Ergonomics
Workplace Safety

- Electrical Safety
- Lockout/Tag-out
- Confined Space
- Personal Protective Equipment
- Hazard Communication

Ergonomics

- Medical & First Aid
- Asbestos Control
- Fire Prevention
- Chemical Safety
What Is Ergonomics?

Modern Definition

Science of fitting *workplace conditions* and *job demands* to the *capabilities of the working population*
What Is Ergonomics?

Ergonomics is the science of improving employee performance and well-being in relation to the

- job tasks,
- equipment, and
- the environment.

Ergonomics is...

- a continuous improvement effort to design the workplace for what people do well, and design against what people don’t do well.
What Is Ergonomics?

Ergonomics is fitting the job to the person.
Utmost Goal: “Humanization” of Work

Design with “E & E”: Ease and Efficiency
The Pillars of Ergonomics

ERGONOMICS

Anthropometry
Biomechanics
Physiology
Psychology
Applications of Ergonomics

Anatomy
Orthopedics
Physiology
Medicine
Psychology
Sociology

Anthropometry
Biomechanics
Work Physiology
Industrial Hygiene
Management
Labor Relations

Industrial Engineering
Bioengineering
Systems Engineering
Safety Engineering
Military Engineering
Computer-Aided Design
Work System is Adequate

Accepted Work System

Optimal Work System
Ergonomic Hazards

Defined as any situation that leads to undue physical or mental stress. They Include:

- Poor workplace design and layout leading to awkward postures
- Inappropriate handling or manual handling tasks
- Tools or equipment
- Excessive reaching, stretching and bending
- Insufficient rest breaks
- Excessive repetitive movements
- Unsuitable work flow/methods
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Ergonomics Related Illness

- Cumulative Trauma Disorders (CTDs)
- Repetitive Motion Disorders
- Work-Related Musculoskeletal Disorders (WMSDs)
Cumulative Trauma Disorders

Bodily injuries or physical ailments that have developed gradually over periods of weeks, months, or even years as the result of repeated stresses on a particular body part.

- The main risk factors for office-related CTDs are:
  - Repetition
  - Awkward positions or posture
  - Excessive pressure or force

- Another risk factor for CTDs would be:
  - Vibration
An MSD is an injury or illness of

- Muscles
- Nerves
- Tendons
- Ligaments
- Joints
- Cartilage
- Spinal Discs
Symptoms of a MSD
Subjective indicators of potential concern

- Painful Joints
- Pain, tingling or numbness in hands or feet
- Shooting or stabbing pains in arms or legs
- Swelling or inflammation
- Pain in wrists, shoulders, forearms, knees
- Fingers or toes turning white
- Back and neck pain
- Stiffness or burning sensations
Examples of WMSDs

Lower Body

- Low Back Pain
- Back Strain
- Disc Disorder
- Degenerative Disc Disorders
- Sciatica
- Knee Disorders
- Foot Disorders
Examples of WMSDs

Upper Body

- Tension Neck Syndrome
- Rotator Cuff Syndrome
- Lateral Epicondylitis (Tennis Elbow)
- Medial Epicondylitis (Golfer’s Elbow)
- Tendinitis
- Carpal Tunnel Syndrome
- DeQuervain’s Tenosynovitis
- Trigger Finger
- Hand-Arm Vibration Syndrome
Common Physical Injuries/Illnesses

A - inflammation of the shoulder tendons
B - tennis elbow
C - inflammation of the wrist tendons
D - lesion of the knee cartilage
E - inflammation or tearing of the Achilles tendon
F - spraining of the thigh muscles
G - backache (due to a lesion of the ligaments or muscles)
Repetitive Motion Disorders

A variety of muscular conditions that result from repeated motions performed in the course of normal work or other daily activities.

RMDs may be caused by:

- overexertion
- incorrect posture
- muscle fatigue
- compression of nerves or tissue
- too many uninterrupted repetitions of an activity or motion
- friction caused by an unnatural or awkward motion such as twisting the arm or wrist

Source: (National Institute of Neurological Disorders and Stroke)
Examples of Repetitive Motion Disorders

- Carpel tunnel syndrome
- DeQuervain’s disease
- Raynaud’s syndrome (white finger)
- Tendinitis
- Tenosynovitis
- Trigger finger
Psychological Hazards
Psychological hazards

- Boring, repetitive work – lack of stimulation
- Threat (Direct/Indirect)
- Harassment, bullying
- Change, uncertainty
- Work environment
- Work pressure
- Low self esteem

- Low job responsibility
- Financial problems
- Conflict
- Poor work organization
- Little training or instruction
- Little choice in type of work
- Poor promotion opportunities