United States
Environmental Protection
Agency

Air and Radiation

EPA420-D-00-001
May 2000

# Draft Regulatory Impact Analysis for the Proposed Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements Rule

EPA420-D-00-001
May 2000

# Draft Regulatory Impact Analysis for the Proposed Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements Rule

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

*NOTICE*

*This technical report does not necessarily represent final EPA decisions or positions. It is intended to present technical analysis of issues using data which are currently available. The purpose in the release of such reports is to facilitate the exchange of technical information and to inform the public of technical developments which may form the basis for a final EPA decision, position, or regulatory action.*

# Executive Summary

Key results of this draft regulatory impact analysis are discussed below.

*Health and Welfare Concerns*

When revising emissions standards for heavy-duty vehicles, the Agency considers the effects of air pollutants emitted from heavy-duty vehicles on public health and welfare. As discussed in more detail in Chapter II, the outdoor air quality in many areas of the country is expected to violate federal health-based ambient air quality standards for ground level ozone and particulate matter during the time when this rule will take effect. In addition, studies have associated diesel exhaust with a variety of cancer and noncancer health effects. Emissions from heavy-duty vehicles contribute to these air pollution problems, and the standards proposed in this rulemaking will result in significant improvement in ambient air quality and public health and welfare.

*Air Quality Benefits*

The following table presents the total NOx, PM, and NMHC benefits from heavy-duty engines that we anticipate from this proposed rule. Evaporative emission reductions are included in the NMHC benefits.

**Total Reductions from Heavy-Duty Engines for this Proposed Rule (thousand short tons per year)**

| *Calendar Year* | *NOx* | *PM* | *NMHC* |
|---|---|---|---|
| 2007 | 35 | 13 | 12 |
| 2010 | 465 | 36 | 71 |
| 2015 | 1400 | 64 | 165 |
| 2020 | 2,020 | 83 | 230 |
| 2030 | 2,760 | 111 | 305 |

*Costs*

Total annual costs are estimated to reach about $3 billion in 2010 (the year that the phase-in of standards is completed). These costs increase gradually in subsequent years due to projected growth in vehicle sales and fuel consumption.

Lifetime per-vehicle cost impacts have also been estimated. These costs include the incremental cost for new engine hardware, operating costs for closed crankcase filtration systems, the incremental cost for low sulfur diesel fuel, and maintenance savings realized through the use of low sulfur fuel.

**Estimated Long Term Incremental Costs for Emission Control**
**(per vehicle costs, 1999 dollars)**

| *Vehicle Weight Class* | *Emission Control Technologies* | | *Low Sulfur Fuel* | | *Total* |
|---|---|---|---|---|---|
| | *Hardware Costs* | *Operating Costs* | *Lifetime Cost* | *Maintenance Savings* | *Lifetime Cost for Control* |
| Light Heavy-Duty | $982 | $31 | $536 | ($153) | $1,396 |
| Medium Heavy-Duty | $1,188 | $46 | $1,004 | ($249) | $1,989 |
| Heavy Heavy-Duty | $1,572 | $172 | $3,704 | ($610) | $4,838 |
| Urban Bus | $1,252 | $120 | $4,364 | ($610) | $5,126 |

*Cost-Effectiveness*

A comparison of the costs of our proposed program with the emission reductions it is estimated to achieve leads us to conclude that it is a cost-effective means of reducing pollution. As shown in Chapter VI, the cost-effectiveness of our proposed program falls within the range of cost-effectiveness of other mobile and stationary source controls. For example, our recently promulgated standards for Tier 2 vehicles and gasoline sulfur had similar cost-effectiveness to the standards we are proposing today.