GLY 102 – Global Environmental Science part 2
Handout for Lectures 7 & 8

Environmental Protection Agency
Created in 1970 by President Nixon
•All Americans are protected from significant risks to human health and the environment where they live, learn and work.

•National efforts to reduce environmental risk are based on the best available scientific information.

•Federal laws protecting human health and the environment are enforced fairly and effectively.

•Environmental protection is an integral consideration in U.S. policies concerning natural resources, human health, economic growth, energy, transportation, agriculture, industry, and international trade, and these factors are similarly considered in establishing environmental policy.

•All parts of society--communities, individuals, business, state and local governments, tribal governments--have access to accurate information sufficient to effectively participate in managing human health and environmental risks.

•Environmental protection contributes to making our communities and ecosystems diverse, sustainable and economically productive.

•The United States plays a leadership role in working with other nations to protect the global environment.

Other Agencies
•Department of the Interior
- –National Park Service
- –Bureau of Land Management
  - •Minerals Management Service
  - •Office of Surface Mining Reclamation and Enforcement
- –U.S. Fish and Wildlife Service
- –U.S. Geological Survey (USGS)

•Department of Agriculture
- –Natural Resources and Environment
  - •Forest Service
    - –Fire and Aviation Management
    - –Minerals and Geology Management
  - •Natural Resources Conservation Service
- -Plus all of the agencies that deal with food safety and the like

•Department of Labor
- –Occupational Safety and Health Administration
  - •created in 1970 at the same time as the EPA
  - •Regulates exposure of workers to chemicals
  - •Sets safety requirements

•**Statue** - acts of Congress or state legislator Federal Statues are either Public Laws or Statues at Large (i.e. the Law)

•**Regulations** - the statues (laws) are usually written in very general terms and administrative agencies (EPA) must provide the technical details in the form of regulations - regulations have the force of law

•**Guidance Documents -** allows the government agency to provide technical guidelines without them becoming law which allows more governmental discretion in applying them.

Primacy - The EPA will often confer primacy on a state agency allowing that agency to administer a federal program

National Environmental Policy Act (NEPA)

- Also created by Nixon in 1969
- created council on Environmental Quality (CEQ) oversight board for general environmental conditions
- Directs federal agencies go take the environmental consequences into account
- Requires an Environmental Impact Statement (EIS) for federal projects

- The National Environmental Policy Act was one of the first laws ever written that establishes the broad national framework for protecting our environment. NEPA's basic policy is to assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action that significantly affects the environment.

- NEPA requirements are invoked when airports, buildings, military complexes, highways, parkland purchases, and other federal activities are proposed. Environmental Assessments (EA's) and Environmental Impact Statements (EIS's), are required from all Federal agencies and are the most visible NEPA requirements.

Environmental Impact Statement - EIS

- purpose and need of the project
- alternatives (including not doing anything)
- statement of positive and negative impacts

Clean Air Act

- First Clean Air Act was actually written in 1963 but was completely ineffective
- a much strengthened act was created in 1970
- amended and strengthened in 1977 and 1990

Two Part Mission

1 - Emission for individual sources (“point sources”) including automobiles, industrial smokestacks, powerplants …

2- National Ambient Air Quality Standards - the EPA is directed to monitor the overall purity of the air - must enforce stricter point control standards if the NAAQS are not met

Clean Air Act 1990 Amendment

Added

- Sulfur dioxide and acid rain requirement to reduce levels to 50% of 1980 levels
- Smog - reduce nitrogen oxides, ozone and particulates
- “volatile toxic pollutants” - protection from hazardous air pollutants
- Reduction/elimination of ozone destroying chemicals - CFC

Clean Water Act

- Established 1977 as an amendment to the Federal Water Pollution Control Act of 1972, which set the basic structure for regulating discharges of pollutants to waters of the United States.
- major amendment in 1986

The law gave EPA the authority to set effluent standards on an industry basis (technology-based) and continued the requirements to set water quality standards for all contaminants in surface waters.

The CWA makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit (NPDES) is obtained under the Act.

Safe Drinking Water Act

- originally passed in 1974 to ensure that public water supplies were maintained at high quality
- amended in 1986 required EPA to set **national primary drinking water standards** - including maximum contaminant levels (MCLs) and maximum contaminant level goals (MCLGs)
- This law focuses on all waters actually or potentially designed for drinking use, whether from above ground or underground sources.

Toxic Substances Control Act

- TSCA passed in 1976
- Control the manufacture of toxic materials that are not waste products but useful and necessary materials
- previously the government could only control substances if they were released into the environment
- Allows the EPA to identify potentially toxic materials before they are manufactured in bulk.
  - PCBs, PCH, etc.

Occupational Safety and Health Act (OSHA)

- Passed in 1970 same time as EPA created
- addresses health and safety in the workplace
- set stringent requirements for on-site training, surveillance, monitoring,

Endangered Species Act

- Established 1973
- The Endangered Species Act provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The U.S. Fish and Wildlife Service of the Department of the Interior maintains the list of 632 endangered species (326 are plants) and 190 threatened species (78 are plants).

- Species include birds, insects, fish, reptiles, mammals, crustaceans, flowers, grasses, and trees.
- Anyone can petition FWS to include a species on this list.
- The law prohibits any action, administrative or real, that results in a "taking" of a listed species, or adversely affects habitat. Likewise, import, export, interstate, and foreign commerce of listed species are all prohibited.

Resource Conservation and Recovery Act (RCRA)

- established 1976
- federal management of hazardous waste
- set up as a separate office within the EPA that was charged with identifying which wastes are hazardous and establishing a system for tracking waste

Resource Conservation and Recovery Act (RCRA)

- Held generators responsible for the wastes they produced from the **"cradle to the grave"**
  - even if third party disposal was utilized the generator was still liable
- Provided for "citizen suits" allowing the government to be sued for failure to comply with this act.

- **Hazardous Waste** means a solid waste or combination of solid wastes which because of its quantity, concentration, or physical, chemical or infectious characteristics may
  - cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or
  - pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed.

EPA considered "hazardous" if

- waste is specifically listed by the EPA
- waste is tested and meets one of four characteristics established by the EPA: ignitable, corrosive, reactive, toxic
- waste is declared hazardous by its generator based on their knowledge of it

Ignitable

- wastes which are liquids with flashpoints below 60°C or solids capable of causing fires under standard temperature and pressure

Corrosive

- aqueous wastes with a pH below 2.0 or above 12.5, or which corrode steel at a rate in excess of 0.25 inches per year

Reactive

- wastes that are normally unstable, react violently with water or air, or form potentially explosive mixtures with water.
- Also includes wastes that emit toxic fumes when mixed with water

Toxicity

- Category most difficult to define
- object is to determine whether toxic constituents in a solid waste sample will leach into ground water if the waste is placed in a landfill

Again the standards were left to the EPA to develop - both for identification and disposal
Led to Congressional optimism that the hazardous waste problem was “solved”

Hazardous and Solid Waste Amendments (HSWA)

- Congress perceived a lack of action by the EPA so they passed these amendments in 1984
- far more detailed than most pieces of environmental legislation
- specified several minimum technical requirements for landfills, disposal facilities, standards for permits …
- Allowed EPA to require corrective action outside the boundaries of the plant or facility
- Prohibited the disposal of bulk non-containerized liquid hazardous waste in landfills or surface impoundments
- Only allowed disposal of containerized liquid hazardous waste if
  - no reasonable alternative is available
  - it is environmentally acceptable

- Minimum technical requirements for landfills
  - double-liners
  - leachate collection systems
  - groundwater monitoring
  - leak detection sustems

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

- Passed in 1980 to deal with sites that were already contaminated
- established a $1.6 billion dollar fund to implement a massive cleanup program over a five-year period
- intent to identify hazardous waste sites and clean them, then establish liability and recover costs
- Set unrealistic goals and deadlines
- at end of 5 year period “only” six site had been cleaned up

Superfund Amendments and Reauthorization Act (SARA)

- CERCLA amended with SARA in 1986
- “Superfund” refers to both laws and the clean-up program thus mandated
- Complete rewrite of CERCLA
- $8.5 billion dollars for cleanup of abandoned sites
- $500 million for leaking petroleum tanks

Right-to-Know

- provisions of SARA require industries to plan for emergencies and inform the public of hazardous substances being used.

National Priority List

- the list of site that are eligible for clean-up under Superfund - determined using a method called the **Hazard Ranking System** to estimate degree of risk each site poses
  - proximity to population
  - nature of contaminants
  - potential pathways

•**combined to form a single number - the HRS score**

Remedial Investigation

- the RI is a detailed study of the site
  - description of the current situation
  - analysis of air, surface water, ground water, soil and any waste

Feasibility Study (FS)

- EPA officials develop, screen, and evaluate alternate solutions based on
  - Short-term effectiveness
  - Long-term effectiveness
  - Implementability
  - Reduction in toxicity, mobility, and volume
  - Cost-effectiveness
  - Compliance with ARAR standards
  - Human health protection
  - State concurrence
  - Local acceptance

ARAR

- Applicable or Relevant and Appropriate Requirement
  - environmental regulations from programs other than Superfund that may be desirable to apply
    - chemical specific
    - action specific
    - location specific

Liability

Potentially Responsible Parties (PRPs)

- Present and past owners of the site
- Operators of the facility at the time of disposal
- Generators
- Transporters

- usually a joint responsibility - can take years to sort out