

# Safety First

INTEGRATED  
CURRICULUM UNIT  
ON WORKPLACE  
INJURIES

UNIT  
OVERVIEW



# Safety First

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# Safety First

## UNIT OVERVIEW

### ***Essential Question for This Unit***

How can workplace injuries be reduced, and who should be responsible for implementing reduction strategies?

### ***Unit Summary***

This unit focuses on the causes of workplace injuries and the consequences for workers, employers, and society as a whole. Students will investigate the biological and physical basis for injury on the job, regulations governing the work environment in the United States, and how public and government perception of who is responsible for work-related injuries has changed through history.

Subunit 1 focuses on the individual employee's perspective on workplace injuries. Students are introduced to common workplace injuries, and connect them to their previous knowledge of body systems. They discuss the effects of stress on the body and the physics of proper lifting techniques in their science or physical education classes. Students then expand their knowledge of strategies to prevent injuries under different conditions.

The obligations of the employer as related to workplace injuries are explored in Subunit 2. Students learn that federal and state regulations protect workers on the job, and translate the complicated language of government regulations into persuasive brochures on labor and health standards that are easy to understand. Math lessons investigate industrial applications—how cumulative noise level is calculated in decibels, and how to highlight trends in data by displaying information graphically. The subunit also includes an exploration of the variety of health professionals employees visit to be diagnosed, treated, and rehabilitated after injury.

In Subunit 3 students study the evolution of workplace injuries and views about responsibility for those injuries over the centuries. They learn how the Industrial Revolution changed the work environment and influenced types of workplace injuries. Then they survey the progression of regulations and judicial cases related to responsibility for workplace

injuries in the United States. The balance between social and personal responsibility for work accidents and the role of government regulation for adults and teens is discussed.

### ***Culminating Event***

In most companies, a company's Human Resources department is responsible for informing employees about the risks of injury in the work environment and the resources available when an employee is injured. For the culminating event, students select a company and take on the roles of various health and safety professionals that a Human Resources team would ask to research and report on common workplace injuries. Student work includes a PowerPoint presentation, a summary brochure, an in-depth safety manual, and an organized oral presentation. This activity is described in detail in Lesson 3.4 of the unit.

### ***Key Questions/Issues***

- What are the common workplace injuries in the United States? How are they best prevented and treated? (Health Science, Biology, Physics)
- What rights and resources do workers have when they are injured on the job? What are the laws and regulations governing teen workers? How can one tell if a workplace is following OSHA safety regulations? (English Language Arts)
- How is noise a worker safety issue? How does a company calculate the cumulative amount of noise created by multiple machines, in order to see if a room is safe for workers? (Algebra II)
- What is the most effective way to display different types of trend data? (Algebra I)
- What are the healthcare professions that address individuals' workplace injuries? How do you become one of those professionals? (Health Science)
- How did the Industrial Revolution change the workplace landscape? What were the implications for workplace injuries? (World History)
- How have views about the responsibility for workplace injuries changed in the United States? (U.S. History or U.S. Government)

- What is the best way to inform an audience about the prevention, treatment, and legal requirements related to workplace injuries? (English Language Arts)

### ***Learning Scenario to Kick Off the Unit***

Jerry gets a new job as a delivery person at the local food manufacturing plant. Due to an old football injury from high school, he has a weakened back, and lifting more than 50 pounds would risk a new injury. He tells his employer his medical history, and the employer agrees to reduce his lifting responsibilities to loads that weigh 50 pounds or less, despite government guidelines that allow workers to lift heavier objects. If there is a load that is heavier, Jerry can have another person lift it or get assistance. One day, a box is accidentally mislabeled due to mechanical error. It weighs 65 pounds, still within government-allowed weight limits. Jerry lifts the box and suffers a slipped disk.

Who should pay for Jerry’s medical care and lost productivity? Should it be Jerry, or his employer?

### ***Biomedical/Healthcare and Education Partner Roles***

- School librarian/media specialist can assist the Math, Health Science, and/or English Language Arts instructors with teaching research skills,

particularly in the use of print and other media resources.

- A Computer Technology or Graphic Arts instructor can assist with the layout and production of brochures and flyers.
- Invited speakers can discuss the treatment of workplace injuries and related laws; possibilities include physical therapists, occupational therapists, human resources specialists, safety specialists, and OSHA inspectors.
- Additional individuals can be invited to participate as speakers or to help evaluate the culminating event. These include:
  - Exercise Physiologist
  - Kinesiologist
  - Recreation Therapist
  - Speech, Language Pathologist
  - Respiratory Therapist
  - Radiologist
  - Psychologist

#### **SUBUNITS AND MAJOR TOPICS (ACROSS ACADEMIC AND TECHNICAL SUBJECT AREAS)**

##### **Subunit 1** *Personal Injury*

BIOLOGY · HEALTH SCIENCE · PHYSICS

- Introduction to workplace injuries
- Effects of stress on the body
- Science of lifting and proper body mechanics
- Strategies for preventing work-related injuries
- Fight-or-flight stress response

##### **Subunit 2** *Workplace Safety*

HEALTH SCIENCE · ALGEBRA I · ALGEBRA II · ENGLISH LANGUAGE ARTS

- Applications of logarithms and exponents
- Reading and understanding government and legal documents
- Creating clear graphical representations of data
- Creating persuasive flyers and brochures
- Persuasive techniques in propaganda and advertising
- Treatment and rehabilitation strategies for common workplace injuries
- Treatment- and rehabilitation-related occupations

##### **Subunit 3** *Taking Responsibility*

WORLD HISTORY · U.S. HISTORY OR U.S. GOVERNMENT · ENGLISH LANGUAGE ARTS

- Public health issues during the Industrial Revolution
- History of workplace injury regulations and court cases from the early 19th century until present day
- Use of multimedia strategies for research on workplace injuries common to a specific company or industry sector
- Composition and delivery of oral presentations for specific audiences