Tuesday, March 24

Ergonomics - The Department of Defense Perspective Track

8 a.m - 8:30 a.m

Defense Occupational Health Readiness System - Industrial Hygiene

Kevin Wisniewski, Industrial Hygienist and Sandra Parker-Mork, Industrial Hygienist
U.S. Army
(All)

Objectives:
- The eight steps of the DoD Exposure Assessment Model
- The Army risk management initiatives to capture ergonomics hazards
- The data extraction reports that help to pinpoint personnel exposed to ergonomics hazards within specific work processes

Description:
Army Industrial Hygienists (IH) is tasked to anticipate, recognize, evaluate and control occupational health hazards at medical treatment facilities and installations worldwide. In order to accomplish these tasks, an IH will conduct evaluations, or surveys, at the workplace operations to determine the employees (both military and civilian) potential exposures to chemical, physical, biological and ergonomics hazards. The information gathered during these evaluations, including worker exposure monitoring results, is entered into the DOEHRS-IH. This database collection system is used throughout the Department of Defense.

DOEHRS-IH records contain a history of individual worker exposures. The data can then be analyzed and utilized by environmental, safety and occupational health practitioners to prioritize preventive medicine actions. This includes a baseline to facilitate exposure based medical surveillance, allocation of resources, implementation of controls and development of appropriate training programs. All these actions enhance combat readiness by focusing efforts to reduce workplace exposures, illnesses and injuries

8:30 a.m - 9 a.m

ErgoFix

John Pentikis, Ergonomist, U.S. Army
(B)

Objectives:
- Assess typical office workstation design flaws seen in an office environment
- I dentify mismatches comparing the typical set up vs. a good ergonomic set up
- Using a Web-based application to educate employees

Description:
ErgoFix is a Web-based, computer workstation, self-assessment program designed to identify problem areas at employee workstations through job factor statements. Once ErgoFix has identified general problem areas, questions that are more specific are generated to pinpoint areas of concern. ErgoFix then offers a comprehensive set of possible solutions in a report. The employee can then make the recommended changes to the workstation. ErgoFix allows workers to take an active roll in the promotion of their own health and safety while at the same time takes a step in the reduction of the Department of the Army's injury rates.
9 a.m. - 9:30 a.m.

**Keeping Employees Healthy at Work through Proper Ergonomics**
Sharon Terrell-Lindsay, Senior Program Analyst, Department of Defense

**Objectives:**
- Overview of the Computer/Electronic Accommodations Program (CAP)'s Healthy Work Practices Program
- How CAP provides assistive technology and services to federal employees with disabilities
- Information on proper ergonomic set-ups for an office
- How to conduct an office needs assessment for your employees
- What CAP provides, who can participate and how to submit a request for accommodation

**Description:**
The Computer/Electronic Accommodations Program (CAP) is the federal government's centrally funded accommodations program that provides assistive technology and services to federal employees with disabilities. It is at no cost to the agency. In this presentation, you will learn how CAP's Healthy Work Practices Program offers assistance in preventing musculoskeletal disorders such as carpal tunnel syndrome. We will also cover how CAP is educating federal agencies with ergonomic training, presentations and CAP's own Workplace Ergonomics Reference Guide. This presentation will cover the proper ergonomic setup for an office and how to conduct your own needs assessments. CAP provides personalized needs assessments in several ways, including individual evaluations at the employee's workstation, by a visit to CAP's Technology Evaluation Center or by a phone or VTC assessment given by one of CAP's trained staff. You will gain a better understanding of ergonomic principles and best practices, the needs assessment process and how CAP is a valuable resource to federal employees with disabilities.

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8 a.m. - 8:30 a.m.

**Ergonomic Best Practices for Patient Handling**
Mike Lampl, Ergonomist, Ohio Bureau of Workers' Compensation

**Objectives:**
- A description of various equipment used to reduce lifting of residents/patients
- Usage results data in using this equipment more than 100 facilities, showing injury rate decreases
- Cost benefits information to support using this equipment

**Description:**
According to the Bureau of Labor Statistics (BLS), nursing home workers suffer most injuries when handling residents (51.2 percent). Fifty-eight percent of the injuries were strains and sprains. Back injuries account for 42 percent of all injuries in extended-care facilities, compared to 27 percent in the private sector. Nurses' aids and orderlies have the highest injury rates of any occupation except for truck drivers and laborers. The Ohio Bureau of Workers' Compensation has given over 100 health care facilities grants to use equipment such as floor lifts, ceiling lifts, electric beds and other equipment to reduce the amount of manual lifting of residents/patients. A description of the equipment and the results (lower injury rates, lower turnover, etc.) will be covered during this presentation. The injury rates in work units using the equipment were reduced to 7.88 per 100 employees from 12.37 per 100 employees.

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8:30 a.m. - 9 a.m.

**Yes, Safe Patient Handling Programs Can Work**
Carys Price, Director of Employee Injury Prevention
Denise Netta-Turner, Injury Prevention Educator
Rick Zock, Injury Prevention Educator
Christiana Care Health System

**Objectives:**
- You will have an understanding of the basic components necessary to initiate and implement a successful safe patient handling program
- You will be able to describe equipment choice decisions based on mobilization needs of population
- You will be able to identify two new uses for equipment/devices
- You will be able to list three teaching strategies utilized for learning safe behavior practices
Description:
This session is an overview of the development of a Safe Patient Handling Program at Christiana Care Health System that has improved Lost Time Injury (LTI) rates from below to above the national benchmark over a 10- to 15-year period. Program components included in the evolution of this program include:
- Education/training
- Equipment
- Support (administrative and textiles/preventative maintenance)
- Resources developed (people and informational material)
- Continuous improvement process (techniques and research)

9 a.m. – 9:30 a.m.
Choosing Patient Handling Equipment and Slings to Fit Caregiver and Patient Needs
Lynda Enos, Ergonomist; Nursing Practice Consultant, Humanfit
(I)

Objectives:
- Identify optimal physical and cognitive ergonomics design features of safe patient handling equipment
- Discuss appropriate choice, use and care of patient handling slings
- Define a process for choosing patient handling equipment that best meets patient care goals, patient characteristics and facility design constraints

Description:
One of the key components to successful safe patient handling programs in any health care environment is knowing how to choose the right equipment to match the task, patient characteristics and design of the facility. This session will provide you with information on how to choose patient handling equipment and slings that meet this goal. Evaluating equipment and slings for the best safety and ergonomics features that enhance caregiver and patient safety will be explored. Case studies from acute and long-term care facilities will be used to illustrate best practices in SPH equipment choice.

Manufacturing Applications Track

8 a.m. – 8:30 a.m.
Ergonomic Design Guidelines your Engineers Need to Know
Blake McGowan, Senior Consultant and Ergonomics Engineer, Humantech
(I)

Objectives:
- The latest ergonomic design principles
- Practical ergonomic design guidelines based on functional anthropometry
- Key learnings from actual engineering projects

Description:
This session will help participants learn and share the latest ergonomic design principles with their engineers, such as establishing ergonomic design guidelines based on functional anthropometry rather than static anthropometry. Ergonomic design guidelines will be provided that engineers can immediately apply to their current projects and their work environments. Guidelines will be provided for the following:
- Workstation heights and reaches
- Manual material handling
- Hand and arm strength
- Hand tools
- Access
Time savings and the quality impact for each design guidelines will be quantified and shared.

8:30 a.m. – 9 a.m.
Impact of the Use of Gloves on Worker’s Performance and Comfort in the Semiconductor Industry
Awwad Dababneh, Ph.D., C.P.E., University of Jordan and Paul Schwab, Ergonomics Program Manager, Texas Instruments Inc.
(I)
Objectives:
- Assess the impact of using wet and dry gloves on worker’s performance and comfort in the semiconductor industry
- Results evaluated include gender, function while using gloves, type of gloves and other factors
- Discussion of uses for future investigation

Description:
The potential impact of using single and double gloves on worker’s performance and comfort in the semiconductor industry was assessed using an experimental investigation. Four glove conditions were included in the study: no gloves or bare hands, single vinyl gloves, latex rubber gloves over vinyl gloves and tri-polymer gloves over vinyl gloves. In addition, each glove condition was examined under wet and dry conditions. Three basic tests were devised: (1) carrying out a test task, (2) using a testing rig to assess the subject’s ability to exert pull-down forces while using a power grip and (3) using the same test rig to assess the ability of the subject to exert a pull-down force while using a pinch grip. The test rig included dimensionally identical end effectors made of polypropylene, stainless steel and Teflon. Sixteen male and seven female workers participated in the study. Results indicated that using gloves increased the level of effort exerted, reduced comfort and reduced the sense of security during the test task. The ability to exert pull-down forces using either power or pinch grips were reduced with different degrees for the single and double-glove conditions as well as for the different materials of the end effectors. It was concluded that using gloves may reduce the workers’ capacity to perform material handling tasks while wearing gloves. Moreover, it can be concluded that the effects of using gloves is a function of the type and characteristics of the material handled; thus recommendations for future investigations are made.

9 a.m. – 9:30 a.m.
An Assessment of Human Performance for Hydraulic Excavator Operators
Khaliah Hughes, Doctoral Student, and Xiaochun Jiang, Associate Professor, North Carolina A&T State University

Objectives:
- Learn how human performance can be modeled for hydraulic excavator operators
- Gain knowledge about design issues using Micro Saint Simulation software

Description:
Interaction between humans and technology is fundamental in the evolution of modern systems. Fluid power technologies aim to utilize this type of interaction within systems to deliver safe, efficient and effective performance. However, the traditional design process has placed much emphasis on technical performance without regard to the importance of human components. This research presents the development of a simulation model for a hydraulic excavator to assess human performance. Micro Saint Simulation software was chosen as the modeling tool to study and analyze the basic actions that occur in typical hydraulic excavation processes, taking into consideration both cognitive and physical aspects. Such a model will allow for the analysis and design improvement of existing excavator systems and to assess the impact of variations in human-machine interaction that will ultimately yield a better understanding of fluid power systems. Results of the simulated tasks and processes reveal time span, stability and consistency at various points during the excavation process. Variations can be explained from the multiple reasons and methods by which operators undertake work tasks (scooping, digging, rotating, etc.). The model revealed implications of operator fatigue leading to stress and an increased amount of concentration for the operator. Recommendations suggest that designers consider the placement of controls and measures to reduce operator workload.

Ergonomics Programs Track
James Galante (TBD)

Ergonomics - The Department of Defense Perspective Track

1:30 p.m. – 2 p.m.
Army Installation Program Development
Kelsey McCoskey, Ergonomist, C.P.E., U.S. Army

Objectives:
- How to implement a comprehensive ergonomic program development and assessment
- Perform an ergonomics program assessment
- Facilitate development of revised program plans and priorities
Description:
The implementation of comprehensive ergonomic program development and assessment will allow installations to meet regulatory requirements, identify trends and deficiencies in their program and develop corrective actions. Recently there has been an increased focus on developing and implementing ergonomic programs in the Department of Defense in an effort to reduce injuries affecting the civilian work force and improve military readiness. Ergonomists are faced with the need to develop ergonomic programs and to assess the programs that have been developed. Ergonomics program development and assessment are essential steps in the process of decreasing work related injuries in both civilian and military personnel. Program implementation, progress and effectiveness can be evaluated through both external and internal review of the installation ergonomics program.

2 p.m - 2:30 p.m
Ergonomics: An Army Industrial Hygienist's Corporate Perspective
Dennis Palalay, Program Manager, U.S. Army
(All)
Objectives:
- Describe the Army Industrial Hygienist's (IH) role with integrating ergonomics in an industrial hygiene program
- Summarize the challenges and successes from the Army's IH corporate perspective
- List actions we are taking to improve ergonomic assessments
- Discuss the return on investment to implementing the listed actions
- Dramatize the strategic importance of becoming a “Trim Tab” in guiding the successful integration of ergonomics in an industrial hygiene program

Description:
A comprehensive set of observational and scientific skills are required to anticipate, recognize, evaluate and control a variety of hazards in any Army operation. Clearly, the knowledge and skills to prevent work-related musculoskeletal injuries in the workplace are at the top of those skill sets. In this presentation, LTC Dennis Palalay will describe the Army Industrial Hygienist's role with integrating ergonomics within the overall Army's industrial hygiene program. This presentation will summarize the challenges and successes from the Army's Industrial Hygiene corporate perspective. We will list ways to improve and the potential return on investment from these improving actions. Finally, we will discuss and dramatize the importance of becoming a “Trim Tab” in guiding the successful integration of ergonomics in an industrial hygiene program.

2:30 p.m - 3 p.m
Navy Mishap Prevention and Hazard Abatement Program
Cathy Rothwell, Navy Ergonomics Subject Matter Expert
Theresa Stack, Ergonomist, Naval Facilities Engineering Command
(B)
Objectives:
- Understand the Navy Mishap Prevention and Hazard Abatement (MPHA) Program
- Overview of the ergonomics technical support and project funding to Navy activities
- Understand what projects and activities are eligible for funding and how to apply for funding
- Gain knowledge of successful ergonomic interventions funded through the MPHA program

Description:
Navy activity commanders and commanding officers have the primary responsibility for correcting safety and health hazards affecting their personnel. This responsibility includes budgeting for and funding correction of hazards. However, funding is sometimes beyond the capability of the local activity and the claimant. To assist in these cases, the Mishap Prevention and Hazard Abatement (MPHA) Program was established. This session describes the unique Navy program used to assist in funding hazard abatement projects with a focus on ergonomics projects. The program is described and actual ergonomic interventions funded with MPHA dollars are presented.
Health Care Issues Track

1:30 p.m. – 2 p.m.

**Occupational Injury in Medical Imaging and Managing Change**
Carolyn Coffin, Sound Ergonomics (I)

**Objectives:**
- Describe the types of occupational injuries common in medical imaging professionals
- List the causes for these injuries
- Discuss what changes in work posture and work environment can reduce risk for injury
- Discuss resistance to change and how to approach change

**Description:**
Occupational injuries among medical imaging personnel, especially sonographers, are increasing. Although the causes are multifactor, one primary cause is the computerization of the workstation and the resultant static postures. Reducing the risk for injury in this population requires changes in workstation equipment design and set-up, management support, scheduling changes and worker education. The key to successful injury risk reduction is the willingness of workers to make changes in their work postures. Change can be difficult, especially in a busy work environment, and requires management support and workers’ appreciation of how change benefits them. This session will present the types of injuries among imaging personnel, the causes for those injuries and changes that can be implemented to reduce injury risk.

2 p.m. – 2:30 p.m.

**Workbench Worries: Work-Related Injury in the Laboratory**
Susan Murphey, President, Essential Ergonomics (B)

**Objectives:**
- Identify risk factors associated with work-related musculoskeletal disorders (WRMSDs) in medical laboratories
- Understand and recognize the needs of laboratory workers in order to ensure their safety from WRMSDs
- Recognize economic and ergonomic benefit of work safety programs in the laboratory as a pro-active approach to preventing work-related injuries

**Description:**
Health care workers lead the nation in work-related musculoskeletal disorders (WRMSDs) and account for the largest proportion of workers’ compensation costs in hospitals and long-term care facilities. However, one high-risk area frequently not recognized as being at risk for injury in health care is in the laboratory; yet significant risk factors are present in the daily work activities of laboratory workers. As occupational health professionals, we are asked to evaluate and recognize the needs of workers in order to insure their safety. We may be the first line of defense in addressing work safety; however, many of us lack familiarity in developing sustainable work safety programs. Recognizing the conditions and related risk factors common among laboratory professionals is the first step to being able to anticipate their needs in addressing work safety.

2:30 p.m. – 3 p.m.

**COWs & WOWs: Fodder for Mobile Computing Workstations**
Susan Murphey, President, Essential Ergonomics (I)

**Objectives:**
- Understand and recognize the needs of health care workers utilizing workstation/computers on wheels in order to insure their safety from work-related musculoskeletal disorders
- Identify the need for balancing technological requirements with ergonomic value in order to achieve an ergonomically sound workstation for electronic charting in health care
- Recognize economic and ergonomic benefit of ergonomic input prior to the purchase of workstations on wheels or computers on wheels equipment
Description:
Mobile computing systems known as Computers on Wheels (COWs) or Workstations on Wheels (WOWs) are becoming commonplace in patient care areas as more and more hospitals convert to electronic charting. However, with the myriad of product choices on the market, it is difficult to know how to best serve the population of users with a system that will accommodate both their technological and ergonomic needs. Unfortunately, the hospital information systems department with no input often makes these expensive purchases from either the frontline worker or an ergonomics specialist. As a result, the equipment is neither user friendly nor ergonomic. The technology exists to make an ergonomically sound workstation, but finding it and getting administrative and information systems support can be difficult. Learning what factors to consider in approaching these capital equipment purchases will help you provide valuable feedback to the stakeholders and decision makers involved.

Manufacturing Applications Track

1:30 p.m. – 2 p.m.
Resistance Welder Ergonomic Enhancements - Cooperative Redesign for Injury Prevention
Maritza Barrera, Industrial Hygienist; Neeltje Mack, Certified Industrial Hygienist; and Enrique Castro, Primary Manufacturing Engineer, Northrop Grumman (All)
Objectives:
• Identify the tool-related ergonomic risk factors that can affect an operator's hands, wrists and shoulders
• Describe how a cooperative tool redesign effort among engineers, EHS, operators and management can be used to eliminate ergonomic risk factors and prevent ergonomic injuries
• Provide relevant information on the basic ergonomic methods, tools and techniques that can be used to evaluate existing and proposed tool designs for ergonomic enhancements

Description:
In the late 1990, a resistance welding tool was designed by NGST manufacturing engineers to facilitate solar cell assembly into the satellite solar panel fabrication process. The tool was conceived as prototype and the design was never intended for full time use on the production floor. However, a decade and several employee repetitive motion injuries later, the “prototype” needed some serious ergonomic improvements. The resistance welder re-design effort was initiated with cooperative involvement of the responsible manufacturing engineers, EHS staff, tool operators and management. The re-design process incorporated current ergonomic design principles taking into account the ever-changing NGST worker population. Originally, the tool employed a number of operational features requiring repetitive force, pressure and awkward posture. In contrast, the re-designed welder boasts a lightweight aluminum design, articulating arm with integrated cable support and other ergonomic features. The improved tool increases operator efficiency and minimizes potential for ergonomic injury.

2 p.m. – 2:30 p.m.
Grit Blast/Paint Room Risk Factors and Solutions
Bob Rutledge, Regional Safety and Loss Control Manager, AIG Aviation (All)
Objectives:
• Discover risk factors in grit blasting and painting job tasks by surveying workstation layout, hand tools and equipment used to complete job tasking
• Provide solutions to reduce risk factors by redesign of workstation layout, hand tool selection and use, and equipment modification.

Description:
Grit blasting and painting in small aircraft manufacturing tasks can create significant risk for cumulative trauma disorders to workers. This session identifies risk factors seen from workstation design, hand tools and equipment used to complete job tasking. Solutions to risk factors will be discussed using re-design of workstation layout, hand tool selection and use and equipment modification. The results are reduced exposures, fewer injuries and improved job productivity.
2:30 p.m. 3 p.m.
Ergonomic Assessment of Hand Tools and Workstation Layout
Abdul Kamal, Associate Professor, Industrial Engineering, Western New England College

Objectives:
- Clear understanding of an actuator control system function
- A description of existing poor ergonomic design of hand tools and workstation layout
- Analytical yet simple ergonomic principles and concepts applied to mitigate current conditions, including redesign of hand tools and workstation

Description:
A small manufacturing firm located in New England produces actuator control systems that are principally used in automotive applications. A recent comprehensive on-site audit of the plant has revealed the presence of certain ergonomic risk factors. In particular, a mechanical assembly of components in one given workstation involves strictly manual operations using various hand tools. These tools include hammers, screwdrivers, Allen wrenches and factory-set torque wrenches. This session provides a detailed description of the current workstation design with an overall ergonomic evaluation relevant to operator fatigue and discomfort. We will propose and analyze specific redesigns of both the hand tools and the workstation layout.

Ergonomics Programs Track

1:30 p.m. - 2 p.m.
Ergonomic Program Development: Conducting Effective Program Audits
Julia Greenwald, Senior Ergonomist, The Ergonomics Center of North Carolina

Objectives:
- Learn how to set up and conduct an effective, value-added program audit
- See best practice examples of program audits

Description:
Most companies have ergonomics programs or teams in place, but just because you have a program or team does not mean that you are being effective at addressing ergonomics issues. It is important to check periodically to make sure the ergonomics program is being implemented correctly and is positively affecting the business. Knowing what to look for, how to measure it and what to report are key to ensuring that your program is not only successful, but thrives. This session will discuss a best practice framework that will enable you to effectively audit your ergonomics program and teams in a value-added way.

2 p.m. - 2:30 p.m.
What Gets Measured Gets Done: Performance Measures for Ergonomics
Cindy Hung, C.P.E., Senior Consultant & Ergonomics Engineer, Humantech

Objectives:
- Effective metrics for driving and tracking progress
- The steps to establish an ergonomic improvement process
- How to demonstrate return on investment
- The value of employee reports of discomfort
- Methods for planning, monitoring and tracking progress

Description:
Clear measurable improvement goals are critical to a successful ergonomic process. This session examines an approach for planning and maintaining an ergonomics program. It includes critical elements as effective metrics for driving and tracking progress, demonstrating return on investment and methods for planning, monitoring and tracking progress' based on successful practices from Fortune 500 companies. It can be applied to improve an organization's productivity, safety and bottom line.
2:30 p.m. 3 p.m.
**Grease the Wheels with an Ergonomics Steering Team**
Sally Shute, Consultant, and Maria Junge, Senior Consultant, Bureau Veritas North America; Lester Cacao, Principal, Bayer Healthcare LLC
(All)

**Objectives:**
- How to select ergonomics steering team members
- How to keep the team momentum going
- How to select partners for projects
- Sample case studies will illustrate examples of tool selection and use, and other best practice examples

**Description:**
The outstanding element of the ergonomics program at a major pharmaceutical company is the Ergonomics Steering Team (EST) because of the team member representation across management levels, its synergy and variety of accomplishments. The EST members represent the departments with evidence of injury and discomfort cases. The directors of these departments nominated key individuals such as an operator, a supervisor or a manager to participate on the team to solve problems and address issues. The team vision is to become a recognized world leader in health and safety by providing a workplace free of ergonomics risk factors. The mission is to promote worker health and safety and to increase quality and productivity by improving the fit of tools and processes to the capabilities of individual workers. A key motivator at the company is the incorporation of safety and ergonomics objectives as measurable performance goals for management. The onsite ergonomics consultants provide training, partnering and inspiration for the team. The EST is successful in reducing risk factors and injuries. This presentation will illustrate the EST plan, goals, objectives and accomplishments through case studies.

Wednesday, March 25

**Ergonomics - The Department of Defense Perspective Track**

8 a.m. – 8:30 a.m.
**Hand-Arm Vibration at a U.S. Army Installation**
Steven Chervak, Human Factors Engineer, U.S. Army
(B)

**Objectives:**
- You will learn about a methodology for conducting field assessment of anti-vibration gloves
- You will learn about possible pitfalls when conducting field assessments
- You will be exposed to the International Standards governing hand-arm vibration

**Description:**
At a United States Army Installation, the workers on a vehicle disassembly line use power tools such as impact wrenches, grinders and cutting wheels during the disassembly process. These tools expose the workers to hand-arm vibration (HAV) which can lead to occupational illnesses such as carpal tunnel syndrome, Raynaud’s syndrome and tendinitis. Many of the workers use gloves to shield their hands from the vibration caused by power tools and to protect their hands from cuts, scrapes and abrasions. A vibration analysis of seven different gloves used by the workers was performed to determine the effectiveness of the gloves on their ability to isolate the workers hands from the vibrating tools. This presentation will also discuss the methodology, procedures and results from the vibration analysis.

8:30 a.m. – 9 a.m.
**Assessing Musculoskeletal Injury Risk during Product Development**
Don Goddard, Ergonomist, U.S. Army
(B)

- Understand the importance of identifying and mitigating ergonomic risks during product design
- Be familiar with the current Army process for identifying and mitigating injury risks from ergonomic exposures
- Be familiar with the vision for improving risk assessment of ergonomic exposures
Description:
The US Army uses safety and health assets to protect soldiers from occupational injury. One aspect of this philosophy is embodied in the health hazard assessment process that requires certain classes of developing products to be reviewed to identify hazardous exposures, assign risk assessment codes and recommend mitigation strategies. Methods for assessing many exposures such as chemical, microwave, noise and laser are well-established. However, it is often challenging to assess injury risk from ergonomic risk factors. This presentation will discuss how Army ergonomists currently assess ergonomic hazards on equipment during the design stage and how the results of these assessments influence the product design or use. It will also offer a vision for improving ergonomic product assessments in the future.

9 a.m. – 9:30 a.m.
Embracing Vendor Relationships to Improve Quality
Sharon Wilson, Industrial Engineer Tech, and John Pentikis, Ergonomist, U.S. Army (B)
Objectives:
• Develop relationships with vendors that offer skill sets not found at your installation
• Think of ergonomics as a means to meet quality and Lean Six Sigma objectives as well as improve worker health
• Involve your work force so they are the mechanism for change

Description:
Red River Army Depot has been on a journey since 1991 to continually improve on a quality product in support of the soldiers in the battlefield. This has lead to the implementation of ISO initiatives and lean manufacturing principles. Although processes improved based on increased awareness to quality, certain tasks at RRAD were still physically demanding and caused injury. Although RRAD did not have the expertise in-house to modify these physically demanding jobs, we were able to identify a need for increased ergonomics awareness and set off to develop relationships with Army agencies, defense contractors and private industry. These relationships have helped us see work in a different manner. Although ergonomics alone does not account for the decreased injury rates and increased production rates, it is part of the depot’s 88 percent reduction in lost time accident rate and 52 percent workload increase with only a 27 percent increase in personnel.

Health Care Issues Track

8 a.m. – 8:30 a.m.
Six Sigma Methodology Applied to Safe Patient Mobilization
Daniel Perrot, Director of Employee Safety and Health, Sutter Health (I)
Objectives:
• Use of the Six Sigma problem solving methodology as applied to reducing patient mobilization injuries in an acute care hospital
• Describe how Six Sigma tools were applied to identify and validate root causes as well as methodology used to develop solutions

8:30 a.m. – 9 a.m.
The Ergonomics of Patient Handling
Kent W. Wilson, Safety Program Manager, Hill-Rom (I)
Objectives:
• Identify the patient handling tasks most commonly associated with caregiver injuries
• Prioritize the risk of patient dependency and how to address these variations
• Describe the role of room design in an effective ergonomics program
• List examples of steps that can be taken to reduce injury risk during patient handling

Description:
This presentation will focus on the ergonomic issues often overlooked as hospitals grapple with the problems of patient handling. Health care has historically lead most industries in their high rates of musculoskeletal injuries that can be traced directly to patient handling activities. Telling nurses to “Lift with your legs, not your back” doesn’t help much when moving a 200 or 300-pound patient. With a nationwide nursing shortage, it is important that the ergonomic industry help find solutions to assist these caregivers. These injuries impact all of us when we begin to examine some of the contributing factors to the high cost of healthcare as well as the quality of the healthcare we
Nurses that are in pain are much more likely to make a mistake than those who are not in pain. Sadly, when a nurse makes a mistake it can be potentially deadly for the patient.

9 a.m. - 9:30 a.m.
Safe Patient Handling Legislation Update
Lynda Enos, Ergonomist, Nursing Practice Consultant, HumanFit
(B)

Objectives:
- Identify states with Safe Patient Handling (SPH) laws and current legislative initiatives
- Identify core components of these state SPH laws
- Discuss effectiveness of SPH initiatives and activities in states with and without SPH legislation

Description:
Over 16 states have laws or legislation related to Safe Patient Handling. This session will review core components of these state laws and discuss their effectiveness to reduce work related musculoskeletal disorders related to manual patient handling. The effectiveness of SPH initiatives in states without SPH legislation will also be discussed.

Potpourri Track

8 a.m. - 9 a.m.
Ginnie Thomas, Health Advocate, University of California Santa Barbara
Participatory Ergonomics with Food Service and Operations Units
(All)

This presentation describes the implementation of a participatory ergonomics program in two service areas. A main challenge included involving staff with limited English speaking skills and limited experience in participating to improve workplace safety and productivity. Attendees will:

- Learn the importance of using PE principles
- Understand how to be a facilitator rather than a “fix it” person
- Receive a template that can be adapted to any organization for planning and implementing a PE program

Description:
This presentation describes the implementation of a participatory ergonomics program (PE) in two service areas, Dining and Operations, in a university setting. A main challenge included involving staff with limited English speaking skills and limited, or no, experience in actively participating to improve workplace safety and productivity. We will review the definition of participatory ergonomics and its importance in creating successful and sustainable injury reduction programs. Attendees will learn how to be a facilitator rather than always a “fix it” person. A PE template will be introduced that can be adapted for any organization or business.

8:30 a.m. - 9 a.m.
Long-Distance Push Task Assessment Methodology
Mike O'Brien, Senior Ergonomist, and Mark Harralson, Corporate Ergonomist, Intel Corp.
(I)

Objectives:
- Review ergonomics risk factors associated with long distance pushing (manual material handling)
- Understand scientific bases for methods used to analyze pushing tasks
- Learn input and output variables of a new Intel model for risk assessment of long-distance pushing tasks

Description:
As semiconductor manufacturing processes have advanced, likewise the material handling systems integrated into these high-tech factories have also progressed from manual to automated systems. However, contingency plans for manual material handling still exist to be able to transport product throughout a factory when the automated system is undergoing maintenance. Manufacturing management needs to understand the ergonomics risks to personnel being required to push relatively heavy loads over long distances. A team of ergonomists at Intel Corporation have developed a simple method to analyze long distance pushing tasks by integrating an estimation of metabolic rate with a fatigue model for assessment of static back and shoulder force exertions. This presentation will demonstrate how these two models can be used to evaluate localized muscle fatigue and energy expenditure requirements related to long distance pushing.
9 a.m. – 9:30 a.m
How to Assess Hand Impact Tasks
Siobhan Gaizutis, Project Engineer, Sandalwood

Objectives:
- Measurement methods and tools for hand impact
- Examination of the dynamic tasks performed in order to assess the risk factors

Description:
Traditionally dynamic tasks have been measured using static assessment tools or models, which do not truly represent the task and/or to what the individual is exposed. The purpose of this presentation is to provide the manufacturing industry with a description of dynamic tasks, the associated risk factors and a method to evaluate dynamic hand tasks. Differences between the results of a static assessment and a dynamic assessment will also be discussed.

Master Ergonomist Session
8 a.m. – 9:30 a.m
Obesity in the Workplace
Mark E. Benden C.P.E., Ph.D., Texas A&M Health Science Center; Sharon Joines, Ph.D, N.C. State University; and Ann Kuhnen, M.D., Employee Health Management U.S.

Description:
More than appearance and cosmetics, obese individuals are at an increased risk of developing serious health problems. From the perspective of the ergonomics professional, accommodating obese individuals to minimize these risks is especially challenging. Attend this expert panel to learn and share how ergonomics can help or assist both obese individuals and those who work with them.

Ergonomics - The Department of Defense Perspective Track
1:30 p.m. – 2 p.m
Ergonomic Challenge: Pentagon & Leased Facilities for 60,000 Workers
Brian Higgins, Special Assistant, Environment & Safety, Department of Defense (B)

Objectives:
- Who integrates ergonomics with other safety, occupational health, accessibility and mishap reduction initiatives?
- When can communications enhance awareness and application of ergonomic principles?
- How are workplaces improved during multi-year renovation and construction programs at a major DoD installation?

Description:
The Washington Headquarters Services (WHS) Defense Facilities Directorate (DFD) manages the Pentagon Reservation and 100+ leased facilities in the Washington, DC area for the Secretary of Defense and more than 60,000 DoD military, civilian and contractor personnel and visitors. The ergonomic challenge is to ensure that their workplaces and public areas are safe, healthy, secure, sustainable and environmentally sound. The $4 billion Pentagon renovation and $1 billion BRAC (Base Realignment & Closure) move to Ft. Belvoir will improve workplaces, impact productivity and influence quality of life for 30,000+ people. Measures to improve awareness and application of ergonomic principles include many types of training, communications, documents, evaluations and meetings. The US Army Ergonomics Program evaluated pre-selection keyboard tray criteria, furniture kit-of-parts and ergonomic task seating for the renovation. Pentagon Accessibility Forums and the Computer/Electronics Accommodation Program help fit workplaces to workers with disabilities. The DoD Ergonomics Working Group provides valuable on-line information. 3-D Video Safety Training addressed psychosocial factors that cause traumatic injuries. Given the large number of employees and computer workstations, the potential pain, suffering and cost of work-related musculoskeletal disorders and the goals of the Secretary of Defense Mishap Reduction Initiative, WHS will continue to improve workplaces with ergonomics.
2 p.m. - 2:30 p.m.
Initiating and Sustaining Ergonomic Interventions in Decentralized Organizations
Sean McDonald, Marsh USA Inc
(All)
Objectives:
- Learn best practices to gain control of the ergonomics and safety prevention efforts
- Discussion will include prioritizing site locations, data presentation, establishing ergonomics and safety committees, train-the-trainer initiatives, sustaining the process over time and more.

2:30 p.m. - 3 p.m.
A DoD Frontier - Ergonomic Safety for Patients and Staff
Patricia Collins, Senior Advisor to the Deputy Chief Medical Officer, TRICARE Management Activity
Based on John P. Kotter’s Change Theory
(B)
Objectives:
- Setting the stage for change: Literature review and data review of health care staff injuries related to patient handling and movement at our hospitals
- Change strategy and vision: Dealing with naysayers and providing proof through pilot studies
- Making it happen: Communication for understanding and buy-in, short-term wins and continuing partnerships with other organizations

Description:
This presentation focuses on three lessons. First, to create a sense of urgency, learn to recognize the opportunity of major construction of new DoD hospitals, gain awareness of staff injuries related to patient handling and movement, validate injuries by reviewing corporate-level data and realize the rate of injuries compared with NIOSH rates. Second, to change strategy, learn to overcome cultural resistance to ergonomic interventions through partnering with the Department of Veterans Affairs and others and fund targeted ergonomic assessment and root cause analysis to underscore scientific basis for intervention. Third, to make it happen, learn to present suggested pilot sites to senior leadership, create short-term wins, stay the course and hold the gains to make the culture stick.

Potpourri Track

1:30 p.m. - 2 p.m.
The Frugal Engineer Comes Back
Leonard Walsh, Engineering Fellow, Pratt & Whitney
(B)
Objectives:
- Basic simple fixes even with little to no budget should not hinder a program
- Frugal doesn’t mean cheap; it is, however, using the best of available resources

Description:
Based on past presentations, Len Walsh is back and returns with even more gadgets, fixes and just plain extraordinary items for those on a budget. Frugal doesn’t mean cheap; it is however using the best of available resources. See how to turn problems into process changes or problems plus insight plus no budget into dollars and sometimes big dollars.

2 p.m. - 2:30 p.m.
Using Voice to Solve Human Factors Problems
William Lenharth, Associate Research Professor, University of New Hampshire
(All)
Objectives:
- How to design a voice system for a noisy and varied environment using off-shelf standard components
- The University of New Hampshire developed Project54 to be used as a model for how to deploy such a system
- Discussion will center on the ease of customization and application

Description:
The presentation will cover the traditional problems with implementing voice-based systems to perform command/control applications. This talk will describe the various design considerations and trade-offs to be included in a system. The details of implementing a standards-based system will be discussed in detail. Both hardware and software components will be discussed in some detail. Finally we will examine a case study, an application that has been in continuous use for over five years.
2:30 p.m. - 3 p.m.
**Ocular, Musculoskeletal and Ergonomic Manifestations among Computer Professionals**
Vipul Shah, MPH Student, University of North Carolina

**(B)**

**Objectives:**
- The relationship to duration of employment and other variables are discussed in this paper and remedial measures suggested.
- Most common ocular and musculoskeletal problems in computer professionals.

**Description:**
The presenters conducted a study to find out the ergonomic, musculoskeletal and ocular problems among computer professionals. The majority of the subjects were middle-aged and worked for six to eight hours per day for five years. The results revealed the prevalence of ocular problems. This increased prevalence is noted with the increase in duration of work. The conclusion was a statistically significant association between unfavorable working environment pertaining to upper limb body parts and increased upper limb problems. Statistically significant associations between increased work and increased duration (years) leading to musculoskeletal problems were also noted. The relationship between duration of employment and other variables as well as suggested remedial measures will be discussed in the session.

**Tools of the Trade Track**

1:30 p.m. - 2 p.m.
**The Evolution of the Physical Demands Analysis (PDA)**
Mike Harnett, Director of Operations, WorkSMART

**(I)**

**Objectives:**
- Design a quality, multi-use PDA document
- Apply a PDA as a proactive tool
- Quantify risks identified within a PDA

**Description:**
Research indicates that most checklist PDAs are lacking in content and quality, significantly limiting their value to a single use. Learn how a well-designed PDA can complement your hazard assessment process while quantifying the need for specific controls, identify lack of worker skills or need for training, and assist in claims management, modified duties and RTW processes. Session will also cover the evolution of the physical demands analysis (PDA), how companies use PDAs, and the most common application is a reactive tool in response to an injury claim. By incorporating a well-designed PDA based on a position and not just a specific individual, it becomes a multi-use proactive document that can benefit all industries, even non-manufacturing. Learn how a thorough PDA will complement existing hazard assessment processes including the identification of musculoskeletal hazards while quantifying injury risk control strategies. Use your PDA to assist in the establishment of standard operating procedures and job descriptions for new hires. Utilize it to identify lack of worker skills or need for training and to assist in claims management, modified duties and return to work processes. Are you ready to evolve?

2 p.m. - 2:30 p.m.
**Ergonomic Surveys: Factors to Consider**
Robyn Lee, Statistician, U.S. Army

**(B)**

**Objectives:**
- Clearly defining the purpose of an ergonomic survey
- Formulating reliable and valid questions
- Conducting appropriate analyses of collected data
- Gain knowledge on preparing a good survey tool, analyzing the collected data and interpreting the results

**Description:**
While several well-known questionnaires exist that measure workplace hazards and worker discomfort, often times they do not exactly answer the question of interest. Development of new survey tools may be needed. When using reliable and valid survey tools, areas of concern can be identified and effective methods to address them can be employed. Clearly defining the purpose of your survey is the first important step in the process followed by determining what questions to ask and how to frame them to meet your objectives and to obtain reliable and valid results. Analyses vary with respect to the type of information collected and can lead to misinterpretations if not
conducted appropriately. An overview of survey methodologies will be presented with a focus on ergonomic and health care surveys.

2:30 p.m - 3 p.m
Ergonomic Comparisons on a Budget
Victor Garrison, Technical Director, Liberty Mutual

Objectives:
- Recognize when commonly available ergonomic assessment tools for workplace safety will not adequately address the task at hand
- Review methods to determine principle risk factors for musculoskeletal disorders presented by the task at hand
- See how to select and tailor evaluation techniques to provide a meaningful comparison of task options
- Review examples of ergonomic task comparisons

Description:
Organizations want definitive comparisons of alternative work arrangements at a minimal cost. There may be no assessment tool that fits the key demands of the task or the assessment tool may be prohibitively expensive. The ergonomic practitioner must innovate and use the assessment tools available to compare the alternative work arrangements and establish the more ergonomically correct work arrangement. I will share examples of ergonomic comparisons for work tasks. Tasks will include manual material handling and upper body repetitive tasks. Assessment techniques will include force measurement, video analysis of motions and postures and the use of perception surveys.

Lean Manufacturing and Ergonomics Track

1:30 p.m - 2 p.m
Leveraging Ergonomics to Lead in Lean Manufacturing
Peter Budnick, President and CEO, Ergoweb Inc.

Objectives:
- The fundamentals of successful continuous improvement methodologies, generally referred to as "lean"
- The fundamentals of a broad approach to ergonomics and how ergonomics not only complements the goals of continuous improvement, but is central to its success
- Why continuous improvement is intrinsic to ergonomics methodologies and philosophy
- Why and how ergonomists can impact, influence, or better yet, be leaders in the lean journey

Description:
This presentation will review and lay the foundation for Lean and why companies who “get it” tend to excel on the competitive landscape. The role of ergonomics will then be discussed and demonstrated as an integral part of Lean, rather than as separate components from each other, or separate components from Lean. Further, attendees will learn how to gain respect for ergonomics methodologies as means to support core Lean goals of waste reduction and continuous improvement. Ultimately, attendees will learn how to promote “Respect for People” by helping their companies recognize and treat employees as more than simple pairs of hands that do physical work. Successful Lean recognizes and taps greater human potential, and ergonomics professionals have unique insight and abilities to play a significant role in this transformation; or better yet, lead it.

2 p.m - 2:30 p.m
Incorporating Ergonomics into Continuous Improvement Initiatives
Murray Gibson, Senior Consultant, Aon Global Risk Consulting

Objectives:
- Learn how to incorporate ergonomics into continuous improvement initiatives including lean and kaizen
- Learn how to translate ergonomic-related improvements into the language of business (cycle time reduction, labor savings, cost savings, improved quality, etc.)
- Learn how to utilize ergonomics to increase productivity and improve quality in your organization

Description:
Ergonomics can be a powerful tool for your organization's continuous improvement teams (Lean Team, Kaizen Team, etc.). Modern industrial ergonomics has historical roots in the early 1900's, when many ergonomics principles used by ergonomics professionals today were used to eliminate wastes in the manufacturing process. These wastes include awkward postures, inefficient motions and high forces - all hindering optimal job
performance. Today, many of these motion, posture and force related wastes fly beneath the radar of continuous improvement teams. Ergonomics is a tool that can be of significant value to these teams when applied with the perspective of driving wastes and inefficiencies from the process, reducing the risk of injury during the process. Ergonomics is a tool that can be of significant value to your organization's continuous improvement initiatives.

2:30 p.m. – 3 p.m.

Using Ergonomists' Tools in the Lean Environment
Theodore Braun, Product Director - Manufacturing Technology, Liberty Mutual

Objectives:
- Risk and accident analysis in the context of value stream mapping
- Risk measurement to support quantitative baselining
- Guiding decisions about manual material handling design using basic tools
- Identifying risks of musculoskeletal disorders as a result of lean
- Aligning ergonomics with standard work

Description:
Activity-based accident analysis is a process that focuses on understanding injury and risk trends based on tasks in the context of value stream mapping. It is vital to recognize the degree to which risk is introduced with respect to value-added steps and those which add no value and may be eliminated. Using tools understandable to the project teams facilitates the ergonomic assessments and can be used to recognize potentially poor designs as well as identify designs that tend to minimize the risk of adverse musculoskeletal events. This approach can help introduce interventions that are incorporated into standard work easily aligned with Lean and Six Sigma process improvement efforts.

Ergonomics - The Department of Defense Perspective Track

3:30 p.m. – 4:15 p.m.

Ten Terrific Tips to Improve DoD Workers' Compensation Outcomes
Connie Fox-Sanson, Attorney/HR Specialist, U.S. Army

Objectives:
- Identify the four Presidential SHARE goals.
- Describe DoD's progress toward meeting the SHARE goals and Army Medicine's balanced scorecard measures for its civilian workers.
- Evaluate initiatives to improve outcomes where gaps and shortfalls exist to determine best practices.
- Measures, targets and initiatives used by the Army's Center for Health Promotion and Preventive Medicine to improve workers' compensation outcomes.

Description:
In 2004, the Presidential Safety, Health and Return to Employment (SHARE) Initiative established four workplace safety and health goals for every federal department and the five largest independent agencies. At the end of the first three years of the initiative, the administration extended the goals through FY 2009, reaffirming their commitment to improving conditions for federal workers, while also reducing the financial costs to America's taxpayers. The scorecard for DoD and the military components indicates mixed results over the past year, resulting in the cascading of scorecards to establish measures, targets, goals and initiatives to address the gaps and shortfalls. The purpose of this presentation is to discuss how the Army's Center for Health Promotion and Preventive Medicine is using available data, policies and best practices to contribute to meeting the SHARE goals and improving outcomes for Army civilian workers. At least ten best practices will be included as “take a ways” for you to consider implementing to reduce compensation and medical costs and lost work-day rates at your site.

4:15 p.m. – 5 p.m.

Elements for Funding, Implementing and Creating Ergonomics Solutions
Richard Borcicky, Fleet Readiness Center East

Objectives:
- Describe how to obtain funding for an ergonomics program from the ground up.
- Detail specific strategies, including 5S +1, for implementing a successful ergonomics program in a high-risk environment.
- Identify how to obtain measurable gains in production efficiency while reducing ergonomic risks.
Health Care Issues Track

3:30 p.m - 4:15 p.m
Patient Care Ergonomics and Building Design Considerations
Mary Matz, Patient Care Ergonomics Consultant/Program Manager, Veterans Health Administration
(All)

Objectives:
- Background/rationale
- Ergonomic evaluation & control measures for the patient care environment
- Building design to accommodate patient handling technology

Description:
Patient care providers are at high risk of injury from performing patient handling tasks and use of ergonomic control measures have been found to be very effective in reducing that risk. However, many designers and architects are unfamiliar with, thus hesitant to include this technology required to reduce risk. This presentation relays the rationale and biomechanics that support the current focus on patient care ergonomics as well as an overview of the process used to make technology recommendations to reduce risk. As well, design considerations related to introduction of patient handling technology in new and existing construction will be presented.

4:15 p.m - 5 p.m
Installing Patient Handling Equipment Safely
Lynda Enos, Ergonomist, Nursing Practice Consultant, HumanFit
(I)

Objectives:
- Define a process for successful installation of ceiling lift equipment
- Identify general federal and state regulatory requirements for purchase and installation of safe patient handling equipment
- Identify key criteria to consider when choosing an equipment vendor

Description:
This session provides participants with practical information on successful purchase and installation of patient handling equipment with a focus on ceiling and floor based powered lift equipment. Topics will include common installation challenges such as maintenance, building code and other regulatory considerations and working with vendors. Case studies will be used to illustrate best practices that ensure successful installation and use of SPH equipment. A comprehensive safe patient handling equipment-purchasing checklist will be provided to attendees.

Ergonomics for Non-Traditional Work Forces Track

3:30 p.m - 4:15 p.m
Ergonomic Innovations for the Masonry Industry
Dan Anton, Assistant Professor, Eastern Washington University; Jennifer Hess and Laurel Kindi, Research Associates, University of Oregon; Lauren Graupner and Carlos Sanchez Marin, Graduate Research Assistants, University of Iowa
(B)

Objectives:
- Identify current innovations in the masonry industry
- Compare regional differences in the use of ergonomic innovations
- Recognize the barriers to adopting innovations in the construction industry
- Compare the benefits and limitations of telephone and worksite audits of ergonomic innovations
- Generalize lessons learned from the masonry industry to other occupational groups

Description:
Work-related musculoskeletal disorders (MSDs) are common among construction trade workers; and masonry accounts for one of the highest rates of back injuries. Although ergonomic solutions are available to reduce MSDs, solutions are not widely adopted across the US. The purpose of this project was to identify promising innovations, evaluate regional differences in their use and compare the use of innovations based on telephone and worksite audits. We conducted a national telephone survey of 200 masonry contractors and performed 90 regional worksite audits of the use of ergonomic innovations. We examined utilization rates, reasons for adoption and barriers to implementation of solutions. The findings emphasized that important barriers and significant regional differences
exist in the adoption of ergonomic solutions. Additionally, results from the telephone survey differed from actual use of ergonomic solutions at the worksite. These findings provide useful information for developing regionally effective dissemination strategies for ergonomic solutions.

4:15 p.m. - 5 p.m.
**The Challenges and Improvements of TruGreen's Ergonomics Success**
Michael Higgins, Director Risk Management and Safety, TruGreen, and Deepesh Desai, Senior Consultant & Ergonomics Engineer, Humantech

(A/II)

**Objectives:**
- Identify and assess ergonomics risk in the lawn care environment
- Conduct engineering feasibility design tests and implement the resulting improvements
- Sustain ergonomics success

**Description:**
This presentation focuses on sharing the deployment of TruGreen's ergonomics approach in a non-standard work environment. It will illustrate the tools and techniques used to create and sustain their ergonomics program including identifying and assessing risk in a lawn care environment. It will also share specifics such as identifying direct causes and feasible engineering design improvements and will cover the deployment of ergonomics design improvements on key projects including vehicle design, ride-on spreader and hose reel. In addition the presentation will share results and its impact towards risk, injury and productivity and the training approach TruGreen undertook to sustain and enhance the success of the program.

Master Ergonomist Session
3:30 - 5 p.m.
**Insights to Facilitating a Global, Multicultural and Cross-Functional Ergonomic Process**

**Description:**
This expert panel discussion is a must for anyone who wants insight into what it takes to run global, multicultural and cross-functional processes. The panel experts will share their combined experiences about global ergonomics, communication success and lessons learned related to education/training, risk assessment, procurement and design.

Thursday, March 26
Special Populations in Today's Work Force Track

8 a.m. - 8:45 a.m.
**Responses to Obesity Simulation Suit**
Sharon Joines Ph.D, Assistant Professor of Industrial Design, North Carolina State University

(B)

**Objectives:**
- How to recreate our obesity suit
- The limitations of using a simulation suit
- How to contribute to the improvement of our open source simulation suit
- An understanding of the benefits of developing open source simulation techniques
- An understanding of the challenges that may be portrayed for designers and engineers with employees and consumers who are obese

**Description:**
The purpose of this investigation was to generate a set of weighted, wearable components for the upper extremities and torso which are connectable and size adjustable. The inner layer of the suit is designed to accept a variety of weights, increasing the weight of the individual wearing the suit by a percent of their body weight or by a fixed weight. Designers, engineers and researchers using the suit may explore an experience similar to that of an obese individual while performing a variety of tasks or interacting with products and environments. A second layer creates a cosmetic component increasing the size of the torso. The results of a product and built environment assessment using the obesity suit will be presented. The suit is an open source simulation; attendees will be given simulation specifications for reproduction of the suit and a mechanism to provide input to the simulation suit for improvement.

8:45 a.m. - 9:30 a.m.
**Ergonomics Roundtable - Networking in Your Community**

Kristy Schultz, Ergonomics Consultant, and Ann Pudoff, Ergonomics Consultant, State Fund

**Description:**
As co-chairs of the Ergonomics Roundtable of Sacramento since 2002, we want to introduce you to this great resource. The roundtable is a nonprofit organization established in 1996 and currently has 400 members throughout Northern California. We meet bimonthly and provide educational sessions and vendor updates. Our meetings average 40 to 60 members.

**Potpourri Track**

8 a.m. – 8:45 a.m.

**Communicating Hazards for Industrial and Construction Equipment**

Paul Adams, Senior Consultant, Applied Safety and Ergonomics Inc. (I)

**Objectives:**
- Broaden the perspective of safety and ergonomics practitioners beyond CTD prevention
- Contrast how people acquire hazard knowledge in both the consumer product and occupational domains
- Understand features of occupational settings that affect how workers learn of hazards
- Recognize when warnings might be appropriate in occupational settings and when they are likely to be ineffective

**Description:**
Avoiding accidents and injuries often requires the human to recognize a hazard, understand its potential to cause harm and then take appropriate action to avoid contact. Warnings on consumer products frequently convey information about all three of these components. In occupational settings such as in manufacturing and construction, traditional approaches for conveying hazard information are often inappropriate. Several important features distinguish consumer product domains from occupational settings. For example, the consequences of “over-warning” tend to be greater. Engineers and safety professionals responsible for creating safe work environments need to understand these differences so that workers can be protected from residual hazards that cannot be eliminated through design. This presentation will discuss from a human factors perspective the unique ways that warnings function in occupational settings. The use and limitations of warnings as safety interventions will be discussed along with guidance on when warnings should and should not be applied.

8:45 a.m. – 9:30 a.m.

**Work Site Intervention Improving Employment for Workers with Arthritis**

Diana Baldwin, Co-Investigator, University of Missouri (B)

**Objectives:**
- Learn why work site interventions for workers with arthritis to decrease injuries and pain is more effective than provision of educational materials
- Identify variables for work site health promotion/wellness and musculoskeletal disorder prevention programs based on self-management and problem-solving based on social learning theory
- Identify the most acceptable modifications in work behaviors and the work environment adopted by workers with arthritis to decrease work-related problems

**Description:**
Arthritis is the second leading cause of work disability in the US. One in 20 of working adults is affected by arthritis attributable work limitations. Presentation is results of randomized comparative study with half-year follow-ups of worksite intervention for workers with arthritis administered by an occupational therapist compared to provision of educational materials. This session highlights effectiveness of incorporating injury prevention and health promotion principles within social learning and problem-solving model emphasizing relevance of self-management. Positive outcomes are a milestone in identifying effective approaches and the necessity for early intervention to maintain employability. The concept of prevention based on musculoskeletal risk factors has been introduced to a population surprisingly unaware of the benefits of prevention in arena of work behaviors. Redirecting information to awareness of risks and compensation strategies based on ergonomics principles and an understanding of injury vulnerability has potential for more direct impact on sustaining employment and limitations.
Office Ergonomics Programs and Applications

8 a.m. - 8:45 a.m.
_Trends in Ergonomic Design for Office Environments_
Jonathan Puleio, Director of Consulting, Humanscale
(I)

Objectives:
- Designing healthy work environments
- Common musculoskeletal problems for intensive computer users
- Apply ergonomic principles to design of workstations

Description:
We will explore current client oriented challenges in proactively addressing ergonomic concerns and how to bridge the gap between workplace aesthetics and functionality. An overview of common musculoskeletal problems facing today’s intensive computer users is provided and key research developments in the areas of seating, input device design, display technology, lighting and employee level training are discussed. Participants will learn how ergonomic principles are being applied to the design of computer workstations to reduce employee discomfort and risk of injury while lowering employer costs. Information on how organizations can earn LEED-CI credits through the implementation of an ergonomics program will also be provided.

8:45 a.m. - 9:30 a.m.
_Quest for the Holy Grail - Ensuring Sponsorship for Your Ergonomics Program_
Deepesh Desai, Senior Consultant and Ergonomics Engineer, Humantech
(All)

Objectives:
- Understand the role of and potential opportunities for management to ensure success of the program
- Identify strengths and opportunities for improvement in current ergonomics program
- Understand how ergonomics can be integrated with and leveraged from common business initiatives

Description:
Management support and sponsorship is critical to the success of an ergonomics or safety program. Obtaining their agreement to support is easy, but maintaining ongoing involvement and support can be difficult. This presentation describes and demonstrates approaches and methods for ensuring management involvement, support and sponsorship within an integrated ergonomics management process to ensure that safety and productivity results are achieved.

Master Ergonomist Session
8 a.m. - 9:30 a.m.
_Ergo Stew_
Miriam Joffe, Auburn Engineers Inc.; Ira Janowitz, Lawrence Berkeley National Laboratory; R.J. Banks, California State Fund; Deidre Rogers, Ergovera Ergonomic Consulting; and Melanie Alexandre, Joint Genome Institute

Description:
A key strength of ergonomics is the integration of evidence-based knowledge and experience from a wide variety of disciplines. From a unique perspective, each discipline interprets the causes and impacts of ergonomics risk factors, the direction of ergonomics programs and the topics of ergonomics research as they apply to health care, business and industry today.

Special Populations in Today’s Work Force Track

9:45 a.m. - 10:30 a.m.
_Ergonomic Design for the Obese Office Worker_
Mark Benden, Texas A&M Health Science Center
(I)

Objectives:
- General knowledge of the scope of the financial and physical impacts on corporations and workers from the obesity pandemic facing modern office work
- Specific results from pilot studies conducted by researchers at Texas A&M and summaries of other research that show specific ways to help workers win the battle of the bulge while at work
Description:
Two-thirds of Americans are overweight or obese. The numbers for office workers are even higher. Obesity is not just a risk factor for occupational disease. In fact, it has become the #2 killer behind smoking with over 400,000 deaths associated with it in 2007. Many issues in the design of the office affect obese workers. Cubicle access openings, space between desk and wall, common area seating such as break and conference rooms, task seating, lavatory stall and toilet design to name a few. In the first part of this presentation, the speaker will present ways to assess and correct deficiencies in office design for the severely obese in our population. In the second part, the speaker will review promising pilot study data from research at Texas A&M and summarize completed research studies that show specific methods for employees and employers to use in the office to improve weight loss and avoid weight gain.

10:30 a.m. - 11:15 a.m.
Is the world shrinking or are we getting bigger?
Melanie Alexandre, Senior Ergonomist, Joint Genome Institute
(All)
Objectives:
- Obtain an understanding of the scope, severity and impacts of obesity on today’s and tomorrow’s workforce
- Examine how ergonomics can play an active role in optimizing productivity and comfort for obese workers
- Explore how ergonomists can facilitate improvements for obese children and young adults

Description:
The growing trend of the population becoming obese poses many opportunities for ergonomics to have a positive impact on improving the comfort and productivity of obese workers. Ergonomics can have a lasting and effective influence on today’s and tomorrow’s growing workforce by providing insights and perspectives to help address this emerging issue. This session will help examine the scope, severity and impacts of obesity, discuss ways ergonomists can improve the productivity and comfort for obese workers and explore ideas and considerations for obese children and young adults.

Potpourri Track

9:45 a.m. - 10:30 a.m.
Human Performance in Simulated Tasks Using Game Controllers
Leslie Parker, Sara McGinley, Daniel W. Carruth and John McGinley, Research Assistants, Mississippi State University
(B)
Objectives:
- Similarity of human motion in simulated tasks to real world tasks
- Similarity of muscle activation between simulated tasks and real world tasks
- Wii and other similar systems are potentially useful for rehabilitation and work force training

Description:
New interactive games such as Wii Sports use motion-sensors and accelerometers to require that players mimic actual real-life physical motions. These capabilities may allow gaming systems to play a role in occupational and physical rehabilitation. However, before these systems can be recommended for use in training and rehabilitation, the fidelity of human performance when using these systems to simulate real-world tasks must be studied. The current study compared motion and muscle activation of participants playing the Wii Sports boxing and bowling games to motion and muscle activation during real-world boxing and bowling. This presentation will present the results of our analysis and discuss implications for physical rehabilitation and work force training.

10:30 a.m. - 11:15 a.m.
Human Error: Causes and Strategies for Prevention
Michael Topf, CEO and President, Topf Initiatives
(I)
Objectives:
- The latest in error prevention
- Cutting-edge technology to address the human factors that can cause errors
- Practical self and team management skills and techniques to prevent errors
- Strategies for error prevention citing examples from industry.
Description:
There is an ongoing concern within corporate leadership to find more effective methods to prevent human errors that can cause errors in all aspects of a company’s operations, including everything from misshipments to operating errors to damaging equipment and property to incidents, injuries and fatalities. Since 1983, we have studied and addressed the various human factors that cause errors that can lead to incidents and breakdowns related to overall productivity including quality and accidents, injuries and health/environmental incidents. We will discuss our research and findings related to the human factors that cause errors and examine the awareness, skills and strategies needed to achieve operating excellence.

Ergonomics Programs Track

9:45 a.m. - 10:30 a.m.
Partnership for a Healthy Workforce - 2008 Ergo Cup Winner
David Litzke, Administrative Coordinator, and John Anthony Blackburn, Production Safety Staff, Honda of America, Manufacturing Inc.
(All)
Objectives:
- The importance of a proactive approach to injury reduction
- The benefits of physical conditioning
- The importance of a process-ready associate
- Basic production skill identification
- The importance of gradual acclimation to job processes

Description:
The Partnership for a Healthy Workforce team, consisting of members from the safety, production, medical and wellness fields, analyzed the effectiveness of the current orientation program for associates coming into the Assembly Department at Honda’s East Liberty Plant. The team found opportunities to strengthen the orientation program in the following areas: (1) how to perform jobs safely and using proper methods and techniques, (2) physically preparing associates for their new assignments, (3) getting acclimated with the use of assembly tools and equipment, and (4) following up with associates within the first 90 days of their assignment. Since implementation of this new orientation program, there has been a reduction of at least 40% in incidents occurring within the first 90 days of assignment. Quality and productivity measures have also shown improvements. The injury avoidance along with the quality and productivity enhancements provided the company with an annualized savings of at least $341,000.

10:30 a.m. - 11:15 a.m.
John Deere Des Moines Work ‘Red Flag’ Ergonomic Assessment
Michael Hilby, Manager, Manufacturing Engineering, John Deere Des Moines Works
(B)
Objectives:
- How a nontraditional organizational ownership of an ergonomics program can drive results in the work environment
- Methodology and assessment techniques used to achieve step-functional improvement
- Employee engagement for ergonomic success

Description:
Your company has an ergonomics team and a written program, but the injuries keep occurring or the program has lost its energy. What do you do? This presentation will help you gain insight how one factory assessed and changed their approach for an ergonomically safe work environment for their 1400 employees, 2.6 million square foot manufacturing facility and 800 processes. The audience will develop an understanding of how ergonomic ownership by the right functional areas is the key ingredient. You will see how the assessment process used data analysis, independent assessments, and employee involvement to identify systemic issues and ergonomic hot spots. The session will also share implementation of improvements for business success.
Special Populations in Today’s Workforce - Aging Track

9:45 a.m - 10:30 a.m
Physical & Cognitive Changes with Age: Ergonomic Implications
Ben Zavitz, Principal Consultant, Lead Ergonomist, EORM
(I)

Objectives:
- The physical and cognitive changes related to age
- Ergonomic tools, methods and guidelines that can be applied to an aging work force
- Simple ergonomic solutions that are applicable to an aging population

Description:
This presentation will focus on the physical and cognitive changes as a worker ages and whether they are significant from an ergonomics perspective. Specific areas that will be discussed include age-related diseases, physical and musculoskeletal changes, cardiovascular changes and neurological changes. Various ergonomic tools, methods and guidelines that take into account and address these changes will be discussed and compared to non-aging workforce guidelines to illustrate the key differences and how best to integrate this data into an aging workforce.

10:30 a.m - 11:15 a.m
Ergonomic Risk Reduction for the Aging Health Care Worker
Don Goddard, Ergonomist, U.S. Army
(B)

Objectives:
- Understand the physiological changes of aging that make senior health care workers more vulnerable to injury
- State the key ergonomic risk factors that need to be evaluated to protect senior health care workers from injury
- Explain controls that can be used to reduce injury risk from ergonomic risk factors for senior health care workers

Description:
The aging process is accompanied by physiological changes in all systems of the body that reduce sensory acuity, neuromotor responsiveness and physical capacity. These changes in combination with the sequelae of the degenerative process increase the probabilities of both accidental and overuse injuries. This presentation will discuss how age-related changes increase injury risk for senior healthcare workers. It will identify high risk work activities and suggest strategies for reducing exposures and avoiding injury. These strategies can provide a better match between work demands and age-related changes in work capacity in order to retain optimal productivity of the aging workforce.