

GLG 110 – Chapter 20 – Geology, Society, and the Future

- **China on edge of environmental crisis**
 - As its society becomes more affluent, China is facing the same types of pollution, waste disposal, and energy issues faced by Europe and the U.S. before
 - Rapid industrial growth fueled by coal (much of it high-sulfur)
 - Respiratory and other diseases result from environmental degradation of soil, water, and air (exposure to toxins)
 - China's problems are magnified by comparison due to its population of over 1.3 billion
 - 90% of sewage discharged directly into waterways without treatment
 - 50% of drinking water supply contaminated by biological waste
 - rapid depletion of GW in northern China's grain belt (soil erosion, dust storms)
- 21st century challenge – balance economic development with healthy environmental sustainability
- Toxin – poisonous substance (some are harmful even in *tiny* amounts)
- Carcinogen – poisonous substance that causes cancer
- Lead poisoning
 - Anemia, mental retardation, nervous diseases (palsy), death
 - Sources: gasoline, paint, batteries
 - Roman empire had widespread lead poisoning due to use of lead in drinking vessels and *plumbing* (“plumbum” is Latin for “lead”)
- Human activities can be either beneficial OR harmful to environment
- “Natural” environment is not *always* ideal (toxins occur naturally in soils, water, and air)
- Geologic environment and disease
 - Heart disease rates in U.S., Japan, England, Sweden and Wales have been found to be linked to regional water chemistry (hard vs. soft water)
 - *Soft* water (less/fewer dissolved minerals) seems to be associated with higher rates of heart disease. Why is not yet known for certain.
- Radon (Rn) gas is naturally occurring carcinogen
 - Decay product of U²³⁸
 - Can concentrate in basements of homes with little or no air flow, which are built on rocks such as granite and shale
 - Air venting system is an effective preventative measure to reduce Rn concentrations
 - Cancer risk of radon exposure is *vastly* increased (~1500%) for smokers
- Understanding of naturally and human-caused environmental risk factors (toxins, geologic hazards like landslides, etc.) is critical to best select sites for buildings, etc.
- Environmental Impact Statements (EISs) are now required for all federal actions/projects that will alter the landscape or change its use
 - Identifies environmental issues/challenges that will be increased or otherwise affected by a proposed action/project
 - Plans on how to mitigate (reduced the negative impacts of) such problems are important part of EISs
- Good land use planning allows sound economic development while maintaining a

- sustainable high quality of life for residents in an area
- U.S. Scenery is considered a natural resource (national parks like Grand Canyon, monuments, wildlife preserves)
 -