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www.thoracic.org

Comments from the American Thoracic Society
Presented by Mary B. Rice MD MPH
Before the Senate Environment and Public Works – Superfund, Waste Management and Regulatory Oversight Subcommittee
on
The Benefits of EPA's Clean Air Standards
Oct 21, 2015

Mr. Chairman, Mr. Ranking member, my name is Dr. Mary Rice. I am an adult pulmonologist and critical care physician at Beth Israel Deaconess Medical Center and Harvard Medical School in Boston, and also Vice Chair of the Environmental Health Policy Committee of the American Thoracic Society. When I am not caring for patients, I am engaged in research on the respiratory health effects of ambient pollution exposure in children and adults. On behalf of the American Thoracic Society, I want to thank you for the opportunity to share with the Subcommittee information about the tremendous public health benefits that Americans enjoy from the EPA's Clean Air standards.

I am testifying today on behalf of the American Thoracic Society, a medical professional organization with over 15,000 professionals and patients who are dedicated to the prevention, detection, treatment and cure of respiratory disease, critical care illnesses and sleep-disordered breathing. We pursue our mission through research, clinical care, education and advocacy.

Research has consistently shown that exposure to air pollution causes a wide range of serious health effects that harm children and adults across America. These health effects include respiratory effects like asthma attacks and chronic obstructive pulmonary disease (COPD) hospitalizations, worse lung function in adults, slower lung growth in children, and premature death. While my expertise is in respiratory medicine, air pollution (like tobacco) also impairs other parts of the body. Non-respiratory effects include heart attacks, stroke, lower birth weights, and cognitive impairment in children and adults.

The accumulation of decades of scientific research, including hundreds of peer-reviewed publications, provides clear and consistent evidence that air pollution is bad for human health. These studies include multiple scientific methods, including animal toxicology studies, human exposure studies, observational epidemiology studies, and natural experiment studies. The evidence **overwhelmingly** indicates that exposure to air pollutants, including ozone and particulate matter, is harmful for health.

While a variety of air pollutants have adverse health effects, my testimony will focus on ozone and particulate matter.

Ozone

It has been known for a long time that ground-level ozone, a component of smog, is a potent oxidant that irritates and damages the airways and lungs. The American Thoracic Society is pleased the EPA recently issued a more protective ozone standard of 70 ppb, but we are disappointed the EPA did not adopt a standard of 60 ppb, which would prevent even more adverse health effects and premature deaths.

For several years, the American Thoracic Society has encouraged the EPA to issue a more protective ozone standard. When the standard was reviewed in 2007 under the Bush Administration, we recommended a standard of 60 ppb based on the available evidence at that time[1]. When the Obama Administration first reconsidered this standard in 2010, we again urged 60 ppb[2]. While the recommended standard endorsed by the physician community has not changed during this time, the scientific evidence supporting this recommendation has significantly strengthened. Recent studies provide an even greater understanding of the health effects of ozone, including greater risk of respiratory hospitalization in infants and children, worse lung function in healthy adults, increased hospitalization for asthma and chronic obstructive lung disease, and increased mortality among older adults.

Ozone exposures have adverse physiologic effects across the entire age spectrum—from newborn infants to the elderly. Several lines of evidence demonstrate dose-response relationships between ozone exposure above 60 ppb and childhood asthma hospital admissions and emergency room visits[3–6]. A new study of emergency department visits by preschool children in Atlanta, found that each 30 ppb increase in the three-day average of ozone was associated with an 8% higher risk of pneumonia[7].

Adults are also harmed by ozone. Research has shown that for each incremental rise in ozone, adult emergency room visits and hospitalizations for severe asthma attacks increase[6,8,9]. Similar associations have been found for chronic obstructive pulmonary disease[10,11] and pneumonia admissions[11]. In my own work in the Framingham Heart Study, we examined lung function in more than 3,000 generally healthy adults and found that lung function was substantially lower (by 55 mL) when ambient ozone ranged from 60 to 75 ppb compared to days with levels under 60 ppb[12]. This analysis did not even include any days with levels above our current standard of 75 ppb. Controlled human exposure studies have re-affirmed lung function decrements in healthy adults after exposure to 60 ppb to 70 ppb of ozone[13,14]. Numerous animal toxicology studies have demonstrated damage to the lung tissue after ozone exposure, including evidence of lung damage at levels in the 60 to 70 ppb range[15,16].

Perhaps of greatest concern, there is now stronger evidence from large, multi-city studies that there are thousands of excess American deaths each year resulting from ozone[17–19], particularly among the elderly and those with chronic disease[20–22]. A study published by investigators at the Johns Hopkins School of Public Health estimated the annual numbers of ozone-related premature

deaths that could be avoided with full attainment of an ozone standard of 75 ppb, 70 ppb and 60 ppb[23]. If all non-attainment areas in 2005 to 2007 were instead in full compliance with the current 75 ppb standard, an estimated 1500 to 2500 premature deaths would be avoided each year. This increases to 2500 to 4100 premature deaths at 70 ppb, and 5200 to 8000 premature deaths at an attained ozone standard of 60 ppb. This study also estimated that 10 million cases of acute respiratory symptoms and 3.5 million lost school days would be avoided nationally if we attained a standard of 60 ppb of ozone.

Particulate Matter (PM)

Particulate matter or PM is another major pollutant and consists of tiny inhalable particles that are released during combustion processes. Particles less than 2.5 microns in diameter ($PM_{2.5}$) are so small that they deposit all the way in the terminal air sacs of the lung (the alveoli) where gas exchange takes place.

The deadly effects of particulate matter first became evident during the Great Smog of December 1952, when the city of London documented thousands of excess deaths and cases of illness during a major smog event. Now, more than 60 years later, hundreds of studies in the U.S. and around the world have confirmed that elevations in particulate matter, including exposure levels within current EPA standards, result in excess deaths and a number of other serious respiratory and cardiovascular health effects[24–27]. These health effects include:

- Worse lung function in healthy children and adults[12,28–30]
- Slower lung growth in children[31,32]
- Aggravated asthma[33–37]
- Hospitalization for chronic obstructive pulmonary disease (COPD)[37,38]
- Congestive heart failure symptoms and hospitalization[26,39–41]
- Stroke[42,43]
- Heart attacks and survival after heart attacks[26,27,41,44]
- Irregularities of the heartbeat[45,46]
- Higher mortality[27,47–49]

Particulate pollution can cause health problems for anyone, but certain people are especially susceptible. Children, the elderly, and people who already have cardiovascular disease, chronic lung disease or diabetes are among the groups most at risk[50]. Even healthy adults who are more heavily exposed, for example because they work outdoors or live close to a major road, power plant or other source of pollution, face higher risk.

Reducing Air Pollution Improves Health

While many Americans have suffered and continue to suffer from the health effects of air pollution, experience has repeatedly shown that **when pollution levels decrease, human health improves**. Below are a few illustrative examples of the benefits of lower pollution:

1. **Fewer Asthma and Bronchitis Events in Children**

   In 1996, Atlanta hosted the summer Olympics. Olympic organizers took steps to reduce the air pollution levels during the games. Peak daily ozone levels decreased from 81 ppb during the baseline period to 59 ppb during the Olympic Games and peak weekday morning traffic counts dropped by 22.5%[51]. This created a natural experiment allowing researchers to study medical claims and emergency visits for child asthma attacks during the Olympic Games, and compare them to baseline rates. During the Olympic Games, the number of asthma acute care events in the Georgia Medicaid claims file for children aged 1 to 16 decreased by 41.6% in the 5 central counties of Atlanta, a decrease that was statistically significant[51].

   Another natural experiment happened when a steel mill in the Salt Lake valley was closed for several months due to a strike. When the steel mill closed and PM levels declined sharply in Utah Valley, the number of bronchitis and asthma admissions for preschool-age children in Utah Valley fell by approximately 50%[52]. No parallel changes were observed in neighboring communities.

2. **Improved Children's Lung Function Growth**

   In a landmark paper published this year in our nation's most prestigious medical journal, the *New England Journal of Medicine*, declining levels of PM between 1994 and 2011 were associated with improvements in lung function development in children with and without asthma in Southern California[31]. This indicates that American children, including the most vulnerable with asthma but also normal children, have on average larger, healthier lungs thanks to successful lowering of air pollution over the past decade.

3. **Slower Lung Function Decline in Adults**

   After the age of about 35, the lung function of adults declines by about 30 mL each year. A recent study in Europe found that improvements in air pollution exposure from 1990 to 2001 slowed down this yearly loss of lung function in adults[53].

4. **Prolongation of U.S. Life Expectancy**

   Improvements in air quality, particularly reductions in PM, have allowed investigators to examine how these improvements affect life expectancy. An extended follow-up of the original Harvard Six Cities Study (a study published in 1993 that identified a link between pollution and mortality in six U.S. cities[54]), found that from 1979 to 1998, $PM_{2.5}$ decreased in all 6 U.S. cities, particularly in the most polluted cities (up to 7 $\mu g/m^3$ per decade). Each 10 $\mu g/m^3$ decrease in $PM_{2.5}$ during this 19 year interval reduced the relative risk of death by 27%[55]. Nonetheless, associations between $PM_{2.5}$ and increased

risk of death persist at these lower pollution levels, particularly for cardiovascular and lung cancer mortality[48].

Scientists recently looked at changes in life expectancy in 211 counties in 51 metropolitan areas across the U.S. and calculated that for every 10 $\mu g/m^3$ in $PM_{2.5}$ between 1980 and 2000, average lifespan was extended by approximately 5 months[56]. The counties with the greatest reductions in $PM_{2.5}$ benefitted from the greatest increases in life expectancy. Reductions in $PM_{2.5}$ accounted for 15% of the overall increase in life expectancy in these U.S. counties during the 20 year period.

A recent study examined reductions in $PM_{2.5}$ in 545 U.S. counties from 2000 to 2007. During these years, $PM_{2.5}$ has continued to decline but at a slower rate. Scientists found a 4.2 month increase in average U.S. life expectancy from 2000 to 2007 per 10 $\mu g/m^3$ decline in $PM_{2.5}$[57].

Cost/Benefit Estimates of EPA Air Regulations

Mr. Chairman, as you know, the OMB issues an annual report that estimates the cost and benefits of major federal regulations. This annual report gives policy makers and the public a sense of how federal regulations are impacting the overall economy. For the past 10 years, in both Republican and Democratic Administrations, the OMB has determined that the benefits of EPA regulations far exceed the costs. In fact, the OMB has reported that over the past 10 years, the benefits of EPA regulations exceed costs at a minimum of 2-1, and possibly by as much as 20-1 (see testimony attachment 1). The health benefits of the EPA's clean air regulations are a major part of the large benefits enjoyed by the American people as a result of EPA public health protections.

Countless scientific studies over many decades have demonstrated and quantified the harmful health consequences of air pollution exposure. With this clear and comprehensive scientific evidence, the EPA has consistently found that cleaner air standards provide far more benefits than the costs of implementation. Progress in the United States has resulted in reductions in pollution levels, and our experience has confirmed that reducing air pollution improves human health and saves lives.

I would be happy to answer any questions.

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Attachment 1
Report to Congress on the Costs and Benefits of Federal Regulations
Table 1-1: Estimates of the Total Annual Benefits and Costs of Major Federal Rules (Reports for 2005-2015)

2005:

2005 Report to Congress on the Costs and Benefits of Federal Regulations

Table 1-1: Estimates of the Total Annual Benefits and Costs of Major Federal Rules, October 1, 1994 to September 30, 2004 (millions of 2001 dollars)

Agency	Number of Rules	Benefits	Costs
Department of Agriculture	5	2,837-5,923	1,586-1,608
Department of Education	1	632-786	349-589
Department of Energy	6	5,194-5,260	2,958
Department of Health and Human Services	17	10,226-19,714	3,817-3,992
Department of Homeland Security (Coast Guard)*	2	60	869
Department of Housing and Urban Development	1	190	150
Department of Labor	4	1,138-3,440	349
Department of Transportation	11	4,979-7,742	3,591-5,617
Environmental Protection Agency	41	44,381-233,730	21,166-23,284
Total	**88**	**69,638-276,846**	**34,836-39,416**

*Presented here are the costs and benefits of two Coast Guard rules that pre-date the establishment of DHS. These totals do not include the 7 major homeland security regulations adopted in 2004 by DHS and HHS. These regulations imposed costs of approximately $1.8 billion to $3.7 billion per year, and are presented in more detail in Table 1-5.

Reference link:
https://www.whitehouse.gov/sites/default/files/omb/assets/omb/inforeg/2005_cb/final_2005_cb_report.pdf

2006:

Table 1-1: Estimates of the Total Annual Benefits and Costs of Major Federal Rules, October 1, 1995 to September 30, 2005 (millions of 2001 dollars)

Agency	Number of Rules	Benefits	Costs
Department of Agriculture	7	3,530-6,747	2,215-2,346
Department of Education	1	633-786	349-589
Department of Energy	6	5,194-5,260	2,958
Department of Health and Human Services	19	21,313-33,268	3,853-4,029
Department of Homeland Security (Coast Guard)	1	44	305
Department of Housing and Urban Development	1	190	150
Department of Justice	1	275	108-118
Department of Labor	4	1,138-3,440	349
Department of Transportation	13	2,913-4,948	3,212-6,622
Environmental Protection Agency	42	58,670-394,454	23,572-26,200
Total	**95**	**93,899-449,412**	**37,071-43,665**

Table 1-2 provides additional information on aggregate benefits and costs for specific agency programs. In order for a program to be included in Table 1-2, the program needed to have finalized three or more rules in the last 10 years with monetized costs and benefits.

Reference link:
https://www.whitehouse.gov/sites/default/files/omb/assets/omb/inforeg/2006_cb/2006_cb_final_report.pdf

2007:

Table 1-1: Estimates of the Total Annual Benefits and Costs of Major Federal Rules, October 1, 1996 to September 30, 2006 (millions of 2001 dollars)

Agency	Number of Rules	Benefits	Costs
Department of Agriculture	6	3,454-3,692	2,106-2,215
Department of Education	1	633-786	349-589
Department of Energy	6	5,194-5,260	2,958
Department of Health and Human Services	17	20,746-32,946	3,781-4,071
Department of Housing and Urban Development	1	190	150
Department of Justice	1	275	108-118
Department of Labor	5	1,173-4,302	611-620
Department of Transportation	15	3,913-6,147	3,879-7,377
Environmental Protection Agency	39	62,917-430,004	25,235-28,055
Total	**91**	**98, 492-483,603**	**39,176-46,152**

Table 1-2 provides additional information on aggregate benefits and costs for specific agency programs. In order for a program to be included in Table 1-2, the program needed to have finalized three or more rules in the last ten years with monetized benefits and costs.

Reference link:
https://www.whitehouse.gov/sites/default/files/omb/assets/omb/inforeg/2007_cb/2007_cb_final_report.pdf

2008:

Table 1-1: Estimates of the Total Annual Benefits and Costs of Major Federal Rules, October 1, 1997 - September 30, 2007 (Millions of 2001 dollars)

Agency	Number of Rules	Benefits	Costs
Department of Agriculture	6	906-1,315	1,014-1,353
Department of Education	1	633-786	349-589
Department of Energy	5	4,834-5,209	3,033-3,080
Department of Health and Human Services	18	20,565-32,850	3,834-4,331
Department of Housing and Urban Development	1	190	150
Department of Justice	1	275	108-118
Department of Labor	6	1,085-4,215	449-458
Department of Transportation	15	10,407-18,149	5,029-8,756
Environmental Protection Agency[10]	40	83,298-592,567	32,252-35,058
Total	**93**	**122,190-655,556**	**46,219-53,894**

and a more consistent regulatory environment. OMB expects that as more agencies adopt our recommended best practices, the benefits and costs we present in future reports will become more comparable across agencies and programs. OMB is working with the agencies to ensure that their impact analyses follow the new guidance.

[9] In many instances, agencies were unable to quantify all benefits and costs. We have conveyed the essence of these unquantified effects on a rule-by-rule basis in the columns titled "Other Information" in Appendix A of this and previous Reports. The monetized estimates we present necessarily exclude these unquantified effects.

[10] These totals include EPA's March 2005 final "Clean Air Interstate Rule." On July 11, 2008, the D.C. Circuit vacated this rule; however, in response to EPA's petition, the Court on December 23, 2008, remanded the rule without vacatur, which keeps it in effect while EPA conducts further proceedings consistent with the Court's July 11 opinion

Reference link:
https://www.whitehouse.gov/sites/default/files/omb/assets/information_and_regulatory_affairs/2008_cb_final.pdf

2009:

Table 1-1: Estimates of the Total Annual Benefits and Costs of Major Federal Rules by Agency, October 1, 1998 - September 30, 2008 (millions of 2001 dollars)

Agency	Number of Rules	Benefits	Costs
Department of Agriculture	6	906-1,315	1,014-1,353
Department of Education	1	633-786	349-589
Department of Energy	6	4,954-5,391	3,067-3,118
Department of Health and Human Services	18	20,522-32,426	3,879-4,387
Department of Homeland Security	1	20-29	13-99
Department of Housing and Urban Development	1	190	150
Department of Justice	1	275	108-118
Department of Labor	6	481-1605	320-347
Department of Transportation	18	11,256-19,098	5,218-8,968
Environmental Protection Agency[11]	40	87,042-601,469	36,853-40,851
Total	**98**	**126,277-662,584**	**50,973-59,978**

[11] These totals include EPA's March 2005 final "Clean Air Interstate Rule." On July 11, 2008, the D.C. Circuit vacated this rule; however, in response to EPA's petition, the Court on December 23, 2008, remanded the rule without vacatur, which keeps it in effect while EPA conducts further proceedings consistent with the Court's July 11 opinion.

[12] The 2007 Report is available at http://www.whitehouse.gov/omb/inforeg_regpol_reports_congress/. We note that there are ongoing discussions regarding the scientific assumptions underlying the benefits per ton numbers that we use to monetize benefits that were not monetized. If, for instance, assumptions similar to those described at http://www.epa.gov/air/benmap/bpt.html were used, these estimates would be somewhat higher.

Reference link:
https://www.whitehouse.gov/sites/default/files/omb/assets/legislative_reports/2009_final_BC_Report_01272010.pdf

2010:

Table 1-1: Estimates of the Total Annual Benefits and Costs of Major Federal Rules by Agency, October 1, 1999 - September 30, 2009 (millions of 2001 dollars)

Agency	Number of Rules	Benefits	Costs
Department of Agriculture	6	906-1,315	1,014-1,353
Department of Energy	8	6,251-8,500	3,328-3,856
Department of Health and Human Services	20	21,895-44,435	4,651-6,232
Department of Homeland Security	1	20-29	13-99
Department of Housing and Urban Development	1	2,303	884
Department of Justice	1	275	108-118
Department of Labor	5	252-1,375	301-327
Department of Transportation	23	14,158-24,983	6,603-12,502
Environmental Protection Agency[12]	30	81,903-533,066	25,789-29,227
Total	**95**	**127,962-616,282**	**42,700-54,597**

[12] These totals include EPA's March 2005 final "Clean Air Interstate Rule." On July 11, 2008, the D.C. Circuit vacated this rule; however, in response to EPA's petition, the Court on December 23, 2008, remanded the rule without vacatur, which keeps it in effect while EPA conducts further proceedings consistent with the Court's July 11 opinion.

Reference link:
https://www.whitehouse.gov/sites/default/files/omb/legislative/reports/2010_Benefit_Cost_Report.pdf

2011:

Table 1-1: Estimates of the Total Annual Benefits and Costs of Major Federal Rules by Agency, October 1, 2000 - September 30, 2010 (billions of 2001 dollars)

Agency	Number of Rules	Benefits	Costs
Department of Agriculture	6	0.9 to 1.3	1.0 to 1.34
Department of Energy	10	8.0 to 10.9	4.5 to 5.1
Department of Health and Human Services	18	18.0 to 40.5	3.7 to 5.2
Department of Homeland Security	1	< 0.1	< 0.1
Department of Housing and Urban Development	1	2.3	0.9
Department of Justice	4	1.8 to 4.0	0.8 to 1.0
Department of Labor	6	0.4 to 1.5	0.4 to 0.5
Department of Transportation (DOT)	26	14.6 to 25.5	7.5 to 14.3
Environmental Protection Agency (EPA)[16]	32	81.8 to 550.7	23.3 to 28.5

[15] The 2006 Report is available at http://www.whitehouse.gov/omb/inforeg_regpol_reports_congress/. We note that there are ongoing discussions with respect to the scientific assumptions underlying the benefits per ton numbers that we use to monetize benefits that were not monetized. If, for instance, assumptions similar to those described at http://www.epa.gov/air/benmap/bpt.html were used, these estimates would be higher.

[16] This total includes the impacts of EPA's 2005 Clean Air Interstate Rule. On July 11, 2008, the DC Circuit Court vacated the rule; however, in response to EPA's petition, the court on December 23, 2008, remanded the rule without vacatur, which keeps this rule in effect while EPA conducts further proceedings consistent with the court's July 11 opinion. On August 2, 2010, EPA published in the Federal Register the proposed rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone." This rule, once finalized, will replace the Clean Air Interstate Rule. This total also includes the impacts of EPA's 2006 PM NAAQS which was inadvertently dropped from last year's aggregates.

This total excludes the impacts of two rulemakings we inadvertently neglected to remove from the 10-year aggregates in previous reports. The first rule is EPA's 2005 "Clean Air Mercury Rule--Electric Utility Steam Generating Units," On February 8, 2008, the D.C. Circuit vacated a precursor EPA rule removing power plants from the Clean Air Act list of sources of hazardous air pollutants, and at the same time vacated the Clean Air Mercury Rule. The second rule is EPA's 2004 —National Emission Standards for Hazardous Air Pollutants: Industrial/Commercial/Institutional Boilers and Process Heaters." On June 19, 2007, the United States Court of Appeals for the District of Columbia Circuit vacated and remanded this rule to EPA.

Agency	Number of Rules	Benefits	Costs
Joint DOT and EPA	1	3.9 to 18.2	1.7 to 4.7
Total	**105**	**131.7 to 655.0**	**43.7 to 61.7**

Reference link:
https://www.whitehouse.gov/sites/default/files/omb/inforeg/2011_cb/2011_cba_report.pdf

2012:

Table 1-1: Estimates of the Total Annual Benefits and Costs of Major Federal Rules by Agency, October 1, 2001 - September 30, 2011 (billions of 2001 dollars)

Agency	Number of Rules	Benefits	Costs
Department of Agriculture	5	0.9 to 1.3	0.8 to 1.2
Department of Energy	10	6.5 to 12.0	3.3 to 4.7
Department of Health and Human Services[13]	16	15.8 to 38.5	2.2 to 4.1
Department of Homeland Security	1	< 0.1	0 to 0.1
Department of Housing and Urban Development	1	2.3	0.9
Department of Justice	4	1.8 to 4.0	0.8 to 1.0
Department of Labor	7	6.8 to 19.8	2.1 to 5.0
Department of Transportation (DOT)[14]	27	16.1 to 27.9	7.9 to 15.7
Environmental Protection Agency (EPA)[15]	30	84.8 to 565.0	22.3 to 28.5

[12] The 2006 Report is available at: http://www.whitehouse.gov/omb/inforeg_regpol_reports_congress/. We note that there are ongoing discussions regarding the scientific assumptions underlying the benefits per ton numbers that we use to monetize benefits that were not monetized. If, for instance, assumptions similar to those described at http://www.epa.gov/air/benmap/bpt.html were used, these estimates would be somewhat higher.
[13] The draft version of this Report included HHS's Cigarette Warning Label Statements rule. On August 24, 2012, however, a divided panel of the U.S. Court of Appeals for the District of Columbia Circuit vacated the graphic labeling requirements of this rule. On December 5, 2012, the D.C. Circuit denied FDA's petition for rehearing en banc, and FDA has not sought further review. Accordingly, we have excluded the rule from the total costs and benefits presented in Chapter 1 of this Report.
[14] This total excludes FMCSA's 2010 Electronic On-Board Recorders for Hours-of-Service Compliance rule. The rule was vacated on August 26, 2011, by the Court of Appeals. To avoid double counting, this total also excludes FMCSA's 2009 Hours of Service rule, which finalized the provisions of the 2005 final rule included in the final count of rules.
[15] This total includes the impacts of EPA's 2005 Clean Air Interstate Rule (CAIR). CAIR was initially vacated by the U.S. Court of Appeals for the District of Columbia Circuit, see *North Carolina* v. *EPA*, 531 F.3d 896 (D.C. Cir. 2008) (per curiam), but in a later decision on rehearing the court modified the remedy to remand without vacatur,

Agency	Number of Rules	Benefits	Costs
Joint DOT and EPA	2	6.1 to 20.7	2.0 to 5.2
Total	**103**	**141.0 to 691.5**	**42.4 to 66.3**

Reference link:
https://www.whitehouse.gov/sites/default/files/omb/inforeg/2012_cb/2012_cost_benefit_report.pdf

2013:

Table 1-1: Estimates of the Total Annual Benefits and Costs of Major Federal Rules by Agency, October 1, 2002 - September 30, 2012 (billions of 2001 dollars)

Agency	Number of Rules	Benefits	Costs
Department of Agriculture	5	$0.9 to $1.3	$0.8 to $1.2
Department of Energy	12	$8.2 to $15.3	$3.6 to $5.5
Department of Health and Human Services	19	$16.6 to $40.2	$2.4 to $5.2
Department of Homeland Security	2	$0 to $0.5	$0.1 to $0.3
Department of Housing and Urban Development	1	$2.3	$0.9
Department of Justice	4	$1.8 to $4.0	$0.8 to $1.0
Department of Labor	8	$7.3 to $21.4	$2.3 to $5.1
Department of Transportation (DOT)[15]	29	$16.2 to $27.6	$7.9 to $14.1
Environmental Protection Agency (EPA)[16]	32	$112.0 to $637.6	$30.4 to $36.5
Joint DOT and EPA	3	$27.3 to $49.6	$7.3 to $14.0
Total	**115**	**$192.7 to $799.7**	**$56.6 to $83.7**

[15] This total excludes FMCSA's 2010 Electronic On-Board Recorders for Hours-of-Service Compliance rule. The rule was vacated on Aug. 26, 2011, by the U.S Court of Appeals for the Seventh Circuit. To avoid double counting, this total also excludes FMCSA's 2009 Hours of Service rule, which finalized the provisions of the 2005 final rule included in the final count of rules.

[16] This total includes the impacts of EPA's 2005 Clean Air Interstate Rule (CAIR). CAIR was initially vacated by the U.S. Court of Appeals for the District of Columbia Circuit, see *North Carolina* v. *EPA*, 531 F.3d 896 (D.C. Cir. 2008) (per curiam), but in a later decision on rehearing the court modified the remedy to remand without vacatur, thus allowing EPA to continue to administer CAIR pending further rulemaking, see *North Carolina* v. *EPA*, 550 F.3d 1176 (D.C. Cir. 2008) (per curiam). On July 6, 2011, EPA finalized the Cross-State Air Pollution Rule (CSAPR), which responded to the remand in *North Carolina* and was designed to replace CAIR. On August 21, 2012, a divided panel of the D.C. Circuit vacated CSAPR while again keeping CAIR in place pending further EPA action. See *EME Homer City Generation, L.P.* v. *EPA*, 696 F.3d 7 (D.C. Cir. 2012). On April 29, 2014, however, the Supreme Court reversed and remanded the D.C. Circuit decision. Once the status of the final CSAPR has been resolved, OMB will consider changes to our method of attributing and accounting for the benefits and costs of the two rulemakings.

Reference link:
https://www.whitehouse.gov/sites/default/files/omb/inforeg/2013_cb/2013_cost_benefit_report-updated.pdf

2014:

Table 1-1: Estimates of the Total Annual Benefits and Costs of Major Federal Rules by Agency, October 1, 2003 - September 30, 2013 (billions of 2001 or 2010 dollars)[17]

Agency	Number of Rules	Benefits		Costs	
		2001$	2010$	2001$	2010$
Department of Agriculture	4	$0.9 to $1.2	$1.0 to $1.4	$0.8 to $1.2	$1.0 to $1.4
Department of Energy	14	$9.1 to $16.6	$11.0 to $20.1	$3.9 to $5.8	$4.7 to $7.0
Department of Health and Human Services	18	$16.2 to $37.4	$19.6 to $45.2	$2.4 to $5.1	$2.9 to $6.2
Department of Homeland Security	2	$0 to $0.5	$0 to $0.6	$0.1 to $0.3	$0.1 to $0.3
Department of Housing and Urban Development	1	$2.3	$2.8	$0.9	$1.1
Department of Justice	4	$1.8 to $4.0	$2.1 to $4.8	$0.8 to $1.0	$1.0 to $1.3
Department of Labor	8	$7.3 to $21.4	$8.9 to $25.8	$2.3 to $5.1	$2.7 to $6.2
Department of Transportation (DOT)[18]	28	$15.2 to $26.7	$18.5 to $32.2	$6.5 to $12.7	$7.9 to $15.3
Environmental Protection Agency (EPA)[19]	34	$136.4 to $703.1	$164.8 to $849.5	$31.6 to $38.2	$38.2 to $46.1

[18] This total excludes FMCSA's 2010 Electronic On-Board Recorders for Hours-of-Service Compliance rule. The rule was vacated on Aug. 26, 2011, by the U.S Court of Appeals for the Seventh Circuit. To avoid double counting, this total also excludes FMCSA's 2009 Hours of Service rule, which finalized the provisions of the 2005 final rule included in the final count of rules.

[19] This total includes the impacts of EPA's 2005 Clean Air Interstate Rule (CAIR). CAIR was initially vacated by the U.S. Court of Appeals for the District of Columbia Circuit, see *North Carolina* v. *EPA*, 531 F.3d 896 (D.C. Cir. 2008) (per curiam), but in a later decision on rehearing the court modified the remedy to remand without vacatur, thus allowing EPA to continue to administer CAIR pending further rulemaking, see *North Carolina* v. *EPA*, 550 F.3d 1176 (D.C. Cir. 2008) (per curiam). On July 6, 2011, EPA finalized the Cross-State Air Pollution Rule (CSAPR), which responded to the remand in *North Carolina* and was designed to replace CAIR. On August 21, 2012, a divided panel of the D.C. Circuit vacated CSAPR while again keeping CAIR in place pending further EPA action. See *EME Homer City Generation, L.P.* v. *EPA*, 696 F.3d 7 (D.C. Cir. 2012). On April 29, 2014, The U.S. Supreme Court reversed the DC Circuit opinion vacating CSAPR. On June 26, 2014, the U.S. government filed a motion with the U.S. Court of Appeals for the D.C. Circuit to lift the stay on CSAPR. On Oct 23, 2014, the U.S. Court of Appeal for the D.C. Circuit ordered that EPA's motion to lift the stay of CSAPR be granted. The U.S. Supreme Court recently sent the case back to the D.C. Circuit to entertain arguments that had not been decided earlier. EPA is currently awaiting a final decision from the D.C. Circuit. OMB will consider changes to our method of attributing and accounting for the benefits and costs of the two rulemakings in an upcoming report.

Agency	Number of Rules	Benefits		Costs	
		2001$	2010$	2001$	2010$
Joint DOT and EPA	3	$27.3 to $49.6	$33.0 to $59.9	$7.3 to $14.0	$8.9 to $16.9
Total	**116**	**$216.6 to $862.5**	**$261.7 to $1,042.1**	**$56.7 to $84.2**	**$68.5 to $101.8**

Reference link:

https://www.whitehouse.gov/sites/default/files/omb/inforeg/2014_cb/2014-cost-benefit-report.pdf