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| **Glossary** |  |
| **Chapter 14** |  |
| **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 mountaintop removal, open-pit mining, subsurface mining. |
| **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 area strip mining, mountaintop removal, open-pit mining, subsurface mining. |
| **core** | Inner zone of the earth. It consists of a solid inner core and a liquid outer core. Compare crust, mantle. |
| **crust** | Solid outer zone of the earth. It consists of oceanic crust and continental crust. Compare core, mantle. |
| **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. |
| **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. |
| **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 low-grade ore. |
| **igneous rock** | Rock formed when molten rock material (magma) wells up from the earth's interior, cools, and solidifies into rock masses. Compare metamorphic rock, sedimentary rock. See rock cycle. |
| **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 crust, geosphere, mantle. |
| **low-grade ore** | Ore containing a small amount of a desired mineral. Compare high-grade ore. |
| **magma** | Molten rock below the earth's surface. |
| **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 igneous rock, sedimentary rock. See rock cycle. |
| **mineral** | Any naturally occurring inorganic substance found in the earth's crust as a crystalline solid. See mineral resource. |
| **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 metallic (such as iron and tin ores) or nonmetallic (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 area strip mining, contour strip mining. |
| **nanotechnology** | The use of science and engineering to manipulate and create materials out of atoms and molecules at the ultra-small scale of less than 100 nanometers. A nanometer is one-millionth of a meter. |
| **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 area strip mining, contour strip mining, mountaintop removal, subsurface mining. |
| **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 high-grade ore, low-grade ore. |
| **overburden** | Layer of soil and rock overlying a mineral deposit. Surface mining removes this layer. |
| **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. See tectonic plates. |
| **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 mineral. |
| **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 igneous rock, metamorphic rock. See rock cycle. |
| **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 area strip mining, contour strip mining, surface mining. Compare subsurface mining. |
| **subsurface mining** | Extraction of a metal ore or fuel resource such as coal from a deep underground deposit. Compare surface mining. |
| **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. |
| **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. |

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