

Short Written Assignment: Asbestos –Mineral Friend or Foe ?

Due Date: 4:00 pm in drop box, Thursday, October 26, 2006

10% will be automatically deducted for assignments handed in after 4:00 pm, Oct. 26. An additional 10 % will be deducted for each day late thereafter (10% for weekends).

This assignment will hopefully make you think about the characteristics of minerals, uses of minerals, and the effects of mineral use on human health.

A major concern over the past couple of decades has been the presence of asbestos in the home and in the workplace, as it has been determined to be a hazardous substance. An entire industry is based on its removal from buildings (including most of the older buildings at UWO). But what exactly is asbestos, and why is it so hazardous ? In this assignment, you will investigate these questions. Please answer all the questions and components of these questions written below in the main body of your report (about three to four, double-spaced, typewritten pages, 12 point font). **Each question will act as a heading for separate sections- major points to be discussed in each section are listed below.** Each section, including the aspects listed below will be written in paragraph form.

Main Body of Report (Questions)

Is all asbestos the same ?

Comments: The term “asbestos” is a term applied to fibrous minerals of amphibole and serpentine mineral groups.

- a) i) Name three minerals included in the “amphibole asbestos” group, and ii) name the single principal mineral of the “serpentine asbestos” mineral group.
- b) Explain how the amphibole asbestos differs in crystal structure (i.e., structure of fibres) from serpentine asbestos, and which of these two different mineral groups of asbestos is most commonly used.
- c) Both amphibole and serpentine asbestos occur in economically viable quantities in only one of the three rock classes discussed in the course. Indicate which rock class asbestos minerals occur in (in the highest abundance), and the location principal Canadian location where asbestos is/has been mined.

Why and where do we use asbestos ?

Comments: Whether people like it or not, asbestos is found in many different products and remains a useful material today.

- a) Asbestos has been used in a great variety of products. Name three important qualities that make asbestos such a useful material.
- b) Name four types of manufactured products used by humans (at present or in recent past) that contain asbestos.

How does asbestos affect humans ?

Comments: Asbestos inhalation has been linked to a variety of illnesses, the most notable asbestosis and mesothelioma.

- a) Describe the symptoms of asbestosis and mesothelioma, explaining how the inhalation of asbestos fibres produces these symptoms.

- b) Geologists have often pointed out that health hazards are probably not the same for amphibole and serpentine asbestos. Which mineral groups of asbestos (amphibole or serpentine) are deemed most hazardous and why ?
- c) It has been suggested that the act of removing asbestos might put humans at greater risk than not removing it. Explain why this might be so.

Additional Sections of Report (In addition to main body of report)

1. The main body of the text should be preceded by a very short *Introduction* section (about 1 paragraph) that, in a nutshell, introduces the content of the report.

2. The main body of the text will be followed by a *Conclusions* section (about 1 paragraph) summarizing the most important points of the report and indicating why the understanding of asbestos and asbestos use is important.

At the very end of your report should be a *References* section, in which you cite any written sources you have used for your report (websites, books, magazines, journals, etc.).

Marking Criteria

Your mark will be primarily based on the content of your report, but your grade will also be greatly influenced by your organizational and writing abilities (yes, this does include spelling and grammar). All essays should be double-spaced and typed in 12-point font. **Reports showing any evidence of plagiarism will be given a grade of zero. Also note that the information you have collected for your report should be paraphrased in your own words. Avoid using direct quotations unless such a quotation is critical to the subject being discussed . Avoid using footnotes; instead, use the reference format provided below.** Essays that have depended heavily on lecture materials (including web links) without further research will be penalized for lack of effort to seek out additional information.

Illustrations

You can use pictures to illustrate your point (if you feel that they help in your explanation). When you use a picture, you must refer to the corresponding figure number in the text of your report.

Example of a figure should be referred to in the text

Diamond is made of carbon atoms that are arranged in a specific three-dimensional pattern (Figure 1). Each picture should be assigned a figure number and caption, with a reference to the original source of the picture.

Examples of figure captions:

Figure 1: The internal arrangement of carbon atoms within the crystal structure of diamond (from Hildebrand, 1984).

Citations in Text

Properly cite information used in the text of your essay. For articles with more than one author, write the last name of the first author, followed by "et al."

Hard-copy and authored internet articles

For hard-copy publications and , cite the last name(s) of authors, followed by year of publication.

Example sentence:

The effects of volcanic ashfall on marine communities are well-documented (Radinsky, 1987; Fredrickson and Olstott, 1996; Heikoop et al., 1996).

Another example sentence:

As documented by Radinsky (1987), Frederickson and Olstott (1996) and Heikoop et al. (1996), volcanic ashfall can profoundly affect the health of marine communities.

Yet another example sentence (this one is for an authored internet article):

Research on the martian meteorite ALH84001 has provided intriguing evidence for possible ancient life on Mars (McKay et al., 1996).

Unauthored internet articles

If using a website article without an author, give an appropriate title (e.g. Mt. St. Helens Article, Discovery Channel Website).

A Note on Quotations

You are discouraged from using direct quotations; wherever possible, express the concepts in your own words. If you feel that a quotation is absolutely necessary, provide a citation as indicated above, followed by the page number of the publication you derived the quotation from (e.g., Heikoop et al., 1996, p. 287). If using an unauthored internet article, cite it as indicated above - a page number is not necessary.

Reference Format

Citations in the text and figure captions of your essay should correspond with full citations in a "References" section at the end of your report. This should be divided into the subheadings "Hard-copy publications and authored internet publications" and "Unauthored internet articles" These should be listed in alphabetical order (according to last name of author or title of webpage). Your references must be written in the following format:

Hard-copy publications and authored internet articles

1) For scientific journal articles:

Heikoop, J.M., Tsujita, C.J., Risk, M.J., and Tomascik, T., 1996, Corals as proxy recorders of volcanic activity: evidence from Banda Api, Indonesia. *Palaios*, v. 11, p. 286-292.

2) For books:

Radinsky, L.B., 1987, *The Evolution of Vertebrate Design*. The University of Chicago Press, Chicago, 188 p.

3) For articles in popular magazines:

Fredrickson, J.K., and Onstott, T.C., 1996, Microbes deep inside the Earth. *Scientific American*, October, p. 68-73.

5) For articles in compendia:

Kidwell, S.M., and Bosence, D.J.W., 1991, Taphonomy and time-averaging of marine shelly faunas. *In*: Allison, P.A. and Briggs, D.E.G., eds., *Taphonomy: Releasing the Data Locked in the Fossil Record*. Plenum Press, New York, p. 115-209.

6) For articles in conference symposia:

Buddemeier, R.W., 1974, Environmental controls over annual and lunar monthly cycles in hermatypic coral. *Proceedings of the Second International Symposium on Coral Reefs*, v. 2, Great Barrier Reef Committee, Brisbane, p. 259-267

7) For authored website articles

McKay, D.S., Gibson, E.K., Thomas-Keprta, K.L., and Vali, H., 1996, Search for past life on Mars: possible relic biogenic activity in Martian meteorite ALH84001. Lunar and Planetary Institute website, <http://cass.jsc.nasa.gov/lpi.html>. Accessed February 19, 2005.

Unauthored internet articles:

If an author is not provided on the website, use the appropriate title cited in the text and give the full address of the website source you obtained the information from, plus the date at which the article was accessed. For example:

Mt. St. Helens article, Discovery Channel website,
<http://dsc.discovery.com/news/afp/20041004/helens.html>. Accessed February 20, 2005.
Pearls article, American Museum of Natural History website,
<http://www.amnh.org/exhibitions/pearls/>. Accessed February 21, 2005.

Note: you will not use encyclopedic sources such as Wikipedia or Britannica either online or in printed form ! Any other reputable sources of information will be acceptable.