next immunization (men 74.7% v. 18.5%; women 81.3% v. 30.8%, $p<0.01$).

Conclusions. Gender, medication use and prior vaccine-associated adverse events are significantly related to higher reports of adverse events. All reported immediate consequences resolved. Reengineered documentation can both reflect patient experience and collate the clinical experience of large groups with analyzable data.

TRENDS AND ISSUES IN EDUCATION AND TRAINING IN OCCUPATIONAL HEALTH

Moderator: *Giorgio Assenato, MD, MPH, ScD, Italy*

EFFECTIVENESS OF TRAINING IN CO-OPERATION AS AN ELEMENT OF POSTGRADUATE TRAINING FOR OCCUPATIONAL PHYSICIANS AND GENERAL PRACTITIONERS

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Introduction

Dutch occupational physicians (OPs) and general practitioners (GPs) have a long history of non-cooperation, with negative consequences for their common patients: long sickness absence and even disability for work.

Recently the government has deployed an assignment to the Netherlands School of Occupational Health, TNO Work & Employment and four GP training institutes, regarding the postgraduate training for OPs and GPs (1999-2001).

Objectives

To develop and introduce a common training program as a part of the postgraduate (vocational) training for OPs and GPs, providing them with skills and strategies for mutual cooperation in diagnosis and treatment of work-related disorders.

To evaluate this program with respect to its effectiveness.

Methods

I Development of a common training program in the framework of the postgraduate training for OPs and GPs. The aims of this training program had to be:

- to acquire knowledge about the other discipline (legal framework, organisation, working situation);
- to acquire knowledge about strategies and guidelines with regard to cooperation with the other discipline;
- to create a basis for an attitude focused towards cooperation.

II. Implementing the program into the regular curricula for OPs and GPs. Training groups consisted of 12-18 GPs and 6-12 OPs.

III Testing the effectiveness of the program with regard to practical behaviour. The effects of the program were evaluated by a questionnaire (to measure effect variables) and interviews. 34 GPs and 20 OPs participated in the program in 2000 and were asked to fill in the questionnaire before, immediately after, and 3 and 6 months after the program. The questionnaire response rate declined from 100% to 24%. We applied Anovas to compare the results at the start of the program with the results of the three measurements after the program.

2 GPs and 2 OPs were interviewed about 18 months after the program.

Results

A four-day training program was developed and implemented into the curricula of 4 training institutes. The program consisted of three days in class, a day in the other's working practice and a practical exercise in the participant's own practice. It was carried out for the first time in 2000.

Desired changes in cooperation behaviour were shown. However, these effects pointed out to be stronger after 3 months than after 6 months.

In general GPs showed more changes than OPs.

There were changes in a positive direction for GPs, but only one was still significant after 6 months.

For GPs knowledge and application of the guideline for information exchange improved but only until 3 months after the course.

OPs had significantly more contacts than before, and gave an information letter for the GP significantly more often, even after 6 months.

For OPs knowledge of the guideline for information exchange improved for a short time. The use of the guideline was said to be significantly better after 6 months.

The interviewed GPs were positive about the personal contacts with the OPs. They got to know the work of the OPs. They learned that the OPs are actively trying to improve the well-being of their patients. They certainly advise patients more often to contact their OPs.

Sometimes they take the initiative to call an OP themselves.

The interviewed OPs judged the program useful in changing perceptions the GPs had about them. They appreciated the personal contacts with the GPs. The course made them more aware of the process of cooperation. The OPs found that patients consider the cooperation as positive.

Conclusion

Although the groups were small, the results are encouraging. The aims of the program were realised. Some effects persisted even after 6 months. The interviews suggested that the personal contacts during the program were important.

Implementation of the program is an effective strategy to promote OP-GP-cooperation. Full implementation is aimed by the end of 2004.

HOW TO TRAIN OCCUPATIONAL PHYSICIANS AND GENERAL PRACTITIONERS TO COOPERATE AT SPECIFIC DISEASES

PC Buijs; AN Weel

Introduction

In The Netherlands Occupational physicians (OPs) and general practitioners (GPs) unfortunately have a long history of poor cooperation, with negative consequences for their common patients: unnecessary long sickness absence and even (permanent) *disability for work*.

Mainly because of the rising figures on Sickness Absence and Disability for work the Dutch government, together with the professional medical organisations involved, has deployed many improvement measurements during the last five years. Among them there was an assignment to the Netherlands School of Occupational Health (NSOH), TNO Work and Employment and four training institutes for GP's, regarding the continuing medical education (CME) of Ops and GPs. This project started in 1999, and has to be finished at the end of 2002.

Objective

To develop and test training programs within the framework of continuing medical education, providing Ops and GPs with skills and strategies for better cooperation, given a certain illness or disease.

Methods

I. Creating a project management team and four working teams, aimed to develop four particular CME programs for training Ops as well as GPs how to cooperate, when common patients/employees suffer from Chronical Obstructive Pulmonar Diseases, musculoskeletal complaints, psychological complaints, and chronic diseases more in general.

II. Testing these programs in practise

III. Making an implementation plan

IV. Evaluating the products

Results

Between 2000 and 2002 the organisational network has been built, the four CME programs have been completed and tested – appearing already to contribute to an attitude more directed at cooperation - , an implementation plan has been made and a product evaluation has been carried out.

Conclusion

Implementation of the CME programs is a promising strategy to improve cooperation between Ops and Gps, in order to improve the quality of guidance of sickness absence and early rehabilitation, and eventually to help decreasing the high level of disability for work, also called the “Dutch Disease”.

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Effectiveness of Peer Training for Prevention and Management of Housestaff Bloodborne Pathogen Exposures

Authors: Jonathan Lieske MD, MPH
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Robyn Gershon DrPH, MHS
Jill Guidera RN
Clifford Mitchell MS, MD, MPH

ABSTRACT

Objective: To measure the effect of a “peer-to-peer” bloodborne pathogen (BBP) training intervention on knowledge of and attitudes towards BBP exposure prevention and post-exposure management in a population of medical housestaff at The Johns Hopkins Hospital.

Background: Medical housestaff in several clinical departments were administered a questionnaire to assess baseline knowledge of and attitudes towards BBP exposure prevention and post-exposure management, as well as multiple demographic variables. Housestaff were divided by department with half receiving a “peer-to-peer” BBP training intervention; consisting of an audio-visual presentation with post-exposure management simulations and personal protective equipment video demonstrations; and standardized live instruction from an occupational medicine resident. The control group received no training in addition to conventional training provided by the hospital’s safety office. Knowledge of and attitudes towards BBP exposure prevention and management were assessed by self-administered questionnaire immediately following the training, and at a 6 - month follow-up by self-administered questionnaire.

Independent variables analyzed included concern regarding BBP exposure, number of previous BBP exposures, age, gender, hours worked per week, years worked at JHH, post-graduate (PGY) training year, and clinical department.

AN INTERACTIVE TRAINING MODEL AND QUALITY ASSURANCE IN A SCHOOL OF OCCUPATIONAL MEDICINE

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Department of Internal and Public Medicine, Occupational Medicine Division,
University of Bari - Italy.

Aim. Complying with European directives, the Italian law 626/1994 requires the presence of an occupational physician in every workplace as well as specific professional competence. New methods of teaching are needed to ensure knowledge, experience and competence to postgraduate residents of a school of Occupational Medicine.

Method. In order to ensure a core curriculum for all the residents of the School of Occupational Medicine of Bari University, a web based training model was organised. The Bari School of Occupational Medicine is a hub of a training network including public and private health agencies and private company-based occupational health services. The Residency Program goals to provide comprehensive training for clinical practice and specific competencies in Occupational Medicine topics.

An on-line resident logbook is available for each resident allowing remote interaction and replacement of paper forms. Qualitative and quantitative requirements needed to obtain the postgraduate degree according to the current law are displayed for every resident. Facilities such as CCINFO, ILO Encyclopaedia of Occupational Health and Safety, CISILO Database etc. are also available on line as well as free document delivery service. The interactive training model aims at enhancing control of residents and staff in order to promote training efficacy, continuing monitoring of the quality

level of the training process, post training job search service. A remote evaluation of Residency Program is also provided, by an on-line questionnaire to be completed by the Residents. Along with theoretical lectures the system is based on scheduled rotation of the resident across different facilities (including now also emergency room, ophthalmology, dermatology, rehabilitation, the office of a local practitioner, occupational health services). The role of chief resident is also described.

Results. Difficulties in the compliance from faculty and residents was a major problem. Only after two years it was possible to obtain a sufficient co-operation by all the subjects involved in the program. As first step towards accreditation, the quality system manual was prepared. The quality assurance allows offering the Residents professional competencies in line with international standards, through planning, monitoring and correcting the activities included in theoretical and practical training. Such a training model allows a continuing monitoring, both individually and on a collective level of everyday activity. This model represents an essential precondition to keep the level of quality, once it has been achieved.

Shifting from paper to computerized work in the management of daily activity allows the Residents to act in the same environment that is also used for cultural activities (i.e. access to data banks).

HEALTH SOLUTIONS IN OCCUPATIONAL HEALTH

Moderator: *Michael Silverstein, MD, USA*

OCCUPATIONAL SAFETY AND HEALTH REGULATIONS
IN PLAIN LANGUAGE

Co-Authors: Michael A. Silverstein, MD, MPH and Gail Hughes

“Regulations in Plain Language ” is a comprehensive effort by the Washington State Department of Labor and Industries (L&I) to redesign its workplace safety and health rules so employers and employees can readily understand the requirements for making workplaces safe and healthful.

Like other states and the federal government, Washington administers a complex set of regulations – many of them decades-old – governing workplace safety and health. These rules were nearly impossible for average persons to comprehend and use. They had become a source for anger among employers and frustration among workers.

Recognizing that such anger and frustration creates enormous barriers to cooperation and compliance, L&I spent three years rewriting and reorganizing its core safety and health rules in a style and language that virtually anyone can grasp.

Here is one example:

The old language: *“Means of egress shall be designed and maintained as to provide adequate headroom, but in no case shall the ceiling height be less than 7 feet 6 inches nor any projection from the ceiling less than 6 feet 8 inches from the floor.”*

The new: *“You must make sure an exit route is at least 6 feet 8 inches high at all points.”*

And it's just not that the language is simple. The core rules for the first time have an index and table of contents. Based on formal usability testing, each rule has been formatted, organized and illustrated with ease of use in mind.

Writing rules in plain language sounds simple and straightforward, yet it has proven difficult for others and this project has been uniquely successful. Starting at the same time, for example, the federal Occupational Safety and Health Administration has yet to change the word "egress" to "exit."

L&I was able to succeed only when it recognized that the job had to be done in partnership with the three groups most directly affected by the rules: the state's employers, its workers and its safety and health professionals. L&I established an "Innovations Task Force" composed of these key stakeholders to oversee every step of the redesign process along with the agency staff. Once it was clear that L&I was willing to share ownership of the process and the product, the participants responded with exceptional energy and creativity.

The Task Force was given three criteria: There must be no reduced protections for workers; there must be no increased requirements for employers; and the final product must look and feel dramatically better than any government regulations any of us had ever seen before. The result is a set of worker-protection rules unlike any found elsewhere in the United States.

Work Improvement in Small Enterprises (WISE)

Engr. Jose Maria S. Batino
Occupational Safety and Health Center
Manila, Philippines

Dr. Tsuyoshi Kawakami
International Labour Organization
Bangkok, Thailand

Dr. Toru Itani
Nagoya City University Medical School
Nagoya, Japan

The Work Improvement in Small Enterprises (WISE) is a unique approach for improving productivity and working conditions in small enterprises. It entails the conduct of action-oriented training program that links better working conditions to higher productivity for owners and managers using local examples, positive reinforcement, learning-by-doing and group consultancy.

WISE has been proven effective in generating simple and low-cost improvements linking productivity and product quality to better and safer workplace conditions. Small enterprise owners/managers are encouraged to consider improvements more favorably if they are inexpensive. Good operating practices can often be implemented with little cost, and therefore have a high return on investment.

The six basic training principles of WISE are build on local practice, focus on achievements, link working conditions with other management goals, use learning-by-doing, encourage exchange of experience and promote workers' involvement. The technical contents involve materials storage and handling,

work-station design, productive machine safety, control of hazardous substance, lighting, welfare facilities and services, work premises and work organization.

While WISE started from the link between working conditions and productivity, this was far from sufficient. The second essential innovation is the positive approach. This consisted of identifying the good things that are being done in a specific locality, and feeding these ideas to other enterprises. More than 6,000 practical and low-cost workplace improvements have been implemented by small enterprises that have been trained under the WISE program.

Many challenges remain to realize the full potential of WISE. It has to be more cost-effective in order to reach more enterprises with the meager resources available. Workers and their organizations have to be involved more extensively in spite of the low unionization rate in small enterprises. These enterprises must learn more about the advantages of a highly motivated and highly productive workforce. The employers' organizations have to make WISE a continuing part of their activities.

The small enterprises are many and increasingly important source of employment. At the same time, the small enterprises sector is where the most improvements are required in both productivity and working conditions. WISE demonstrates that it is possible to link these improvements, and thus make the sector both an economic success and a better place to work.

Health Solutions in Occupational Health
Monday, October 28: 2:00 – 3:30 pm
Jeannie K. Hanna, RN, MSN, COHN-S
Karin S. Frederick, RN, MBA, COHN-S

In today's competitive marketplace, the need for productivity is at a premium. Organizations are faced with growing demands on limited human and financial resources. A healthy and safe work environment provides many advantages including: lower accident and injury rates, lower insurance and overtime costs, improved productivity and company morale. Management of effective health and safety programs can be enhanced by using Web-based technology. A global corporation will describe their project on the development and implementation of a health and safety IT solution.

The purpose of this project was to develop and implement an integrated health and safety system that supports multiple languages and global requirements. The initial target group was the 17 manufacturing sites in the US. The objectives of the project were to:

- Identify the IT needs of health and safety in the US
- Evaluate and select a provider
- Obtain senior management approval of the project
- Develop the business requirements of the system
- Lead the task force through the project
- Implement the project including training of end-users and launch.

The focus of the project was on the following areas of health and safety:

- Injury and Illness Management
- Medical Monitoring
- Safety Incidents
- Action Requirements
- Corporate Indicators and Reports.

The timeline for the project extended over a 16-month period and included vendor selection, project approval, development of the functionality of the system, testing of the modules, training and launch.

Water System Vulnerability Assessments

Authors: CPT(P) T.C. Timmes, P.E.; T.E. Richards, P.E.; J.A. Valcik, P.E., DEE, COL
K.K. Phull, P.E., Ph.D.¹

Abstract: The growing threat of international and domestic terrorism has generated heightened concerns of public safety and the vulnerability of our national infrastructure. Because the American military serves as a symbol of our country's strength, military installations present an ideal target for terrorists who wish to create fear and attract sensational media coverage. Of particular concern is the vulnerability of drinking water systems that serve U.S. forces and their families. Although water is essential to human life, most Americans generally take for granted the reliable delivery of safe drinking water. Fortunately, steps can be taken to significantly reduce the probability, severity, and associated risk of terrorist attacks. The USACHPPM WSV A protocol addresses water system vulnerabilities which, if successfully exploited, could result in physical destruction of water system assets, intentional contamination of raw or treated water supplies, and cyber attacks.

The Water Supply Management Program has developed a protocol to conduct water system vulnerability assessments (WSVAs). These assessments are required under the newly passed Bioterrorism Act (PL 107-188) for community water systems serving over 3300 people. Roughly 80 Army community water systems will be required by this regulation to undergo a WSV A and send a copy of the report to the EPA. The Army also plans to require +/- 150 smaller water systems to undergo a WSV A to support the installation commander's responsibility for an overall installation vulnerability assessment. This protocol, Chapter 3 of the USACHPPM Technical Guide 188, is written

for the project officer and provides him with specific guidance to plan, execute, and write a report for the installation commander. The assessment adapts the familiar risk management methodology found in FM 100-14, and incorporates the latest industry guidance for conducting a water system vulnerability assessment. The assessment analyzes the risks to water system components from physical attacks, cyber attacks, and acts of intention contamination. The value added benefit of this protocol is that it involves the preventive medicine community, engineers, fire department, intelligence community, information technology (IT) offices, and the installation force protection office to fully develop the assessment. Unclassified examples will be shared to highlight this new CHPPM service.

¹Respectively, Field Water Section Chief, Fixed Water Section Chief, Program Manager and Master Consultant, and Director, Environmental Health Engineering, U.S. Army Center for Health Promotion and Preventive Medicine, 5158 Blackhawk Road, Aberdeen Proving Ground-Edgewood Area, Maryland 21010-5403, DSN 584-3919, Commercial 410.436.3919, Water.Supply@apg.amedd.army.mil.

The opinions and assertions contained herein are those of the author(s) and are not to be construed as official or as reflecting the views of the Department of the Army or Department of Defense.

**COMMUNICATING OCCUPATIONAL SAFETY AND
HEALTH TO SPANISH SPEAKING WORKERS AND
THEIR EMPLOYERS**

Moderator: *Marie Haring Sweeney, PhD, USA*

Communicating the Safety and Health Message to a Multilingual and Multicultural Workforce

Session Moderator: Marie Haring Sweeney, Ph.D.

In the 19th and early 20th centuries, the United States was termed the “Melting Pot” as immigrants, predominantly from Europe, moved across the Atlantic Ocean. In the early history of the United States, workplace safety and health, held a back seat to economic development. Now, 100 years later, new immigrants arrive from Asia and the Americas. According to the 2000 Census nearly 15 million people currently residing in the US were born in Latin America, 7 million were born in Asia, and more than 2 million were born in other areas of the world. In addition, approximately twenty percent of the U.S. population speaks a language other than English at home. Many of these individuals may be US - born citizens. Such changes offer opportunities and challenges to the occupational safety and health community to effectively communicate the safety and health message using linguistically and culturally appropriate media.

This session will address the foremost issues facing employees, employers and others who must communicate the safety and health message to workforces whose first language may not be English and whose primary culture did not include strong workplace safety and health principles and regulations. Three speakers will discuss how the safety and health message is most effectively communicated for culturally and linguistically different populations. Discussion topics will include how effective safety and health communication materials are developed for this emerging workforce, appropriate dissemination strategies, training methods, use of appropriate electronic media and printed material, and evaluation of materials for effectiveness.

Barriers to translating information in a multilingual and multicultural workforce

Susan Feldmann (NIOSH)

Anne Hamilton (NIOSH)

More than 23 million people of Hispanic origin make up the U.S. workforce, and this number is expected to increase 36% by the year 2010 (BLS 2001). Many Hispanics in the workforce are newly arrived immigrants and speak Spanish as a primary language. Federal agencies are required to ensure that their programs and activities are accessible to “limited English proficiency” persons. For these reasons, the Spanish-speaking audience was the first that NIOSH took into account when we began translating documents. In December 2001, the NIOSH Spanish Web site (*NIOSH en EspaZol*) was launched.

Although NIOSH documents were not originally written with the intent of having them translated, we found that the documents that had been well edited and “pared down” were much easier to translate than documents that had not been edited. In addition to translating documents into Spanish, NIOSH staff have occasionally translated correspondence into other languages such as Italian, German, and French. Many principles of good editing and writing easy-to-read material in English overlap with principles for preparing documents for translation into other languages.

This presentation focuses on basic principles that we discovered for facilitating translations:

(1) stress simplicity of structure, clarity, and good grammar: For example, keep verbs close to corresponding subjects; put phrases as close as possible to nouns they modify, void long “string” noun modifiers, break up long sentences whenever possible, and use consistent terminology throughout the document.

(2) avoid metaphors, jargon, etc: This includes culturally specific allusions references, and “empty” words that do not enhance the meaning of a sentence.

(3) emphasize the information most critical to the audience: A writer should not think only of what he or she wants to say, but what he or she want the reader to understand.

In addition to having documents that are as clear and concise as possible in English, we learned other lessons that made our translation project easier. NIOSH began with few resources, so we first translated the most important information for our audience: the “About NIOSH” page and the page describing our Health Hazard Evaluation and 1-800 number telephone services. Since occupational safety and health information is limited, and even more limited in Spanish, we provided links to occupational safety information in Spanish from other organizations. To address the problem of the many acronyms used in government, we translated the full name of institutes or programs and then continued to use the acronym based on the English word. By doing this we avoid having to create a new acronym for each translated language; also, many non-English speakers are already familiar with the English acronyms we used.

Having subject matter experts review the content of the document in the original language is

extremely important. This way, the translator can concentrate on the language rather than the content of the document. Even though many of our documents are translated on contract by native speakers, the quality is reviewed by other native speakers. When documents are translated by nonnative speakers, it is even more important to have documents reviewed and corrected by native speakers. Nonnative speakers, however, can improve their translation abilities by reading material written in the target language and by familiarizing themselves as much as possible with concerns of the intended audience through community activities.

Having a well written, concise document in English saves time and money during translation. "An effective target language document is largely the result of an effective source language document."

“Educational Materials for Spanish-speaking Workers: Getting it ‘Right’”

By Marianne P. Brown, MPH, Director of UCLA Labor Occupational Safety and Health (LOSH) Program

Spanish-speaking workers in the United States work in some of the most dangerous industries, and they currently have the highest occupational fatality rate of any ethnic group. It is also suspected that Spanish-speaking workers have high rates of workplace injuries and illnesses although the extent of the problem is not well known because there are many disincentives on the part of both the employer and the employees not to report these so they are not reflected accurately in national statistics.

According to the National Institute for Occupational Safety and Health, the number of Latino workers in the United States is expected to increase by more than one-third in the next decade. And they will no longer be concentrated only in New York, Miami and Los Angeles. United States 2000 Census data show that the Latino population has spread out across the national faster and farther than any previous wave of immigrants.

Consequently, there is a strong need to provide workplace health and safety information and training to these workers in their first language in an accurate and culturally sensitive manner. Of course, the provision of this information and training is not sufficient; it must be part of an employer's comprehensive health and safety program.

This is a report of a survey of over 500 such Spanish-language materials designed for workers that have been produced in the United States and Spanish-speaking countries. Results will be shared including a call for a systematic approach to deciding what

materials should be developed and recommendations on how they should be developed in order to maximize their usage by workers. Issues such as the usage of “Standardized Spanish” and “Spanglish,” the importance of pilot testing, and other related considerations will be examined. Examples of “good” and “not-so-good” materials will be shared to illustrate Best Practices recommendations.

Occupational Safety and Health for Spanish-speaking Workers: Training Development and Evaluation

Author: Suzanne Teran, Program Coordinator, Labor Occupational Health Program,
UC Berkeley

Headlines scream the news: Latino workers risk life and limb to work in the U.S. and face a higher job-injury and fatality risk. This occurs in part because immigrants are channeled into highly physical and dangerous jobs. Their risk is compounded by the fact that they receive little or no training, are less likely to challenge working conditions, don't speak English and are more isolated from traditional resources for health and safety information.

Several smaller studies reveal a general lack of job health and safety training among immigrant workers. Therefore, they do not learn about hazards or safe work practices, let alone their rights. At the workplace, warning signs and labels and other hazard information provided only in English represents a hazardous work condition for these workers. Moreover, even with health and safety information, Spanish-speaking workers have a harder time advocating for change on the job. One published evaluation found that while Spanish-speaking training participants attempted to take action to improve health and safety at work as often as English-speaking workers, they were half as successful in achieving it.

Over the past twelve years, the Labor Occupational Health Program at UC Berkeley has developed a training and education program targeting Spanish-speaking workers. This

presentation will focus on how we developed the program, what worked, challenges we faced and lessons learned. Some of the strategies LOHP has implemented in order to reach Spanish-speaking workers with health and safety information include: providing training through worksites; developing a peer-training program; forming partnerships with community-based organizations and unions (with an emphasis on hazard awareness and workers' rights); working through the schools to reach Spanish-speaking youth; using the media; and conducting outreach through employers.

Our experience has shown that any successful efforts to develop training programs for Spanish-speaking workers are built on two distinct yet interrelated processes: 1) developing effective curricula and materials, and 2) adapting the training program to the socio-political contexts that influence the experience of Spanish-speaking workers. With respect to the curricula and materials, workers need to be involved in all phases of the development and design in order to meet their literacy, language, cultural and workplace specific needs. In this regard, LOHP has emphasized adult learning theory and participatory training techniques. Moreover, training programs must address the barriers that Spanish-speaking workers encounter in being able to initiate workplace changes following training, and must be prepared to support these efforts.

Abstract

OSHA En Espanol

Bonnie A. Friedman
Director, Office of Public Affairs
Occupational Safety and Health Administration

While fewer than ever U.S. workers die on the job, the fatality rate for Hispanic or Latino workers in this country is on the increase. In 2002 it climbed by more than 11 percent. Many immigrant workers speak little if any English; some foreign-born employers do not speak the language fluently. The Occupational Safety and Health Administration determined that something must be done. The agency created a Hispanic Outreach Taskforce to address the problem and find creative solutions.

In January 2002 the agency added a Spanish component to its existing 800 number to respond to questions from employees and employers, direct calls and refer complaints. The following month OSHA launched new Spanish page on its website with basic information for employers and employees about job safety and health as well as agency programs and services. The agency also developed a list of Spanish-speaking OSHA employees available to help customers who need assistance. All OSHA Regional Offices strengthened their contacts with police and emergency responders to ensure that the agency receives referrals when an injury is work-related.

In March 2002 OSHA signed an alliance with the Hispanic Contractors of America to promote safe and healthful working conditions for Hispanic construction workers through effective safety and health training and increased access to safety and health resources in Spanish.

And in April 2002 the agency announced it would begin to collect data on country of

origin and primary language spoken for all workers during its investigations of fatalities and other serious accidents. At the same time the agency signaled its intention to begin to collecting site-specific information on construction projects where many Spanish-speaking and other immigrants work and where fatality rates are especially high.

In October 2002 OSHA will co-sponsor a Hispanic Forum at the National Safety Congress in San Diego, providing information, materials and panel discussions for community-based and other organizations that work directly with the Hispanic and Latino communities. The agency also is planning to exhibit at conferences around the country to provide information and assistance to Spanish-speaking employers and their employees.

In addition, OSHA Regional and Area Offices around the country are engaged in numerous outreach and education activities. The Dallas, Atlanta and New York Regions are particularly active, offering training, compliance assistance, community relations and collaborative efforts in Spanish and with Hispanic and Latino organizations.

Currently OSHA has in production radio and television public service announcements in Spanish, encouraging employers and employees to contact the agency for more information about job safety and health. Later this year the agency will conduct focus groups in three cities across the country to assess best messages, methods and means for communicating with Spanish-speaking audiences; results will help influence future communication efforts on many fronts.

Plenary Session:

**INTEGRATING OCCUPATIONAL SAFETY AND HEALTH
CONTENT INTO EDUCATION, TRAINING, AND
COMMUNICATION**

Janine Bigaignon-Cantineau, France

Dinner

IMAGINING WORK

Guest Speaker: *David Parker, MD, MPH*

David Parker, M.D., M.P.H.
Picturing Work

A few months ago I met with Max Lum to discuss some photographic work I was doing. At the end of our meeting at the Embassy Suites Hotel in Chevy Chase, Max asked me to make a presentation at this week's conference. I would like to thank Max Lum for this opportunity as well as Ray Sinclair for his encouragement and thoughts. Ray told me, at the core is making science realize that understanding how systems work is added to by art, art helps to solve public health problems, it adds emotion to science, and creates change.

I have completed two photographic books: *Stolen Dreams: Portraits of Working Children* and *By These Hands: Portraits From the Factor Floor*. I have spent many months trying to see factories and their workers, examining texture, light, faces, hands, dirty boots, tires caked in mud, climbing into sugar silos, walking through polluted water in garbage dumps, talking to children desperate to escape from their slavery and the beatings of their masters or being raped by their overseers. The culture of work is reflected in the jobs women and men do. Factories are still divided by race, gender, and at times age. Many workers struggle to meet their basic needs; they also work hard and do their best for their employers. While science may describe process and surveillance may describe outcome, art describes who we are.

We need to better understand the lives of those whose work makes our homes warm, produce our food, build the cars we drive or do any of thousands of other tasks we take for granted each day. While most if not all of us study work, workplace safety, or some area of occupational health, work has remained largely invisible. Robert Cole quotes Robert Kennedy saying, "Show us what you saw and the country will be stirred to action." The camera is a moral witness and tells us what we already know and changes an abstract reality into something we believe is solid – a camera testifies and serves as a sort of expert witness.

Perhaps it is necessary for us to draw a stronger connection between the work and workers we study and ourselves. Indeed, as Bertolt Brecht states, "Art is not a mirror held up to reality but a hammer with which to shape it." The camera needs to serve, as more than an expert witness, it needs to allow us to be active participants on the factory floor. And when I say the camera, it is not necessarily the 35mm or digital camera; it is a way of seeing. At the heart of what we do is making science realize that understanding how systems work is aided with art and art can help to solve public health problems.

Look for example at this photograph of a young brick worker. What do you feel? Do you feel weight of his bricks on this child and so many like him. The photograph has a sense of time that is somehow expands from the moment the picture was taken. This is the contemplation of things as they are; there is no confusion, nothing extra, nothing taken away. You may call the photograph art, documentary photography, or even worker surveillance.

To paraphrase Walker Evans, it would be foolish to hope that a purification of a sense of light would save us, any more than anything else is likely to, in restoring us toward sanity, goodwill, calm, and acceptance. Our science seems pure, however, it fails to see, and while art may not be scientific or even academic when we are lucky it presents a reality that is uncluttered by so many ideas and it helps us precisely because it lacks theory and forces us to try to understand what is elemental.

In a world flooded with visual images we remember very few. More important, few people respond to the mere presentation of data. Our science is dry, lacks metaphor, and frequently fails to serve those most in need. It lacks allegory and it tells a story that is hard to discern and more difficult to remember. Even if these problems are not inherent in science they appear to be ingrained in our style of writing and presentation. In short, our work is boring, dry, and as a result evanescent.

If I were not as equally guilty as all others in this audience I would doubtless be unwilling to stand here today and be critical. I recently reviewed an intervention article I co-authored in the American Journal of Public Health. It is difficult to imagine reading this material. I usually scan the medical journals for the names of people I know, read an abstract or two, look at the job listing and put the journal into the "to read pile." It sits there for a long time, when it has gathered sufficient dust it goes into recycling.

If we are going to tell a story it needs to be told in a common language. William Carlos Williams once cautioned a Harvard undergraduate wishing to write: "I would get away from the all those ivy plants. I would run for dear life. I would hurry and find some low-down, hungry, loud-mouthed people, living high in some tenement, plenty of stairs to climb. Let them give you a lecture. Take notes. Keep your eyes open, and close them when you get back to the typewriter."

I have often found myself in places we do not wish to consider. In Jakarta I was lost in one of the world's largest garbage dumps (image), a place whose existence was denied by the Indonesian government. A place of 10,000 souls who struggle to find the barest sustenance in order to survive and the garbage of millions is indiscriminately dumped. People do eat rotten garbage. These places are not rare, they are found all over the world: (Acapulco, Mexico City, Madras, Quito, Arequipa).

We need to present people a world they believe they know and understand and show a world with subtle shifts in a way of seeing or close enough to reality that they are tricked into looking. In some respects a photograph will capture people with the familiar and suspend them in something vague and unknown. In my own work I have tried to follow the words of Dortehea Lange, "For me documentary photography is less a matter of subject and more a matter of approach." The important thing is not what is photographed but how..." Most importantly, a photograph must have a sense of time and place.

Dortehea Lange notes, "It is a very difficult thing to be exposed to the new and strange worlds that you know nothing about and find your way. That's a big job. It's hard, without relying on our past performances and finding your own little rut, which comforts you. It's a hard thing to be lost." If we talk about health promotion, about a safer place to be, what is safer, our old ways of doing or some new way, however small the change which we might bring? I suspect that it is usually the latter but it often feels like the former.

Work is one of those unknown worlds. Even those of us who study work have often spent little time observing workers. We may look at process but we see so many movements of the hand or so many pounds to be moved from point A to point B resulting in some probability of causing injury. Or in modern jargon, "evidence-based practice." Even if the fundamentals of health promotion are based on the "best evidence" it is not equally true that simply presenting such information will lead us to change make our workplace safer and our lives healthier. Clearly the tobacco companies have realized this for many decades.

Day's Review

Session Chair: *Jacqueline Agnew, PhD, RN, USA*

Plenary Keynote:

**BEST PRACTICES IN MEETING THE NEEDS OF
OCCUPATIONAL SAFETY AND HEALTH
PROFESSIONALS AND WORKERS IN TRAINING AND
EDUCATION**

Elise Handelman, RN, MEd, USA

Best Practices in Meeting the Needs of Occupational Safety and Health Professionals and Workers in Training and Education

Elise Handelman

Effective education, training and communication by occupational health care professionals require a design that addresses the adult learner's unique characteristics. These characteristics have been described by Malcolm Knowles in his book titled, "The Adult Learner: A Neglected Species" (1998). The models of pedagogy and andragogy are described by Knowles. These models of educational design contrast the art and science of teaching children (pedagogy) and learning directed at adults (andragogy). Knowles uses 6 elements to contrast and compare these models: need to know, self-concept, experience, readiness to learn, orientation to learning, and motivation. This presentation will describe these elements and discuss their application to occupational safety and health education, training and communication programs.

**CRITICAL FACTORS OF RISK COMMUNICATION:
LESSONS LEARNED FROM PARTNERING WITH
STAKEHOLDERS**

Moderator: *Donna L. Orti, MS, MPH, USA*

CONFERENCE ABSTRACT

BEST PRACTICES IN OCCUPATIONAL SAFETY AND HEALTH, EDUCATION, TRAINING, AND COMMUNICATION: IDEAS THAT SIZZLE

Presentation Title: Communicating with Local Communities about Health, Safety, and Environmental Issues

Presenters:

- Chuck Franks, US EPA
- Marion Cox, **RESOURCE ASSOCIATES**

Purpose: Our project was designed to address mounting public concerns about potential health impacts related to exposure groundwater contamination at an abandoned landfill.

Objective: The objective of our efforts was to restore public confidence in the regulatory and health agencies responsible for investigating and cleanup of the site, and to ensure the public had access to all relevant information from the investigation to better understand exposures and potential and health risks.

Target Audience: Local residents, organized interest groups active at this site, the owner of the abandoned landfill

Focus of Project:

- Design of a public involvement process providing up-to-date project information [eg, well-water testing information, results from the site investigation, information on potential human exposure pathways] to local residents to increase knowledge and understanding of site results.

- Design of a “transparent” technical review process that allows specialists to discuss site information [including health impacts] while allowing the public access to these discussions.
- Implementation of a regulatory review and decision process that was transparent, understandable, and responsive to identified concerns.

Intervention technique:

- Use of an “neutral” intervener to conduct an assessment at the beginning of the project and make recommendations about how to proceed [hired by US EPA]
- Use of a public involvement team [hired by the responsible party] to implement the public involvement process
- Use of a “technical review committee” for specialists to discuss findings and next steps throughout the investigation

Results/evaluation:

- An evaluation of the effectiveness of the technical review committee
- An “evaluation” of the effectiveness of the public involvement effort

Addressing Risk Communication Needs in Environmental Justice Communities

Francisco A Tomei Torres, Ph.D.

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Environmental justice communities express health concerns dealing with exposure to environmental hazards. These concerns often involve chronic exposures to low concentrations of hazardous substances. Because of the uncertainty and lack of data in trying to address these concerns, comprehensive public health actions are needed. Such investigations are outlined in the White House Executive Order entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (E.O. 12898.) In addition to requiring community consultation prior to agency actions, the Order focuses on carrying out public health activities in low-income and minority communities. The Order specifically asks Federal agencies, whenever practicable and appropriate, to conduct epidemiological and clinical studies. Workers should also be included. These studies should identify multiple and cumulative exposures to environmental hazards. The Order also calls for studies on subsistence consumption of fish and wildlife. This presentation discusses, within the context of E.O. 12898, risk communication strategies in two predominantly Hispanic communities expressing environmental justice concerns. The first one is the Island of Vieques, Puerto Rico, site of a U.S. Navy bombing range. The second is an area in Corpus Christi, Texas, pockmarked with old landfills. The former emphasizes published public health assessments ascertaining the risk of human exposure. The second emphasizes reports of disease cluster analyses using cancer and birth defect registries. Lessons learned include: (1) use of disease registries in risk communication; (2) role of independent professionals in assessing health issues and communicating health risks; and (3) impetus for public health actions provided by elected officials. Agency actions continue at both sites.

Community Outreach Following the Attack on the World Trade Center

Background

The September 11 attack on the World Trade Center was an unprecedented event that required a cooperative and coordinated level of response from the government. In the days following the attack, the New York City Department of Health (NYC DOH) in collaboration with numerous other local, state, and federal agencies engaged in activities focused upon protecting public health.

A key concern for the DOH was determining the needs of Lower Manhattan residents and providing the appropriate services and resources to address these concerns. In October 2001, a needs assessment was conducted comprised of a door-to-door survey with residents of lower Manhattan and focus groups with other area residents. The results of the survey indicated that 1) About 50% of those surveyed continued to experience symptoms such as nose, throat, and eye irritations. 2) Residents had ongoing concerns about the air quality and its potential effect on health. 3) Many residents needed further information regarding proper household cleaning from the dust and debris from the WTC site. 4) Almost 40% of those interviewed reported symptoms suggestive of Post Traumatic Stress Disorder (PTSD). By December 2001, based upon the information collected from the survey, an intervention was designed to meet the needs of this community.

Community Outreach

The unmet needs identified by the assessment project expanded the existing framework for the Health Department's outreach initiative for lower Manhattan residents. The primary objectives of this enhanced initiative were to provide residents with information on key issues such as the results of air monitoring, recommendations on cleaning, and information about mental health services. Beginning in January 2002, approximately 30 forums were conducted throughout lower Manhattan in a number of community settings (e.g. tenant associations, churches, schools, day care centers, local libraries, and the community board). These forums served as a means to dialogue with the community to listen to their concerns and

attempt to address outstanding issues. Written materials were distributed and maps depicting ongoing air monitoring were utilized. Major issues raised by residents were health symptoms, air quality, cleaning, impact on children, and disruptions to daily life.

In addition to community forums conducted throughout lower Manhattan, a hotline was established in March 2002 by the Office of Emergency Management (OEM) and staffed by Department of Environmental Protection (DEP) and DOH employees. Hotline operators provided callers with information regarding WTC-related concerns, including: ongoing outdoor air testing results, indoor air testing requests, cleaning methods, and mental health referrals. Over 1200 calls were received in a three-month period, with 34% focused upon indoor air testing and cleaning.

Following the EPA's decision in June 2002 to provide indoor air testing and cleaning for apartments in lower Manhattan, the Department's WTC outreach activities, including the interagency hotline, were terminated and residents were referred to a hotline established by the EPA. The DOH in collaboration with the Federal Emergency Management Agency (FEMA) and other federal, state and local agencies will continue to conduct analyses and disseminate information regarding environmental risks in Lower Manhattan.

Recommendations

This community outreach initiative was able to provide information, listen to resident concerns, and make referrals for specific complaints for the lower Manhattan community. Throughout the period of recovery there were frequent press accounts of controversy regarding the extent of risk from poor air quality. For this reason, gaining credibility in the community was essential due to residents' frustrations with a perceived lack of access to consistent information. Future efforts to address community concerns after a major disaster must include early dialogue and proactive outreach during the initial phases of the recovery effort. Additionally, interagency collaboration and delegation of responsibilities between local, state, and federal officials is essential for coordinating a comprehensive outreach effort that addresses the needs of the community.

Empowering Stakeholders in Health and Safety Communications

Rob Nicholas
Health and Safety Communications Project Leader
Los Alamos National Laboratory
LA-UR-01-2407

Stakeholders can simultaneously be the messengers and the message in effective risk communication. They can be both the communicator and the audience. The U.S. Department of Energy/Los Alamos National Laboratory video—*Beryllium Worker Safety*—incorporates members of its intended audience as the key communicators in the video. Current beryllium workers and former workers living with chronic beryllium disease convey crucial health and safety information. Through their testimonies, personal attitudes and values are combined with technical information. From the very beginning of the video's development, these workers set the tone and intention of the overall video and eventually participated through on-camera interviews.

To build trust and insure the comfort and commitment of these workers, they were empowered with complete control over their interviews as well as the use of their material. A working relationship with each worker was built through on-going personal conversations over several months. During the interview process, each worker retained the ability to stop and start the on-camera interview based upon their own comfort level. After each interview was edited, the workers had the right

to adjust the content and message of their material. Once the video was complete, each worker had the right to pull their entire interview if they disagreed with the video's overall message. All of these controls were identified in letters of commitment. Except for minor content adjustments, the workers never felt the need to exercise their control, because of the working relationship, trust, and comfort built through this process.

Through the empowered workers, the resulting video invites the audience to invest themselves in the risk communication process.

**Some lessons learned from working with tribal stakeholders concerned about exposures
and risks to hazardous substances**

Primary Authors: Jayne Michaud, Environmental Scientist, USEPA Headquarters and John Persell, Director of Minnesota Chippewa Tribe Research Laboratory

The Environmental Protection Agency Superfund program is working with tribal organizations to ensure that risks to tribal communities and environmental health are considered appropriately and adequately in the risk assessment and risk management process. The effort stemmed from a national dialogue on tribal concerns about impacts of contaminated sites on tribal cultural factors. The dialogue led to joint actions to explore ways to incorporate cultural factors into risk assessment and risk-based decisions. Although there is no one-size-fits-all approach, the lessons learned from the collaborative effort may be transferable to other situations. The effort is a partnership, on a government-to-government basis, which is building capacity for all parties involved. Some of the lessons learned or reinforced include: promote tribally-led efforts from scoping and planning to finding solutions; acknowledge regulatory constraints up front; understand roles and expectations; respect rights to privacy and confidentiality; work to demystify the regulatory process and find alternative solutions when feasible.

RISK COMMUNICATION IN BIOTERRORISM

Moderator: *Clifford Mitchell, MD, MPH, USA*

TITLE OF PAPER: Risk Communication during Biological Response Incidents

PRIMARY AUTHOR: LTC Donald Archibald, Chief, Environment, Safety & Occupational Health, Fort Detrick, MD

CO-AUTHOR: Lori S. Geckle, Environmental Protection Specialist and Risk Communication Practitioner, US Army Center for Health Promotion & Preventive Medicine Health Risk Communication Program

Discussing risk-related issues since the events of September 11th has changed – in some ways, quite dramatically. Catastrophic events such as 9/11 permanently changed public perception. Correspondingly, risk communication strategies must adapt to the changes. Simply providing information to the media is no longer enough. The heightened awareness of the general public about bioterrorism and other crisis events has changed what, when and how we communicate, and who we need to communicate with. A much wider audience is now interested in situations that used to be considered “non-events,” demanding a more aggressive and collaborative approach to resolve the issue. In addition, emergency responders are more concerned because of the nature of their work with sometimes unknown and unfamiliar materials. Politicians can sometimes use crisis events to further their own agendas, and the general public isn’t sure what to even be worried about.

In order to be successful in responding to real or potential bioterrorism events, the environmental, safety and occupational health community must adopt the most innovative yet proven risk communication strategies. Alleviating concerns, communicating facts, and preventing hysteria are major risk communication goals of the leaders and their staffs. The first risk communication task to be faced is when and how to notify employees and the public. This is always a tough call that requires a sense of good judgment, and a broad understanding of stakeholder information needs. Even in the earliest stages of a crisis when uncertainties are high, people want and often need to know

basic information, so earlier notification is always better even if preliminary results are wrong. As the saying goes, “Bad news does not get better with age.”

In this lab incident, several proven risk communication tools were used. One effective tool was that the site commander requested assistance from a third-party widely recognized for their expertise as a result of the Senate Hart building clean up in Washington, DC. This provided unparalleled expertise and proven experience, and prevented past mistakes from being repeated. At the same time, however, many lessons were learned. These lessons are covered in the session.

One of the challenges of a biological incident also involves communicating with an extremely concerned work force returning to their place of work. Tough questions arise such as “What is the acceptable level of biological materials in offices? 0, 10, 1,000?” and “Are the sampling procedures adequate to detect potential health hazards?”. These type of question make it increasingly important for the communication staff to develop an overall risk communication strategy so that all concerns can be addressed, and to integrate communication needs into the technical decision-making process. The specific technical approaches used are also covered more completely during the session.

In this session, we will demonstrate the changing nature of risk communication by discussing an unexpected biological event at an Army laboratory, and the risk communication lessons learned as a result of this incident. Having an innovative risk communication strategy in place **before** a crisis occurs helps ensure that risk-related messages don’t cause unnecessary concern, but that key risk information is heard, believed, and acted upon, as necessary.

PRESENTATION DESCRIPTION

PRESENTATION TITLE: US Department of Veterans Affairs (VA) Education Initiative for Personal Safety and Readiness in Response to Terrorism: What Every Health Care System Worker Needs to Know

V. Troy Knighton, Ed.S., L.P.C., Director, Training and Education; Constance Raab, Director, Public Health Communications; Lawrence Deyton, MSPH, MD, Chief Consultant, Public Health Strategic Health Care Group, VA Central Office, Washington, DC 20420

Presenter : Troy Knighton

The VA medical system, Veterans Health Administration (VHA), is the largest health care organization in the United States with 163 hospitals, over 800 community- and facility-based clinics, 135 nursing homes, 206 readjustment counseling centers, and 43 programs for homeless individuals. VHA has 180,000 full-time employees. Within the threat of potential terrorist incidents, it may not be possible to anticipate or thwart all terrorist activity. However, it is possible and prudent to undertake a campaign to improve education on bioterrorism and personal safety to try to minimize the consequences of any attack. The Veterans Health Administration will launch a campaign to foster readiness and a sense of responsibility for personal safety and well-being for employees. VHA is proactive and is committed to empowering employees to understand and plan for personal readiness and safety issues. If VHA personnel have knowledge of terror agents and other related terrorist devices, this may quicken recognition of terrorist events and lessen its impact.

This presentation will focus on the VHA's initiative: **UNDERSTAND AND PLAN – an education response to empower and prepare employees to understand and manage personal safety during terrorist incidents.** To establish a foundation of knowledge, UNDERSTAND AND PLAN operates from learning objectives that are topic- and audience-specific. Considerations are driven by the principles of effective education, communication, use and access to resources, and evaluation.

The target audience has been categorized into three areas: Health Care Professionals (MD, PA, RN, NP, Psychologists, Social Workers), Administrative Staff (Assistant Ward Clerks, Medical Records personnel, HR), and Facility Management (custodial and grounds crew, food and security services). Given the diversity of these groups, the challenge rests in producing materials that will be effective for everyone in the target audiences and have widespread appeal.

Marketing and internal relations campaigns are key to raising personal awareness of the program. Diverse vehicles of communication facilitate VHA's goal to reach all personnel. These include primary products such as a resource/handbook and website that contain comprehensive content. From these resources, secondary educational products are produced. These products include (not limited to): brochures, satellite broadcasts, posters, one-page flyers, packaged didactic education programs, employee meetings and discussion groups.

Outcomes measures include hits on the website, CME participation evaluations, pre and post-testing, and program evaluation. Sample content areas include biological agents (category A), chemical agents, nuclear agents, radiation syndromes that are framed in the context of family concerns, emergency measures, and basic preparedness

TITLE: A Stepped Health Care Delivery Strategy for Optimizing Provider-Patient Discussions of Health Risk Following Possible Military or Occupational Exposures.

SESSION: Risk Communication in Bioterrorism

DATE/TIME: Tuesday October 29, 10 AM to 12 noon

PRESENTER: Charles C. Engel, Jr., MD, MPH, Associate Professor of Psychiatry, Uniformed Services University, Bethesda, Maryland

CO-AUTHORS: Joyce Adkins, PhD, Department of Defense Deployment Health Clinical Center at Walter Reed, Washington, DC
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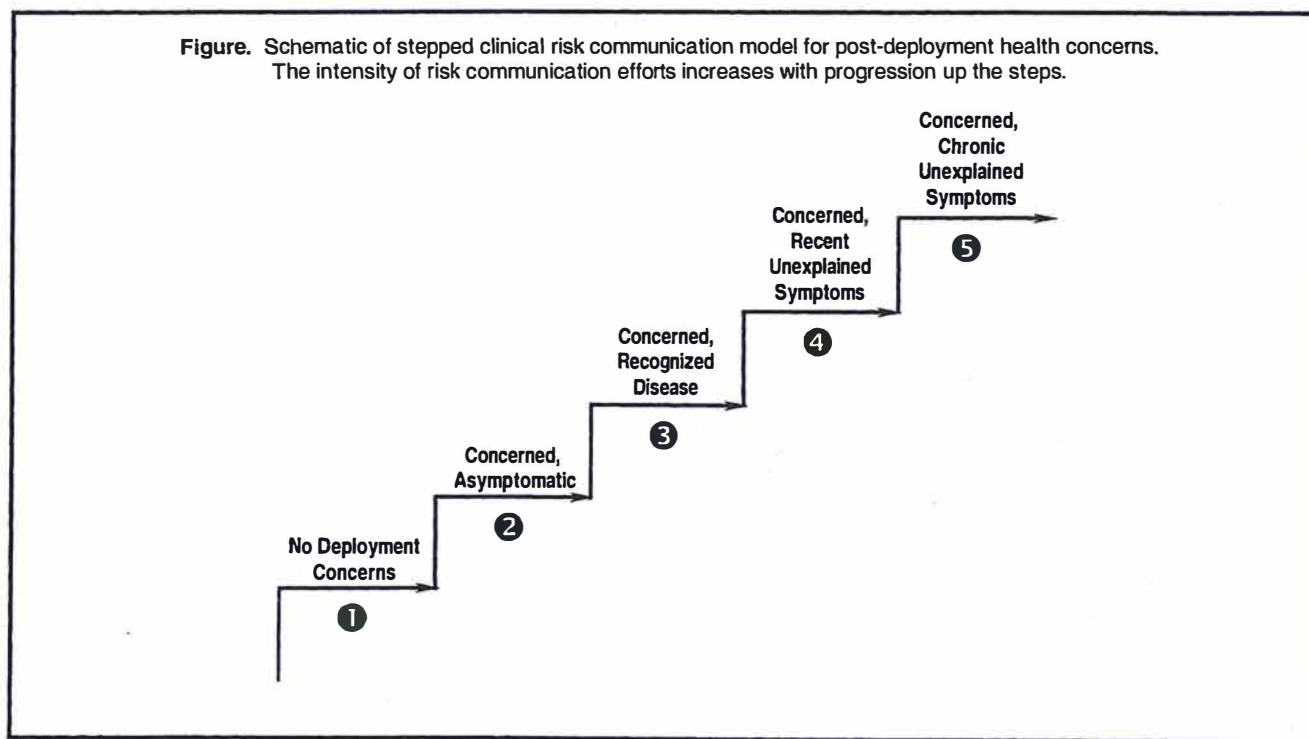
DISCLAIMER: The views expressed in this article are those of the authors and do not reflect official policy or position of the Department of the Army, The Department of Defense, the U.S. Government, or any of the institutional affiliations listed.

FUNDING: This work was funded in part by a grant from the Centers for Disease Control & Prevention.

Military deployments routinely involve environmental and psychosocial exposures of uncertain health consequence. The Institute of Medicine has recommended and the U.S. Congress now requires that “force health protection” efforts involve detailed environmental monitoring for all overseas tactical troop deployments. These environmental monitoring efforts often produce complex data that necessitate careful population risk communication planning and implementation. An often-overlooked opportunity to convey these data occurs in primary care. Nearly 80 percent of all Department of Defense health care beneficiaries see a primary care provider each year. Therefore, primary care efforts to communicate the health risks of previous deployments offer nearly population-based risk communication coverage provided quality of these communications is ensured.

We present a model for maintaining and improving high quality risk communication performance among clinicians providing care for military personnel and veterans with various

deployment-related health concerns. The central feature of the model is its reliance on a stepped health care delivery strategy. Patients are “diagnosed” into one of five groups, each with increasing levels of unmet clinical risk communication need (see figure). These groups include patients with 1) no deployment-related health concerns; 2) deployment-related concerns and no illness or disease (i.e., “asymptomatic patient with concerns”); 3) deployment-related concerns and recognized disease; 4) deployment-related health concerns with recent onset of medically unexplained symptoms; and 5) deployment-related health concerns with chronic medically unexplained symptoms. The intensity of risk communication efforts increases with



progression up the “steps”.

Department of Defense (DoD) and Department of Veterans Affairs (VHA) medical facilities are using this clinical risk communication strategy in a new practice guideline called the DoD-VHA Clinical Practice Guideline for Post-Deployment Health Evaluation and Management (PD-CPG). Research is underway to develop web-based tools to improve the implementation of

this communication strategy in DoD and VHA medical facilities. Future research is needed to determine the model's positive and negative impacts on patients, on health care settings, and on clinicians. Outcomes of particular interest include acceptability of the model for clinicians and for patients, its clinical feasibility, clinician levels of adherence, and capacity of this model to alter outcomes such as patient health status, provider-patient trust, and provider and patient satisfaction with post-deployment health care.

In federal health care settings, efforts to protect military forces and their families are examining clinical risk communication strategies with intense interest. These efforts may also be used to inform efforts to provide care and mitigate symptoms and disability in communities during the weeks, months, and years following a terrorist attack.

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Workplace Health Defense

presentation at "Ideas that Sizzle"

ICOH, Baltimore, October 2002

Theme topic: Risk communication in Bioterrorism

Richard Ennals

Centre for Working Life Research

Kingston University, UK

Security and Responsibility

Technology will never offer complete security. Behind technical threats and medical problems, there are questions regarding people, with implications for work organisation. Senior executives may outsource the technical and medical expertise for workplace health, but moral responsibility cannot be outsourced. With globalisation, the local workplace is the new front line. Disaster recovery planning means we are more aware of internal threats and obstacles. Knowledge critical to the survival of the organisation resides at low levels; without certain practical skills, survival is unlikely.

- Occupational anthrax in 2001 demonstrated how an illness of goatherds and shepherds moved to a new occupational group, post room workers. The infection spread through the postal system, while attention was on military threats.
- The ongoing pandemic of HIV / AIDS in Southern Africa was spread through patterns of work organisation and accommodation arrangements among migrant workers in Southern Africa. The workplace was part of the mechanism of transmission, and the workforce is being decimated.

Defending the Global Village

No man, country or continent is an island. Just as international capital flows have increased, health cannot be considered in terms of national boundaries. Occupational anthrax alarms spread around the world, based on rumour and misinformation. Few countries are free of HIV / AIDS, though the strains of the virus, and the predominant means of transmission, vary. External threats are brought down to a human scale, when we consider the implications for our own working life, our own workplaces. Information and communications technologies could support delivery of medical education and services; satellites could support two way communication, involving the poorest rural dwellers. Technology and information gaps are widening. We have met the enemy: it is us. Occupational health has a strategic significance, in a world where the workplace may also be the home, and where international networking is routine.

Networking for Workplace Health Defense

It is easier to obtain government funding for ballistic missile defense than for workplace health defense. Normal cost benefit analysis is not applied to the defense of the country, as the consequences of defeat go beyond quantification. The same argument should apply to workplace health defense, where decisions are now driven by short term accounting. It is cheaper for employers not to provide occupational health services, when they are not liable for the costs of illnesses contracted at work. Where health costs have been externalised, employers can take a minimalist approach, resisting regulations, with drastic consequences for human health, the economy and society. The presentation reports on recent initiatives, each based on networking, in the UK, Europe and internationally.

Terrorism Preparedness Training for Non-Clinical Hospital Workers: *Addressing the “Hazard + Outrage”*

Craig D. Thorne, M.D., MPH, Assistant Professor of Medicine ¹.

Co-authors: Barbara Curbow, Ph.D.², Marc Oliver, R.N., MPH, M.A.¹, Mohamed Al-Ibrahim, M.D.³, Melissa McDiarmid, M.D., MPH ¹.

1. University of Maryland School of Medicine, Occupational Health Project, Baltimore, Maryland. 2. Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland. 3. Veterans' Affairs Maryland Healthcare System, Baltimore, Maryland

Purpose and Methods: We conducted focus groups of non-clinical hospital workers from various hospital departments to determine: 1. Perceptions of risk of a terrorism event, 2. Families' perceptions, 3. Possible impact on work, 4. Topics of training needs, 5. Methods of training, 6. Evaluation of recent training, and 7. Who they turn to for support. The focus groups consisted of workers including Nursing Assistants, Food Service/Laundry/Mailroom Workers, and Police Officers.

Results: Regarding the **message**, most workers want basic information that is less detailed than materials previously made available to them, and the focus of training should be on the early recognition of attacks and how to protect themselves and others. Regarding the **source**, experienced military and clinical personnel should deliver this information. Regarding the **channel**, they want role-specific training sessions that are tested by drills.

Discussion and Next Steps: These hospital workers want training tailored specifically for them. The expertise of the speaker and the method of delivery are also important. We are designing terrorism preparedness training that considers the level of the worker's education, job description and anticipated role in crafting the **message**. We will use

outside experts and internal experts in safety and infection control as the **source** for the training. Several **channels** will be implemented as suggested in the focus groups (i.e. printed material, lecture, small group discussion, and video). We will administer pre- and post- tests to assess the workers' knowledge and beliefs, and changes in the their attitudes towards preparedness.

**LEARNING FROM EVALUATION OF OUR OSH
EFFORTS: EXPECTED AND UNEXPECTED RESULTS**

Moderator: *Catherine Heaney, PhD, MPH, USA*

Paying Attention to Evaluation

Catherine A. Heaney, PhD, MPH
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After investing much time and scarce resources into the careful development and implementation of an occupational safety and health training program, it is not surprising that many practitioners are willing to *assume* that their programs are accomplishing their intended objectives. However, it is only through systematic evaluation efforts that we can determine whether specific programs are effectively preventing work-related injury and illness. Investing some time and effort into evaluation of one's training programs can serve several important purposes such as satisfying accountability requirements of sponsors or budgetary decision-makers; providing guidance for refining or improving existing programs; assessing the feasibility and/or utility of innovative pilot programs; and deciding how to allocate future resources among occupational health and safety programs.

More specifically, evaluations can provide unambiguous answers to the following questions:

- ☐ Is a particular service or program needed in your organization?
- ☐ Is the service or program likely to be used?
- ☐ Is the program of sufficient magnitude to meet the unmet need that has been identified?
- ☐ Is the program implemented as planned?
- ☐ Does the program help those in need?

- Does the program have any unintended effects (either desirable or undesirable)?
- Is the program cost-effective (i.e., provide assistance at a reasonable cost)?

One of the priority areas of the NIOSH National Occupational Research Agenda (NORA) is intervention effectiveness research. The NORA Intervention Effectiveness Research Team's mission includes (1) increasing the awareness and appreciation of the value of intervention effectiveness research and (2) broadening the dissemination of results and lessons learned from the evaluations of occupational safety and health programs. In support of this mission, members of the NORA team have put together this panel of presentations. The presentations describe the evaluations of occupational health and safety interventions in a variety of worksite settings (e.g., agriculture, nursing homes, manufacturing facilities). Each presenter will emphasize what was learned from the evaluation that could not have been discerned without systematic evaluation efforts.

Evaluation of a Best Practices Back Injury Prevention Program in Nursing Homes

James W. Collins, Ph.D., MSME, National Institute for Occupational Safety and Health

Laurie Wolf, MS, CPE, BJC Health System-Corporate Health Services

Jennifer Bell, Ph.D., National Institute for Occupational Safety and Health

Bradley Evanoff, MD, MPH, Washington University School of Medicine–St. Louis

Bureau of Labor Statistics data indicate that nursing homes have the highest nonfatal injury rate of all health services industries. Among female workers, Nursing aides and orderlies comprise the highest risk occupation (prevalence rate = 18%) in the U.S. and reported the largest number of work-related cases of back pain. This NIOSH study, conducted in collaboration with BJC Health System, evaluated the impact of a “best practices” program for back injury prevention in five nursing homes. A laboratory study evaluated the biomechanical stresses on nursing personnel, the safety and comfort of the residents, and the time efficiency of nine battery powered lifts and three manual methods for transferring physically dependent residents. The field study utilized company records on injuries, hours worked, and staff demographics to contrast the injury, and injury-related cost experience of a cohort of nursing aides, orderlies, and assistants for a six-year period (36 month pre- and a 36-month post-intervention). The intervention included state-of-the-art patient lifting equipment to assist with transferring residents in and out of a bed or chair; and bathing, toileting, and weighing tasks. A comprehensive worker training program was integral to the prevention program. The program was highly successful in reducing injury incidence, lost workdays, and injury-related costs. Results will be presented on the program’s impact on reducing the incidence rate and injury-related costs associated with back and other injuries among nursing home staff.

Evaluating a Farm Safety Training Program with Rural High School Students

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A farm safety exercise was evaluated by high school students in rural Kentucky.

"The Kayles' Difficult Decisions" (KDD) farm family interactive simulation encourages participants to examine the underlying connections between productivity, workload, safe work practices, and risks for injury in the context of the entire farm operation. The KDD exercise has been presented to Kentucky farmers, university classes, and professional meetings.

The evaluation with high school students is the first systematic assessment of the effectiveness of the exercise in communicating information about farm safety issues. The evaluation measures include: 1) information learned about farm safety and economics; and the degree to which participants: 2) think about farm safety issues, and 3) talk about these

This discussion highlights the two media used for the exercise: print and CD-ROM. The evaluation study included 287 high school students, in three experimental conditions: 74 print, 82 CD-ROM, and 131 control. Results are examined by: 1) treatment condition, 2) farming status, and 3) knowing someone involved in a tractor overturn. Some of the cell sizes are very small. Nevertheless the two media appear to be differentially effective to a small degree. For example: 1) print version participants who lived and worked on the farm and did not know anyone who had overturned a tractor performed less well than farming

students who did know someone in an overturn; 2) CD-ROM version participants performed somewhat uniformly, regardless of familiarity with farming or tractor overturns. Follow-up research questions are proposed.

Effective Safety Committee Training

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Health and safety committees exist at many public and private sector organizations. To provide the tools they need to be effective, a curriculum has been developed that delivers in 10 hours the following topics: Introduction to health and safety issues, analytical and problem solving tools, job hazard analysis, safety audits, ergonomics, review of resources that can help. . The manual entitled “Does it really Work?” developed by the Intervention Effectiveness Evaluation committee of NORA has been used to evaluate changes being promoted by the health and safety committee.

The manual was developed for the use of industrial groups that need to do evaluations without the assistance of trained professional safety personnel. In this class the cases in the manual have been supplemented by problems unique to the workplace of the individuals being trained. Their familiarity with the problem has helped them gain understanding in the use of techniques discussed in the manual.

At the last session of the class the students present reports based on techniques learned in the class. The company that is currently receiving this training has 6 departmental health and safety committees and a central safety committee. A safety culture committee chaired by the CEO of the company developed this organization. Associates complete a survey that asks questions related to the value of the materials presented and the quality of the

workshop. In addition the project presentations by workshop participants are evaluated for changes in behavior due to the subject matter of the workshop. This data has been evaluated for close to 100 participants in the workshops.

While workshop evaluation surveys provide some useful information related to the quality and usefulness of the workshop, the class projects indicate how well the students can apply the principles learned. Most of the projects chosen have result in changes to the work site that immediately reinforce the subject matter of the workshop. Also students are encouraged to use techniques outlined in the Intervention Manual to evaluate the success of their projects. Projects have developed from safety committee training sessions and a number are being implemented. The extent to which these projects will be evaluated for effectiveness will be a measure of how successful the workshop was in getting workers to think about evaluation effectiveness.

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A Four Year Intervention to Promote Safer, More Profitable Production Practices to 4,300 Dairy Farmers

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Introduction: Fatal and nonfatal injury rates on dairy farms exceed rates for all agriculture and for all US private industry. Previous agricultural research has shown that better information flow can speed adoption of more profitable practices.

Methods: The intervention disseminated information to 4,300 dairy operation managers Northeast Wisconsin counties via national print mass media, Wisconsin public events, university Extension, the Internet. Three safer, more profitable production practices were promoted: long day barn lights, bag silos for silage storage, and a mixing site for feed near the calf housing area. Evaluation questionnaires were mailed to independent samples of dairy managers at baseline and after each of four intervention years and to dairy manager controls from Maryland after the second through fourth intervention year.

Results: After four intervention years, the percent of both NE Wisconsin and Maryland dairy farmers who reported getting information about each production practice from national print media was no different but from public events was. The percent of NE Wisconsin dairy managers who reported adopting each practice increased above the baseline year and the proportion who reported being unaware of two of three practices decreased. However, except for the barn lights practice, Maryland dairy farmers reported levels of adoption and awareness after four intervention years that equaled levels in NE Wisconsin.

Conclusions: The increased awareness and adoption reported by both Wisconsin and Maryland farmers may be attributable to both groups reading the same national dairy publications or to pre-existing trends. Better information flow to growers may be able to increase the speed with which agricultural practices with better ergonomics are adopted, especially when the practices are more profitable. US NIOSH funding from U05/CCU506065, R01 OH1 4357, R01 OH0 3953, R01 OH0 07578.

HEALTH THREATS: COMMUNICATING THE RISK

Moderator: *Margaret M. Farrell, MPH, RD, USA*

Glove Use and Acute Traumatic Hand Injury Prevention

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The study aim was to determine the effect of glove use on the risk of acute occupational hand trauma. We used a case-crossover design to estimate the short-term risk of acute hand trauma when wearing gloves compared with not wearing gloves. The case-crossover design uses self-matching to control for potential confounding by differences between individuals which remain stable over short periods of time, such as age, gender, handedness, occupation, injury history and job experience.

A total of 1,166 hand-injured subjects were recruited from 23 occupational health clinics in New England and interviewed by telephone within 2 days, on average, of their injury. Study subjects were asked to recall glove use in the 90-minute period before the injury, and during the previous work month (control time). Estimated hours of glove use in the month before the injury and their use at the time of the injury were reliably recalled by 29 hand-injured subjects re-interviewed within four days of the injury.

The mean age of the subjects was 37.2 years (SD, 11.4), 76% were men, and most subjects worked in manufacturing (42%), construction (15%) or service industries (15%). The most common injury type was a laceration (63%).

Gloves were worn, on average, 28% of the control time (53 hours); however, 19% of subjects (225) had gloves on at the time of the injury. Taking individual exposure and work time into account, glove use was associated with a 60% reduced risk of hand injury (relative risk=0.4, 95% confidence interval 0.3-0.5) and significantly reduced hand injury risk in all occupational categories and years of job experience. Glove use was less frequent in manufacturing than in service or construction trades. Based on self-reported free-text descriptions of the injury event, gloves contributed to the injury in three percent (n=7) of 225 cases.

In summary, glove use reduced the risk of hand injury. Strategies for increasing glove use at work are needed to help reduce the risk of hand injuries.

Cancer Education and its Impact Risk Reduction

Primary Author: Mariann Cameron, RN, BSN Air Products and Chemicals, Inc.
Co-author: Jessica Herzstein, MD, MPH Air Products and Chemicals, Inc

Air Products and Chemicals, Inc. (AP) partnered with the Fox Chase Cancer Center to conduct a three-year study to improve employees' participation in cancer education and screening, modify behavioral risk for cancer, and increase the diagnosis of latent cancer.

The study began in September 2000 with a baseline assessment to determine the current level of cancer education, screening, and prevalence through analysis of medical claims data and health risk assessment questionnaires. The process was repeated in 2001 and will conclude in the fall of 2002.

Between the first and second questionnaires, AP held seminars on cancer topics and disseminated cancer information to employees. After analyzing the 2001 questionnaires and claims, Fox Chase provided aggregate data indicating that employee participation in cancer screening had increased and cancer risk behaviors had decreased.

Change in Intent

Screening	2000 (%)	2001 (%)	Differential
DRE	69	73	4
PSA	63	74	11
Fecal Occult Blood	61	65	4
Sigmoid	25	32	7

Behavioral Impact

Behavior	2000	2001	Differential
Sedentary	44	27	-17
Smoking	10	7	-3
Diet	9	1	-8
Alcohol	6	5	-1
Obesity	25	23	-2
Sun	11	8	-3

AP will use the information from the study to improve the health of their employees and lower medical costs through education, behavior modification and medical plan benefit design.

The study, which is funded by the Pennsylvania Department of Health and open to Pennsylvania employees and spouses, is voluntary and confidential. A total of 2,046 individuals participated in 2001.

Public Health Focus:
Legionella Threat in an Occupational Health Setting

A sentinel event in an industrial setting threatened the health of workers in four automotive plants and provided impetus for epidemiological study. Site health providers were suddenly thrust into unfamiliar roles in an atmosphere of alarm and uncertainty following the death of two employees from Legionellosis. Control of this outbreak required collaboration between several disciplines to identify exposures, initiate treatment, protect employees, and calm fears. Occupational health nurses worked in harmony with external agencies such as the Centers for Disease Control, OSHA, the county board of health, health care providers, and local and national media. Included in this mix were internal departments involved in crisis management including safety, industrial hygiene, human resources, and maintenance.

This presentation chronicles the discovery process (sentinel event) and subsequent nursing collaboration assisting the case finding research process by the Centers for Disease Control. A brief overview summarizes the data and analysis resulting from the study. Basic epidemiological concepts (host, agent, environment) serving as the theoretical framework are reviewed. Also highlighted are collaborative efforts by nurses with agencies, unfamiliar roles and challenges faced in the immediate crisis management and eventual outcomes emerging as best practices in the control of Legionella. Use of the "Precautionary Principle" as the ethical perspective underlying the company decision-making is discussed. Nursing implications include the necessity of increased awareness of the crucial role professional nurses hold in the management of public health threats and the interdisciplinary collaboration necessary to

effectively control these threats. This example typifies and presents those implications in an actual case focusing on collaborative management related to a workforce issue.

Risk Communication for Fallon Nevada Cancer Cluster

Mary Ann Simmons, Risk Communication, Navy Environmental Health Center, Portsmouth, Virginia

Since 1997, 14 cases of Acute Lymphocytic Leukemia (ALL) and one case of Acute Myelogenous Leukemia (AML) have been diagnosed in Fallon (Churchill County), Nevada. Based on cases reported to the Nevada Central Cancer Registry, an average rate of ALL is about 3 childhood cases per 100,000 children could be expected. Using this data, **one** case of ALL would be expected to occur in Churchill County about every **five** years. The Nevada State Health Division confirmed a cancer cluster is occurring in Fallon and is in charge of a multi-agency, both federal and state, investigation. Many consider this the most comprehensive cancer cluster investigation ever.

Fallon, Nevada is a small, primarily agricultural community. The Naval Air Station (NAS) Fallon is located approximately 8 miles outside of the town of Fallon. NAS Fallon is home to the Navy's Fighter Weapons School (TOPGUN), which provides advanced training to Navy fighter pilots. The cancer cluster has caused high concern within the entire Navy community. In fact, two of the ALL patients are from Navy families.

The Navy Environmental Health Center's Environmental Programs Directorate is the Department of the Navy liaison to the agencies conducting the cancer cluster

investigation, and has developed and is helping to implement the NAS Fallon Risk Communication Plan.

This paper will discuss the on-going risk communication work, both within and external to the Navy, to ensure accurate, comprehensive and timely information is available. The target audience is anyone who is dealing with a health emergency, especially one for which a cause probably won't be determined.

Telling the Story: Reaching Native American Audiences with Targeted Risk Communication Messages.

Lessons Learned from the National Cancer Institute's I-131 Campaign

Primary Author: M. M. Farrell MPH RD; Public Affairs Specialist, National Cancer Institute

Co-Author(s): E. Handley(1), A. Cotler (2), S. Spengler (2), C. Handler (2)

(1)National Cancer Institute, (2) Matthews Media Group,

The National Cancer Institute has developed a public information campaign addressing the effects of iodine-131 (I-131) exposure from the Nevada nuclear weapons tests during the Cold War. A key component of NCI's campaign is outreach to populations most likely to have been exposed to radioactive fallout, including Native Americans living in areas where I-131 might have fallen. The difficulty inherent in determining an individual's level of I-131 exposure, and in assessing subsequent thyroid cancer risk, presents a true communication challenge.

By working closely with Native American leaders and others, NCI developed and tested an educational tool (flip chart) that draws upon current risk communication strategies and couples them with individual decision-making methodologies.

The result is a flip chart designed for use with small groups, such as tribal councils, that lay leaders can use to guide audiences to 1) obtain accurate perception of estimated risk; 2) increase knowledge about thyroid cancer screening benefits and risks; and 3) make specific, deliberate choices among screening options.

NCI will disseminate this tool in conjunction with other I-131 consumer education materials. This presentation will highlight 1) the process NCI employed in developing this tool, including its extensive work with advocates and health professionals; 2) findings from focus group research; and 3) a preview of the flip chart.

Sample pages from the forthcoming National Cancer Institute publication: "I-131 and Thyroid Cancer: An Educational Resource":

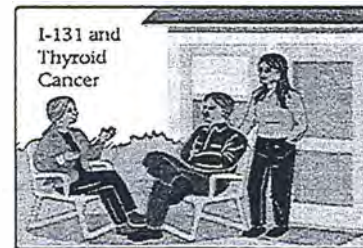
I-131 and Thyroid Cancer



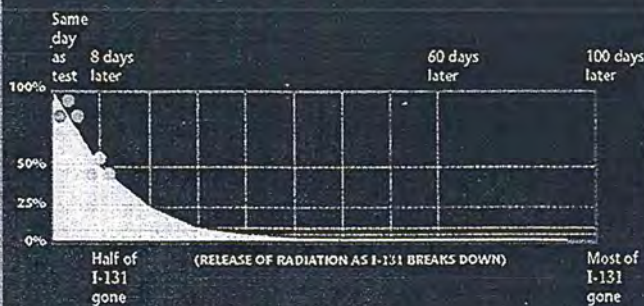
1. I-131 and Thyroid Cancer

TALKING POINTS

- Today I'd like to talk to you about I-131 and its possible effects on thyroid cancer risk.
- During the Cold War in the 1950s and early 1960s, the U.S. government conducted one hundred nuclear weapons (atomic bomb) tests in the atmosphere at a test site in Nevada.
- The radioactive substances released by these tests are known as "fallout," and were carried thousands of miles away from the test site by winds. As a result, people living in the United States at the time of the testing were exposed to varying levels of radiation.
- Among the numerous radioactive substances released in fallout, there has been a great deal of concern about and study of one radioactive form of iodine — called iodine-131, or I-131.



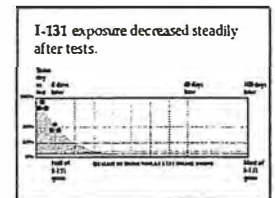
I-131 exposure decreased steadily after tests.



4. I-131 exposure risks steadily decreased after tests.

TALKING POINTS

- The "active" in "radioactive" means that unstable substances produced in nuclear reactions break down and change, so that they eventually become stable and no longer release radioactivity.
- The breakdown can occur quickly in some radioactive substances, often within a few days. Half of the I-131 released during an atomic bomb test was gone in about 8 days, and almost all of it was gone (less than 1% remained) several months after the test.
- Like all radioactive substances, however, I-131 releases radiation as it breaks down. It is this radiation that can injure human tissues.
- But I-131's steady breakdown means that the amount of I-131 released by a bomb test steadily decreased after the test. Therefore, farm animals that grazed in fields within a few days after a test would have consumed higher levels of I-131 than animals grazing later.



How were Americans exposed to I-131?



I-131 released in bomb test fallout	Traveled away on wind	Fell with rain, landing on grasses and pastures	Grazing animals (cows or goats) ate the grass	I-131 collected in the animals' milk	Humans (often children) drank the milk	Some I-131 in milk collected in thyroid gland
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3. How were Americans exposed to I-131?

TALKING POINTS

- I-131 was among the radioactive materials released by the atomic bomb tests and carried thousands of miles away from the test areas on the winds.
- Some of the I-131 collected on pastures and on grasses, where it was consumed by cows and goats.
- When consumed by cows or goats, I-131 collected in the animals' milk. Eating beef from cows exposed to I-131 carried little risk, which is why much of the health risk associated with I-131 occurred among milk-drinkers — usually children.



Outcomes Effectiveness

Moderator: *Henry P. Cole, EdD*, USA

Evaluation of an Educational Booklet Aimed at Preventing Hand Dermatitis Among Health Care Workers

Christy Curwick, MPH; David Bonauto, MD, MPH; and Marty Cohen, ScD, CIH

Purpose: We evaluated an educational booklet aimed at preventing hand dermatitis among health care workers.

Methodology: A one-page feedback survey was disseminated using the mailing lists generated to send the booklet. The survey was designed to assess whether six pre-defined objectives were satisfied. A before-and-after analysis was used to determine whether the booklet contributed to an increase in awareness of moisturizer incompatibility concerns with latex gloves and antibacterial hand washing agents.

Results: Criteria for 5 of the 6 objectives used to evaluate the effectiveness of the educational booklet were met or exceeded. All respondents stated that the document was clearly written and easily understood and 99% believed that it provided practical tips for preventing hand dermatitis. A statistically significantly greater proportion of individuals were aware of the moisturizer incompatibility issues after receiving the booklet than before its receipt. More than 50% of the respondents indicated that they had checked the compatibility or considered making changes to the products used in their facilities since receiving the booklet. Seventy-three percent of respondents indicated that 1-2 pages is

the optimal length for educational materials and 80% prefer receiving materials in the mail – only 7% preferred the use of the Internet for educational materials.

Conclusions: The booklet raised awareness and provided practical resources and tips for preventing hand dermatitis. Additionally, it prompted initial steps toward positive change. Lessons were learned regarding the preferred length and methods of distribution for future educational materials to health care professionals.

Title of Paper: Multidisciplinary Employee Wellness Initiative Yields Cost Effective Outcomes

Theme Topic: Health Promotion Initiative, Multidisciplinary Education,

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Hospitals are notoriously dangerous places to work with repetitive motion issues, back injuries, puncture wounds, and slip-trip-fall injuries abounding. The assurance of a safe and healthy workplace is a human resource management issue that transcends the hospital's various services and individual employee responsibilities. Insuring work-place health and safety goes beyond conscientious vigilance to matching each employee's abilities to the functional requirements of their position. This presentation will focus upon benefits realized by providing a comprehensive personnel health initiative that is staffed by an interdisciplinary team of human resource managers and health professionals, including: physicians, nurses, nutritionists, health administrators and social workers. Discussion will include issues related to interdisciplinary confidence building between Medical Center occupational health providers and coordination with Human Resources Management Service personnel. Data will be presented illustrating how this initiative has led to increases in utilization of the Personnel Health Service, reductions in lost time claims and a lowering of expenditures for workers compensation.

This large urban medical center, with a 2,900+FTE workforce, has reduced annual workers compensation expenditures to the point where FY 2002 OWCP costs are the lowest in two decades. This represents annual savings to the Medical Center of more than \$800,000. This fiscal outcome is unique because most comparable major medical centers have experienced an opposite trend in workers compensation expenditures. Administratively, the Personnel Health Service and Employee Wellness Initiative are based in the Medical Center's Human Resources Management Service (HRMS). This presentation will illustrate how the employee's orientation to occupational health and wellness begins with the pre-placement examination that stresses

personal wellness and continues throughout the employee's affiliation with this medical center. This initiative provides employees with detailed pre-placement exams, treatment of on-duty illness and injury, and case management of complex work-related injury cases. Additionally, employees are provided corporate wellness and health education programming that includes comprehensive health risk appraisals, health education and incentives for improving and maintaining their health. In addition to achieving the lowest OWCP expenditures in twenty years, the Central Arkansas Veterans Healthcare system Human Resources Management Service Personnel Wellness Initiative has served as clinical education site for students in a variety of health professions and human resource management curricula.

TUBERCULOSIS SURVEILLANCE: INNOVATIVE PROGRAM DESIGN FOR A COMPREHENSIVE CANCER CENTER

Michelle M. Newton, BScN, RN, COHN-S, Melissa Gutierrez-Gonzalez, BS, Elizabeth Frenzel, MD, MPH, Georgia Thomas, MD, MPH

The University of Texas M.D. Anderson Cancer Center is a facility with over 11,000 employees located in Houston, Texas. Conducting annual tuberculosis (TB) screening in a large, multi-site medical and research facility is a major challenge. Previous methods of conducting TB surveillance included screening based in the Employee Health office and a roving team that traveled to departments. These methods were labor intensive and produced less than acceptable compliance rates. Data analysis of these programs as well as collaboration with hospital administration and the City of Houston TB Control Department have led to program redesign.

In order to design an effective and innovative program for TB Surveillance in a Comprehensive Cancer Center three objectives were developed.

1. Increase annual TB screening compliance rate over previous years.
2. Implement 2-step screening of new employees.
3. Compare the accuracy of a verbal history of a positive TB skin test with the results of a TB skin test administered by Employee Health.

We have discovered that compliance rates increase as a consequence of changes in program design including accessible and convenient times and locations for screening as well as the use of an online health summary at the screening site. Communication to employees, dissemination of information via managers and supervisors, and multi-tasking of employee health personnel have also enhanced the program. Two step TB testing has been implemented for all new employees, faculty and students. Written documentation of previous Mantoux TB skin test is required for exemption from 2 step testing as verbal history appears to be inaccurate.

Continuous process improvement over the past five years has yielded significant increases in compliance rates. Details of the development of this program, review of annual data and reevaluation will be discussed. The 2002 compliance rate for TB screening at M.D. Anderson is 98%; true testimony for practice makes best practices!

OCCUPATIONAL EPIDEMIOLOGICAL SURVEILLANCE SYSTEM (OESS) FOR
WORKERS EXPOSED TO PHYSICAL AND CHEMICAL RISK AGENTS IN
CHILEAN SAFETY ASSOCIATION (ACHS). CHILE.

Active epidemiological surveillance programs are tools that help to prevent chronic effects in workers exposed to risk agents with an early diagnostic of biochemical changes or early effects.

The purpose is to describe the results of the latest five years of our program.

Chilean Safety Association is a mutual that gives prevention, health and economical services for accidents and professional illness.

We have a OESS where, 100.000 workers, belonging to 3500 companies, exposed to almost 90 physical and chemical agents are systematically followed for 15 years. The program has four stages:

- 1) screening
- 2) medical evaluation to those workers with abnormal screening values
- 3) medical legal disability evaluation when permanent sequelae is present
- 4) follow up of pensioned workers.

There is a computational system that allows the systematic measurements of health problems through the country, in order to have an early diagnose and to focus environmental preventive actions.

Results are expressed in terms of rates and number of workers, exams and enterprises in hearing loss, pneumoconiosis, asthma and chemical toxic agents.

Professional illness diagnostics and permanent disabilities diagnostic are described.

Noise is the major program with 80.000 workers. Screening stage has abnormal exams rates of 15% for noise, 3% for pneumoconiosis, 13 % for asthma, and 4% for chemicals.

Dermatitis, intoxications and laryngopathies are the main diagnostics for professional illness

Hearing loss and pneumoconiosis are the main causes of permanent disability.

Ill workers belong mainly to mining, manufacturing and services companies.

Finally we conclude that OESS is a tool for an early diagnose in exposed workers. It gives the alert to focus the environmental prevention. Noise is still the major risk agent.

Chemicals and excessive use of voice produce the main demand of Occupational Medical Services. Noise and silica are the main causes of permanent disabilities.

THE DEVELOPMENT OF A SATISFACTION SURVEY AS A FIRST STEP IN EVALUATING NIOSH PUBLICATIONS

Vern Anderson

A primary mission of the National Institute for Occupational Safety and Health (NIOSH) is to inform the public about various occupational health and safety issues by disseminating information on preventing workplace disease, injury, and disability. To accomplish this mission, NIOSH conducts research on the full scope of occupational disease and injury ranging from lung disease in miners to carpal tunnel syndrome in computer users.

The Education and Information Division (EID) of NIOSH draws from the diversity of scientific and medical sources within NIOSH to focus information on specific occupational safety and health problems. This information is disseminated through print, electronic and other communication channels to various health professionals and others who rely on NIOSH as a credible information resource. Through user feedback, EID assesses whether the information disseminated has been useful in bringing about changes that will lead to reductions in occupational injury and disease.

The purpose of this paper is to describe the process for developing and administering the customer satisfaction survey for NIOSH publications. Each year the National Institute for Occupational Safety and Health (NIOSH) develops and disseminates about 35 primary "numbered" publications, along with one hundred or more annual "series" publications. The NIOSH publications inventory contains nearly 4,000 scientific and educational documents relevant to occupational safety and health issues. In collaboration with four professional organizations, the American Association of Occupational Health Nurses, (AAOHN), the American College of Occupational and Environmental Medicine, (ACOEM), the American Industrial Hygiene Association, (AIHA) and the American Society of Safety Engineers (ASSE). NIOSH is conducting a survey to evaluate their members' satisfaction with these publications and other communication products developed and disseminated through NIOSH since 1995. The survey was designed to determine: (1) to what extent NIOSH publications are perceived as credible, useful sources of information about occupational safety and health issues, i.e., a product evaluation, (2) to what extent is NIOSH successful in distributing its occupational safety and health information products to the appropriate user audience, i.e., marketing evaluation; and, (3) to what extent (and in what ways) have NIOSH publications influenced workplace safety and health program practices, i.e., impact evaluation.

The project can be divided into three phases: development, implementation, and analysis. This report describes the process and method for developing the survey instrument and how the survey was implemented. A focus group methodology was chosen to gather preliminary ideas for constructing items that would be suitable for a customer satisfaction survey. The focus groups were formed by drawing upon members of four key occupational safety and health associations, AIHA, ASSE, AAOHN, and ACOEM. By definition, members of these organizations would have basic knowledge and expertise in occupational health and safety, and more than likely, be familiar with NIOSH publications. A general questionnaire was administered to the focus group participants seeking their opinions, concerns, beliefs, awareness, and experiences related to the survey questions. The focus group method was chosen because it allows for discussion and group interaction to assist individuals clarify how they think and feel about an issue, product, or service. In this study, participants were allowed time to complete the survey and to discuss both general issues and specific questions issues within a relatively brief time frame. Their opinions were used to revise, modify, and improve the final survey that was administered in the second phase of the project.

The second phase, or implementation stage, of the project involved administering a questionnaire survey that aims at gathering more specific information that would be used to measure program effectiveness by gathering information on specific variables related to program effectiveness. A sample of 1200 respondents was randomly drawn from the list of member of the four collaborating professional organizations. The goal was to determine the extent to which they rely upon NIOSH-numbered publications, as an informational resource, in reducing workplace injuries and illness and to seek information on how NIOSH performance might be improved. Each organization provided a mailing list of its members and a random sample of about 300 names was selected for the survey. To ensure a reasonable response rate, a reminder card was sent to all participants after a two-week period and two weeks later a second mailing was done. An electronic version of the questionnaire was also developed giving respondents the option to fill it out electronically. This e-version is easily completed and can be electronically submitted to a secure NIOSH server. Lessons learned from this survey will direct future NIOSH communication efforts aimed at these customers regarding their preferred publication format, design and delivery systems.

PRACTICAL EDUCATIONAL EXPERIENCES IN OCCUPATIONAL HEALTH EDUCATION

Moderator: *Alain Cantineau, MD, PhD, France*

OPTIMIZATION OF THE LEARNING EXPERIENCE FOR OCCUPATIONAL MEDICINE

RESIDENTS ROTATING AT A LARGE TERTIARY NAVY HOSPITAL

CDR Neal Naito, MC, USN

Teaching of the occupational medicine (OM) resident is a challenge given the limited one year clinical training cycle post MPH. Moreover, the number of training opportunities nationwide has diminished over the past several years due to companies contracting out for occupational health services rather than maintaining them internally. Previously, the OM rotation at National Naval Medical Center (NNMC), Bethesda, Maryland, associated with the Uniformed Services University of the Health Sciences (USUHS) residency program, consisted of mainly seeing patients in the OM clinic and doing work site visits. For the resident, there was a fair amount of self-directed learning during the rotation since the clinic only had one physician preceptor. Recently, the resident rotations were increased to 8 weeks from 4 weeks, to account for the many conferences and short courses residents can attend throughout the academic year. Moreover, NNMC was designated as a core rotation site for the residency. Consequently, it was soon realized that the NNMC rotation had to be reorganized and optimized to improve the quality of the learning experience for residents.

To achieve this goal, it was decided to take advantage of the natural strength of a tertiary teaching hospital, which is access to multiple specialty clinics. Consequently, to enhance the clinical teaching in the rotation, 2-3 week mini-rotations were created where residents rotate through occupational medicine related specialty clinics. These specialty clinics include currently dermatology, ophthalmology, and travel clinic. Pulmonary clinic may be added in the future as well. One half day a week, residents also see patients in the occupational health clinic. Another half day a week, residents return to USUHS to participate in a journal club.

In dermatology, residents learn how to diagnose and treat occupational and primary care skin conditions. They also learn how patch testing for allergies is done. Residents rotating through ophthalmology learn how to diagnose and treat occupationally related ocular injuries. Emphasis is placed on learning how to use the slit lamp for diagnosis. In the travel medicine clinic, which the residents attend ½ day a week, they learn to address the issues regarding

protecting the health of workers who are sent overseas. Immunizations, malaria prophylaxis, special requirements of pregnant travelers, etc. are some of the frequent subjects reviewed in the rotation.

While working in the occupational health clinic, the resident gains familiarity with program management of an occupational health program at a large hospital. A wide range of topics are reviewed with the resident such as accommodation, fitness for duty, medical surveillance, workers compensation, infection control, etc. Special emphasis is placed on medical reviews of Federal workers compensation cases using an evidence based medicine approach. These reviews provide the platform for review of important subjects such as asbestosis, noise induced hearing loss, disability vs. impairment, etc.

Although this revised OM rotation has been in place only for approximately one year, it has received positive feedback so far from rotating residents. Essentially, all of their time now is directed with enhanced learning opportunities. The specialty clinics have been strong supporters of the concept to date since it integrates nicely within their own residency teaching programs. Moreover, rotating occupational medicine residents have been actively contributing to the academic mission of the specialty clinics they have worked in by frequently giving lectures on a pertinent occupational medicine topic. Thus, occupational medical clinics

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The new basic training für safety specialists in Germany - a combination of seminar and CBT

A completely upgraded training for safety specialists was installed in Germany last year. The concept for this training has been developed by the Federal Institute for Occupational Safety and Health and the Federation of the German Berufsgenossenschaften.

The participants of the training are appointed by their employers, whom they have to advise in all questions concerning occupational safety and health as for example in how to put into practise occupational safety and health regulations in the internal flow of work. To fulfil their task they are expected to have an extensive knowledge of safety issues as well as good social and method competences. So the purpose of the project is the practice-orientated basic training of engineers, technicians and foremen as safety specialists who can meet the demands of their job profiles.

The education of the safety specialists is based on a current understanding of occupational safety and health requirements, and the resulting consequences for their new role as safety specialists. This is reflected in the training concept, which is characterised by the use of new contents, new teaching methods and multimedia modules. Important parts of the training are an integrated practical training and four tests.

A typical feature is a gradual combination of learning in seminars and individual learning by computer-aided instruction programmes known as CBT (in the future WBT). Topics dealt with in the seminars are extended in self-study modules and in subsequent seminars.

In the CBT modules not only knowledge is taught, but also practical training on complex case studies is practised, which later on is evaluated in tests. This also implies some demands to the design of the computer based training, in particular to its didactical concept. The motivation of the participants to work with CBT modules is very important. Therefore, we encourage them for example by

- relating to previous knowledge and experience
- referring to the practical tasks of safety specialists when presenting the contents
- using exercises
- giving feed-backs on the result of learning

Learning with CBT is also a chance to increase competence by working with modern media.

During the basic training the participants learn the required facts and methods in seminars and in self-study modules with a hot-line available. They also learn to put the theory into practice.

During the first step of the training (3 weeks) they learn for example basic facts about work related health hazards, about the role and function of a safety specialist and about the organization of occupational safety and health protection.

In the second step (2 weeks) this knowledge will be reinforced using complex exercises and case studies.

In the third step they will receive sector specific training.

During the whole training the ability to communicate and to cooperate with different kinds of groups in a company will be trained.

First experiences of the project show results in an improved ability to transfer knowledge into practice, a higher education level and a higher motivation of the participants.

Title of Paper: Integrating Farm Safety Information into Social Studies Classrooms in Rural Public Schools: A Report from the Field."

Theme Topic (Select from list in brochure). Curricula

Primary Authors (Name & Title) Joan M. Mazur, Associate Professor

Co-Author(s) (Name & Title) 1. Henry Cole, Professor

Since 1999 researchers at the Southeast Center for Agricultural Health and Injury Prevention have collaborated with social studies teachers in four rural Kentucky counties to integrate important information on the economics of farm safety into their existing curricula. Using interactive simulations and a variety of multimedia materials previously developed for community based interventions, teachers have field tested and modified these materials in ways that meet the state-mandated educational goals.

The work is significant because it represents a way to disseminate the public health attitudes, knowledge and safety behavior messages the materials convey to a potentially large population of young adults through public education instruction. Evaluation included an on-going process evaluation, a product evaluation of the integrated curriculum materials produced and progress evaluation. Additionally in 1999 a controlled, quasi-experimental evaluation study was conducted in the four counties comparing a hard-copy with the multimedia versions of an interactive simulation, The Kayles' Difficult Decisions.

The presentation will have four goals: 1) to describe the experiences of these teachers and their insights regarding the use of the farm safety materials in their classrooms. 2) to detail particular strengths of using these materials in extending Social Studies beyond the classroom into the daily lives of rural students, 3) to provide data on students' learning from the interactive materials as well as informative data on students social networking and the impact on their community from having these materials in their

classes, and 4) to provide strategies for working with schools to integrate public health and safety information.

Research in classroom found that materials related to farm health and safety were highly relevant and engaging to students. Students learned important safety information and were successful as advocates when assigned strategic activities such as interviewing family members or acquaintances who live and/or work on farms. The Project teachers were able to modify materials originally developed for use in community education settings to meet the content and performance standards required in Kentucky social studies classrooms. However, this process could be time consuming and thus might preclude some from using these highly relevant engaging materials. Thus, a Teacher's Guide was developed by an experienced social studies teacher on the team to facilitate adoption of the materials into state- required curriculum. In Kentucky and elsewhere, teachers have ever-increasing demands on their time, but are eager to have materials that provide opportunities for students to extend their learning beyond the classroom. Teachers need and want relevant materials that help them meet state curriculum requirements (in this case the economics requirements in high school social studies curricula). By working directly with classroom teachers in rural communities (in this case) and piloting smaller scale interventions to engage teachers in user-centered curriculum design projects, critical health and safety information can be linked to curriculum content goals and disseminated to students and their families. The schools provide untapped potential to reach the often at-risk youth population when integrated into required curriculum. Strategies for successful integration include tailoring materials to curriculum, working with actual teachers in strategic development and implementation cycles to assure acceptance with this target audience, and developing university-school-community partnerships to insure success.

**Evaluation of pedagogical tools used within
the Inter University Diploma Course (DIUST) in France
How to acquire knowledge but also and specially know how competencies**

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The Inter University Diploma Course started in 1994, since then over 300 OHN have been trained and 15 OHP from developing countries. Two years ago this Diploma Course was modified and adapted to OHPs, specially targeted to Moroccan Physicians. This Course's strong points are centered not only on knowledge that the OHN's need to acquire for professional practice but also and specially know-how. If methodology is one of the important points of this course, applied practical research exercises in the student's environment are regularly done during their training to improve and acquire new competencies. These are the main tools helping them to acquire know-how, to learn mobilizing plant's human resources by developing close collaboration with various departments other than the OH service. Learning by doing is the leitmotiv, learning to work within a team, within close collaboration with the OHP, but also with technicians, engineers, ergonomes etc. A dissertation centered on concrete applied research method in the students working environment completes this training course.

Objectives

This study is geared towards evaluating pedagogical tools, set up within the framework of the course specially those helping to acquire competencies.

Methodology

Composed of two parts:

1. Progress analysis of 315 OHN during training based on applied research work and dissertation ; in fact a special grill is used to evaluate competencies, quality, applied methodology,
2. A study concerning students having completed their DIUST course successfully is in process so as to have related information on the course's impact and competencies from students and tutors. Questionnaires have been sent to 315 students and their tutors. The questions concern prevention, health promotion, methodology, OHN consultations, relation and communication aspects, collaboration, changes occurred within the OH service. The results are in the process of being analyzed.

Conclusion

The French DIUST experience has helped trained 315 OH professionals mostly nurses. It seems the most important aspect is methodology and tools elaborated to develop competencies.

The Relationship of Training to Patient Assaults Against Mental Health Staff

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Background: Violence prevention training is recommended in the 1996 OSHA Guidelines for Violence Prevention in Healthcare and Social Services. Training, however, must be evaluated in an organizational context which considers management commitment and employee involvement, risk assessment, hazard control, and evaluation. Systematic implementation of a comprehensive violence prevention program adhering to the OSHA guidelines is underway in a State mental health system. The baseline staff survey provides an opportunity to examine the role of training in preventing assaults prior to full-scale implementation of the OSHA Guidelines.

Purpose: The purpose of this project is to examine the relationship of time since training, work experience, skill level and employee confidence in violence prevention skills to employee's report of threats and assaults within the past year.

Objectives: 1) What is the relationship between time of last violence prevention training and assaults against staff? 2) Does violence prevention training effectiveness vary by job title and experience? 3) To what extent does violence prevention training increase confidence in violence prevention skills? 4) Does staff confidence in violence prevention skills predict threats or assaults against staff?

Target Group: Inpatient direct care mental health workers.

Focus of Project: Assessment of violence prevention training (usual care) program prior to implementation of OSHA Violence Prevention Guidelines.

Results/Evaluation: A baseline survey of mental health workers in seven psychiatric facilities (n=488) was conducted. Results of bi-variate and multivariate analysis will be presented. Strategies for planned training

enhancements which increase communication between management and staff such as mutual review of risk assessment data, hazard control “solutions-mapping” workshops and regular facility-level violence prevention committee activity will be described.

REDUCING ERGONOMIC-RELATED RISK THROUGH EDUCATION AND TRAINING

Moderator: *Judith Ostendorf, RN, MPH, COHN-S, USA*

Experience of New Teaching Strategies of Occupational Health and Ergonomics at Tallinn Technical University

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Keywords: *ergonomic solutions, computer based learning, problem based learning, occupational health*

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Accelerated technological development promises increasing access to more and better information. To help students turn information into knowledge and create new ideas, that sizzle, teachers need to know the new teaching strategies of problem based learning (PBL) based on computer based learning (Siirak, 2000b, 2001).

Learning in itself is changing: we can now be co-workers and colleagues when shaping new knowledge. The teacher's role and the student's role are also changing, and we are learning more and more together (Bradley, 2001).

Our Chair of Working Environment (former chair of Work Sciences) has been using the ergonomic approach in research to solve problems of risk and safety during the last 20 years (Kristjuhan, 1994, Siirak, 2000a).

In September 1999 a new ergonomics laboratory with computers and modern presentation equipment for practicals was installed. The completely new type of study programme of Risk and Safety Sciences generally based on the ergonomics approach by the manuals by Bridger and Dul and Weerdmeister was introduced. The course was renamed Working Environment and Ergonomics. The aim of the study is to find more better teaching strategies for reducing risks of health and safety.

This paper shows how PBL based on computer based learning of Occupational Health and Ergonomics changes students' thinking and attitudes to health risks in the working environment.

During lectures and practicals of the course of Working Environment and Ergonomics students are inspired to use the internet and find modern ergonomics and safety information from internet databases (Google etc.) and to use the information of NIOSH, OSHA and other main institutions for problem solving. All materials and links are available on the internet <http://staff.ttu.ee/~vsiirak/tudeng.html>

The possibility of virtual tours to the main institutions of the world is provided <http://staff.ttu.ee/~vsiirak/virtualtouring.html>. Students are encouraged to create web sites in the field of occupational health and ergonomics, for example <http://my.tele2.ee/world/ergonoomika> (made by student Lauri Tibbo).

Spring 2002 after this course 270 students of the Faculty of Economics and Public Administration were interviewed. The aim of the study was to find out the students' opinions the effectiveness of ergonomic solutions, computer based learning and the best source of information on the internet in the field of Occupational Health.

Of the respondents 97% answered that ergonomic problem solutions and ergonomic design are the most useful, economic and effective method for the prevention of health risks and accidents in the working environment.

Computer-based learning was considered the most effective method for obtaining ergonomic knowledge for problem solving for reducing health risks and accidents by 96% of students and 90% appreciated the home page of NIOSH as the best source of information on the Web.

Conclusion: PBL and ergonomic approach based on computer based learning is the most effective method for obtaining knowledge for reducing health risks and accidents.

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UTILIZING A MULTIDISCIPLINARY ERGONOMIC EDUCATIONAL PROGRAM: THE NEW YORK HARBOR HEALTHCARE SYSTEM EXPERIENCE

Margaret Lesiak Eichler, MSN, FNP, COHN-S

Based on data collected in 1998 and compared to the National VA statistics, New York Harbor Healthcare System recognized the need for a program to reduce the number of employees' musculoskeletal injuries. As an initial effort and to reach the greatest number of employees, ergonomic education was presented in a survey form as part of a poster presentation during mandatory reviews. Results indicated that the employees were in need of further ergonomic education. Formed in 1996, the multidisciplinary Ergonomic Committee utilized OWCP data gathered from a previous task force that identified five services with the most injuries; they were: Nursing, Environmental Management, Dietary, Engineering, and Security.

The Ergonomic Team decided to focus first on the Nursing Service, since it was the largest service and had direct patient care. Team educators included nurse educators, physical therapists, a kinesio-therapist, industrial hygienist, an information resource manager, the education resource specialist and the occupational health nurse. A multifaceted approach was implemented with Adult Learning Theory used as the conceptual framework for education. The core of the program was the "Safe Patient Movement and Handling Program." This is a program "Developed under the guidance of the National Occupational Safety and Health Training Committee" with team coordination by Audrey Nelson, PhD of the Tampa VA. Formal classes in safe patient movement and handling gave way to unit based classes to reach the greatest number of staff and for the staff's convenience. Education methods included video presentation, demonstration, testing and one on one follow up.

The outcomes for nursing were measured by using data collected from Human Resources

Department and Safety. Data associated with back injuries involving lifting of patients were collected. Statistics gathered from fiscal year 2000-2001 indicate that there has been a 58% decrease in the number of compensable back injuries in nursing compared to the previous year. To date, New York Harbor Healthcare System has seen a 14% decrease in all lost time injuries due to lifting , though the number of injuries has remained the same.

Accident Review Boards are conducted on a monthly bases. This data continues to provide pertinent information regarding safety issues in the workplace. Incorporating this data in conjunction with the Stetler Model exploring available evidence based research a "Computer Workstation Safety Program" has been implemented. The program includes classes on computer workstations. Ergonomic rounds are conducted at all campuses by the team members stationed at each campus. This aspect of the ergonomic program is being evaluated and data collected. The "Safe Materials Movement and Handling Program" was also taught. New employees are also provided with a basic class entitled "Orientation to Ergonomics."

The ergonomic program is scheduled for evaluation at the end of the 2002 fiscal year.

Shonna Cole, CEA, and Mark Klemmer

Highly Effective Training Results in Reduced Ergonomic Risk

The Training Need:

A manufacturer of brake calipers for light trucks and SUV's was experiencing high rates of musculoskeletal disorders (MSD) among assembly and machining personnel. The plant operates under the lean manufacturing concept with a highly productive work force, operating a 3-shift schedule with a total population of 500 associates who often work periods of overtime. About 275 manufacturing associates were exposed to the risk activities described below. The work is highly repetitious and involves handling heavy parts, (machining parts weigh 4 lbs. to 12 lbs., with cycle time of 2.3 per minute, assembly parts weigh 4 oz to 12 lbs, with cycle time of 2.3 to 3.0 per minute). Material handling and MSD injuries accounted for 85% of OSHA recordables injuries for the year 2000. Employees needed help to work more safely while maintaining the high expectations for productivity.

The safety manager attempted traditional ergonomic training methods for the assembly and machining associates. However, it proved difficult to remove workers from the production line for classroom training and it was an ineffective method for behavior change on the production line.

The Training Solution:

An Ergonomist with experience in training was brought in, and a program developed to train employees one at a time while they do their usual tasks. The training process is called Ergonomic Coaching. To prepare the training program the Ergonomist conducted ergonomic analyses of the five assembly tasks and two machining tasks to determine a set of "best methods." These methods were documented using digital photos and brief text with step-by-step instructions. The safety manager and the ergonomist established written training criteria and measurable goals for the Ergonomic Coaching project. The goals were based on comparison of the musculoskeletal disorder injury rates before and after the training process. The coaching sessions took between five minutes and twenty minutes for each employee depending on the number of tasks observed and whether the employee had concerns to discuss. The Ergonomist used the following simple procedure for the ergonomic coaching.

- Tell the employee you are observing them and why. Emphasize working with them find the best way to get the work done safely.
- Watch closely, spend at least one minute just watching their body and hands not the machine and the parts. Get into a position to see their body profile to view torso positions and get close enough to view their hands. Observe one body part at a time.
- Demonstrate needed changes in methods. Watch them practice the changes for several cycles, encourage and correct if needed.
- Find and note any barriers to compliance. Ask for Suggestions and Concerns.
- Document the coaching session.

During the coaching sessions the Ergonomist asked every employee for his or her suggestions and concerns. Numerous sub-clinical health issues and barriers to productivity were discovered and addressed. All feasible suggestions to improve working conditions and productivity were implemented. The Training Results:

The training goals were exceeded. Over 75% of employees in the assembly and machining areas had ergonomic coaching sessions, exceeding our goal of 50%. The result was a significant reduction in ergonomically related injury and illness comparing the year 2000 to the year of the ergonomic coaching, 2001. Among assembly personnel the number of MSD of a cumulative nature were cut in half. The muscle strains among assembly and machining personnel dropped by 45%. And for all MSD in the manufacturing areas the number of cases dropped by one third. These results were achieved while the rate of productivity increased per employee. The trends in reduced injuries continue downward as we continue the process with follow-up coaching and observations. Coaching is also conducted after each MSD report and is triggered by the accident investigation process.

Conclusion

Finding the specific behaviors to be changed, and working individually with employees to change their behavior has proven to be a highly effective training method to reduce ergonomically related injury and illness.

Title:

Implementing Mechanical Lifts and Training Programs
in Acute Care Hospitals and Nursing Homes

Authors:

Laurie Wolf, Certified Professional Ergonomist, Liz Aton (Industrial Hygienist), Jason Canos (Research Assistant), Jim Collins (Epidemiologist/Engineer), Brad Evanoff (Associate Professor)

Aims: To evaluate the effectiveness of mechanical patient lifts for reducing musculoskeletal injuries and time loss in various health care settings. A knowledge based educational technique was used in acute care hospitals while a “best practices” skills based training was used in nursing homes.

Methods: A pre-post intervention study examining changes in injury and lost day rates in 36 selected nursing divisions from 4 acute care hospitals and 5 nursing homes. Stand up and full body lifts were deployed during 1997 and 1998. Knowledge based training sessions were conducted in the acute care hospitals at the time of lift deployment. Education in the nursing homes included knowledge and skills based training as well as a competency demonstration and annual re-training. Content appropriate training programs were also developed for Directors of nursing, physical therapy departments and maintenance representatives.

Data on injuries and lost days were collected through OSHA-200 from 1996 - 2000; data on utilization of lifts were collected through 190 employee surveys. Rates of injuries and lost days were expressed in terms of events per 100 full-time equivalents (FTE).

Results: Self-reported frequencies of lift use by nursing aid staff were higher in the LTC facilities (50%) than in acute care hospitals (34%). The most common reasons given for non-use of lifts included lack of perceived need for lifts, insufficient training, and lack of time. Nursing personnel had decreased rates of recordable injury in the post vs. pre intervention period (RR=0.82; 95% C.I. 0.68 to 1.00). Rates of injuries resulting in lost work days (RR= 0.56; 95% C.I. = 0.41-0.78) and total lost days due to injury (RR=0.38) were also reduced. Larger injury reductions were seen in the nursing homes than in the acute care hospitals.

Conclusions: Implementation of patient lifts can be effective in both the long-term care and the acute-care settings. Higher reported use in the LTC was associated with greater reductions in injuries and lost days. Frequency of use was low in acute care hospitals, thus further reductions in injuries are probably possible with increased use. Skills based training and competency demonstrations may increase lift usage in acute care hospital settings.



INTERVENTION EFFECTIVENESS STRATEGIES IN EDUCATION AND TRAINING

Moderator: *Roberto Lucchini, MD, Italy*

Improving Farmers' Self-protective Behavior with a Narrative-based Tractor Safety Community Education Program¹

Henry Cole, Larry Piercy, Tim Struttman, and Susan Westneat
Southeast Center for Agricultural Health and Injury Prevention, University of Kentucky
Lexington, Kentucky

Aims – Farm injury surveillance data were used to develop a community education program to promote farmers' adoption of tractor rollover protective structures (ROPS) in two intervention rural Kentucky counties.

Methods – The community-trials design included the two intervention and two control counties. Local groups in the intervention counties assisted in developing and then disseminated the program materials consisting of hands-on demonstrations, displays, mailing stuffers, radio public service announcements, and newspaper articles. Hundreds of personal stories about the risks and injury consequences of tractor overturns and the protection provided by ROPS and seat belts comprised the program. The intervention activities and materials were designed according to principles of narrative psychology, socioculturalism, participatory learning, persuasive mass communication, dual coding theory, and interactive learning.

Findings – Repeated measures analysis of variance of a pre- and post-intervention survey data collected from a random sample of 1,227 farmers found a significant difference ($p = .001$) in the expected direction for the intervention counties compared to the control counties with respect to (1) positive attitudes about ROPS, (2) contemplating putting ROPS on ungarded tractors, and (3) efforts to do so. A significant difference ($p = .05$) also was found in the expected direction for farmers' actual acquisition of ROPS-equipped tractors for the intervention counties compared to one control county (See Table 1). In the other control county an equipment dealer implemented his own ROPS retrofit campaign after a friend was killed in a tractor overturn. Records for the three-year project period revealed 50 SAF-T-CAB ROPS sales to dealers in the treatment counties and 8 to dealers in the control counties. (SAF-T-CAB manufactures ROPS for nearly all tractors except for John Deere and Kubota.)

¹ Community Partners for Healthy Farming Intervention Project, "Further Dissemination and Evaluation of the Kentucky ROPS Project" NIOSH/CDC Cooperative Agreement U06/CCU412900-02, principal investigator, Henry P. Cole. University of Kentucky Human Subjects Protocols 01-0205-P4L, 99-10018 and 00-0771.

Conclusion – The results are discussed in terms of the translation of injury surveillance data into narratives that promote replacement of risky attitudes and behavior with self protective behaviors.

Table 1

ROPS Retrofits and ROPS-equipped Replacement Tractors for Samples of Farmers across Intervention and Control Counties						
	Intervention Counties			Control Counties		
County	IC 1	IC 2	Combined	CC 1	CC 2	Combined
Farmers (n)	301	283	584	322	321	643
Retrofits	15 (5.0%)	27 (9.5%)	42 (7.2%)	8 (2.5%)	33 (10.3%)	41 (6.4%)
Replacement tractors with ROPS ~	10 (3.3%)	15 (5.3%)	25 (4.3%)	8 (2.5%)	7 (2.2%)	15 (2.3%)
Total	25 (8.3%)	42 (14.8%)*	67 (11.5%)	16 (5.0%)*	40 (12.5)	56 (8.7%)
95% CI	5.6-12.2	11.0-19.6*	9.1-14.4*	3.0-8.1*	9.2-16.7	6.7-11.2

~ Percent of farmers who replaced older unguarded tractors with newer (used or new) tractors equipped with ROPS where the primary motivation was to obtain a ROPS-protected tractor and not for other reasons like more power, better hydraulics, etc.

* Significant difference ($p < .05$) in farmers' intentional acquisition of ROPS-protected tractors

EFFECTIVENESS OF EDUCATIONAL INTERVENTION ON LEAD WORKERS AT DIFFERENT TIMES AFTER THE PROGRAM

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Health education has a potential very relevant impact on reducing the exposure level to toxic substances. In facts, health education programs can be useful for preventive purposes, by improving the knowledge of health risks related to exposure. An educational intervention can be better finalized with the inclusion of learning assessments, that can be done at different time after the educational program.

A study was conducted to verify the effectiveness of an educational program on lead (Pb) exposed workers. The program consisted of the administration of questionnaires and the measurement of blood Pb (PbB) and ZPP levels before and after attending a structured training session. The influence of psychologically-related variables on the subjects' responsiveness were also investigated, to verify at what extent these factors should be also considered when designing and implementing educational intervention programs.

The target population consisted of a group of 30 male Pb workers. A questionnaire on Pb health effects was administered before a structured training session. At the same time, PbB and ZPP were measured for each subject. The questionnaire was coded into: a) a score reflecting the knowledge level of Pb toxicity and b) a score on the adoption of safety and preventive procedures. Additional questionnaires on personality and mood factors characterizing introversion, extroversion, anxiety and depression were also administered. The training session included the

illustration of Pb health effects and of safety and preventive measures to be adopted by the workers. This was accomplished with 1 hour of oral teaching by a specialized occupational health professional to groups of 5 subjects each and with informative brochures given to the workers. The questionnaires on Pb health effects and safety and preventive measures were repeated 6 and 12 months thereafter, together with the measurement of PbB and ZPP.

The average pre-intervention PbB was $22.78 \pm 12.23 \mu\text{g/dl}$, and ZPP $3.25 \pm 1.92 \mu\text{g/dl}$.

Compared to this baseline, similar average values of PbB were observed at 6 and 12 months, but with a drop of Pb B values $> 40 \mu\text{g/dl}$, and a significant decrease of ZPP . The knowledge and procedural scores of the questionnaires increased significantly at 6 months and remained stable. The results of the education program were found to be less effective with those workers with certain personality (neuroticism) and mood (depression) figures and also with heavy drinking and smoking habits. No changes had taken place in the work environment during the study.

As a conclusion, educational training programs are truly able to effectively reduce peak Pb exposure, also in workers exposed on generally low levels. This can be achieved by informing the workers on health risks of exposure, and by inducing the adoption of safety procedures. In order to be fully effective, such programs should be repeated periodically in the workplace.

COMPUTER-BASED HEARING SCREENING TESTS AND PERSONALIZED FEEDBACK

Oi Saeng Hong, PhD. RN, Delbert M. Raymond, MSN, RN, Jamie Decker, BSN, RN
Julie Wilner, University of Michigan School of Nursing

Noise-induced hearing loss (NIHL) is an insidious and permanent loss of hearing caused by prolonged exposure to noise. It ranks among the most important occupational health problems because of its high prevalence, the disability and substantial costs it creates, and the great potential for its prevention. More than 30 million (one out of ten) American workers are exposed to loud noise that could result in hearing. NIHL among construction workers has long been recognized as a problem. Most construction workers lose some or all of their hearing after years at the trade. Since NIHL occurs gradually, an individual may not realize he or she is developing impairment until a substantial amount of hearing is lost. Early detection of hearing loss is crucial and requires audiometric testing. Since periodic audiometric testing makes it possible to track and document hearing loss, further development of NIHL can be prevented.

Recognizing the significance of NIHL and its early detection through regular hearing tests suggested the need to develop intervention program with interactive computer-based hearing screening test and tailored message based on individuals' hearing status. This CDC-NIOSH funded project developed and implemented computer-based hearing screening test and tailored intervention at a construction union training center in a Midwestern state to prevent NIHL among construction workers.

Multimedia program for instruction of hearing test, presentation of audiogram, and immediate feedback on hearing test results were developed by a multidisciplinary team including scriptwriters, video and film production specialists, graphic designers, computer programmers, audiologist, and nurse researchers in the fields of occupational and environmental health and safety.

Data collection was done from January to April of 2002 during the period when workers came to the training center for their annual Hazardous Materials refresher courses offered on weekends and every other Tuesday. Prior to the computer-based self-administered audiometric test, demographic and hearing related questions and otoscopic examination were completed. Computer-based hearing

screening test and tailored intervention were conducted in eight sets of soundproof audiometric booths. Each booth was equipped with computer, flat display monitor, audiometer, and keypad. All computers were hooked to local area network (LAN) at the training center for downloading of data onsite and to the networked central printer for printing handouts. Upon completion of the program, the computer presented each worker's audiogram with an explanation of the results on the screen. Participants also received a printed handout with information regarding their hearing status, and tailored feedback to their hearing loss and use of hearing protection. This provided a 'Teachable Moment', the moment workers experience serious concerns regarding their hearing loss by viewing demonstrable hearing loss on their audiograms. It was the best opportunity to educate and motivate workers' attitudes and behaviors regarding hearing protection.

A total of 612 workers participated in the study. Subjects were primarily Caucasian (90.7%) males (95.7%). Participant ages ranged from 20 to 68 with a mean age of 47.2. These findings are a reflection of the Labor Force Statistics for construction workers provided by the Bureau of Labor and Statistics reports for the year of 2001 (U.S. Department of Labor, 2002). The majority (92.3%) completed at least high school and about 20% finished trade school or college and above. These subjects reported working in the construction industry for an average of 22.6 years and experiencing an average of 7.4 hour of excessive noise exposure per day. Yet, workers' reported mean use of hearing protection was only 42.3% of the time they exposed to loud noise.

Participants' feedbacks were obtained to evaluate the effectiveness of the program. Subjects were asked about their computer usage, satisfaction levels with the computerized hearing test, and overall program satisfaction. About 40% of participants never used the computer and only 22% reported that they used computer often. Yet, the majority of them (96%) liked getting hearing test by the computer and 96% reported the computerized hearing test worked smoothly. Only 10% thought they would not like to get their hearing tested this way again next year. Almost all (99%) said they would recommend the program to other construction workers. The continued development of this approach is strongly supported by participants' favorable feedback.

Examining the impact of narrative case studies in toolbox talks for building construction

Author: Terri Heidotting, Ed.D.

Toolbox training, a common form of safety training used across a wide range of industries, consists of brief (10- to 20-) minute discussions attended by small groups of employees at the worksite. However, despite its widespread use, little research has investigated the impact that toolbox training may have on enhancing workplace safety. This presentation will describe findings from a pilot study that guided the development of toolbox safety talks for construction. In addition, this presentation will describe progress on a study comparing toolbox training that incorporates narratives derived from work fatality investigation reports (case-based) to conventional (fact-based) instructional materials. Variables examined in this study include worker knowledge gains, changes in safety attitudes, and workplace safety practices. Potential benefits of enhanced toolbox-training approaches and future plans for the development of systematically evaluated, public domain toolbox safety training materials for construction and mining will also be discussed.

RISK COMMUNICATION STRATEGIES

Moderator: *André Weel, MD, MOccH, PhD*, Netherlands

Deriving human risks and its significance for managers and regulatory toxicologists

Henryka Nagy

The use of exposure limits for monitoring and controlling chemical substances in the environment and in the workplace has always been the core of most occupational health guidelines and standards.

OSHA uses permissible exposure limits (PELs), the Association of Governmental Industrial Hygienists develops, threshold limit values (TLVs), NIOSH, establishes exposure limits (REL). EPA sets standards for toxic substances that contaminate the environment and FDA sets standards for food contaminants.

To justify a recommendation and regulatory measure these institutions determine whether the probability exists that a substance will produce harm under specific conditions.

In the past, the hazards have been commonly identified based on observations or reports of adverse health effects that occur in specific occupations. In many instances, workers had already died or became severely ill by the time any preventive pressures were installed. Ideally, hazards should be identified before agents are introduced into the workplace through the use of experimental tests that determine the potential toxicity.

The most convincing evidence of human risk can be derived from well conducted epidemiological studies in which positive associations between exposure and disease were observed. However, only in rare instances does sufficient human toxicity data exist to relate the exposure to the adverse outcome and define the threshold exposure for each population and each effect.

Human risk has to be extrapolated from experimental animal data. Animal studies are rarely designed to simulate the working environment. The experimental data have to be adjusted to the human condition. In extrapolating human risk from animal data, many assumptions are made. Although non carcinogenic chemicals are assumed to have an adverse effect which occurs only if exposure exceeds a threshold, it is uncertain whether carcinogens show threshold effects or whether the dose - response curve should be extrapolated linearly to zero.

Since risk assessments face many uncertainties, members of the public and experts might disagree about risk because they define risk differently. Social relationships of all types, including risk management, rely heavily on trust. The difficulty in verifying a risk analysis methods adds to the climate of distrust and present problem for risk managers who design risk reduction strategies. In fact we tend to manage our risk within an adversarial legal system, contradicting each other's risk assessments and destroying the trust. The risk analysis methods or models and its results must be presented to the decision makers and other stakeholders in a manner that gives confidence in the validity of the models and assumptions, and presents the criteria used in deriving human risk assessments in a format that is transparent and easy to interpret.

Purpose and Aims

This proposed study, to be conducted by the Washington, DC, War-Related Illness and Injury Study Center (WRIISC), is designed to answer questions regarding the presence of health conditions and/or symptoms experienced by veterans who served in the Vietnam, Persian Gulf, and Bosnia-Kosovo regions; their perceptions that health problems are linked to potential exposures during deployments; their communication needs; and factors that may influence levels of needs and concerns.

Methodology

A cross-sectional mailed questionnaire survey of a population-based stratified sample of 5000 war veterans will gather self reported data on health status and communication needs. A questionnaire has been developed which addresses: health conditions and symptoms; environmental exposures and medical-countermeasures; and information needs and preferred channels for receiving health risk communications.

Main Results

Once implemented, this survey will function as a needs assessment for the development of a Risk Communication Strategy. The Strategy will guide the progress of a dynamic and focused risk communication program and the development of supportive materials for veterans, clinicians, and others.

Conclusions

This population-based survey will provide an excellent resource for understanding the unique risk communication needs of war veterans from the major conflicts of the past 40 years. The information from this survey will help the VA's Washington WRIISC Risk Communication Program to meet the risk communication needs of America's war veterans.

TITLE: HEALTH-e VOICE: Randomized controlled trial of web-based training to improve risk communication between health care providers and patients with military-related health concerns.

SESSION: Risk Communication Strategies

DATE/TIME: Tuesday October 29, 1:30 to 3 PM

PRESENTER: Charles C. Engel, Jr., MD, MPH, Associate Professor of Psychiatry, Uniformed Services University, Bethesda, Maryland

CO-AUTHORS: Terry J.W. Sjoberg, BSc, Department of Defense Deployment Health Clinical Center at Walter Reed, Washington, DC
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DISCLAIMER: The views expressed in this article are those of the authors and do not reflect official policy or position of the Department of the Army, The Department of Defense, the U.S. Government, or any of the institutional affiliations listed.

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Poor provider-patient communications are a major cause of patient dissatisfaction and may be associated with unnecessary health care use, inappropriate treatments, and iatrogenic harm. A lesson for the Department of Defense following the Gulf War was the need for health professionals caring for military personnel, veterans, and their families to effectively address the medical uncertainty and sometimes even suspicion that exists around enigmatic or ambiguous symptoms following military-related exposures of unknown health consequence. Widespread distrust between federal providers and veterans led a reevaluation of ways to improve primary care in the military and VA health systems.

We are developing an interactive web-based risk communications learning tool called Health-e VOICE. The tool will be used to test if enhanced communications training for primary

care providers seeing military personnel or veterans with military-related health concerns will expand provider knowledge base, improve patient satisfaction, and reduce health care utilization. The protocol is based on the hypothesis that improved clinical risk communication alleviates unnecessary patient distress and physical health concerns, reduces frustration in the patient-provider relationship, and increases patient trust in providers and the health care system.

During the first year a qualitative research design involving focus groups will be used to develop the Health-e VOICE tool. Following its development and usability testing, the tool will be evaluated in a randomized controlled trial to assess its effect on clinician knowledge, patient satisfaction, and healthcare use.

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VA COMMUNICATIONS PROGRAM ON ENVIRONMENTAL HAZARDS EXPOSURE IN MILITARY SERVICE

Donald J. Rosenblum, Environmental Agents Service, VA Central Office, Washington,
DC 20420

The purpose of this presentation is to describe the Department of Veterans Affairs (VA) Environmental Agents Service efforts to respond to concerns/problems expressed by veterans regarding long-term health consequences of exposure to environmental hazards in certain military settings.

The objective of our program is to provide straightforward, timely information to veterans that effectively and credibly respond to their environmental health concerns.

The target audience depends on the issue. Agent Orange-related materials are aimed at Vietnam veterans. Similarly, Gulf War-related publications are prepared for Gulf War veterans. Ionizing radiation information is for veterans exposed to radiation during service. Family members and health care providers are also a key target for many of these efforts.

The public health communication program focuses on the concerns expressed by veterans. These concerns include availability of high quality health care, disability compensation, research efforts, and outreach and education. These themes reflect the programs that VA has developed to respond to the difficult-to-answer questions in such areas as Agent Orange and other herbicides, a wide range of Gulf War exposures, and ionizing radiation, based on available information on these subjects.

VA officials have carefully listened to military veterans with medical problems associated with military service and have been sensitive to these veterans concerns. Communications addressing these concerns and providing information has been developed for veterans in various formats including issue-specific newsletters, brochures, fact sheets, exhibits, Web sites, meetings, news releases, and public service announcements. The newsletters have included readers' surveys and regularly solicit ideas and suggestions. Feedback is used to improve the program.

RISK, RISK PERCEPTION, AND PSYCHOSOCIAL ISSUES

Moderator: *Julie Hayes Seibert, MA, MPH, USA*

Risk Perception-Psycho-Social Determinants: Inclusion in OSH Education

Author- Richard A. Lippin MD, FACOEM

In the current dominant bio-medical model of health care occupational health professionals obtain limited training generally in psycho-social aspects of OEM. Yet, these issues profoundly influence for example the topic of this presentation i.e.- Risk Perception. Psycho-social determinants such as parental views on risk, early educational, religious and media influences are among the early determinants of risk perception. Other influences include peer influences, local /community culture, major previous events such as illness or injury. Finally socioeconomic status (SES) with all of its ramifications including nutrition, environmental exposures, population density, access to health care and others is hypothesized to be a major determinant of risk perception. The reason that risk perception is so important is that perceptions of the public along with scientific risk assessments drive the political process which results in legislation and regulations which in turn drive dollar and other resource allocation. Without doing a formal survey this paper posits that these topics are not formally addressed in most undergraduate, postgraduate and continuing education programs in OSH education. In order to be relevant and effective these educational programs should seriously consider

including these topics. I believe as a bio-psycho-social-spiritual (BPSS) model of health care imminently emerges it is especially important for OSH professionals to interact effectively with colleagues in psychology and sociology.

Occupational Mental Health Issues in Light of September 11, 2001 Implications for Policy and Research

Julie Hayes Seibert, MA, MPH,
Doctoral Student, UNC- CH School of Public Health

Thomas R. Konrad, Ph.D.
Senior Research Fellow and Director
Program on Health Professions and Primary Care
Cecil G. Sheps Center for Health Services Research

With the recent terrorist events of September 11, 2001, the importance of disaster planning and response has taken on new meaning for health, public health and public service workers in the United States. As these workers are the first to respond when such crises occur, there is increased occupational health risk, as well as serious implications for the immediate and long-term mental health of workers. Due to societal stigma associated with mental illness and reluctance of workers to seek treatment, a special effort must be made to ensure workers remain mentally healthy and can receive needed treatment.

The aim of this study is to conduct a qualitative review of a sample of international, national and state-level disaster planning documents and reports. This study evaluates plans to address the following issues.

- Are worker short-term and long-term mental health issues addressed in disaster planning documents, and if so, to what extent?
- On the individual level, are mental health treatment and prevention strategies integrated with health care strategies when possible?
- On the organizational level, are mental health planning efforts coordinated and integrated with health care planning efforts when possible?
- Are mental health treatment and prevention strategies based on current research regarding the mental health impact of severe trauma or disastrous events?

Preliminary findings indicate wide variation in the adoption of planning efforts regarding the mental health of workers. Based on the analysis of planning documents, policy recommendations and topics for future research will be identified.

HOMICIDE ON THE JOB

BY: Charlie Morgan, JD, CSP

The Triangle Shirtwaist Factory Fire of 1911 so shocked the conscience of the US that dramatic social change ensued, particularly the enactment of workers' compensation statutes by the states. In recent years the "exclusive remedy" afforded by these laws has begun to erode, however, with an increasing number of prosecutions of business owners for willful misconduct leading to worker injury or death.

It appears that the first case in the modern era to result in jail time for a workplace fatality occurred at the Film Recovery Systems plant near Chicago in 1983. In that case a Polish immigrant by the name of Stefan Golab died as a result of breathing cyanide gas generated by a photographic film recovery operation. The subsequent investigation by the Cook County medical examiner revealed that not only were the workers not provided with the appropriate personal protective gear, but that management actively sought to conceal the chemical risks from the non-English speaking workforce. According to a recent piece in the American Journal of Public Health (April, 2000), the supervisors were actually ordered to scrape the skull-and-crossbones warning labels from the canisters containing the cyanide gas. Furthermore, there was also testimony to the effect that workers were frequently observed vomiting violently outside the plant as a result of the exposure to the toxic fumes.

As a result of these shocking revelations the District Attorney of Cook County secured indictments for murder against five Film Recovery officials. Following the criminal trial and a series of appeals spanning an eight-year timeframe, three of the firm's managers were sentenced to three-year jail terms for manslaughter. This case signaled

the start of a trend of sorts as the intervening years witnessed increasing use of the criminal law as a vehicle for enforcing workplace safety.

To date, however, no incident has been dealt with more harshly than a fire in the Imperial Foods poultry processing plant in Hamlet, NC, in 1991. In a situation closely paralleling the Triangle tragedy, the exits had been locked to prevent petty theft by the employees. Consequently, when a fire broke out the workers were trapped, and 26 people perished in the blaze.

Whereas the owners of the sweatshop in 1911 were exonerated of the manslaughter charges that were brought against them, Imperial's owner was actually sentenced to almost 20 years in prison, although he was freed after serving less than years behind bars.

What accounts for the state district attorneys becoming more aggressive in prosecuting such owners in criminal cases? One reason is that recent high profile cases of "corporate violence" has required a rethinking of the limited liability historically accorded to a corporate entity. Bhopal and the Exxon Valdez are but two examples of shocking offenses committed by "corporations." Another reason lies in the fact that the ultimate responsibility for such actions is highly diffused within an organization, and thus "guilt" is hard to prove. A combination of factors is apt to be at work in this trend.

Whatever the explanation may be, however, business owners can surely no longer be complacent in their reliance on the "exclusive remedy" provided by comp statutes. That is, where serious injury or death is "foreseeable" due to willful misconduct, the local DA is increasingly characterizing such actions as criminal in nature, and seeking a punishment commensurate with the offense.

Violence at work: occupational injuries and fatalities in Mexico.

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1. Background: Workplace violence shows an increasing trend in Occupational Health statistics. Up to date, in Mexico there are not specific surveys or reports about this issue.
2. Purposes: To describe the frequency and distribution of occupational injuries and fatalities in Mexico, built out of statistical records of Mexican Institute of Social Security (IMSS) for year 2000.
3. Statistical data bases from IMSS, concern with occupational injuries and fatalities were analysed. Following data show frequency and distribution of cases. In 2000, there were 12'418,761 working people under professional risk insurance by IMSS. At this time 356,725 occupational injuries occurred. Incidence rate was 2.9 by 100 exposed workers. From this occupational injuries 3,997 cases (1.1%) were due to workplace violence. SEX: 3,243 (81%) of cases affected men and 754 (19%) occurred to women. AGE: Almost half of cases (2,154 = 53%) affected workers from 20 to 34 years old. The largest frequency was observed in the 25 to 29 years group, with 800 (20%) cases. INDUSTRIAL ACTIVITIES: Only 740 (18%) cases were related to 5 industrial activities. From this, the largest frequency belongs to public security services, with 221 (5.5%) cases. JOB: Just 1,115 (29%)

cases occurred to 5 jobs. The largest frequency was found among general assistance workers with 392 (9.8%) cases. EXTERNAL CAUSES OF MORBIDITY AND MORTALITY. The main issue was bodily force attack with 1,191 (30%) cases. STATES: 1,241 (31%) cases occurred in Distrito Federal (D.F.). From the whole number of workplace violence injuries, there were 78 fatalities. 71 male deaths and 7 female deaths occurred. Most of cases (17) affected workers between 30 to 34 years old. The most frequent category of external cause of morbidity and mortality was short gun attack with 41 cases. Also the biggest number of fatalities due to workplace violence occurred in D. F. (13 cases). This data show that violence at work is a current cause of occupational injuries and fatalities among Mexican workers. The type of violence is related to criminal attacks and customer to clerk aggression. Young male workers from public security services, hotels, restaurants and department stores are mainly affected. National records about other type of work violence lack.

4. Further activities: To propose to Occupational Medicine societies and physicians research projects on this issue, in order to define precisely the real situation of workplace violence in Mexico.

TEACHING STRATEGIES IN OCCUPATIONAL HEALTH AND SAFETY

Moderator: *Janine Bigaignon-Cantineau*, France

Use of Internet among occupational health physicians in France

Gehanno JF¹, MD, MSc, Nicolas D, MD², Boitel L, MD³, Caillard JF, MD¹

1 : Occupational Health Department, Rouen University Hospital, France; 2 : Occupational Health Department, Air France, France; 3 : CISME, Paris, France.

In the field of Evidence Based medicine, accessing prevention information is the first step for physicians who want to transfert evidence into strategies. Databases available on the Internet and reliability of information obtained on the web are the cornerstones of transferring knowledge into practice. To assess whether occupational health physicians (OHP) use the Internet to improve their skills in day to day practice, we conducted a transversal survey among occupational health services in France.

In 2001, a questionnaire was sent to 287 French occupational health services, employing approximately 4000 OHP. This questionnaire included questions on access to the Internet, web literacy and confidence using the web, reliance on recovered information and needs in terms of formation.

A total of 542 OHP replied to the survey and 25 questionnaires were excluded. On the whole, 70% of OHP had access to the internet at home and 40% at work but 21% had no access, either at home or at work.

Among the physicians who responded, a sub-group of "confident" web users was isolated. Our definition of "confident" web users was that they should answer "yes" to typing in a URL; they explore the internet on their own; and they always or

frequently obtain information needed when performing searches. Two hundred and sixty five people fulfilled these criteria, i.e. : 51% of the respondents.

Bibliographic searches were rarely performed and 77% and 47% of, respectively, inexperienced and confident users, never used bibliographic databases.

Concerning the use of the quality criteria of the HON foundation, only 406 persons replied. Among them, 201 (49%) paid medium to high attention to the 7 criteria mentioned whereas 104 (26%) did not consider at all at least one of the criteria.

On the whole, physicians trusted institutional web sites more than international "paper" journals, but less commercial web sites than national "paper" journals for GPs.

Internet was considered a useful tool for continuous medical education for 21% and 56% of respectively inexperienced and confident users. A total of 50% and 77% of OHP estimated they required a training course concerning, respectively, the use of Internet and information retrieval methods on the Internet.

Although Internet is available for most OHP, either at home or on the workplace, it is not sufficiently used to obtain reliable information, which could be transferred into day-to-day practice. A major effort should be made in terms of Internet training, since, in our study, 62% of the subgroup of web-literate OHP estimated that the Internet, in fact, improved their practice skills, as compared to 22% in the "non confident" user group.

Project-Based Learning in Occupational Safety and Health

Dennis K. George Ph.D., CIH and Rodney G. Handy Ph.D., CIH

Time spent in the classroom and laboratory is without question an essential part of a student's preparation for a career in Occupational Safety and Health (OSH). However, very often in the classroom or laboratory, students receive the false sense that everything flows just as smoothly in the field as it does on the chalk board or the lab bench top where variables and opportunities for errors are minimized. Additionally, opportunities for personal interactions with workers, supervisors, management, etc. which are such vital components of competent professional practice, are not possible in a laboratory setting. Obviously, the real world does not operate in such a sterile environment.

The Environmental, Health, and Safety (EHS) program of Western Kentucky University attempts to provide a more distinctive and effectual learning environment for its students by integrating project-based learning into the academic program. Project-based learning essentially involves supplementing the curriculum with faculty-supervised projects with local industries that allow for increasing student involvement and responsibility as they make the transition from student to EHS practitioner. Project-based learning seeks to lead the student through a guided discovery process in the real world whereby they gain knowledge and wisdom from their experiences, and often, from their mistakes. Building on knowledge gained in coursework and laboratories, it extends learning opportunities into actual industrial settings where students can interact with workers, supervisors, and management personnel.

Since Fall 1996, the Environmental, Health, & Safety Resource Center (EHSRC) has engaged approximately 100 students in over 50 projects with local/regional business

and industry. Some of the project tasks completed include industrial hygiene sampling, environmental site characterization and remediation, indoor air quality monitoring, ergonomic evaluations, and compliance training. A few of the more recent industrial partners include Logan DESA International, General Motors, Willamette, and DANA Corporation.

The overall effectiveness of this effort as an educational tool will be enhanced as faculty address two key issues. First, a more conscious effort must be made to include all matriculating students in these projects. Currently participation in these extracurricular projects is essentially open to all students in the program. However, since the projects occur on an ad hoc basis as necessitated by local industrial need, they are difficult to incorporate as a graded component in a given course. Thus, many students do not take advantage of these opportunities because they are presently not required. This can be resolved by partnering with a given industry with issues that recur on a periodic, relatively predictable basis. These issues can be then incorporated into specific courses with the participation of all students required as part of the grade.

A second issue relates to the assessment of the educational value of the project-based approach. Although substantial qualitative evidence of the benefit of these projects exists, a more quantitative approach is needed. Educational outcomes must be developed that specifically identify what students are expected to know or be able to do as a result of their participation in these projects. Valid assessment tools must be selected and appropriate criteria for success established. Once these are in place, data can be collected and analyzed with the results utilized to improve project-based learning as a tool to producing technically-qualified, well-grounded EHS practitioners.

The University of Florida's Safety in Agriculture Course: The Cornerstone of a Best Practice Approach for an Agricultural Safety Program

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The University of Florida is one of a small number of universities that offer a course in agricultural safety. Florida agriculture is extensive and diverse. An equally extensive and diverse population of farm workers, managers and owners serves this industry. A comprehensive safety program is essential, and the University of Florida Extension Agricultural Safety Program plays a key role in supporting safety education for these populations throughout the state.

A cornerstone of this effort is an undergraduate class, Safety in Agriculture. Students who have taken the class find careers as operations managers, farmers or ranchers; as well as careers in economics, policy or law. Students may also take a companion course on Agricultural Risk Management and the Law, or advanced undergraduate or graduate study in safety. As these students go out into the workplace, they continue to communicate with the Extension Safety Program for guidance in implementing safety programs in the workplace. This serves to form a "safety network" across the state. Almost 400 students have taken these courses since 1996.

The objectives in the Safety in Agriculture course are:

1. To understand the basic concepts of Occupational Safety & Health

2. To apply occupational safety and health concepts to agricultural applications.
3. To understand how to develop effective intervention strategies to reduce or eliminate agricultural safety and health hazards and risks.
4. To understand how to educate and influence society to adopt safety, health, and environmental policies, practices and procedures that prevent and mitigate human suffering and economic losses arising from preventable causes.

A variety of teaching methods are used, which include discussions, case studies, simulations, narratives, and most recently a mock trial. Students are required to learn how to use the National Ag Safety Database, which is a Web-based central repository of health, safety, and injury prevention materials for the agricultural community. They are also required to read Marilyn Adams' book, "Rhythm of the Seasons," which is about the death of her 11-year-old son in a gravity grain wagon. This story is used in order to put real faces on the statistics. This book has a great impact on influencing safety behaviors made by the students.

Additional information included in the presentation will be details of course topics and examples of some of the activities used.

Occupational Health Psychology – A New Specialty Field that Integrates Training in Psychology and Occupational Safety and Health

Steven L. Sauter¹, Heather R. Fox², Michael L. Colligan¹, Joseph J. Hurrell, Jr.¹, Jen Schmit¹

Organizational and psychosocial factors at work have been increasingly implicated in a variety of health and safety outcomes such as cardiovascular disease and work-related musculoskeletal and psychological disorders. Such effects have attracted special concern in the context of rapid organizational change in today's workplace. However, formal training venues to prepare occupational safety and health professionals to address organizational and psychosocial risk factors for illness and injury are lacking. The Institute of Medicine has recently ranked training of this nature as one of the leading priorities to prepare occupational safety and health professionals for research and practice in the next decade (IOM, 2000).

Recognizing this training gap, NIOSH entered into a joint project with the American Psychological Association in 1996 to establish graduate level training programs at universities that blend curricula in behavioral science and occupational safety and health—a specialization that has come to be known as “occupational health psychology” (OHP). Thus far, graduate programs and curricula of this nature have been developed at 11 universities in the U.S. under this project. Similar training models have emerged in Europe under the auspices of the European Association for Occupational Health Psychology.

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These OHP graduate programs are situated mainly in psychology departments, although qualifying criteria require formal collaboration of departments and faculty in both the behavioral sciences and in an appropriate public health discipline (e.g., occupational/environmental health; epidemiology; industrial hygiene). Curricula in these programs are designed to expose students in the behavioral sciences to research methods, theory, and topical issues in occupational safety and health and, correspondingly, students in occupational health are exposed to research methods, theory, and relevant topical issues in behavioral science. Examples of topics highlighted in many of these programs include a) organizational risk factors for stress, illness and injury, b) health aspects of stressful work, including physical and psychological health, and social and economic costs, and c) organizational interventions and programs for reduction of stress, illness and injury.

In addition to description of program content and curricula, this presentation also discusses obstacles and lessons learned in program development and recruitment of students, and market niches that are developing for students with this form of multidisciplinary training.

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Plenary Session:

**SHARING OCCUPATIONAL SAFETY AND HEALTH
INFORMATION AND KNOWLEDGE THROUGH
NATIONAL AND GLOBAL PARTNERSHIPS**

S. Len Hong, BSc, MHSc, Canada

Best Practices-Sharing OSH Information and Knowledge through National and Global Partnerships

By S. Len Hong

Occupational health and safety (OSH) information and knowledge is created everyday throughout the globe. It is a vital resource for ensuring the security, health and well-being, not only of the workforce, but also of all the population. Yet, there exists a large gap in the capacity of nations to answer and respond to all the OSH questions, and to deal with every problem and situation that arises. Fortunately, people engaged in OSH have continually sought ways to assist each other to develop and share information, programs processes, and knowledge.

Today, there exists many examples of partnerships and methodologies for providing OSH information to the public and select audiences. These include collaborations of governmental, non-governmental, not-for profit, for profit and organized labour organizations. On the horizon are emerging global OSH networks which have the potential to greatly influence the development of broad-based OSH codes, standards, policies, practices and accords.

A very significant recent development is the rapid adoption of electronic information technologies for sharing information, engaging in communication, and building proactive networks for local, regional, national and international communities to work together for the elimination of workplace injuries, illnesses and deaths. Some of the examples of best practices in OSH communication and information sharing have been the result of effective and innovative use of the Internet. Governments, researchers, trade associations, sectoral organizations, professional societies, and interest groups are using the internet

and other electronic media to greatly expand their capabilities to provide their OSH information and knowledge. Additionally internet has increased the ease of communications thereby reducing barriers to forming working relationships and engaging in collaborative projects. Large increases in productivity and elimination of redundant efforts have been achieved through these effective uses of partnerships.

The Canadian Centre for Occupational Health and Safety's (CCOHS) programs and services are examples of the power of partnerships and collaborative efforts. Structurally CCOHS has been governed and directed by a tripartite Board of Governors, representing Canadian federal, provincial and territorial governments, employers and organized labour. This nature of governance enables CCOHS to function and be recognized as Canada's unbiased, credible and trustworthy national centre for occupational health and safety information and services.

Two important mandates, as part of CCOHS' services, is to provide free information to Canadian workplace parties so they can make informed decisions and implement changes, and secondly to promote sharing of OSH information and knowledge. Right from its creation 24 years ago, CCOHS endeavoured to collect and provide the best and most credible OSH information and knowledge to Canadians. Today the best OSH information and knowledge, programs and practices are created in even more places around the globe. Much of this global OSH resource is transferable and usable by other nations. CCOHS directs much of its efforts to find high quality information from many national and international sources, including governments, research and educational institutions and international agencies.

This global OSH information resource forms the basis for the creation of CCOHS publications, reviews, documents and circulars, which are written in an easy-to-understand level, for use by workers at basic literacy levels. From its inception, CCOHS has developed and engaged in many different types of partnerships and collaborations to develop and share the best available OSH information, knowledge and resources for the benefit of Canadian and global workers and workplaces. Today the internet has been used as a major tool by CCOHS to deliver the resultant OSH resources developed from collaborative ventures and partnerships. A wide variety of OSH related information is available now from the CCOHS website. A number of these programs demonstrate successful examples of partnerships.

1. Canadian Health Network: www.ccohs.ca/headlines/text59.html

Provides to the Canadian public a credible quality-controlled collection of health information including Workplace Health coverage. This resource continues to expand through an effective partnership of governments, educational institutions, and not for profit health care agencies. CCOHS continues to build the Workplace Health partnerships and website presentations.

2. CanOSH website: Canada's national occupational health and safety website

www.canoshweb.org

This is an organized portal presentation of OSH information and resources in a single location which provides instant access to Canadian federal, provincial and territorial Ministries of Labour and Workers' Compensation Board and CCOHS websites. This greatly collaborative effort greatly improves the efficiency and ease of use for locating previously scattered information. CanOSHweb is maintained and updated by CCOHS in

partnership with Canada's 14 governmental jurisdictions and related Workers' compensation boards.

3. European Union- Canada OSH, www.eu-ccohs.org

Provides a coordinated, organization and presentation of Canadian and European OSH information and content and greatly enhances sharing information in a sensible and collaborative manner. CCOHS and the European Safety Agency are the lead partners for the evolution and development of this OSH portal.

4. International Labour Organization - CIS, www.ciscentres.org

CCOHS created a web-based framework for the members of ILO's international, national and collaborating OSH information centres (CIS centres) to post their OSH information and resources in a coordinated manner. This partnership has the potential of engaging 54 nations to share information and enhances their abilities to engage in collaborative efforts. It also forms another part of the internet for developing a coordinated global OSH information network.

5. OSH for Everyone, www.oshforeveryone.org/wsib, www.oshforeveryone.org/ntnu,
www.worksafesask.ca

A collection of practical quality OSH resource for free use through the web. This is a collection of mostly Canadian OSH resources that were developed and organized for delivery by CD-ROM and internet to Canadian workplaces. The intended users are Canadian workplaces with a focus on providing small and medium sized enterprises with valuable and easy to use OSH resources. The partners are governments, safety associations, workers compensation boards and CCOHS. A key goal is to encourage users to consult and utilize the services of the contributing partners in order to maximize the value of the OSH resources. Currently there are specific programs dedicated for two

provinces and two territories, Ontario, Saskatchewan, Northwest Territories, and Nunavut.

Many more examples of partnerships and collaborations, delivered as services, products and programs, are located on the CCOHS website, www.ccohs.ca

Day's Review

Session Chair: *Max Lum, EdD, MPA USA*

Plenary Keynote:

**INTERNATIONAL HEALTH RISK COMMUNICATION
FROM A MILITARY PERSPECTIVE**

Brigadier General William T. Bester

ABSTRACT

Military Risk Communication in a Changing World

William T. Bester

Brigadier General, USA

Commanding

U.S. Army Center for Health Promotion and Preventive Medicine

Risk communication concepts and practice continue to evolve in the face of world changes. The military has unique risk communication challenges that require a balance between the need for citizens to be informed, and the need for protecting national security. In the war on terrorism, adequate and effective risk communication processes pre-, during, and post-deployment is crucial to alleviating unwarranted anxieties for service members already being placed in stressful environments in the service of their country. On the Homeland Security front, defending and battling bioterrorism and disease must be a collaborative effort through improved risk communication processes, adequate public information dissemination, and disease surveillance. In light of current events, it is even more crucial for the military to build and maintain the national and international strategic partnerships necessary to collaboratively face these challenges as a cohesive, world-wide force. This session will explore some of the steps the U.S. military is taking to meet these challenges.

INTERNET-BASED EDUCATION

Moderator: *Ian Eddington, PhD, Australia*

OCCUPATIONAL HEALTH AND SAFETY EDUCATION, SUSTAINABLE DEVELOPMENT (SD), AND SOCIAL AND RESPONSIBLE BUSINESS

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The Brundtland experiment to harness the power of the market to the maintenance of the safe, civil and sustainable society is ten years old this year. Despite claims of failure the process continues, driven by concerns about economics, environment and ethics. Worker safety and health are of central importance in Agenda 21, its action blueprint. This paper puts the view that a new (third) phase of OH&S development is beginning to emerge under the SD umbrella, and that it will be extremely demanding of OH&S professionalism in general and OH&S education in particular.

Briefly the first phase of OH&S professionalism can be tracked by the milestone achievements of people like Alice Hamilton in the USA and the Cadbury brothers in England. It brought forth, inter alia, workable legislation and standards. The 1972 Robens reforms (in England, and later in Commonwealth countries) catalysed a second phase in which new legislation called up education itself, quality assurance and control, new standards, and, under the influence of the business capture of safe work as a non-price productivity strategy, management standards involving environmental health as well. In shorthand, safety and health (SH) became safety health and environment (SHE), which became safety, health environment and quality (SHEQ), with considerable innovation and change in pedagogy and curriculum development. In this its 10th year, hallmarks of the third phase are beginning to emerge: (a) it gives ethics a higher profile, (b) it is global, (c) it is market oriented and

engages the profit motive but (d) does not sit easily with the *market is the morals, business as usual* convenience. In shorthand it is the step from SHEQ to something like SHEEQ, where the extra E signals the Agenda 21 desire for safe, civil and responsible business, government and society. Of course different countries have their own phase 2 catalysts: e.g. Minamata in Japan. Also, each of the steps from SH to SHEEK was (a) catalysed by ethical concerns and (b) incremental rather than a paradigm shift.

Many forces are driving the complexity of that extra E but only some will be mentioned here: (1) the political (Agenda 21) capture of organisations like the World Bank, the World Trade organisation, and UN agencies, (2) the business capture of safe work and environmental amenity as value chain, product and profitability strategy, and the litigation consequences if firms cheat at this, (3) the growing social intolerance of poverty, terrorism, bullying and exploitative labour relations and environmental deterioration and (4) increasing concern about failure of government. Naturally each of these coins has its flip side but, taken together, and wisely invested, they may well prove to be no small change.

Unfortunately, very powerful obstacles exist, three of which are (1) the sheer size of the poverty and SD challenge, (2) apathy and failure of will in both rich and poor countries alike and (3) the UN consensus negotiation approach after which governments can return home and behave badly. It is precisely for these reasons that OH&S professionalism is required more than ever. Handouts will further explore these phenomena and their implications for OH&S professionalism, curricula and teaching.

Lessons Learned in Developing Web Education for OSHA Confined Space Entry Training

Mark Hodges, Senior Research Associate, Georgia Institute of Technology
Sandra Tillett, Director, OSHA Region III Education Center

Many workers find it difficult or impossible to leave their jobs and attend safety and health classes. For them, distance education appears to be the most viable alternative for learning the principles of safety and health. Virtual classrooms often have struggled to replicate the interactivity of the traditional classroom, in which participants can share knowledge and demonstrate safe job tasks through conversational give-and-take. However, recent advances in computer network capacity and animation software have enhanced the ability of web courses to provide interaction and simulated depiction of work exercises. Participants in the federally sponsored OSHA Training Institute (OTI) have begun to develop web adaptations of its standard menu of courses. This presentation focuses on the collaboration of the OTIs in Regions III and IV to develop and assess a 21-hour web-based course in Permit-Required Confined Space Entry (OTI 226). The Region III OTI is operated by the National Resource Center, a consortium of the Center to Protect Workers Rights, the George Meany Center for Labor Studies, and West Virginia University. The Region IV OTI is operated by the Georgia Tech Research Institute (GTRI).

The OTI 226 web course was developed in fiscal 2002 and offers learning material on the management of permit-required confined spaces through a blend of text, still images, illustrations, video clips, quizzes, and interactive Flash animations. These animations demonstrate processes and principles involved in confined space entry and, in some cases, allow students to test their knowledge. Among the features of the course is an automated capability for students to stop their work in mid-lesson and resume the class at the point they left off. The course also has embedded links to entries in a glossary of terms as well as links to relevant pages on the official OSHA web site. Students can ask questions by electronic mail and within a single workday receive e-mail replies from a course chair at either OTI Region III or IV.

The course will be made accessible to students on the web site of training company that markets a variety of safety and health courses. A data management system will monitor students' performance and determine their eligibility to receive certificates of completion. Four sessions of OTI 226 will be presented in the current federal fiscal year, with OTI Region III and IV each providing chairs for two classes.

Evaluation of this web course began last year with informal reviews by confined space safety instructors, OSHA training managers, and a focus group of safety and health trainers conducted in fall 2001 at the computer laboratory of the International Brotherhood of Electrical Workers in Washington, DC. The assessment process will continue in fiscal 2003, when the two OTIs works with an evaluation specialist from the National Institute of Occupational Safety and Health (NIOSH) to evaluate learning performance and student preferences of several student groups. The OTIs will use the knowledge gathered in the evaluation process to enhance OTI 226 and refine its model for adapting other course offerings to the web.

This presentation will focus on lessons learned in the development and assessment of OTI 226.

Gregory J. Petkosh
George Meany Center-National Labor College
Examination of the Railway Workers Hazardous Materials Advanced Training
Technologies Program Completion Rate

In 1991 the George Meany Center received funding for training rail workers in hazardous materials awareness. This training was conducted in either eight-hour or four-day classroom sessions. Since 1991 less than ten percent of the targeted population of rail unionists have received hazardous materials training, with industrial, geographic, and financial roadblocks being part of the problem. In an effort to increase access to this training for rail workers who were unable to participate in the classroom-based training, a team assembled at the George Meany Center-National Labor College developed and offered a web-based, on-line hazardous materials training course. While the course material was well received by the students, there was a noticeable rise in the attrition rate for the latter cohorts. A structured interview was conducted via the telephone, which targeted the individuals who had volunteered to start one of the last four cohorts, but dropped out prior to completion. Of the 117 students who enrolled in the last four cohorts there were 78 students who did not complete the course and out of those 78 there

were 29 actual dropouts, and 23 students who signed up but never started the course. The remaining 26 students could not be contacted for the interview because either their telephone number or email address had changed and not been updated. The student interviews identified four issues that contributed to the drop out rate. They are:

- Time spent away from home due to work demands
- Lack of an available computer/internet service

- Peer trainer availability
- Course material issues

While computer skills were not an issue, many of the students experienced equipment failure, viruses, and difficulties in downloading and “running” the course material, which led to frustration and eventually dropping out. Another area of frustration was the lack of instructor availability to answer questions or respond to problems on the same 24/7 schedule that the program was offered.

Based on the findings of these interviews, the online course can be modified to increase the completion rate.

Occupational Safety & Health Online: Universities as Information Centers

Katherine J. Hall, Senior Editor, University of Washington Department of Environmental Health

Universities occupy a key role in occupational health and safety education and training. Though our objectivity and research expertise make us an ideal channel for information dissemination, universities have been slow to integrate health information into their Web sites. This paper describes how the University of Washington Department of Environmental Health redesigned its Web site to broaden its scope, reach, and appeal. Our site, <http://depts.washington.edu/envhlth>, has become a model for other departments in the UW School of Public Health and Community Medicine.

Our first-generation Web site was developed in the mid-1990s under a grant for graduate student recruitment; its narrow focus excluded workers or occupational health professionals. A faculty-staff task group began redesign efforts in 1999 with a broader vision reflecting our teaching, research, and community service missions. Prospective students remained a target audience, but we broadened our reach to employers, unions, elementary and secondary teachers; policy makers; and academic communities in the US and beyond. We wanted each of these audiences to find the appropriate information. Here is how we implemented our plan:

Online training is done through our OSHA-approved online institute, <http://depts.washington.edu/ehce>, which offers continuing education in six areas: hazardous materials/dangerous goods, occupational safety and health, transportation safety, environmental compliance, emergency response and management, and human resources.

Most of our 25 centers, institutes, and programs have redesigned their Web sites to be more consumer-friendly. For example, our particulate matter research center, <http://depts.washington.edu/pmcenter/>, now features current air quality information, and our Field Research and Consultation Group provides information on job hazards such as noise, silica

exposure, and ergonomics at <http://depts.washington.edu/frcg/>. By digitizing indexes, reports, and abstracts, our departmental site now provides worldwide access to our publications through a prominent link on our home page, <http://depts.washington.edu/envhlth/>.

We incorporated user-centered design with an interface that can be used by the visually impaired and read on all types of computers and browsers. Sites aimed at younger audiences, such as our undergraduate site, <http://depts.washington.edu/ehug/>, or a game that teaches toxicology concepts to high school students, <http://depts.washington.edu/hereuw/greensk8/>, are more colorful than those designed for researchers or health professionals.

Our site has an average of 2,000 visits a month, with about 31% coming from US educational institutions, 2% from US government agencies, and 8% international (from 74 countries so far this year). By tracking site traffic, we have found areas for improvement. For example, we discovered that more than 20% of the searches included the keywords “job” or “jobs.” Although we don’t intend to maintain an employment service, we designed a page with links to organizations that do, <http://depts.washington.edu/envhlth/jobs/jobs.html>.

We market our Web sites in various ways. When we learned that Yahoo!—which accounts for more than half of our site searches—had an incorrect path to our department (under “earth sciences” rather than “public health”), we corrected it. For student recruitment, we buy listings in GradSchools.com and Peterson's, which together account for about 10% of our referrals.

With minimal investment (\$2,500 for the initial design and maintenance by undergraduate design majors who work for us part-time), the UW Department of Environmental Health has turned what was previously a narrowly focused Web site into a key component of our community outreach.

– kjhall@u.washington.edu

TRAINING AND EFFECTIVENESS

Moderator: *Paul A. Schulte, PhD*, USA

Whole Brain Safety: Making Sure Workers Get It

Linda Sennett

How your brain is hard-wired to think can be expressed as a four-part model, termed the Whole Brain model. Created by Ned Herrmann, the Whole Brain model evolved from the “split brain” experiments of Roger Sperry (who was awarded the Nobel Prize in 1981), and Paul MacLean’s medical research at the National Institute of Health. The Whole Brain model posits four thinking styles that represent two halves of the cerebral cortex—cognitive and intellectual ways of thinking—and two halves of the limbic system—visceral, structured and instinctive ways of thinking.

Because Whole Brain technology is based on physiological data, not psychological information, it can be readily verified by EEG and PET scans. Yet, if we utilize Whole Brain technology as a tool or technique instead of as a scientific theory, we gain a real advantage in diagnosing and solving problems. We can apply it in day-to-day life situations that matter most. Benefits in human relations, education and business have been realized and documented.

Now Whole Brain technology has been specifically applied to the area of safety and health through Master Mind Safety Systems [M²S²]. M²S² applies Whole Brain Technology by: (1) understanding the mental preferences of individual workers; (2) communicating safety and health information to them in their preferred quadrant(s) language; and, (3) aligning employees to their work improves their chances to be happy, successful, productive, and safe.

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Strategy for Improving Dissemination of Occupational Safety and Health Information

Despite being widely practiced, dissemination of occupational safety and health information has not received extensive scholarly attention. Consequently, practically no relevant scientific literature describes the objectives, costs, utility, and effectiveness of such dissemination. In recent years, the Education and Information Division of the National Institute for Occupational Safety and Health (NIOSH) has addressed some of these issues by developing models of information dissemination as a critical component of the occupational safety and health “system.” To construct these models, NIOSH has developed a framework for modeling and tracking dissemination. The framework identifies more than 20 legislative mandates for information dissemination. These mandates drive a model that includes surveillance, priority setting, research, dissemination, and risk management. A framework for tracking dissemination efforts with four output categories has been adapted from Geisler (1996). Each stage of the framework creates a transformation activity that modifies the prior output. To focus more attention on dissemination, the safety and health community needs to (1) involve stakeholders in product development and assessment; (2) develop methods to measure sequential outputs, translations, and transformations of research findings; (3) utilize the skills and techniques offered

by information science, communication and diffusion theories, social marketing, organizational behavior studies and decision theory, and the sociology of knowledge; (4) enhance strategies to manage the dissemination of occupational safety and health knowledge across all occupational sectors; and (5) continually evaluate the effectiveness of dissemination efforts.

Improving Safety and Health in a Developing Country:

Best Practices vs. Regulatory Compliance

By Deborah R. Roy, MPH, RN, COHN-S, CET, CSP
President, SafeTech Consultants, Inc.

Bangladesh Project also involved Peter Lees, PhD, CIH, Associate Professor at Johns Hopkins, Bloomberg School of Public Health, and was directed by Georgine Price, MPH, RN, formally Project Director at Aurora International

Even though industrial facilities in developed countries have improved equipment, reduced hazards and compensated workers for injuries since the early 1900s, they still have difficulty recognizing the benefits of prevention and best safety practices, and tend to perpetuate an often ineffective approach of compliance to a minimum standard. However, the best practice approach can be successfully taught, integrated, and implemented in developing countries still finding their way in health and safety, if for no other reason than to attract or increase international trade. Using a 2001 US DOL sponsored project in Bangladesh as an example, this presentation will illustrate how a best practices approach can improve safety and health in local industry. The Bangladesh project focused on the tannery and textile industries-specifically on the chemical end of the manufacturing process, which is often now carried out in developing countries due to the occupational hazards and availability of cheap labor. Best practice elements which were completed include: selection of one representative company from each industry, hazard evaluations, preparation of an implementation plan, instruction of a 5 day training course for trainers who will provide worker training, and development of an 8-week curriculum for management who will become the in-house safety and health resource. This project was intended for completion by September of 2002, but due to world events

further implementation has been delayed. The hope is that newly developing industrial nations will integrate the concept of best practices into their infrastructure initially, thus drastically reducing the later need for regulatory enforcement.

Incorporating Respirator Research Results in Training Programs

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Personal protective equipment, especially respiratory protective masks, interfere with wearer performance of assigned tasks. Workers cannot work as long or as hard while wearing respirators as they can without. While many workers realize this, they often are not consciously aware of the amount of performance degradation, the many ways that performance can be degraded, and what they may be able to do about it.

Respirators interfere with respiration, communications, vision, heat exchange, other equipment, personal procedures (such as eating, drinking, rubbing one's eyes, etc), and anxiety level. Experiments in our laboratory have quantified performance degradation due to many of these.

Different respirator effects depend on the level of physical exertion. Respiratory effects, for instance, are important during intense exercise (80-85% $\dot{V}O_2$ max). Respirator resistances and dead volume both degrade performance time linearly with resistance or dead volume level. The higher the resistance, the shorter is the performance time at this level of work. Resistance has no effect for low intensity exercise. We have not found a respirator that doesn't degrade intense work performance time less than 25-50%. Performance degradations of that magnitude can cost lost productivity, or worse, lost lives.

Vision effects are important at low work levels but not for intense work. Console-monitoring with impaired visual acuity due to dust, lens condensation, or smoke, can impair task performance 10% for each line of visual acuity lost on a Snellen chart. An effect of this magnitude can mean that emergency procedures in a chemical or nuclear plant may not be able to be implemented. Women performed significantly better at these tasks than did men, which may be important.

Communications are important to most tasks. Communication effectiveness is the chief concern of respirator users, especially among those with language accents. With moderate background noise, single word comprehension suffered by 20% when the speaker-listener pair was separated by 0.5 m. Comprehension was degraded by 100% at 9 m. Hand signals need to be used. When using a telephone or radio handset, speakers and listeners should be taught a protocol that lets them know when to move the handset from the ear to the respirator speech diaphragm.

Anxious people should not be asked to wear respirators. They become ineffective when wearing masks. They work slower and for a much shorter time than normal individuals. Screening for anxious people uses the Spielberger State Trait Anxiety Inventory.

If workers were made aware of the shortcomings they face while wearing respirators, they could perhaps find ways to overcome some of these limitations, or they could avoid situations where the limitations are critical. Respirator training programs, then, should do more than show how to care for the respirator; they should also show how to take care of people.

CULTURAL ISSUES IN EFFECTIVE TRAINING

Moderator: *Fernando Marroquín, MD, MSc, USA*

Title of Paper: Eye Injury Prevention in Latino Farmworkers Using a Community Health Educator Model

Theme: Cultural Issues in Effective Training

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The purpose of the Eye Injury Prevention in Latino Farm Workers Project is to reduce eye injuries and illnesses in farm workers. These conditions, among the leading work-related health problems in agriculture, are caused by branches, dust, ultraviolet light, allergies from plants, or foreign bodies hitting the eye and are preventable when workers wear safety glasses and hats with visors, or when work practices are changes to reduce risks to the eyes.

The objective of the training component was to increase the use of eye protection in

farm workers through a community peer educator model. In 2001 15 promotores de salud or camp health aides (CHAs) were hired; 7 in Michigan and 8 in Illinois. CHAs conducted the project intervention consisting of provision and fitting of eyewear, a group educational session in Spanish or English and a one to one follow up during the season.

The focus of the project is to demonstrate that peer health educators are effective in providing protective eye wear, education and support of prevention in the language and culture of the migrant workers.

Program evaluation was conducted by review of CHSA documentation regarding activities with workers, supervisor review, review of eye injury or illness encounter forms and direct observation by university partners of the process and results of the intervention. Implementation evaluation was assessed by analysis of a 20 question pre and post questionnaire in Spanish or English to workers. Preliminary analysis shows that difference in injury prevention knowledge and behavior do exist between the groups of workers who interacted with CHAs and those that did not.

INTEGRATING SOCIO-CULTURAL INFLUENCES ON OCCUPATIONAL HEALTH EDUCATION AND TRAINING

**By: Prof. Jinky Leilanie D.P. Lu, Associate Prof. 1, National Institutes of Health,
University of the Philippines, Pedro Gil St., Manila, Philippines**

ABSTRACT:

This research paper focused on the health management and practices of selected Filipino women workers and the factors that influence such behavior. Factors affecting the health behaviour were investigated as an insight into the formulation of the best or better approach for health management at the workplace. Several information dissemination techniques had been given to workers towards the maintenance of occupational health and in the prevention of illnesses, injuries and accidents. However, data show that there is still an increasing trend of occupational injuries and illnesses. Health promotion without considering the personalities, culture and the social structure where individuals work may become futile and counterproductive. It is therefore expedient that all efforts to uplift the health conditions of the workers should incorporate sociological concepts and approaches that make strategies both rational as well as sensitive to the real situation and milieu of the workers. A review of the Occupational Injuries and Work Accidents Consolidated Report from 1991-1993 showed an estimated 220,000 to 248,000 occupational injuries occurring per year.⁶ Of these, 70% are non-disabling while 30% are disabling. Of these disabling cases, 0.5% to 0.9% are fatal while 91%-95% are non-fatal. Of the non-fatal disabling injuries, 99% result in temporary total disability while the rest resulted in either permanent partial or permanent total disability. From 1991-1993, 45%-58% of the occupational injuries occurred in the manufacturing establishments. The accidental causal

factors include use of handtools and machineries, unsafe mechanical or physical conditions and unsafe acts. The problem in the workplace is therefore very serious.

Some of the important conclusions in this study include:

- Any existing ideology in the workplace will foster a particular kind of health behavior congruent to the dominant culture. Whatever information dissemination given to the workers , including detailed discussion of the physiology of illness, when ideology are in direct contrast to these body of knowledge, the workers persist with their dominant health management.
- There is a need to incorporate transcultural health care values and practices and the need to accept clients on their own terms that transcend the more obvious cultural classifications.
- Health promotion at the workplace without considering the personalities, culture and the social structure where individuals work may be futile and counterproductive.

KEYWORDS: health management, occupational health, socio-cultural influences, chemical exposures, worker's health and safety, protective equipments.

Title: *Reaching Spanish-Speaking Workers and Employers with Occupational Safety and Health Information*

Author: Tom O'Connor

Spanish-speaking immigrants are a rapidly growing part of the U.S. workforce. Recent data from the Bureau of Labor Statistics demonstrates that this Latino workforce suffers significantly higher rates of injury than non-Latinos and significantly higher rates of workplace fatalities. At the same time, this population presents particular challenges in effective workplace safety and health training and education. It is essential that occupational safety and health professionals and employers hiring Latino immigrant workers gain a greater understanding of these challenges and of effective methods to reach these workers with critical occupational safety and health information.

This presentation will present a brief overview of the Latino immigrant worker population in the U.S. including current demographic data; injury data relative to the non-Latino population; particular characteristics, such as educational and literacy level, which make traditional training methods of training less effective, and occupational characteristics.

The paper will focus primarily on effective methods of training, materials development and communication with the Latino immigrant population. Among the issues to be addressed will be:

- Literacy: While the Latino immigrant population is very diverse in its educational characteristics, a substantial segment of the population lacks literacy not only in English, but in Spanish as well. We will examine a number of strategies for reaching effectively low-literacy Latino workers.
- Effective channels of communication for reaching Latino immigrants: We will look at the ways in which Latinos access information and discuss the best methods for reaching them through trusted organizations in their communities, Spanish language media outlets, and community outreach.
- Language and cultural issues: We will address issues relating to training in the native language versus training through interpreters, the importance of using members of the same ethnic group to conduct training.
- Written materials: We will address issues related to the needs for written training materials among this population, factors to consider in developing such materials, and the limitations of written materials in reaching this group.
- The Internet as a channel of communication: We will address the potential benefits and limitations of the Internet as a means to reach Latino workers with occupational safety and health information.
- Worksite-based training: We will address the benefits and limitations of conducting training for this group at the worksite.

Let's Communicate Effectively with the Hispanic Worker!

Fernando Marroquín, M.D., M. Sc.¹, Jeffrey D. Buckley, M.A.², Fernando Antón-Tay, M.D.³, William H. Weems, Dr.P.H., C.I.H.¹, Raquel B. Vázquez Moreno, Mtra.⁴

During the '90s, migration of Spanish speaking workers to the United States increased dramatically. These new workers played a significant role in the economic development during this period of expansion, particularly in the southeastern United States. In Alabama, for example, Spanish speakers in some counties grew from near zero to ten percent of the total population.

OSHA has reported a large number of accidents involving injuries and deaths among Hispanic workers who have not been trained to work in a safe manner. The risk of occupational illness is also a concern for these workers. This is particularly true in the asbestos and lead abatement industry where Hispanic workers are increasingly employed. In Alabama, the University of Alabama's Environmental & Industrial Programs division has the responsibility for overseeing standards compliance of worker training for the removal of asbestos and lead. Classes taught in both English and Spanish are evaluated, and any deficiencies are corrected before certification of the course and instructors. During the audit of one course presented on video, dubbed from English to Spanish by a "bilingual" speaker, the students were asked what they had learned. They all answered, "This person does not speak Spanish!" This incident and review of printed training materials point to the need for educational resources in "standard international Spanish." There is also a need for more train-the-trainer courses in Spanish similar to those developed in Alabama for asbestos and lead abatement workers. Protecting all our workers is the objective. Let's communicate the message properly.

COMPUTER TECHNOLOGY IN TRAINING

Moderator: *Tim Tinker, MPH, DrPH, USA*

Title: Web-Based International Occupational Health Nursing Resource Network

Kennith Culp, PhD, RN, Associate Professor, Occupational Health Nursing Core Director, The University of Iowa College of Nursing

Pamela Willard, MS, RN, Assistant Clinical Professor, The University of Iowa College of Nursing

www.occhealthnursing.net

PURPOSE: The purpose of this presentation is to introduce a web-based communication network for occupational health nursing professionals that incorporates critical information about the status of occupational health nursing in select countries. Currently, we are developing content for Korea, Slovakia, and The Gambia.

OBJECTIVE: To provide a communication tool for interaction between occupational health nursing students and the global community. Most of the content is based on actual student observations – either international students who have received occupational health training in our graduate program in occupational health nursing or American students who have visited other countries.

TARGET GROUP: Occupational health nurses and occupational health educators.

FOCUS OF THE PROJECT: To foster the development of a web-based site as an effective communication tool for disseminating critical information about the status of occupational health and occupational health nursing in select countries.

RESULTS: The web site is unique in that it focuses on the international community, including countries where lower-skilled workers are at great risk of occupational injury and disease. It has been reviewed by international site visitors and is easily accessed at any web-based work station, even in remote third-world countries. Recently, the site has

fostered collaboration between the first author and environmental health students in Kenya who were able to access the web site and asked questions about sanitation and water treatment in the poverty-stricken slums of their homeland. The web site is a work in progress.

QUALITY E-LEARNING: KEY ELEMENTS EFFECTIVE E-LEARNING MUST HAVE

Robin M. Pickens, Environmental Health and Safety Officer/Training Officer

E-learning, or electronic learning, is a broad-based term that groups together education, training, and structured information delivered via computers utilizing the web, CD's, or a company's intranet. E-learning requires various operational elements to be most effective and valuable to learners and institutions. Designers, trainers, and those who purchase e-learning products and services will discover and be able to apply key elements that all e-learning requires in order to be effective and enjoyable to learners. Broad categories of these elements include: planning, instructional and presentation design, e-training principles, data-tracking, and measurements of effectiveness.

Planning is the most important step for effective e-learning. Beware: effective programs are not canned - they require careful planning, analysis, design, and construction. E-learning is not a single, one-size-fits all solution to every training problem, and it must target specific objectives. Realizing the potential for e-learning takes forethought in designing and looking at the training and organizational goals. Planning includes the determination of costs, including costs of inefficiency and ineffectiveness. What will be the role of training? To disseminate information, build job skills and knowledge, comply with regulations, or provide professional development for employees? Will the mode of delivery be via web, CD, or include a mix of methods, such as use of discussions lists, chats, video, hands-on, and classroom training?

Effective e-learning requires proper instructional and presentation design. Instructional design is a process as well as a collection of principles about how people learn. Some critical design principles include limiting walls of text (e-learning is not an on-line book!), providing users with intuitive navigation, avoiding visual fatigue, designing to educate, not impress (emphasize substance over sizzle), maintaining a standardized layout, and minimizing scrolling.

Following e-training principles ensures that presentation concepts are clear. These principles utilize engaging interactivities with the user, which turn the training into a rich learning experience. E-training principles should always honor adult learning styles. Good e-training principles allow users to apply the information, not just read about it. A goal of many designers is to strive for 1/3 presentation

content and 2/3 application content. Breaking topics into bite size chunks allows users to complete sections in one sitting, allowing them to return to the next topic at a later time. This also gives users time to absorb the information. Limiting information to “need to know”, and eliminating the “nice to know” information will keep users motivated.

Data tracking is always a good idea. There are many good reasons to track data, which can range from simply capturing user test scores to tracking learner performance data and course evaluation/effectiveness data. Data tracking also helps determine the return on investment (ROI).

E-learning is never complete until it is evaluated. Evaluation helps to measure effectiveness of e-learning. Donald Kirkpatrick has four levels of evaluation: reaction, learning, behavior (use of what was learned), and results (impact on the organization). Results are obtained through questionnaires, tests, observing workers at work, talking with supervisors, performance measures. ROI may be considered a fifth level of evaluation.

Implementation of these elements will guarantee that e-learning is valuable to learners and the company or institution– and worth the cost of the initial investment. These elements will ensure the continual success of e-learning. Illustration of these elements, as well as lessons learned, will be discussed using e-learning training modules designed for the National Cancer Institute at Frederick.

OSHA eProducts: Using Technology for Compliance Assistance and Training

By Bob Curtis and Rhett Thomas
OSHA Salt Lake Technical Center

This presentation will focus on the benefits that OSHA has reaped by using the World Wide Web to distribute information. This will detail the cost/benefit ratio of web pages vs. other mediums, and explain how OSHA's eProducts compare to "traditional" web pages. The presentation will also give a brief history and overview of OSHA's eProducts, and touch on OSHA's cost-effective methods for keeping information up-to-date.

General cost benefit regarding web pages:

It's hard to argue against using the web to distribute information. OSHA has more than three million unique user sessions per month, making us one of the top five .gov web sites. The average user spends about 18 minutes on our site. Imagine the cost of providing an 800 number and staffing a phone center to accommodate those same inquiries. It's also tough to measure whether this would be as effective. It may sound cliché, but people have information at their fingertips when using the internet – they can skim the surface for general information, or dig further into the details through the use of hyperlinks.

eProducts and "traditional" web pages:

Most of the content in OSHA's eTools is displayed using "traditional" web programming. The difference is, while some sites may offer a lot of plain text on a subject, OSHA's aim is to provide a more graphical, user-friendly way to understand OSHA's requirements and safe work practices. We spice up the content with graphics and animations, and make it more interactive by implementing "Expert System" and "Instructional Design" components.

Our hope is that these eProducts provide an interesting and quick way for users to access key information. People usually don't visit the OSHA website for fun, they come for information. A real benefit of OSHA's eProducts comes not only in the user's ability to access information, but also in their comprehension and enjoyment of the material.

OSHA's eProducts, a brief overview:

1. Technical Links web pages - Subject specific web pages of reference links by industry, operation or hazard. These include key information and hyperlinks to various sources, links to OSHA standards, directives, publications, training materials and eTools.

2. Electronic Technical Assistance Tools (eTools) - Stand-alone, interactive, web-based training tools on occupational safety and health topics. These are highly illustrated and utilize graphical menus as well as expert system modules that enable the user to answer questions and receive reliable advice on how OSHA regulations apply to their workplace.

3. Expert Systems - Interview software/programming that asks about workplace settings, activities, materials, equipment and policies. The programming then provides a customized report describing possible hazards and applicable OSHA standards. Guidance depends on respondent's answers.

4. Instructional Design (part of eTools) - Adds educational enhancements and blends background information with OSHA standards and industry best practices. This could be question and answer quizzes, compliance checklists, or interactive demonstrations that test user's comprehension of material. With the programming that exists today, the possibilities are really only limited by one's imagination.

5. PowerPoint presentations - Principle information covered in an eTool. Some include links to the eTool to allow instructor more flexibility. Can be easily altered for specific presentations.

6. Subject-targeted CDs - Include all of the eProducts related to a specific topic (e.g., Technical Links pages, eTools, PowerPoint presentations, OSHA Standards, Directives). Can be a handout for outreach and trade associations. A cost-effective way to distribute eProducts to individual users.

Cost-effective methods for keeping information up-to-date:

Updating and maintaining web pages can be expensive. Information, techniques, products and theories are constantly evolving so keeping materials "evergreen" is certainly a challenge. Part of OSHA's solution to this is maintaining editorial boards for each topic. These boards include various subject experts, whether they are from the world of academia, trade associations, or other government agencies. These individuals review technical materials every couple of months or semi-yearly at the very least. Using this outside help is one of OSHA's cost-effective methods of keeping content up-to-date, without spending a fortune.

Title: Academic Preparation for ISO 14401

Linda Lee, MS, REM

University of Texas M. D. Anderson Cancer Center is a premier research hospital that recently attained its ISO 14001 certification. By becoming one of the third hospitals and universities in the United States to obtain such recognition truly demonstrates integrity, admiration and responsibility.

M. D. Anderson is extremely committed to operate in a safe and responsible manner by being respectful of the environment and the communities where operations exist. Environmental protection is a primary management responsibility, as well as the responsibility of every employee and M. D. Anderson is prime example. To meet their obligations, a sound electronic environmental management system was developed to adhere to federal and state laws, along with ISO 14001 principles. The goal of the Environmental Management System (EMS) Web include:

- Supporting M.D. Anderson's Environmental Policy and communicating the EMS Message with the institution and to their external stakeholders.
- Implementing compliance programs that meet the intent of legislative actions.
- Reducing M. D. Anderson's Environmental Footprint
- Improving the communication and understanding of M. D. Anderson's Environmental Programs and by providing faculty, employees and patients with immediate access to current information.

M. D. Anderson's mission is *Making Cancer History*, but their EMS Message states that *M. D. Anderson Cares about the environment* in which we all live. Both statements are genuine when it comes to cancer prevention, education, and saving lives.

VIDEO AND RISK COMMUNICATION-LESSONS LEARNED

Moderator: *Rob Nicholas, MA, USA*

Video Lessons Learned for Reaching Specific Stakeholders and a Wide Audience

Rob Nicholas
Health and Safety Communications Project Leader
Los Alamos National Laboratory
LA-UR-01-2407

Video has the potential to meet specific stakeholder-needs and simultaneously reach a wide audience. The U.S. Department of Energy/Los Alamos National Laboratory video—*Beryllium Worker Safety*—was developed to communicate essential health and safety information for beryllium workers. In a potential environment of high concern and low trust, the video combines technical information with the personal perspectives of current and former beryllium workers, and invites workers to make informed decisions.

At the same time, the video was designed to reach other members of the extended beryllium community, including industrial hygienists, managers, scientists, occupational medicine staff, family members of beryllium workers, and the public. Because this audience is so varied, a wide range of backgrounds and learning styles had to be addressed simultaneously. Visual, audio, kinesthetic, and other learning styles are engaged through a variety of video elements and techniques. The use of narrative and metaphor provides an overall context for the video and a means for converting short-term to long-term memory. Informal interviews convey the stories that the workers want to tell as they relate their personal perspectives and values. The cycling of information-packages allows easier assimilation. Music, motion, and color help to engage the viewer, accent key information, and provide continuity.

These techniques, when integrated throughout the video, contribute toward a balanced story that serves the beryllium worker and the broader beryllium community.

Tell Me A Story – Using Narrative to Teach Miners

by Elaine T. Cullen, Principle Investigator
Spokane Research Lab/NIOSH

Miners, like many skilled blue-collar workers, are not traditional learners. They have not generally been successful in classroom type settings, preferring to learn on the job in a hands-on environment, usually from older, more experienced miners who have earned their respect. U.S. miners are required to have annual safety training, but they have not viewed this positively. In fact, it has been called “safety jail” by many of them, who regard it as a time to get a little extra sleep. The challenge for the NIOSH research project “Developing and Evaluating Effective Safety Training for Miners” then, was to find a way to develop effective safety training for these people, particularly in view of the fact that their work is among the most dangerous of all occupations, and failure to learn about and pay attention to the hazards of doing the job could mean injury or even death.

Miners are born story tellers. They share “near miss” stories, stories about master miners they have known, and stories about how things used to be. These stories not only pass along information about what will happen if a miner fails to respect the mining environment, they also instruct listeners in the culture of mining and the values that it embraces. Stories, it seemed, were a possible way to get safety messages to miners, especially inexperienced ones, and using older, wiser miners in these stories was an obvious choice.

Finding appropriate stories to tell was not a difficulty. Every miner who has worked for any length of time has personal experiences of near-misses, either as a participant or as a by-stander. A digital video format was chosen as the most logical media for capturing the

stories, because of the versatility it provided as a source of raw material to other media such as DVD, VHS or even CD-based training. The initial plan was to visit the Sunshine Mine of northern Idaho to interview survivors of the infamous Sunshine Mine Fire of 1972 that killed 91 miners. In those interviews, it was hoped, other stories would surface, that could also be used to illustrate the hazards and consequences of working in a dangerous environment. All of the miners interviewed had at least 30 years of experience, and all of them had stories to tell. 27 people were interviewed on camera, for anywhere from 15 to 90 minutes. They talked about the fire, but also talked about how they got into mining, what mining was like then, who trained them, what kind of mistakes they had made and what happened because of them. It is an amazing wealth of information that will generate many more training products before it is depleted.

This presentation will discuss how the videos that have been created to date were developed, how “master miners” and story lines were chosen, and how the resulting videos have been received in the mining industry. It will also provide information on the newly released documentary-style video, *You Are My Sunshine*, which tells the story of the Sunshine Mine disaster through the eyes of those who lived it. This particular video has generated intense interest, with over 700 requests for copies received in less than a month after its release in early August of 2002. It is a compelling story, and one that is already being used nation-wide to train mine rescue teams as well as fire-fighters and other emergency teams. It appears that story-telling is a very effective way to train skilled blue-collar workers. To hear another person’s experience, and see the impact it has had, is to become involved in the experience, and to learn from it. And that is what training is all about.

Lessons learned from working with communities to improve risk communication within the Superfund program

Primary Author: Jayne Michaud, Environmental Scientist, USEPA Headquarters

Communication about health risks at toxic waste sites is an integral part of the Environmental Protection Agency's Superfund risk assessment and risk management process. To ensure that communities are informed and empowered to participate in the process, early and frequent involvement is necessary. Accuracy and consistency are considered key to providing basic information to communities learning about the regulatory process.

Communities may be inundated with information from many sources. Experience at Superfund sites indicates that some concepts are often misunderstood. Video communication, in conjunction with other forms of outreach, is effective for delivering an accurate and consistent message. With the help of community members, EPA risk assessors designed and produced a set of videos about risk assessment and community involvement. Lessons learned from this process include: interview Stakeholders about what they want in a video; emphasize the Stakeholders (in this case, communities living near Superfund sites) in the planning phases; minimize the number of "talking heads", but maximize community interviews; focus on the few key messages that can be expanded upon during discussions; involve a small group of knowledgeable people with ability to communicate clearly and concisely; test the video with a broad range of Stakeholders.

YOUNG WORKERS AT RISK

Moderator: *Linda McCauley, RN, PhD, FAAN, USA*

Reducing injury risk of students in vocational-technical schools and young workers in small businesses

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NIOSH estimates that in USA each year 200,000 adolescent workers suffer work-related injuries. Many States mandate that vocational schools and small businesses have safety and health programs, conduct hazard analysis, and do safety inspections, maintenance, and comply with safety, health, and environmental regulations. To address these needs, NIOSH has taken a leading role to reduce injury risk by increasing safety and health awareness and safety education of vocational school students, teachers, administrators, and small businesses owners. NIOSH in conjunction with Environmental Occupational Health Sciences Institute of NJ developed an occupational and environmental safety checklists program. This program contains instructions on how to establish, implement, and maintain an occupational safety, health, and environmental program within the school and small business. It is comprised of over 80 safety checklists that cover occupational and environmental hazards found at schools and especially in the shops and small businesses. The program helps the user prepare for and participate in OSHA- and EPA-type compliance inspections. It enables the users of the checklists to identify occupational safety and health and environmental hazards and areas that need improvement. It can be utilized by the teachers, students and young workers to help them learn about government regulations pertinent to their shop and workplace. The program provides technical assistance, resources, and guidance to ensure that the school is in compliance with occupational safety and health and environmental

regulations. The document will soon be available as a CD-ROM and on the NIOSH web site at <http://www.cdc.gov/NIOSH>. For free copies of the CD-ROM call 1-800-356-4674.

Getting the Training They Need: Worker Training for Adolescent Migrant Farmworkers

L McCauley; D Sticker; J Scherer; M Lasarev, K. Anger

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Agriculture in the United States is highly dependent on the labor of seasonal and migrant farmworkers and uncertainty exists regarding the number of youth working in agriculture. While exact figures are not known, the US General Accounting Office estimates that adolescents make up seven percent of this valuable workforce. Results of the National Agricultural Workers Survey indicate a trend towards an increased percentage of hired farmworkers between 14 and 17 years old. Development differences between adults and children may lead to distinct differences in risk perception and risk taking activities of the adolescent farmworker workforce. Organizations serving farmworkers have recognized a change in workforce migration patterns and report a substantial increase in the number of farmworkers speaking indigenous dialects. In an effort to integrate an occupational health and training program into an established educational system, we partnered with the Oregon Migrant Education Program to offer worker protection training to adolescent farmworkers. This project targeted highly migratory adolescent farmworkers, the majority of whom travel without parental accompaniment.

We completed interviews exploring pesticide knowledge, agricultural work experience, and occupational health beliefs with 343 migrant Latino adolescent farmworkers in agricultural communities throughout Oregon between 1998-2001. During 2001 and 2002 we also provided pesticide training in the form of an interactive flip chart presentation, an EPA-certified video or self-paced computer training to approximately 200 of these adolescents. Adolescents were recruited in migrant labor camps and English as a second language (ESL) programs. Questionnaires were administered by personal interviews with trained bilingual research staff and explored knowledge of pesticides and their effects, agricultural work experience, and occupational health beliefs. We measured pesticide knowledge (general knowledge of pesticide hazards, health problems, and protective clothing/safety) before the training occurred, one hour after the completion of the training and two weeks later. A control group of adolescents recruiting from migrant labor camps and who did not receive any specialized training served as a comparison

group. In addition we compared the knowledge level of adolescent farmworkers to adult farmworkers recruited from the same camp settings.

While pesticide training is an occupational requirement for fieldworkers, only 29% of the adolescents reported having received pesticide training prior to beginning agricultural work. Twenty three percent indicated they currently or previously mixed and /or applied agrochemicals, an activity that requires specialized training or certification and has specific age restrictions. While pesticide knowledge scores were higher than expected given the lack of formal training, questions about chronic health effects seemed more difficult to understand. There was a trend for adolescents that spoke an indigenous dialect to score lower on pesticide knowledge with significant differences in their knowledge of protective clothing and safety. Differences were also observed between older and younger adolescents. The knowledge scores were found to be associated with the likelihood that adolescents would report the use of protective clothing when working in agriculture. Analysis of the effectiveness of the different modes of education delivery are in progress.

These results point to the need to increase training opportunities for migrant farmworkers and special attention is needed towards those adolescents that may be engaging in hazardous work conditions. Education of farmworkers who speak indigenous dialects presents challenges in occupational health and safety.

TITLE: Assessment of Sight and Hearing Protection Use in High School Vocational, Technical and Industrial Education Programs

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The use of sight and hearing personal protective equipment (PPE) is essential in preventing injuries that can cause permanent loss of vision and hearing. High school vocational, technical and industrial (VTI) education programs use equipment that may cause eye injuries and hearing loss. The National Center for Injury Prevention and Control has identified industrial arts classes as an area “associated with possible danger” at school, and in the category of occupational safety and health, Healthy People 2010 has set a goal to reduce the injury rate in adolescent workers from 4.8 per 100 full-time equivalents (FTE) to 3.4 per 100 FTE.

This study surveyed the behavior, intention, attitudes, subjective norms, and facilitating conditions in the use of PPE. 250 high school VTI students participated, and they were queried regarding use of PPE (response variable), as well as activities performed, perceived hazards, attitudes about PPE use, safety education classes attended and history of eye injury or hearing loss (predictor variables). A total of 228 usable surveys were returned, giving a 91.2% response rate. A descriptive analysis of the data revealed that the majority of the respondents were male (96.5%), did not live on a farm (83.8%), attended VTI classes on an average of 9.1+/-6.5 hours per week, and had been taking VTI classes 2.8+/-1.3 years.

Positive associations were seen between the use of safety eyewear and the predictors included in the model: whether fellow students used it OR=5.15 (95% CI, 3.65-7.28), the student's desire to prevent eye injuries OR=2.07 (95% CI, 1.28-3.35) and if the student was concerned how he/she was perceived by fellow students when wearing it OR=1.87 (95% CI, 1.22-2.87). The use of hearing protection was positively associated with the predictors in the following model: whether other students were using it OR=93.28 (95% CI, 27.23-319.51), and if the student had undergone a hearing test in the past OR=2.88 (95% CI, 1.12-7.37). The use of hearing protection was negatively associated with whether the student had been taught about the use of eye and hearing protection OR=0.19 (95% CI 0.06-0.65) and if the student lived on a farm OR=0.13 (95% CI, 0.03-0.49).

Traditional types of classroom safety education may not be helpful in the VTI setting. The perception of what one's peer were doing appeared to play the major role in determining PPE use in these students, and this should be recognized when deciding how to apportion and utilize resources to best protect them from eye injury and hearing loss. Strategies that incorporate this finding when encouraging the use of sight and hearing protection may help lead to routine use of PPE in these students.

Best Practices in Agricultural Safety Education for Teenagers

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Pamela S. Kidd, PhD, FAAN, Arizona State University, Tempe, AZ

When adjusted for work time exposure, work related injuries to adolescent teens on farms and ranches outrank injuries to adult farmers. The purpose of this paper is to describe an agricultural safety education program developed with high school students and agriculture teachers. The Agricultural Awareness and Risk Education Project (AgDARE) included student guided content and evaluation of the quality, realism, and effectiveness of the curriculum to change farm work behavior.

A quasi-experimental cross-over design was used. Students in Kentucky, Iowa, and Mississippi (N=1,137) participated in the program. The intervention included four sets of narrative and physical simulations. These reality-based exercises focused on prevention of amputations, spinal cord injuries, noise-induced hearing loss, and hypersensitivity pneumonitis. Two visits were made to each school across the school year. Pre and post tests to evaluate farm safety attitudes and readiness to change behavior were administered just before the first visit and immediately following the second visit to the intervention groups and at similar time frames for the control group. Students evaluated the realism and quality of each exercise using a five-point Likert scale. One year later 29 intervention students participated in farm visits for assessment of their farm work behaviors. The intervention group consisted of 591 high school agriculture students, of which 373 completed at least two narrative and two physical simulations that focused on the same disabilities. In the control group 417 of 547 students had complete data sets.

Students who completed at least two matched units of AgDARE demonstrated significant positive changes in both Farm Safety Attitude ($p = .02$) and Stages of Change ($p < .0001$) scores compared to control students. Students rated the quality and realism of the exercises high, with no individual unit rated below a three on the five-point scale. Thirty-one positive changes in work behavior were noted during the farm visits. Twenty of the 29 visited students had made changes since participating in AgDARE. Teachers verbalized that the combination of teaching methods enhanced the classroom experience and requested the content for future use.

A student-driven, multi-strategy training program is effective for influencing positive teen work behaviors. The research team did not have the advantage of knowing the students or the physical class settings. It is possible that when AgDARE is delivered by the regular agriculture teacher and incorporated into existing curriculum, students may respond even more favorably to the content and exhibit more positive work behaviors.

NOTE: AgDARE will soon be available through the National Agriculture Safety Database (NASD) at www.cdc.gov/nasd. Two of the narrative modules have also been translated into Spanish but have not been evaluated for effectiveness,

Plenary Session:

**VISIONING THE FUTURE OF COMMUNICATION
STRATEGIES IN OCCUPATIONAL SAFETY AND
HEALTH**

Jorma Rantanen

Lunch with Closing Keynote Speaker:

**MAKING BEST PRACTICES HAPPEN: SIZZLING THE
IDEAS**

Antonio Grieco, MD, Italy

"Best Practices in Occupational Safety and Health, Education, Training, and Communication:

IDEAS THAT SIZZLE

Baltimore, Ma. - October 28-30, 2002

Abstract

"Making Best Practices Happen: Sizzling the Ideas"

Antonio Grieco

"Clinica Luigi Devoto" Department of Occupational Health, Milan University

Chair ICOH SC "History of Prevention of Occupational and Environmental Diseases"

The "Culture of Safety" is often mentioned, quite often to complain its lack or even its absence. However I understand it has never been defined in the scientific literature, specially from the epistemological point of view which plays a major role to address goals and contents in training initiatives. Nor do I think that the thin but quite resistant thread associating our attitudes to safety at workplace to general lifestyle behaviours has been so far sufficiently disclosed. And within the latter, the different behaviours be they leisure ones or of any other kind. In other words, except for the differences between fulfilments in charge to employers and employees respectively, negligence to safety does not recognize physical or functional barriers. Therefore, if present, it displays at work and when we drive our car or at home where, as is well-known, accident prevalence is on average much higher than at workplace.

The "culture of safety", far from being only a harvest of information and knowledge to be circulated through lessons and updated teaching aids, can be considered as an orderly altogether of "values" which in their turn, come from the respect of some "principles", followed by the choice of some "attitudes" addressed to "behaviours" towards safety goals. Two main principles/values are quite relevant:

- a. respect of psycho-physical integrity of one's own and of others;
- b. respect of integrity of all the "objects" involved during different activities.

As to attitudes and behaviours, the former are unconscious acquisitions addressing organization and sequence of the latter in order to achieve some goals. Attitudes are not observed directly but through ensuing behaviours. When focusing our attention on behaviour as the last and visible ring of the logical chain proposed, the following major issues proved to be those more relevant to safety.

- Research and acquisition of all the information and knowhow necessary to implement activities following best practice.
- Implementation of actions and decisions in the respect of established procedures.
- Periodical checks of technique and equipment adequacy as well as of conditions for activity implementation.
- Use and maintenance of available individual protection means
- Analysis and discussion of anomalies and related origins for their removal.

On the basis of these issues, Information-Training-Communication can suggest main paths and useful tools for spreading the "culture of safety".

The new European legislation (specially the 391/1989 European directive) increased the value of safety education and training (E&T).

The subjects to be educated and trained:

- the people who anyhow will have to deal with the enterprise and work world
- experts, entrepreneurs and workers within the enterprise.
- occupational preventive medicine operators of public services, to enable them to adjust the enterprise educational and training system

E&T addressed to improvement of workers' safety and health at work must cover the whole enterprise system and, within it, the prevention subsystem. Hence the necessity of some "E&T intelligence" within the enterprise enabling permanent education.

The complexity of the E&T system poses at least three conditions:

- establish a convention on the deontological minimum requirements, first of all to discourage the wild market and improvisation
- set up a network and favour synergies within the market rules
- avoid monopolistic aspirations.

A non ideological approach to information technologies and e-learning is not decisive but may be useful and necessary as least quantitatively speaking.

In the frame of the general E&T gap, maybe the most neglected area is E&T effectiveness assessment. 3 key words are proposed: method and tool **appropriateness**, content **coherence**, path **completeness**.

Temporary work still poses unresolved problems.

Implementation of an international network of educators would be desirable.

In conclusion, it is worth calling the attention on the fact that these initiatives are aimed at adults (at least at workplaces), while quite often the used methods come from pedagogical experiences.

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