

# ENV. SCIENCE FINAL STUDY GUIDE

## Biodiversity

- What is Biodiversity
  - Unknown species
  - Levels of biodiversity-species, genetic, genetic
  - Keystone species
  - Benefits of biodiversity
- Biodiversity at Risk
  - Extinctions
  - Threatened, endangered species
  - Exotic species-poaching
  - Critical areas- endemic species
  - Biodiversity hotspots
- The Future of Biodiversity
  - Captive breeding
  - Germ plasm-genetics
  - Parks/zoos
  - U.S. Conservation- ESA, habitat conservation
  - International Conservation- CITES, biodiversity treaty

## Water (11)

- Water Resources
  - Water cycle
  - Water distribution—surface, river, watersheds
  - Groundwater-aquifers
- Water Use and Management
  - Water use- residential (water treatment), industrial, agricultural
  - Water management projects—diversions, dams/ reservoirs
  - Water Conservation
  - Future use-desalination, transporting
- Water Pollution
  - Point-source/ nonpoint-source pollution
  - Wastewater-treatment, sewage
  - Artificial eutrophication, thermal pollution
  - Biomagnification

## Air (12)

- What causes air pollution
  - Primary vs. secondary pollutants
  - Motor vehicle emissions
  - Industrial air pollution-scrubbers
  - Smog/ temperature inversions
- Air, Noise, and Light pollution
  - Short term vs. long term effects
  - Indoor air pollution-sick building syndrome, radon, asbestos
  - Noise and Light pollution
- Acid Precipitation
  - Causes and formation of acid rain
  - Affect on ecosystems
  - Human health problems

## Atmosphere and Climate Change (13)

- Climate and Climate Change
  - Factors- latitude, atmospheric circulation
  - Seasonal changes

- Land Management and Conservation
  - Farmlands
  - Rangelands-overgrazing
  - Forest lands- harvesting trees, deforestation
  - Parks and preserves-wilderness

## Food and Agriculture (15)

- Feeding the World
  - Malnutrition
  - Food efficiency
  - Food problems- distribution, droughts/famines
- Crops and Soil
  - Topsoil
  - Soil erosion and desertification
  - Pest control- resistance, biological pest control
  - Genetic engineering
- Animals and Agriculture
  - Overharvesting
  - Aquaculture
  - Livestock-ruminants, poultry

## Mining and Mineral Resources (16)

- Minerals and mineral Resources
  - Ore mineral-metallic and nonmetallic
  - Formation- hydrothermal, evaporites
- Mineral Exploration and Mining
  - Subsurface mining-longwall, solution
  - Surface mining- coal, quarrying
  - Placer mining- gold
  - Smelting-slag
- Mining Regulations and Mine Reclamation
  - Impacts- air/noise pollution, water contamination, wildlife, erosion, soil degradation, subsidence, fires
  - Regulation and reclamation- acts for compliance

## Nonrenewable Resources (17)

- Energy Resources and Fossil Fuels
  - Electric generator
  - Energy use- world vs. US
  - Formation of fossil fuels
  - Coal—mining, air pollution
  - Fossil fuels-future production
- Nuclear Energy
  - Nuclear fission
  - Nuclear power plant
  - Advantages vs. Disadvantages
  - Nuclear fusion

## Renewable Resources (18)

- Renewable Energy Today
  - Solar energy- passive/ active heating, photovoltaic cells
  - Wind power- wind farms
  - Biomass- methane, alcohol
  - Hydroelectricity- advantages, disadvantage
  - Geothermal energy
- Alternative Energy and conservation
  - Tidal power

- Hazardous Waste
  - Superfund
  - Waste management
  - Deep-well injection

## **The Environment and Human Health (20)**

- Pollution and Human Health
  - Toxicology- dose, dose-response curve
  - Epidemiology-risk assessment
  - Natural sources-particulates, heavy metals
  - Human Activities- burning fuels, pesticides, industrial chemicals
- Biological Hazards
  - Pathogens, host
  - Waterborne diseases- vector
  - Antibiotic resistance, cross-species transfers

## **Economics, Policy, and the Future (21)**

- Economics and International Cooperation
  - Sustainability
  - Economics and the environment—economic incentives
- Environmental Policies in the US