

Minerals and Mining (20 points)

EAPS 10000 Y01 *Planet Earth* online course

Name _____ If writing by hand, be sure to print legibly.

1. Introduction: This homework assignment briefly explores the topics of the uses of minerals, and the effects of mining on the environment. Minerals have very large range of uses in our modern world. A large number of minerals are mined for their use in many products (manufacturing, food, energy, etc.) that we use today, and our society and our way of life are dependent on these minerals and the mining operations that provide them. There is also a significant economic impact related to mining and international trade related to minerals. Fossil fuels (mostly crude oil, natural gas and coal) are often included in discussions of minerals. However, here we will be concerned primarily with non-fuel minerals. Many minerals (including those containing rare earth elements used in modern electronic components) are relatively scarce and are mined only in restricted regions of the world. Nearly all economic minerals are also considered non-renewable resources as the time for formation of the minerals is so long that the minerals resources available to us for exploitation are relatively old and are fossil resources. Despite the scarcity of many minerals, the demand for minerals is such that there is active exploration for minerals using geological, geophysical, geochemical and satellite remote sensing techniques.

2. Procedure: Review the last slide of the EAS 10000 Y01 Week 1, Chapter I (that's an I, not a "one") PPT, and the last two slides (on the uses of minerals – the mineral use numbers shown are per person averages) in the EAS 10000 Y01 Chapter 1 (that's a "one") PPT and then watch the following **YouTube** videos. All except the Navajo lands video are best viewed in the full screen option in your browser; the durations of the videos in minutes and seconds are listed in parentheses. The PPTs are the PowerPoint file introductions to each chapter (converted to PDF format) on the **Course Content** page of **Blackboard Learn**. Then, answer the questions below. I suggest that you read over the questions before viewing the videos so that you will know some specific information to look or listen for.

You can print out this document and answer the questions by writing (by hand) in the spaces below, and turn in a hard copy. Or, you can use MS Word (or other word processor) and add your answers to the questions (below) in the document and then submit directly to **Blackboard Learn** (this is the preferred method; see **Directions for Submission** on **BB Learn**); or, you can send electronically as an attachment [MS Word or PDF file format] to an email to braile@purdue.edu. If you send electronically, be sure to use the file naming convention described in the **Syllabus**.

<http://www.youtube.com/watch?v=Xvr47hhbTt4> Nevada mining 1 – Diatomaceous Earth (3:36)

http://www.youtube.com/watch?v=67OJKgTota8&feature=bf_next&list=ULKBg5asZfacE&lf=mfu_in_order Nevada mining 2 – Diatomaceous Earth (2:37)

<http://www.youtube.com/watch?v=mxtiPEO0GLc> Mining matters – Colorado Mining Association (4:19)

<http://www.youtube.com/watch?v=shq7e09gqu0> Uranium mining – Navajo lands (5:30)

<http://www.youtube.com/watch?v=lqclwhyblGk> Effects of mining in Nevada (9:06)

3. Questions:

a. In examining the information on the uses of minerals in the EAPS 10000 Y01 Chapters I and 1 (“one”) PPTs, were you surprised by the number of minerals that are in common use and the number of products or applications that these minerals allow? Also, write 1-2 sentences explaining your reaction(s) to the information shown in the mineral use slides of the PPTs.

b. The first three videos (above) emphasize the many uses of minerals and the positive impact on our lives and modern society and focus on a mineral resource called diatomaceous earth (DE). What is diatomaceous earth? How was it formed and preserved? What is the main use of DE?

c. View the last two videos (above). What are the main concerns discussed in the videos related to the impact of mining operations?

d. Explore the following website (and some of the links within this website) on the environmental effects of mining: http://en.wikipedia.org/wiki/Environmental_impact_of_mining (Wikipedia articles are generally, but not always, good sources of basic information on a wide range of science topics). Based on the information in the videos and your review of the Wikipedia web pages, write a short (150-250 words) summary of what you have learned about mineral resources and mining and the most significant environmental impacts of mining activities. Include one or more statements about what you think should be done to address the issues of mining, recognizing that it is nearly impossible to fully reduce our dependence on the use of minerals.