

1.85 WATER AND WASTEWATER TREATMENT ENGINEERING

HOMEWORK 1 – DUE FEBRUARY 10, 2005

You may collaborate in working on the homework, but the work you submit should be your own. Questions are by design open-ended: you may need to make assumptions or develop your own approach.

Question 1 (2 points)

This question relates to professional practice rather than water or wastewater treatment. It is intended to stimulate some thought about how to communicate technical information effectively.

Consider the following two passages:

1. Galactic dark matter may consist of weakly interacting particles which can be captured and trapped in stars, and which would then contribute to the transfer of energy. A special class of these particles (“cosmions”), with weak cross-sections that are larger than standard has been invoked as a solution of the solar-neutrino problem, and also as a means of suppressing convection in the cores of horizontal-branch stars.
2. Subduction of the Juan de Fuca and Gorda plates has presented earth scientists with a dilemma. Despite compelling evidence of active plate convergence, subduction on the Cascadia zone has often been viewed as a relatively benign tectonic process. There is no deep oceanic trench off the coast; there is no extensive Benioff-Wadati seismicity zone; and most puzzling of all, there have not been any historic low-angle thrust earthquakes between the continental and subducted plates.

Which of these two passages is easier to read? Why?

ANSWER. See pages 29-30 of: Montgomery, S. L., 2003. *The Chicago Guide to Communicating Science*. The University of Chicago Press, Chicago. Montgomery explains that the second passage is much easier and more interesting reading. It using diverse and interesting vocabulary and the pattern of the passage – some medium-length sentences, some short – is good. In short, the second passage does a better job of drawing in the reader.

Question 2 (4 points)

What happens to your wastewater? Describe the wastewater treatment facilities that service your residence at either home or school. The description should list the individual unit processes that comprise the treatment system and what each process accomplishes.

Question 3 (4 points)

Where does your drinking water come from? Describe the source of your water at either home or school, how it is treated, and how it is conveyed from the source to the distribution system.

ANSWER: The answer to Questions 2 and 3 obviously will vary. The expectation is that by research on the internet, through phone calls, or from other sources, you gathered information on your water supply and wastewater treatment.