ENGR-2500 Mini-Midterm – Spring 2015

A few years ago the head of the U.S. Environmental Protection Agency ordered a review of EPA regulations pertaining to nanotechnology and nanomaterials. Similar reviews were instigated years ago by both European and Japanese governmental agencies and, in the eyes of many activists, a U.S. review was long overdue.

For this mini-midterm, I want you to imagine that you are a staff scientist/engineer working for the EPA. Your boss, an associate director, just received the above mandate. He/she has now turned to your team to perform a preliminary analysis of issues, consequences and strategies to be studied in the development of an effective and efficient regulatory strategy.

In real life (it is to be hoped) your team would consult a wide range of materials and experts. But for this exam I am going to make it a little easier by asking you to read only one resource, an article entitled:

“Nanotechnology: Getting it Right the First Time”
(This reading is linked from our class’s homepage, in the homework table entries for March 17)

The above article was chosen to offer inspiration ONLY. It is certainly not the last word on the subject. It also almost certainly missed important issues and got some things wrong.

So this exam is NOT a report on the above paper.

Instead, stimulated by the article, it is a call for YOU to brainstorm about the regulatory challenges nanotechnology poses.

In brainstorming, the object is to identify new ideas/issues that others have not already thought of.

Thus YOU, as a single member of this brainstorming team do NOT have to present a comprehensive response.

In fact it might be particularly useful if you were to identify and discuss ONE aspect of the regulatory challenge that all others had completely overlooked (or at least treated only superficially).

Thus:

This analysis SHOULD NOT be:

- A lengthy prose document that would make your English, History or STS professor proud.

- The final word on the subject, summarizing all viewpoints, replete with quotations and references.

That is because:

- This is not a comprehensive, final, public, report.

- Its intent is instead to START a brainstorming process by quickly identifying issues and likely targets for further investigation. YOU as an individual brainstormer are thus liberated in that you do not have to be complete or balanced, or even objective. Indeed, you have the freedom to flog a particular viewpoint -
AS LONG as you back it up (i.e. mere slogans or personal "articles of faith" cannot stand without supporting well developed arguments).

- Importantly, you will be submitting this report to a high level manager:

And, as I was taught (when I became a mid-level industrial manager), executives are extremely busy leading to apparently miniscule attention spans. My boss told me flat out that, for such executives, in writing I had to make my essential points and recommendations within the first page - because it was unlikely the second page would ever get read. And on those occasions when I spoke directly to my VP (a fiery Nobel Laureate) I learned that I could only count on him listening for about 60 seconds.

This is not as damning as it sounds: A GOOD executive has appointed talented subordinates and believes in delegating responsibility to them. So it is plausible that executives listening to your analysis could make a relatively quick judgment as to whether you have done your homework, are applying good analytical thinking, and should (or should not) now be authorized to proceed further.

So this report should be short and sweet identifying particular issues and possible changes in regulatory policy. But, as analysts, you should not just summarize source material, but instead go well beyond that to identify challenges, contradictions, conflicts and, most importantly, areas requiring further investigation and work. (Think twice if you are hoping someone is going to pay you for simple literature summaries - the good people of Google and Wikipedia are well on their way to automating such jobs out of existence!).

Remember, that you DO have the freedom to concentrate on a single issue or viewpoint of personal interest (as your report would then be merged with input from the larger team). And, as such, your report need not be longer than about 3 pages.

What will I be looking for when I grade these exams? Given that this is a team brainstorming process, I am particularly looking for either new ideas or particularly well-developed ideas.

By new ideas I mean issues, concerns, possible problems or solutions that are NOT obvious, that are not already being widely discussed.

By well-developed ideas I mean following a suggestion through to try to anticipate the full range of alternatives and full range of consequences. This is particularly relevant to regulatory suggestions where "good intentions" can lead to actions that are ineffective, or hugely costly, or even counter productive if one does not try very hard to anticipate the full chain of possible events and behaviors they may stimulate.

Your analysis should be typed and pledged.

This exam will be due in class on March 17

On my honor as a student, I have neither given nor received unauthorized assistance on this exam.

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(sign name above)