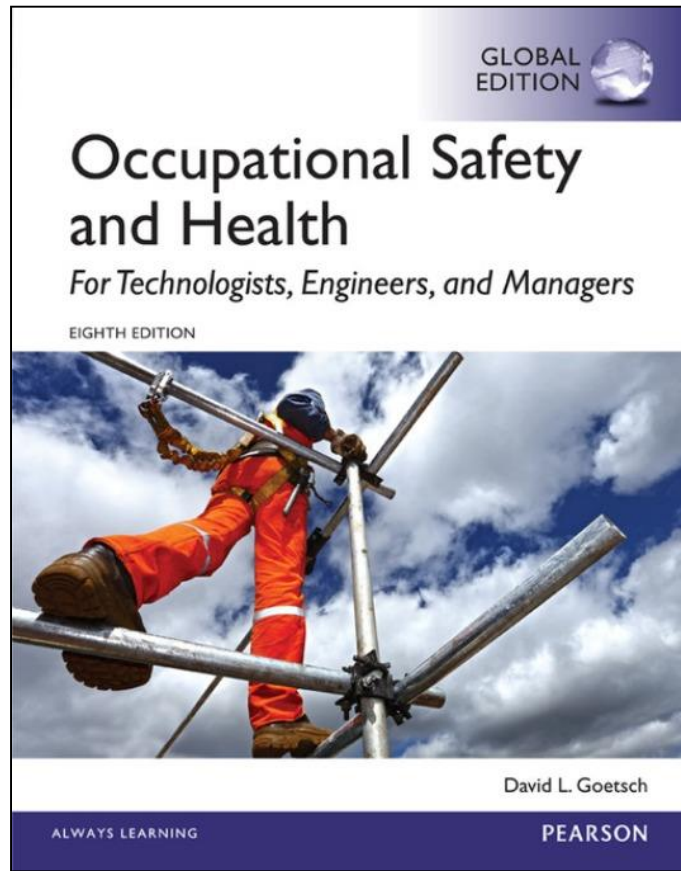


# Occupational Safety and Health

for Technologists, Engineers, and Managers

EIGHTH EDITION



## CHAPTER 11

### Stress and Safety

# Workplace Stress Defined

- Emotions are affected in the workplace by social, occupational, environmental, and psychological factors we perceive as threats.
  - Stress is the reaction of the human body to these stimuli.

# Workplace Stress Defined

- The amount of stress felt depends as much on the individual's ability to deal with the external stimuli as the relative intensity of the stimuli.
- Managers tend to view stress as an individual problem tied to the personality and emotional makeup of the employee.

# Workplace Stress Defined

- Employees often view stress as a problem induced by **poor supervision, unrealistic expectations,** and other management shortcomings.
- Both **personality & emotional makeup** of employees are **factors** in how they **respond to stress stimuli.**
  - Management shortcomings are also factors.

# Workplace Stress Defined

- Workplace stress involves the emotional state resulting from a perceived difference between the level of occupational demand and a person's ability to cope with this demand.
  - Considered a subjective state.

# Workplace Stress Defined

- The relation between **job demands and the worker's ability to meet those demands** further influence workplace stress.

# Sources of Workplace Stress

- Sources of on-the-job stress may involve:
  - Physical working conditions; Work overload.
  - Role ambiguity or conflict; Lack of feedback.
  - Personality, personal & family problems.
  - A job perceived as being too complex.

# Sources of Workplace Stress

- Sources of on-the-job stress may involve:
  - Repetitive and monotonous.
  - Control of employees over their job responsibilities.
  - Being responsible for work without being in control of it.



# Sources of Workplace Stress

- Being responsible for the welfare of a family may cause a worker to feel employment risks are limited.
  - A worker may perceive that he/she is "trapped in the job."

# Sources of Workplace Stress

- The feeling of being responsible for the safety of the public has also been shown to be a stressor.
  - Air traffic controllers experience intense stress.
- Managers failing to communicate frequently and effectively with employees are creating high-stress environments for workers.

# Sources of Workplace Stress

- Job security involves the **risk of unemployment**.
  - A worker who believes that his or her job is in jeopardy will experience anxiety and stress.

# Sources of Workplace Stress

- Unpredictable, never-changing work and ever-changing schedules can induce stress.
  - Employees have lives outside of their jobs.
- Home/family problems create added worker stress.

# Sources of Workplace Stress

- Home/family problems create added worker stress.
- **Work relationships** can lead to on-the-job stress.
  - When employees **do not get along with their fellow workers**, stress levels increase.

# Sources of Workplace Stress

- Human resource management (HRM) issues can be a source of workplace stress.
- Workload demands can stimulate stress when they are perceived as being overwhelming.
- Feeling that one is in danger can be a stressor.

# Sources of Workplace Stress

- Workload demands can stimulate stress when they are perceived as being overwhelming.
  - Time & cognitive constraints, or workload demands may be physically overwhelming.

# Sources of Workplace Stress

- Feeling that one is in danger can be a stressor.
  - Workers need to feel safe from environmental hazards.



# Human Reactions to Workplace Stress

- Some human reactions to workplace stress:
  - Subjective or emotional (anxiety, aggression, guilt).
  - Behavioral (accident proneness, trembling).
  - Cognitive (inability to concentrate or make decisions)

# Human Reactions to Workplace Stress

- Some human reactions to workplace stress:
  - Physiological (increased heart rate and blood pressure)
  - Organizational (absenteeism and poor productivity).

# Human Reactions to Workplace Stress

- Initially problems may be psychosomatic, but with continued stress, appear as organic dysfunction.
  - The most common forms of stress-related diseases are **gastrointestinal**, particularly **gastric** or **duodenal ulcers**.
  - Research has linked some **autoimmune diseases** with increased long-term workplace stress.

# Human Reactions to Workplace Stress

- There are **three stages of human stress response**:
  - **Alarm** - Characterized by pallor, sweating, and an increased heart rate, which prepares the body for whatever action is necessary.
  - **Resistance** - Alarm symptoms dissipate, and the body develops a limit adaptation to the stress.

# Human Reactions to Workplace Stress

- There are three stages of human stress response:
  - **Exhaustion** - Failure to adapt to continued stress can be seen, as psychosomatic diseases such as gastric ulcers, colitis, rashes, and autoimmune disorders may begin.

# Human Reactions to Workplace Stress

- From an evolutionary viewpoint, adverse effects of stress on health may be considered a maladaptation.
  - The first step in learning to adapt to stress is under-standing the amount of stress to which we are subjected.

# Measurement of Workplace Stress

- One method to determine psychological response uses a **measurement of mental workload**.
  - With **subjective ratings**, the workers are asked to rate their perceived level of workload.
    - Viewed as a direct reflection of workplace stress.

# Measurement of Workplace Stress

- One method to determine psychological response uses a measurement of mental workload.
  - **Behavioral time-sharing** techniques use simultaneous performance of two tasks, one the primary, or most important; the other of secondary importance.
    - Workplace stress is thought to increase as behavioral time sharing increases.



# Measurement of Workplace Stress

- One method to determine psychological response uses a measurement of mental workload.
  - **Psychophysiological techniques** require simultaneous measurement of heart rate and brain waves.
    - Interpreted as indexes of mental workload & workplace stress.

# Shift Work, Stress, and Safety

- Basic physiological functions are scheduled by the **biological clock called the circadian rhythm**.
  - Blood pressure, heart rate, body temperature, and urine production are measurably slower at night.
  - Behavioral patterns also follow the circadian pattern.
  - Alertness has been determined to be decreased at night.

# Shift Work, Stress, and Safety

- Rotating shifts over several weeks can result in desensitization to the circadian rhythms.
  - With this comes a measurable loss in productivity, increased accidents & reported subjective discomfort.
  - After returning to a predictable shift, workers regained their biological clock and circadian rhythm.

# Shift Work, Stress, and Safety

- To **reduce stress** associated with shift work:
  - Encourage shift workers to **exercise regularly**.
  - Encourage shift workers to **avoid caffeine, alcohol, or other drugs that can inhibit their ability to sleep**.

# Shift Work, Stress, and Safety

- To reduce stress associated with shift work:
  - If shift workers cannot sleep without some type of sleep aid, the food supplement melatonin or other **natural sleep inducers** should be recommended.

# Improving Safety by Reducing Stress

- **Training** can help people recognize and deal with stress effectively.
- Employees need to know what is expected of them, and to receive recognition when it is deserved.

# Improving Safety by Reducing Stress

- **Managers** can reduce role ambiguity and stress by **providing frequent feedback, helping employees match career goals with company goals, and giving them more control over their jobs.**

# Improving Safety by Reducing Stress

- Physical stress can be reduced by improving the work environment and establishing a sound safety & health program.



# Improving Safety by Reducing Stress

- Organizational approaches to coping with work stress include **avoiding** a monotonous, mechanically controlled pace, standardized motion patterns, and constant repetition of short-cycle operations.
  - Also avoiding jobs that do not make use of a **worker's knowledge and initiative**, that lack human contact & have authoritarian-type supervision.

# Improving Safety by Reducing Stress

- Keeping a positive mental attitude can help defuse some otherwise stressful situations.
- Individuals can effectively respond to a stressful workload by delegating responsibility instead of carrying the entire load.

# Improving Safety by Reducing Stress

- Common relaxation methods—meditation, music, biofeedback, exercise—can reduce stress effects.

# Improving Safety by Reducing Stress

- Some strategies for reducing workplace stress:
  - **Management** recognizes workplace stress and takes steps regularly to reduce this stress.
  - **Mental health benefits** are provided.
  - The employer has a **formal employee communications program**—management and employees talk openly.

# Improving Safety by Reducing Stress

- Some strategies for reducing workplace stress:
  - Employees are given information on coping with stress.
  - Workers have current, accurate & clear job descriptions.
  - Employees are recognized and rewarded with nonmonetary prizes for their contributions.

# Improving Safety by Reducing Stress

- Some strategies for reducing workplace stress:
  - **Work rules** are published, and are the same for everyone.
  - Employees can work **flexible hours**.
  - Workers have the **training & technology access** they need.

# Stress in Safety Managers

- Specific stressors for safety managers include:
  - Overload; Ever-changing safety regulations.
  - Communication problems with employees, managers, and supervisors.
  - Competing loyalties.

# Stress in Safety Managers

- When economic forces focus an organization's attention on other matters, it can be more difficult than usual to get the safety/health message across.
  - This increased difficulty can lead to increased stress.



# Stress in Safety Managers

- Safety & health managers can cope with common triggers of stress by applying these strategies:
  - Prioritize activities by focusing on those that present the most risk to the organization.
  - Work closely with the organization's legal staff and subscribe to an online CD-ROM updating service.

# Stress in Safety Managers

- Safety & health managers can cope with common triggers of stress by applying these strategies:
  - Formalize communication & hold regular, scheduled safety & health meetings for all employees.
  - Focus on the risks to the organization and refuse to take sides.

- <https://www.youtube.com/watch?v=BuzrH0tVTDM>
- [https://www.youtube.com/watch?v=IHgWwSGZ\\_-o](https://www.youtube.com/watch?v=IHgWwSGZ_-o)
- <https://www.youtube.com/watch?v=15GaKTP0gFE>
- <https://www.youtube.com/watch?v=v-t1Z5-oPtU>