



Regulation: The Clean Air and Water Acts Study Guide

Produced by Intellectual Takeout

Following the Air Pollution Control Act from 1955, the Clean Air Act (CAA) was signed in 1963. It set the stage for future environmental legislation and regulation. Shortly thereafter, in 1972, the Clean Water Act (CWA) was added as an amendment to the Federal Water Pollution Control Act (passed in 1948). Both of these Acts are integral parts of the United States Environmental Protection Agency (EPA); the EPA derives much of its regulatory power from these. Both Acts have been amended numerous times since their inceptions. Like other federal environmental laws, the rules and regulations have given the federal government more control with each amendment. Both of these Acts have always been controversial due to their impact on the energy industry in the United States. Recently, the CAA and CWA have been in the news surrounding the debate over the American natural gas and coal industries. Some have reported that the process of hydraulic fracturing (“fracking”) to collect natural gas releases harmful levels of methane in the air, while also leaking dangerous chemicals in the bedrock and water table. Meanwhile, there is concern over the amount of carbon dioxide emissions from coal burning plants. Despite new technology able to capture large amounts of carbon, many remain concerned over carbon levels in our air. This study guide will take a look at the Clean Air and Water Acts, as well as their relation to the energy industry. It includes useful charts and graphs, relevant quotes and some questions for discussion in a group, or simply to ponder on your own.



The Clean Air Act

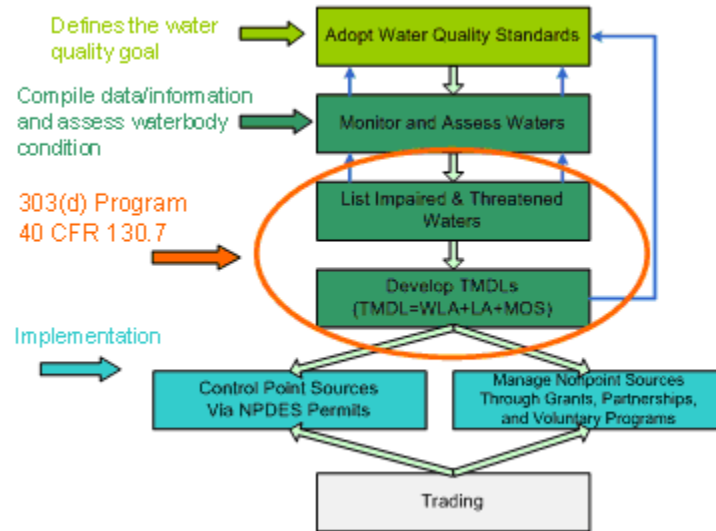
- The original CAA was created in response to [several cases of extreme and deadly air pollution](#) which had occurred in America and Europe. Deaths attributed to poor air quality were reported in Pittsburgh, St. Louis, New York and Los Angeles. The Act provided funding for research on air pollution.

- The primary goal of the CAA is to keep the American people healthy. This it claims to accomplish by dissipating concentrated areas of smog and haze; reducing emissions of directly toxic chemicals; and slowly eliminating the use of chemicals responsible for ozone destruction.
- In 1970, the CAA was amended, and the Environmental Protection Agency (EPA), which would be used to enforce the standards set by the CAA, was created. Together, they offered the first national preventive response to air pollution through four regulatory programs:
 - *National Ambient Air Quality Standards (NAAQS)* – The NAAQS cover the six biggest air pollutants in the U.S.:
 - Particle pollution
 - Ground-level ozone
 - Carbon monoxide
 - Sulfur oxides
 - Nitrogen oxides
 - Lead
 - *State Implementation Plans (SIPs)* – Each state must present comprehensive plans to combat air pollution. The CAA and EPA set limits on the amount of pollutants acceptable, and states can opt to have stricter pollution laws, but no state can go below the minimum standard set by the CAA and EPA. If the plans do not meet federal standards, the state could face sanctions or temporary federal presence to ensure enforcement of environmental regulations.
 - *New Source Performance Standards* – Every new industrial facility must abide by these standards.
 - *National Emission Standards for Hazardous Air Pollutants (NESHAPs)*

The Clean Water Act

- The Act was derived from the Federal Water Pollution Control Act (FWPCA) of 1948. This new set of laws was the first concerning water pollution in America. It was passed primarily to address rising pollution levels following the increased industrialization of WWII. Prior to these new laws, the only regulation on waste disposal in water was not created to deal with pollution, but rather, to protect against impeded navigation (e.g. the Refuse Act of 1899).
- In 1945, it was estimated that 2.5 billion tons of raw sewage were being dumped into America's rivers and lakes every day. Despite bipartisan concerns over this fact, many politicians still believed that environmental regulation should be left to the states. After years of battling, the FWPCA was finally passed. These new laws, however, were **complicated and rather feckless**, for they only controlled *interstate* waters, not *intrastate*.

- In 1972, the FWPCA was heavily revised and renamed as the Clean Water Act. It had previously been amended six times, but federal authority to enforce the laws was quite weak. This changed in 1972 when Congress passed the Act, despite a veto from President Nixon. It has since been slightly amended several times.
- At its most fundamental level, the CWA monitored and regulated levels of pollutants in rivers, lakes, wetlands, and coastal waters in the United States. Its main tangible goal was to make all of America’s waterways “fishable and swimmable” by 1985.

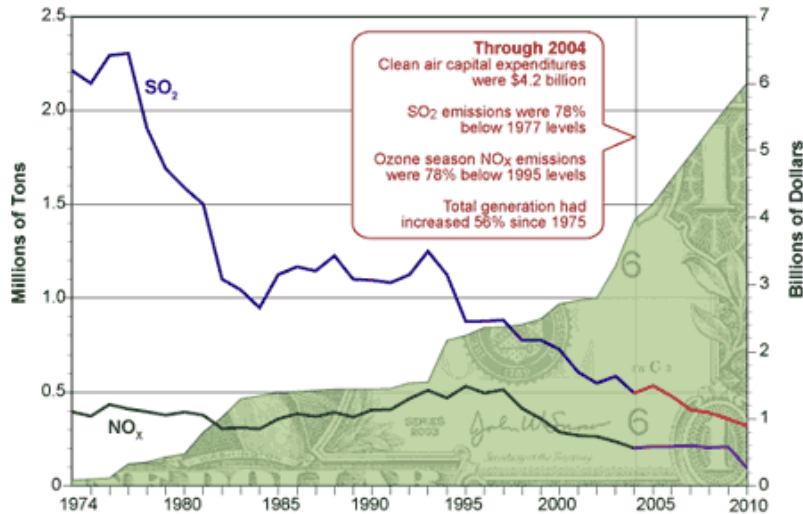


Source

- Under the **National Pollutant Discharge Elimination System (NPDES)** the CWA also addressed wastewater problems, particularly “**point source discharges/pollution,**” meaning pollution which comes wholly from a single, identifiable source. For instance, a drain from an oil rig would be point source pollution, whereas a river which is contaminated by numerous agricultural runoff is an example of nonpoint source pollution.

How have the CAA and CWA changed? What sort of regulatory powers do they have (under the EPA)?

- The CAA was again amended in 1977, making NAAQS stricter. Despite high costs, the level of toxic emissions has dropped significantly.

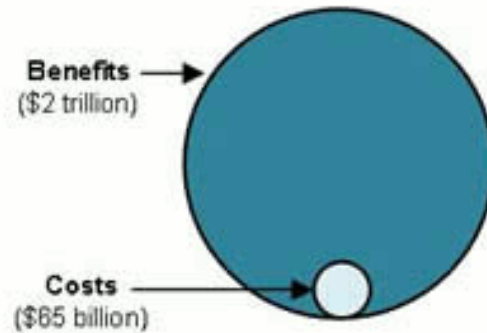


Source

- It was [amended again in 1990](#), giving the federal government much greater control on air quality protection, including the task of preventing acid rain. It also increased the number of pollutants the EPA could control to 189.
- The CAA claims to have saved thousands of lives and dollars since its inception. For instance, in a [1997 report](#) the EPA argued that the CAA prevented nearly a million asthma attacks and cases of bronchitis, as well as about 200,000 premature deaths. The report even goes so far as to claim that the CAA saved 10.4 million I.Q. points by reducing lead pollution.
- Additionally, a [2011 study](#) estimates that the CAA prevented the loss of 13 million work days in 2010. Because of this, the EPA claims that the financial benefits it provides the American economy far outweigh the costs to businesses and of taxpayer dollars that are needed to run the program.

The 1990 Clean Air Act Amendments prevent:

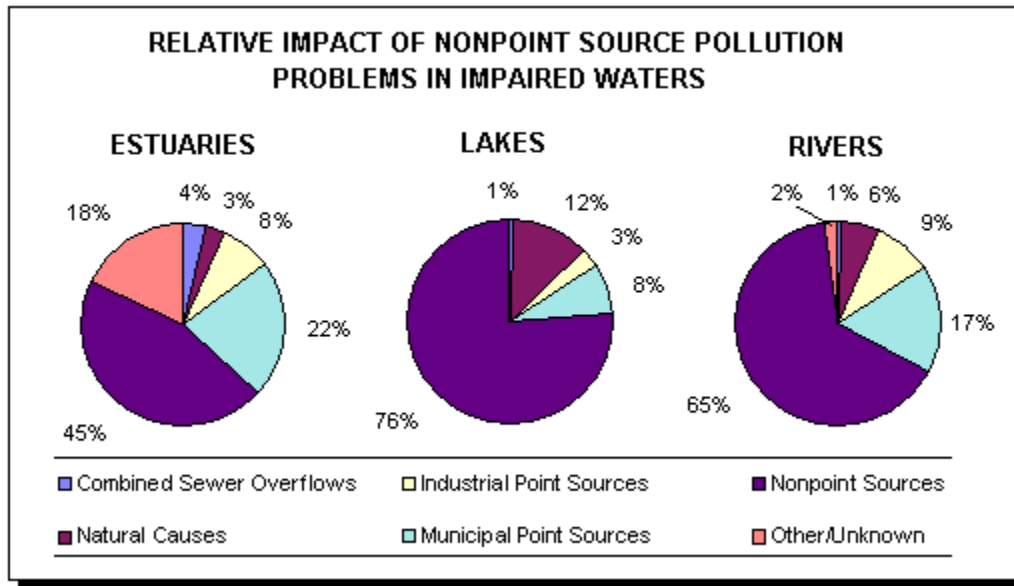
	Year 2010 (cases)	Year 2020 (cases)
Adult Mortality - particles	160,000	230,000
Infant Mortality - particles	230	280
Mortality - ozone	4,300	7,100
Chronic Bronchitis	54,000	75,000
Acute Myocardial Infarction	130,000	200,000
Asthma Exacerbation	1,700,000	2,400,000
Emergency Room Visits	86,000	120,000
School Loss Days	3,200,000	5,400,000
Lost Work Days	13,000,000	17,000,000



Source

- In order to dispose of any water pollutant, an individual or company must first get a [license](#) from the NPDES. Since the inception of the CWA in 1972 the list of pollutants has been significantly expanded.
- The CWA focused heavily on technology. The EPA offered many [federal grants](#) to cities adopting modern water treatment technology.
- The [Water Quality Act](#) was another precursor to the CWA. Originally passed in 1965, the [WQA](#) was amended in 1987, strengthening the CWA. The Water Quality Act mainly deals with surface pollution and seeks to solve some of the aesthetic issues of water pollution.
- The [Coastal Zone Management Act](#) (CZMA) was also passed in 1972 and later amended in 1990. This Act offered incentives to all eligible states (35) to protect and restore key coastal areas. Currently, Alaska is the only eligible state not participating.
- The [Safe Drinking Water Act](#) was created in 1974 and amended in 1996. This Act allowed the EPA to set minimum chemical standards to all water which might be consumed. All owners of public water systems are required to comply with these federal standards. Recently, this Act has been applied to individual, private wells.
- In 1981, the [Municipal Waste Water Treatment Construction Grant Amendments](#) offered federal money to treatment facilities which abided by strict EPA standards. Such financial incentives which are offered by the EPA are at the heart of the controversy surrounding the federal regulations. Adding to the controversy is the fact that companies which fail to meet the EPA's standards owe massive fines.

- The CWA was directly amended several times in the 70s and 80s. In 1984, all construction projects had to first receive approval from the EPA. Moreover, the EPA began to focus more on nonpoint source pollution. New studies have revealed that point source pollution was not the main pollutant.



Source

- According to the EPA the CWA has helped curb wetland loss, agricultural runoff, and overall pollution, while also improving drinkable water supply across the country. For instance, annual wetlands losses are estimated to be down from nearly 500,000 acres/year to 70,000.
- Currently, about 40% of all water sources in the United States still fail to meet EPA standards.

How does the CAA affect the energy industry in America today?

- Recently many have been criticizing fracking because of its environmental impacts.
 - The primary concern is methane: methane traps 20 to 25 times more heat in the atmosphere than carbon dioxide. Fracking releases 40 to 60 percent more methane than traditional natural gas wells.
 - The EPA estimates that about 2.5% of all natural gas harvested escapes into the atmosphere.
 - There is an exemption in the CAA for fracking (called the “Halliburton Loophole” by fracking opponents). However, the EPA has begun to impose stricter regulations on the industry, many of which originate from the CAA.
 - As of 2012, the EPA under the CAA had not yet imposed regulations which would strongly hinder the fracking industry from producing cheap natural gas,

largely due to the fact that coal is **far more** environmentally damaging. The extent of the CAA’s reach in fracking remains to be seen.

- The CAA has had a bigger effect on the coal industry.
 - Coal is often thought as being a “dirty” fuel. Burning coal releases large amounts of carbon dioxide.
 - Coal-fired power plants account for the majority of fossil fuel-fired plants. **All together** these are responsible for 67% of sulfur dioxide, 23% of nitrogen oxide, and 40% of carbon dioxide emissions.
 - According to the **American Lung Association**, power plant pollution kills 13,000 people every year in the U.S.
 - Due to stats like this, coal has faced increasing regulation. Currently, many **politicians** have been pushing for “**clean coal.**” Clean coal is more expensive to produce (mainly due to infrastructure costs), but captures a significant percentage of carbon emissions.
 - One of the EPA’s biggest concerns has been eliminating **coal ash**, the largest contributor to smog and poor air quality. Coal ash, along with a number of other air pollutants are classified as **coal combustion residues** (CCRs) by the EPA. All are regulated.
 - The EPA **estimates** that this will cost the industry about \$1.5 billion every year for the next 50 years.
- The EPA’s budget is a tiny fraction of the total federal budget and has actually decreased under President Obama.

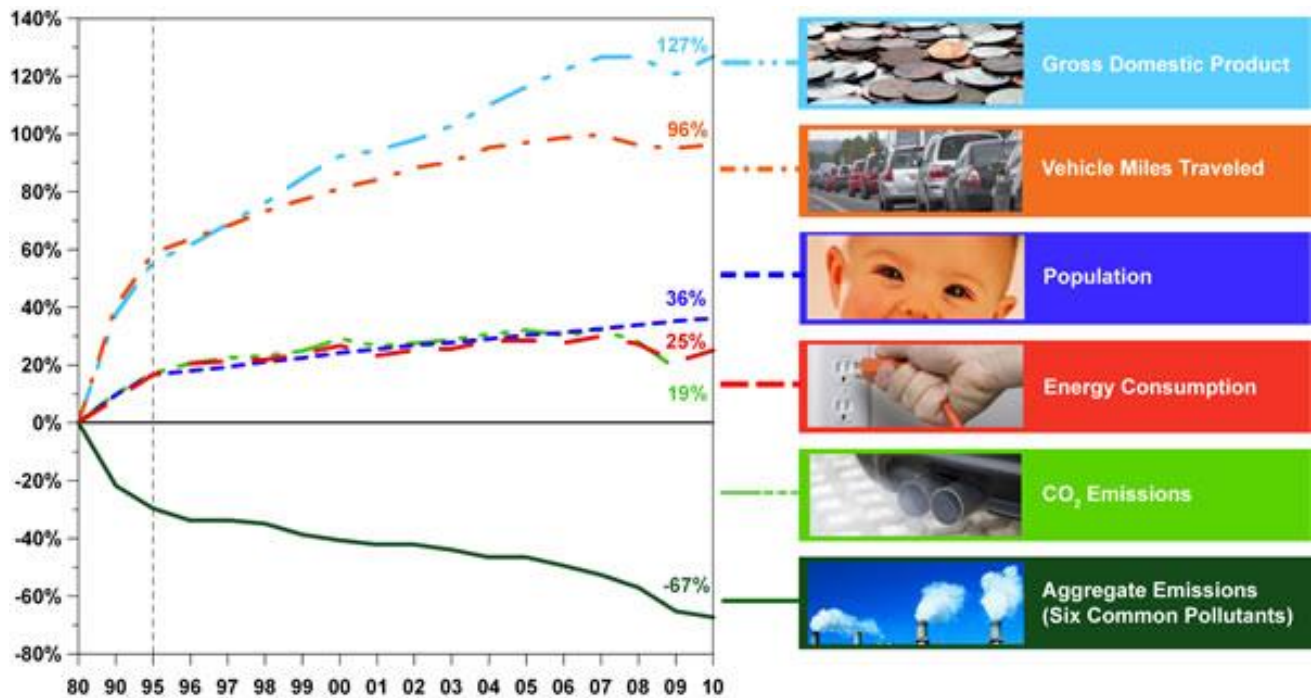
Proposed FY 2012 Federal R&D budget spending
 (dollar values in millions with percent changes from FY 2011 adjusted for projected 1.3 percent inflation)

U.S. agency or department	FY 2010 actual	FY 2011 continuing resolution	FY 2012 proposed	Percent change
Defense	80,602	81,442	76,633	-7.1
NIH (and other HHS R&D)	31,424	31,948	32,343	-0.063
Energy	10,836	10,783	12,989	18.9
NASA	9,262	9,911	9,821	-2.2
NSF	5,445	5,374	6,320	16.1
USDA	2,611	2,619	2,150	-19
Commerce	1,344	1,331	1,720	27.6
Interior	776	776	727	-7.5
EPA	590	590	579	-3.1
Education	353	356	480	33.1
All others [†]	3,896	3,904	4,149	4.9
Total	147,139*	149,034*	147,911*	-2.0*

* Figures reflect rounding; † Includes Departments of Transportation, Homeland Security, Veterans Affairs, the Smithsonian Institution and others. □ Increase □ Decrease
 SOURCE: TABLE 22-1, P 367, ANALYTICAL PERSPECTIVES: BUDGET OF THE U.S. GOVERNMENT FISCAL YEAR 2012, FEBRUARY 14, 2011

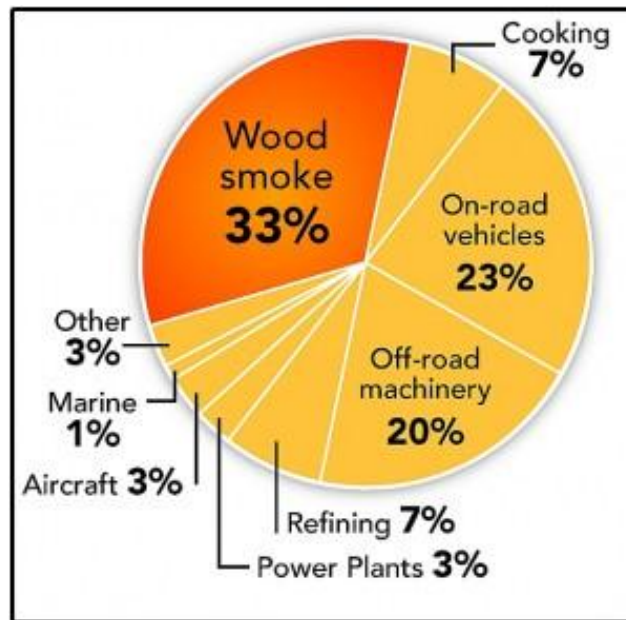
Source

- The EPA claims that its regulations have helped allow for an increase in energy consumption while decreasing overall toxic air emissions.



Source

- But industrial plants powered by fossil fuels account for a very small percentage of America's total air pollution.



Source

How does the CWA affect the energy industry in America today?

- The Clean Water Act has been an important topic recently due to its [connection](#) to hydraulic fracturing (“fracking”).
- During the fracking process, water is pumped at extreme pressures into fissures in the rock. In order to make the process more efficient, several chemicals are added to the water. Several of these chemicals are quite toxic. There has been growing concern over the safety and effectiveness of the disposal of this water.
- Additionally, increased levels of methane (the main component of natural gas) have been reported in local water supplies near fracking rigs. This has raised serious concern across the country, with many claiming that natural gas companies are in violation of EPA standards.
- The fracking industry has also been criticized due to the “[Halliburton Loophole.](#)” The industry has been able to evade EPA regulations for decades.

Under-regulated?

Environmental laws and exemptions for the oil and gas industry

Environmental law	Exemption
Safe Drinking Water Act	Hydraulic fracturing exempt from regulation
Clean Water Act	Oil-and-gas operations exempt from stormwater runoff regulation
Clean Air Act	Oil-and-gas exploration and production exempt from the act’s regulation of aggregated small sources of air pollutants
Emergency Planning and Community Right to Know Act	Oil-and-gas exploration and development exempt from reporting toxic emissions in the Toxic Release Inventory
Resource Conservation and Recovery Act	Oil-and-gas field wastes exempted from control
Comprehensive Environmental Response, Compensation, and Liability Act	Oil and gas are not defined as hazardous substances
National Environmental Policy Act	Oil-and-gas development enjoys broad categorical exclusions from comprehensive environmental impact statements

Source

- Others have argued that the environmental risks fracking poses have been largely exaggerated. There is very little proof that fracking has ever contaminated any drinking water.

What are the pros and cons of the Clean Air and Water Acts?

- Air quality has [dramatically improved](#) since the Act’s inception.

Percent Change in Air Quality

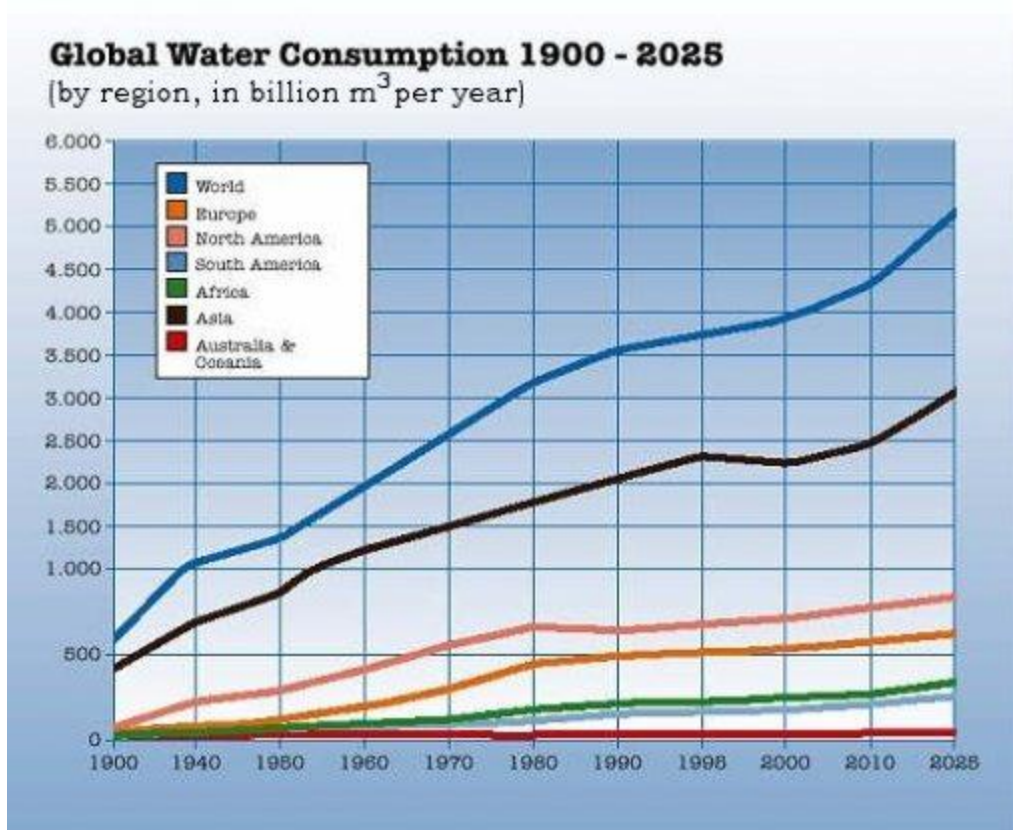
	1980 vs 2010	1990 vs 2010	2000 vs 2010
Carbon Monoxide (CO)	-82	-73	-54
Ozone (O ₃) (8-hr)	-28	-17	-11
Lead (Pb)	-90	-83	-62
Nitrogen Dioxide (NO ₂) (annual)	-52	-45	-38
PM ₁₀ (24-hr)	---	-38	-29
PM _{2.5} (annual)	---	---	-27
PM _{2.5} (24-hr)	---	---	-29
Sulfur Dioxide (SO ₂) (24-hr)	-76	-68	-48

Notes:

1. --- Trend data not available
2. Negative numbers indicate improvements in air quality

Source

- **Some** believe the economic value recovered by having cleaner air easily makes up for the money spent on the agency's costs as well as lost production in the energy industries.
 - Additionally, air pollution is a leading factor contributing to global warming. Reducing air pollution is a key step in combating global warming.
 - Global water consumption is rapidly rising. Therefore, broad regulations are necessary if we hope to have an adequate freshwater supply for the future.



Source

- Because of the EPA, particularly because of the CAA and CWA, thousands of lives have been saved and diseases prevented.
- Our water sources are **remarkably cleaner** than they were 40 years ago. Though there is still more work to do, wetlands are being conserved, coastal regions protected and rivers cleaned up. Further power granted to the EPA and the federal government will allow us to achieve more in this regard.

TOP 20 WATERWAYS FOR TOXIC WASTE

WATERWAY	TOXIC DISCHARGE* (LB.)
1. Ohio River (IL, IN, KY, OH, PA, WV)	32,111,718
2. Mississippi River (AR, IA, IL, KY, LA, MN, MO, MS, TN, WI)	12,739,749
3. New River (NC, VA)	12,529,948
4. Savannah River (GA, SC)	9,624,090
5. Delaware River (DE, NJ, PA)	6,719,436
6. Muskingum River (OH)	5,754,118
7. Missouri River (IA, KS, MO, ND, NE)	4,887,971
8. Shonka Ditch (NE)	4,614,722
9. Tricounty Canal (NE)	3,386,162
10. Rock River (IL, WI)	3,370,392
11. Cape Fear River (NC)	3,364,823
12. Illinois River (IL)	3,206,191
13. Big Sioux River (SD)	2,949,940
14. Tennessee River (AL, KY, TN)	2,810,828
15. Roanoke River (NC, VA)	2,762,330
16. Houston Ship Channel (TX)	2,715,228
17. Monongahela River (PA, WV)	2,626,677
18. Snake River (ID, OR)	2,609,501
19. Morses Creek (NJ)	2,403,408
20. Aroostook River (ME)	2,271,733

*2010 numbers

Source: Environment New Jersey, Frontier Group

THE STAR-LEDGER

Source

- Others believe that the CCA and CWA are not only [unconstitutional](#), but impair economic growth.
 - The United States does not need the CCA to keep the air clean. There is enough incentive to do so [without it](#). For instance, if rivers or lakes were privately owned, the owner would have far more incentive to keep the source clean than the federal government does.
 - The EPA and its legislation [cost](#) both taxpayers and businesses billions of dollars. Moreover, they limit domestic production of energy and drive up fuel costs.
 - Congress has passed numerous environmental laws and regulations without really knowing the effect they will have.
 - There have been a number of cases in which the regulations set by the CAA or CWA have infringed on individuals' property rights. Indeed, over the last several

decades reconciling environmental law and property rights has become increasingly difficult.

- Landowners can be prevented from building a home, cutting down trees, draining wetlands, or even plowing fields. Many argue that this is in direct violation of the Fifth Amendment which states, “No person shall be...deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation.”
- The CWA, in particular, has been used as a means of regulatory taking across the country. Though the Bill of Rights guarantees “just compensation,” payment is sometimes never made.

Quotes on the Clean Air and Water Acts

“(1) that the predominant part of the Nation’s population is located in its rapidly expanding metropolitan and other urban areas, which generally cross the boundary lines of local jurisdictions and often extend into two or more States;

(2) that the growth in the amount and complexity of air pollution brought about by urbanization, industrial development, and the increasing use of motor vehicles, has resulted in mounting dangers to the public health and welfare, including injury to agricultural crops and livestock, damage to and the deterioration of property, and hazards to air and ground transportation;

(3) that air pollution prevention (that is, the reduction or elimination, through any measures, of the amount of pollutants produced or created at the source) and air pollution control at its source is the primary responsibility of States and local governments; and

(4) that Federal financial assistance and leadership is essential for the development of cooperative Federal, State, regional, and local programs to prevent and control air pollution.”

- [Clean Air Act](#), December 31, 1970

"The Clean Water Act of 1977 embraces many of the principles and proposals put forward by my administration. The Congress has agreed to long-term funding for the municipal sewage treatment construction grant program which I urged in my environmental message earlier this year. This will help States and communities plan and implement effectively programs to clean up backlogs of municipal pollution.

The bill also emphasizes the importance of controlling toxic pollutants which endanger the public health--a focus which my administration has urged."

- President Jimmy Carter, [“Clean Water Act of 1977 Statement,”](#) December 28, 1977

“This landmark legislation will reduce air pollution each year by 56 billion pounds -- that's 224 pounds for every man, woman, and child in America. It will go after the three main types of air pollution: acid rain, smog, and toxic air pollutants. This bill will cut emissions that cause acid rain in half and permanently cap them at these new levels. It will reduce pollutants that cause smog in our cities by 40 percent, so that by the year 2000, over 100 major American cities with poor air quality will have safer, healthier air. And it will cut dangerous air toxics emissions by over 75 percent, using new technologies. And by the next decade, its alternative fuel provisions will help reduce our dependence on foreign oil. This bill means cleaner cars, cleaner power plants, cleaner factories, and cleaner fuels; and it means a cleaner America. Virtually every person in every city and every town will enjoy its benefits.

This legislation isn't just the centerpiece of our environmental agenda. It is simply the most significant air pollution legislation in our nation's history, and it restores America's place as the global leader in environmental protection.”

- President George H.W. Bush, [“Remarks on Signing the Bill Amending the Clean Air Act,”](#) November 15, 1990.

“Before the Clean Water Act, water quality in many, many parts of our country was simply deplorable.

Many of America's great waterways -- so vital to our health, our commerce and our very identity as a nation -- had become places to avoid.

The Hudson River contained bacteria levels of 170 times the safe limit. The Cuyahoga River in Ohio actually caught fire.

And the Upper Mississippi -- this father of waters, this national treasure -- was in serious decline.

There was a reason for this. Raw sewage and industrial waste was routinely dumped into rivers, lakes and coastal waters. There was simply no method in place of effectively controlling the pollution that was fouling America's waters.

But, 25 years ago, the American people said ‘enough.’”

- Carol M. Browner, [“25th Anniversary of the Clean Water Act,”](#) EPA, October 17, 1997

“Section 404 of the Clean Water Act prohibits the discharge of pollutants into navigable waters without a permit from the U.S. Army Corps of Engineers. Under this section, pollutants include natural materials such as rock, sand, and dirt. ‘Navigable waters’ have been broadly defined to include dry washes and remote wetlands.

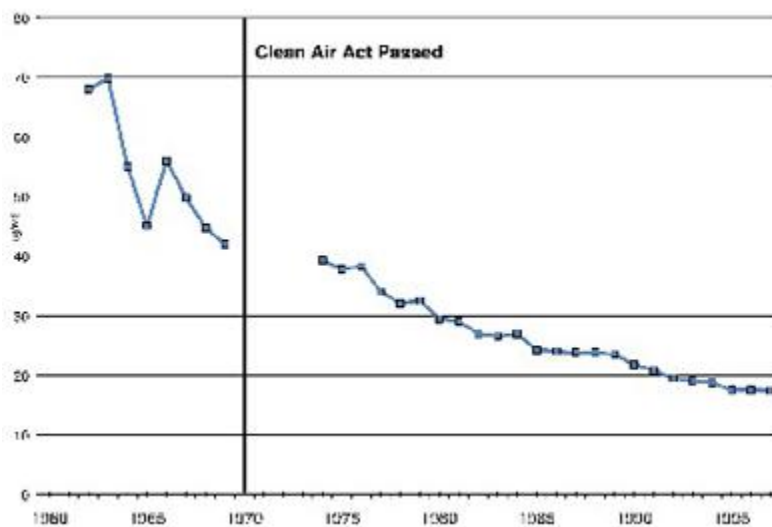
The average applicant hoping to develop his or her own wetlands will spend 788 days and

\$271,596 working with federal authorities to do so. In pursuing environmental purity, the principle that one may use his property as he best sees fit has vanished.”

- Benjamin Barr, “[Muddy Waters: Deconstructing the Clean Water Act in Arizona](#),” *Policy Report, No. 21*, January 29, 2008

“Air quality was improving before the passage of the 1970 CAA. Environmentalists should give more credit to innovation and less to top-down regulation. The air quality improvements are attributable to the cost-saving, energy-efficiency gains made by business and industry that go hand-in-hand with environmental improvement.”

- Nicolas Loris, “[The Clean Air Act’s Birthday Is Not Worth Celebrating](#),” *The Heritage Foundation*, September 15, 2010



Ambient SO₂ Level, Mean Annual Average, 1962-1997

[Source](#)

“Despite the urgent need to combat climate change and the significant societal and economic benefits flowing from reducing greenhouse gas pollution, the Clean Air Act is under intense assault from polluters and their allies in Congress. Parroting the same disproven assertions used against the Clean Air Act for decades, polluters are aggressively seeking to strip EPA of its authority to reduce greenhouse gas pollution on the grounds that any such regulations would, in the words of Representative Joe Barton (R-TX), ‘put the American economy in a straitjacket.’”

- Matt Vespa, “[The Clean Air Act Works: How the Landmark Pollution Law Can Benefit Our Climate, Health and Economy](#),” *Center for Biological Diversity*, February 2011

Questions for Discussion

1. Do you think the CAA and CWA lead to higher prices for consumers? Why or why not?
2. Is it possible to effectively address the problem of air pollution through property rights? Why or why not? If so, how?
3. Does the United States have an international responsibility environmentally? If so why, and to what extent?
4. Which is more important: our energy needs or the environment? Is there a trade-off, or can the two be reconciled?
5. The Clean Air and Water Acts and EPA have long enjoyed nearly universal bipartisan support. It is rather recently that significant criticisms have arisen. Why do you think this is the case?