Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Student Instructions**

You will be assigned one or more metals identified in Investigation 1. For each metal, you should find the information requested on the Metal Worksheet attached.

A starting website that can be a lot of fun and get you most of the answers you are seeking can be found here:

Dayah, M. (1997, October 1). *Dynamic Periodic Table*. Retrieved June 14, 2011, from Ptable: <http://www.ptable.com>

Don’t forget to follow the links and click on the tabs – you will be able to see videos, pictures, and even listen to podcasts about the various chemical elements!

There are many other good sources of information, including but not limited to the following:

United States Geological Survey’s Mineral Resources Program:

<http://minerals.usgs.gov/>

<http://minerals.usgs.gov/minerals/index.html>

USGS, Mineral Commodities Summary, 2011

<http://minerals.usgs.gov/minerals/pubs/mcs/2011/mcs2011.pdf>

Mineral Information Institute

<http://www.mii.org/>

Your responses should be typed.

**Metal Worksheet for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **The Basics**

|  |  |  |
| --- | --- | --- |
| Elemental Symbol: |  |  |
| Atomic Number: |  |  |
| Atomic Weight: |  |  |
| Elemental Category: |  |  |
| Abundance in Earth’s Crust |  |  |
| Color: |  |  |
| Melting Temperature (oC) |  |  |
| Density (g/cm3) |  |  |
| Mohs Hardness: |  |  |

1. **The Visual**

Find a picture or image of the metal on the internet. Copy and paste it here, or print and attach a picture of the metal to your report.

1. **Important Physical Properties and Uses**

Using the Dynamic Periodic Table (linked above), other internet or book sources, you should search out the important physical properties and uses of this metal. Be specific and credit your sources! Find as many uses as you can!

An example:

1. The metal vanadium is used as an additive in making steel (USGS, 2010). The vanadium-steel alloy is lighter in weight than regular steel and significantly stronger.
2. **Do you use this metal?**

After investigating the uses of this product, what products do you or your family own or use that might contain this metal?

Use the internet and your textbook to find the following information about the metal ores. Be sure to credit your sources for each of the responses.

1. **What mineral(s) or rock(s) make up the ores for this metal?**

Identify the ore minerals/rocks in which this metal can be found.

1. **How is this ore formed?**

Describe the ore-forming process. Can you find the concentration of the metal in the ore?

1. **Where if this ore found?**

Investigate where (location/countries) these ore deposits are mined. Are there any mines in the United States? What percentage of this metal does the U.S. import each year?

1. **How is the ore mined or extracted?**

Provide any information you can find how the ore is mined. Can you describe the extraction process?

1. **How much of this metal is mined each year? Is any mined in the United States? What percentage of the metal supply is imported annually to the US?**

(The USGS website is helpful here)

1. **What is the current market price of the metal in US $/lb or kg?**
2. **What is the value (monetary) of the metal used in the US each year?**