

An Overview of the U.S. Environment



Waterscape
International Group



Overview

- Basics of the United States Environment (water, air, land, biological resources)
- Use of Natural Resources in the U.S. (consumption, production, pollution)
- Environmental Protection in the U.S. (legal protections, education, role of the public)
- The Greatest Challenges Ahead



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I. U.S. Environment Basics

- Land Area
- Lakes
- Rivers
- Mountains



Basic U.S. Geography

- Number of states: 50,
- Territories: 15
- Area (2000): total: 3,794,083 sq mi (9,826,675 sq km),
- land only: 3,537,438 sq mi (9,161,964 sq km),
- water: 256,645 sq mi (664,711 sq km).
- Share of world land area (1990): 6.2%

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The Continental Divide

The Continental Divide is a ridge of high ground that runs irregularly north and south through the Rocky Mountains and separates eastward-flowing from westward-flowing streams. The waters that flow eastward empty into the Atlantic Ocean, chiefly by way of the Gulf of Mexico; those that flow westward empty into the Pacific. Every continent with the exception of Antarctica has a continental divide.



Three Longest Rivers in U.S.

- 1-Mississippi 2348 miles
- 2-Missouri 2315
- 3-Yukon 1979



Largest Lakes in the U.S.

Lake Name	Country	Area
<u>Superior</u>	Canada, U.S.	82,100 km ²
<u>Huron</u>	Canada, U.S.	59,600 km ²
<u>Michigan</u>	U.S.	57,800 km ²
<u>Baikal (Ozero Baykal)</u>	Russian Federation	31,500 km ²
<u>Erie</u>	Canada, U.S.	25,700 km ²
<u>Ontario</u>	Canada, U.S.	18,960 km ²

Lithuania Land Area=65,000 km²

Notable Highs, Lows of the U.S.

- Highest point: Mount McKinley, Alaska (6,198 m)
- Lowest point: Death Valley, Calif. 282 ft. (86 m) below sea level
- Approximate mean elevation 2,500 ft. (763 m)
- Points farthest apart (50 states): Log Point, Elliot Key, Fla., and Kure Island, Hawaii 5,859 mi. (9,429 km)
- Geographic center (50 states): in Butte County, S.D. (west of Castle Rock) 44°58'N lat. 103°46'W long.
- Geographic center (48 conterminous states): in Smith County, Kan. (near Lebanon) 39°50'N lat. 98°35'W long.

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World Heritage Sites in the U.S.

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) has identified 582 World Heritage sites that it considers of “outstanding universal value.” In the United States, there are 22 of these sites.

<http://www.unesco.org/whc/nwhc/pages/home/pages/homepage.htm> .

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Carlsbad Caverns National Park, New Mexico

Carlsbad Caverns National Park is a network of more than 80 limestone caves, including the nation's deepest—1,597 feet—and third longest. The Lechuguilla Cave is particularly noteworthy for its beautiful stalagtites and stalagmites.

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Carlsbad Caverns National Park, New Mexico



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Everglades National Park, Florida

The Everglades, or “River of Grass” as the Seminoles called it, is formed by a river of fresh water 6 inches deep and 50 miles wide that flows slowly across the expanse of land of sawgrass marshes, pine forests, and mangrove islands. More than 300 species of birds live in the park as well as alligators, manatees, and Florida panthers.

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Everglades National Park, Florida



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Redwood National Park, California

Redwood National Park contains the tallest living things on Earth, evergreen trees that grow to 350 feet. Descendants of the giant evergreens that grew during the age of the dinosaurs, redwoods take 400 years to mature. Some of the survivors are more than 2,000 years old.

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Redwood National Park, California



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Waterton-Glacier Peace Park, Montana

The two parks sustain an exceptionally diverse habitat, including wolves, bears, and mountain lions. It also features a wide variety of wild flowers and wildlife, including bighorn sheep and bald eagles.

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Waterton-Glacier Peace Park, Montana



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Yosemite National Park, California

Yosemite, located in California's Sierra Nevada Mountains, contains breathtaking panoramas of rugged scenery and a huge variety of plant and animal life. During the last Ice Age the granite bedrock was gouged and shaped into bare peaks, sheer cliffs, rounded domes, and huge monoliths.

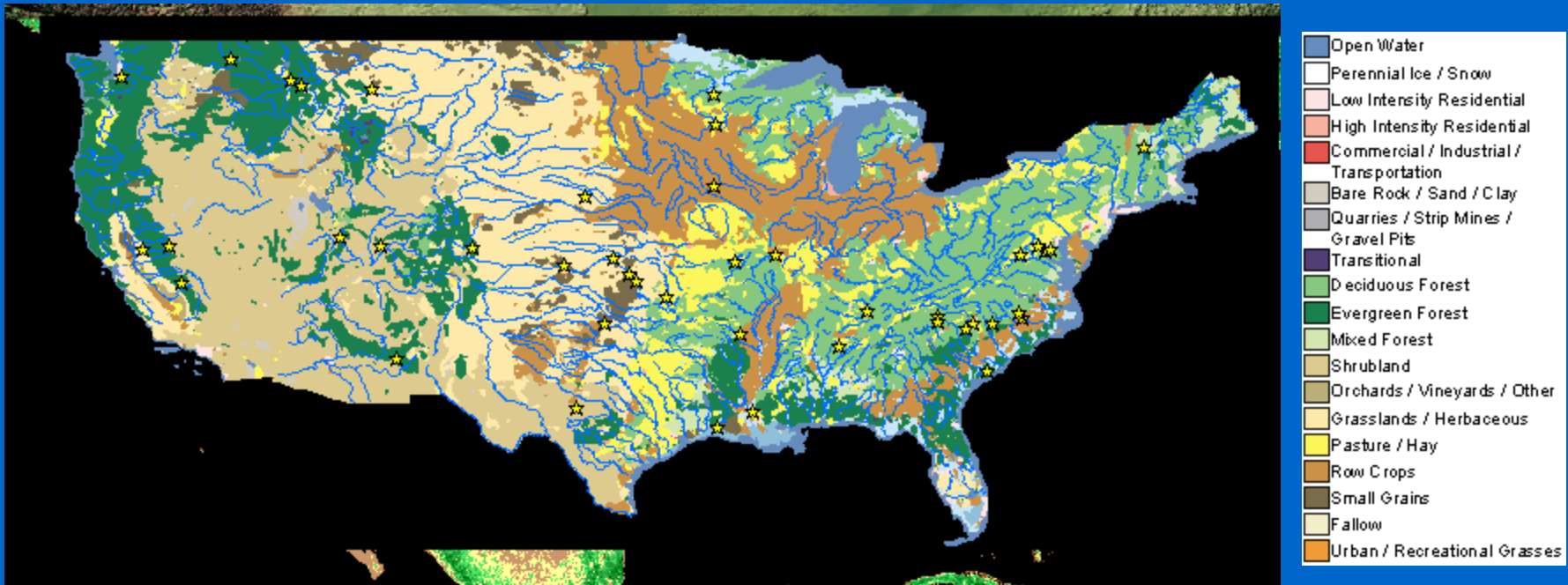
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U.S. Topography



<http://nmviewogc.cr.usgs.gov/>

U.S. Landcover



Endangered Species

Mammals

Status Species Name

- E Bat, gray (*Myotis grisescens*)
T(S/A) Bear, American black (*Ursus americanus*)
XN,T Bear, grizzly (*Ursus arctos horribilis*)
T Bear, Louisiana black (*Ursus americanus luteolus*)
E Caribou, woodland (*Rangifer tarandus caribou*)
E Deer, Columbian white-tailed (*Odocoileus virginianus leucurus*)
E Deer, key (*Odocoileus virginianus clavium*)
E,XN Ferret, black-footed (*Mustela nigripes*)
E Fox, San Joaquin kit (*Vulpes macrotis mutica*)
E Fox, San Miguel Island (*Urocyon littoralis littoralis*)
E Fox, Santa Catalina Island (*Urocyon littoralis catalinae*)
E Fox, Santa Cruz Island (*Urocyon littoralis santacruzae*)
E Fox, Santa Rosa Island (*Urocyon littoralis santarosae*)
E Jaguar (*Panthera onca*)
E Jaguarundi, Gulf Coast (*Herpailurus (=Felis) yagouaroundi cacomitli*)
E Jaguarundi, Sinaloa (*Herpailurus (=Felis) yagouaroundi tolteca*)
E Kangaroo rat, Fresno (*Dipodomys nitratoides exilis*)
E Kangaroo rat, giant (*Dipodomys ingens*)
E Kangaroo rat, Morro Bay (*Dipodomys heermanni morroensis*)
E Kangaroo rat, San Bernardino Merriam's (*Dipodomys merriami parvus*)
E Kangaroo rat, Stephens' (*Dipodomys stephensi* (incl. *D. cascus*))
E Kangaroo rat, Tipton (*Dipodomys nitratoides nitratoides*)
T Lynx, Canada (*Lynx canadensis*)
E Manatee, West Indian (*Trichechus manatus*)
E Mountain beaver, Point Arena (*Aplodontia rufa nigra*)
E Mouse, salt marsh harvest (*Reithrodontomys raviventris*)
T Mouse, southeastern beach (*Peromyscus polionotus niveiventris*)
E Mouse, St. Andrew beach (*Peromyscus polionotus peninsularis*)
E Ocelot (*Leopardus (=Felis) pardalis*)
XN,T Otter, southern sea (*Enhydra lutris nereis*)
E Panther, Florida (*Puma (=Felis) concolor coryi*)
T Prairie dog, Utah (*Cynomys parvidens*)
E Pronghorn, Sonoran (*Antilocapra americana sonoriensis*)
E Puma (=cougar), eastern (*Puma (=Felis) concolor cougar*)
T(S/A) Puma (=mountain lion) (*Puma (=Felis) concolor* (all subsp. except *coryi*))
E Rabbit, Lower Keys marsh (*Sylvilagus palustris hefneri*)
E Rabbit, pygmy (*Brachylagus idahoensis*)
E Rabbit, riparian brush (*Sylvilagus bachmani riparius*)
E Rice rat (*Oryzomys palustris natator*)
E Seal, Caribbean monk (*Monachus tropicalis*)
T Seal, Guadalupe fur (*Arctocephalus townsendi*)
E Seal, Hawaiian monk (*Monachus schauinslandi*)
E,T Sea-lion, Steller (*Eumetopias jubatus*)
E Sheep, bighorn (*Ovis canadensis*)
E Sheep, bighorn (*Ovis canadensis californiana*)
E Shrew, Buena Vista Lake ornate (*Sorex ornatus relictus*)
E Squirrel, Carolina northern flying (*Glaucomys sabrinus coloratus*)
E,XN Squirrel, Delmarva Peninsula fox (*Sciurus niger cinereus*)
E Whale, blue (*Balaenoptera musculus*)
E Whale, bowhead (*Balaena mysticetus*)
E Whale, finback (*Balaenoptera physalus*)
E Whale, humpback (*Megaptera novaeangliae*)
E Whale, right (*Balaena glacialis* (incl. *australis*))
E Whale, Sei (*Balaenoptera borealis*)
E Whale, sperm (*Physeter catodon* (=macrocephalus))
E,XN,T Wolf, gray (*Canis lupus*)
E,XN Wolf, red (*Canis rufus*)
E Woodrat, Key Largo (*Neotoma floridana smalli*)
E Woodrat, riparian (=San Joaquin Valley) (*Neotoma fuscipes riparia*)



II. Natural Resources Use

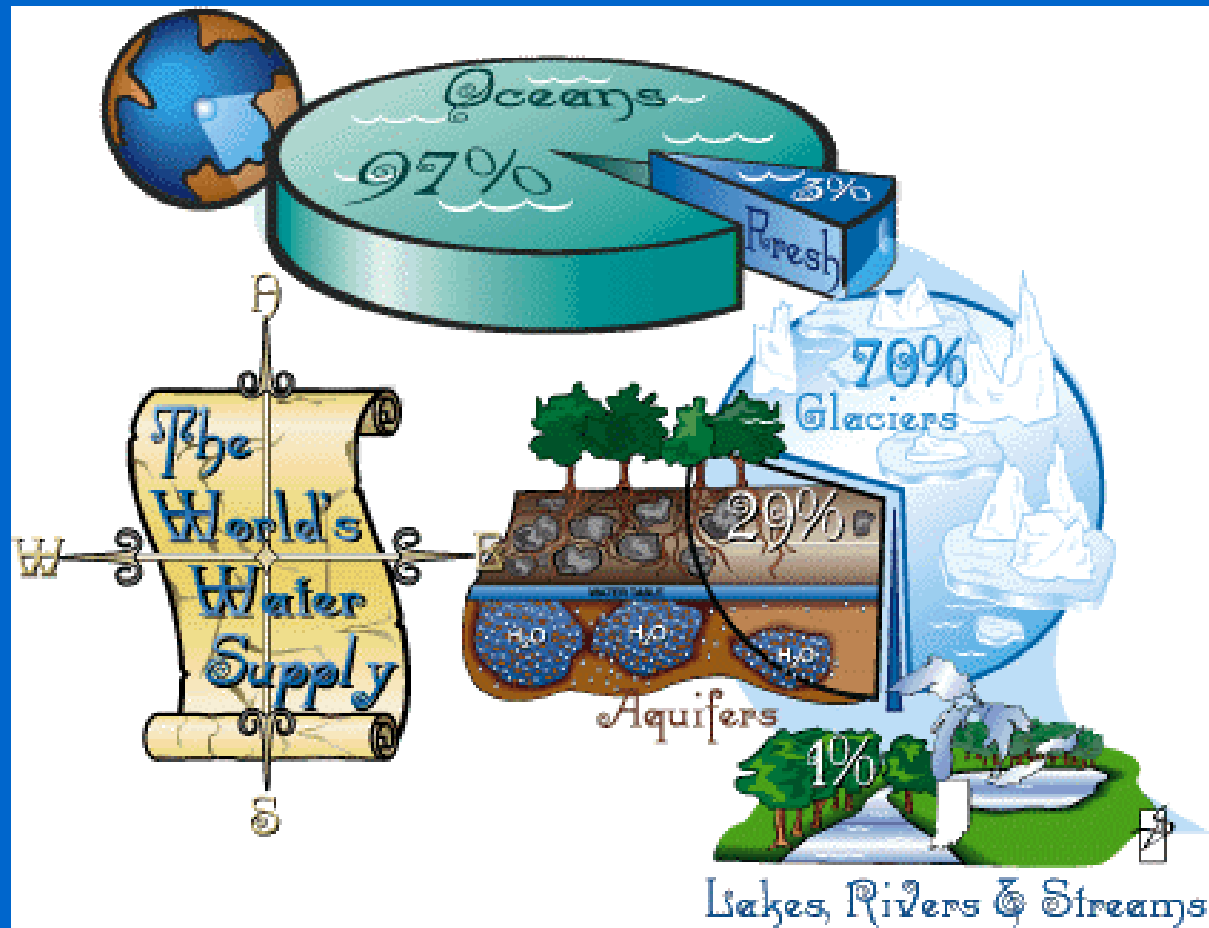
- Water Use and Pollution
- Air Pollution
- Hazardous Materials



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Water Use and Pollution

How much freshwater?



Water Use in the U.S.

- Types of Water Uses: Agricultural, Domestic, Energy, & Environmental
- Groundwater consumption v. surface water.
- United States of America 1995 469.00 km³ (1,688 m³/person/yr)
- Bangladesh 1987 22.50 km³ (175 m³/person/yr)
- Lithuania 1995 0.25 km³ (68 m³/person/yr)



Water Pollution

- **Contaminant:** Any physical, chemical, biological, or radiological substance or matter that has an adverse effect on air, water, or soil.
- Naturally occurring
- Point-source (end-of-pipe)
- Non-point source (agricultural, land use)
- Microorganisms, Disinfectants & Disinfection Byproducts, Inorganic Chemicals, Organic Chemicals, & Radionuclides



Air Pollution

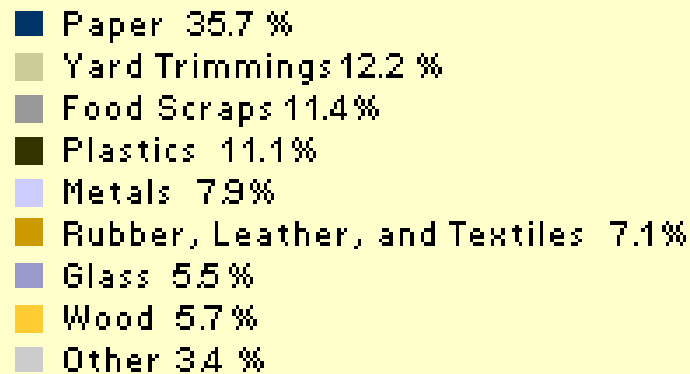
- Vehicles/Engines -- Cars, buses, trucks, planes, trains, boats, and other sources contribute to air pollution.
- Haze/Visibility Impairment -- Air pollution impairs visibility in our cities, national parks, and other scenic areas.
- Acid Rain -- Pollutants combine with moisture in the air to form acids that fall to Earth, making lakes unsuitable for fish, and damaging forests, crops, cars, and monuments.
- Nitrogen Deposition -- Air pollutants deposit out in water bodies, where they upset the balance of nutrients and deplete oxygen essential to aquatic life.

Air Pollution (cont.)

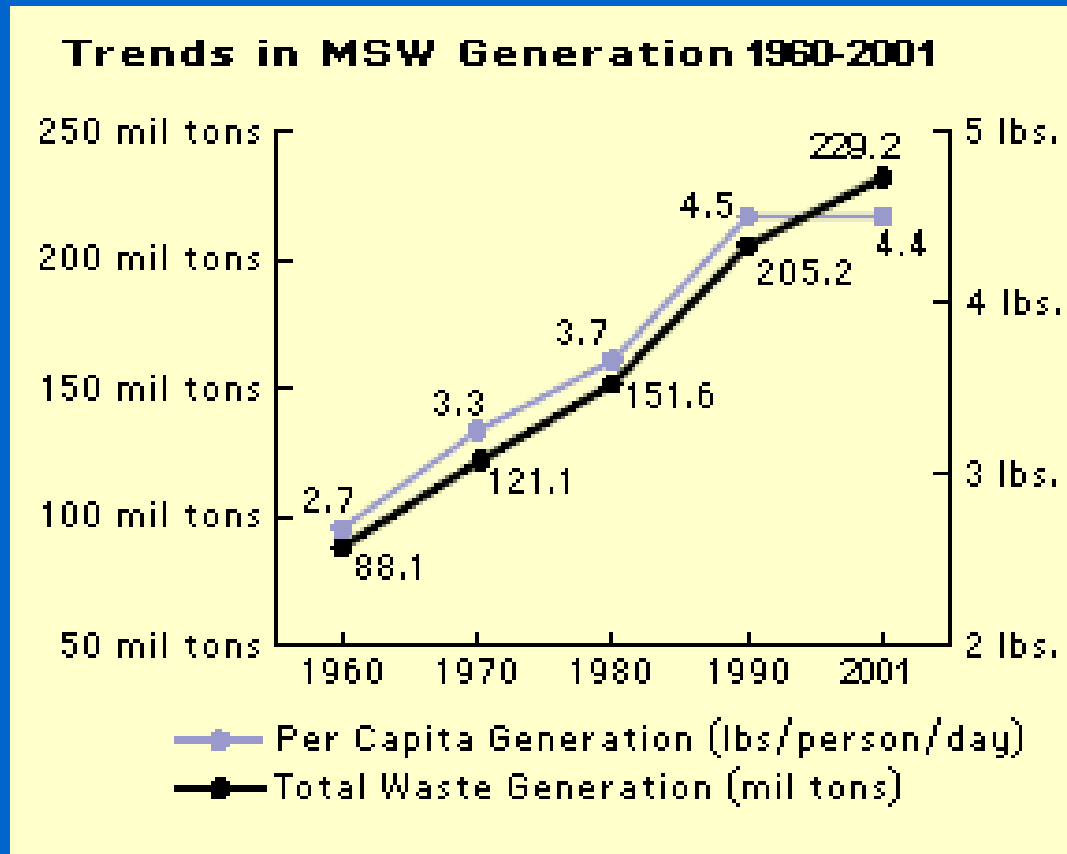
- Ozone Layer Damage -- Pollutants are damaging the Earth's protective ozone layer, which protects us from the sun's harmful ultraviolet rays.
- Global Warming -- Greenhouse gases accumulate in the atmosphere, causing a gradual rise in the Earth's temperature.
- Indoor Air -- Radiation and indoor air pollution includes information on asthma, molds, secondhand smoke, and radon.

Waste/Hazardous Waste

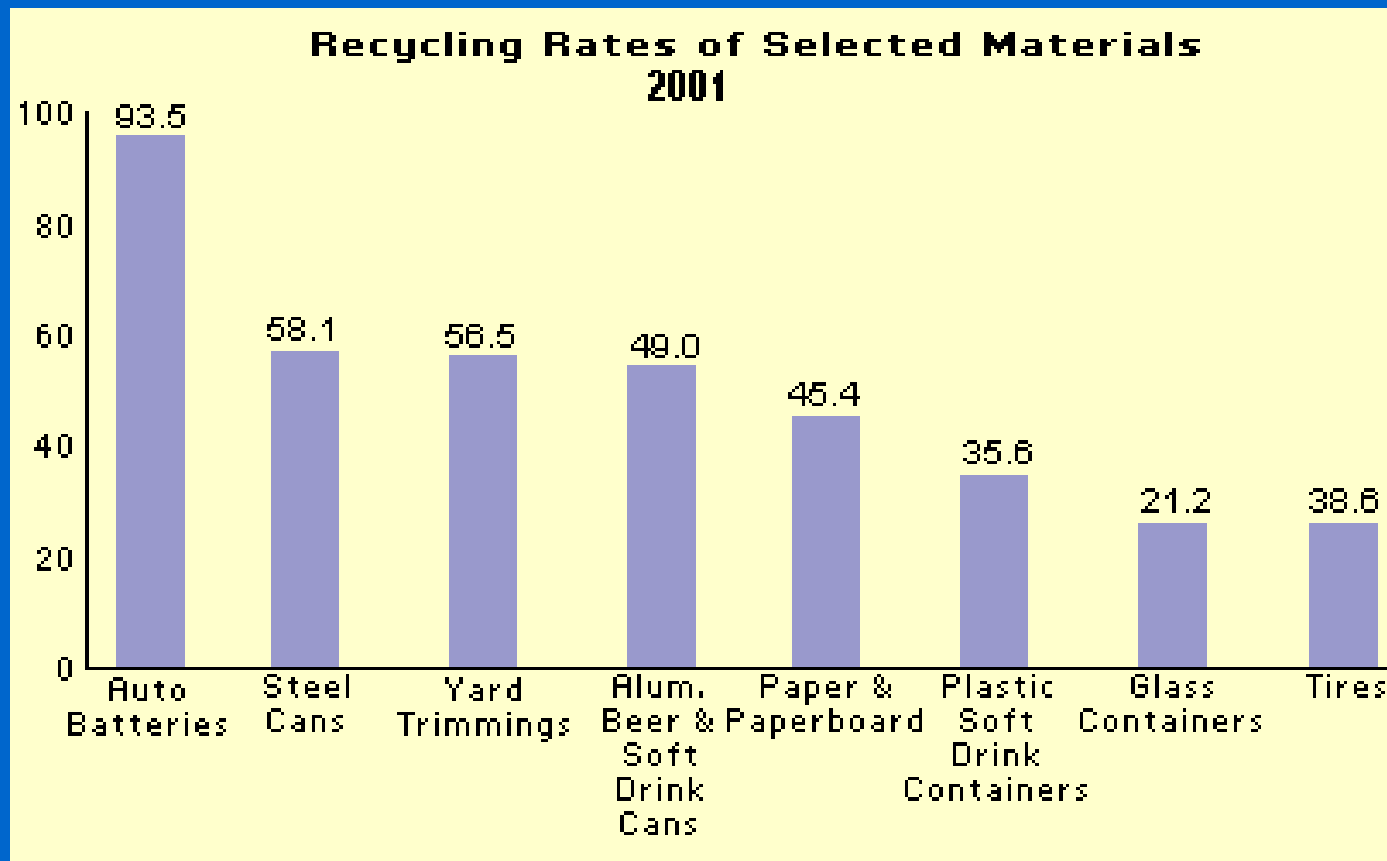
2001 Total Waste Generation— 229 Million Tons (before recycling)



Waste/Hazardous Waste



Waste/Hazardous Waste





III. Environmental Protection

- National Environmental Policy Act of 1969
- The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980
- Clean Water Act of 1977



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National Environmental Policy Act 1969

- What is NEPA?
- How does NEPA work?

CERCLA

- The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund
- tax on the chemical and petroleum industries
- Over five years, \$1.6 billion was collected and the tax went to a trust fund for cleaning up abandoned or uncontrolled hazardous waste sites.

CERCLA (cont.)

CERCLA:

- established prohibitions and requirements concerning closed and abandoned hazardous waste sites;
 - provided for liability of persons responsible for releases of hazardous waste at these sites; and
 - established a trust fund to provide for cleanup when no responsible party could be identified.
- The law authorizes two kinds of response actions:
 - Short-term removals,
 - Long-term remedial response actions, that permanently and significantly reduce the dangers associated with releases



Clean Water Act

- How does the Clean Water Act work?



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IV. Challenges Ahead

- What is the most important environmental issue of the day?
- Why is/is not environmental protection working?
- What should/should not be done to improve the situation?

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Access to Safe Drinking Water

- Region 1994 Population (millions) Percent with Access (%)
- AFRICA 707 46%
- LATIN AMERICA 473 80%
- ASIA & THE PACIFIC 3,122 80%
- WESTERN ASIA 81 88%
- Bottom Line: About 1 billion don't have access to clean water.
- How can we reduce this figure?