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**Coal City Unit District #1**  
**Eighth Grade**  
**Science Curriculum**

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**SC.8:1 Students will demonstrate understanding of the microscopic changes when thermal energy is added or removed. (MS-PS1-4)**

- SC.8:1-1 Identify the states of matter and the movement of molecules in each state.
- SC.8:1-2 Explain the movement of molecules as thermal energy is added or removed.
- SC.8:1-3 Explain what is happening to temperature as thermal energy is added or removed, particularly during a change of state.
- SC.8:1-4 Construct a model to demonstrate what will happen when thermal energy is added or removed to different states of matter.

**SC.8:2 Students will develop models to describe the atomic composition of simple molecules and extended structures. (MS-PS1-1)**

- SC.8:2-1 Identify the characteristics of the boxes on the periodic table.
- SC.8:2-2 Identify parts of an atom.
- SC.8:2-3 Identify elements based on their atomic structures, including their isotopes.
- SC.8:2-4 Compare and contrast covalent and ionic bonds.
- SC.8:2-5 Construct models of various molecules and write their molecular formulas.
- SC.8:2-6 Based on an element's properties, determine where it belongs on the periodic table.

**SC.8:3 Students will develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved. (MS-PS1-5)**

- SC.8:3-1 Explain the conservation of mass.
- SC.8:3-2 Demonstrate the rearrangement of atoms in a chemical reaction.

**SC.8:4 Students will analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. (MS-PS1-2)**

- SC.8:4-1 Differentiate between reactants and products.
- SC.8:4-2 Differentiate between physical and chemical properties.
- SC.8:4-3 Identify physical and chemical reactions.
- SC.8:4-4 Write equations to symbolize reactions.
- SC.8:4-5 During a reaction, analyze properties of reactants and products.

**SC.8:5 Students will demonstrate understanding of the design process in a project that deals with endothermic and exothermic reactions. (MS-PS1-6)**

SC.8:5-1 Differentiate between endothermic and exothermic reactions.

SC.8:5-2 Construct a device that releases or absorbs thermal energy, modifying as necessary.

**SC.8:6 Students will apply scientific principles to design a method to monitor and minimize the impact of synthetic materials on the environment. (MS-PS1-3, MS-ESS3-3, MS-ESS3-4)**

SC.8:6-1 Identify different examples of synthetic materials that are used regularly (e.g. polymers, medicine, foods, alternative fuels).

SC.8:6-2 Analyze how the mining/drilling and use of oil, coal, gas, and minerals impacts the environment.

SC.8:6-3 Explain how the production and use of synthetic materials have negative and positive impacts on society and the earth.

SC.8:6-4 Discuss the ways the U.S. uses oil and construct ideas that could help us reduce our consumption.

**SC.8:7 Students will use evidence to construct a scientific explanation for how the geologic time scale is used to organize Earth's history. (MS-ESS1-4)**

SC.8:7-1 Use the laws that relate to rock formation to identify the ages of different rock formations.

SC.8:7-2 Explain how radioactive dating can be used to identify the age of igneous rocks, but not necessarily sedimentary or metamorphic.

SC.8:7-3 Explain how fossils are used to help identify the age of sedimentary rocks.

**SC.8:8 Students will demonstrate understanding of past plate motions. (MS-ESS2-3)**

SC.8:8-1 Investigate how fossils, mountain ranges, and seafloor shelves provide evidence for continental drift.

SC.8:8-2 Investigate how mountain ranges formed with the formation of supercontinents, like Rodinia.

SC.8:8-3 Explain the forces behind the movement of the continents.

**SC.8:9 Students will construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. (MS-ESS2-2)**

SC.8:9-1 Develop a timeline of different geologic events that have shaped the earth as we know it today.

SC.8:9-2 Explain how specific geologic locations were formed.

**SC.8:10 Students will analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. (MS-ESS3-2)**

- SC.8:10-1 Identify natural hazards.
- SC.8:10-2 Describe the processes that cause earthquakes and tsunamis.
- SC.8:10-3 Describe the processes that cause volcanic eruptions.
- SC.8:10-4 Identify how scientists monitor faults and volcanoes.
- SC.8:10-5 Compile data needed to predict earthquakes and tsunamis.
- SC.8:10-6 Compile data needed to predict volcanoes.

**SC.8:11 Students will describe the cycling of Earth's materials and the flow of energy that drives this process. (MS-ESS2-1)**

- SC.8:11-1 Explain how the processes of melting, crystallization, weathering, deformation, sedimentation, and erosion cause the formation of rocks.
- SC.8:11-2 Differentiate between the types of rocks and their formation.
- SC.8:11-3 Explain how minerals are formed.
- SC.8:11-4 Develop a model to demonstrate how one rock type can turn into another.

**SC.8:12 Students will demonstrate understanding that the uneven distribution of natural resources are the result of geoscience processes. (MS-ESS3-1)**

- SC.8:12-1 Discuss the formation of oil, coal, natural gas, and minerals.
- SC.8:12-2 Analyze data identifying the oil producing countries.
- SC.8:12-3 Research how new drilling techniques are opening up new or dried up oil/gas reserves.

**SC.8:13 Students will demonstrate knowledge of how the body systems work together and how they help maintain homeostasis. (MS-LS1-3,7,8)**

- SC.8:13-1 Identify how homeostasis helps to maintain a healthy body.
- SC.8:13-2 Explain how body systems function with one another.
- SC.8:13-3 Identify the functions of the body systems and how they work.