

Chapter 21 Reading guide

1. What is the current world human population? Projected by 2050? By 2150?
2. What are some issues with overpopulation? Read the whole chapter before answering this completely.
3. Go back to table 17.3, page 526, and talk about how overpopulation, deforestation, and rainforest degradation are contributing to emergent/resurgent disease.
4. Which nation uses the most energy and raw materials per person?
5. What role might education play in achieving zero population growth?
6. List the major sources of air pollution; explain where each comes from and their effects on health.
7. How is smog formed?
8. Describe the way an acidified lake looks. What has happened to that lake?
9. What effects does acid deposition have on human health? Be sure to mention its effects on toxic metals in soil.
10. Is indoor or outdoor air generally more polluted? Explain.
11. Describe each of the sources of indoor air pollution, where they might be in a home/building, and their health effects.
12. Should you prefer or avoid products containing dichlorobenzene? What kinds of products contain it?
13. List the many causes of Sick Building Syndrome.
14. What is the significance of chlorofluorocarbons, hydrofluorocarbons and perfluorocarbons? What are some of their sources?
15. List several green house gases. Where do they come from? What effect have they probably had (and will continue)?
16. What do experts agree is the only way to significantly reduce air pollution?
17. What percent of the world's water is available for human consumption?
18. List and describe generally the many ways that contaminants get into the water supply.
19. Pay special attention to the "chemical contaminants" section of water contamination. List several types of chemicals and where you might find them in your home.
20. What are chlorinated hydrocarbons? Name several. Why are they a problem? Where will you find them in your home?
21. Even though PCBs were banned long ago, they are still around- including likely in your body. Why? Is this true of dioxins, too? Be sure to use and define the term "bioaccumulate."
22. How many pounds of pesticides are used by US Americans each year? What percent reach target organisms? What happens to the rest?
23. What is one measure you can take to reduce lead in your water... (while your spouse/roommate is at the store buying a filtration system and you are saving up to replace your leaded plumbing)? ☺
24. Besides damaged ears, what are some physiological responses to excess loudness?

25. What percent of recyclable waste is actually recycled? Where does it end up? Did you realize that we ship much of our toxic waste to poorer countries whose citizens don't even get to use the luxuries that produced the waste?
26. Explain the story of the housing development that was built on the Love Canal dump site in NY. What specific chemical is mentioned here?
27. How much is known about the risks of EMFs? Of cell phones? *It is a good idea to play both sides of the coin here: risk is probably very low, so there is no need to be **fearful**; on the other hand, risks, while low, might be real so it makes sense to practice reasonable caution (the text has suggestions).
28. What are the top 20 hazardous substances according to the ATSDR/EPA?

-From required links, supplemental lectures-

29. Why is vinyl/PVC considered the poison plastic? Ie, what's so bad about it (there are several things, be sure to cover most)
30. Provide several examples of products made with vinyl.
31. Provide several examples of alternatives to vinyl.
32. Why is the "new car smell" not so great after all?
33. What website can you visit to find "Much more detail on specific brands of products available..."? (alternatives to vinyl)
34. What are the "Chemicals of Concern" listed by healthytoys.org, which have been found in many children's toys? How did they estimate the presence of phthalates?
35. Does the Environmental Defense pocket guide for seafood choices list wild Alaskan Salmon as a good choice (for environment and low contaminants) or a bad choice?

Supplemental Lectures

I. Some sources of contaminants in your home-

- A. Lead- see my write up in the links section for more info, but here's a wrap-up: paint in homes built before 1978 (keep it in good shape, have someone follow with a vacuum when drilling or screwing into walls, hire an abatement professional for deconstruction projects AND exterior painting, NEVER scrape or sand paint); soil (from peeling and scraped exterior paint, which creates dust you can't see); carpets and floors (dragged in on your shoes, insist that shoes be left at the door, vacuum often with a quality vacuum); possibly tap water, especially in older homes; garden hoses (buy white "potable"/drinking rated hoses, even if you don't drink from it. You don't want to spray lead onto your yard.); electrical cords including Christmas lights (ain't nothin' you can do about this but keep them out of kids' hands, wash yours after touching, and vacuum around them often... this is a good reason to keep your lighted Christmas display minimal, if the waste of energy wasn't reason enough); some dishes and pitchers (especially older and Mexican/Chinese made), see my write-up for more information

- B. Asbestos- linoleum flooring from before the 1990's (you CANNOT tell by looking at it, don't let a contractor tell you they can. They can't. As long as you don't disturb the linoleum, it's safe. But if you're going to rip up old linoleum flooring, have it tested first.); some old attic insulations (have it checked before going up there); see also www.watoxics.org for more
- C. VOCs, formaldehyde- furniture and cabinets made with particle-board, any kind of pressed wood product (Medium Density Fiberboard is a common one). Most is made with this stuff these days, so buy from a company that uses the lowest-toxicity adhesives (Ikea is an example of such a company); carpets (buy from Ecohaus/Environmental Home Center)
- D. Flame retardants- furniture (primarily the foam but also the covering), some clothing (especially children's pajamas). Some companies have adopted lower-toxicity retardants (Serta, Ikea). Washington State has banned the highest-toxicity retardants ("brominated"), but I'm not sure when all products will be phased out. If you're in the market for new stuff, ask and research. There are some "green" stores that sell furniture, but they are often expensive. Look for kids' pajamas that are 100% cotton and specifically say they do not contain flame retardants (I think polyester blends are required by law to have retardants added).
- E. Other bad stuff- household cleaners! See www.watoxics.org and search for their information sheet on alternative cleaning products. They include an explanation about how to effectively disinfect, too, so you won't need to worry and wonder.
- F. One more "other bad stuff"- personal products! If it says "fragrance," it's likely to contain phthalates. Some cosmetics contain heavy metals like lead and mercury. Check out www.ewg.org, and see their "skin deep" site for explanations and buying guides with brands named!

II. **If we were the only ones reaping what we sow...**

The US produces a huge proportion of the contaminants we are talking about, and we are having to deal with the consequences. Well, often the consequences get concentrated on small communities to have to deal with themselves. But not always; for example, ALL seafood is contaminated to some extent with methylmercury. Thankfully, there are some species whose contamination levels are low. But, MANY of our favorite fish are so contaminated, children should not be eating them. Women who are pregnant, who MIGHT get pregnant, should not be eating them. Honestly, considering that mercury exposure increases adults' risks of many chronic diseases, should anyone be eating them more than just occasionally? But this is SO LAME! Fish is one of the healthiest foods we can eat... if it weren't for mercury (oh, and PCBs). Now it's not so healthy, and we're confined to eating only a few species, and we already have problems with overfishing so now these few species are likely to see dwindling populations even MORE...

Anyway, that's fine, we reap what we sow, right?

But what about the Native Alaskans, who have the highest amounts of PCBs in their breastmilk of any population tested? These people didn't produce PCBs. But being persistent in the environment, the PCBs followed ocean movement and concentrated up there, and accumulated in the tissues of the animals eaten by the Native Alaskans.

And how's this for reaping what you sow: you know how we've gotten all of these lead-tainted products from China recently? Well, it turns out that we send a bunch of our toxic waste to China (we don't want it here, we don't know how to dispose of it safely!). This includes old televisions, computer monitors, etc. There are poor people in China who supplement their living by picking through dumps and looking for metal components. They can get a little bit of money for the metal they find. Turns out, some of it is lead. That lead is purchased by people who make, among other things, jewelry and paint. The lead is really cheap. It gets mixed in and used to help stabilize the paint color, and just adds bulk to the jewelry with a cheaper metal. Then it gets shipped here. While I'm irritated that this whole thing slipped through SO MANY cracks, I find it difficult to feel like we were specifically sleighted. The Chinese people are getting these products, too, and that's no more right! I don't have an answer, but I do find it useful to understand this.

III. A note on fluorescent lights- You may have heard that they contain mercury. This is true, and it is a problem. Specifically, it is going to be a big problem in a few years. When I first learned this, I really questioned whether the energy savings justified the mercury issue. Then I did some research, and found out that it does. Here's why: the production of incandescent lights (the "regular" lights) puts MORE mercury into the environment than fluorescent. So, even though there is no mercury IN the lights, it still ends up where it hurts us most: in the water. Fluorescents are our best choice on both counts. Do note: when you turn them on and off a lot, they don't save much energy; it actually makes sense to leave a fluorescent on if you're going to come back soon.

IV. Pesticides in Animal Foods- When people talk about "choosing organic," they are generally thinking about produce. Many people choose organic just because it's good for the environment; and it IS good for the environment. Many choose organics because they don't want to be exposed to pesticides. Many choose organics because they believe organic produce will be more nutritious.

How harmful pesticides on produce is, is still being investigated... some believe the levels are too small to produce effects. This is EXTREMELY difficult to assess with good scientific design. My belief is that pesticides are NOT things our bodies are designed to ingest; unless it is absolutely necessary, there is no reason to. A lack of knowledge about their effects does

not mean they do not have effects. Enough evidence has shown that negative effects can occur to make me purchase organic whenever I have the choice, with little regard for cost. But I have a little one for whom I would like to give as clean a start as possible.

Nutritionally, they are about equal. Certainly, there have been differences found, usually on the side of organics (having higher vitamin content, etc). It makes sense because the soil should be healthier... the soil feeds the plant, the soil has the minerals, etc. But, if you can't afford or find organics, conventional fruits and veggies are still nutritional powerhouses.

Now for the point I really want to make. People often don't think about the meat, eggs and dairy they eat as sources of pesticides. In fact, these products often have MORE pesticides than produce. If the chickens were fed grain with pesticides, they store the pesticides in their tissues. The pesticides get concentrated! Animal foods are sources of other contaminants, too, like PCBs. Fish contain a lot of PCBs, but so do land animals (not typically as much as fish but they are there). Most of these contaminants are in the fat... so, to avoid them, eat organic animal products (meat, eggs and dairy) and choose lean. I have never seen anyone address the issue of whether organic animal products have fewer non-pesticide contaminants (PCBs, heavy metals etc), but I doubt there would be much difference unfortunately. These are things that are much more difficult to control, and I doubt that even organic farmers test their soils for heavy metals and their water for metals and PCBs.