Delaware Department of Education

Science *

Recommendations for

High School Assessment

April, 2010

Combined with Biology EOC

Standard Title	2: Materials and Their Properties
Strand	1: Properties and Structure of Materials
Standard Statement	A. All matter is composed of minute particles called atoms. Most of the mass of an atom is concentrated in the nucleus. In the nucleus, there are neutrons with no electrical charge and positively charged protons. Negatively charged electrons surround the nucleus and overall, the atom is electrically neutral.
Prioritization Level	Essential
Grade Level Expectations	Explain that matter is composed of tiny particles called atoms that are unique to each element, and that atoms are composed of subatomic particles called protons, neutrons, and electrons. Describe the relative charge, approximate mass, and location of protons, neutrons, and electrons in an atom.
Clarifications	Students are expected to: • Understand the basic structure of an atom • Compare one atom to another in terms of number of protons, neutrons, and electrons. • Determine the structure of an atom based on information from the Periodic Table (atomic mass, atomic number). • Distinguish between core and valence electrons.

Standard Title	2: Materials and Their Properties
Strand	1: Properties and Structure of Materials
Standard Statement	B. Elements and compounds are pure substances. Elements cannot be decomposed into simpler materials by chemical reactions. Elements can react to form compounds. Elements and/or compounds may also be physically combined to form mixtures.
Prioritization Level	Essential
Grade Level Expectations	Explain that elements are pure substances that cannot be separated by chemical or physical means. Recognize that compounds are pure substances that can be separated by chemical means into elements.

Combined with Biology EOC

	Classify various common materials as an element, compound or mixture.
Clarifications	Students are expected to: • Understand that elements are represented by symbols (students are not held accountable for memorizing symbols). • Understand that compounds are represented by chemical symbols (students are not held accountable for memorizing symbols).

Standard Title	2: Materials and Their Properties
Strand	1: Properties and Structure of Materials
Standard Statement	C. Isotopes of a given element differ in the number of neutrons in the nucleus. Their chemical properties remain essentially the same.
Prioritization Level	Important
Grade Level Expectations	Describe isotopes of elements in terms of protons, neutrons, electrons, and average atomic masses. Recognize that isotopes of the same element have essentially the same chemical properties that are determined by the proton and electron number.
Clarifications	Students are expected to : • Understand that isotopes are atoms of the same element that have different numbers of neutrons. • Understand that the number of neutrons affects atomic mass therefore; different isotopes of the same element have different atomic masses. • Describe how isotopes of an element differ from each other. • Given the number of protons and neutrons, determine the mass number of an isotope.

Standard Title	2: Materials and Their Properties
Strand	1: Properties and Structure of Materials
Standard Statement	D. The periodic table arranges the elements in order of atomic number (the number of protons). The elements are grouped according to similar chemical and physical properties. Properties vary in a regular pattern across the rows (periods) and down the columns (families or groups). As a result, an element's chemical and physical properties can be predicted knowing only its position on the periodic table.
Prioritization	Important

Level	
Grade Level Expectations	Use the Periodic Table to identify an element's atomic number, valence electron number, atomic mass, group/family and be able to classify the element as a metal, non-metal or metalloid. Determine the physical and chemical properties of an element based on its location on the Periodic Table. Investigate differences between the properties of various elements in order to predict the element's location on the Periodic Table. Use the Periodic Table to predict the types of chemical bonds (e.g., ionic or covalent) in a variety of compounds.
Clarifications	Students are expected to: • Describe how the elements are arranged on the Periodic Table in terms of properties and characteristics (i.e., # of valence electrons, reactivity, metals/non-metals/metalloids, gases, atomic weight…) • Students are expected to use the Periodic Table as a tool and are not expected to memorize content or details of the chart. • Given an unknown element, predict where the element would be found on the Periodic Table. • Use the Periodic Table to compare similarities and differences between elements (number of valence electrons, metal/non-metal/metalloid, type of bonds that they form…)

Standard Title	2: Materials and Their Properties
Strand	1: Properties and Structure of Materials
Standard Statement	E. An atom's electron structure determines its physical and chemical properties. Metals have valence electrons that can be modeled as a sea of electrons where the valence electrons move freely and are not associated with individual atoms. These freely moving electrons explain the metallic properties such as conductivity, malleability, and ductility.
Prioritization Level	Essential
Grade Level Expectations	Explain how an atom's electron arrangement influences its ability to transfer or share electrons and is related its position on the periodic table. Recognize that an atom in which the positive and negative charges do not balance is an ion.

Combined with Biology EOC

	Explore the extent to which a variety of solid materials conduct electricity in order to rank the materials from good conductors to poor conductors. Based on the conductivity data, determine patterns of location on the Periodic Table for the good conductors versus the poor conductors.
Clarifications	Students are expected to: • Understand general properties of ionic substances: bond between metal and non-metal, dissolves in water, conducts electricity when dissolved but not when solid, and is a brittle solid.

Standard Title	2: Materials and Their Properties
Strand	1: Properties and Structure of Materials
Standard Statement	F. Ionic compounds form when atoms transfer electrons. Covalent compounds form when atoms share electrons. Both types of interactions generally involve valence electrons and produce chemical bonds that determine the chemical property of the compound.
Prioritization Level	Essential
Grade Level Expectations	Use models or drawings to illustrate how molecules are formed when two or more atoms are held together in covalent bonds by "sharing" electrons. Use models or drawings to illustrate how ionic compounds are formed when two or more atoms "transfer" electrons and are held together in ionic bonds. Recognize that molecular and ionic compounds are electrically neutral. Construct models or diagrams (Lewis Dot structures, ball and stick models, or other models) of common compounds and molecules (i.e., NaCl, SiO_2, O_2, H_2, CO_2) and distinguish between ionically and covalently bonded compounds. Based on the location of their component elements on the Periodic Table, explain the elements tendency to transfer or share electrons.
Clarifications	Students are expected to: • Understand that chemical bonds hold atoms together. • Distinguish between ionic, covalent, and metallic bonds. • Understand general properties of ionic substances: bond between metal and non-metal, dissolves in water, conducts electricity when dissolved but not when solid, and is a brittle solid. • Understand that ionic bonds are formed when metal atoms "give up" their valence electrons to non-metal atoms.

Combined with Biology EOC

	• Understand general properties of covalent substances: made entirely of non-metal atoms, do not dissolve in water, do not conduct electricity, and form very hard solids. • Understand that covalent bonds form when electrons are shared between atoms.

Standard Title	2: Materials and Their Properties
Strand	3: Conservation of Matter
Standard Statement	A. The total mass of the system remains the same regardless of how atoms and molecules in a closed system interact with one another, or how they combine or break apart.
Prioritization Level	Essential
Grade Level Expectations	Conduct and explain the results of simple investigations to demonstrate that the total mass of a substance is conserved during both physical and chemical changes.
Clarifications	Students are expected to: • Understand that matter can neither be created nor destroyed. • Recognize that a simple balanced equation illustrates the conservation of elemental matter in a chemical reaction. (Students rearrange the products to make the reactants to see that matter is 100% conserved. The focus is not on balancing equations but on recognizing that all matter is conserved.)

Standard Title	2: Materials and Their Properties
Strand	4: Chemical Reactions
Standard Statement	A. Chemical reactions result in new substances with properties that are different from those of the component parts (reactants).
Prioritization Level	Essential
Grade Level Expectations	Recognize that chemical changes alter the chemical composition of a substance forming one or more new substances. The new substance may be a solid, liquid, or gas. Identify, name and write simple formula for covalent and ionic compounds.

Combined with Biology EOC

Clarifications	Students are expected to: • Students are not held accountable for naming, writing polyatomic ions and complex covalent molecules. Students are expected to writ formula for simple ionic and covalent molecules such as NaCl.

Standard Title	2: Materials and Their Properties
Strand	4: Chemical Reactions
Standard Statement	C. The rate of a chemical reaction depends on the properties and concentration of the reactants, temperature, and the presence or absence of a catalyst.
Prioritization Level	Essential at grade 11 Important at grade 10
Grade Level Expectations	
Clarifications	Students are expected to: • Students are expected to be tested on this in terms of enzyme reactivity in terms of whether a reaction proceeds fast or slow in the presence of an enzyme. • Describe the effect of raising reaction temperature on reaction rate (assuming enzyme denaturation.) • Interpret rates of reaction graphs for enzyme activity.

Standard Title	2: Materials and Their Properties
Strand	4: Chemical Reactions
Standard Statement	D. Energy is transformed in chemical reactions. Energy diagrams can illustrate this transformation. Exothermic reactions release energy. Endothermic reactions absorb energy.
Prioritization Level	Essential for grade 11 Important for grads 9/10
Grade Level Expectations	Identify the reactants and the products in equations that represent photosynthesis and cellular respiration. Explain how the equations demonstrate the Law of Conservation of Matter and Energy in terms of balanced equations.
Clarifications	Students are expected to: • Recognize the effect of an enzyme on activation energy as illustrated by an energy diagram.

Combined with Biology EOC

	• Know whether a reaction is endothermic or exothermic based energy diagrams.

Standard Title	2: Materials and Their Properties
Strand	4: Chemical Reactions
Standard Statement	E. A catalyst lowers the activation energy of a chemical reaction. The catalyst remains unchanged and is not consumed in the overall reaction. Enzymes are protein molecules that catalyze chemical reactions in living systems.
Prioritization Level	Important
Grade Level Expectations	Explain how enzymes permit low temperature chemical reactions to occur in cells. Investigate how various factors (temperature, pH, enzyme/substrate concentration) affect the rate of enzyme activity.
Clarifications	Students are expected to: • Focus on the role of enzymes in cellular metabolism not digestion. • Define enzymes as biological catalysts or identify enzymes as proteins. • Identify catalystic characteristics of enzymes (e.g., specificity, reusability, susceptibility to conditions that disrupt protein structure). • Explain why an enzyme is not included as a reactant or product in a biochemical reaction. • Given a chemical reaction on an energy diagram, identify the reaction as exothermic or endothermic. • Explain why temperature and pH can affect an enzyme catalyzed reaction. • Explain why biological specimens are preserved by refrigeration in terms of enzyme activity.

Standard Title	3: Energy and Its Effects
Strand	1: The Forms and Sources of Energy
Standard Statement	A. Electromagnetic waves carry a single form of energy called electromagnetic (radiant) energy.

Combined with Biology EOC

Prioritization Level	Essential
Grade Level Expectations	Recognize that electromagnetic energy (radiant energy) is carried by electromagnetic waves. Use diagrams to illustrate the similarities shared by all electromagnetic waves and differences between them. Show how wavelength is used to distinguish the different groups of EM waves (radio waves, microwaves, IR, visible and UV waves, X-rays, and gamma waves).
Clarifications	Students are expected to: • Understand that this form of energy is often called solar energy, light, or radiant energy. • Understand that EM energy is carried by a general spectrum of waves. Students are not expected to know the frequencies of waves or classify waves in a spectrum. • Understand that EM energy from the Sun provides most energy for Earth. • Given different waves (radio waves, microwaves, IR, visible and UV waves, X-rays, and gamma waves), compare basic characteristics.

Standard Title	3: Energy and Its Effects
Strand	1: The Forms and Sources of Energy
Standard Statement	B. An object has kinetic energy because of its linear motion, rotational motion, or both. The kinetic energy of an object can be determined knowing its mass and speed. An object can have potential energy when under the influence of gravity, elastic forces or electric forces and its potential energy can be determined from its position.
Prioritization Level	Essential
Grade Level Expectations	Conduct investigations involving moving objects to examine the influence that the mass and the speed have on the kinetic energy of the object. Collect and graph data that supports that the kinetic energy depends linearly upon the mass, but nonlinearly upon the speed. Recognize that the kinetic energy of an object depends on the square of its speed, and that KE =½ mv^2. Collect and graph data that shows that the gravitational potential energy of an object increases linearly with the weight of an object (mg) and with its height above a pre-defined reference level, h. (GPE = mgh).

Combined with Biology EOC

	Conduct investigations and graph data that indicate that the energy stored in a stretched elastic material increases nonlinearly with the extent to which the material was stretched. Recognize that the energy stored in a stretched elastic material is proportional to the square of the stretch of the material, and a constant that reflects the elasticity of the material. (Elastic PE = ½ kx^2)
Clarifications	Students are expected to: • Focus on relationships between mass and KE, not calculate the KE given the formula, likewise with GPE and EPE. • Describe how GPE changes with height and mass (emphasis on height). • Describe how KE changes with speed and mass (emphasis on speed). • Describe how EPE changes with mass and stretched distance (emphasis on stretched distance). This is best emphasized in moving tectonic plates.

Standard Title	3: Energy and Its Effects
Strand	1: The Forms and Sources of Energy
Standard Statement	C. Mechanical waves result from the organized vibrations of molecules in substances. Kinetic energy can be transferred very quickly over large distances by mechanical waves.
Prioritization Level	Essential
Grade Level Expectations	Use diagrams to illustrate how the motion of molecules when a mechanical wave passes through the substance is different from the motion associated with their random kinetic energies.
Clarifications	Students are expected to: • Focus on mechanical waves via earthquakes. • Focus on the fact that mechanical waves (earthquake waves) are highly organized vibrations of molecules. • Focus on the fact that energy transferred by mechanical waves is highly efficient as compared with thermal energy. • Compare the motion created by the energy transfer by different seismic wave types.

Standard Title	3: Energy and Its Effects
Strand	1: The Forms and Sources of Energy
Standard Statement	D. Thermal (heat) energy is associated with the random kinetic energy of the molecules of a substance.
Prioritization Level	Essential
Grade Level Expectations	Explain that heat energy represents the total random kinetic energy of molecules of a substance.
Clarifications	Students are expected to: • Understand that with thermal energy, the motion of the molecules is random in nature. • Understand that the end product of energy chains is thermal energy due to the random nature of the molecules.

Standard Title	3: Energy and Its Effects
Strand	1: The Forms and Sources of Energy
Standard Statement	F. Chemical energy is derived from the making and breaking of chemical bonds.
Prioritization Level	Essential
Grade Level Expectations	Recognize that chemical energy is the energy stored in the bonding of atoms and molecules.
Clarifications	Students are expected to: • Understand that in chemical bonding, breaking bonds requires an input of energy (endothermic) and creating bonds releases energy (exothermic).

Standard Title	3: Energy and Its Effects
Strand	2: Forces and the Transfer of Energy
Standard Statement	B. Forces are mechanisms that can transfer energy from one object to another. A force acting on an object and moving it through a distance does work on that object and changes its kinetic energy, potential energy, or both. Power indicates the rate at which forces transfer energy to an object or away from it.

Combined with Biology EOC

Prioritization Level	Essential
Grade Level Expectations	
Clarifications	Students are expected to: • Understand relationships, not calculations, between work and power. Students are not expected to compare calculations nor calculate work and power. • Describe power as a rate of energy transfer. • Identify forces that are responsible for energy transfer (gravity, friction, and air resistance). Gravity is the main force that is emphasized.

Standard Title	3: Energy and Its Effects
Strand	2: Forces and the Transfer of Energy
Standard Statement	E. Gravity is a universal force of attraction that each mass exerts on any other mass. The strength of the force depends on the masses of the objects and the distance between them. The force of gravity is generally not important unless at least one of the two masses involved is huge (a star, the Earth or another planet or a moon).
Prioritization Level	Important
Grade Level Expectations	
Clarifications	Students are expected to: • Focus on gravity via standards 4 and 5 (listed below). • Understand that gravity is the force responsible for the formation of the solar system and differentiation of Earth's layers. • Explain the importance of gravity in the formation of the universe, solar system, and differentiated Earth.

Standard Title	3: Energy and Its Effects
Strand	3: Energy Interacting with Materials; The Transformation and Conservation of energy
Standard Statement	A. Energy cannot be created nor destroyed. Energy can be transferred from one object to another and can be transformed from one form to another, but

Combined with Biology EOC

	the total amount of energy never changes. Recognizing that energy is conserved, the processes of energy transformation and energy transfer can be used to understand the changes that take place in physical systems.
Prioritization Level	Essential
Grade Level Expectations	
Clarifications	Students are expected to: • Understand that energy cannot be created nor destroyed. • Trace the flow of energy, given an example, to demonstrate that energy is not created or destroyed. • Draw and explain energy chains. • Interpret energy chains, given an example. • Given an energy chain with missing information, complete the energy chain.

Standard Title	3: Energy and Its Effects
Strand	3: Energy Interacting with Materials; The Transformation and Conservation of energy
Standard Statement	B. Most of the changes that occur in the universe involve the transformation of energy from one form to another. Almost all of these energy transformations lead to the production of some heat energy, whether or not heat energy is the desired output of the transformation process.
Prioritization Level	Essential
Grade Level Expectations	
Clarifications	Students are expected to: • Understand that the end result of energy chains is usually thermal energy due to the random nature of the molecules. • Draw or interpret energy chains that indicate thermal energy as the end form of energy.

Standard Title	3: Energy and Its Effects
Strand	3: Energy Interacting with Materials; The Transformation and Conservation of energy

Combined with Biology EOC

Standard Statement	C. Waves (e.g., sound and seismic waves, waves in water, and electromagnetic waves) carry energy that can have important consequences when transferred to objects or substances.
Prioritization Level	Essential
Grade Level Expectations	Recognize that electromagnetic waves transfer energy from one charged particle to another. Use graphics or computer animations to illustrate this transfer process. Give everyday examples of how society uses these transfer processes (for example, communication devices such as radios and cell phones).
Clarifications	Students are expected to: • Understand that waves transfer energy, not matter. • Given an example, such as a slinky, describe the movement of energy versus matter.

Standard Title	3: Energy and Its Effects
Strand	3: Energy Interacting with Materials; The Transformation and Conservation of energy
Standard Statement	D. When waves interact with materials, the energy they transfer often leads to the formation of other forms of energy.
Prioritization Level	Important
Grade Level Expectations	Use diagrams to illustrate how the motion of molecules when a mechanical wave passes through the substance is different from the motion associated with their random kinetic energies.
Clarifications	Students are expected to: • Draw energy chains that show the transformation of energy, transported by waves, from one form to another and describe the motion of the molecules.

Standard Title	3: Energy and Its Effects
Strand	3: Energy Interacting with Materials; The Transformation and Conservation of energy
Standard	E. Through reflection and refraction, electromagnetic waves can be

Combined with Biology EOC

Statement	redirected to produce concentrated beams or images of their source.
Prioritization Level	Important
Grade Level Expectations	
Clarifications	Students are expected to: • Understand how waves interact with materials and are reflected or refracted based on the properties of the materials. • Understand that when waves are refracted, the energy is either absorbed by the material or allowed to transmit through the materials, which is based on the properties of the material. For example, when visible light interacts with a white shirt, the energy is reflected. When visible light interacts with a black shirt, the energy is absorbed and ultimately is transformed into thermal energy.

Standard Title	4: Earth in Space
Strand	2: The Solar System
Standard Statement	A. The motion and the basic elements (periodic table) that comprise our Solar System are consistent with the theory that the Solar System emerged from a large disk of gas and dust.
Prioritization Level	Important
Grade Level Expectations	Explain the formation of solar systems using the Solar Nebular Theory including the origin of the planets and Sun from the nebula, the evolution of planets, and the dispersal of left over gas and dust.
Clarifications	Students are expected to: • Understand solar system formation • Recognize that gravity is the driving force behind solar system formation as interstellar dust condenses to form stars.

Standard Title	4: Earth in Space
Strand	2: The Solar System
Standard Statement	B. The Earth's atmosphere, crust, and interior have changed since the formation of the planets. Driven by internal heat (radioactive decay and heat from accretion), the Earth's layers have separated by density into a solid core, molten mantle, and crust of solid rock composed of plates.

Combined with Biology EOC

Prioritization Level	Important
Grade Level Expectations	Describe how the Earth formed (using the Solar Nebular Theory) into a solid core, molten mantle, crust of solid rock composed of plates, and early atmosphere as a result of the densities of the elements.
Clarifications	Students are expected to: • Describe and explain the formation of Earth's layers. • Explain how density of materials affected the differentiation of Earth's layers and describe the density of the layers. • Given the atomic mass of elements, predict which would be found in the core versus the atmosphere.

Standard Title	5: Earth's Dynamic Systems
Strand	1: Components of the Earth
Standard Statement	A. Minerals are the building blocks of rocks. Common rock-forming minerals found in Delaware (calcite, quartz, mica, feldspar, and hornblende) can be identified by their chemical and physical properties.
Prioritization Level	Essential
Grade Level Expectations	Identify mineral specimens according to their chemical and physical properties. Mineral specimens include calcite, quartz, mica, feldspar, and hornblende. Properties include hardness (Moh's scale), streak, specific gravity, luster, cleavage, crystal shape, and color, and other properties that are useful for identification of specific minerals such as reaction with hydrochloric acid.
Clarifications	Students are expected to: • Understand that minerals are made of elements or compounds whereas rocks are made of minerals and other components. • Given an unknown mineral, use resources listing the properties of minerals to identify the mineral. • Understand the tools and procedures for determining the properties of minerals. • Focus on use of Delaware minerals rather than memorization of minerals found in Delaware.

Combined with Biology EOC

Standard Title	5: Earth's Dynamic Systems
Strand	1: Components of the Earth
Standard Statement	B. Rocks can be classified as igneous, metamorphic and sedimentary based on the method of formation. The natural cycling of rocks includes the formation of new sediment though erosion and weathering and of new rock through heat and compaction of the sediment.
Prioritization Level	Essential
Grade Level Expectations	Classify and describe features that are used to distinguish between igneous, sedimentary, and metamorphic rocks. Describe energy sources, processes, and transformations of Earth materials as they progress through the rock cycle to form new sedimentary, metamorphic, and igneous rocks. Discuss how the cycling of rock is continuous. Describe how igneous rocks are formed. Classify igneous rocks according to crystal size and mineral assemblage. Identify sandstone, shale and limestone by their composition and texture. Explain how sandstone, shale, and limestone can be changed into the metamorphic rocks quartzite, slate, and marble.
Clarifications	Students are expected to: • Describe the cycling of rocks from one form to another and the processes involved in this cycle. • Recognize that energy coming form inside the Earth is due to radioactive decay of minerals. • Describe general characteristics of igneous, metamorphic, and sedimentary rocks.

Standard Title	5: Earth's Dynamic Systems
Strand	1: Components of the Earth
Standard Statement	C. Earth's geosphere is composed of layers of rocks which have separated due to density and temperature differences and classified chemically into a crust (which includes continental and oceanic rock), a hot, convecting mantle, and a dense metallic core.
Prioritization Level	Essential

Combined with Biology EOC

Grade Level Expectations	Describe energy sources, processes, and transformations of Earth materials as they progress through the rock cycle to form new sedimentary, metamorphic, and igneous rocks. Discuss how the cycling of rock is continuous.
Clarifications	Students are expected to: • Describe the layers of the Earth according to density. • Explain why, generally, heavier elements are found in the core and lighter elements in the crust.

Standard Title	5: Earth's Dynamic Systems
Strand	1: Components of the Earth
Standard Statement	D. Continental and oceanic rock differ in overall composition, density and age. These differences help explain the distribution and configuration of land masses and ocean basins.
Prioritization Level	Important
Grade Level Expectations	Investigate the densities, composition, and relative age of continental (felsic) and oceanic (mafic) rocks. Explain why the continental crust, although thicker in most places, overlies oceanic crust. Use this information to explain why oceanic crust sub ducts below continental crust in convergent plate boundaries and explain the configuration of land masses and ocean basins.
Clarifications	Students are expected to: • Describe how density and gravity affect the consequences of tectonic plate interaction.

Standard Title	5: Earth's Dynamic Systems
Strand	2: Interactions Throughout Earth's Systems
Standard Statement	B. Tectonic plates press against one another in some places (convergence), pull apart in other places (divergence), or slide past each other. These plate movements may result in the formation of mountain ranges, and can lead to earthquakes, volcanic eruptions, and tsunamis. The consequences of these events impact the surrounding atmosphere, geosphere, hydrosphere, and the life existing within them.

Combined with Biology EOC

Prioritization Level	Essential
Grade Level Expectations	Use models or computer simulations to demonstrate the processes and origin of landforms at diverging, converging and transform plate boundaries. Show on a map how plate tectonics, earthquakes, and volcanoes are spatially related. Investigate how thermal convection relates to movement of materials. Apply this knowledge in explaining the cause of movement of the Earth's plates. Research and describe evidence that supports the Theory of Plate Tectonics to include rock magnetism and the age of the sea floor. Explain how the Theory of Plate Tectonics demonstrates that scientific knowledge changes by evolving over time. Recognize that although some theories are initially rejected, they may be re-examined and eventually accepted in the face of new evidence.
Clarifications	Students are expected to: • Describe the interaction and consequences of tectonic plate movement.

Standard Title	5: Earth's Dynamic Systems
Strand	2: Interactions Throughout Earth's Systems
Standard Statement	C. Earthquakes result when rocks rupture and slide by one another releasing stored energy which travels through the geosphere in the form of waves. Local earthquake risks can be assessed and preparations made to minimize the hazards.
Prioritization Level	Important
Grade Level Expectations	Describe how energy within the Earth's interior is released in the form of earthquake waves, and explain how these waves affect Earth's surface. Describe how earthquake energy is represented on seismograms and describe how these waves can be used to determine the origin and intensity of earthquakes. Describe the effects on life and property from consequences of earthquake such as landslides, liquefaction, surface faulting and tsunamis. Cite ways these hazards can be minimized.
Clarifications	Students are expected to:

Combined with Biology EOC

	• Focus on the study of earthquakes as related to evidence for Plate Tectonic theory.

Standard Title	5: Earth's Dynamic Systems
Strand	2: Interactions Throughout Earth's Systems
Standard Statement	D. The type and eruptive style of volcanoes is determined by the viscosity and gas pressure of the magma. The effects of these eruptions can have both local and global consequences.
Prioritization Level	Important
Grade Level Expectations	Explain how explosively, type (shield, strato, etc.) and shape of a volcano is related to the properties of its magma and its location along different plate margins. Identify volcanic products (lava, mudflow, pyroclastic projectiles, ash, gases) associated with various types of volcanoes and their eruptions. Describe the effect of these products on life and property. Explain how the products of volcanic activity influence both long-term and short-term changes in the Earth system.
Clarifications	Students are expected to: • Focus on the study of volcanoes as related to evidence for Plate Tectonic theory.

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