

Name TEACHER KEY Period          Date         

**Chapter 16.3 Environmental Science – MINING REGULATIONS AND MINE RECLAMATION Chart**

**Directions: Fill in the information from the classroom or online chart.**

***Environmental Science Standard and element:***

**SEV4. Students will understand and describe availability, allocation and conservation of energy and other resources.**

- a.) Differentiate between renewable and nonrenewable resources including how different resources are produced, rates of use, renewal rates, and limitations of sources. Distinguish between natural and produced resources.**

**STUDENT CHECKLIST**

- |  |          |         |
|--|----------|---------|
| 1.) Put the chart in your Science Notebook behind the Chapter 16 Word Study after it has been checked. | _____yes | _____no |
| 2.) The CHART was accurate and complete with no abbreviated information.                               | _____yes | _____no |
| 3.) The Information was written neatly and large and dark enough to be easily seen.                    | _____yes | _____no |
| 4.) All information was complete with no grammar or spelling errors.                                   | _____yes | _____no |

**Mining** has become one of the most regulated industries in the United States because of the environmental impacts on ecosystems. Before mining an area, companies must have a plan to return the land being used to its original condition.

**THE ENVIRONMENTAL IMPACTS OF MINING**

|                                  |  |
|----------------------------------|--|
| <b>Air and Noise Pollution</b>   | <ul style="list-style-type: none"> <li>At surface coal mines, removing, loading, hauling, and dumping soil and overburden produce dust which causes more particulates to be added to the atmosphere.</li> <li>Noise is created by the equipment that is used as well as the explosives used in blasting.</li> <li>Most surface mines are not near urban areas because of the air and noise pollution.</li> </ul>   |
| <b>Water Contamination</b>       | <ul style="list-style-type: none"> <li>Water that seeps into mines or through piles of excess rock can pick up toxic substances which wash into streams and rivers harming or killing wildlife.</li> </ul>   |
| <b>Displacement of Wildlife</b>  | <ul style="list-style-type: none"> <li>All plant life is stripped before surface mining starts.</li> <li>All native animals must relocate to live.</li> <li>Dredging negatively affects creek and stream aquatic life by destroying the plants needed for food and contaminating the creeks, streams, and rivers with toxins.</li> </ul>   |
| <b>Erosion and Sedimentation</b> | <ul style="list-style-type: none"> <li>Excess rock is dumped into large piles called dumps in which rain water carries the excess sediments into nearby creeks and streams harming water quality and aquatic wildlife.</li> </ul>  |
| <b>Soil Degradation</b>          | <ul style="list-style-type: none"> <li>Topsoil is sometimes covered with soil from the lower part of the land when it is removed for mining. If this happens, then the soil that is returned to the mined area will not have nutrients needed for plant growth causing the area to be barren.</li> <li>Minerals that contain sulfur may be found in deeper soil layers. If these layers are exposed to water and oxygen, they would release dangerous acids that would contaminate the soil making it difficult for plants to grow.</li> </ul>   |
| <b>Subsidence</b>                | <ul style="list-style-type: none"> <li>The sinking of regions of the ground is called <b><i>subsidence</i></b>.</li> <li>Subsidence occurs when pillars that have been left standing in mines collapse or the mine roof or floor falls causing sinkholes to occur at the surface.</li> </ul>   |
| <b>Underground Mine Fires</b>    | <ul style="list-style-type: none"> <li>Fires that start in underground coal seams are one of the most serious environmental science consequences of coal mining.</li> <li>Lightening, forest fires, and burning trash can also cause coal-seam fires.</li> <li>Minerals in the coal seams can also cause fires if they are exposed to oxygen.</li> <li>Underground mine fires are very difficult to put out and may burn for decades or centuries. Australia has an underground coal-seam fire that geologists believe has been burning for 2,000 years.</li> <li>Underground fires that burn their way to the surface release smoke and gases that cause respiratory problems.</li> </ul> |

|                                   |  |
|-----------------------------------|--|
| <b>Mining Regulations</b>         | <ul style="list-style-type: none"> <li>• Mines on land are regulated by both federal and state laws.</li> <li>• Mining companies must comply with the <b><i>Clean Water Act</i></b> and <b><i>Safe Drinking Water Act</i></b> which is supposed to protect fresh water from being contaminated by mining.</li> <li>• The release of hazardous substances into the air, soil, or water by mining is regulated by the <b><i>Comprehensive Response Compensation and Liability Act</i></b>.</li> <li>• All mining operations must also comply with the <b><i>Endangered Species Act</i></b>.</li> </ul> |
| <b>State Regulation of Mining</b> | <ul style="list-style-type: none"> <li>• Each state has created programs to regulate mining on state lands.</li> <li>• Mining companies have to obtain permits from state environmental agencies before mining a site.</li> <li>• In some states, a <b><i>bond</i></b> must be posted before a mining company begins mining in case the company does not do a good job reclaiming the land or putting the land back in its original condition.</li> </ul>  |
| <b>Reclamation</b>                | <ul style="list-style-type: none"> <li>• The process of returning land to its original or better condition after mining is called <b><i>reclamation</i></b>.</li> <li>• The Surface Mining Control and Reclamation Act of 1977 regulates mining on public and private land.</li> </ul>   |
| <b>Mining Facts</b>               | <ul style="list-style-type: none"> <li>• Every American uses an average of 40,000 pounds of new minerals each year.</li> <li>• A television requires 35 different minerals; 40 minerals are used to make telephones and 15 minerals are needed to make a car.</li> <li>• The United States is the world's second-largest producer of copper and gold.</li> <li>• The United States has the world's largest reserve of coal.</li> </ul>   |