

Objectives and Colorado State Standards

Objectives:

Students will: (1) understand the origin of acid mine drainage and the chemistry of its formation; (2) understand the physical and chemical processes behind acid mine drainage environmental impacts and remediation techniques; (3) Research acid mine drainage remediation techniques and be able to select appropriate techniques for an acid mine drainage scenario; (4) Participate in fieldwork to observe and monitor the effects of acid mine drainage.

State standards

High School (9-12)

Area: Science

Standard: Physical Science

Grade Level Expectation: 3. Matter can change form through chemical or nuclear reactions abiding by the laws of conservation of mass and energy

Standard: Earth Systems Science:

Grade Level Expectation: 5. There are costs, benefits, and consequences of exploration, development, and consumption of renewable and nonrenewable resources

6. The interaction of Earth's surface with water, air, gravity, and biological activity causes physical and chemical changes

Area: Physical Education

Standard: Emotional and Social Wellness

Grade Level Expectation: 3. Demonstrate responsible behavior in group settings.

Standard: Prevention and Risk Management

Grade Level Expectation: 1. Understand the risks and safety factors that may affect participation in physical activity.

Area: Reading, Writing, and Communicating

Standard: Oral Expression and Listening

Grade Level Expectation (12th Grade): 1. Effective speaking in formal and informal settings requires appropriate use of methods and audience awareness.

2. Effective collaborative groups accomplish goals.

Grade Level Expectation (11th Grade): 1. Verbal and nonverbal cues impact the intent of communication.

Grade Level Expectation (10th Grade): 1. Content that is gathered carefully and organized well successfully influences an audience.
2. Effectively operating in large and small groups to accomplish a goal requires active listening.

Grade Level Expectation (9th Grade): 1. Oral presentations require effective preparation strategies.

Standard: Research and Reasoning

Grade Level Expectation (11th Grade): 2. Complex situations require critical thinking across multiple disciplines.

Grade Level Expectation (9th Grade): 2. Effective problem-solving strategies require high-quality reasoning