

CHAPTER 14 VOCABULARY - Geology and Nonrenewable Mineral Resources

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area strip mining	Type of surface mining used where the terrain is flat. An earthmover strips away the overburden, and a power shovel digs a cut to remove the mineral deposit. The trench is then filled with overburden, and a new cut is made parallel to the previous one. The process is repeated over the entire site. Compare <i>mountaintop removal</i> , <i>open-pit mining</i> , <i>subsurface mining</i> .
asthenosphere	Zone within the earth's mantle made up of hot, partly melted rock that flows and can be deformed like soft plastic.
contour strip mining	Form of surface mining used on hilly or mountainous terrain. A power shovel cuts a series of terraces into the side of a hill. An earthmover removes the overburden, and a power shovel extracts the coal. The overburden from each new terrace is dumped onto the one below. Compare <i>area strip mining</i> , <i>mountaintop removal</i> , <i>open-pit mining</i> , <i>subsurface mining</i> .
convergent plate boundary	Area where the earth's lithospheric plates are pushed together. See <i>subduction zone</i> . Compare <i>divergent plate boundary</i> , <i>transform fault</i> .
core	Inner zone of the earth. It consists of a solid inner core and a liquid outer core. Compare <i>crust</i> , <i>mantle</i> .
crust	Solid outer zone of the earth. It consists of oceanic crust and continental crust. Compare <i>core</i> , <i>mantle</i> .
depletion time	The time it takes to use a certain fraction (usually 80%) of the known or estimated supply of a nonrenewable resource at an assumed rate of use. Finding and extracting the remaining 20% usually costs more than it is worth.
divergent plate boundary	Area where the earth's lithospheric plates move apart in opposite directions. Compare <i>convergent plate boundary</i> , <i>transform fault</i> .
earthquake	Shaking of the ground resulting from the fracturing and displacement of subsurface rock, which produces a fault, or from subsequent movement along the fault.
erosion	Process or group of processes by which loose or consolidated earth materials, especially topsoil, are dissolved, loosened, or worn away and removed from one place and deposited in another. See <i>weathering</i> .
geology	Study of the earth's dynamic history. Geologists study and analyze rocks and the features and processes of the earth's interior and surface.
high-grade ore	Ore containing a large amount of a desired mineral. Compare <i>low-grade ore</i> .
igneous rock	Rock formed when molten rock material (magma) wells up from the earth's interior, cools, and solidifies into rock masses. Compare <i>metamorphic rock</i> , <i>sedimentary rock</i> . See <i>rock cycle</i> .
lithosphere	Outer shell of the earth, composed of the crust and the rigid, outermost part of the mantle outside the asthenosphere; material found in the earth's plates. See <i>crust</i> , <i>geosphere</i> , <i>mantle</i> .
low-grade ore	Ore containing a small amount of a desired mineral. Compare <i>high-grade ore</i> .
magma	Molten rock below the earth's surface.
mantle	Zone of the earth's interior between its core and its crust. Compare <i>core</i> , <i>crust</i> . See <i>geosphere</i> , <i>lithosphere</i> .

metamorphic rock	Rock produced when a preexisting rock is subjected to high temperatures (which may cause it to melt partially), high pressures, chemically active fluids, or a combination of these agents. Compare <i>igneous rock</i> , <i>sedimentary rock</i> . See <i>rock cycle</i> .
mineral	Any naturally occurring inorganic substance found in the earth's crust as a crystalline solid. See <i>mineral resource</i> .
mineral resource	Concentration of naturally occurring solid, liquid, or gaseous material in or on the earth's crust in a form and amount such that extracting and converting it into useful materials or items is currently or potentially profitable. Mineral resources are classified as <i>metallic</i> (such as iron and tin ores) or <i>nonmetallic</i> (such as fossil fuels, sand, and salt).
mountaintop removal mining	Type of surface mining that uses explosives, massive power shovels, and large machines called draglines to remove the top of a mountain and expose seams of coal underneath a mountain. Compare <i>area strip mining</i> , <i>contour strip mining</i> .
open-pit mining	Removing minerals such as gravel, sand, and metal ores by digging them out of the earth's surface and leaving an open pit behind. Compare <i>area strip mining</i> , <i>contour strip mining</i> , <i>mountaintop removal</i> , <i>subsurface mining</i> .
ore	Part of a metal-yielding material that can be economically extracted from a mineral; typically containing two parts: the ore mineral, which contains the desired metal, and waste mineral material (gangue). See <i>high-grade ore</i> , <i>low-grade ore</i> .
overburden	Layer of soil and rock overlying a mineral deposit. Surface mining removes this layer.
plate tectonics	Theory of geophysical processes that explains the movements of lithospheric plates and the processes that occur at their boundaries. See <i>lithosphere</i> , <i>tectonic plates</i> .
plates	See <i>tectonic plates</i> .
reserves	Resources that have been identified and from which a usable mineral can be extracted profitably at present prices with current mining or extraction technology.
rock	Any solid material that makes up a large, natural, continuous part of the earth's crust. See <i>mineral</i> .
rock cycle	Largest and slowest of the earth's cycles, consisting of geologic, physical, and chemical processes that form and modify rocks and soil in the earth's crust over millions of years.
sedimentary rock	Rock that forms from the accumulated products of erosion and in some cases from the compacted shells, skeletons, and other remains of dead organisms. Compare <i>igneous rock</i> , <i>metamorphic rock</i> . See <i>rock cycle</i> .
smelting	Process in which a desired metal is separated from the other elements in an ore mineral.
spoils	Unwanted rock and other waste materials produced when a material is removed from the earth's surface or subsurface by mining, dredging, quarrying, or excavation.
strip-mining	Form of surface mining in which bulldozers, power shovels, or stripping wheels remove large chunks of the earth's surface in strips. See <i>area strip mining</i> , <i>contour strip mining</i> , <i>surface mining</i> . Compare <i>subsurface mining</i> .
subduction zone	Area in which the oceanic lithosphere is carried downward (subducted) under an island arc or continent at a convergent plate boundary. A trench ordinarily forms at the boundary between the two converging plates. See <i>convergent plate boundary</i> .
subsurface mining	Extraction of a metal ore or fuel resource such as coal from a deep underground deposit. Compare <i>surface mining</i> .

- surface mining** Removing soil, subsoil, and other strata and then extracting a mineral deposit found fairly close to the earth's surface. See *area strip mining*, *contour strip mining*, *mountaintop removal*, *open-pit mining*. Compare *subsurface mining*.
- tailings** Rock and other waste materials removed as impurities when waste mineral material is separated from the metal in an ore.
- tectonic plates** Various-sized areas of the earth's lithosphere that move slowly around with the mantle's flowing asthenosphere. Most earthquakes and volcanoes occur around the boundaries of these plates. See *lithosphere*, *plate tectonics*.
- transform fault** Area where the earth's lithospheric plates move in opposite but parallel directions along a fracture (fault) in the lithosphere. Compare *convergent plate boundary*, *divergent plate boundary*.
- tsunami** Series of large waves generated when part of the ocean floor suddenly rises or drops.
- volcano** Vent or fissure in the earth's surface through which magma, liquid lava, and gases are released into the environment.
- weathering** Physical and chemical processes in which solid rock exposed at earth's surface is changed to separate solid particles and dissolved material, which can then be moved to another place as sediment. See *erosion*.