

Why Do I Have to Study Chemistry?

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Students frequently believe that the study of biology is more relevant to their daily lives than the study of chemistry or physics. As instructors, we face the task of focusing students' attention on the numerous, often subtle, ways that chemistry and physics impact nearly every facet of their daily routines. As a student who majored in both biology and chemistry, and as an instructor of both, I clearly see that chemistry provides more practical explanations of the science and technology that surround us than does biology. In a conversation with an instructor of physics, an article entitled, "Why Do I Have to Study Physics?" was mentioned (*1*). Offered here is a similar article for instructors of chemistry.

Instructors of introductory, general, or consumer chemistry courses for nonmajors, who are most likely very familiar with the question posed in the title of this article, should take interest in the questions posed by the student in the scenario. The text written from the student's point of view could be used as a culminating activity for such classes. One possible activity could be a writing-in-chemistry assignment in which students answer the questions posed in the scenario below. It is unlikely that any single reference text or textbook contains the answers to all the questions posed in the scenario. If students were assigned the writing-in-chemistry activity, it is likely that they would need access to a library with fairly extensive references in chemistry.



Oh boy, there's my alarm. Six-thirty, the morning I've dreaded all week—the day of my first big chemistry exam.

I should get ready. Where's that toothpaste? Fluoride sounds familiar; I wonder why that's in there. There's baking soda and peroxide too. Why would they put those in toothpaste?

It's time for a shower. I wonder why soap and water clean so much better than just plain water. How is shampoo different from soap? I wonder why I feel so cool before I dry off. There's isobutane in this mousse. I wonder if that's anything like the butane in lighters. Why would something like that be in this hair styling stuff?

It's time for some tunes. The news is on. They say this beautiful late summer morning will become an ozone action day. I wonder what ozone is. How does it get into the air? Why is it a problem? They keep telling us not to stay out in the sun too long because the ozone layer is disappearing. How can it just disappear, and how is the ozone layer different from the ozone they tell us we shouldn't breathe? I wonder how a sunblock works.

I had better turn on the light. I wonder what's in a light bulb that lets it get so hot and still not melt or catch on fire. It's time to check the laundry and get dressed. How does a detergent work? Maybe I'll wear that tie-dyed T-shirt. I wonder how they tie-dye clothing. How do dyes stay on the clothes without coming off onto my skin? Boy, these jeans are really

faded. I wonder what made them fade so much. My socks came out nice and white. What is bleach, and how does it work? My new cross training shoes sure are comfortable. I wonder how they made that foam rubber.

I should fuel up with some breakfast. Maybe I'll fry an egg. I wonder why a fried egg tastes so much better than a raw egg. How does cooking change the egg? It's getting late; I'll just have some orange juice and cereal. Wait, every time I drink orange juice after I brush my teeth, it tastes really strange. I wonder why that is. I think I'll just try the cereal and skip the juice. I know it has vitamin C, but what does that do for me anyway? This cereal is "fortified with iron". I wonder what kind of iron they put in there; it couldn't be those iron filings we used in chemistry lab, could it? This milk has calcium in it; it surely isn't those little lumps we saw bubbling in water the other day in class. The milk says it has vitamin D added. I wonder what vitamin D is and why it's good for me. There's the calorie count. I wonder if that has anything to do with those energy measurements we read about in the chemistry book.

Time to leave for school. I hope the car starts this morning. I wonder how a battery works. Oh great, the car needs gas. I'll pull in to the mini-mart and fill up the tank. The pump says something about an octane rating. I wonder what octane is and what that octane rating really means. This gas is unleaded; how could they put lead in gasoline? Why would it be used in gasoline anyway? It looks like that tire is a little low. This pressure gauge is reading lower than it did yesterday afternoon. I wonder if it's because it's so much cooler this morning.

Before I leave, I think I'll get a can of soda. Oops, I dropped it; I better not open it until later. I wonder what those bubbles are and how they get them in there.

I made it to school on time. It's supposed to be really hot today. I've heard of car windows popping when it gets really hot, so I'd better open them a little bit. I wonder why they sometimes break when the car gets really hot. I'm glad the windows are coated to shade the inside. That should help, too. I wonder what that coating is, and how they get it in the glass.

It sure is bright out this morning; I'm glad my glasses darken in the sun. I wonder how they do that.

The air conditioning sure will feel good this afternoon. I'm glad I had my air conditioner fixed. What is the refrigerant that the service technician refilled? I wonder how air conditioning works.

Well, here I am in chemistry class. Worrying about this exam is giving me heartburn. I wonder how this antacid works. Why do I have to study chemistry anyway? When will I ever use chemistry in my everyday life? What good is it to me? Why can't I study something that's practical—like biology?

Literature Cited

1. Gore, G. R. *Phys. Teach.* 1997, 35, 378.