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106-426 }FEDERAL REFORMULATED FUELS ACT
OF 2000

REPORT

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

TO ACCOMPANY

S. 2962

TOGETHER WITH

ADDITIONAL AND MINORITY VIEWS

SEPTEMBER 28 (legislative day, SEPTEMBER 22), 2000.—Ordered to be
printed.

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FEDERAL REFORMULATED FUELS ACT OF 2000

SEPTEMBER 28 (legislative day, SEPTEMBER 22), 2000.—Ordered to be printed.

Mr. SMITH, of New Hampshire from the Committee on
Environment and Public Works, submitted the following

REPORT

[To accompany S. 2962]

together with

ADDITIONAL AND MINORITY VIEWS

The Committee on Environment and Public Works, to which was referred the bill (S. 2962) to amend the Clean Air Act to address problems concerning methyl tertiary butyl ether, and for other purposes, having considered the same, reports favorably thereon with an amendment and recommends that the bill, as amended, do pass.

GENERAL STATEMENT

The Reformulated Gasoline (RFG) program of the Clean Air Act (CAA), added to the law in 1990, required the use of oxygen-laden additives, called oxygenates, in RFG. To comply with this requirement, refiners have relied heavily on methyl tertiary butyl ether (MTBE). MTBE has also been used as an additive in conventional gasoline at lower concentrations since 1979.

MTBE was detected in ground water in a number of locations as early as the mid-1980's. This contamination was believed to be a minor, manageable problem until 1995, when MTBE was found in Santa Monica, California. MTBE contamination led to the closure of wells producing more than half of that city's daily water supply. Since that time, MTBE has been the focus of numerous State and Federal efforts to ban its use. Appendix I provides a list of State legislative activities regarding MTBE. Due to the fact that MTBE is used to satisfy a particular requirement in the CAA, eliminating

its use in gasoline will lead to related consequences for the environment, human health, the supply and cost of fuel, and the future of the industries involved in the manufacture and supply of oxygenates.

BACKGROUND

The Federal Reformulated Gasoline Program

The Clean Air Act Amendments of 1990 (CAAA) established the RFG program as a measure to reduce the growing impact of mobile source emissions on air quality in urban areas. The program requires gasoline in the nine nonattainment areas¹ with the highest ozone concentrations and a population over 250,000, to meet formula and performance standards that are stricter than standards for conventional gasoline. One additional area² was required to use RFG in June 1996 after being redesignated from serious to severe. Authority was given for other nonattainment areas to opt-in to the RFG program at the discretion of the Governor of a State³ Opt-in areas are required to use RFG for a period of at least 4 years. The extent of the opt-in authority recently has been challenged and explicitly limited by the DC Circuit Court of Appeals⁴ This legislation expands State authority to opt-in to the RFG program beyond the limits the Court found in existing law. Areas now using RFG represent approximately 30 percent of U.S. gasoline consumption.

The program set a variety of content and performance requirements, including a minimum content requirement for oxygen and maximum allowable benzene and heavy metal quantities in RFG. Through regulatory authority provided by the Act, EPA chose, in 1993, to adopt performance standards for toxic air pollutants and volatile organic compounds (VOCs) rather than the prescriptive fuels formula allowed under Section 211 (k)(3)(A). These performance standards required a 15 percent reduction in toxic air pollutants from baseline vehicles⁵ starting in 1995 and maintained through 1999, and require a 22 percent reduction from baseline vehicles beginning in 2000, as part of Phase II. Phase II also requires reductions in NOx and VOCs.

Motor vehicle emissions of carbon monoxide, volatile organic compounds, and most notably toxics have been drastically reduced in RFG areas. RFG use has allowed areas to exceed the statutory requirements to reduce toxic emissions, including emissions of ben-

¹ Los Angeles, California; San Diego, California; Hartford, Connecticut; New York, New York; Philadelphia, Pennsylvania; Chicago, Illinois; Baltimore, Maryland; Houston, Texas; and Milwaukee, Wisconsin. (See Appendix II).

² Sacramento, California.

³ States that opted-in areas to the RFG program include Arizona, Connecticut (entire State), Delaware (entire State), District of Columbia, Kentucky, Maine, Maryland, Massachusetts (entire State), Missouri, New Hampshire, New Jersey (entire State), New York, Pennsylvania, Rhode Island (entire State), Texas, Virginia. The Governors of Arizona, Maine, New York and Pennsylvania subsequently opted-out certain opt-in areas. See Appendix II for a complete list of RFG areas.

⁴ American Petroleum Institute v. Environmental Protection Agency, 198 F. 3d 275 (DC Cir. 2000). The Court agreed with API, saying that Congress did not grant EPA the authority to interpret the opt-in provisions in Section 211 (k)(6) of the Clean Air Act so as to allow areas that are not classified or are in attainment to adopt the Federal RFG program via application by a Governor. Only areas that are designated nonattainment for one of the specified classes of nonattainment (marginal, moderate, serious, extreme, and severe) are presently allowed to implement an RFG program.

⁵ Baseline vehicles and fuel technology assumptions in EPA's complex model date from 1990, despite significant advances in vehicle and fuel systems technology.

zene. This over-compliance is largely due to the dilution effect of the oxygenates MTBE and ethanol, relatively toxic-free additives. Although substantially toxic-free, MTBE is listed in Section 112 of the CAAA as a hazardous air pollutant due to its adverse effects on human health when inhaled. Recent data suggest that refiners have achieved a 27 percent or higher reduction in toxic air pollutants from the 1990 baseline. A 1998 study by the Northeast States for Coordinated Air Use Management (NESCAUM) concluded that Phase II RFG would reduce the public cancer risk by 20 percent.

On August 4, 2000, EPA released a proposed strategy to further reduce air toxics emissions from motor fuels as an effort to comply with its responsibility under Section 202 (1) of the Act to establish additional standards for fuels or vehicles to control hazardous air pollutant emissions. The strategy identifies 21 mobile source air toxics (MSATs), proposes a gasoline benzene control program to maintain the current levels of refiner over-compliance with RFG and anti-dumping requirements, and commits EPA to revisiting additional fuel and vehicle MSATs controls in a 2004 rulemaking. The deadline in the CAAA for issuance of these regulations was June 1995.

There is currently no specific deadline in the Act for EPA to further reduce toxic air pollutants from mobile sources. The Agency retains general authority to control emissions from motor vehicles of any air pollutant that causes or contributes to air pollution which may reasonably be anticipated to endanger public health or welfare. In a discussion focused on maintaining air toxics reductions from the RFG program, EPA's Blue Ribbon Panel on Oxygenates in Gasoline specifically recommended that "EPA should explore and implement mechanisms to achieve equivalent or improved public results that focus on reducing those compounds that pose the greatest risk."⁶ The Panel recognized that the current mass-based performance requirements in the RFG program may not adequately account for and consider that the different exhaust components pose differential risks to public health due in large part to their variable potency.

While the RFG program is considered a general success, experts acknowledge that there is some uncertainty in estimating the actual quantity of mobile source emissions. It is difficult to verify the emission reductions associated with the RFG program as distinct from other mobile source emission reduction programs. In May 2000, the National Research Council recommended that EPA make a number of improvements to the Mobile Source Emissions Factor model (MOBILE), including estimation of off-road vehicle emissions and incorporation of both mobile source toxic emissions and high-emitting vehicles.⁷ S. 2962 requires EPA to expedite resolution of the current MOBILE6 model and more regularly update MOBILE so that vehicle manufacturers, fuel makers, air quality planners, and Congress have accurate information.

⁶U.S. EPA. "Achieving Clean Air and Clean Water: The Report of the Blue Ribbon Panel on Oxygenates in Gasoline." (EPA420-R-99-021) Washington, DC: GPO, 1999.

⁷National Research Council. "Modeling Mobile-Source Emissions." Washington, DC: National Academy Press, May 2000.

Oxygenates

The CAAA required that 2 percent by weight of RFG be oxygen. This requirement was not included in this committee's reported version of S. 1630, the Clean Air Act Amendments of 1989. It was added on the Senate floor after vigorous debate and was the only successful floor amendment. Proponents of that requirement had expected ethanol to be the oxygenate of choice for fuel providers. It was not regarded as a mandate to use ethanol, however, even by its sponsors. During floor debate on the measure, Senator Daschle stated that the oxygen standard was "fuel neutral." Most refiners, blenders, and importers opted to use a cheaper and more readily available oxygenate, MTBE, in many nonattainment areas. MTBE currently is used in approximately 80 percent of RFG, while ethanol is used in slightly less than 20 percent of that fuel.

In late 1993, EPA issued final regulations implementing the RFG program. In 1994, EPA issued another set of final rules that revised the RFG program. The revisions included a requirement that renewable oxygenates be used to meet 30 percent of the 2 percent oxygen content requirement in RFG. The 1994 rules were challenged by the American Petroleum Institute and the National Petroleum Refiners Association. The DC Circuit Court of Appeals decided that EPA lacked the authority to impose the renewable requirement and vacated the 1994 rulemaking.⁸

Generally, the addition of oxygenates to gasoline allows for more complete fuel combustion and lowers emissions of ozone precursors. The oxygen content requirement formally took effect in 1995 and is currently satisfied by refiner use of either MTBE or ethanol. Today, approximately four billion gallons of MTBE and 380 million gallons of ethanol (EtOH) are consumed to meet this requirement. Most of the ethanol is produced and consumed in the Midwest region of the country, while MTBE use is concentrated in the Northeastern States, Texas and California. Approximately 3.5 percent of ethanol and 30 percent of MTBE is imported.

In addition to use in the RFG program, ethanol and MTBE are used to help reduce emissions in carbon monoxide (CO) nonattainment areas as part of the wintertime oxygenated fuels program, which began in 1992. Originally, 40 CO nonattainment areas were required to participate in this winter fuel program. Today 15 areas in ten States participate. Approximately 46 million gallons of MTBE and 240 million gallons of ethanol are used each year to satisfy the oxygenate requirement of this program.

Section 211 (k)(2)(B) of the CAA provides EPA the authority to waive the oxygen content requirement for RFG, in whole or in part, for an ozone nonattainment area upon the determination by the Administrator that compliance with the requirement would prevent or interfere with the attainment of a National Ambient Air Quality Standard (NAAQS). On April 12, 1999, California submitted to EPA a petition requesting such a waiver. The waiver request letter from Governor Gray Davis is attached in Appendix III. EPA has not acted upon this waiver application to date, and, although a decision is imminent, the outcome is expected to be litigated. A recent

⁸American Petroleum Institute v. Environmental Protection Agency, 52 F. 3d 1113 (DC Cir. 1995).

letter from EPA to Congressman Thomas J. Bliley, Chairman of the Committee on Commerce, U.S. House of Representatives, explaining the status of the effort to respond to the waiver request is attached in Appendix IV. In providing the States with access to this waiver authority on the condition of meeting a relatively stringent test, and under EPA's authority under Section 211 (c)(4), Congress sought to balance the desire for uniformity in our nation's fuel supply with the obligation to empower States to adopt measures necessary to meet national air quality standards.

Methyl Tertiary Butyl Ether and Water Quality

MTBE has been used nationwide at low levels in gasoline since 1979 to replace lead as an octane booster, or "anti-knocking" agent. It is a fuel additive containing oxygen manufactured from natural gas or petroleum sources. The use of MTBE greatly expanded due to the oxygen content requirement of the RFG program described above. Demand driven by the RFG program caused MTBE's share of the total national gasoline supply to grow from 1 percent in 1990 to the current 3 percent level. Most of that increase has been concentrated in the nonattainment areas of the Northeastern States, Texas, and California.

The success of the RFG program has been overshadowed in recent years by the discovery of MTBE in drinking water supplies. When leaked or spilled into the environment, MTBE can cause serious drinking water quality problems. MTBE moves quickly through ground and water without significant biodegradation or natural attenuation. Once in underground water supplies, MTBE can be detected by smell and taste at extremely low concentrations. Small amounts of MTBE can render water supplies undrinkable, but the precise human health effects of MTBE consumption at very low levels are unknown. In 1997, EPA issued a drinking water advisory that recommends an aesthetic limit of 20 to 40 parts per billion (ppb) and a health limit of 70 ppb. Many States have also established drinking water standards for MTBE, some of which are more stringent than EPA's advisory. A list of State standards is attached in Appendix V.

Currently, there are no comprehensive nationwide data on the extent of MTBE contamination. A few targeted studies have been conducted. In 2000, the U.S. Geological Survey completed a study that estimates up to 20 percent of the nation's drinking water supplies are at risk due to their proximity to underground fuel storage tanks. In 1998, Maine conducted a state-wide sampling that found 16 percent of tested wells contained some level of MTBE.

The major sources of MTBE contamination are leaking underground storage tanks. Many underground storage tanks have been or are currently being upgraded or replaced per a recent deadline under a long-standing EPA regulation. Questions remain, however, regarding the ability of refiners, distributors, and manufacturers of MTBE to ensure that fuel storage systems are completely sealed from the environment. Other sources of MTBE contamination are automobile and tanker truck accidents, leaks from above ground tanks, leaks from pipelines, two-stroke water craft engine releases, storm water runoff, fueling over-fills, and residential releases.

The EPA Blue Ribbon Panel recommended a suite of Federal, State, and local actions that could expedite remediation of MTBE contamination and protect water supplies from additional and future contamination. Cleanup is possible, but difficult and expensive. Contaminated water may be filtered, aerated, or bioremediated. MTBE may be pumped and treated or remediated in situ. All options require installation and use of special equipment as well as on-going operation and maintenance.

States and communities are seeking financial assistance for the cleanup of MTBE. Existing Federal and State programs are not fully funded.

Many States have enacted or are considering legislation to address MTBE contamination. Appendix I provides a complete list of all such State legislative activities. Legislation has been enacted to ban MTBE in several states including Arizona, California, Colorado, Connecticut, Michigan, Minnesota, and New York. EPA has started action to ban MTBE under the Toxic Substances Control Act, but this action could take years to complete. Both State and Federal efforts to ban MTBE continue to face questions regarding the limits of existing authority to ban a substance that is not yet proven to be hazardous to human health at anticipated levels of exposure.

The CAA allows neither EPA nor the States to prohibit a fuel or fuel additive unless “any emission product of such fuel or fuel additive causes, or contributes, to air pollution which may reasonably be anticipated to endanger the public health or welfare.” MTBE, as part of the RFG program, has provided air quality benefits, but its role in contaminating water is the main problem that mitigates in favor of a ban of MTBE use in gasoline.

Ethanol

Ethanol is used as an oxygenate in the RFG program and as an octane enhancer in conventional gasoline. Some of the physical and chemical properties of ethanol affect how it is used as a gasoline additive. The volatility of gasoline increases when blended with ethanol. Consequently, gasoline blendstocks that are prepared for blending with ethanol must undergo additional refinement in order to reduce volatility and comply with evaporative performance standards. Manufacturing such “sub-RVP blendstock” adds to the refiners’ costs of production.

Ethanol also is soluble in water. Since water is suspended in gasoline and is present in pipelines and storage tanks along the gasoline distribution system, ethanol blended with gasoline can lead to pools of ethanol and water separating from the gasoline. As a result, ethanol is blended at terminals and refinery racks as close as possible to the point of retail sale where it is delivered by truck. Often this involves filling a truck with gasoline and ethanol from separate tanks. The two fuels are then “splash-blended” by the motion of the truck as the truck drives to its destination. These factors create a need for additional infrastructure in order to distribute and blend ethanol into gasoline.

Ethanol consumption, as part of the nation’s total motor vehicle fuel use, is expected to increase as MTBE is banned by States and as a result of enactment of this legislation. This increase will, in

turn, affect the nation's fuel supply and distribution system, air quality, and water quality. The Administrator and the States will have to monitor carefully and, as appropriate, deal with these consequences using both existing authorities and those established in this legislation to prevent economic and environmental harm.

Ethanol can contribute to both increases and decreases of emissions of air pollutants. The increased volatility of ethanol blends of gasoline can lead to greater emissions of volatile organic chemicals that contribute to smog formation. It can also play a role in ozone formation in warm-weather conditions. On the other hand, ethanol is effective at reducing carbon monoxide emissions. Carbon monoxide is a pollutant regulated in cold-weather conditions because of its adverse health effects.

Adding ethanol to gasoline will displace benzene and other aromatics and can result in a reduction in emissions of those toxic compounds. Exhaust emissions of acetaldehyde can increase by as much as 100 percent when ethanol is blended at 5 percent volume of gasoline. Ethanol blends typically contain 10 percent ethanol as a result of tax incentives. Acetaldehyde can undergo photochemical reactions in the atmosphere to form peroxyacetyl nitrate (PAN). Acetaldehyde is classified as a probable human carcinogen. PAN is a respiratory irritant and has been shown to be mutagenic in cellular research. Further study is needed to determine if emissions of these substances pose significant health risks.

Ethanol will biodegrade more easily than other components of gasoline. Some laboratory data and modeling have indicated that this property can result in extending the plume of benzene, toluene, and xylene (BTEX) in leaks or spills or gasoline containing ethanol. The BTEX plume would not begin to biodegrade until the ethanol is depleted because the ethanol would consume all the oxygen available for biodegradation until it is completely broken down. This would allow more time for the BTEX plume to migrate in either soil or groundwater.

CHRONOLOGY

November 1990	.....	President George Bush signs S. 1630, the Clean Air Act Amendments of 1990. Public Law 101-549 added RFG program to the CAA and includes 2 percent oxygen requirement.
December 1993	.....	EPA promulgates final regulations to implement the RFG program.
June 1994	.....	EPA promulgates regulations to require 30 percent of the oxygen requirement in the RFG program be renewable oxygenates. The rule is challenged in the DC Circuit Court of Appeals and vacated by the Court in April 1995.
December 1994	.....	RFG is first sold.
May 1995	.....	United States Geological Survey reports detections of MTBE in groundwater in Denver, Colorado.
February 1996	.....	MTBE is detected in water supplies in Santa Monica, California. Seven of 11 municipal drinking water wells are closed eliminating more than half of the city's daily water production. Contamination levels range from 610 ppb to 230,000 ppb.
January 1997	.....	Monitoring program of water reservoirs begins in Southern California and leads to detections of MTBE concentrations as high as 29 ppb during the summer boating months.
December 1997	.....	U.S. EPA publishes a Drinking Water Advisory for MTBE that recommends an aesthetic limit of 20 to 40 ppb and a health limit of 70 ppb.

Spring 1998	Maine experiences three incidents of small gasoline spills that contaminate water supplies. In Standish, an automobile accident is linked to contamination of 24 private wells (10 contained MTBE levels in excess of 100 ppb). In Whitefield, a gasoline spill is the likely source of MTBE contamination of a well supplying water to a public elementary school with MTBE levels of 800 ppb. In Windham, surface spills and fuel over-fills at a convenience store, with up-dated double-walled tanks, contaminate nearby wells.
October 1998	Maine's request to opt-out of the RFG program is granted in Federal Register notice.
March 1999	California Governor Gray Davis issues Executive Order D-5-99 calling for a phase-out of MTBE use in California by December 2002.
April 1999	California Governor Gray Davis sends letter to EPA requesting a waiver from the oxygen mandate by making the claim that compliance with the use of oxygenated fuel contributes to air pollution and hampers the State's efforts to attain the NAAQS for ozone.
September 1999	EPA's Blue Ribbon Panel on Oxygenates in Gasoline issues its final report. Among its recommendations are the elimination of the 2 percent oxygen mandate, maintenance of toxic emission reductions achieved by the oxygen mandate, expanding available resources for treatment of water contaminated by MTBE, and a substantial reduction in the use of MTBE.
March 2000	Clinton Administration issues principles for elimination or phase down of MTBE use in fuels nationwide and increased use of renewable fuels. EPA initiates efforts to ban MTBE under the Toxic Substances Control Act.
May 2000	Article is published in Environmental Science and Technology—the U.S. Geological Survey determined that 9000 wells in 31 surveyed States are at risk of gasoline contamination due to proximity to leaking underground storage tanks. Sampling was not done to determine actual MTBE contamination.
May 2000	New York Governor George Pataki signs legislation banning the use of MTBE in gasoline within 3 years.

OBJECTIVES OF THE LEGISLATION

The bill provides Governors the authority to waive the mandate that RFG contain 2 percent oxygen by weight. In States where that waiver is exercised, the bill provides additional toxic emission performance standards and aromatic content requirements.

The bill eliminates use of MTBE in gasoline within 4 years. It also provides authority to the Administrator to limit or eliminate use of fuels or fuel additives that cause or contribute to water pollution.

The bill grants authority to States to amend State Implementation Plans (SIP) to prohibit application of the Reid Vapor Pressure (RVP) waiver for ethanol blends.

The bill makes mandatory the Administrator's existing discretionary authority to require studies of fuels and fuel additives.

The bill creates a program that reserves an increasing portion of the total motor vehicle fuel pool consumed for fuel that 1) reduces pollution relative to conventional fuel usage and 2) displaces some petroleum consumption. Compliance with this program occurs within the context of a market-based credit trading system. This program requires each refiner to demonstrate compliance either through the acquisition and retirement of credits generated by the manufacture and sale of clean vehicles or by blending ethanol into the fuel it produces.

The bill provides explicit authority for States to opt-in nonclassified areas to the RFG program.

The bill provides a one-time authorization of \$200 million from the Leaking Underground Storage Tank Trust Fund to conduct corrective action with respect to MTBE.

The bill authorizes \$200 million over 6 years from the LUST Trust Fund for EPA and States to conduct inspections, issue orders, or bring actions under Subtitle I of the Solid Waste Disposal Act.

The bill requires a pair of analyses of vehicle fuel changes and authorizes additional regulatory actions if warranted by the underlying analyses to ensure protection of human health and the environment.

SECTION-BY-SECTION SUMMARY

SECTION 1. SHORT TITLE

The bill is entitled “The Federal Reformulated Fuels Act.”

SEC. 2. WAIVER OF OXYGEN CONTENT REQUIREMENT FOR REFORMULATED GASOLINE

Summary

Section 211 (k)(2) of current law requires RFG to contain 2 percent oxygen by weight. That section also places other formula and performance requirements on gasoline to be sold as RFG. Section 2 of S. 2962 allows Governors to waive the oxygen content requirement and establishes additional performance standards for RFG sold in States that exercise the waiver.

Discussion

The bill allows Governors 90 days from enactment to waive the oxygen requirements in Section 211 (k)(2) for RFG sold or dispensed within the State. The Governor must notify the Administrator of the waiver. States that opt-in to the program, including opt-in areas, are allowed to waive the oxygen requirement as part of the opt-in application. States with areas that are required to use RFG as a result of a reclassification are permitted 90 days from reclassification to waive the oxygen requirement. This relatively brief period of 90 days for a decision by a Governor is included to provide refiners with ample opportunity to comply with changes in the RFG requirements described below before the sale of a revised formula of RFG is scheduled to start.

Gasoline sold in areas that have waived the oxygen mandate will be required to meet all other RFG requirements. Additionally, gasoline sold in those areas must maintain toxics reductions and aromatic content achieved in areas that used MTBE prior to waiving the oxygen mandate. EPA is required to establish by regulation a new toxics performance standard based on the annual aggregate reductions in emissions of toxic pollutants in the years 1998 and 1999. A new formula requirement for aromatic content will be established based on data from the 2 years with the lowest content averages of the years 1998, 1999, and 2000. The new standards will be based on compliance survey data, annual aggregate reduction in toxic emissions, and annual average aromatic content of RFG containing MTBE. An upper bound for aromatic content will be determined based on the 10 percent of RFG that has been blended with MTBE and has contained the greatest volume of aromatic content.

If the Administrator does not promulgate regulations establishing new performance standards based on this data within 270 days of enactment of S. 2962, statutory performance standards become effective for both emissions of toxic air pollutants and aromatic content of gasoline in RFG areas in States for which the oxygen mandate has been waived by the Governor. The statutory performance standard for emissions of toxic air pollutants is 27.5 percent below aggregate emissions of toxic air pollutants from baseline vehicles using baseline gasoline. The statutory performance standard for aromatic content is an annual average not to exceed 26 percent by volume with a per gallon maximum of 45 percent. An alternative statutory performance standard for aromatic content requires that no gallon exceed 30 percent aromatic content by volume. Refiners and gasoline suppliers would be able to choose the standard with which its products will comply.

The statutory performance standards could be revised by promulgation of regulations based on the data resources described above. The bill does not restrict the Administrator's authority to promulgate more stringent requirements under Section 202 (l) of current law.

The new performance standards will be applied on an annual average importer or refinery-by-refinery basis to all gasoline sold in a State for which the Governor waives the oxygen mandate. Credits for exceeding the performance standard will be provided by the Administrator in the same manner as credits provided under Section 211 (k)(3). The Administrator must ensure that the granting or transfer of credits for use in meeting toxics performance standards will not result in higher average aggregate emissions of toxic air pollutants for the nonattainment area in which such credits are used than would occur in the absence of using such credits. The performance standards will not apply in a State, such as California, which has authority to regulate motor vehicles under Section 209 (b).

The provisions regarding performance standards for toxic emissions and aromatic content will prevent backsliding that could result from changes in refinery product use or processes spurred by waivers of the oxygen mandate. The arbitrary 2 percent oxygen content mandate requires refiners to use more oxygenates than would be necessary to meet the other performance or content standards in Section 211 (k) of current law. Refiners could respond to waivers of the oxygen mandate by shifting to other high-octane components such as aromatics or alkylates. These substitutes can lead to increased emissions of toxic air pollutants, including benzene.

EPA should expeditiously issue a final decision in response to the auto industry's January 1999 petition to limit the Distillation Index of gasoline to no greater than 1200 degrees Fahrenheit. Consideration of such a limit becomes more important as additional, and more volatile, ethanol increases in use.

SEC. 3. AUTHORITY FOR WATER QUALITY PROTECTION FROM FUELS

Summary

This section provides the Administrator with new authority to address water pollution caused by the use of motor fuel or fuel additives. It also eliminates the use of MTBE in gasoline within 4 years.

Discussion

Section 211 (c) of the CAA allows EPA to regulate fuel and fuel additives that cause or contribute to air pollution. Section 3 of this bill expands current law to allow the Administrator to control fuels and fuel additives that are shown to cause or contribute to water pollution which may reasonably be anticipated to endanger the public health or welfare.

Section 3 creates a ban on the use of MTBE that shall be effective not later than 4 years after enactment of S. 2962. No regulatory action is required to effect the elimination of MTBE. The Administrator is authorized to establish by regulation a schedule to phaseout the use of MTBE in gasoline. Use of this authority is not mandated by the bill. The regulatory authority does not allow any use of MTBE in gasoline beyond the 4 years after enactment of S. 2962.

A savings clause in Section 3 makes clear that nothing in S. 2962 can be read to limit existing authority of States to prohibit or control the use of MTBE. Additionally, the bill does not grant new State authority outside of that available to States acting in accordance with Section 209 of the CAA.

SEC. 4. EXCLUSION FROM REID VAPOR PRESSURE REQUIREMENT

Summary

Section 4 provides State authority to prevent the application of the RVP waiver provided by Section 211 (h)(4) for ethanol blends of conventional gasoline. Using the authority provided by Section 4, a State can revise its SIP to exclude any area from a 211 (h)(4) waiver. The Administrator could approve a SIP revised to prohibit the application of an ethanol RVP waiver if the State can demonstrate that application of the waiver significantly interfered with attainment or maintenance of the NAAQS for ozone.

Discussion

Blending ethanol with gasoline increases the RVP, a measure of volatility, of gasoline. Under certain conditions gasoline with a higher RVP will lead to increased evaporative emissions of hydrocarbons that can exacerbate air quality problems unless the base gasoline has been refined sufficiently to accommodate the addition of ethanol. Manufacturing such a “sub-RVP blendstock” adds to the refiners’ costs of production. Many factors interact to increase or reduce the probability of a higher RVP fuel leading to a reduction in air quality. Under current law, RVP limits are either required or recommended for most of the fuel sold in the nation.

Since Section 2 and Section 6 of S. 2962 are likely to result in significant increases in ethanol consumption over time in attain-

ment and nonattainment areas, the expanded authority in this section is necessary to provide States with the means to prevent any related increase in VOC emissions.

A State could use the authority in this section to demonstrate that circumstances present in an area of the State cause ethanol fuel blends, subject to the 211 (h)(4) waiver, to interfere with efforts to attain or maintain the ozone NAAQS. Based on such a demonstration, a revised SIP, once approved, would prohibit the application of the waiver in 211 (h)(4). This criteria for SIP approval is intended to be less stringent than the criteria currently found in Section 211 (c)(4)(c), e.g., a State would not need to show that no other reasonable or practicable means exist to bring about timely attainment.

SEC. 5. PUBLIC HEALTH AND ENVIRONMENTAL IMPACTS OF FUELS AND FUEL ADDITIVES

Summary

The bill directs the Administrator to require tests to determine potential public health effects of fuels or fuel additives prior to registering the fuel or fuel additive for use. Studies under this provision will be conducted on a regular basis.

Discussion

The existing law allows the Administrator to require fuel producers to conduct tests to determine the health and environmental effects of new fuels and fuel additives. This provision makes such testing mandatory prior to registration and use.

The Administrator should use this authority to identify and assess any adverse public health, welfare, or environmental effects from the use of motor vehicle fuels or fuel additives or the combustion products of such fuels or fuel additives. The Administrator should use the authority to assess threats to both air pollution and water pollution in order to effectively exercise the authority in Section 211 (c) as amended by this legislation. This provision is intended to prevent situations such as the one presented by MTBE contamination of water supplies from recurring.

To avoid such recurrences, the Blue Ribbon Panel on Oxygenates in Gasoline recommended that EPA and others accelerate ongoing research efforts into the inhalation and ingestion health effects, air emission transformation byproducts, and environmental behavior of all oxygenates and other components likely to increase in the absence of MTBE. This should include research on ethanol, alkylates, and aromatics, as well as on gasoline compositions containing those components.

EPA has provided a list of fuel and fuel additive testing which is now underway, pursuant to Section 211 requirements, and which the Agency has indicated is responsive to the Blue Ribbon Panel recommendations. See Appendix VI for the list of on-going studies. This testing is designed to provide specific information on MTBE and five other oxygenates as well as conventional gasoline containing typical gasoline components that would substitute for oxygenates.

SEC. 6. CLEAN ALTERNATIVE FUEL PROGRAM

Summary

Section 6 creates a program that reserves an increasing portion of the total motor vehicle fuel pool consumed for fuel that 1) reduces pollution relative to conventional fuel usage and 2) displaces some petroleum consumption. Compliance with this program occurs in the context of a market-based credit program. Each fuel supplier has the option of blending a quantity of renewable fuel into the fuel it sells, purchasing and using credits generated by the manufacture and sale of zero-emission or “super ultra-low” emission vehicles, or a combination of both. The Administrator may also provide for transfer of credit generated by renewable fuel use above levels required by this bill.

This section provides that motor vehicle fuel sold beginning in 2008 shall, on a 6-month average basis, be comprised of a quantity of clean alternative fuel. Measured in gasoline equivalent gallons, the percentage shall be 1.2 in 2008 and increase by 0.1 percent each year to reach 1.5 for 2011 and thereafter.

Section 6 creates a transition program for the period after enactment of S. 2962 and prior to commencement of the Clean Alternative Fuel program (2002–2007). During this period motor vehicle fuel sold shall contain a quantity of renewable fuel. The applicable percentage of renewable fuel shall be 0.6 in 2002 and increase by 0.1 percent each year to reach 1.1 percent in 2007. Credits that qualify for use in the Clean Alternative Fuel program could be used in the transition period to satisfy not more than 10 percent of the applicable percentage of renewable fuel.

This section provides a waiver from the requirements of the Clean Alternative Fuel program and the transition program upon a petition by one or more States, if the Administrator, after consultation with the Secretary of Energy and the Secretary of Agriculture, determines that those requirements would severely harm the economy or environment of a State, region, or the United States, or that there is an inadequate domestic supply or distribution capacity to meet those requirements.

Discussion

Section 6 establishes a marketplace for competition between alternate methods of satisfying the requirements of the program. Competitors are given access to the market only on the basis of manufacturing and selling vehicles that emit very little or no air pollutants. Those vehicle sales generate credits based on the extent that the vehicles minimize the reliance on petroleum as a fuel source. Credits generated in this manner could be bought and sold, or otherwise transferred. Credits could be acquired and used to satisfy a petroleum company’s obligation under the Clean Alternative Fuel program. A petroleum company could also satisfy its obligations by selling fuel that contains or is comprised of a quantity of renewable fuel, including ethanol, sufficient to satisfy the applicable percentage of clean alternative fuel, and generate credits if it exceeds the applicable percentage. Section 6 does not require any demonstration that the use of renewable fuels, including ethanol, would significantly reduce either the emissions of air pollutants or

the use of petroleum. Additional study is needed to identify the extent and circumstances under which renewable fuel might contribute to these goals.

For the purpose of this section, renewable fuel is defined to mean a motor vehicle fuel produced from grain, starch, oilseeds, or other biomass, or is a natural gas from a biogas source, and is used to replace or reduce the quantity of fossil fuel present in a fuel mixture used to operate a motor vehicle.

The Administrator shall issue a regulation governing the generation of credits by a vehicle manufacturer that could be used to satisfy the applicable percentages of clean alternative fuel and renewable fuel in this section. Credits will be calculated primarily upon the vehicle's expected lifetime displacement of petroleum consumption. In establishing the credits, the Administrator may give consideration to the use of innovative, advanced, and alternative fuel technologies.

The credits generated will be a monetizable asset created by the manufacture and sale of a vehicle that meets the Bin 1 or Bin 2 definitions in this section. A Bin 1 vehicle is a light-duty motor vehicle that emits no air pollutants or a heavy-duty motor vehicle that meets equivalent standards as determined by the Administrator by regulation. A Bin 2 vehicle is a light-duty motor vehicle that does not exceed the standards for the category of motor vehicle with the least emissions of any vehicle with an emissions profile. A Bin 2 vehicle is also a heavy duty motor vehicle that emits not more than 50 percent of the allowable emissions of air pollutants under the most stringent standards applicable to heavy duty motor vehicles in the year the credit is generated. The term "most stringent standards applicable" includes the vehicle emissions standards for heavy duty engines approved by the United States District Court for the District of Columbia in consent orders settling litigation between the U.S. Department of Justice, EPA, and several heavy duty diesel engine manufacturers.

The proceeds of the sale of credits could, but are not required to, be used to reduce or offset the costs associated with the production, promotion, or sale of the vehicles that meet the definitions in Section 6. A person that generates credits may use the credits or transfer all or a portion of the credits to another person. Credits, or proceeds from the sale or transfer of credits, may be transferred to a person, nonprofit entity, or local government to provide any portion of the non-Federal share required for an alternative fuel project under the Congestion Mitigation and Air Quality Improvement (CMAQ) program (Section 149 (e)(4) of title 23 U.S.C.) or a voluntary supply commitment under the Clean Cities program authorized in the Energy Policy Act of 1992 (42 U.S.C. 13255). In the case of CMAQ, credits may be transferred directly from the manufacturer to the Federal Government, and their market value would correspondingly reduce the local match requirements for alternative fuel projects.

Section 6 provides for petitions singly or jointly by States to the Administrator to waive the applicable percentages in whole or in part. Waiver petitions will be evaluated on the basis of a demonstration that the applicable percentages would severely harm the economy or environment of a State, a region, or the United States,

or a demonstration of an inadequate domestic supply or distribution capacity to meet the requirements of this section.

The waiver authority of the bill should be exercised to avoid the use of ethanol in cases when it would cause substantial harm to the environment. While ethanol can provide important environmental benefits, it can also have environmental drawbacks. For example, in certain areas of the country, ethanol use can complicate reduction of summertime ozone. Some tests indicate that ethanol use may increase tailpipe emissions of nitrogen oxides. Similarly, because ethanol is only produced in certain regions of the country, some states may experience supply dislocations. These dislocations should be avoided through use of the waiver authority.

If any petitions are granted, the Administrator, after consultation with the Secretary of Agriculture and the Secretary of Energy, shall reduce the applicable national percentage accordingly. The Administrator, and other relevant agencies, should collect and maintain accurate data on fuel price and supply, fuel related emission inventories, and ozone and particulate matter formation from changes in fuel use in order to act on any waiver requests in a timely fashion.

Based on data in the Administration's analyses provided at the committee's request, industry projections, and staff discussions with EPA and California Air Resources Board (CARB), ethanol consumption in motor vehicle fuel could nearly triple from today's levels by 2011 under S. 2962. This increase may be less due to the generation and use of credits from the manufacture and sale of extremely clean, alternative fuel vehicles. The Administration's analyses, including a separate base case scenario completed by the Department of Energy, are attached in Appendix VII.

The significant changes in the nation's motor fuel supply system contemplated by the bill are likely to affect gasoline cost no later than 2003. There is no existing model of the national fuel supply system that can adequately and accurately account for all the variables involved in projecting such cost effects. Still, available estimates of the average gasoline cost impact of increasing ethanol use, employing the flexible approach to market growth in this bill, indicate an additional 3-5 cents per gallon by the year 2005 is probable. Should the bill not be enacted, multiple States ban MTBE, and the oxygen content requirement is not made optional, the Administration's analysis suggests that gasoline could be as much as 7-8 cents per gallon more in 2005 than is otherwise expected. A graphic representation of these cost effects is included in Appendix VIII. The aforementioned Administration's analyses also include projections of total ethanol demand under various probable scenarios.

Current ethanol use reduces contributions into the Highway Trust Fund by approximately \$1 billion annually. This reduction is due to the 5.4 cent exemption that ethanol, of a 10 percent fuel blend, receives from the 18.4 cents per gallon Federal excise tax imposed on gasoline and the diversion of 3.1 cents of the excise tax collected on ethanol fuels to general revenue. The 5.4 cent exemption diminishes to 5.1 cents over the next 6 years, then expires in 2007.

This legislation is likely to increase ethanol consumption and will therefore reduce contributions into the Highway Trust Fund accordingly, assuming no change in tax law. Based on informal Administration projections, this legislation will first result in an observable increase in on-road consumption of ethanol in 2004. This increase will have an effect on the apportionments and allocations of state obligation authority beginning in 2006, given existing Federal Highway financing methods. The Transportation Equity Act for the 21st Century (TEA-21) is due to be reauthorized by the end of 2003, so this committee and Congress will need to address the impacts on the Highway Trust Fund created by the changing fuel system prior to that time.

The adverse impact of this tax exemption on the Highway Trust Fund has been a topic of committee hearings and was debated during committee action on this legislation. The committee expects the General Accounting Office and the U.S. Department of Transportation to provide additional data on the impacts of this bill prior to the expiration of TEA-21.

The bill does not provide a market guarantee for any specific fuel, given the waiver opportunities incorporated herein for economic and environmental harm and the open competition for the fuel requirements starting in 2008. The Administrator, in cooperation with other relevant agencies within the executive branch and after consulting with interested members of the public and the appropriate industries, should estimate annually the number of vehicles meeting the definitions under this bill which may be manufactured in the near future and the quantity of credits that would be thereby generated and available for sale or transfer. Such estimates will enhance competition and assist refiners in meeting the fuel requirements imposed by this legislation in an informed manner.

SEC. 7. ADDITIONAL OPT-IN AREAS UNDER REFORMULATED GASOLINE PROGRAM

Summary

This section of the bill provides explicit authority to States that allows nonclassified areas to opt-in to the RFG program.

Discussion

Currently, 17 States and the District of Columbia rely on the RFG program as an emissions control strategy. Appendix II provides a complete list of all RFG areas. The CAAA mandated use of RFG in nine areas⁹ One additional area¹⁰ was required to sell RFG beginning in June 1996 after being redesignated from serious to severe. Several States¹¹ have exercised the opt-in authority of Section 211 (k)(6) to require the use of RFG. Opt-in areas are re-

⁹ Los Angeles, California; San Diego, California; Hartford, Connecticut; New York, New York; Philadelphia, Pennsylvania; Chicago, Illinois; Baltimore, Maryland; Houston, Texas; and Milwaukee, Wisconsin.

¹⁰ Sacramento, California.

¹¹ States that opted-in to the RFG program include Connecticut (entire State), Delaware (entire State), District of Columbia, Kentucky, Maryland, Massachusetts (entire State), Missouri, New Hampshire, New Jersey (entire State), New York, Rhode Island (entire State), Texas, Virginia. The Governors of Arizona, Maine, New York and Pennsylvania opted-out certain opt-in areas.

quired to use RFG for a period of at least 4 years. The Act limits opt-in actions to areas that previously violated the 1-hour ozone NAAQS and are classified according to their current status in relation to attainment of the NAAQS. States expend considerable resources in an effort to avoid violating the NAAQS because of the stringent requirements imposed on nonattainment areas by the CAA. This section allows use of the RFG program for those areas that seek to use it as an emissions control technique in the State's strategy for avoiding new violations of the NAAQS. Under this provision, once the SIP revision is approved the area will be a covered area under the Federal program. The SIP revision may include a waiver of the oxygen content requirement under Section 2 of this bill.

SEC. 8. LEAKING UNDERGROUND STORAGE TANKS

Summary

The bill authorizes appropriations not to exceed \$200 million from the Leaking Underground Storage Tank (LUST) Trust Fund to be used for cleanup and treatment of MTBE. The bill also authorizes \$200 million over 6 years from the LUST Trust Fund for EPA and States to conduct inspections, issue orders, or bring actions under Subtitle I of the Solid Waste Disposal Act.

Discussion

In 1984, Congress enacted, as Subtitle I of the Solid Waste Disposal Act, a comprehensive program to address the problem of leaking underground storage tanks. Among other things, the program required EPA to develop leak detection and prevention standards for underground storage tanks (USTs), and authorized the Agency to compel tank owners and operators to take corrective action to clean up leaking tanks and comply with standards for USTs, or to close them. States have largely taken the lead in implementing and enforcing the program requirements, including corrective action requirements.

States receive Federal funds from the LUST Trust Fund, which is paid for by a one-tenth of one cent tax on all petroleum products, to carry out the requirements. This tax generates approximately \$170 million per year, and the interest on the principal in the fund generates approximately \$70 million annually (roughly the amount of annual appropriations from the LUST Trust Fund). Amounts are appropriated each year from the Trust Fund for the States and EPA to implement and enforce the UST corrective action requirements; to conduct cleanups in certain limited situations where there is no financially viable responsible party or where a responsible party fails to undertake the appropriate corrective action; to take corrective action in cases of emergency; and to bring cost recovery actions against parties to seek reimbursement of costs expended from the Fund to clean up sites. The balance of the trust fund is approximately \$1.3 billion. The annual appropriation from the LUST Trust Fund for fiscal year 2001 is expected to be approximately \$72 million. Congress has appropriated approximately \$10 million per year from general revenues for State implementation of leak prevention and detection programs. In addition to the

Federal LUST Trust Fund, many States have also established funds, capitalized through State gas taxes, fees, and other mechanisms, to pay for cleanups and to provide assistance to tank owners in complying with other requirements. States spend approximately \$1 billion per year from their trust funds. However, in recent years, the claims against those funds have risen dramatically.

While over a million leaking USTs have been closed under this program, EPA estimates that there are currently over 740,000 active USTs containing petroleum products. Some of these tanks have leaks, causing potential harm to human health and the environment. A number of recent, high profile contamination cases have highlighted the problem. MTBE has been detected at thousands of leaking UST sites. In some cases, drinking water wells have been closed due to these releases of MTBE. According to EPA, States have reported more than 400,000 confirmed releases from USTs. Cleanups have been initiated for approximately 357,000 releases and almost 242,000 cleanups have been completed. In spite of this progress, many thousands of cleanups remain to be completed. EPA, States, and the private sector have suggested that lack of resources, both for cleanup and for inspections and enforcement, have limited efforts to fully address MTBE contamination and leaking USTs. Section 8 of this bill addresses these concerns.

Section 8(a) reconfirms the authority of the Administrator and the States to use funds from the LUST Trust Fund for the cleanup of sites contaminated by MTBE from leaking USTs. In addition, Section 8(a) authorizes the Administrator and the States to conduct such cleanup activities using specifically designated funds made available under new Section 9011(a) from the LUST Trust Fund. In order to undertake a corrective action under this subsection, the Administrator or a State must still comply with the requirements of Section 9003 (h)(2) of the Solid Waste Disposal Act. States are to exercise this authority in accordance with their cooperative agreements.

Because MTBE can be detected in groundwater at relatively low levels, which in turn makes the water unpalatable, but not necessarily harmful, for drinking water purposes, this section amends Section 9003 of the Solid Waste Disposal Act to clarify that the Administrator and the States may undertake corrective actions whenever the presence of MTBE in groundwater presents a threat to public welfare. This clarification is intended to reaffirm the authority of the Administrator and States to undertake corrective actions with respect to release of MTBE to groundwater, even in situations where the level of MTBE is not so high as to present a threat to human health.

Section 8(b) amends Subtitle I of the Solid Waste Disposal Act by creating a new Section 9010 giving States greater flexibility in their use of LUST Trust funds. New Section 9010 authorizes EPA and the States to use funds appropriated from the LUST Fund to conduct inspections, issue orders, or bring actions under Subtitle I. This increased funding for inspections and enforcement-related activities will enable States and EPA to secure greater compliance which, in turn, will avoid future releases and resulting cleanup costs. It will also help protect human health and the environment. Funding authorized under this section is for both formal enforce-

ment actions, such as judicial actions and administrative orders, and related measures to secure compliance, such as notices of violation or warnings. In addition, funds authorized under this provision may be used for cost recovery.

This section is not intended to change current law on State authority under authorized programs or Federal authority to enforce the requirements of Subtitle I. Nor does this provision affect EPA's authority to use other funds to enforce the UST program. EPA receives funding from sources other than the LUST Trust Fund to undertake inspection and enforcement related activities for leak detection and other preventive requirements. Any LUST Trust Fund appropriations used for such enforcement activities by EPA are expected to supplement funds that the Agency has been, and will be, receiving from sources other than the LUST Trust Fund.

In addition to authorizing funding for States and EPA for federally authorized programs, this section authorizes States to use funds to undertake inspection and enforcement related actions for State tank leak detection, prevention and other requirements through State programs where requirements are similar or identical to Subtitle I. State agencies currently receive funding from EPA from sources other than the LUST Trust Fund to undertake such activities for leak detection and other preventive requirements. It is expected that States will continue to receive funding from EPA from these other sources, as well as from the LUST Trust Fund, for these activities. Any LUST Trust Fund appropriations used for enforcement related activities by States should supplement funds that the States have been receiving, and will continue to receive, through grants authorized under Section 2007 (f).

Section 8(b) also creates a new Section 9011 to increase the levels of authorized funding for measures related to corrective actions and enforcement. This section authorizes appropriations for two major and equally important activities—to fund an immediate need to address MTBE which is currently coming from leaking underground tanks and is creating problems in numerous drinking water wells, and to facilitate inspection and enforcement activities to avoid similar problems being created in the future. Section 9011 (1) authorizes a one-time appropriation of \$200 million for corrective actions with respect to MTBE. The bill authorizes substantial funding to clean up MTBE contamination in recognition of the fact that this problem has arisen, in part, as a result of increased use of MTBE by refiners in an effort to meet Federal oxygenate requirements. Section 9011 (2) authorizes an additional \$200 million over the period between fiscal years 2001 through 2006 to conduct inspections, or issue orders or bring actions under Subtitle I. There is broad consensus that more resources are needed to conduct inspections to ensure that underground tanks comply with applicable regulations and to ensure early detection of leaks and other problems. EPA has estimated that it would cost approximately \$93 million over what is currently appropriated for the first year, and \$70 million each year thereafter, to inspect facilities on an annual basis. A biannual inspection schedule would cost approximately \$63 million over what is currently appropriated for the first 2 years combined, and \$20 million additional annually thereafter.

SEC. 9. ANALYSES OF MOTOR VEHICLE FUEL CHANGES AND
ADDITIONAL PERFORMANCE REQUIREMENTS

Summary

Section 9 requires the Administrator to publish an analysis of the changes in emissions of air pollutants and air quality due to the implementation of the provisions in S. 2962. The analysis will examine changes in all motor vehicle fuels and fuel additives and will attempt to identify and quantify any increase in emissions or air pollution caused by implementing this bill. A draft analysis will be published within 4 years of enactment, and a final analysis will be published within 5 years of enactment. The Administrator should include in the analysis consideration of direct and evaporative emissions from the use of these fuels and fuel additives, as well as combustion by-products, in on-road and off-road vehicles.

S. 2962 directs the Administrator to promulgate regulations to establish performance requirements to address any significant changes in motor vehicle emissions or air quality from a baseline period of 1998 through 2000. The regulations are required to ensure that, as compared with emissions in the baseline period, emissions from motor vehicle fuel or fuel additives will not be significantly greater on a per gallon average basis in any region or cause air quality to be significantly worse in any region. A more than de minimus increase in contribution to any criteria or toxic air pollutant is presumed to worsen air quality unless the Administrator determines that other factors ameliorate the effect of such increases.

Section 9 also requires analysis of the mobile source title of the CAA and regulations promulgated based on authority in that title, including changes made to that title by S. 2962. The analysis will be of the effects on public health and the environment of motor vehicle fuel and fuel additives. A draft analysis will be published within 7 years of enactment of S. 2962. A final analysis will be published within 8 years of enactment of S. 2962.

Section 9 directs the Administrator to promulgate additional performance requirements within 10 years of enactment of S. 2962. The additional requirements will apply to motor vehicle fuel and fuel additives, to their use, and to motor vehicles. Additional requirements will be promulgated both to ensure adequate protection of human health and the environment and to achieve specific reductions in the use of compounds or emission products that pose the greatest risk to human health. In determining the effects of motor fuel and fuel additives on public health and the environment, the analyses in Section 9 will be required to take into account the entire life cycle of the production, distribution, and use of motor vehicle fuel and fuel additives.

Section 9 requires the Administrator to develop and finalize an emissions model that reasonably reflects the effects of characteristics or components of motor vehicle fuel or emissions from vehicles in the motor vehicle fleet during calendar year 2005.

Discussion

Section 211 (c) of the CAA, as amended by Section 3 (a)(1) and (2) of this legislation, provides the Administrator with the authority to regulate, control, or prohibit the manufacture, introduction

into commerce, offering for sale or sale of any fuel or fuel additive, if, in the judgment of the Administrator, any fuel or fuel additive or emission product causes or contributes to air pollution or water pollution that may reasonably be anticipated to endanger the public health or welfare. The bill requires the Administrator to exercise this authority and interprets a “significant worsening of air quality or a significant increase in emissions” as a circumstance that would “reasonably be anticipated to endanger the public health or welfare.” The bill also adds “water quality” as an environmental protection criterion in Title II of the Act.

Section 202 (a) of the CAA requires the Administrator to prescribe by regulation standards applicable to the emissions of any air pollutant from any class of motor vehicles which, in the Administrator’s judgment, causes or contributes to air pollution which may reasonably be anticipated to endanger public health or welfare. Such regulation provides for time for the appropriate technology development, giving consideration to the cost of compliance. The bill requires the Administrator to exercise this authority and interprets “adequate protection of public health and the environment” as a charge substantially similar to the Act’s protection of “public health or welfare.”

In addition, Section 202 (l) requires the Administrator to exercise the authorities in Sections 211 (c) and 202 (a) and to promulgate, and from time to time revise, regulations containing reasonable requirements to control hazardous air pollutants from motor vehicles and fuels. The regulations must reflect the greatest degree of reductions achievable, considering cost and projected available technology, and must focus on those categories of emissions that pose the greatest risk to human health or about which significant uncertainties remain.

The emissions model currently used by EPA to determine compliance in both the RFG and conventional anti-dumping gasoline programs is called the complex model. It uses 1990 average gasoline quality and 1990 model year motor vehicle technology as its baseline, and models how changes in gasoline qualities change emissions of these vehicles compared to 1990 gasoline. For purposes of this provision, EPA is authorized to update its complex model to address changes in motor vehicle technology since 1990. The motor vehicle fleet in calendar year 2005 will be different from model year 1990 vehicles. The updated model is expected to contain a mix of technologies with, for example, the newer Tier 2 technology entering the fleet.

Developing an emissions model that reflects the actual mix of motor vehicle technologies in the fleet during calendar year 2005 allows EPA to reasonably determine the change in emissions between 1998–9 and 2005–6 due to changes in gasoline, as the 2005 calendar year fleet should still contain the kinds of technologies found in the prior years, although with a different mix of technologies. EPA should work with a consortium of the automobile and oil industries and other interested and qualified parties to design and conduct the extensive vehicle and fuel combination testing that will be necessary to update the complex model, as was done in developing the current complex model.

Once EPA has developed this updated complex model, it may be useful for other related applications, such as emissions modeling for State planning. Under this provision, EPA also has the discretion to use the updated model in the RFG and conventional gasoline programs, including future RFG rulemakings, where doing so would not be inconsistent with the provisions of Section 211 (k).

APPENDIX I

STATE LEGISLATION ON MTBE ADDITIVES IN REFORMULATED GASOLINE

Arizona	FINAL ACTION. Arizona will ban the MTBE no later than 180 days after California completes its phaseout of MTBE on December 31, 2002, according to Senate Bill 1504 (HB 2386), which was recently approved by the Governor.
California	FINAL ACTIONS. <ul style="list-style-type: none"> • In March 1999, California became the first State to officially ban MTBE when Governor Gray Davis issued an executive order for a three-year phase out of the gasoline additive. • California SB 989 codified the Governor's executive order for the phase-out of MTBE. The legislature also required that refiners submit quarterly reports to detail the amount of MTBE used in gasoline and how the amount compares to last year's use. • MTBE has shown up in hundreds more underground fuel links in and water quality experts have raised their estimate of the number of MTBE spills from 4,500 to nearly 6,600, a nearly 32 percent increase over the past year.
Colorado	FINAL ACTION. Colorado's Governor recently signed SB 190 into law, which mandates a phasing out of MTBE by April 30, 2002. In areas where MTBE is not currently sold or stored which includes Denver and the rest of the Front Range of the Rocky Mountains the additive will be banned immediately.
Connecticut	FINAL ACTION. SB 571 (signed by Governor 6/1/2000) will phase out the use of MTBE as a gasoline additive over a five-year period, and increase penalties for the unlawful discharge of gasoline.
Delaware	The legislature is studying the groundwater problem, but as of now, no resolutions have passed or been proposed to phase out MTBE. (Source at the Department of Environmental Control)
Florida	Florida has been monitoring its public water system for MTBE since the early 1990's; MTBE has not yet been found in amounts exceeding the EPA guidelines. No MTBE legislation has passed as of the present.
Hawaii	FINAL ACTION. The Governor recently vetoed Hawaii HB 3021 (passed House and Senate) which would have banned MTBE by July 1, 2001.
Illinois	FINAL ACTION. A proposal to ban MTBE was blocked on 4/11/2000 in an Illinois House committee. Rep. Bill Mitchell, (R-Forsyth), proposed the original amendment to Senate Bill 1046 that would have banned MTBE in Illinois by 2001. PENDING ACTION. Other resolutions have urged Congress and the executive branch to take immediate steps to ban MTBE.

STATE LEGISLATION ON MTBE ADDITIVES IN REFORMULATED GASOLINE

Iowa	<p>FINAL ACTIONS.</p> <ul style="list-style-type: none"> • Iowa HB 2294 died in committee. It would have prohibited the sale of MTBE, but would have permitted the sale or storage of an “incidental amount” of MTBE if the Department of Natural Resources found no threat to public health/ environment. • A resolution has been considered to urge Congress or the State’s congressional delegation to change the Clean Air Act to phase out MTBE.
Kentucky	<p>FINAL ACTIONS.</p> <ul style="list-style-type: none"> • House Resolution 151, passed 3/23/2000, recognized the benefits of ethanol as an effective alternative to MTBE. • HB 849, which would have banned the use of MTBE, died in committee with the end of the legislative session. • Senate Joint Resolution 68, which urged KY’s congressional delegation to support changes to the Clean Air Act that would allow the State to opt out of the Federal RFG program, passed in the Senate, but died in committee.
Maryland	<p>FINAL ACTIONS.</p> <ul style="list-style-type: none"> • Legislation has been enacted creating a State Task Force to investigate the contamination of water supplies MTBE and to examine potential health effects. (HB 823) • Environmental officials have found the gasoline additive MTBE in 66 of the 1,060 public water systems in Maryland they investigated (03/08/2000).
Massachusetts	<p>FINAL ACTIONS.</p> <ul style="list-style-type: none"> • Resolution against MTBE failed in the legislature. • Although no ban is likely to be proposed, the Dept. of Environmental Affairs is working with regional groups to monitor water contamination and to eventually phase out MTBE additives. NESCAUM, a coalition of New England regions, is the principle organization working to monitor the situation.
Michigan	<p>FINAL ACTION.</p> <p>On June 15, 2000, Michigan’s Governor signed into law HB5570, which bans MTBE beginning 1/1/2003, and directs the department of environmental quality to study the environmental and health effects of MTBE.</p>
Minnesota	<p>FINAL ACTION.</p> <p>Minnesota HB 3131, a complete ban on MTBE, died in committee at the end of this legislative session. However, SB2946, which instead limits MTBE content in gasoline to 1/3 of one percent by weight, and requires that MTBE be phased out by July 2005, was signed into law. (Codified in Chapter 434)</p>

STATE LEGISLATION ON MTBE ADDITIVES IN REFORMULATED GASOLINE

Missouri	<p>FINAL ACTIONS.</p> <ul style="list-style-type: none"> • Concurrent resolutions in the legislature urged the governor to exercise the State's right to opt out of the RFG program until a safe substitute for MTBE is identified (e.g., HCR 32, HCR 14). • Thus pressed by the Republicans, the Governor issued an executive order which will ban MTBE after the EPA and Congress meet certain conditions. These conditions include: a requirement that the EPA provide a waiver for Missouri from provisions in the Clean Air Act and the reformulated gasoline program (RFG); a requirement that Congress prevent price increases or a decline in air quality that could result from an MTBE ban; and assurance from Congress that Missouri will not lose Federal highway funds because of its ban of MTBE. • SB 966 (HB 1801), which was to codify the Governor's ban on MTBE, died in committee at the end of the legislative session. <p>PENDING ACTION.</p> <p>Missouri lawmakers are also urging quick action at the Federal levels to ban MTBE and to promote ethanol as a replacement. (03/29/2000)</p>
Nebraska	<p>FINAL ACTION.</p> <p>The much-talked-about ethanol mandate in Nebraska appears to be finished for this year, and thus Gas station owners will not be required to sell an ethanol blend. The ethanol mandate instead evolved into a ban of MTBE (LB 1234), which was approved by the Governor on 4/12/2000.</p>
New Hampshire	<p>FINAL ACTIONS.</p> <ul style="list-style-type: none"> • In 1999, New Hampshire signed three actions on MTBE into law; HB 592 established a legislative study committee to investigate actions for reducing the effects of MTBE on surface and groundwater; HJR 9 urges the U.S. Congress and the U.S. Environmental Protection Agency to eliminate Federal requirements for oxygenates; SB 70 requires that the commissioner of environmental services limit the concentration of MTBE allowed in gasoline and that the commissioner seek waivers from EPA for MTBE. • SB 71, a complete ban on MTBE, passed the Senate in 1999; however, its House companion bill failed to pass early this year. • New Hampshire has also introduced legislation that would permit the State to enter into discussions with other northeastern States about implementing a regional gasoline that contains less MTBE.
New Jersey	<p>PENDING ACTION.</p> <p>New Jersey (AB 218, AB 1667, AB 1923, SB 527) has several pieces of legislation that would prohibit MTBE use. All are currently in committee, and will carry over to the next legislative session.</p>
New York	<p>FINAL ACTION.</p> <p>Governor Pataki (R-NY) signed a bill banning MTBE by Jan. 1, 2004. The New York ban, drafted partly in response to contamination reported on Long Island and upstate, will prohibit the use, sale, and importation of MTBE beginning January 1, 2004 under penalty of up to \$10,000, according to Pataki's office. (5/24/2000)</p> <p>PENDING ACTION.</p> <p>Legislation has also been proposed to direct State agencies to study MTBE contamination of water supplies and to examine its health effects.</p>

STATE LEGISLATION ON MTBE ADDITIVES IN REFORMULATED GASOLINE

Pennsylvania	<p>FINAL ACTIONS.</p> <ul style="list-style-type: none"> • In June 1999, Pennsylvania chose to no longer participate in the Federal RFG program, citing MTBE health effects as its primary reason. SB 989 codified the governor's executive order for the phase out of MTBE. • Studies found 73 percent of Pennsylvania's drinking water supplies were contaminated with MTBE.
Rhode Island ...	<p>FINAL ACTION.</p> <p>House Resolution 7999 (passed 06/07/2000) requests that the Federal government lift the requirement for 2% oxygenate level in reformulated gasoline.</p> <p>PENDING ACTION.</p> <p>Legislation has been proposed to direct State agencies to study MTBE contamination of water supplies and to examine its health effects.</p>
South Dakota ...	<p>FINAL ACTION.</p> <p>South Dakota passed legislation (SB 1124 signed by the governor) that limits MTBE content in gasoline to no more than 2 percent by weight. PENDING ACTION. A proposed bill, South Dakota HB 1132, would prohibit MTBE use entirely.</p>
Virginia	<p>FINAL ACTION.</p> <p>HB 909 was recently enacted (4/09/2000), which directs State agencies to study MTBE contamination of water supplies and to examine its health effects.</p>
West Virginia ...	<p>FINAL ACTION.</p> <p>West Virginia SB 441, which would have prohibited MTBE use, died in committee at the end of the legislative session.</p>
Wisconsin	<p>FINAL ACTION.</p> <p>AB 838, a proposed ban on MTBE, failed to pass the Wisconsin Assembly in 1999.</p>

Source: National Conference of State Legislatures, July 2000.

APPENDIX II

List of Reformulated Gasoline Program Areas

U.S. Environmental Protection Agency, Office of Mobile Sources, April 5, 1999

Clean Air Act: Required Areas

LOS ANGELES	<p>South Coast Air Basin, South East Desert, Ventura, CA Los Angeles County, CA Ventura County, CA Orange County, CA San Bernardino County (partial), CA Riverside County (partial), CA</p>
SAN DIEGO County, CA	<p>San Diego County, CA</p>
HARTFORD	<p>New Haven—Waterbury, CT Hartford County (partial), CT Litchfield County (partial), CT Middlesex County (partial), CT New London County (partial), CT New Haven County (partial), CT Tolland County (partial), CT</p>

List of Reformulated Gasoline Program Areas—Continued

U.S. Environmental Protection Agency, Office of Mobile Sources, April 5, 1999

Clean Air Act: Required Areas

NEW YORK	Northern New Jersey—Long Island—Connecticut area, NY-NJ-CT Fairfield County, CT Litchfield County, (partial), CT New Haven County (partial), CT Bergen County, NJ Essex County, NJ Hudson County, NJ Hunterdon County, NJ Middlesex County, NJ Monmouth County, NJ Morris County, NJ Ocean County, NJ Passaic County, NJ Somerset County, NJ Sussex County, NJ Union County, NJ Bronx County, NY Kings County, NY Nassau County, NY New York County, NY Orange County, NY Putnam, NY Queens County, NY Richmond County, NY Rockland County, NY Suffolk County, NY Westchester County, NY
PHILADELPHIA	Wilmington—Trenton—Cecil County, MD area PA-NJ-DE-MD New Castle County, DE Kent County, DE Cecil County, MD Burlington County, NJ Camden County, NJ Cumberland County, NJ Gloucester County, NJ Mercer County, NJ Salem County, NJ Bucks County, PA Chester County, PA Delaware County, PA Montgomery County, PA Philadelphia County, PA
CHICAGO	Gary—Lake County, IL—Indiana—Wisconsin area Cook County, IL Du Page County, IL Kane County, IL Lake County, IL McHenry County, IL Will County, IL Grundy County, IL, (partial) Kendall County, IL, (partial) Lake County, IN Porter County, IN
BALTIMORE, MD	Anne Arundel County, MD Baltimore County, MD Carroll County, MD Harford County, MD Howard County, MD The City of Baltimore, MD

List of Reformulated Gasoline Program Areas—Continued

U.S. Environmental Protection Agency, Office of Mobile Sources, April 5, 1999

Clean Air Act: Required Areas	
HOUSTON	Galveston—Brazoria, TX Brazoria County, TX Chambers County, TX Fort Bend County, TX Galveston County, TX Harris County, TX Liberty County, TX Montgomery County, TX Waller County, TX
MILWAUKEE	Racine, WI Kenosha County, WI Milwaukee County, WI Ozaukee County, WI Racine County, WI Washington County, WI Waukesha County, WI
SACRAMENTO, CA * (newly required area).	El Dorado County (partial), CA Placer County (partial), CA Sacramento County, CA Solano County (partial), CA Sutter County (partial), CA Yolo County, CA
CONNECTICUT, The Entire State 1.	Litchfield County (partial), CT Hartford County (partial), CT Middlesex County (partial), CT New London County (partial), CT Tolland County (partial), CT Windham County, CT
DELAWARE,	The Entire State 1 Sussex nonattainment area Sussex County, DE
DISTRICT OF COLUMBIA	Washington, DC-MD-VA area (DC portion) Entire District of Columbia
KENTUCKY	Cincinnati-Hamilton KY-OH area (KY portion) Boone County, KY Campbell County, KY Kenton County, KY Louisville, KY-IN area (KY portion) Jefferson County, KY Bullitt County (partial), KY Oldham County (partial), KY
MARYLAND	Washington, DC-MD-VA area (MD portion) Calvert County, MD Charles County, MD Frederick County, MD Montgomery County, MD Prince Georges County, MD Kent & Queen Anne's nonattainment area Queen Anne's County, MD Kent County, MD
MASSACHUSETTS,	The Entire State 1 Boston-Lawrence-Worcester (E. MA) Barnstable County, MA Bristol County, MA Dukes County, MA Essex County, MA Middlesex County, MA Nantucket County, MA Norfolk County, MA Plymouth County, MA Suffolk County, MA Worcester County, MA Springfield (Western MA) nonattainment areas Berkshire County, MA Franklin County, MA Hampden County, MA Hampshire County, MA

List of Reformulated Gasoline Program Areas—Continued
 U.S. Environmental Protection Agency, Office of Mobile Sources, April 5, 1999

Clean Air Act: Required Areas	
MISSOURI (Effective Opt-In Date is June 1, 1999).	St. Louis nonattainment area St. Louis County St. Louis (city) Franklin County Jefferson County St. Charles County
NEW HAMPSHIRE	Boston-Lawrence-Worcester, MA-NH nonattainment area (NH portion) Hillsborough County, NH Rockingham County, NH Merrimack County, NH Strafford County, NH
NEW JERSEY,	The Entire State 1 Allentown-Bethlehem-Easton area (NJ portion) Warren County, NJ Atlantic City nonattainment area Atlantic County, NJ Cape May County, NJ
NEW YORK	Essex nonattainment area Dutchess County, NY Essex County (partial), NY
RHODE ISLAND,	The Entire State Providence nonattainment area Bristol County, RI Kent County, RI Newport County, RI Providence County, RI Washington County, RI
TEXAS	Dallas-Fort Worth nonattainment area Collin County, TX Dallas County, TX Denton County, TX Tarrant County, TX
VIRGINIA	Washington DC-MD-VA area (VA portion) Alexandria, VA Arlington County, VA Fairfax, VA Fairfax County, VA Falls Church, VA Loudoun County, VA Manassas, VA Manassas Park, VA Prince William County, VA Stafford County, VA Richmond, VA nonattainment area Charles City County, VA Chesterfield County, VA Colonial Heights, VA Hanover County, VA Henrico County, VA Hopewell, VA Richmond, VA Norfolk-Virginia Beach-Newport News area Chesapeake, VA Hampton, VA James City County, VA Newport News, VA Norfolk, VA Poquoson, VA Portsmouth, VA Suffolk, VA Virginia Beach, VA Williamsburg, VA York County, VA.
“Opt-Out” Areas**	
MAINE	Hancock and Waldo Counties, ME—Hancock County—Waldo County

List of Reformulated Gasoline Program Areas—Continued

U.S. Environmental Protection Agency, Office of Mobile Sources, April 5, 1999

Clean Air Act: Required Areas

PENNSYLVANIA	Allentown—Bethlehem—Easton, PA Carbon County Lehigh County Northampton County Altoona, PA Blair County Erie, PA Erie County Harrisburg—Lebanon—Carlisle, PA Cumberland County Dauphin County Lebanon County Perry County Johnstown, PA Cambria County Somerset County Lancaster, PA Lancaster County Pittsburgh—Beaver Valley, PA Allegheny County Beaver County Fayette County Washington County Westmoreland County Armstrong County Butler County Reading, PA Berks County Scranton—Wilkes-Barre, PA Columbia County Lackawanna County Luzerne County Monroe County Wyoming County York, PA Adams County York County Youngstown, OH—Warren, OH—Sharon, PA* Mercer, PA * Ohio counties have not opted-in.
NEW YORK	Albany—Schenectady—Troy, NY Albany County Greene County Montgomery County Rensselaer County Saratoga County Schenectady County Jefferson County, NY Buffalo—Niagara Falls, NY Erie County Niagara County

A proposed rule to remove the above "opt-out" areas from the requirements of the reformulated gasoline program was published June 14, 1995. [On January 1, 1995, a temporary exemption of the RFG requirements in these areas went into effect. On July 1, 1995 this stay was extended until the Agency took final action]. The final rule, published July 8, 1996 [61 FR 35673], formally removed these areas from the list of RFG covered areas and provided States with general opt-out procedures. The July 8 final rule was superseded by a final rule published October 20, 1997 [62 FR 54552], revising the opt-out procedures.

ARIZONA	Phoenix nonattainment area Maricopa County (partial), AZ
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Phoenix opted in the RFG program in 1997; retail stations were required to supply RFG by August 4, 1997. In September 1997, the Governor of Arizona submitted an RFG opt-out petition for purposes of adopting a more stringent State RFG program in Phoenix.

EPA approved the opt-out petition which became effective on June 10, 1998.

List of Reformulated Gasoline Program Areas—Continued
 U.S. Environmental Protection Agency, Office of Mobile Sources, April 5, 1999

Clean Air Act: Required Areas	
MAINE	The following counties in Maine "opted-out" of the RFG program—the effective opt-out date was March 10, 1999: Knox & Lincoln nonattainment area Knox County, ME Lincoln County, ME Lewiston-Auburn nonattainment area Androscoggin County, ME Kennebec County, ME Portland nonattainment area Cumberland County, ME Sagadahoc County, ME York County, ME

* Reclassification of Sacramento from Serious to Severe was effective June 1, 1995. RFG was required as of June 1, 1996. "Opt-In" Areas (Voluntary):
 **Note: These "Opt-Out" areas withdrew from the Federal RFG program before it went into effect on January 1, 1995. See below for details.

APPENDIX III

OFFICE OF THE GOVERNOR,
 Sacramento, CA, April 12, 1999.

The HONORABLE CAROL M. BROWNER, *Administrator,*
Environmental Protection Agency,
 401 M Street SW,
 Washington, DC 20460.

DEAR Ms. BROWNER: I am writing to request that the U.S. Environmental Protection Agency (EPA) take prompt action to waive Federal requirements that all gasoline sold in the Sacramento region and most of Southern California contain a minimum oxygen content pursuant to the provisions of the 1990 amendments to the Clean Air Act.

As I am sure you are aware, on March 26, 1999, I concluded that the use of the oxygenate methyl tertiary-butyl ether (MTBE) in California gasoline poses a significant risk to California's environment, and, accordingly, directed that MTBE be phased out of California gasoline as soon as possible. A copy of my Executive Order D-5-99, which identifies the actions we will take to remove MTBE from gasoline, is enclosed.

One of the essential elements for a rapid phase down, and eventual phase-out of MTBE in California, is action by the U.S. EPA to eliminate the current mandate that California gasoline subject to the Federal reformulated gasoline (RFG) program—about 70 percent of all gasoline in the State—must contain at least 2.0 percent by weight oxygen year-round. Your action to provide this relief is needed for several compelling reasons.

Many California refineries have the capability to produce significant amounts of gasoline that provides all of the required emission reductions without using MTBE or any other oxygenate. The only reason such MTBE-free gasoline is not being made available today is U.S. EPA's enforcement of the 2.0 percent oxygen requirement. Your approval of our requested action would enable several refiners to greatly reduce their use of MTBE in the very near future.

In terms of the eventual phase-out of MTBE, your action is equally important. Under the current U.S. EPA requirements, once MTBE is phased out, the 70 percent of California gasoline that is sold in areas subject to the Federal RFG program would need to be oxygenated with ethanol. Relying on ethanol exclusively for this volume of gasoline, approximately 10 billion gallons per year, would increase the time needed to complete our phase-out of MTBE, and result in higher fuel costs to California consumers. Your action to allow the required emissions reductions to be achieved without using a minimum oxygen content in every gallon of fuel would allow us to reduce risks of future water contamination sooner, meet California's growing demand for fuel and allow flexibility to make more economical blends of gasoline.

Finally, time is of the essence. California refineries must begin a time consuming and expensive retooling process to eliminate their current reliance on MTBE. In order to complete the phase-out of MTBE by December 31, 2002 or earlier, the refiners must start immediately with the planning and design phases of the necessary

refinery and distribution system modifications. It is clear that the approach taken by industry will differ substantially depending on whether, upon completion of the modifications, refiners will be subject to a mandatory Federal RFG minimum oxygen requirement. Without the mandatory oxygen requirement, the industry can design in greater flexibility and less costly processes. But in order to make informed planning and design decisions, the refiner must know in 1999—not just in 2001 or 2002 or 2003—that they will have flexibility with respect to oxygen requirements.

Because California has historically experienced the worst air quality in the nation and has long been engaged in pioneering efforts to reduce the contribution of motor vehicles to air pollution, the State has been granted unique authority by the Clean Air Act and the EPA to administer a State fuels program to reduce motor vehicle emissions. California is the only area in the country where the Federal RFG requirements apply in conjunction with comprehensive and demonstrably more effective State standards for cleaner burning gasoline. The California regulations provide complete assurances that a waiver of the Federal RFG year-round minimum oxygen content requirement will not result in a loss of any air quality.

Our regulations accomplish the needed emissions reductions without requiring a minimum level of oxygen. Numerous assessments by the auto and fuels industry, government agencies, and most recently scientists at the University of California confirm that a minimum oxygen content is not essential to making RFG that meets all emission reduction requirements. Therefore, application of the current minimum oxygen content requirement serves absolutely no purpose in California relative to its intended air quality rationale—to reduce ozone precursors and toxic emissions from vehicles.

In contrast, the minimum oxygen content requirement is having one clear effect on another area of the environment. It is increasing the risk that leaking tanks and boat engine discharges pose to water quality. As the University of California study of MTBE indicated, California's ground and surface water resources are seriously at risk because of discharges of gasoline that has been oxygenated with MTBE. Over 60 percent of the reservoirs tested have detectable levels of MTBE, and many public drinking water sources in areas like Santa Monica, Santa Clara, Sacramento and South Lake Tahoe have been contaminated and shut down because of MTBE contamination. This is what led me to direct the appropriate State regulatory agencies to devise and carry out a plan to complete the expeditious phase-out of MTBE from California gasoline.

However, in order for California to achieve this essential protection of water quality quickly and at an affordable cost, we must have flexibility relative to the minimum oxygen content currently enforced by U.S. EPA. We need this action quickly, and I am calling on you to use your broad authority to protect both the air and water environment by allowing California's reformulated gasoline rules, which provide all of the emission benefits of the Federal RFG, to be applied in lieu of the counterproductive Federal minimum oxygen content requirement.

Your prompt approval of this request will help us limit any further contamination of drinking water while we transition away from MTBE. It will not risk any adverse impact on air quality due to California's more effective State gasoline regulations. It will enable us to devise the most expeditious and cost-effective solution to the MTBE problem in California. One that will protect our water and keep us on the road to clean air.

Thank you for your consideration of this request. Enclosed is a more detailed discussion of this issue and materials that support our request. As always we are ready to work with you to ensure that California and the EPA are working together to ensure environmental protection.

Sincerely,

GRAY DAVIS.

APPENDIX IV

U.S. ENVIRONMENTAL PROTECTION AGENCY,
Washington, DC 20460, August 21, 2000.

The HONORABLE THOMAS J. BLILEY, *Chairman,*
Committee on Commerce,
U.S. House of Representatives,
Washington, DC 20515-6115

DEAR MR. CHAIRMAN: I am writing in response to your inquiry of July 31, 2000, to Administrator Carol Browner regarding various issues related to the Environmental

Protection Agency's (EPA's) consideration of California's request for waiver of the reformulated gasoline (RFG) program's oxygen content requirement. This letter and the enclosures provide information responsive to Questions 2 and 3 of your inquiry and follows our initial response of August 3, 2000. Other relevant documents will be provided in a subsequent letter according to the schedule agreed upon by committee and EPA staff.

In response to Question 2 of your July 31, 2000 inquiry, we are providing all records relating to work performed by the Southwest Research Institute (SwRI) that relates to our consideration of California's request for a waiver from the Federal oxygen requirement in RFG. Enclosure 1 contains SwRI's submittals to EPA, which include draft versions of its assessment of California's predictive model and of alternative models, faxed submissions (data plots, data points for regression models) and e-mails of communication between SwRI and EPA. All records provided in this response are those created or that we received after March 1, 2000 since records prior to this date were included in our March 10, 2000 response to the committee.

In Question 3 you asked about the status of the various technical issues associated with the waiver decision. This is discussed below.

The statute requires that, in order for EPA to grant a waiver from the oxygen requirement, EPA must determine that the requirement would prevent or interfere with an area attaining a National Ambient Air Quality Standard (NAAQS). California's request is the first and only request that EPA has received under this waiver provision. In order to make the determination of whether to grant a waiver, many complex legal and technical questions must be addressed.

California claims that requiring the use of oxygen will increase emissions of oxides of nitrogen (NOx) compared to not requiring its use and thereby interfere with California's ability to meet the NAAQS for ozone (and for particulate matter through transformation of NOx). In order to evaluate such a claim, several issues must be evaluated.

EPA must first evaluate the effect of fuel oxygen on any emissions that may affect ozone formation. These emissions include not only NOx but also emissions of volatile organic compounds (VOC) and carbon monoxide (CO). Although the NOx oxygen relationship is crucial in making any decision about an oxygen waiver, other information is just as crucial to a decision on the California request. This is because oxygen content can impact the level of VOC and CO emissions in both on-road and off-road vehicles which, in turn, can affect ozone formation. Furthermore, the use of oxygen influences other properties of gasoline and these other property changes also have critical emissions effects. Finally, the use or non-use of oxygenates in gasoline can result in other effects such as commingling and permeation which are discussed below.

Another critical issue concerns an assessment of the formulation of fuels California refiners would produce should a waiver be granted. This is crucial since if both the gasoline made with oxygen and without oxygen in California precisely meet California's Phase 3 standards, then no NOx increase or decrease would be experienced regardless of the existence of an oxygen requirement. California, however, presents evidence and arguments to show that, if a waiver were granted, the non-oxygenated California RFG (CaRFG) would be produced having properties that result in NOx overcompliance. In order to evaluate if NOx overcompliance would actually occur, refinery modeling must be performed to estimate the properties of CA gasoline that refiners would choose to make in meeting Phase 3 standards with and without a waiver of the oxygen requirement. This type of modeling, which attempts to optimize California gasoline production, is complex and includes the use of many assumptions, such as the cost of various gasoline components in future years. In short, this type of analysis attempts to predict how California gasoline producers will formulate their gasoline in the future under different regulatory scenarios. Since it is infeasible to model each gasoline producer separately, this analysis estimates a set of properties representative of the gasoline pool.

Other critical issues include the effect of fuel property changes on emissions of off-road engines, the potential that ethanol-containing fuels may cause increased evaporative emissions due to permeation through synthetic vehicle fuel system components, and the potential that a "mixed market" of ethanol-containing fuels and non-oxygenated fuels may produce higher evaporative emissions as a result of commingling of these two types of fuels in vehicle fuel tanks. For each of these issues (commingling, permeation, and fuel property effects on off-road emissions), limited data exist for a thorough evaluation. (Enclosure 2 is a summary of the technical issues that EPA has been studying which includes answers to your questions regarding the status of our evaluation.)

Finally, once we have evaluated the various emissions effects produced by reformulation of California fuels and by the other factors mentioned above, EPA must

then evaluate whether these emission changes will prevent or interfere with attainment of the ozone NAAQS.

Although the initial California request for a waiver was received in April 1999, the State did not provide technical justification for the petition at that time. In July 1999 an initial technical analysis was received from California. Additionally, as you pointed out in your letter, EPA's Blue Ribbon Panel (BRP) on oxygenates did not complete its analysis until late July 1999 and the report was not published until September. We continue to believe that the conclusions of the Blue Ribbon Panel report were crucial in determining the appropriate policy objectives the Agency should take into consideration when considering oxygenate use.

Based upon California's July 1999 submission, EPA responded to California on August 6, 1999, asking for clarification on several issues. Between August and December 1999, EPA and the California Air Resources Board (CARB) staff conducted two telephone conference calls in which CARB presented recalculations of emissions effects.

In December 1999 two important developments occurred which significantly affected the course of EPA's work to evaluate California's request. First, on December 9, MathPro, Inc., completed an analysis for the California Energy Commission which presented information regarding how refineries in California might reformulate their gasolines in order to meet CARB fuel standards if there were no Federal oxygen requirement. Almost simultaneously, CARB adopted California RFG3 standards and changes to its predictive model. Shortly thereafter, on December 24, 1999, California submitted to EPA a major new analysis and technical justification for their request. This new submission precipitated additional EPA questions about the analysis and on January 20, 2000, EPA submitted questions to CARB. Four EPA staffers and an EPA contractor from Southwest Research Institute traveled to California and met with CARB staff to discuss the new analysis on January 24 and 25, 2000. Finally, on February 7, 2000, CARB submitted additional information to EPA based upon the January discussions. Upon an initial but non-comprehensive review of the February submission, EPA believed the State had submitted sufficient information for EPA to evaluate its waiver request.

The developments between December 1999 and February 2000, were critical in defining the parameters associated with California's request and, therefore, the major part of EPA's analysis and evaluation has occurred since February. During that same timeframe, EPA began the necessary administrative procedures to contract with Southwest Research Institute to help EPA evaluate the statistical procedures and assumptions used by California to produce its predictive model, as well as to conduct an independent evaluation of the effect of fuel properties, including oxygen content, on NOx and VOC emissions. (This firm conducted much of the analysis associated with EPA's original complex model in the early 1990's.) This contractor analysis continues today.

In late spring of this year, EPA staff began to assess whether further analyses needed to be performed. This included consideration of further analyses on one of the crucial questions at issue which is the expected level of oxygenate use should a waiver be granted. This is because the use or non-use of oxygenates in a portion of California gasoline would affect all of the properties and associated emissions of gasoline in the California marketplace under a waiver of the oxygen requirement. Therefore, the question of comparing emissions with and without an oxygen requirement would hinge, in part, on the expected use of oxygen should a waiver be granted.

Among other things, EPA was utilizing the December MathPro study to help estimate the properties of California gasoline with and without a waiver in order to estimate emissions levels. Staff discussions with various experts have called into question some of the assumptions and conclusions of the MathPro study based upon newer information now available. Specifically, in the December 1999 report, MathPro estimated that approximately 60 percent of California summertime gasoline would be oxygenated with ethanol even if a waiver were granted. Furthermore, MathPro estimated that the gasoline that is oxygenated would contain oxygen at a level of 2.7 percent by weight. Since the study was conducted, California finalized its new Phase 3 standards and predictive model. Directionally, at least, the newly finalized model might lead refiners to use less oxygen should they have the choice. Additionally, in continuing discussions in May of this year, CARB staff said refiner reports indicated that less than 60 percent of the California market would be oxygenated should a waiver be granted. This called into question the MathPro analysis. Later, California staff also indicated that pipeline product specification development in California show that gasoline shippers believe that oxygenates are likely to be used at a 2.0 percent oxygen level and not the 2.7 percent originally predicted by MathPro. These discussions concerning the MathPro analysis also called into

question the accuracy of some of the technical aspects of the modeling contained in the original December MathPro report. In early July, EPA began exploring contractual arrangements to have MathPro re-examine its study. EPA believes that further analyses of the original MathPro refinery modeling is central to deciding California's request, and important technical issues remain unresolved. We are taking steps to pursue this analysis to ensure that EPA's decision on the complicated issues underlying California's request is based on a sound, robust analysis.

In addition, EPA has received comments from other stakeholders on many of these issues. The Renewable Fuels Association and the National Corn Growers Association have sent letters to EPA expressing substantive technical and legal views on California's waiver request. For example, these groups state that, if the waiver is granted, ethanol blending in California would not be widespread. They also question other results of the MathPro analysis and, in fact, present alternative refinery modeling results. As part of EPA's independent analysis of the waiver request, the Agency takes into account the comments it receives from other stakeholders.

Once the analyses described above have been completed and we have evaluated the results, each piece must be integrated into the total picture of how these fuel changes will affect California's ability to meet the ozone and particulate NAAQS. We certainly understand the committee's interest in knowing when EPA will complete its evaluation and release a proposed decision on California's waiver request. As we have explained in previous correspondence to you and to other interested parties, the analysis and evaluation of these issues has proven to be far more complex than we had originally expected. The need to re-examine the MathPro refinery modeling was unforeseen, but is critical to our deliberations. We currently estimate that this work will take at least 10 to 12 weeks from this date to complete. At that point in time we would expect the other analyses described herein to also be complete. Since all of the work products are inter-related, EPA's technical and legal staff will then begin to integrate the various results into a complete and comprehensive analysis which we believe will allow us to go forward to propose a decision on the California waiver request. I can assure you this work will be completed as expeditiously as possible once all the individual technical work products are available to us.

In summary, the technical analyses involved in consideration of California's request have been continuing since the end of last year when the actual parameters associated with California's predictive model and Phase 3 standards were finalized and the initial MathPro report was available. EPA has vigorously pursued answers to the questions associated with the request as is evidenced by the contractor analyses and the internal EPA analyses that have been performed. The question of interference with the NAAQS is an extremely complex issue. We are therefore making every effort to assure that our analysis is founded squarely on the best science and modeling available.

Please note that the documents that we have provided in the enclosure to this letter are pre-decisional and deliberative in nature. In providing you with these records, we are not waiving the Agency's ability to invoke exemption 5 under the Freedom of Information Act (FOIA) for deliberative or attorney-client privileged documents or the work product/attorney client privileges in general. We therefore request that you preserve the confidentiality of these documents by refraining from providing copies of those records, or from otherwise communicating the contents of those records, to persons other than those with a need to know as part of this Congressional oversight review.

I appreciate the opportunity to be of service, and trust that this information will help to clarify the current status of the Agency's deliberations.

Sincerely,

ROBERT PERCIASEPE, *Assistant Administrator*.

Enclosure 1: Documents responsive to Question 2 of July 31, 2000 letter from the Honorable Tom Bliley to Administrator Carol Browner [Note: Enclosure 1 is not included in this report].

Enclosure 2: Status of Technical Issues.

ENCLOSURE 2: STATUS OF TECHNICAL ISSUES

OXYGENATE/NOX RELATIONSHIP

Specific technical information EPA is reviewing or producing for review:

We are examining the relationship of NOx emissions to oxygen content in reformulated gasoline. This requires that we consider the effect of changes of other fuel properties, as well as fuel oxygen content, on NOx emissions, since use of oxygen affects the other aspects of fuel composition. This involves use of emissions test and

fuel property data from a number of separate studies designed to examine the effects of fuel property changes on emissions. California has combined these data into a single data base in order to develop a statistical model, the predictive model, which relates fuel property changes to emission changes. California has updated the predictive model for use with its phase 3 reformulated gasoline (CaRFG3). California has used this model to support its claim that use of oxygen will increase NOx emissions. We are reviewing development of the updated predictive model, and we are independently developing alternative models relating NOx emissions to fuel properties.

When the EPA or contract personnel began working to produce or review such technical information:

EPA began work on this in January, 2000. EPA's contractor, Southwest Research Institute (SwRI), began working on this task in February, 2000.

Specific issues being reviewed:

Prior to development of the alternative NOx models, it was necessary for EPA to make a number of technical decisions. These decisions included evaluation of available data, characterization and treatment of high emitters, choice of statistical regression technique and choice of distillation parameters to include in the models. EPA must review its model development decisions and ensure that they are documented. EPA's model development process yielded a number of possible candidate models. EPA must review these alternative models and select the model or models which it believes best characterizes the oxygen/NOx relationship.

OXYGENATE/VOC RELATIONSHIP

Specific technical information EPA is reviewing or producing for review:

EPA is examining the relationship of exhaust VOC emissions to the oxygen content in reformulated gasoline. EPA's basic approach is similar to that described above to evaluate the oxygenate/NOx relationship. This approach involves use of emissions data to build models that relate exhaust hydrocarbon emissions to oxygen content and the other fuel properties.

When the EPA or contract personnel began working to produce or review such technical information:

EPA's contractor, SwRI, began working on this task in late April, 2000.

Specific issues being reviewed:

The same issues applicable to EPA's evaluation of the oxygen/NOx relationship are applicable here. The normal emitter/high emitter issue may be more complicated with respect to the VOC model than the NOx model.

COMMINGLING

Specific technical information EPA is reviewing or producing for review:

We are examining the potential increases in VOC emissions that could result from the commingling of non-oxygenated fuels with ethanol-oxygenated fuels in vehicle gas tanks.

When the EPA or contract personnel began working to produce or review such technical information:

EPA began work on this in February, 2000.

Specific issues being reviewed:

The degree of commingling which will occur under a waiver is influenced by consumer brand and grade loyalty, the market shares for ethanol and non-oxygenated gasoline within a given area, and other factors relating to consumer refueling behavior and fuel oxygenate content. EPA is reviewing estimates of the commingling effect which various assumptions and models provided by CARB and other parties.

PERMEATION

Specific technical information EPA is reviewing or producing for review:

We are examining CARB's data and other data available on additional evaporative VOC emissions from permeation through soft rubber/plastic fuel system components, due to ethanol-blended gasoline.

When the EPA or contract personnel began working to produce or review such technical information:

EPA began work on this in February, 2000.

Specific issues being reviewed:

We are reviewing estimates of additional VOC emissions associated with permeation. We are considering whether the reduction of VOC emissions (associated with eliminating permeation emissions through displacement of ethanol RFG with non-oxygenated fuels) offsets the increase in CO resulting from reduction of oxygen in

RFG. We will review any new data or analyses which may better quantify the permeation effect.

REFINERY MODELING

Specific technical information EPA is reviewing or producing for review:

We are examining refinery modeling conducted by MathPro for Chevron/Tosco and for the California Energy Commission that predicts the penetration of non-oxygenated fuels if a waiver were to be granted, and also identifies the fuel parameters in non-oxygenated RFG. We are working to initiate new work to clarify MathPro's original analyses.

When the EPA or contract personnel began working to produce or review such technical information:

EPA began work on this in February, 2000.

Specific issues being reviewed:

Degree of penetration of non-oxygenated fuels and what the fuel parameters are for non-oxygenated RFG with respect to varying degrees of penetration.

OFF-ROAD EMISSIONS

Specific technical information EPA is reviewing or producing for review:

We used EPA's report NR-003, "Exhaust Emission Effects of Fuel Sulfur and Oxygen on Gasoline Nonroad Engines" which summarized data from several emission testing studies of fuel oxygen effects on nonroad engine emissions. We are using information in this report to assess the specific mix of off-road engines and emissions inventory found in California.

When the EPA or contract personnel began working to produce or review such technical information:

EPA began work on this in February, 2000.

Specific issues being reviewed:

Effect of oxygen on emissions of off-road vehicles in California.

Integration of Emissions Analyses and Evaluation of NAAQS Interference.

Specific technical information EPA is reviewing or producing for review:

The other analyses and work products described herein and the California SIP.

When the EPA or contract personnel began working to produce or review such technical information:

EPA began work on this in March, 2000.

Specific issues being reviewed:

Net effect on emissions of the factors covered in the other analyses and the impact of these emissions on California's ability to attain the ozone and PM NAAQS.

APPENDIX V

Summary of State Drinking Water and Groundwater Standards For MTBE

State	Groundwater (ppb)	Type of Standard or Guideline
Alabama	20	Guideline or Action Level
Arizona	35	Guideline or Action Level
California	13/5	Public Health Goal/ Enforceable Aesthetic Std.
Connecticut	70	Guideline or Action Level
Florida	50/500	Primary Drinking Waster Std./Non-Potable Water Std.
Hawaii	20	Groundwater Cleanup Level for Drinking Water
Idaho	52/261/511	Pathway Dependent Action Level
Illinois	70	Guideline or Action Level
Kansas	20 to 40	Health Advisory
Louisiana	18	Guideline or Action Level (10% of MCL)
Maine	35/25	Drinking Water Std./Action Level
Maryland	10/50	Guideline or Action Level/Drinking Water Std.
Massachusetts ..	70/50,000	Primary Drinking Water Std./Vapors in Buildings
Michigan	240/20 to 40	Enforceable Guideline/Aesthetic Guideline
Missouri	400/40	Guideline for Non-potable and Potable Water
Montana	30	Guideline or Action Level

Summary of State Drinking Water and Groundwater Standards For MTBE—Continued

State	Groundwater (ppb)	Type of Standard or Guideline
New Hampshire	70/15/13	Current Primary Drinking Water Std./Action Level Prop. Primary Drinking Water Std. & Groundwater Cleanup Level
New Jersey	70	Primary Drinking Water Std.
New Mexico	100	Interim Action Level
Nevada	20/200	Interim Action Level for Nearby Receptors/Incomplete Exposure Pathway
New York	50/10	Primary Drinking Water Std./Groundwater Cleanup Std.
North Carolina ..	200	Guideline or Action Level
Ohio	40	Action Level
Oklahoma	20	Action Level
Oregon	20 to 40	Revised Guideline
Pennsylvania	20 to 40	Health Advisory
Rhode Island	40/500	Primary Drinking Water Std./Non-potable Water
South Carolina ..	20 to 40	Interim MCLG
Texas	15	Guideline or Action Level
Utah	200/70	Groundwater Cleanup Level/Drinking Water Cleanup Level
Vermont	40/1	Primary Drinking Water Std./Action Level
Washington	20	Guideline or Action Level
West Virginia	20 to 40	Health Advisory
Wisconsin	60/12	Groundwater Enforcement Std./Action Level
Wyoming	200	Primary Drinking Water Std.

Source: New Hampshire Department of Environmental Services, January 20, 2000

APPENDIX VI

TESTS ON OXYGENATED FUELS CONTAINING OXYGENATES OTHER THAN MTBE

SOURCE: U.S. ENVIRONMENTAL PROTECTION AGENCY

SEPTEMBER 2000

Ethanol (EtOH)

Subchronic Inhalation Toxicity Study, with Specific Health Effect Assessments.

Fertility/Teratology Assessment, which includes animal studies designed to provide information on potential health hazards to the fetus arising from the mothers repeated inhalation exposure to vehicle/engine emissions before and during her pregnancy.

In vivo Micronucleus Assay, which is an in vivo cytogenetic test which uses erythrocytes in the bone marrow of animals to detect chemical damage to the chromosomes or mitotic apparatus of mammalian cells.

In vivo Sister Chromatid Exchange Assay to detect the ability of a chemical to enhance the exchange of DNA between two sister chromatids of a duplicating chromosome.

Neuropathology Assessment including histopathological and biochemical techniques designed to develop data in animals on mor-

phologic changes in the nervous system associated with repeated inhalation exposures.

Glial Fibrillary Acidic Protein Assay to determine chemically induced injury to the brain and central nervous system.

Histopathology Assessment including preparation of the animals targeted for pathologic examination of the lungs shall include inflation of the lungs with fixative which will permit later examination of the lung tissues by electron microscopy, if followup to light microscopy is indicated. In addition, respiratory tract histopathology shall be conducted.

Immunotoxicity Screening describing the performance and analysis of the required primary antibody response (IgM) to sheep red blood cell antigen by either the Jerne and Nordin splenic antibody plaque forming cell assay or by an enzyme-linked immunosorbent assay (ELISA).

Inhalation Pharmacokinetic Studies which develop and validate a physiologically based pharmacokinetic (PBPK) model to quantitatively describe test substance disposition (uptake, distribution, metabolism and elimination).

Ethyl tertiary butyl ether (ETBE)

Subchronic Inhalation Toxicity Study, with Specific Health Effect Assessments.

Fertility/Teratology Assessment.

In vivo Micronucleus Assay.

In vivo Sister Chromatid Exchange Assay.

Neuropathology Assessment.

Glial Fibrillary Acidic Protein Assay.

Histopathology Assessment.

Immunotoxicity Screening.

Inhalation Pharmacokinetic Studies.

Tertiary amyl methyl ether (TAME)

Subchronic Inhalation Toxicity Study, with Specific Health Effect Assessments.

Fertility/Teratology Assessment.

In vivo Micronucleus Assay.

In vivo Sister Chromatid Exchange Assay.

Neuropathology Assessment.

Glial Fibrillary Acidic Protein Assay.

Histopathology Assessment.

Immunotoxicity Screening.

Inhalation Pharmacokinetic Studies.

Di-isopropyl ether (DIPE)

Subchronic Inhalation Toxicity Study, with Specific Health Effect Assessments.

Fertility/Teratology Assessment.

In vivo Micronucleus Assay.

In vivo Sister Chromatid Exchange Assay.

Neuropathology Assessment.

Glial Fibrillary Acidic Protein Assay.

Histopathology Assessment.

Immunotoxicity Screening.

Inhalation Pharmacokinetic Studies.

Tertiary butyl alcohol (TBA)

Subchronic Inhalation Toxicity Study, with Specific Health Effect Assessments.

Fertility/Teratology Assessment.

In vivo Micronucleus Assay.

In vivo Sister Chromatid Exchange Assay.

Neuropathology Assessment.

Glial Fibrillary Acidic Protein Assay.

Histopathology Assessment.

Immunotoxicity Screening.

Inhalation Pharmacokinetic Studies.

Tests on Non-Oxygenated Gasoline and MTBE-Gasoline

Subchronic Inhalation Toxicity Study, with Specific Health Effect Assessments.

Two-Generation Reproductive Study which includes animal studies designed to provide information on potential health hazards to the fetus arising from the mothers repeated inhalation exposure to vehicle/engine emissions before and during her pregnancy. This study will include neuropathology and Glial Fibrillary Acidic Protein Assay assessments conducted on the first generation of pups no sooner than 21 days after birth and no later than 28 days.

In vivo Micronucleus Assay which is an in vivo cytogenetic test which uses erythrocytes in the bone marrow of animals to detect chemical damage to the chromosomes or mitotic apparatus of mammalian cells.

In vivo Sister Chromatid Exchange Assay to detect the ability of a chemical to enhance the exchange of DNA between two sister chromatids of a duplicating chromosome.

Neuropathology Assessment including histopathological and biochemical techniques designed to develop data in animals on morphologic changes in the nervous system associated with repeated inhalation exposures.

Glial Fibrillary Acidic Protein Assay to determine chemically induced injury to the brain and central nervous system.

Histopathology Assessment including preparation of the animals targeted for pathologic examination of the lungs shall include inflation of the lungs with fixative which will permit later examination of the lung tissues by electron microscopy, if followup to light microscopy is indicated. In addition, respiratory tract histopathology shall be conducted.

Immunotoxicity Screening describing the performance and analysis of the required primary antibody response (IgM) to sheep red blood cell antigen by either the Jerne and Nordin splenic antibody plaque forming cell assay or by an enzyme-linked immunosorbent assay (ELISA).

Inhalation Pharmacokinetic Studies which develop and validate a physiologically based pharmacokinetic (PBPK) model to quantitatively describe test substance disposition (uptake, distribution, metabolism and elimination).

Two-species Developmental Study which is a developmental study to determine chemically induced changes in development.

Two-year cancer bioassay to determine the chemically induced development of tumors.

Exposure Testing

Quantify personal exposures to motor vehicle gasoline and MTBE-oxyfuel emissions (both evaporative and combustion-related) in microenvironments which represent the upper end of the frequency distribution of such exposures. This would include determination of the quantitative relationship between the personal exposures measured in the selected microenvironments, fixed site measurements in these microenvironments, and available ambient emission measurements; determination of how the high-end personal exposures (i.e., exposures approaching the 99th percentile), differ in cities and seasons of the year in which oxyfuel is used (MTBE-containing reformulated gasoline (RFG) or wintertime oxygenated gasoline) as compared with cities and seasons in which oxyfuels are typically not used; determination of the relative contributions of fuel combustion vs. evaporation as the source of personal exposures to gasoline and oxyfuel emissions and the study would provide sufficient information to serve as a baseline for extrapolation to other sites and, if possible, other oxygenated fuels.

Animal Testing

Test Group	Fuel Mixture	Toxicology Studies	Studies Initiation	Draft Report Due to EPA	Comments Due to RG	Final Report Due to EPA
Group A	Baseline Gasoline—Gasoline MTBE.	Study Set 1: • Subchronic w/ Neurotoxicity, Immunotoxicity, and In Vivo/In Vitro Genotoxicity*. • Developmental Toxicity (Two Species).	0 months	26 months	28 months	30 months
		Study Set 2: • Two Generation Reproductive Toxicity.	12 months	36 months	38 months	40 months
		Study Set 3: • Oncogenicity (One Species)	12 months	52 months	54 months	56 months
Group B	Gasoline Ethanol Gasoline TAME .. Gasoline ETBE ..	Study Set 4: • Subchronic w/Neurotoxicity, Immunotoxicity, and In Vivo/In Vitro Genotoxicity*. • Developmental Toxicity (One Species).	6 months	32 months	34 months	36 months
		Study Set 5: • One Generation Reproductive Toxicity.	18 months	38 months	40 months	42 months
Group C	Gasoline DIPE ... Gasoline TBA	Study Set 6: • Subchronic w/Neurotoxicity, Immunotoxicity, and In Vivo/In Vitro Genotoxicity*. • Developmental Toxicity (One Species).	18 months	38 months	40 months	42 months
		Study Set 7: • One Generation Reproductive Toxicity.	30 months	50 months	52 months	54 months

Animal Testing—Continued

Test Group	Fuel Mixture	Toxicology Studies	Studies Initiation	Draft Report Due to EPA	Comments Due to RG	Final Report Due to EPA
Group D	EtOH, TAME, ETBE, DIPE, TBA.	Study Set 8: • Neat Oxygenate PK (where applicable).	6 months	26 months	28 months	30 months

*To include the in vivo micronucleus assay and the in vivo sister chromatid exchange assay, as well as the in vitro salmonella test specified in 40 CFR para. 79.68.

Exposure Studies

Exposure Assessment Task	Original Schedule	Revised Schedule
Incorporate going monitoring studies	not considered	6 months
API submits draft peer-reviewed protocol including individual peer review comments and disposition of comments.	3 months	12 months
EPA provides comments on draft protocol to API	5 months	14 months
API submits revised draft protocol to EPA	7 months	16 months
EPA approves/disapproves revised draft protocol	9 months	18 months
API submits draft final report for review by EPA including individual peer review comments and disposition of comments.	24 months	42 months
EPA provides comments on draft final report	26 months	44 months
API submits final report to EPA on results of testing	28 months	48 months

APPENDIX VII

ANALYSIS OF POLICY SCENARIOS FOR REDUCING OR ELIMINATING
MTBE

JUNE 2000

Executive Summary

In March, the Administration outlined a legislative framework for protecting the nation's drinking water from MTBE (Methyl Tertiary-Butyl Ether) contamination, that would also preserve clean air benefits and promote greater production and use of renewable fuels. Since then, several Members of Congress have requested that the Administration provide additional analysis to further inform the legislative process.

The primary purpose of this analysis is to examine the economic consequences of either reducing or eliminating MTBE, while maintaining air quality and increasing the use of renewable fuels. It is our conclusion that legislation, along the lines of the Administration's principles, can address the MTBE problem in a cost-effective manner while providing additional benefits.

Rationale for Action: The Clean Air Act Reformulated Gasoline (RFG) program has delivered significant benefits to the nation's air quality. However, MTBE—the primary oxygenate used in RFG—poses risks to the nation's drinking water. Consistent with the advice of the Federal Blue Ribbon Panel on Oxygenates in Gasoline, the Administration has advocated the significant reduction or phase-out of MTBE. Legislation is the fastest and best way to achieve this goal. If Congress fails to enact Federal legislation, the costs could be significant as States continue to ban MTBE (as California and New York have already done) and gasoline refiners work

to meet the existing RFG program without the flexibility provided in the Administration's framework.

Balanced Approach: A balanced legislative approach must not only reduce or eliminate MTBE, but must also maintain air quality benefits and replace the existing oxygenate requirement in the Clean Air Act with a renewable fuels standard. Such a standard will stimulate the biomass ethanol industry and permit annual and geographic averaging which allows refineries the flexibility to seek out low-cost approaches to produce fuel, something that unilateral State action would not achieve. Indeed, a renewable fuels standard that would result in the same volume of ethanol consumed nationwide as maintaining the current oxygenate mandate would have lower costs to refiners and consumers than retaining the oxygenate requirement.

We modeled the effect of reducing or eliminating the use of MTBE, repealing the oxygenate requirement, and establishing a renewable fuels standard. The model estimated that maintaining air quality benefits and totally eliminating MTBE would cost about 3 cents per gallon while a 3 percent cap on the use of MTBE (which would achieve significant improvements in water quality) would cost about 2 cents per gallon. Eliminating MTBE or reducing to a 3 percent cap—with a repeal of the oxygenate requirement—would increase ethanol consumption to a level roughly comparable to the effect of a 1.7 percent renewable fuel standard. The cost of a 2 percent renewable fuels standard is estimated at about 2 cents per gallon in 2005. Maintaining toxic emissions benefits would have a modest impact on production costs. In 2005, legislation along these lines would reduce receipts into the Highway Trust Fund by about \$600 million to \$900 million per year, depending on the amount of ethanol consumed.

The actual costs in 2005 of this approach could be lower for several reasons. For example, the opportunities for refiners to reuse existing MTBE equipment could reduce capital costs more than was assumed in our analysis. Further, if States follow California and New York and ban MTBE while the oxygenate mandate remains in place, the cost of no action significantly rises, which would reduce the incremental costs of a balanced approach. Finally, we anticipate that costs would continue to fall after 2005 as additional technological breakthroughs further increase the efficiency of producing renewable fuels. In addition, if the ethanol tax incentive expires in 2007, as scheduled, the impact on the highway trust fund would be significantly diminished.

Conclusion: We must take steps to protect America's drinking water supplies from further MTBE contamination and legislation is the fastest and best way to achieve this. Congress should adopt legislation consistent with the Administration's principles, which provide for addressing the MTBE problem while maintaining air quality gains and promoting growth in renewable fuels. Taken as a package, this approach represents a responsible and effective approach to addressing this serious problem.

I. The Reformulated Gasoline Program

A. Origin of the Reformulated Gasoline Program

To promote cleaner motor vehicles and cleaner fuels, the 1990 Clean Air Act Amendments established the Federal reformulated gasoline (RFG) program. In 1995, this program was introduced to the market cleaner fuels meeting more stringent emission performance requirements. The 1990 Clean Air Act Amendments also required that RFG contain at least 2 percent oxygen by weight. The addition of oxygenates causes gasoline to burn cleaner and more efficiently, thereby reducing toxic air pollutants, carbon monoxide, and smog-forming emissions.¹ The RFG program initially was mandated only for the nine metropolitan areas in the country with the worst smog: Los Angeles, San Diego, Chicago, Houston, Milwaukee, Baltimore, Philadelphia, Hartford, and New York City. Seventeen States and the District of Columbia currently use RFG, either because of Clean Air Act requirements, or on a voluntary basis to achieve air quality standards.

B. Use of RFG Has Led to Cleaner Air

The RFG program has produced substantial environmental benefits. Phase I of the RFG program (1995–1999) aimed to reduce air pollution that causes smog by 64,000 tons per year in RFG areas. Phase II, beginning this year, has more stringent standards that will reduce smog pollutants by an additional 41,000 tons per year in RFG areas. This program also reduces emissions of toxic air pollutants such as benzene, a known human carcinogen. Phase I and Phase II RFG combined to reduce toxic pollutants by about 24,000 tons per year in RFG areas, the equivalent of eliminating the toxic emissions from over 13 million vehicles. From 1995 through 1999, RFG exceeded the required average reductions of smog-forming volatile organic compounds (VOCs), tonics, and oxides of nitrogen (NOx) (Blue Ribbon Panel [BRP] 1999; see table 1). Most notably, overall toxics reductions averaged about 27 percent versus the 17 percent required. Benzene showed the most dramatic declines with a median reduction of 38 percent in the first year of the program (EPA 1995). This year, Phase II RFG will implement more stringent emissions standards: a 27 percent reduction in VOCs, 22 percent reduction in tonics, and a 7 percent reduction in NOx emissions.

Table 1. Reformulated Gasoline Average Emission Reduction Requirements¹

	Phase I RFG	Phase II RFG
Volatile Organic Compounds	17%	27%
Nitrogen Oxides	2%	7%
Toxics	17%	22%

¹Reductions are from 1990 nationwide baseline.

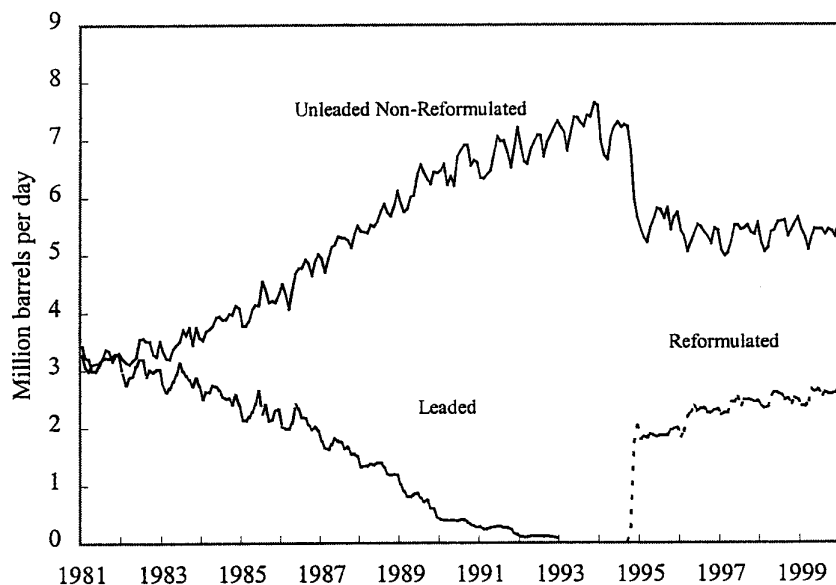
¹The 1990 Clean Air Act Amendments also established a wintertime oxygenate gasoline program to reduce emissions of carbon monoxide starting in 1992. This program requires oxygenated gasoline to contain 2.7 percent oxygen by weight. Oxygenated gasoline makes up about 3 percent of all gasoline sold in the winter and 1.3 percent of all gasoline sold per year.

RFG and the Gasoline Market

The 1990 Clean Air Act Amendments require RFG to contain 2 percent oxygen by weight, but neither the Act nor EPA requires the use of a specific oxygenate in RFG. Both ethanol and methyl tertiary-butyl ether (MTBE) are used as oxygenates in the current RFG program. MTBE is the oxygen additive most commonly used by the petroleum industry to satisfy the 2 percent oxygen mandate, primarily because of its low cost, ease of transport, and low volatility. Approximately 87 percent of RFG contains MTBE, and most of the rest contains ethanol. The petroleum industry has used MTBE in much smaller amounts to replace lead as an octane and performance enhancer since the late 1970's.

In response to the 1990 Clean Air Act Amendments, refineries undertook substantial investments to increase their production of MTBE and other oxygenates. Between 1990 and 1994, MTBE consumption doubled. By 1997, MTBE consumption was more than three times the 1990 level (EIA 2000). Approximately 4.5 billion gallons of MTBE are used each year in gasoline (nearly 300,000 barrels per day out of a total of 8.2 million barrels/day of gasoline). MTBE, ethanol, and other oxygenates combined allowed for the production of about 2.5 million barrels per day of RFG in 1997, nearly one-third of the total gasoline market (see figure 1). RFG now represents about half of all gasoline production on the east coast and a little less than 20 percent of gasoline production in the Midwest and gulf coast. The West Coast consumed 36 percent of all RFG in 1997 (EIA 2000).

Figure 1. U.S. Gasoline Production, 1981-Present



Source: EIA 2000.

II. MTBE

A. The MTBE water Contamination Problem

Significant concern has arisen about contamination of drinking water by MTBE in many areas of the country. Because of the odor and taste of MTBE-contaminated water, EPA established a drinking water advisory range of 20 to 40 parts per billion (ppb) (EPA 1997). Drinking water systems with MTBE concentrations at or above the advisory range may smell and taste so bad that the water becomes unusable for personal consumption. For example, Santa Monica in 1996 experienced MTBE concentrations up to 600 ppb (15 to 30 times greater than the EPA advisory range) necessitating the removal from service of half of the city's drinking water supply (Johnson et al. 2000).

Some research also indicates that MTBE could potentially pose a public health risk. MTBE has been found to cause cancer in laboratory test animals. Based on this research, the National Science and Technology Council (1997) concluded that "it is reasonable to regard this alkyl ether oxygenate [MTBE] as posing a potential carcinogenic hazard and risk to humans" (p. 4–29). No human carcinogenicity studies on MTBE, however, have been published to date.

Current data on MTBE levels in ground and surface waters indicate widespread and numerous detections of MTBE at low levels (BRP 1999, Johnson et al. 2000). Recent testing by the United States Geological Survey showed the detection of MTBE in approximately 20 percent of the ground water in RFG areas and a 2 percent detection rate in non-RFG areas (BRP 1999). In most instances, the concentrations of MTBE are below the levels of public health concern and are not above the range set by EPA's drinking water advisory. However, the detection rate of high levels of MTBE (greater than 20 ppb) is 19 times greater in RFG areas than in non-RFG areas (BRP 1999). The detection of MTBE at high concentrations usually results from leaking underground or above-ground Mel storage tanks and pipelines (BRP 1999).

Several States have responded to concerns about MTBE by establishing drinking water standards (see table 2). In fact, California has banned MTBE effective no later than December 31, 2002, and New York has banned MTBE effective in 2004.

Table 2. State Drinking Water Standards, Guidelines, and Action Levels

States with primary drinking water standards (health-based).	Maine (35 ppb) New Jersey (70 ppb) New York (50 ppb) South Carolina (20–40 ppb)
States with a Secondary Standard (aesthetic).	California (5 ppb), enforceable
States with enforceable guidelines	Michigan (240 ppb), health-based West Virginia (20–40 ppb), EPA advisory

Table 2. State Drinking Water Standards, Guidelines, and Action Levels

States with a guideline or action level in place.	Arizona (35 ppb), health-based California (13 ppb), health-based Connecticut (70 ppb), health-based Illinois (70 ppb), health-based Kansas (20–40 ppb), EPA advisory Maryland (10 ppb), aesthetically-based Massachusetts (70 ppb), health-based New Hampshire (15 ppb), aesthetically-based Pennsylvania (20–40 ppb), EPA advisory Rhode Island (20–40 ppb), EPA advisory Vermont (40 ppb), EPA advisory Wisconsin (60 ppb), health-based
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B. Blue Ribbon Panel Report on Oxygenates

In response to water quality concerns associated with the use of oxygenates in gasoline, EPA established a Blue Ribbon Panel (BRP) of leading experts from public health and scientific communities, water utilities, environmental groups, industry, and local and State government, including California, to assess issues posed by the use of oxygenates in gasoline in California and the rest of the nation. The Panel was charged with: 1) examining the role of oxygenates in meeting the nation's goal of clean air; 2) evaluating each product's efficiency in providing clean air benefits and the existence of alternatives; 3) assessing the behavior of oxygenates in the environment; 4) reviewing any known health effects; and 5) comparing the cost of production and use and each product's availability—both at present and in the future. In September 1999, the Blue Ribbon Panel made the following recommendations for blending fuel for clean air and water:

“Given the complexity of the national fuel system, the advantages and disadvantages of each of the fuel blending options the Panel considered (see Appendix A), and the need to maintain the air quality benefits of the current program, the Panel recommends an *integrated package* of actions by both Congress and EPA that should *be implemented as quickly as possible*. The key elements of that package, described in more detail below, are:

- Action agreed to broadly by the Panel to reduce the use of MTBE substantially (with some members supporting its complete phase-out), and action by Congress to clarify Federal and State authority to regulate and/or eliminate the use of gasoline additives that threaten drinking water supplies;
- Action by Congress to remove the current 2 percent oxygen requirement to ensure that adequate fuel supplies can be blended in a cost-effective manner while quickly reducing usage of MTBE; and
- Action by EPA to ensure that there is no loss of current air quality benefits” (BRP 1999, p. 6; emphasis in original).

C. Administration's Principles

Based on the findings and the recommendations of the Blue Ribbon Panel, the Administration has proposed a set of legislative principles to address concerns about the continued use of MTBE:

Recommendation #1: Amend the Clean Air Act to provide the authority to significantly reduce or eliminate the use of MTBE.

Recommendation #2: As MTBE use is reduced or eliminated, ensure that air quality gains are not diminished.

Recommendation #3: Replace the existing oxygen requirement contained in the Clean Air Act with a renewable fuel standard for all gasoline.

The Administration believes that these principles provide for an environmentally sound and cost-effective approach to addressing the risks posed by the current use of MTBE while helping the farm economy and promoting energy diversity.

D. Environmental Benefits of Significantly Reducing or Eliminating the Use of MTBE

WATER QUALITY BENEFITS

Significantly reducing or eliminating MTBE, consistent with the Administration's principles, would provide substantial water quality benefits. With a 3 percent MTBE per gallon cap or MTBE phase-down, the share of MTBE in blended gas throughout the country would be lower than it is today in many non-RFG areas. The 3 percent cap would reduce MTBE to pre-1990 levels and should significantly reduce MTBE contamination of groundwater (Moran et al. 1998). This would generate significant benefits by reducing human exposure to MTBE, reducing the number of drinking water supplies requiring remediation, and reducing the need to find alternative drinking water supplies for those cases when MTBE contamination renders a supply unusable.

The remediation costs of drinking water supplies contaminated with MTBE could be quite significant. Several surveys summarized by the Blue Ribbon Panel found that underground storage tank release sites contaminated with MTBE could have substantially higher clean-up costs than comparable sites without MTBE contamination. For example, a study on groundwater contamination in California found that "on average MTBE-contaminated sites may be 140 percent of the cost of remediating conventional gasoline sites" (BRP 1999, p. 56).

AIR QUALITY BENEFITS

Maintaining the emissions reductions goals under Phase II of the RFG program will preserve the significant environmental gains achieved by reducing smog-forming and toxic emissions. The air quality improvements expected under the RFG program provide important human health benefits since repeated exposures to unhealthy levels of ozone (smog) may increase susceptibility to respiratory infection, cause lung inflammation, and aggravate pre-existing respiratory diseases such as asthma. Further, preserving current toxics performance in gasoline ensures that the risk reductions from decreased exposure to carcinogens in vehicle exhaust achieved to date are not reversed.

III. Renewable Fuels Standard

A. Benefits to Rural Communities

The establishment of a renewable fuels standard would boost the use of renewable fuels, such as ethanol, and could benefit the nation's farmers. In an analysis conducted in 1999, USDA evaluated the effect a renewable fuels standard would have on the domestic farm economy. In that analysis, renewable fuels account for 1 percent of the nation's gasoline in 2001 and increase linearly to 2.5 percent in 2010. The analysis was limited to the effects on the farm economy of increased production of corn-based ethanol. With 2.5 percent of the nation's gasoline consisting of ethanol by 2010, U.S. corn ethanol production would increase from a baseline projection of 1.7 billion gallons in 2010 to 3 billion gallons. The price of corn would be 15 cents per bushel more in 2010 than in the absence of the standard and average 11 cents per bushel more during 2002–2010. With higher corn prices and greater corn production, U.S. net farm income would increase by \$1.4 billion in 2010, and would average \$750 million more per year during 2002–2010 (USDA 1999).

The establishment of a renewable fuels standard would also help boost the United States' fast-growing market for bioenergy generally. A standard would greatly increase the demand for energy crops and for agricultural and forest wastes of all types. Since the cost of transporting the raw materials is high, most of the value-added work would occur in rural communities, providing new revenue streams for farmers and cash-flow for rural economic development.

B. Potentially Lower Fiscal Farm Program Outlays

The Administration and the Congress have demonstrated a strong commitment to provide financial support to farmers when market prices fall. The government provides that support through two primary mechanisms: the Federal Agriculture Improvement and Reform Act of 1996 (1996 Farm Bill) and ad hoc emergency supplemental assistance legislation. Through these mechanisms, total farm program outlays rose to \$10.1 billion in fiscal year 1998, \$19.2 billion in fiscal year 1999, and will increase substantially in fiscal year 2000. Corn producers currently receive more in direct farm support payments than producers of any other commodity. A part of these payments is based on the price of corn. When the market price of corn is below the price support loan rate, corn producers receive a payment equal to the difference between the loan rate and the market price. These payments, known as loan deficiency payments or marketing loan gains, totaled \$2.2 billion for 1999 corn production and are forecast to total \$3.2 billion for 2000 production.

In the most recent USDA baseline projections, the price of corn rises well above the price support loan rate after 2002 (WAOB 2000). Nevertheless, a renewable fuels standard could prevent or help offset some unexpected future decline in the price of corn below the loan rate. In such a scenario, the renewable standard could either prevent the market price of corn from falling low enough to trigger this government subsidy or could keep it from falling as far below as it might otherwise. From the farmers' per-

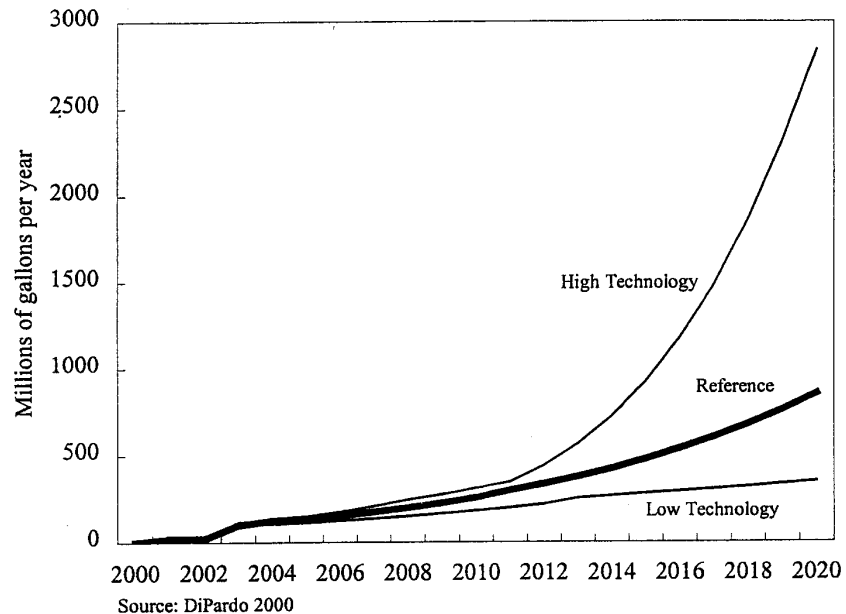
spective, the renewable standard would substitute for part or all of the loan deficiency program in maintaining the price of corn, while the Federal Government expenditures on agriculture would fall, freeing up resources for other socially beneficial uses. The renewable standard could also obviate the need for ad hoc assistance payments.² However, if corn prices follow current USDA baseline projections, loan deficiency payments and ad hoc payments would not be expected, and the renewable standard would provide the kinds of benefits to farmers described above and not impact fiscal outlays.

C. Diversifying the Nation's Energy Portfolio

A renewable fuels standard would increase the role of biofuels in the nation's energy portfolio. Because ethanol can substitute for petroleum-based products, it is an important strategic option for expanding the array of energy sources available to fuel the economy. Increasing the share of ethanol in all transportation fuel would decrease the amount of crude oil necessary to fuel vehicles.

As mentioned above, in addition to current R&D programs and tax incentives, a renewable fuels standard would stimulate the demand for ethanol, promoting further development of the biomass ethanol industry. Unlike the corn-based ethanol industry, ethanol made from cellulosic biomass uses trees, crops, and agricultural and forestry wastes. A recent EIA analysis finds that the nascent biomass ethanol industry should grow substantially over the coming decades (DiPardo 2000). EIA projects biomass ethanol production to increase by a factor of 13 between 2001 and 2010. Even under a pessimistic technology case, biomass ethanol increases 9fold over this period. However, the optimistic high technology case would have biomass ethanol 16 times greater in 2010 than in 2001, and with a successful technological breakthrough in enzymatic hydrolysis, 2020 production could exceed 2.8 billion gallons per year (see figure 2). Some other studies have found that the potential for biomass ethanol could be even greater with other technological breakthroughs. To the extent that it spurs the development of the domestic biomass industry generally, a renewable fuels standard could help drive technology breakthroughs that lead to the low cost production of electrical power, chemicals and other everyday products from biomass—further expanding both economic opportunities and energy diversity.

² While potentially offsetting farm program outlays, a renewable standard could impact other aspects of the budget, such as the Highway Trust Fund. Please refer to section VI for a discussion of how increased ethanol consumption could reduce Highway Trust Fund receipts.

Figure 2. Projected Biomass Ethanol Production

D. Environmental Benefits

Renewable fuels have the potential to provide substantial life-cycle carbon dioxide and greenhouse gas emission benefits relative to gasoline from crude oil. Fuels produced from food grains such as corn, which use fossil fuels in the farming process, typically provide a 10 to 30 percent reduction in life-cycle greenhouse gas emissions relative to gasoline. Future use of biomass feedstocks such as fast-growing grasses or trees, which would not be expected to utilize many fossil fuels in the growing process, could provide life-cycle greenhouse gas emission reductions of 60 to 80 percent relative to gasoline.³ Additionally, the deep-rooted plants commonly used for biomass—such as poplar, willow, and switch grass—are helpful in controlling erosion, filtering chemicals and sediment from water runoff, and slowing floodwaters.

IV. The Economics of Oxygenate Production

A. Economics of Replacing MTBE

The refining industry uses MTBE for several reasons. First, MTBE is an oxygenate that is also high in octane. Second, MTBE, like all oxygenates, contains no sulfur or aromatics, making it easier to meet the gasoline sulfur and toxics standards. Third, MTBE has very good distillation characteristics, and refiners can trans-

³Substantial emissions reduction through biofuels is consistent with the Administration's larger objectives under the President's Bioenergy and Bioproducts Executive Order. Achieving the goal established with the release of this order would reduce 2010 greenhouse gas emissions by up to 100 million metric tons of carbon—the equivalent of taking more than 70 million cars off the road.

port gasoline blended with MTBE through the existing pipelines. Replacing barrels of MTBE thus requires refiners to replace a high quality component of gasoline.

Several key issues can affect the cost of reducing or eliminating MTBE:

- **Time.** Providing more time may enable firms to further reduce costs by modifying production processes and building additional capacity and infrastructure. The California Energy Commission (1999), for example, concluded that 3 years to phase-out MTBE in California was sufficient to avoid severe gasoline shortages and price spikes while extending the phase-out period for another 3 years could reduce costs by as much as 60 percent. Adequate lead time also allows refiners to take advantage of new desulfurization technologies that could lessen the octane and yield loss that can occur with the reduction in sulfur content. This could mitigate some of the cost of an MTBE phase-down.

- **Certainty.** With a variety of environmental rules affecting or potentially affecting refinery production, regulatory certainty could facilitate refiner investment. This is also critical as refiners consider potential economies of scale in making investments that could address multiple environmental rules at once (for example, gasoline sulfur and MTBE).

- **Flexibility.** The petroleum industry comprises a wide variety of companies. The best decision for one may not be the best solution for all. Any legislation should allow the industry the flexibility to find the lowest cost method for achieving the goals consistent with the Administration's principles.

- **Fungibility.** The BRP notes that "Refiners/marketers have indicated that to meet consumer fuel demand and to minimize supply shortages, the scope of any future fuel changes should be national or regional. Permitting State-specific fuel changes (e.g., RVP, low sulfur) may lead to greater uncertainty in fuel supply and may cause periodic shortages unless there is a mechanism to ensure consistency across State boundaries" (p. 68).

B. The Economics of Ethanol Production and Use

Ethanol is the primary alternative oxygenate to MTBE. While ethanol has a higher oxygen content than MTBE, ethanol must be blended with higher cost blendstocks and it has higher transportation costs. It is more costly for producers to ship gasoline containing ethanol via pipelines because the residual water in the pipelines makes the ethanol separate from the gasoline. Instead, producers ship subgrades of gasoline and ethanol separately, blending the two at later points in the distribution system. The higher transportation costs concentrate ethanol consumption in the Midwest, home of most of the nation's ethanol production. Additionally, adding ethanol to conventional gasoline increases evaporative emissions, which can contribute to smog pollution. In RFG, blending ethanol with low volatility blend stock as well as geographic and annual averaging under a renewable fuels standard can address this problem. Finally, ethanol, like other oxygenates, has positive impacts on gasoline toxic emissions by changing gasoline blending characteristics.

Continued expansion of the ethanol industry depends on several factors: petroleum markets, market factors affecting the net feedstock cost, new technological advances, and energy, environmental, and agricultural policy. Currently, ethanol receives a \$0.54 per gallon tax incentive that has positively affected its production. Expansion of existing ethanol plants and construction of new plants require capital investment. Both capital and operation and maintenance costs have declined significantly during the past 10 years, and are expected to decline further in the near future. Capital investment per gallon of ethanol for the dry mill process has decreased from \$2 per gallon in early 1980's to about \$1.10 per gallon today. The wet mill ethanol plants require a larger capital investment and have higher operation and maintenance costs; however, the net corn cost per gallon is significantly lower relative to a dry mill. Lowering net feedstock costs and other costs associated with ethanol production will improve the competitiveness of ethanol as a fuel or fuel additive. Analysis published by USDA suggests that long-term technological improvements could reduce ethanol production costs by 9 to 15 cents per gallon. USDA researchers believe that additional savings of 8 to 13 cents per gallon may be possible through co-product development and process improvement (Holmann and Rendleman 1993).

V. Analysis of Addressing MTBE

A few studies have examined the gasoline production costs of reducing the use of MTBE (MathPro 2000, Hadder 1999). The models employed in these studies can assess the increased capital and production costs associated with a change in MTBE policy. They can also characterize the change in production processes and fuel inputs, such as for ethanol. These models can estimate total and average costs, but not marginal costs. EIA's National Energy Modeling System (NEMS), however, can project not only total costs, but also marginal costs (which includes a return on capital investment). EIA does this by modeling the entire gasoline market, including costs of production in both domestic and foreign refineries. In a well-functioning market with adequate supply capacity, the marginal cost of producing a gallon of gasoline equals the price of a gallon of gasoline paid by consumers.

This marginal cost reflects the cost to produce the last, or marginal, gallon of gasoline in the market. A refiner produces a gallon of gasoline only if the market price is equal to or above the cost to produce this gallon. If the market price is below the cost of producing this gallon, then a refiner would not find it profitable to produce it. Therefore, the increase in the gasoline price under a new oxygenate policy corresponds to the marginal cost of producing this last gallon of gasoline under this policy. The estimate of marginal cost is a very important measure since this determines the production decisions of refiners (where marginal cost of production equals market price) and reflects the cost borne by consumers of a new oxygenate policy. Marginal costs and average costs are not comparable, although for a given oxygenate policy, the marginal cost of gasoline generally should exceed its average cost.

Using price changes based on estimated marginal costs has several advantages over focusing on average cost differences alone. Re-

finery models do not account for the impact of higher production costs on consumer demand and foreign refinery production. Thus, this type of model produces estimates of cost changes that are less than the likely price changes that will be paid by consumers. The impact of any change in oxygenate policy on the Highway Trust Fund depends on the total demand for gasoline, which would vary depending on the price changes associated with this policy.

In its Annual Energy Outlook 2000 study, EIA (1999) evaluated an MTBE reduction scenario using the NEMS model. EIA made the following key assumptions in the analysis:

- The 2 percent oxygenate mandate is eliminated in 2003.
- The MTBE content of gasoline would be limited to 3 percent of gasoline by volume per gallon starting in 2003.
- California would discontinue its MTBE ban and opt for the 3 percent cap.
- Consistent with the Blue Ribbon Panel recommendations, toxic emissions benefits are maintained.

Following on this work, the Administration requested that EIA undertake several additional analyses to better understand the implications of various oxygenate policies.

A. Methodology

EIA performed the MTBE analyses using the petroleum market module (PMM) in HEMS. The PMM represents domestic refinery operations and the marketing of petroleum products to consumption regions. PMM solves for petroleum product prices, crude oil and product import activity (in conjunction with the international energy module and the oil and gas supply module), and domestic refinery capacity expansion and fuel consumption. PMM is a regional, linear programming representation of the U.S. petroleum market. Refining operations are represented by a three region linear programming formulation of the five Petroleum Administration for Defense Districts (PADDs). PADDs I (East Coast) and V (West Coast) are each treated as single regions, while PADDs II (Midwest), III (Gulf Coast), and IV (Rocky Mountains) are aggregated into one region. Each region is considered as a single firm where more than 59 distinct refinery processes are modeled. Refining capacity is allowed to expand in each region over each 3-year period. That is, in 2001 the model looks ahead to 2004 to determine how much new capacity is required and then allows additions of new capacity in 2002, 2003, and 2004. The capacity planning decisions begin anew for 2007 at the end of the 2004. As a result, cumulative investment for any given year may include investment for future expectations. Products are produced to annual average specifications and demands with calibrations to account for non-linear blending qualities such as RVP in motor gasoline. EIA models EPA's complex model requirements through specification constraints on aromatics, benzene, sulfur, RVP, E200, E300, olefins, and oxygen content. The specification constraints conform to EPA's complex model requirements for emissions reductions of VOCs, NO_x, and toxics. Changes to the PMM for the MTBE analyses included the return on investment (ROI) charge rate from 15 percent ROI to a 10 percent ROI to be more consistent with other analyses. Investment decisions ROI remained at 15 percent.

B. Scenarios

EIA evaluated four scenarios under the assumption that the oxygenate requirement is waived and emissions of air toxics are held to their current level (maintaining toxic emissions benefits) (see table 3). The various options for each scenario included banning MTBE in 2003, imposing a 3 percent by volume cap (the pre-1990 MTBE content of gasoline) in 2003, no renewable fuels standard, and a 2 percent renewable fuels standard in 2005⁴. The MTBE content refers to a nationwide standard including California and New York, despite existing State laws to phase-out MTBE. EIA did not undertake an analysis of reducing or banning MTBE and maintaining the oxygenate mandate.⁵

Table 3. Scenarios Evaluated with EIA Model

Scenario	MTBE Content, effective in 2003	Renewable Fuels Standard, effective in 2005
EIA1 ⁶	3%	0%
EIA2	0%	0%
EIA3	3%	2%
EIA4	0%	2%

C. Key Assumptions

In undertaking this analysis, EIA made a number of critical assumptions that could affect the results and the conclusions drawn from this work. The key premises, limitations, and uncertainties are:

- Geographic coverage of MTBE 3 percent cap. To simplify the analysis, the cases analyzing the 3 percent MTBE cap assume that both California and New York decide to repeal their laws requiring the phase-out of MTBE and instead opt for the 3 percent cap.
- Starting date of repeal of oxygenate mandate. The elimination of the RFG oxygenate requirement becomes effective starting in 2003.
- Maintaining toxic emissions benefits. Maintaining toxic emissions benefits refers to keeping the current levels of toxic emissions in RFG, without allowing for toxic emissions to fall to the level of

⁴Note that a 2 percent renewable fuels standard in 2005 would likely have comparable 2005 effects as a 3 percent standard for 2010. Since current renewable fuel production is slightly over 1 percent of the market, constant growth necessary to achieve a 3 percent target in 2010 would require renewable fuels to make up about 2 percent of the market in 2005.

⁵Performing analyses of scenarios that represent States banning MTBE without Federal actions to eliminate the oxygenate mandate would require significant changes to the EIA Petroleum Market Model (PMM). First, representation of imported supplies of RFG requires re-estimation of supply curves. EIA constructs import supply functions for all imported petroleum products using the World Oil Refining, Logistics, and Demand (WORLD) model, which is a worldwide refinery LP that requires significant resources to operate and generate import supply curves. Second, EIA's PMM would require significant structural changes to handle imported subspecification blends of RFG that would be shipped to the demand regions where final blending with ethanol occurs. Third, testing of the PMM capability to manufacture all the domestic supplies to RFG as subspecification blends of RFG has not been completed. Finally, EIA would have to re-estimate RFG specifications that would conform to EPA's RFG2 complex model on an annual basis.

⁶This is the same scenario as the AEO2000 MTBE side case, however EIA modified this scenario from the AEO2000 to correct for an error detected while performing the additional MTBE analyses. The oxygenate specification for sub-specification gasoline, which is blending with ethanol to bring it into specification, was incorrect in the reference case. This correction changed the differential investment and gasoline prices for the AEO MTBE reduction side case to 1.9 cents per gallon and 2.4 cents per gallon in 2003 and 2005 respectively. Additional, differential cumulative investment for 2005 changed to \$1.9 billion.

the Phase II standards. Failing to maintain toxic emissions benefits could result in toxic emissions at the Phase II standard level.

- Low sulfur assumptions. EIA's model does not account for the recently promulgated Tier 2/gasoline sulfur regulations. Because refineries will already be making renovations to meet low sulfur gasoline requirements, additional modifications to accommodate limits on MTBE may prove less costly than if the refineries had to modify their processes to accommodate the MTBE policy change alone. As a result, the EIA model would overestimate the costs if such positive synergies exist. However, reducing the sulfur content of gasoline may require making up both octane and volume losses, potentially increasing the costs of restricting the use of MTBE.

- Assumed gasoline demand. The gasoline forecast is based on EIA's Annual Energy Outlook 2000 demand forecast: 9.4 million barrels per day in 2005 and 10.2 million barrels per day in 2010.

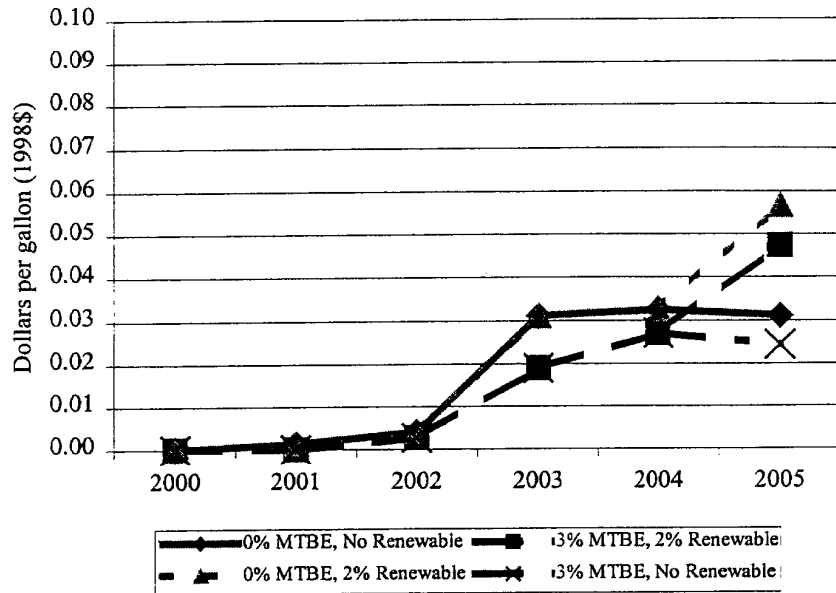
- Starting date of renewable fuels standard. The renewable fuels standard cases involve the phasing up of the share of ethanol in the gasoline market through 2005 based on the level established in the standard. National credit trading and annual averaging is allowed under the renewable fuels standard to provide the industry flexibility in complying with the standard.

- Cost of increased ethanol production. The ELk model solves for the increase in ethanol prices resulting from greater demand. There is substantial uncertainty about the price increases resulting from a near doubling of ethanol volumes. In these analyses, ethanol production costs are projected to increase by 33 to 37 cents per gallon.

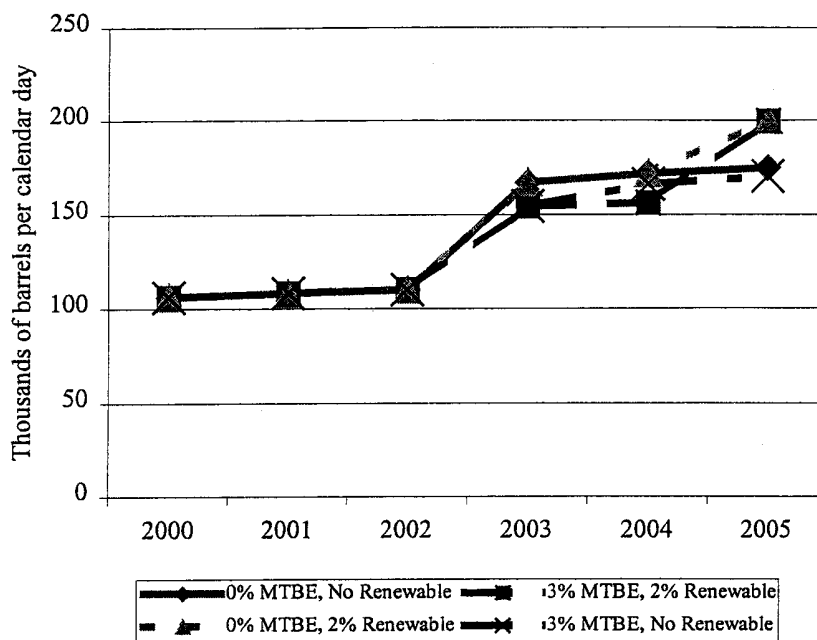
D. Results

In the scenarios evaluated by EIA, a 3 percent MTBE per gallon cap in 2003 is projected to increase gasoline prices about 2 cents per gallon, while eliminating MTBE would increase gasoline prices about 3 cents per gallon (see figure 3). Adding a 2 percent renewable fuels standard is projected to increase gasoline prices in the 5 cents per gallon range in 2005 (see figure 4). The actual costs in 2005 could be lower for several reasons. For example, the opportunities for refiners to reuse existing MTBE equipment could reduce capital costs more than was assumed in our analysis. We anticipate that costs would continue to fall after 2005 as additional technological breakthroughs further increase the efficiency of producing renewable fuels. Finally, if States continue to ban MTBE while the oxygenate mandate remains in effect, the costs of the current Federal policy could be significant.

Figure 3. Change in Average U.S. Gasoline Price Relative to Business as Usual



The required reduction or elimination of MTBE significantly increases the demand for ethanol despite the assumed repeal of the 2 percent oxygenate requirement (see figure 4). In the scenario where MTBE is limited to 3 percent volume per gallon without a renewable fuels standard, the volume of ethanol consumed increases 60 percent between 2000 and 2005. Eliminating MTBE results in about a 65 percent increase in ethanol over this period of time. The ethanol increase under the two “no renewable standard” scenarios is comparable to the effect of a 1.7 percent renewable standard in 2005. A renewable fuels standard of 2 percent results in a little less than 90 percent increase in ethanol consumption over this 5-year period. With a significant reduction or elimination of MTBE and improvement in ethanol production methods, the cost of the renewable standard will decline over time.

Figure 4. Total U.S. Ethanol Demand

E. Results from Other Analyses

Two other studies have also analyzed the impacts of eliminating or reducing the use of MTBE on a national level under a variety of scenarios:

- The National Petroleum Council (NPC) study (MathPro 2000) used MathPro Incorporated's refinery LP modeling system.
- Oak Ridge National Laboratory used its ORNL Refinery Yield Model (see Hadder 1997, 1999 for previous modeling results).

Both models have detailed representations of refinery production and can provide information about the impacts of a change in MTBE policy on production costs, ethanol demand, and other relevant issues. However, these models take total domestic gasoline production as an assumption, and do not account for the change in consumer demand and foreign production in response to price changes that would alter the total gasoline produced in domestic refineries. Thus, while assumptions about the total amount of gasoline produced may bias cost estimates up or down, we believe that this summary of modeling work is illustrative of what the relative impacts of different policy scenarios could be. The results from these two models can further characterize the economic implications of various policy options associated with a change in MTBE policy and complement the results from EIA.

Maintaining Toxic Emissions Benefits

The EIA model did not assess the impacts that failing to maintain current air toxic emissions benefits would have on gasoline

prices and ethanol demand. However, ORNL and MathPro did evaluate a set of scenarios with different assumptions about the allowed toxic emissions and are useful for identifying the potential impact a requirement to maintain air quality benefits could have. Maintaining current toxic emissions levels would likely increase the demand for ethanol. For example, in the ORNL analysis, ethanol use in the East and Gulf Coasts double under this requirement relative to a scenario without such a requirement. The effects of maintaining toxic emissions benefits on production costs appear to be relatively modest. In the ORNL analyses, this requirement increases the average production cost of fuel by 0.2 to 0.7 cent more per gallon for all gasoline produced in East and Gulf Coast refineries.⁷ The MathPro analysis found this requirement would increase the average production cost by about 0.2 cent per gallon.

Repealing the Oxygenate Mandate

One of the Administration's principles is to repeal the oxygenate mandate for RFG. Without a repeal, but with a phase-down or elimination of MTBE, refiners making RFG will be faced with a de facto requirement to use ethanol in all RFG produced. This creates a demand for significantly greater volumes of ethanol than are currently available, a need to move ethanol to new and more distant markets, and increased difficulty and costs for producing summer RFG (ethanol's higher volatility would need to be offset by less volatile petroleum blendstocks) in RFG areas where ethanol is not now used. While ethanol, like other oxygenates, has valuable characteristics for making RFG, cost savings and greater production reliability will be gained from allowing refiners flexibility to choose when, where, and in what amounts to use it. For summer RFG these average production cost savings are on the order of 1 cent per gallon of RFG. A renewable fuels standard with averaging on a national and annual basis would provide refiners more flexibility to produce and transport gasoline to meet Clean Air Act requirements, thereby helping to hold down increases in gasoline production costs. Indeed, a renewable fuels standard that would result in the same volume of ethanol consumed nationwide as maintaining the current oxygenate mandate would have lower costs to refiners and consumers than the oxygenate mandate. The opportunity to average, or trade, geographically and across the seasons of the year is a critical distinction between the renewable fuel standard and the oxygenate mandate.

Renewable Fuels Standard

The MathPro study did not assess the impacts of a renewable fuels standard. The ORNL analysis, however, did consider several scenarios including a 2 percent standard. Banning MTBE with a 2 percent renewable fuels standard would increase average production costs by up to 2.0 cents per gallon in the East and Gulf Coasts, and 1.1 cents per gallon in the Midwest. The saline scenarios without the 2 percent renewable standard would have slightly lower cost impacts. East and Gulf Coast average gasoline production

⁷It is important to note that the results from the MathPro and ORNL analyses represent average costs, while the EIA results reflect marginal costs. Thus, the results between these analyses are not comparable.

costs would increase up to 1.7 cents per gallon and Midwest costs would increase 0.7 cent per gallon. The 2 percent renewable standard in the ORNL analyses increase ethanol production by 24 percent, with average gasoline production costs increases ranging from less than 20 percent (0.3 cent per gallon) in the East and Gulf Coasts to more than 50 percent (0.4 cent per gallon) in the Midwest.

VI. Highway Trust Fund Receipt Impacts

The principal source of revenue impacts for the Highway Trust Fund would reflect a shift from gasoline to gasoline-ethanol blends. Gasohol, gasoline blended with ethanol, bears a lower tax rate than gasoline as part of an existing program to promote renewable fuels.⁸ The substitution of gasohol (taxed at 13 to 15.3 cents per gallon depending on ethanol content) for gasoline (taxed at 18.4 cents per gallon) would result in reduced receipts for the Highway Account of the Highway Trust Fund.

In addition, the General Fund retains a portion of the tax on gasohol or other ethanol fuel. This retention is unique to alcohol fuels among all highway fuels. For each gallon of gasoline-ethanol blended product, the General Fund retains 2.5 cents per gallon of the tax. If the blend contains 10 percent ethanol, then the Fund retains 3.1 cents per gallon. At current ethanol usage rates, the Highway Trust Fund receives about \$1 billion per year less in revenues because of the reduced tax rate and diversion of some receipts to the General Fund.

A. Impact of Highway Trust Fund revenue reductions on the Federal-aid Highway Program

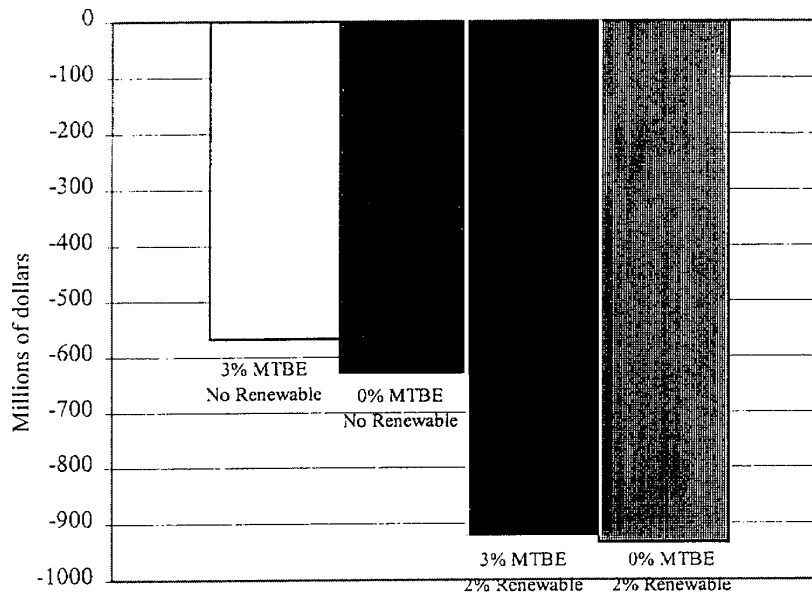
With the passage of the Transportation Equity Act for the 21st Century (TEA-21) (P.L. 105-178), the funding level for the Federal-aid Highway Program is directly linked to income to the Highway Account of the Highway Trust Fund. When the President's Budget is submitted to Congress, the Federal-aid Highway Program authorization and obligation limitation levels are adjusted to the extent that new projections of Highway Account receipts for the budget year and actual Highway Account receipts for the year 2 years earlier are higher or lower than the receipt estimates used for TEA-21. Increased use of ethanol blends would reduce Trust Fund tax receipts and reduce the size of the Highway Program on a dollar-for-dollar basis. Funding for each element of the Federal-aid Highway Program (except emergency relief) and the Motor Carrier Safety Assistance Program would be reduced as a result of the reduced income to the Trust Fund.

Based on the EIA model results, we assessed the impacts of four MTBE policy scenarios on Highway Trust Fund receipts. The Department of the Treasury conducted this analysis using the same methodology as in the fiscal year 2001 Administration budget submission to Congress. TEA-21 expires in fiscal year 2003, so these scenarios also assume a continuation of current law. Tax receipts appropriated to the Highway Trust Fund are estimated to total

⁸The Energy Tax Act of 1978 (P.L. 95-618) began the renewable fuel tax incentives program, which has undergone several modifications since then, most recently through TEA-21 (P.L. 105-178). The renewable final tax incentive program expires in 2007.

\$37.6 billion in fiscal year 2005. Thus, the potential trust fund impacts, ranging between more than \$0.5 billion and a little under \$1 billion per year, would be on the order of 1 to 2 percent of the total fund (see figure 5). However, if the tax incentive expires in 2007, as currently scheduled, the impact on the trust fund would be significantly diminished.

Figure 5. Change in Highway Trust Fund Receipts, 2005



B. Impact of shift to ethanol fuels on the distribution of certain highway program funds

Statutory formulas determine the distribution of most Federal-aid Highway Program funds among the States. TEA-21 established the current apportionment formulas that reflect a negotiated balance among the States for equitable formulas. In two cases, these formulas use “contributions” to the Highway Account of the Highway Trust Fund as a factor in apportioning funds among the States. For the Surface Transportation Program, authorized at almost \$6 billion a year through 2003, 35 percent of the funds each year are distributed among the States based on each State’s relative share of contributions to the Highway Account of the Highway Trust Fund. A second formula, the Minimum Guarantee, guarantees that each State’s share of apportionments of Federal-aid Highway Program funds will be not less than 90.5 percent of its share of contributions to the Highway Account of the Highway Trust Fund. The Minimum Guarantee has an indefinite authorization (such sums as may be necessary). Almost \$7 billion were distributed under the Minimum Guarantee for fiscal year 2000. Analysis of the distributional impacts on the Highway Trust Fund will be provided separately.

VII. Conclusion

We must take steps to protect America's drinking water supplies from further MTBE contamination and legislation is the fastest and best way to achieve this. Based on the examination of the economic consequences of policies reducing or eliminating MTBE presented here, we believe that that legislation, along the lines of the Administration's principles, can address the MTBE problem in a cost-effective manner while providing additional benefits. The risks posed to the nation's water supplies by MTBE contamination can be addressed while maintaining the air quality benefits of the reformulated gasoline program. Moreover, repealing the oxygenate mandate while implementing a renewable fuels standard would promote growth in renewable fuels while providing greater flexibility to refiners. Taken as a package, this approach represents a responsible and effective approach to addressing this serious problem.

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Impacts of Various MTBE Reduction Scenarios on the Federal-aid Highway Programs

The report, Analysis of Policy Scenarios for Reducing or Eliminating MTBE, analyzed the economic consequences of either reducing or eliminating MTBE, while maintaining air quality and increasing the use of renewable fuels. Four different scenarios were evaluated under the assumption that the oxygenate requirement is waived and emissions of air toxics are held to their current level (maintaining toxic emissions benefits). The various options for each scenario included banning MTBE beginning in 2003, imposing a 3 percent by volume cap (the pre-1990 MTBE content of gasoline) in 2003, no renewable fuels standard, and a 2 percent renewable fuels standard in 2005. The MTBE content refers to a nationwide standard including California and New York, despite existing State laws to phaseout MTBE. Note that while the scenarios evaluated contain elements of a number of legislative proposals, they do not correspond to specific bills.

Scenarios Evaluated

Scenario	MTBE Content Effective in 2003	Renewable Fuels Standard Effective in 2005
EIA1	3%	0%
EIA2	0%	0%
EIA3	3%	2%
EIA4	0%	2%

This document illustrates the impact of the scenarios on the distribution of funds under the Federal-aid Highway Program. The assumptions of the scenarios impact the Federal-aid Highway Program in two ways: First, in cases where ethanol blends are substituted for gasoline, receipts to the Highway Account of the High-

way Trust Fund are reduced compared to the estimates made for the fiscal year 2001 President's Budget submission. Under current law, which expires at the end of fiscal year 2003, Federal-aid Highway Program authorizations are linked to the receipts to the Highway Account.

Second, there would be distributional effects. These are caused by the fact that two of the components of the Federal-aid Highway Program—the Surface Transportation Program and the Minimum Guarantee—use contributions to the Highway Account of the Highway Trust Fund as a factor in the distribution of funds. States using increasing amounts of ethanol fuels, which are taxed at lower rates than gasoline, will contribute a smaller share of the Highway Account receipts. Thus, the Federal-aid Highway Program “pie” is smaller and the portion of the reduced pie that each State receives also shifts. States using increased amounts of ethanol will contribute less to the Highway Account and receive proportionately smaller shares of the reduced funding and other States will receive proportionately larger shares of the funds.

The following table shows estimates of the share of the Federal-aid Highway Program apportioned funds (formula funds) that each State would receive under each scenario in fiscal year 2005. The shares resulting from the scenarios are compared to a baseline that reflects current fuel consumption patterns and the fiscal year 2001 President's Budget revenue estimates.

Comparison of fiscal year 2005 State Shares of Federal-Aid Highway Program Apportionments under MTBE Scenarios²

State	Baseline ³	Scenario EIA1		Scenario EIA2		Scenario EIA3		Scenario EIA4	
		Share (%)	Delta (%)	Share (%)	Delta (%)	Share (%)	Delta (%)	Share (%)	Delta (%)
Alabama	2.0092	1.9740	-0.0352	1.9683	-0.0409	1.9743	-0.0349	1.9684	-0.0408
Alaska	1.1753	1.1546	-0.0207	1.1506	-0.0247	1.1548	-0.0205	1.1503	0.0250
Arizona	1.6864	1.6924	0.0060	1.6930	0.0065	1.6922	0.0057	1.6936	0.0072
Arkansas	1.3166	1.3338	0.0171	0.3414	0.0247	1.3337	0.0170	1.3414	0.0247
California	9.0883	9.1678	0.0795	9.1797	0.0914	9.1667	0.0785	9.1833	0.0950
Colorado	1.1547	1.1344	-0.0203	1.1305	-0.0242	1.1346	-0.0201	1.1302	-0.0245
Connecticut	1.4979	1.4716	-0.0264	1.4665	-0.0315	1.4718	-0.0262	1.4661	-0.0319
Delaware	0.4364	0.4287	-0.0077	0.4272	-0.0092	0.4288	-0.0076	0.4271	-0.0093
Dist. of Col ..	0.3902	0.3833	-0.0069	0.3820	-0.0082	0.3834	-0.0068	0.3819	-0.0083
Florida	4.7102	4.8680	0.1578	4.8967	0.1865	4.8676	0.1574	4.8967	0.1865
Georgia	3.5052	3.6143	0.1091	3.6356	0.1304	3.6141	0.1088	3.6357	0.1304
Hawaii	0.5107	0.5017	-0.0090	0.4999	-0.0107	0.5017	-0.0089	0.4998	-0.0109
Idaho	0.7646	0.7512	-0.0134	0.7486	-0.0160	0.7513	-0.0133	0.7484	-0.0162
Illinois	3.3359	3.2771	-0.0588	3.2658	-0.0701	3.2776	-0.0583	3.2649	-0.0710
Indiana	2.4439	2.3815	-0.0624	2.3663	-0.0776	2.3810	-0.0629	2.3676	-0.0763
Iowa	1.1857	1.1648	-0.0209	1.1607	-0.0249	1.1649	-0.0207	1.1604	-0.0252
Kansas	1.1558	1.1354	-0.0204	1.1315	-0.0243	1.1356	-0.0202	1.1312	-0.0246
Kentucky	1.7638	1.8080	0.0441	1.8166	0.0528	1.8078	0.0440	1.8167	0.0529
Louisiana	1.6160	1.6655	0.0494	1.6750	0.0590	1.6653	0.0493	1.6750	0.0590
Maine	0.5257	0.5166	-0.0091	0.5148	-0.0109	0.5167	-0.0091	0.5147	-0.0111
Maryland	1.5721	1.6191	0.0469	1.6276	0.0554	1.6189	0.0468	1.6276	0.0555
Massachu- setts	1.8549	1.8226	-0.0324	1.8162	-0.0387	1.8228	-0.0321	1.8258	-0.0392
Michigan	3.1541	3.1818	0.0277	3.1840	0.0299	3.184	0.0273	3.184	0.0307
Minnesota	1.4789	1.4529	-0.0261	1.4478	-0.0311	1.4531	-0.0258	1.4475	-0.0315
Mississippi ..	1.2335	1.2714	0.0379	1.2789	0.0454	1.2713	0.0378	1.2789	0.0454
Missouri	2.4439	2.5005	0.0567	2.5114	0.0675	2.5003	0.0565	2.5115	0.0677
Montana	0.9794	0.9621	-0.0173	0.9588	-0.0206	0.9623	-0.0171	0.9586	-0.0208
Nebraska	0.7662	0.7527	-0.0135	0.7501	-0.0161	0.7528	-0.0134	0.7499	-0.0163

Comparison of fiscal year 2005 State Shares of Federal-Aid Highway Program Apportionments under MTBE Scenarios²

State	Baseline ³	Scenario EIA1		Scenario EIA2		Scenario EIA3		Scenario EIA4	
		Share (%)	Delta (%)	Share (%)	Delta (%)	Share (%)	Delta (%)	Share (%)	Delta (%)
Nevada	0.7149	0.7023	-0.0126	0.6999	-0.0150	0.7024	-0.0125	0.6997	-0.0152
New Hampshire	0.5126	0.5036	-0.0090	0.5019	-0.0107	0.5037	-0.0089	0.5017	-0.0108
New Jersey ...	2.6027	2.6671	0.0644	2.6784	0.0757	2.6669	0.0642	2.6787	0.0760
New Mexico ..	0.9750	0.9578	-0.0172	0.9545	-0.0205	0.9579	-0.0170	0.9542	-0.0207
New York	5.0926	5.0029	-0.0897	4.9855	-0.1070	5.0036	-0.0890	4.9843	-0.1083
North Carolina	2.7913	2.7734	-0.0179	2.7703	-0.0210	2.7729	-0.0184	2.7712	-0.0202
North Dakota	0.6464	0.6350	-0.0114	0.6328	-0.0136	0.6351	-0.0113	0.6326	-0.0137
Ohio	3.4228	3.3196	-0.1032	3.3081	-0.0114	3.3200	-0.1027	3.3072	-0.1155
Oklahoma	1.5242	1.5617	0.0375	1.5708	0.0466	1.5616	0.0374	1.5708	0.0466
Oregon	1.2215	1.2004	-0.0212	1.1962	-0.0253	1.2005	-0.0210	1.1959	-0.0256
Pennsylvania	4.9868	4.9001	-0.0866	4.8832	-0.1036	4.9008	-0.0859	4.8819	-0.1049
Rhode Island	0.5910	0.5806	-0.0104	0.5786	-0.0124	0.5807	-0.0103	0.5785	-0.0125
South Carolina	1.6380	1.6896	0.0515	1.6995	0.0614	1.6895	0.0514	1.6995	0.0614
South Dakota	0.7208	0.7084	-0.0124	0.7060	-0.0149	0.7085	-0.0123	0.7058	-0.0150
Tennessee	2.2566	2.3258	0.0692	2.3393	0.0827	2.3256	0.0690	2.3393	0.0827
Texas	7.2594	7.3417	0.0823	7.3532	0.0938	7.3408	0.0814	7.3547	0.0953
Utah	0.7724	0.7627	-0.0097	0.7609	-0.0116	0.7626	-0.0098	0.7612	-0.0112
Vermont	0.4511	0.4431	-0.0079	0.4416	-0.0095	0.4432	-0.0079	0.4415	-0.0096
Virginia	2.5311	2.5007	-0.0304	2.4969	-0.0342	2.5003	-0.0308	2.4978	-0.0334
Washington ..	1.7632	1.7321	-0.0311	1.7261	-0.0371	1.7324	-0.0308	1.7257	-0.0375
West Virginia	1.1165	1.0968	-0.0197	1.0930	-0.035	1.0970	-0.0195	1.0928	-0.0237
Wisconsin	1.9645	1.9299	-0.0346	1.9232	-0.0413	1.9302	-0.0343	1.9227	-0.0418
Wyoming	0.6889	0.6769	-0.0121	0.6745	-0.0144	0.6770	-0.0120	0.6743	-0.0146
Total ...	100.0000	100.0000	.....	100.0000	.....	100.0000	.....	100.0000	.....

¹ This document is a supplement to the report, Analysis of Policy Scenarios for Reducing or Eliminating MTBE. A full description of the analysis and the development of the scenarios may be found in that report.

² The scenarios evaluated do not correspond to specific legislative proposals and are for illustrative purposes only.

³ For comparison purposes a baseline is provided. It is based on current fuel consumption patterns and revenue estimates for fiscal year 2005 from the fiscal year 2001 President's Budget.

DEPARTMENT OF ENERGY,
Washington, DC 20585, July 17, 2000.

The HONORABLE BOB SMITH, *Chairman,*
Committee on Environment and Public Works,
U.S. Senate,
Washington DC 20510

DEAR MR. SMITH: As you requested in your letter of June 30, 2000, we have developed a "State Action" MTBE ban scenario. The "State Action" scenario assumes that States ban MTBE but that no Federal action related to the oxygen requirement for reformulated gasoline (RFG) will occur. This scenario supplements four other scenarios related to MTBE reduction, that were completed at the request of the President's Council of Economic Advisers in May 2000.

The "State Action" scenario assumes no waiver of the Federal oxygen requirement for RFG, States ban MTBE starting in 2003, and all areas currently participating in the RFG program continue to do so. Given these assumptions the average price of all gasoline (both RFG and conventional) in the United States is between 7 and 8 cents per gallon higher between 2003 and 2035 than the reference case. Since RFG makes up about 30 percent of the national gasoline pool, the expected price increases for complying gasoline in RFG areas would be substantially higher. In the "State Action" scenario, ethanol demand increases to 229,000 barrels per day in 2005, which is more than double the consumption estimated for 2000, and about 100,000 barrels per day above the reference case demand in 2005. Further details about results and methodology of the Estate Actions scenario are provided in the enclosed summary document.

We appreciate the opportunity to contribute to the analysis of this issue. If you have any questions or comments, please contact me or have your staff contact Mary Hutzler at 586-2222.

Sincerely,

L.A. PETTIS, ACTING ADMINISTRATOR,
Energy Information Administration.

SUMMARY OF "STATE ACTION" SCENARIO REQUESTED BY THE
SENATE COMMITTEE ON ENVIRONMENT PUBLIC WORKS

The Energy Information Administration completed this analysis at the request of the Senate Committee on Environment and Public Works as part of its assessment of legislative options related to methyl tertiary butyl ether (MTBE) reduction. The committee requested a "State Action" scenario, which assumes that MTBE will be banned by States, but the Federal oxygen requirement for reformulated gasoline (RFG) will not be waived. This "State Action" scenario supplements four MTBE related scenarios completed earlier at the request of the President's Council of Economic Advisers. The "State Action" scenario resulted in about 100,000 barrels per day additional ethanol blending and U.S. average gasoline prices (both RFG and conventional) of 7 to 8 cents per gallon higher than the reference case. Since RFG makes up about 30 percent of the national gasoline pool, the expected price increases for complying gasoline in RFG areas would be substantially higher. The incremental price increase of this scenario is larger than any of the options explored previously. The methodology and results of this analysis as they compare to the reference case and the previous MTBE scenarios are described below.

Methodology

The analysis was performed using the Petroleum Market Module (PMM) in the National Energy Modeling System (NEMS). The PMM represents domestic refinery operations and the marketing of petroleum products to consumption regions. PMM solves for petroleum product prices, crude oil and product import activity (in conjunction with the international energy module and the oil and gas supply module), and domestic refinery capacity expansion and fuel consumption. PMM is a regional, linear programming representation of the U.S. petroleum market. Refining operations are represented by a three region linear programming formulation of the five Petroleum Administration for Defense Districts (PADDs). PADDs I (East Coast) and V (West Coast) are each treated as single regions, while PADDs II (Midwest), III (Gulf Coast), and IV (Rocky Mountains) are aggregated into one region. Each region is considered as a single firm where more than 59 distinct refinery processes are modeled. Refining capacity is allowed to expand in each region over each non-overlapping 3-year period. That is, in 2001 the model looks ahead to 2004 to determine how much new capacity is required and then allows additions of new capacity in 2002, 2003, and 2004. The capacity planning decisions begin anew for 2007 at the end of 2004. As a result, cumulative investment for any given year includes investment to meet future expectations of market demand. As with the four previous scenarios, the "State Action" sce-

nario assumes a return on investment (ROI) component of 10 percent with a 15 percent hurdle rate for investment decisions.

In the model, products are produced to actual average specifications and demands with calibrations to account for non-linear blending, qualities such as Reid Vapor Pressure (RVP) in motor gasoline. The PMM models EPA's complex model requirements through specification constraints on aromatics, benzene, sulfur, RVP, E200, E300, olefins, and oxygen content. The specification constraints conform to EPA's complex model requirements for emissions reductions of VOCs, NO_x, and toxics.

Key Assumptions of "State Action" Scenario

States ban MTBE in 2003.

- The Federal minimum oxygen requirement of 2.0 percent (weight) for RFG remains intact. No waivers of the Federal statutory requirement are granted.

- No renewable fuels standard is assumed.

- Maintaining toxic emissions benefits. Air toxic emissions from RFG are assumed to be maintained at current levels.

- Low sulfur assumptions. The PMM does not account for the recently promulgated Tier 2/gasoline sulfur regulations. Investments for meeting the low-sulfur gasoline requirements may simplify additional modifications to accommodate limits on MTBE, making MTBE reduction less costly than it would have been on its own. On the other hand, sulfur reduction may result in both octane and volume losses, potentially increasing the costs of restricting the use of MTBE.

- Assumed gasoline demand. The gasoline forecast is based on the Annual Energy Outlook 2000 demand forecast: 9.4 million barrels per day in 2005 and 10.2 million barrels per day in 2010.

- Areas that currently use RFG are assumed to continue to use RFG.

- MTBE use outside the United States will continue. As with the previous scenarios, no ban or reduction in the use of MTBE is assumed for other countries. Assuming an international reduction in MTBE use would have implications for import availability that have not been analyzed.

- Cost of increased ethanol blending. The PMM solves for the increase in ethanol prices resulting from greater demand. All additional ethanol requirements are assumed to be met with domestic supply. The level of ethanol production required this scenario is associated with production costs which are between 35 and 40 cents per gallon higher than the reference case between 2003 and 2005. These costs do not reflect any additional infrastructure costs that might be associated with the expansion of ethanol blending.

Results of the "State Action" Scenario

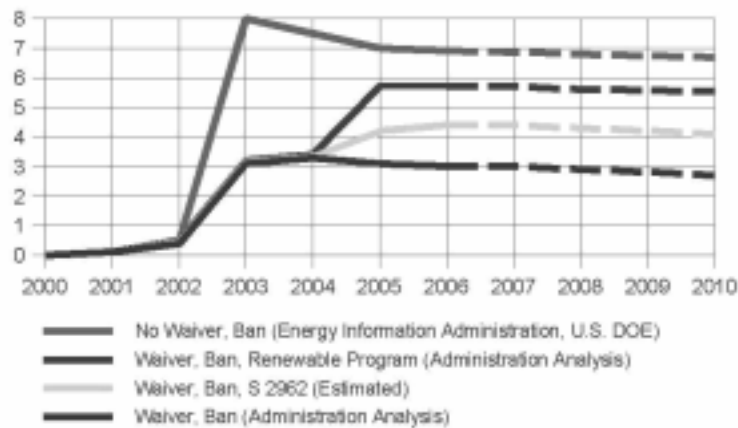
The results of this scenario can be evaluated in terms of incremental differences from a reference case. Like the "State Action" case, the reference case assumes that the Federal oxygen require-

ment for RFG remains intact. However, the reference case reflects no phase-out of MTBE outside of California.¹

The “State Action” scenario resulted in higher U.S. average gasoline prices of about 8 cents per gallon in 2003, declining to 7 cents per gallon by 2005 compared to the reference case. In this scenario ethanol demand increases to 229,000 thousand barrels per day in 2005 which is more than double the consumption estimated for 2000, and about 100,000 barrels per day above the reference case demand.

APPENDIX VIII

COMPARISON OF POLICY OPTIONS Fuel Price Increases in Cents Per Gallon



HEARINGS

On December 9, 1997, the Committee on Environment and Public Works held a field hearing on the presence of MTBE in the nation’s water supply. The hearing was held in Sacramento, California. Testimony was given by Nancy J. Balter, principal, Center for Environmental Health and Human Toxicology, and former associate professor of pharmacology, Georgetown University Medical Center; Nachman Brautbar, professor of clinical medicine, University of Southern California School of Medicine; Cynthia Dougherty, Director, Office of Groundwater and Drinking Water, Environmental Protection Agency; Stephen K. Hall, executive director, Association

¹The reference case is similar to the reference case in the Annual Energy Outlook 2000, but uses a return on investment (ROI) of 10 percent instead of 15 percent, to be more consistent with other industry studies. This reference case also includes a minor correction to the specifications of sub-specification gasoline which is blended with ethanol to produce finished gasoline.

of California Water Agencies; The Honorable Tom Hayden, California State Senator; The Honorable Richard Mountjoy, California State Senator; Gary Patton, counsel, The Planning and Conservation League; Craig Perkins, Director of Environment and Public Works Management, City of Santa Monica, California; Peter M. Rooney, Secretary, California State Environmental Protection Agency; David Spath, Chief, Drinking Water and Environmental Management Division, California State Environmental Protection Agency; and John Zogorski, Chief of National Synthesis on Volatile Organic Compounds and MTBE, U.S. Geological Survey.

On September 16, 1998, the Committee on Environment and Public Works held a hearing on S. 1576, a bill to amend the Clean Air Act to permit the exclusive application of California State regulations regarding reformulated gasoline in certain areas within the state. Testimony was given by The Honorable Brian Bilbray, U.S. Representative from the State of California; John D. Dunlap, III, chairman, California Air Resources Board; Douglas A. Durante, executive director, Clean Fuels Development Coalition; The Honorable Dianne Feinstein, U.S. Senator from the State of California; Daniel S. Greenbaum, president, Health Effects Institute; Al Jessel, senior fuels specialist, Chevron Products Company; and Ned Sullivan, commissioner, Maine Department of Environmental Conservation.

On October 5, 1999, the Subcommittee on Clean Air, Wetlands, Private Property and Nuclear Safety of the Committee on Environment and Public Works held a hearing on the Blue Ribbon Panel findings on MTBE. Testimony was given by Robert H. Campbell, chairman and chief executive officer, Sunoco, Inc.; The Honorable Jake Garn, vice chairman, Huntsman Corporation; Daniel S. Greenbaum, president, Health Effects Institute; and Michael P. Kenny, executive officer, California Air Resources Board.

On June 14, 2000, the Subcommittee on Clean Air, Wetlands, Private Property and Nuclear Safety of the Committee on Environment and Public Works held a hearing on the environmental benefits and impacts of ethanol under the Clean Air Act. Testimony was given by Dan Greenbaum, president, Health Effects Institute; Blake Early, environmental consultant, American Lung Association; Michael Graboski, director, Colorado Institute for Fuels and High Altitude Engine Research, Colorado Department of Chemical Engineering, Colorado School of Mines; Bob Slaughter, director, National Petrochemical & Refiners Association; Jack Huggins, vice president, Williams Energy Services; Jason Grumet, executive director, Northeast States for Coordinated Air Use Management; Stephen Gatto, president and chief executive officer, BC International; Gordon Proctor, director, Ohio Department of Transportation; The Honorable Charles Grassley, United States Senator from the State of Iowa; The Honorable Tom Harkin, United States Senator from the State of Iowa; The Honorable Richard Durbin, United States Senator from the State of Illinois.

LEGISLATIVE HISTORY

On July 27, 2000, S. 2962 was received in the Senate, read twice, and referred to the Committee on Environment and Public Works. On September 7, 2000, the committee held a business meeting to

consider the bill. The bill, as amended, was ordered Reported on September 7, 2000.

ROLL CALL VOTES

On September 7, 2000 at 9:30 a.m., the committee held a business meeting to consider S. 2962. A manager's amendment offered by Senator Smith was agreed to by unanimous consent. An amendment relating to the waivers under the Clean Alternative Fuel program the offered by Senator Inhofe was agreed to by voice vote. A second amendment relating to limiting liability for mandated fuel additives offered by Senator Inhofe was defeated by voice vote. An amendment to establish a Transition Investment Program for MTBE producers offered by Senator Hutchison was defeated by voice vote. Two amendments that struck most provisions of the bill, one on risk analysis and another authorizing additional funds for MTBE cleanup, offered by Senator Bennett were defeated en bloc by voice vote. The committee recessed at 11:35 a.m. to reconvene at the call of the chair.

The committee reconvened at 12:20 p.m. in the President's Room (S-216, U.S. Capitol). The committee continued consideration of S. 2962. Upon no further discussion of the bill, a motion to report the bill was taken by recorded vote. Senator Boxer's motion to report the bill, as amended, was agreed to by 11 ayes, 6 nays, and 1 not voting. Voting in favor were Senators Baucus, Boxer, Chafee, Crapo, Graham, Lautenberg, Moynihan, Reid, Voinovich, Wyden, and Smith. Voting against were Senators Bennett, Bond, Hutchison, Inhofe, Thomas, and Warner. Senator Lieberman was recorded as not voting.

REGULATORY IMPACT STATEMENT

The regulatory authority granted by this bill is structured to streamline and make flexible the imposition of any new requirements.

The authority to waive the oxygen mandate granted to Governors under Section 2 of this bill requires no regulatory action to become effective. Section 2 authorizes regulations to establish new performance standards for toxic emissions and aromatic content of gasoline. If regulations are not promulgated within 270 days, statutory performance standards become effective, rendering regulations unnecessary. The statutory performance standards could be revised by regulation based on data described in Section 2. Compliance with the performance standards is managed through existing regulatory structures under Section 211 (k) of the CAA.

No regulatory action is required to effect the elimination of MTBE. Regulatory authority is provided to the Administrator to implement a phase down prior to the ban on use of MTBE. Use of this authority is not mandated by the bill. The Administrator's existing authority to limit the use of fuels or fuel additives is expanded by the bill to allow consideration of water pollution effects.

The provision in Section 4 that allows for adjusting RVP requirements relies entirely on existing authority and regulatory structures for revision and approval of SIPs.

Section 6 creates new regulatory authority to implement market-based compliance strategies. It is expected that the credit-trading regulations could largely be drawn from existing regulatory structures used to implement Title 2 and Title 4 of the CAA. Regulations necessary to govern the calculation of credits are the exception and would be new. The definitions of vehicles eligible for credits under this section have been primarily drawn from existing regulatory structures and promulgated regulations, including the Tier 2 vehicle emission regulations.

Section 6 provides new regulatory authority for granting waivers of the provisions of this section. This authority would only be used in response to a waiver application by one or more States.

The provisions in Section 7 regarding additional opt-in areas rely entirely on existing authority and regulatory structures for revisions and approvals of SIPs.

Section 9 of the bill adds mandatory deadlines for the exercise of EPA's existing regulatory authority to maintain air quality through standards and performance requirements for motor fuels, fuel additives, and vehicles. The Administrator must issue regulations: a) not later than 7 years after enactment, to ensure that the requirements of this bill affecting motor vehicle fuels and fuel additives will not lead to a worsening of air quality or significantly increased emissions on a per gallon average compared to a 1998–2000 baseline; and b) not later than 10 years after enactment, to establish performance requirements for motor vehicle fuels, fuel additives, and vehicles which are necessary to adequately protect public health and the environment and achieve specific reductions in the use of compounds or associated emission products that pose the greatest risk to human health. Both regulations are preceded by analyses which require the Administrator to consider the entire life cycle of the production, distribution, and use of motor vehicle fuels, fuel additives, and vehicles. Compliance with both regulations is required as expeditiously as practicable, taking into account costs and lead time, similar to conditions in Section 202 (i) of the CAA.

MANDATES ASSESSMENT

In compliance with the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4), the committee finds that this bill imposes no Federal intergovernmental unfunded mandates on State, local or tribal governments. All of the bill's governmental directives are imposed on Federal agencies. Furthermore, Section 2 of the bill provides relief from the mandate in current law that RFG contain 2 percent oxygen by weight. This bill provides authority to the Governor of a State to waive that CAA mandate. In addition, the committee finds that this bill does not preempt any State, local or tribal law.

The committee finds that this bill imposes two mandates on the private sector. Section 3 of the bill prohibits the use of MTBE as a fuel additive. This ban requires the private sector to identify and use alternative fuel additives, which may increase fuel production costs. Section 6 of the bill establishes a Clean Alternative Fuel program that reserves an increasing portion of the total motor vehicle fuel pool for fuel that: 1) reduces pollution relative to conventional

fuel usage; and 2) displaces some petroleum consumption. This new program is expected to increase the cost of fuel production.

Section 423(c) of the Unfunded Mandates Reform Act requires each report to contain an estimate of the direct costs to the private sector required to comply with the Federal mandates. The committee is unable to include such estimates at this time because the Congressional Budget Office has not completed an analysis of the bill as reported by the committee.

COST OF LEGISLATION

Section 403 of the Congressional Budget and Impoundment Act requires each report to contain a statement of the cost of a reported bill prepared by the Congressional Budget Office. Senate Rule XXVI paragraph 11(a)(3) allows the report to include a statement of the reasons why compliance by the committee is impracticable. The committee is unable to include a statement of the cost at this time because the Congressional Budget Office has not finished an analysis of the bill.

ADDITIONAL VIEWS OF SENATOR GEORGE V. VOINOVICH

As a member of this committee, I supported S. 2962 because I believe it contains three of my main environmental priorities banning MTBE, protecting air and water quality, and encouraging the use of ethanol and other alternative fuels.

I have been a strong supporter of the use of ethanol for its environmental benefits toward reducing carbon monoxide, particulate matter and toxics. In addition, I believe it benefits the agricultural community through the use of corn. And I support the use of ethanol as a way to help reduce our nation's dependence on foreign oil.

Ethanol has been beneficial to the environment and the agricultural community. It has been used successfully to improve air quality in areas that use Reformulated Gasoline (RFG). It also has reduced carbon monoxide emissions under the Oxygenated Fuels program in carbon monoxide nonattainment areas.

Like MTBE, another oxygenate used in RFG, ethanol helps lower emissions of volatile organic compounds (VOCs), toxics, carbon monoxide and particulate matter. According to EPA, RFG is responsible for 17 percent reductions in VOC emissions and 30 percent reductions in toxic emissions. Oxygenates, such as ethanol, also reduce the use of aromatics in gasoline, many of which are known or potential human carcinogens.

Unlike MTBE, however, ethanol does not contaminate ground water and drinking water systems.

In addition, the production of ethanol is helping our nation's farmers. The U.S. Department of Agriculture estimates that about 555 million bushels of corn are used to produce about 1.4 billion gallons of fuel ethanol.

I also believe one of the important benefits of using ethanol is that it is domestically produced. While I do not believe that ethanol will take the place of conventional gasoline, I believe it is important to support its growth as a tool to help reduce this country's reliance on foreign oil and gasoline imports. Today, our oil imports have risen to about 55 percent.

However, as chairman of the Transportation and Infrastructure Subcommittee, I believe we need to keep in mind the effects that increased ethanol use would have on the Highway Trust Fund.

The sale of ethanol-blended gasoline results in a loss of highway revenues because of the ethanol tax credit. Under current law, the tax on gasohol comprised of 10 percent ethanol is 5.4 cents per gallon less than the tax on gasoline. As a result, tax deposits to the Highway Trust Fund's highway account will be reduced approximately \$387 million this year alone. By increasing the sale of ethanol blended fuel, the bill will exacerbate that revenue loss, perhaps by a substantial amount.

Ohio's contribution to the highway trust fund is reduced by 8.5 cents for each gallon of ethanol-blended fuel sold in the State. I would expect that ethanol use will continue to rise and will continue to reduce not only Ohio's contributions to the trust fund, but other States' as well.

For Ohio, these reduced contributions to the highway trust fund reduce Ohio's Federal highway funding by \$185 million annually. To put that number in perspective, it equals 21 percent of Ohio's

total Federal obligation ceiling. It equals two-thirds of our State's entire construction budget. And, it equals the Ohio Department of Transportation's budget for routine bridge repair and replacement each year.

There is a way to ameliorate that problem to some extent. Specifically, over \$400 million per year of the tax on ethanol-blended fuels is diverted from the Highway Trust Fund into the General Fund. Before the next highway reauthorization bill is enacted, we should work with the Finance Committee to shift that tax into the Highway Trust Fund where it belongs.

Under current law, 10 percent ethanol-blended gasohol is taxed at 13 cents per gallon. 9.8 cents is deposited into the Highway Trust Fund; 0.1 cent goes to the Leaking Underground Storage Tank Fund; and the remaining 3.1 cents goes to the General Fund. I received a commitment from the chairman and ranking member of this committee to encourage the Finance Committee to move the 3.1-cent ethanol tax out of the General Fund and into the Highway Trust Fund.

Further, I am pleased that the committee adopted an amendment that I offered to place an average annual cap of 26 percent by volume on the amount of aromatics to be used in Reformulated Gasoline (RFG). Aromatics are produced in the gasoline refining process. They along with oxygenates have high octane and are used to increase performance in vehicles. It is likely that the aromatic content of gasoline would increase due to the removal of oxygenates from RFG. During the combustion process, aromatics are partially converted to benzene a known carcinogen xylene and toluene. In addition, aromatics are known to increase ozone pollution.

Essentially what this bill will do, with the inclusion of my amendment, is prevent any potential air pollution increases associated with aromatics, including benzene, xylene and toluene. The purpose of S. 2962 is to address a water contamination problem caused by the use of MTBE. However, with the inclusion of the aromatics amendment, this committee has sent a signal that the use of aromatics, which increase pollution and emissions of known carcinogens, is not acceptable.

ADDITIONAL VIEWS OF SENATORS LAUTENBERG, MOYNIHAN, AND
CHAFFEE

We support the bill as the most viable approach to eliminating the use of MTBE as a gasoline additive, while preserving the air quality benefits of the reformulated gasoline (RFG) program. We are taking this opportunity to clarify our views regarding the conditions under which a State may waive the Clean Alternative Fuel Requirements of the bill.

Without the waiver provision, the bill could ultimately lead to a near tripling of ethanol use nationwide. Our view is that ethanol should be used in gasoline when it can help reduce air pollution, that ethanol should not be used if the result is increased air pollution, and that implementation of the Clean Alternative Fuel Requirements Waiver Program should reflect this philosophy.

Ethanol use can provide important environmental benefits. For example, ethanol use helps to reduce carbon monoxide tailpipe emissions from older vehicles. Also, because ethanol is a good source of octane that contains no aromatics and modest levels of sulfur, refiners can use it to help achieve limits on toxic aromatics and sulfur in the RFG program.

At the same time, however, ethanol use can have substantial environmental drawbacks. Ethanol can significantly increase volatility when mixed with gasoline. Therefore, because evaporation of gasoline hydrocarbons is a major contributor to smog in most areas, ethanol use can complicate reduction of summertime smog. In addition, some tests show that ethanol in RFG increases tailpipe emissions of nitrogen oxides (NOx). Furthermore, tests also indicate that NOx increases are converted in the atmosphere to particulate pollution.

In addition to environmental considerations, we appreciate the fact that the bill allows economic harm to be considered in granting a waiver from the Clean Alternative Fuel Requirements. Oil refiners have warned us that excessive use of ethanol, particularly in the summertime, may cause supply dislocations. We strongly believe the EPA should implement the waiver program in a way that prevents such supply dislocations.

We strongly believe the U.S. Environmental Protection Agency (EPA) should take environmental and economic factors, such as those mentioned here, into consideration when deciding whether to grant a State's request to waive the requirements.

ADDITIONAL VIEWS OF SENATOR BARBARA BOXER

I was pleased to support S. 2962 as reported by the committee. I am also pleased to join in the majority views contained in this report. On August 4, 1999, the full Senate approved my Sense of the Senate calling for the phase-out of MTBE. In S. 2962, this committee has crafted a comprehensive solution to the MTBE problem that gives effect to the view of the Senate that MTBE must be phased out.

I write separately here to underscore the committee's work on two very important issues, and to urge the adoption of the bill by the full Senate.

The first issue is the committee's decision to provide for a direct and complete phase-out of MTBE. The second issue is the committee's decision to reject efforts to protect oil companies from lawsuits that would hold them responsible for cleaning up MTBE-contaminated groundwater and drinking water across the nation.

Almost 3 years ago, my friend, the late Senator John Chafee, permitted me to chair what turned out to be the first of many hearings this committee would hold on MTBE. I held that hearing in the wake of news that Santa Monica, California had lost the majority of its drinking water supply because a little-known fuel additive called MTBE had leaked into Santa Monica's major drinking water wells from underground fuel tanks.

Since Santa Monica, it has been estimated that some 10,000 groundwater wells in California are likely to be contaminated with MTBE. Lake Tahoe, Glenville, and other small communities in California have lost drinking water supplies to the turpentine taste and smell of MTBE. And we also now know, MTBE is not just a California problem. According to a March 2000 report of the U.S. Geological Survey, up to one third of the nation's drinking water supplies may now be contaminated with MTBE.

The basic facts I learned at that first MTBE hearing led me to call for MTBE's phase-out. Those facts remain unchallenged today and accurately foretold the contamination crisis we now face.

First, MTBE is one of the most widely used chemicals in the U.S. In 1997, in fact, MTBE was the second most-produced chemical in the nation. Second, it only takes a very small amount of MTBE to contaminate a drinking water supply with the detectable taste and odor of turpentine. Third, MTBE is classified by the Environmental Protection Agency (EPA) as a possible human carcinogen. Fourth, when MTBE leaks from an underground storage tank, from a motor boat or from a gas tank after a car accident into groundwater, it moves through that water very fast and very far. And, finally, unlike the other harmful toxins in gasoline, MTBE resists degrading once in water and is very expensive to remove from water.

In the years which followed that first hearing, a variety of solutions were proposed and considered before the solution of a complete MTBE phase-out was ultimately embraced by the committee in S. 2962. A discussion of those other proposals helps show why the committee found a complete phase-out to be the best solution to the MTBE problem.

The first proposed approach to the MTBE problem was simply to upgrade our nation's underground fuel storage tanks to prevent MTBE leaks. Proponents of this approach noted that any leak of gasoline from an underground tank poses a serious threat because, in addition to MTBE, gasoline contains highly toxic chemicals like benzene. Because such leaks are clearly dangerous for a variety of reasons, the argument went, we should focus upon making that system fail-safe.

While we must do all we can to ensure that underground fuel tanks don't leak, I did not believe that simply replacing old fuel tanks with new ones would solve the MTBE problem. The tank proposal ignores the other routes MTBE follows to our drinking water. It also ignores the fact that, as the EPA MTBE Blue Ribbon Panel noted, tanks—even new ones—will leak. Sometimes tanks aren't installed properly or have other defects that contribute to leaks.

For example, a July 22, 1999 study by the Santa Clara Valley Water District found that many of its new tanks are leaking. The study reviewed a total of 28 sites with fully upgraded storage tank systems which had not previously shown MTBE contamination to observe whether MTBE had leaked from those tanks. MTBE was detected in groundwater at 13 of these sites at concentrations ranging from 1 part per billion to 200,000 parts per billion.

The second approach to dealing with the MTBE problem was a proposal to amend the Clean Air Act to remove the requirement that reformulated gasoline contain 2 percent oxygen by weight. Proponents of this approach argued that oil companies only use MTBE to meet this Clean Air Act mandate. If that legal mandate were removed, the argument went, oil companies would voluntarily stop using MTBE and there would be no need for a direct MTBE ban.

But the Clean Air Act requirement is not the only reason oil companies choose to use MTBE. MTBE has been used since the 1970's as an octane booster and as a cheap way stretch gasoline supplies. So long as there are reasons for oil companies to use MTBE unrelated to the Clean Air Act's oxygen requirement, it was my view that oil companies would go right on using it.

And I didn't need to look further than California to prove it.

In California, the San Francisco Bay Area complies with clean air standards and, as a result, the Clean Air Act oxygen mandate doesn't apply there. Even in the absence of that mandate, however, in May 1999, two large oil companies added substantial amounts of MTBE to gasoline there in order to stretch supplies. There was no reason to believe that it wouldn't happen again.

The third approach to dealing with the MTBE problem was to substantially reduce its use, but to not phase it out entirely. This was, in fact, the recommendation of approximately half of the EPA MTBE Blue Ribbon Panel. (The remainder of the members called for a total phaseout.)

If it were the case that it took a large amount of MTBE to contaminate a drinking water supply, this approach may have worked. Unfortunately, it only takes an extremely small amount of MTBE to contaminate a drinking water supply. Public water agencies in California estimate that a single tablespoon of MTBE can contaminate the amount of water it takes to fill an Olympic-size pool.

The fourth approach, and the one the committee adopted in S. 2962, was to simply phaseout MTBE over a 4-year period. That is the approach taken in my legislation (S. 1037). That is the approach I have urged EPA to take since 1998, and which finally culminated in the EPA Toxic Substances Control Act (TSCA) rule-making to ban MTBE, which is now in its preliminary stages.

In my view, a total and complete phase-out is the only way to ensure that MTBE does not continue to poison our nation's drinking water.

The other issue I would like to underscore here is the committee's consideration and rejection of the Big Oil bailout amendment. That amendment would have provided oil companies with broad protection from lawsuits seeking to hold them responsible for cleaning up MTBE contamination. The rejection of this amendment was particularly important to California because several such cases have been brought there, including in Santa Monica and Lake Tahoe.

Proponents of the bailout amendment argued in committee that providing oil companies with protection from lawsuits is appropriate because Congress told oil companies to use MTBE.

But the words "methyl tertiary butyl ether" appear nowhere in the Clean Air Act.

Others argued that through adoption of the oxygen mandate, Congress was responsible for creating the market for MTBE and encouraging its use. Some of my colleagues also argued that oil companies didn't realize that MTBE would pose the pervasive drinking water threat we now know it to be.

As a result, amendment proponents concluded that Congress—and by extension American taxpayers—should pay to clean up MTBE contamination.

The history of both MTBE use and the committee's consideration of the oxygen requirement, however, don't support any of these arguments for the Big Oil bailout amendment.

First, long before the first word of the Clean Air Act Amendments of 1990 was ever written, oil companies were both using MTBE and planning to increase its use. In 1979, ARCO first asked EPA for approval to use MTBE in gasoline at volumes up to 7 percent as a way of boosting octane after lead was removed from gasoline. Noting that this decision "increase[d] dramatically" the use of MTBE, in 1986 EPA's Interagency Testing Committee recommended MTBE for listing and testing under TSCA.

So the market for MTBE existed long before the oxygen requirement of the Clean Air Act was written. MTBE was not a product invented to comply with that law.

Second, long before MTBE became an issue in California and elsewhere, oil companies knew it would pose a drinking water threat. The first noted release of MTBE wasn't Santa Monica in 1996, but Rockaway, New Jersey in 1980. There, a MTBE release from a Shell gas station contaminated a public drinking water supply.

By 1986, the Maine Department of Environmental Protection (DEP) presented a paper to the National Waterworks Association and the American Petroleum Institute accurately concluding that MTBE "is more soluble and [a] more rapidly spreading ground

water contaminant than other components of gasoline” and that MTBE “is more difficult to remove from contaminated water than other components of gasoline.”

The Maine DEP urged the oil industry not to use MTBE stored in underground fuel tanks, and to adopt other stringent protections if the industry still chose to continue using it despite the warnings.

The oil industry response to both the Maine paper and EPA’s proposed MTBE TSCA listing was to defend MTBE rather than publicly investigate the concerns. In comments to the agency on the TSCA listing, oil companies argued that MTBE did not present a significant risk to the environment, that sufficient data existed to make that claim, and that EPA should not require companies to develop that data in order to evaluate the risk MTBE posed to drinking water.

So, it’s not right to say that the MTBE drinking water problem is a surprise to the oil industry.

Third, it is not entirely accurate to say Congress foisted the 2 percent requirement on a reluctant oil industry. In fact, at least one major oil company both advocated the adoption of the 2 percent oxygen requirement and touted the “environmental benefits” of using MTBE to meet it. That testimony is found in the committee’s 1989 hearing record on the Clean Air Act Amendments of 1990. Other segments of the oil industry supported the oxygen requirement as a means to defeating an alternative fuels requirement.

But even if all this history didn’t exist, what possible justification could there be for preventing a full and impartial airing of the liability issue in our courts? Just like the manufacturer of any other defective product, the oil industry should not be let off the hook without such a hearing for what promises to be an extremely costly environmental cleanup effort.

While there is no reliable national estimate of what these costs will be, the estimated cost of cleaning up the MTBE-contaminated water in Santa Monica alone is \$150 to \$200 million. That’s just one water supply and does not include the substantial legal costs Santa Monica has incurred or the costs of importing water to the people there.

Discovery is now going on in the California litigation. We can expect that this will produce a clearer picture of just what the oil industry knew or should have known about MTBE. The committee didn’t see fit to cutoff this process, and I would urge my colleagues in the full Senate and House to reject any attempt to add such liability protection to S. 2962 as it moves forward for full consideration.

MINORITY VIEWS OF SENATOR JIM INHOFE

As the chairman of the Clean Air, Wetlands, Private Property and Nuclear Safety Subcommittee I must object strenuously to S. 2962 as reported by the Environment and Public Works Committee. The bill completely rewrites major sections of the Clean Air Act without the benefit of Congressional hearings to understand the complete impact on our Nation's environment and energy policy.

While I chaired two subcommittee hearings on MTBE and ethanol, and the full committee held two hearings on MTBE, none of the hearings addressed the issue of a renewable fuels mandate, which comprises the bulk of the legislation reported out of the committee. In addition, the expanded authority for the EPA to regulate fuels and motor vehicles under Section 9 has not been justified or vetted through the hearing process, and is an issue which should be considered as part of the broader Clean Air Reauthorization process which this committee has committed to addressing in the next Congress.

I agree with the necessity of addressing the problem of MTBE being found in the drinking water of several States. However, I believe this legislation, as reported out of the Environment and Public Works Committee addresses too many extraneous issues to the problem at hand. A far better approach would be targeted legislation which addresses this specific issue of MTBE in the drinking water. In my opinion, the committee has failed to address this issue by trying to address too much. The following are specific comments of the various sections of the legislation and the accompanying majority report. In addition, I am attaching a copy of a letter from Mr. J.L. Frank, the President of Marathon Ashland Petroleum LLC.

Section 2. Waiver of Oxygen Content Requirement for Reformulated Gasoline

The bill would substantially tighten air toxics and aromatics emission standards for reformulated gasoline ("RFG") where the oxygenate mandate is waived. It will grant EPA authority to issue standard-setting regulations. However, 27.5 percent air toxics emission reduction and 26 percent, by volume, aromatics requirements will apply if EPA fails to issue regulations within 270 days, or declines to promulgate them.

The proposed toxics and aromatics provisions far exceed simply maintaining the air toxics benefits of the RFG program. EPA is unlikely to be able to promulgate the air toxics and aromatics regulations called for by the bill within 270 days. Therefore, the reality is that the 27.5 percent air toxics emission reduction and 26 percent, by volume, aromatics requirements specified in the bill will be applicable. The nationwide 27.5 percent toxics standard equals the highest level of current regional over-compliance (this occurs in the Northeast U.S.). Enforcing this amount of over-compliance nationally will further restrict refiners' ability to make and distribute Federal RFG and will impose unfair additional costs on refineries exceeding current environmental requirements by a smaller margin than those in the Northeast.

For example, RFG currently delivered to the Louisville, KY, St. Louis, MO, Dallas, TX, and Houston, TX areas over-complies with the existing toxics requirement for RFG but does not achieve a 27.5 percent reduction. If the Governors of these States waive the oxygenate mandate, refiners serving any of these areas are likely to have to modify their refineries to meet the more stringent standards, yet the bill provides no time to allow for these changes. This could adversely affect gasoline supplies and consumers, leading to fuel shortages and price spikes.

Also important is the fact that EPA recently issued a Notice of Proposed Rulemaking to further regulate mobile source air toxics. Congress should work with EPA and its technical experts rather than act independently. The air toxics and aromatics requirements specified in S. 2962 are not needed or justifiable. If Congress nevertheless chooses to act on toxics, it should maintain RFG toxics over-compliance on a regional basis in the context of legislation that reduces MTBE usage and eliminates the oxygen requirement.

The majority report gratuitously urges EPA to expeditiously act on the auto industry's 1999 petition to limit the distillation index of gasoline. Like many provisions of this bill, resolution of the distillation index issue is not necessary to address the MTBE issue.

Section 4. Exclusion from Reid Vapor Pressure Requirement

Section 4 allows States to eliminate the 1-psi RVP waiver for conventional gasoline blended with ethanol. If States can eliminate the existing 1 psi RVP waiver for ethanol blends, this will adversely affect conventional gasoline supply and cost. The cost to manufacture the appropriate blendstock will increase since extra-low volatility gasoline will be required in order to make room for ethanol's higher volatility. Also, moving a special low RVP blendstock through the distribution system will probably create supply problems, reduce ethanol blending, and reduce total gasoline supply in the Midwest. Tight gasoline supplies could drive up prices and hurt consumers.

Section 6. Clean Alternative Fuels Program

The Clean Alternative Fuels Program mandates a dramatic increase in ethanol via a renewable fuels requirement. The program requires that ethanol make up 0.6 percent of the total motor fuel pool in 2002 and 1.1 percent in 2007. However, the percentages are misleading because compliance is based on gasoline-equivalent (or energy-equivalent) gallons and the mandate is over all motor vehicle fuels, including diesel. The actual volumes over the national gasoline pool are larger with percentages ranging from 1.1 percent in 2002 to 2.0 percent in 2007. This will significantly expand the mandated use of ethanol under Federal RFG and oxy-fuel programs, which is currently roughly one-half of 1 percent of the national gasoline market. These provisions would quadruple the federally mandated ethanol use by requiring an ethanol level of 2.0 percent of the national gasoline pool in 2007. This compares with 14 percent growth in gasoline consumption over this time period, according to the most recent DOE projections.

In 2008, even more ethanol is required. The mandate grows to 2.2 percent in 2008 and to 2.7 percent in 2011. This would increase

the federally mandated share of ethanol in 2011 by roughly more than 400 percent relative to today's level. There is no justification for this magnitude of increase, especially considering that the growth of the gasoline market will be less than 20 percent over this time period.

The bill prefers ethanol to other renewable fuels over the early years of the program. The bill discourages the use of other alternative fuels by restricting the amount of such fuels that can be used during the transition period of the renewable fuels mandate. In later years, i.e., 2008 and beyond, the bill supposedly structures an alternative fuels mandate, but it will remain an ethanol mandate. Bin 1 and bin 2 vehicles may not be successful in the marketplace. Also, once refiners and fuel distributors have put ethanol blending and distributing infrastructure in place in the early years of the program, it is unlikely that they will switch in a significant way to non-ethanol alternative fuels in the out years due to the incentive to avoid stranded investments. Ethanol will remain the only realistic option to meet the mandated levels contained in the legislation.

This legislation will have large adverse consequences for the Highway Trust Fund due to the existing 5.4 cents per gallon excise tax exemption for 10 percent ethanol blends and the 2.5 cents per gallon diversion from the Highway Trust Fund to general revenues for ethanol-containing motor fuel. Loss to the Fund will grow from the current annual level of \$1.2 billion to \$2.4 billion in 2007 and to \$3.5 billion in 2011 under this legislation.

The ethanol mandate will have two additional negative impacts: it will likely increase the cost of gasoline and further limit refiners' ability to provide adequate supply. This is especially true if coupled with elimination of the 1 psi RVP waiver for ethanol blends of conventional gasoline. The bill requires that the mandates be met on a semi-annual basis, thus forcing use of ethanol during the summer when the volatility of gasoline must be controlled. Required summertime use of ethanol will increase the cost of making gasoline to meet environmental specifications imposed by State and Federal law. Refiners will have to pay more to make special low-volatility blend stocks for ethanol blending. Limited availability of these blend stocks played an important role in limiting refiners' ability to deal with supply interruptions in the Midwest earlier this year, and according to the Congressional Research Service was a significant factor in the recent Midwest market volatility.

The mandates will likely mean higher-cost gasoline in the Northeast. Yet, it will not provide people in the Northeast any benefits. In addition, the legislation attempts to maintain the air quality benefits of the RFG program while requiring the use of ethanol, just as EPA's renewable oxygenate rule tried to do in 1994, but that is unlikely to be the case. The D.C. Circuit held that the mandated use of ethanol would likely increase smog at the beginning and end of the summertime high ozone season. *American Petroleum Institute v. EPA*, 52 F.3d 1113 (D.C. Cir. 1995). It should go without saying that the air quality benefits of the RFG program can be maintained without requiring use of ethanol.

Some in the Northeast States assert that the proposed new mandate will mean more ethanol in the Midwest, while Northeast refin-

ers will avoid using ethanol by purchasing credits. This is unlikely. Refiners cannot base their compliance plans on the hope that excess credits will be available, and recent EIA/DOE analysis indicates that wide-spread ethanol use will occur in all regions of the country should this legislation be enacted into law, in part because few, if any, credits will be generated.

When discussing the credit trading provisions of section 6, the majority report suggests that credits can only be generated through the use of bin 1 or 2 vehicles. That is incorrect. Section 6 of the bill expressly provides that credits can be generated through the use of more renewable fuels than required.

The majority report suggests that the renewable fuel/alternative fuel mandate will decrease U.S. dependence on imports. That is unlikely. It is not expected that the increased ethanol use that would result as a consequence of enactment of this legislation would significantly reduce petroleum consumption in the United State since for every 100 Btu generated through the combustion of ethanol it takes 75 Btu of petroleum products to manufacture the ethanol.

The majority report suggests that the cost of the mandates will likely be in the range of 3–5 cents per gallon in 2005. The majority's cost estimates do not reflect the U.S. government's most recent projections. A DOE/EIA analysis indicates an average increase in gasoline prices of 5.7 cents per gallon under this legislation, exceeding the 3–5 cents ranged stated above. The analysis also indicates that RFG prices would be significantly above the estimated price increase of 5.7 cents per gallon for average gasoline (conventional gasoline and RFG).

The majority report states that “Should the bill not be enacted, and multiple States ban MTBE, and the oxygen content requirement is not made optional, the Administration's analysis suggests that gasoline could be as much as 7–8 cents per gallon more in 2005 than is otherwise expected.” Once again, the majority's projections do not reflect the U.S. government's most recent projections. A recent DOE/EIA analysis indicates that should the bill not be enacted, and multiple States ban MTBE and the Federal 2 (wt percent) oxygen requirement be repealed and no renewable or alternative fuel standards be imposed that average gasoline prices would rise by 3.1 cents per gallon. This option represents the most cost-effective solution to addressing the MTBE issue and is why the EPA-appointed Blue Ribbon Panel recommended this approach.

Section 7. Additional Opt-In Areas under Reformulated Gasoline Program

The RFG opt-in provision permits any area of the country to opt into the RFG program, using a SIP (State Implementation Plan) revision process. This provision overturns provisions in the Clean Air Act Amendments and fails to consider the impact of RFG opt-ins on the gasoline distribution system and the increase in overall costs. In addition, it also overturns a court decision *American Petroleum Institute v. EPA*, 198 F. 3d 275 (DC Cir. 2000). Congress should not overturn a court decision without at least conducting hearings to understand the implications involved in the court decision. In 1990, the dimensions of the RFG program were debated extensively by Congress, which rejected a national RFG program

based on need, supply, and cost. These same factors apply with all the more force now since refining capability already risks being substantially constrained as a result of numerous costly new fuels regulations industry must comply with in a short timeframe. Extending the RFG program to attainment areas cannot be justified.

Section 9. Analysis of Motor Vehicle Fuel Changes and Additional Performance Requirements

The legislation also contains provisions requiring EPA to issue two sets of additional regulations within 10 years of enactment. One set, to be finalized within 7 years, will require that emissions from motor vehicle fuel and fuel additives will not be significantly greater on a per gallon average basis in any region than in 1998–2000 and that they will not result in worse air quality. The second set of regulations will be completed in 10 years and could affect both fuels and vehicles. They will set performance standards to protect public health and the environment and achieve a specific reduction in the use of compounds or associated emission products that threaten the most risk to human health.

These provisions of the bill unnecessarily lock EPA into rule-making activity and fail to take into account EPA's ongoing rule-making activity and authority under the existing Act. EPA just recently promulgated more stringent Tier 2 vehicle standards and more stringent gasoline sulfur requirements. EPA also recently proposed to regulate diesel sulfur, and gasoline benzene levels. Furthermore, EPA has authority under existing sections 202 and 211 to regulate vehicles and fuels if needed to protect the public health and welfare.

The majority report states that "A more than de minimis increase in contribution to any criteria or toxic air pollutant is presumed to worsen air quality unless the Administrator determines that other factors ameliorate the effect of such increases." That is not an accurate reflection of the bill language. Furthermore, there is no basis to presume that a mere increase in mass emissions necessarily translates into air pollution that may reasonably be anticipated to endanger public health or welfare.

Other Issues

The General Statements and Background section refers to the U.S. Geological Survey which estimated up to 20 percent of the nation's drinking supplies are at risk due to their proximity to underground fuel storage tanks. It is important to note that this survey was conducted between 1988 and 1998 when most systems were still out of compliance. According to the Association of State and Territorial Solid Waste Management Officials less than 50 percent of all underground storage tanks were in compliance prior to 1998 and that as recent as 1996 only 30 percent were in compliance. Therefore, the detection data reflects a time period before most of the underground tanks were upgraded to the current standards.

The General Statements and Background section of the majority's report contains numerous misstatements and errors. It states that opt-in areas are required to remain in the RFG program for 4 years. That is incorrect. Opt-in areas are required to remain in the RFG program until the end of 2003. If an area were to opt into

the RFG program today, it would only be required to remain in the program until the end of 2003, not 4 years.

The General Statements and Background section also states that "Recent data suggests that refiners have achieved a 27 percent or higher reduction in toxic air pollutants from the 1990 baseline." This is an overstatement. While a 27 percent reduction was attained in the Northeast, the amount of over-compliance was less in other areas of the country. That is why the imposition of a statutorily mandated 27.5 percent reduction results in an increase in stringency rather than just maintenance of current over-compliance.

The General Statements and Background section asserts that EPA has not yet met its rulemaking obligation under section 202(l) of the existing law. That is incorrect. The reformulated gasoline and conventional gasoline anti-dumping regulations that EPA promulgated in 1994 controlled air toxics from all U.S. gasoline. Those regulations were based on the study required under section 202(l) of the Act.

The General Statements and Background section states that "Generally, the addition of oxygenates to gasoline allows for more complete fuel combustion, and lowers emissions of ozone precursors, such as nitrogen oxides and volatile organic compounds." This statement fails to take into account the findings of the National Research Council, Ozone-Forming Potential of Reformulated Gasoline, 1999. (requested by EPA), which stated "The use of commonly available oxygenates in RFG has little impact on improving ozone air quality and has some disadvantages."

The General Statements and Background section fails to mention that the EPA Blue Ribbon Panel recommended a targeted approach to address the MTBE issue, and did not recommend a renewable fuels or alternative fuels mandate. Specifically, the BRP recommended a phase-down of MTBE to pre-RFG levels and the elimination of the Federal 2 (wt percent) oxygen requirement in RFG.

In conclusion, I commend the chairman for his agreement to work through a number of these issues prior to floor action on the committee Bill, and I agree with him that a number of these issues will have to be debated before the whole Senate. I appreciate his willingness to work with me on these issues and his commitment to solving the problem of MTBE in our drinking water supply.

LETTER FROM MARATHON ASHLAND PETROLEUM LLC

September 8, 2000.

The HONORABLE JAMES INHOFE,
U.S. Senate,
453 Russell Senate Office Building,
Washington, DC 20510-3603

DEAR SENATOR INHOFE: I write today to express my profound concern regarding yesterday's decision by the Environment and Public Works Committee to report for full Senate consideration S. 2962, the Federal Reformulated Fuels Act of 2000. This bill goes far beyond providing a narrow legislative solution to the issues which have arisen concerning the use of MTBE (methyl tertiary butyl ether) in gasoline. Instead it represents a massive rewrite of the fuels provisions of the Clean Air Act.

As the president of a major U.S. refining, marketing and transportation company, I find this action astonishing. It has only been a matter of weeks since I personally appeared before Congressional committees and participated in numerous member

requested meetings to answer questions about the critical gasoline supply and demand imbalances in the Midwest, which led to significant price spikes during late spring and early summer of this year.

Throughout this difficult period, as we identified a series of factors which contributed to these imbalances including the roll out of the Phase II Reformulated Gasoline (RFG) program, I was told repeatedly that my industry had failed to warn public officials that supply imbalances were likely to occur.

This time, as Congress considers legislating another set of radical changes to Federal fuel requirements, I feel compelled to go on record to state clearly our belief that implementation of the provisions of S. 2962 will impose a burden on the consuming public of unacceptable and entirely unnecessary price spikes.

We strongly oppose the sweeping changes to Title II of the Clean Air Act contained in this legislation. Provisions such as the imposition of new air toxics standards for RFG and conventional gasoline areas, and the imposition of an aromatics cap, which will dangerously restrict refining flexibility, are serious, substantive changes which threaten to impose long range negative effects on both our industry and the economy at large.

An eleventh hour rush to legislate absent the benefit of the fact finding and robust debate that characterize traditional Clean Air Act Reauthorization efforts is bad public policy. Given the logistical impossibility of this sort of reasoned approach in the remaining days before adjournment, we strongly urge you to go no further in this Congress with this piece of legislation.

You may have heard that the oil industry opposes this legislation because of its expansive renewable fuels requirement. My company is the single largest blender of ethanol in gasoline in the United States. Let me explain our perspective on this issue.

We categorically oppose fuel mandates because history has shown that they inevitably lead to higher gasoline costs and tighter and less reliable fuel supplies, not because we want to avoid using ethanol. Ethanol is a significant element of our gasoline pool and we will continue to blend it into our product so long as it remains an economically viable component of gasoline. We simply believe that additional mandates are unnecessary and ill advised.

There are other unintended negative consequences of this legislation. The bill provides for a nearly unfettered ability by States to adopt Federal RFG requirements. This flies in the face of what we understood in 1990 to be the intent of Congress, which was that cleaner and more expensive gasoline should be required only in areas experiencing the worst air quality problems. S. 2962 ignores this intent and dismisses the impact on the nation's supply and distribution systems of a radically expanded RFG program.

Further, facilitating the ability of States to opt in to the RFG program significantly increases the risk posed by the proliferation of boutique fuels. To the extent that this patchwork approach to fuels increases, our industry's ability to respond to supply shortages decreases radically due to the limitations in the existing supply and distribution infrastructure.

Additionally, damage to our nation's highway system will be inevitable under this legislation. Due to the disparate Federal excise tax treatment of gasoline and gasohol (gasoline blended with ethanol), every gallon of gasoline replaced by gasohol represents a loss to the tax-funded Highway Trust Fund. When such losses are multiplied by the annually increasing mandate for ethanol usage in S. 2962, the deficit to the Trust Fund amounts to billions of dollars.

I would like to close by emphasizing that we strongly support the need to address the problems associated with the use of MTBE. To that end, we urge Congress to support a much more narrow legislative approach, such as that which is embodied in legislation introduced by Senators Inhofe and Bingaman, which addresses the issue of oxygen content in RFG consistent with the recommendations of the EPA's own Blue Ribbon Panel on Oxygenates.

Sincerely,

J.L. FRANK, *President*.

MINORITY VIEWS OF SENATOR CHRISTOPHER S. BOND

I commend the chairman for his diligence and attempt to find a workable solution to the MTBE water contamination issue. S. 2962 could provide some tremendous gains for the use of ethanol which would be a positive step for our environment, rural farm economy, and a positive step in reducing our dependence on foreign oil.

This country, requires a renewable, environmentally friendly alternative to MTBE that helps create local jobs, which adds value to our farmer's products, and which moves us away from this energy hostage situation we are in where our reliance on foreign-produced oil makes our producers, consumers and economy subject to the whims of international cartel autocrats. In my opinion, that alternative is ethanol.

The Federal oxygen content requirement was adopted in 1990 for several reasons. First, those of us in Congress understood that oxygenates provide a source of clean octane—displacing toxic compounds such as benzene and reducing ozone-forming exhaust emissions of hydrocarbons and carbon monoxide. EPA has stated the program is equivalent to taking 16 million vehicles off the road each year. Congress also recognized the energy security benefits of substituting a certain percentage of imported petroleum with domestically produced renewable fuel such as ethanol. When the Clean Air Act Amendments of 1990 were passed, there were more than 500,000 American troops stationed in the Middle East poised to begin Desert Storm. Promoting renewables that are domestically produced, such as ethanol, is a critical element toward regaining our independence from foreign oil. Finally, we knew that oxygenates would provide an opportunity to help the U.S. farm economy which was suffering from falling export markets and low prices by creating additional opportunities for our domestic resources and products such as ethanol.

So, Congress enacted the oxygenate program as a means of providing clean octane to address air quality, but also to address the problems of energy security and rural economic development. Today, the fundamental objectives of providing clean octane for clean air, reducing dependence on imported petroleum, and increasing farm income remain as valid as they were in 1990.

I firmly believe that ethanol does play and will continue to play in our nation's environmental, economic and energy security. Unfortunately, some are trying to use the sins of MTBE as a reason to pull the plug on clean-burning ethanol.

Ethanol is widely marketed across the country to increase octane and reduce emissions through its clean burning properties as an oxygenate. Ethanol, which contains approximately 35 percent oxygen, enhances combustion and therefore contributes to a more efficient burn of gasoline, reducing carbon monoxide emissions, a contributor to harmful ozone formation, by as much as 30 percent. The use of ethanol reduces emissions of all the major pollutants regulated by the Environmental Protection Agency (EPA), including ozone, carbon monoxide (CO), particulate matter (PM₁₀), and nitrogen oxides (NO_x). Ethanol is also an effective tool for reducing air toxics. As a renewable fuel, ethanol can dramatically reduce emis-

sions. In addition, ethanol is an organic, non-toxic, biodegradable substance, that will not harm our nation's water quality.

Ethanol provides significant benefits to the economy, particularly in farming communities across rural America. Earlier this year, I participated in the first ethanol plant grand-opening in Missouri. This facility is a 15 million gallon per year facility located in Macon, Missouri and owned by farmers across the State. The ethanol facility not only provides new jobs, but a value-added market for their commodities. In light of today's record low prices, value-added ethanol processing provides a much-needed economic opportunity. In a letter written by Secretary Glickman, where he assumes a phaseout of MTBE and maintaining the oxygenate requirement, he stated, "The increase in farm and ethanol production caused by replacing MTBE with ethanol is projected to create 13,000 jobs across the economy by 2010. Over a third of the new jobs, 4,300, would be created in the ethanol sector itself. Another 6,400 jobs are created in the trade, transportation, and service sectors. Farm sector jobs increase by 575. Jobs in other industries, food processing, and energy sectors increase by 1,600."

It is clear to me and many others that ethanol is good for the environment, both our water and our air, as well as our economy.

Therefore, I support the Clean Alternative Fuel Program contained in this legislation which encourages the use of domestically produced resources such as ethanol. By encouraging growth in domestic renewable energy resources we will reduce our nation's dependence on imported oil and provide a much-needed economic stimulus to rural economies with the added environmental benefit of reducing emissions.

S. 2962 also allows areas wishing to opt into the reformulated gasoline program the clear authority to do so. The court ruling earlier this year created some confusion and disappointment, especially for areas seeking to opt-in as a way to avoid new violations under the Clean Air Act.

Finally, the legislation attempts to address the issue of leaking underground storage tanks and MTBE. By authorizing resources to help with the MTBE clean-ups necessary because of leaking underground storage tanks we can help the States address this problem that could unfortunately still grow.

However, I believe the bill falls far short of protecting and maintaining the clean air benefits that were made possible by the oxygenate requirement. I firmly believe that if we eliminate the oxygenate requirement we need to ensure the benefits of the requirement, both public health and clean air, are at minimum maintained. Benefits of oxygenates are less aromatics, less olefins, reduced carbon monoxide, reduced ozone, and lower toxic emissions. Unfortunately, few of these things are adequately addressed.

In addition, I believe that this bill could result in some unintended consequences. There are provisions in the legislation which are drafted in ways that are too broad and which provide new authority to the EPA which was never the intent of this legislation.

This bill does contain many positives, most importantly because it recognizes the importance of domestic resources such as ethanol and the role these resources can play in our fuel supply and the environment. However, improvements still must be made. I am

committed to continuing my efforts on this issue to ensure that any enacted legislation is a good clean air bill, good clean water bill, good rural farm economy bill, and a good domestic energy bill.

MINORITY VIEWS OF SENATOR ROBERT F. BENNETT

DISSENTING VIEWS ON S. 2962, THE FEDERAL REFORMULATED FUELS
ACT OF 2000

I submit these views to explain my opposition to S. 2962, the Federal Reformulated Fuels Act of 2000, as approved by the Senate Committee on Environment and Public Works. In summary, I am concerned that the statutory ban on the use of MTBE in motor vehicle fuels is arbitrary and sets a dangerous precedent for private sector participation in future federally mandated environmental programs. Further, I have concerns about the Clean Alternative Fuel program becoming a vehicle for mandating greater consumption of ethanol rather than truly encouraging the development of various alternative fuels. I am also disturbed by the manner in which the bill attempts to ensure environmental anti-backsliding and the creation of additional authority for the Environmental Protection Agency to regulate motor vehicles.

SECTION 3—BANNING THE SALE OF GASOLINE CONTAINING MTBE

Section 3 of S. 2962 would make three amendments to the Clean Air Act: (1) it would amend the Clean Air Act to include new authority for EPA to regulate, control or prohibit a fuel or fuel additive based on water pollution; (2) it would give California special authority beyond that already given to any other state to regulate motor vehicle emissions for the purpose of protecting water quality; and (3) it would require the EPA Administrator to ban the use of MTBE in gasoline not later than 4 years after the date of enactment. I have concerns with each of these provisions.

The Clean Air Act Should Not be Used to Regulate Water Quality

Section 3(a) of S. 2962 amends Section 211(c)(1) of the Clean Air Act to give EPA the authority to regulate fuels and fuel additives not only to protect air quality, but also to prevent water pollution. This amendment would create a clumsy and inefficient overlap of regulatory authorities. The Clean Air Act is intended to regulate air quality. The committee has failed to show that other existing authorities, such as the Clean Water Act and Subtitle I of the Resource Conservation and Recovery Act pertaining to leaking underground storage tanks containing petroleum, are inadequate to address the problem of groundwater contamination. Even if such a showing were made, the appropriate response would be to modify those authorities, not add new authorities in an unrelated statute. Unless and until Congress develops one comprehensive environmental statute, the Clean Air Act should not be used to regulate water quality.

The State of California Should Not be Given Special Authority to Regulate Water Quality

Section 3(a) of S. 2962 amends Section 211(c)(4)(B) to give the State of California additional authority to regulate water quality. For the reasons cited above, I believe it is inappropriate to use the Clean Air Act to give any jurisdiction additional authority to regulate water quality.

The ban on MTBE is arbitrary and unprecedented

Section 3 of S. 2962 requires the EPA Administrator to ban the use of MTBE in gasoline not later than 4 years after the date of enactment. This statutory prohibition is arbitrary and unprecedented in several respects.

First, the bill makes no finding that MTBE presents a serious risk to public health. Indeed, the proponents of the bill acknowledge that the health effects of exposure to low levels of MTBE are unknown. Clearly, additional scientific analysis is needed.

The committee fails to take any notice of information indicating that recent efforts to prevent gasoline (including MTBE) from being released into the environment are succeeding and, as a result, human exposure to MTBE is diminished. The committee's action obviously is rooted in the consequences of underground storage tanks that were allowed to leak gasoline into groundwater supplies in the early and mid-1990's. Since then, however, new regulations on underground storage tanks have gone into effect, minimizing the potential for releases of gasoline into the environment. In addition, prohibitions on the use of two-cycle engines on lakes and reservoirs has further minimized the risk of gasoline (including gasoline containing MTBE) in drinking water supplies. Unfortunately, the committee's action fails to take into account these developments. As a result, the bill bears little logical relation to the actual factual circumstances.

While Congress has acted to ban certain toxic chemicals, it has never done so without an extensive scientific record and, in some cases, with an opportunity for the appropriate administrative agency to revisit the prohibition based on additional factual information. Congress has enacted only one statutory prohibition on a toxic chemical, a ban on PCBs in the Toxic Substances Control Act, enacted in 1976. But even this prohibition allowed EPA to permit the use of PCBs where it could be shown that there was no unreasonable risk. Furthermore, while EPA has taken regulatory action before to take chemicals out of commerce, such as asbestos, lead, and a few major pesticides, EPA only exercised its authority after substantial scientific analysis and an opportunity for public review and comment. Contrary to this precedent, S. 2962 neither allows EPA to make additional findings concerning the actual risk to human health nor allows EPA to exercise its regulatory expertise to provide for exceptions or changes based on changed circumstances. In this respect, the ban of MTBE is both arbitrary and unprecedented.

The ban of MTBE is also objectionable because it is to be implemented in 4 years or less. In other parts of the Clean Air Act, Congress has taken action to prohibit the sale of certain chemicals or change the design of certain products, but never according to such an abrupt schedule. In Title VI of the 1990 Clean Air Act Amendments, for example, Congress mandated a phaseout of Class I chlorofluorocarbons (CFCs) over a 10-year period, and a phaseout of Class II CFCs over a 30-year period. Likewise, in Title IV of the 1990 Clean Air Act Amendments, Congress ordered a reduction in emissions of sulfur dioxide over a 10-year period. Title II of the 1990 Clean Air Act Amendments provides for a tightening of standards for automobile emissions that extends in a two-step process over 11 years. Indeed, the investments required to make the Clean

Air Act RFG work were substantial enough to warrant a 5-year planning and implementation period. It is hard to understand the rationale for banning the use of MTBE in 4 years or less.

The ban on MTBE in 4 years or less raises issues of both workability and fairness. MTBE constitutes approximately 3 percent of the total national gasoline pool, and approximately 10 percent of the gasoline pool in areas of the United States using RFG. It is unlikely that gasoline markets can adjust to this lost volume without significant price increases and supply disruptions. And even as more crude oil is used to meet the demand for motor vehicle fuels, the supplies of crude oil necessary to produce home heating oil are reduced.

Finally, the ban on MTBE in 4 years or less is unfair to those who took risks and committed significant resources to make the RFG program successful. As Chairman Smith has stated on several occasions, Congress created the market for fuel additive oxygenates for an important purpose—to address serious air quality problems in many areas of the United States. MTBE producers, especially petrochemical companies, made significant investments to provide the necessary volumes of oxygenates. The ban on MTBE in 4 years or less deprives these producers of a reasonable return on their investment and may threaten their economic well being and the economic well being of their shareholders.

The ban on MTBE not only harms MTBE manufacturers, it also sets a dangerous precedent that could inhibit the success of federally mandated environmental programs in the future. While Congress can establish conditions for participating in interstate commerce, it cannot compel a business to produce a particular product. Thus, to encourage the development of such products, Congress must ensure that the rules for participating in markets are clear and fair, and that the participant has a reasonable expectation to earn a return on an investment. The proposed ban on MTBE in 4 years or less sends a disquieting message that Congress can arbitrarily change the rules at any time, with potentially ruinous consequences for those who have taken risks and made good faith investments.

SECTION 6 CLEAN ALTERNATIVE FUEL PROGRAM

Section 6 of S. 2962 creates a program intended to encourage the use of alternative fuels. In fact, this extremely complex provision raises a myriad of problems related to the federally mandated threefold expansion of ethanol in both gasoline and diesel fuels sold throughout the United States.

While some have argued that this Program provides a measure of competition, I believe that the consensus view is that the Program constitutes a virtual mandate for ethanol. The amount of ethanol usage eventually required under the Program, given our understanding of the term “gasoline equivalency,” would be almost four times current usage. Given the probable role that the use of ethanol played in the high Midwestern gasoline prices this summer, and given that each gallon of ethanol sold subtracts yet another 54 cents from the Highway Trust Fund, I am troubled by an ethanol mandate. Further, at the June 14, 2000, hearing before our Subcommittee on Clean Air, Wetlands, Private Property and Nu-

clear Safety, I raised the following environmental objections to increased ethanol use:

First, because ethanol is highly volatile, it cannot be counted upon to be as effective in controlling emissions of ozone and its precursors. Second, because ethanol has a net negative energy balance, we cannot expect its widespread use either to assist with energy security or control of greenhouse gases. Third, because ethanol is highly soluble, it takes the most toxic parts of gasoline, including cancer-causing benzene, and spreads it in water. Fourth, because ethanol has been listed as a carcinogen by the World Health Organization, the State of California, and the National Toxics Program, it is of greater public health concern than MTBE. Finally, because combustion of ethanol releases harmful aldehydes, it is of little assistance in controlling air toxics.

In short, because the proposed Clean Alternative Fuels Program does not address the threats posed to energy price and security, to America's infrastructure, and to the environment, I believe the Program would be bad public policy.

SECTION 9—ANALYSIS OF MOTOR VEHICLE FUEL CHANGES AND ADDITIONAL PERFORMANCE REQUIREMENTS

Section 9 of the bill amends Section 211 of the Clean Air Act to impose two new sets of rulemaking requirements on EPA. The problems with each of these sets of rulemaking requirements are described below.

The Anti-Backsliding Analysis and Regulations Fail to Protect Public Health

Section 9 provides that not later than 5 years after the date of enactment, EPA must complete an analysis of "the changes in emissions of air pollutants and air quality due to the use of motor vehicle fuel and fuel additives resulting from" the implementation of S. 2962. Two years later, i.e., not later than 7 years after the date of enactment, EPA must promulgate regulations to ensure that, as compared with emissions due to the use of motor vehicle fuel and fuel additives during the period of 1998 through 2000, emissions due to the use of motor vehicle fuel and fuel additives will not (1) be significant greater on a per-gallon average basis in any region; or (2) cause air quality to be significantly worse in any region.

EPA's analysis will almost certainly show that air quality has deteriorated as a result of implementation of the provisions of S. 2962. First, the anti-backsliding provisions that will apply in areas that have waived out of the oxygen requirement for RFG are inadequate: they do not cover all pollutants that come from motor vehicles, and the statutory default standards are weaker than actual levels already attained under Phase I of the RFG program. Second, Section 3 requires EPA to ban the use of MTBE in motor vehicle fuel, but provides no assurance that the additives used to replace MTBE will not result in increased air emissions. While Section 3 gives EPA 4 years to institute a ban on MTBE, it also gives EPA broad authority to begin a phaseout earlier. Therefore, it is altogether possible that the increased air emissions that would result from the phaseout of MTBE would be recorded in the analysis

which is required under this part of Section 9 of the bill. Third, the use of an increasing amount of alternative fuel in motor vehicle fuels, as prescribed by Section 6 of the bill, is also likely to contribute to air quality deterioration.

The anti-backsliding provisions of Section 9 would likely be insufficient to prevent any air quality deterioration that would occur as the provisions of S. 2962 are implemented. As described above, the adverse air quality impacts of the bill would begin just 9 months after the date of enactment—the latest date on which the oxygen waiver provision can become effective—and would continue as the MTBE ban becomes effective under Section 3 and as the alternative fuel requirements are implemented under Section 6. However, the regulations intended to prevent such deterioration are not due until 7 years after the date of enactment, and even then, the effective date of any standards promulgated by the regulations would be a year or two later. So, for a period of 7 years or more, air quality is allowed to degrade.

The additional authority provided to EPA to regulate motor vehicles, fuels and fuel additives is overly broad

Section 9 of S. 2962 contains a second grant of authority to EPA which is equally problematic. Not later than 10 years after the date of enactment, EPA is required to issue regulations establishing performance standards for motor vehicle fuel and fuel additives, the use of motor vehicle fuel and fuel additives, and motor vehicles that are necessary (1) to ensure adequate protection of public health and the environment and (2) to achieve specific reductions in the use of compounds or associated emission projects that pose the greatest risk to human health. The bill further requires that in conducting the analysis required, the Administrator must take into account the effects of motor vehicle fuel and fuel additives on public health and the environment over the entire life cycle of the production, distribution, and use of motor vehicle fuel and fuel additives evaluated in the analyses.

The problem with this grant of authority to EPA is that it fails to provide the EPA Administrator with any intelligible parameters for decisionmaking. It compels the EPA Administrator to promulgate regulations not only for motor vehicle fuels and fuel additives, but also for motor vehicles themselves, at a highly subjective standard i.e., “to ensure adequate protection of public health and the environment.” The same standards must also achieve “specific reductions” in the use of compounds or associated emission products that pose the greatest risk to human health, but fails to provide any guidance as to what levels reductions are appropriate. This provision of the bill clearly represents an overly broad delegation of authority to EPA.

MINORITY VIEWS OF SENATOR KAY BAILEY HUTCHISON

I would like to elaborate on some of the objections I raised at the mark-up regarding the need for appropriate transitional incentives for manufacturers of MTBE. These incentives would facilitate the transition of productive manufacturing facilities to new generations of clean-fuel additives. Although I have serious misgivings about the alternative fuel mandate contained in the bill, one thing is clear: having a variety of clean-fuel additives—including those made by current MTBE manufacturers—makes sense if we are to have an adequate, reasonably priced supply of clean burning fuel.

At the committee mark-up, the chairman noted that the MTBE manufacturing base “was created as a result of a Congressional mandate to clean up the Nation’s air. And I believe that you are justified in making the point that whether it be a transition from MTBE to something else or retrofitting, whatever it takes to make this product or to either eliminate the product or make the product such that it does not cause the problems, I think you’re justified in saying that industry should have transition funding.” Of course, I certainly agree with the chairman on this point and wish to expound further.

This is at first a fairness issue. The Federal Government mandated the private investment of billions of dollars in bringing additional MTBE capacity on line in order to meet the requirements of the Clean Air Act. By any measure, the reformulated gasoline program has been a great success, exceeding its air quality objectives. Under the circumstances, it was a reasonable expectation on the part of these companies and their workers that the program would be in place for time sufficient to justify the investment. If we are now to end this mandate, it is only fair that we provide incentives to transition away from MTBE to other alternatives.

Consumer considerations justify a transition incentive program. This bill establishes an enormous government mandate for the use of ethanol. Certain physical properties of ethanol, including its volatility, difficulty in transporting, and expensive blendstocks, make it more expensive to use than MTBE. Indeed, the Congressional Research Service, in a June 16, 2000, memorandum, observed that use of ethanol contributed to the severe gasoline price increases in the upper Midwest this summer. To avoid greatly exacerbating this problem, we must seek all alternatives that technology can provide. A transition fund can help do that.

CHANGES IN EXISTING LAW

In compliance with section 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill as reported are shown as follows: Existing law proposed to be omitted is enclosed in [black brackets], new matter is printed in *italic*, existing law in which no change is proposed is shown in roman:

CLEAN AIR ACT¹

[As Amended Through P.L. 106-55, August 17, 1999]

PART A—AIR QUALITY AND EMISSION LIMITATIONS

FINDINGS AND PURPOSES

SEC. 101. (a) The Congress finds—

* * * * *

REGULATION OF FUELS

SEC. 211. (a) * * *

* * * * *

(b)(1) For the purpose of registration of fuels and fuel additives, the Administrator shall require—

(A) the manufacturer of any fuel to notify him as to the commercial identifying name and manufacturer of any additive contained in such fuel; the range of concentration of any additive in the fuel; and the purpose-in-use of any such additive; and

(B) the manufacturer of any additive to notify him as to the chemical composition of such additive.

(2) For the purpose of registration of fuels and fuel additives, the Administrator [may also] *shall, on a regular basis* require the manufacturer of any fuel or fuel additive—

[(A) to conduct tests to determine potential public health effects of such fuel or additive (including, but not limited to, carcinogenic, teratogenic, or mutagenic effects), and]

(A) to conduct tests to determine potential public health and environmental effects of the fuel or additive (including carcinogenic, teratogenic, or mutagenic effects); and

(B) to furnish the description of any analytical technique that can be used to detect and measure any additive in such fuel, the recommended range of concentration of such additive, and the recommended purpose-in-use of such additive, and such other information as is reasonable and necessary to determine the emissions resulting from the use of the fuel or additive contained in such fuel, the effect of such fuel or additive on the emission control performance of any vehicle, vehicle engine, nonroad engine or nonroad vehicle, or the extent to which such emissions affect the public health or welfare.

¹The Clean Air Act (42 U.S.C. 7401-7626) consists of Public Law 159 (July 14, 1955; 69 Stat. 322) and the amendments made by subsequent enactments.

Tests under subparagraph (A) shall be conducted in conformity with test procedures and protocols established by the Administrator. The results of such tests shall not be considered confidential.

(3) Upon compliance with the provisions of this subsection, including assurances that the Administrator will receive changes in the information required, the Administrator shall register such fuel or fuel additive.

(c)(1) The Administrator may, from time to time on the basis of information obtained under subsection (b) of this section or other information available to him, by regulation, control or prohibit the manufacture, introduction into commerce, offering for sale, or sale of any fuel or fuel additive for use in a motor vehicle, motor vehicle engine, or nonroad engine or nonroad vehicle (A) if in the judgment of the Administrator any *fuel or fuel additive* or emission product of such fuel or fuel additive causes, or contributes, to ~~air pollution which~~ *air pollution, or water pollution, that* may reasonably be anticipated to endanger the public health or welfare, or (B) if emission products of such fuel or fuel additive will impair to a significant degree the performance of any emission control device or system which is in general use, or which the Administrator finds has been developed to a point where in a reasonable time it would be in general use were such regulation to be promulgated.

(2)(A) No fuel, class of fuels, or fuel additive may be controlled or prohibited by the Administrator pursuant to clause (A) of paragraph (1) except after consideration of all relevant medical and scientific evidence available to him, including consideration of other technologically or economically feasible means of achieving emission standards under section 202.

(B) No fuel or fuel additive may be controlled or prohibited by the Administrator pursuant to clause (B) of paragraph (1) except after consideration of available scientific and economic data, including a cost benefit analysis comparing emission control devices or systems which are or will be in general use and require the proposed control or prohibition with emission control devices or systems which are or will be in general use and do not require the proposed control or prohibition. On request of a manufacturer of motor vehicles, motor vehicle engines, fuels, or fuel additives submitted within 10 days of notice of proposed rulemaking, the Administrator shall hold a public hearing and publish findings with respect to any matter he is required to consider under this subparagraph. Such findings shall be published at the time of promulgation of final regulations.

(C) No fuel or fuel additive may be prohibited by the Administrator under paragraph (1) unless he finds, and publishes such finding, that in his judgment such prohibition will not cause the use of any other fuel or fuel additive which will produce emissions which will endanger the public health or welfare to the same or greater degree than the use of the fuel or fuel additive proposed to be prohibited.

(3)(A) For the purpose of obtaining evidence and data to carry out paragraph (2), the Administrator may require the manufacturer of any motor vehicle or motor vehicle engine to furnish any information which has been developed concerning the emissions

from motor vehicles resulting from the use of any fuel or fuel additive, or the effect of such use on the performance of any emission control device or system.

(B) In obtaining information under subparagraph (A), section 307 (a) (relating to subpoenas) shall be applicable.

(4)(A) Except as otherwise provided in subparagraph (B) or (C), no State (or political subdivision thereof) may prescribe or attempt to enforce, for the purposes of motor vehicle emission control, any control or prohibition respecting any characteristic or component of a fuel or fuel additive in a motor vehicle or motor vehicle engine—

(i) if the Administrator has found that no control or prohibition of the characteristic or component of a fuel or fuel additive under paragraph (1) is necessary and has published his finding in the Federal Register, or

(ii) if the Administrator has prescribed under paragraph (1) a control or prohibition applicable to such characteristic or component of a fuel or fuel additive, unless State prohibition or control is identical to the prohibition or control prescribed by the Administrator.

(B) Any State for which application of section 209(a) has at any time been waived under section 209(b) may at any time prescribe and enforce, for the purpose of motor vehicle emission control *or water quality protection*, a control or prohibition respecting any fuel or fuel additive.

(C) A State may prescribe and enforce, for purposes of motor vehicle emission control, a control or prohibition respecting the use of a fuel or fuel additive in a motor vehicle or motor vehicle engine if an applicable implementation plan for such State under section 110 so provides. The Administrator may approve such provision in an implementation plan, or promulgate an implementation plan containing such a provision, only if he finds that the State control or prohibition is necessary to achieve the national primary or secondary ambient air quality standard which the plan implements. The Administrator may find that a State control or prohibition is necessary to achieve that standard if no other measures that would bring about timely attainment exist, or if other measures exist and are technically possible to implement, but are unreasonable or impracticable. The Administrator may make a finding of necessity under this subparagraph even if the plan for the area does not contain an approved demonstration of timely attainment.

(5) *BAN ON THE USE OF MTBE.*—

(A) *IN GENERAL.*—*Not later than 4 years after the date of enactment of this paragraph, the Administrator shall ban use of methyl tertiary butyl ether in gasoline.*

(B) *REGULATIONS CONCERNING PHASE-OUT.*—*The Administrator may establish by regulation a schedule to phase out the use of methyl tertiary butyl ether in gasoline during the period preceding the effective date of the ban under subparagraph (A).*

(d) *PENALTIES AND INJUNCTIONS.*—

(1) *CIVIL PENALTIES.*—Any person who violates subsection (a), (f), (g), (k), (l), (m), or (n) of this section or the regulations prescribed under subsection (c), (h), (i), (k), (l), (m), **[or (n)]** (n), or (o) of this section or who fails to furnish any information or conduct any tests required by the Administrator under sub-

section (b) of this section shall be liable to the United States for a civil penalty of not more than the sum of \$25,000 for every day of such violation and the amount of economic benefit or savings resulting from the violation. Any violation with respect to a regulation prescribed under subsection (c), (k), (l), **[or (m)]** (*m*), or (*o*) of this section which establishes a regulatory standard based upon a multiday averaging period shall constitute a separate day of violation for each and every day in the averaging period. Civil penalties shall be assessed in accordance with subsections (b) and (c) of section 205.

(2) INJUNCTIVE AUTHORITY.—The district courts of the United States shall have jurisdiction to restrain violations of subsections (a), (f), (g), (k), (l), (m), and (n) of this section and of the regulations prescribed under subsections (c), (h), (i), (k), (l), (m), **[and (n)]** (*n*), and (*o*) of this section, to award other appropriate relief, and to compel the furnishing of information and the conduct of tests required by the Administrator under subsection (b) of this section. Actions to restrain such violations and compel such actions shall be brought by and in the name of the United States. In any such action, subpoenas for witnesses who are required to attend a district court in any district may run into any other district.

* * * * *

(k) REFORMULATED GASOLINE FOR CONVENTIONAL VEHICLES.—

(1) EPA REGULATIONS.—**[Within 1 year after the enactment of the Clean Air Act Amendments of 1990]**

(A) *IN GENERAL.*—*Not later than November 15, 1991, the Administrator shall promulgate regulations under this section establishing requirements for reformulated gasoline to be used in gasoline-fueled vehicles in specified non-attainment areas. Such regulations shall require the greatest reduction in emissions of ozone forming volatile organic compounds (during the high ozone season) and emissions of toxic air pollutants (during the entire year) achievable through the reformulation of conventional gasoline, taking into consideration the cost of achieving such emission reductions, any nonair-quality and other air-quality related health and environmental impacts and energy requirements.*

(B) *WAIVER OF OXYGEN CONTENT REQUIREMENT.*—

(i) *AUTHORITY OF THE GOVERNOR.*—

(I) *IN GENERAL.*—*Notwithstanding any other provision of this subsection, a Governor of a State, upon notification by the Governor to the Administrator during the 90-day period beginning on the date of enactment of this subparagraph, or during the 90-day period beginning on the date on which an area in the State becomes a covered area by operation of the second sentence of paragraph (11)(D), may waive the application of paragraphs (2)(B) and (3)(A)(v) to gasoline sold or dispensed in the State.*

(II) *OPT-IN AREAS.*—*A Governor of a State that submits an application under paragraph (6) may,*

as part of that application, waive the application of paragraphs (2)(B) and (3)(A)(v) to gasoline sold or dispensed in the State.

(ii) *TREATMENT AS REFORMULATED GASOLINE.*—In the case of a State for which the Governor invokes the waiver described in clause (i), gasoline that complies with all provisions of this subsection other than paragraphs (2)(B) and (3)(A)(v) shall be considered to be reformulated gasoline for the purposes of this subsection.

(iii) *EFFECTIVE DATE OF WAIVER.*—A waiver under clause (i) shall take effect on the earlier of—

(I) the date on which the performance standard under subparagraph (C) takes effect; or

(II) the date that is 270 days after the date of enactment of this subparagraph.

(C) *MAINTENANCE OF TOXIC AIR POLLUTANT EMISSION AND AROMATIC HYDROCARBON CONTENT REDUCTIONS.*—

(i) *IN GENERAL.*—As soon as practicable after the date of enactment of this subparagraph, the Administrator shall—

(I) promulgate regulations consistent with subparagraph (A) and paragraph (3)(B)(ii) to ensure that reductions of toxic air pollutant emissions and aromatic hydrocarbon content achieved under the reformulated gasoline program under this section before the date of enactment of this subparagraph are maintained in States for which the Governor waives the oxygenate requirement under subparagraph (B)(i); or

(II) determine that the requirement described in clause (iv)—

(aa) is consistent with the bases for a performance standard described in clause (ii); and

(bb) shall be deemed to be the performance standard under clause (ii) and shall be applied in accordance with clause (iii).

(ii) *PERFORMANCE STANDARD.*—The Administrator, in regulations promulgated under clause (i)(I), shall establish an annual average performance standard based on—

(I) compliance survey data;

(II) the annual aggregate reductions in emissions of toxic air pollutants achieved under the reformulated gasoline program during calendar years 1998 and 1999, determined on the basis of the volume of reformulated gasoline containing methyl tertiary butyl ether that is sold throughout the United States;

(III) the annual average aromatic hydrocarbon content of gasoline sold under the reformulated gasoline program during the 2 of the calendar years 1998, 1999, and 2000 for which that content is the lowest, determined on the basis of the vol-

ume of reformulated gasoline containing methyl tertiary butyl ether that is sold throughout the United States;

(IV) the annual average aromatic hydrocarbon content of the 10 percent of the gasoline sold under the reformulated gasoline program during the 2 calendar years described in subclause (III) for which that content is the greatest, determined on the basis of the volume of reformulated gasoline containing methyl tertiary butyl ether that is sold throughout the United States; and

(V) such other information as the Administrator determines to be appropriate.

(iii) APPLICABILITY.—

(I) IN GENERAL.—The performance standards under this subparagraph shall be applied on an annual average importer or refinery-by-refinery basis to all reformulated gasoline that is sold or introduced into commerce in a State for which the Governor waives the oxygenate requirement under subparagraph (B)(i).

(II) MORE STRINGENT REQUIREMENTS.—The performance standards under this subparagraph shall not apply to the extent that any requirement under section 202(l) is more stringent than the performance standard.

(III) STATE STANDARDS.—The performance standards under this subparagraph shall not apply in any State that has received a waiver under section 209(b).

(IV) CREDIT PROGRAM.—The Administrator shall provide for the granting of credits for exceeding the performance standards under this subparagraph in the same manner as provided in paragraph (7).

(iv) STATUTORY PERFORMANCE STANDARD.—

(I) IN GENERAL.—Subject to subclause (IV), if the regulations under clause (i)(I) have not been promulgated by the date that is 270 days after the date of enactment of this subparagraph, the requirement described in subclause (II) shall be deemed to be the performance standard under clause (ii) and shall be applied in accordance with clause (iii).

(II) TOXIC AIR POLLUTANT EMISSIONS.—The aggregate emissions of toxic air pollutants from baseline vehicles when using reformulated gasoline shall be 27.5 percent below the aggregate emissions of toxic air pollutants from baseline vehicles when using baseline gasoline.

(III) AROMATIC HYDROCARBON CONTENT.—

(aa) ANNUAL AVERAGE.—The annual average aromatic hydrocarbon content of reformu-

lated gasoline shall not exceed 26 percent by volume.

(bb) *MAXIMUM PER GALLON.*—No gallon of reformulated gasoline shall have an aromatic hydrocarbon content in excess of 45 percent.

(cc) *ALTERNATIVE REQUIREMENT.*—The requirements under items (aa) and (bb) shall be deemed to be met if no gallon of reformulated gasoline has an aromatic hydrocarbon content in excess of 30 percent.

(IV) *SUBSEQUENT REGULATIONS.*—The Administrator may modify the performance standard established under subclause (I) through promulgation of regulations under clause (i)(I).

(2) *GENERAL REQUIREMENTS.*—The regulations referred to in paragraph (1) shall require that reformulated gasoline comply with paragraph (3) and with each of the following requirements (subject to paragraph (7)):

(A) *NO_x EMISSIONS.*—The emissions of oxides of nitrogen (NO_x) from baseline vehicles when using the reformulated gasoline shall be no greater than the level of such emissions from such vehicles when using baseline gasoline. If the Administrator determines that compliance with the limitation on emissions of oxides of nitrogen under the preceding sentence is technically infeasible, considering the other requirements applicable under this subsection to such gasoline, the Administrator may, as appropriate to ensure compliance with this subparagraph, adjust (or waive entirely), any other requirements of this paragraph (including the oxygen content requirement contained in subparagraph (B)) or any requirements applicable under paragraph (3)(A).

(B) *OXYGEN CONTENT.*—The oxygen content of the gasoline shall equal or exceed 2.0 percent by weight (subject to a testing tolerance established by the Administrator) except as otherwise required by this Act. The Administrator may waive, in whole or in part, the application of this subparagraph for any ozone nonattainment area upon a determination by the Administrator that compliance with such requirement would prevent or interfere with the attainment by the area of a national primary ambient air quality standard.

(C) *BENZENE CONTENT.*—The benzene content of the gasoline shall not exceed 1.0 percent by volume.

(D) *HEAVY METALS.*—The gasoline shall have no heavy metals, including lead or manganese. The Administrator may waive the prohibition contained in this subparagraph for a heavy metal (other than lead) if the Administrator determines that addition of the heavy metal to the gasoline will not increase, on an aggregate mass or cancer-risk basis, toxic air pollutant emissions from motor vehicles.

(3) *MORE STRINGENT OF FORMULA OR PERFORMANCE STANDARDS.*—The regulations referred to in paragraph (1) shall require compliance with the more stringent of either the require-

ments set forth in subparagraph (A) or the requirements of subparagraph (B) of this paragraph. For purposes of determining the more stringent provision, clause (i) and clause (ii) of subparagraph (B) shall be considered independently.

(A) FORMULA.—

(i) BENZENE.—The benzene content of the reformulated gasoline shall not exceed 1.0 percent by volume.

(ii) AROMATICS.—The aromatic hydrocarbon content of the reformulated gasoline shall not exceed 25 percent by volume.

(iii) LEAD.—The reformulated gasoline shall have no lead content.

(iv) DETERGENTS.—The reformulated gasoline shall contain additives to prevent the accumulation of deposits in engines or vehicle fuel supply systems.

(v) OXYGEN CONTENT.—The oxygen content of the reformulated gasoline shall equal or exceed 2.0 percent by weight (subject to a testing tolerance established by the Administrator) except as otherwise required by this Act.

(B) PERFORMANCE STANDARD.—

(i) VOC EMISSIONS.—During the high ozone season (as defined by the Administrator), the aggregate emissions of ozone forming volatile organic compounds from baseline vehicles when using the reformulated gasoline shall be 15 percent below the aggregate emissions of ozone forming volatile organic compounds from such vehicles when using baseline gasoline. Effective in calendar year 2000 and thereafter, 25 percent shall be substituted for 15 percent in applying this clause, except that the Administrator may adjust such 25 percent requirement to provide for a lesser or greater reduction based on technological feasibility, considering the cost of achieving such reductions in VOC emissions. No such adjustment shall provide for less than a 20 percent reduction below the aggregate emissions of such air pollutants from such vehicles when using baseline gasoline. The reductions required under this clause shall be on a mass basis.

(ii) TOXICS.—During the entire year, the aggregate emissions of toxic air pollutants from baseline vehicles when using the reformulated gasoline shall be 15 percent below the aggregate emissions of toxic air pollutants from such vehicles when using baseline gasoline. Effective in calendar year 2000 and thereafter, 25 percent shall be substituted for 15 percent in applying this clause, except that the Administrator may adjust such 25 percent requirement to provide for a lesser or greater reduction based on technological feasibility, considering the cost of achieving such reductions in toxic air pollutants. No such adjustment shall provide for less than a 20 percent reduction below the aggregate emissions of such air pollutants from such vehi-

cles when using baseline gasoline. The reductions required under this clause shall be on a mass basis. Any reduction greater than a specific percentage reduction required under this subparagraph shall be treated as satisfying such percentage reduction requirement.

(4) CERTIFICATION PROCEDURES.—

(A) REGULATIONS.—The regulations under this subsection shall include procedures under which the Administrator shall certify reformulated gasoline as complying with the requirements established pursuant to this subsection. Under such regulations, the Administrator shall establish procedures for any person to petition the Administrator to certify a fuel formulation, or slate of fuel formulations. Such procedures shall further require that the Administrator shall approve or deny such petition within 180 days of receipt. If the Administrator fails to act within such 180-day period, the fuel shall be deemed certified until the Administrator completes action on the petition.

(B) CERTIFICATION; EQUIVALENCY.—The Administrator shall certify a fuel formulation or slate of fuel formulations as complying with this subsection if such fuel or fuels—

- (i) comply with the requirements of paragraph (2), and
- (ii) achieve equivalent or greater reductions in emissions of ozone forming volatile organic compounds and emissions of toxic air pollutants than are achieved by a reformulated gasoline meeting the applicable requirements of paragraph (3).

(C) EPA DETERMINATION OF EMISSIONS LEVEL.—Within 1 year after the enactment of the Clean Air Act Amendments of 1990, the Administrator shall determine the level of emissions of ozone forming volatile organic compounds and emissions of toxic air pollutants emitted by baseline vehicles when operating on baseline gasoline. For purposes of this subsection, within 1 year after the enactment of the Clean Air Act Amendments of 1990, the Administrator shall, by rule, determine appropriate measures of, and methodology for, ascertaining the emissions of air pollutants (including calculations, equipment, and testing tolerances).

(5) PROHIBITION.—Effective beginning January 1, 1995, each of the following shall be a violation of this subsection:

(A) The sale or dispensing by any person of conventional gasoline to ultimate consumers in any covered area.

(B) The sale or dispensing by any refiner, blender, importer, or marketer of conventional gasoline for resale in any covered area, without (i) segregating such gasoline from reformulated gasoline, and (ii) clearly marking such conventional gasoline as “conventional gasoline, not for sale to ultimate consumer in a covered area”.

Any refiner, blender, importer or marketer who purchases property segregated and marked conventional gasoline, and thereafter labels, represents, or wholesales such gasoline as reformulated gasoline shall also be in violation of this subsection.

The Administrator may impose sampling, testing, and record-keeping requirements upon any refiner, blender, importer, or marketer to prevent violations of this section.

[(6) OPT-IN AREAS.—(A) Upon]

(6) OPT-IN AREAS.—

(A) CLASSIFIED AREAS.—

(i) IN GENERAL.—Upon the application of the Governor of a State, the Administrator shall apply the prohibition set forth in paragraph (5) in any area in the State classified under subpart 2 of part D of title I as a Marginal, Moderate, Serious, or Severe Area (without regard to whether or not the 1980 population of the area exceeds 250,000). In any such case, the Administrator shall establish an effective date for such prohibition as he deems appropriate, not later than January 1, 1995, or 1 year after such application is received, whichever is later. The Administrator shall publish such application in the Federal Register upon receipt.

[(B) If]

(ii) EFFECT OF INSUFFICIENT DOMESTIC CAPACITY TO PRODUCE REFORMULATED GASOLINE.—If the Administrator determines, on the Administrator's own motion or on petition of any person, after consultation with the Secretary of Energy, that there is insufficient domestic capacity to produce gasoline certified under this subsection, the Administrator shall, by rule, extend the effective date of such prohibition in Marginal, Moderate, Serious, or Severe Areas referred to in [subparagraph (A)] clause (i) for one additional year, and may, by rule, renew such extension for 2 additional one-year periods. The Administrator shall act on any petition submitted under [this paragraph] this subparagraph within 6 months after receipt of the petition. The Administrator shall issue such extensions for areas with a lower ozone classification before issuing any such extension for areas with a higher classification.

(B) NONCLASSIFIED AREAS.—

(i) IN GENERAL.—In accordance with section 110, a State may submit to the Administrator, and the Administrator may approve, a State implementation plan revision that provides for application of the prohibition specified in paragraph (5) in any portion of the State that is not a covered area or an area referred to in subparagraph (A)(i).

(ii) PERIOD OF EFFECTIVENESS.—Under clause (i), the State implementation plan shall establish a period of effectiveness for applying the prohibition specified in paragraph (5) to a portion of a State that—

(1) commences not later than 1 year after the date of approval by the Administrator of the State implementation plan; and

(II) ends not earlier than 4 years after the date of commencement under subclause (I).

(7) CREDITS.—(A) The regulations promulgated under this subsection shall provide for the granting of an appropriate amount of credits to a person who refines, blends, or imports and certifies a gasoline or slate of gasoline that—

(i) has an oxygen content (by weight) that exceeds the minimum oxygen content specified in paragraph (2);

(ii) has an aromatic hydrocarbon content (by volume) that is less than the maximum aromatic hydrocarbon content required to comply with paragraph (3); or

(iii) has a benzene content (by volume) that is less than the maximum benzene content specified in paragraph (2).

(B) The regulations described in subparagraph (A) shall also provide that a person who is granted credits may use such credits, or transfer all or a portion of such credits to another person for use within the same nonattainment area, for the purpose of complying with this subsection.

(C) The regulations promulgated under subparagraphs (A) and (B) shall ensure the enforcement of the requirements for the issuance, application, and transfer of the credits. Such regulations shall prohibit the granting or transfer of such credits for use with respect to any gasoline in a nonattainment area, to the extent the use of such credits would result in any of the following:

(i) An average gasoline aromatic hydrocarbon content (by volume) for the nonattainment (taking into account all gasoline sold for use in conventional gasoline-fueled vehicles in the nonattainment area) higher than the average fuel aromatic hydrocarbon content (by volume) that would occur in the absence of using any such credits.

(ii) An average gasoline oxygen content (by weight) for the nonattainment area (taking into account all gasoline sold for use in conventional gasoline-fueled vehicles in the nonattainment area) lower than the average gasoline oxygen content (by weight) that would occur in the absence of using any such credits.

(iii) An average benzene content (by volume) for the nonattainment area (taking into account all gasoline sold for use in conventional gasoline-fueled vehicles in the nonattainment area) higher than the average benzene content (by volume) that would occur in the absence of using any such credits.

(8) ANTI-DUMPING RULES.—

(A) IN GENERAL.—Within 1 year after the enactment of the Clean Air Act Amendments of 1990, the Administrator shall promulgate regulations applicable to each refiner, blender, or importer of gasoline ensuring that gasoline sold or introduced into commerce by such refiner, blender, or importer (other than reformulated gasoline subject to the requirements of paragraph (1)) does not result in average per gallon emissions (measured on a mass basis) of (i) volatile organic compounds, (ii) oxides of nitrogen, (iii) car-

bon monoxide, and (iv) toxic air pollutants in excess of such emissions of such pollutants attributable to gasoline sold or introduced into commerce in calendar year 1990 by that refiner, blender, or importer. Such regulations shall take effect beginning January 1, 1995.

(B) ADJUSTMENTS.—In evaluating compliance with the requirements of subparagraph (A), the Administrator shall make appropriate adjustments to insure that no credit is provided for improvement in motor vehicle emissions control in motor vehicles sold after the calendar year 1990.

(C) COMPLIANCE DETERMINED FOR EACH POLLUTANT INDEPENDENTLY.—In determining whether there is an increase in emissions in violation of the prohibition contained in subparagraph (A) the Administrator shall consider an increase in each air pollutant referred to in clauses (i) through (iv) as a separate violation of such prohibition, except that the Administrator shall promulgate regulations to provide that any increase in emissions of oxides of nitrogen resulting from adding oxygenates to gasoline may be offset by an equivalent or greater reduction (on a mass basis) in emissions of volatile organic compounds, carbon monoxide, or toxic air pollutants, or any combination of the foregoing.

(D) COMPLIANCE PERIOD.—The Administrator shall promulgate an appropriate compliance period or appropriate compliance periods to be used for assessing compliance with the prohibition contained in subparagraph (A).

(E) BASELINE FOR DETERMINING COMPLIANCE.—If the Administrator determines that no adequate and reliable data exists regarding the composition of gasoline sold or introduced into commerce by a refiner, blender, or importer in calendar year 1990, for such refiner, blender, or importer, baseline gasoline shall be substituted for such 1990 gasoline in determining compliance with subparagraph (A).

(9) EMISSIONS FROM ENTIRE VEHICLE.—In applying the requirements of this subsection, the Administrator shall take into account emissions from the entire motor vehicle, including evaporative, running, refueling, and exhaust emissions.

(10) EXCLUSION FROM Reid VAPOR PRESSURE REQUIREMENT.—*Notwithstanding subsection (c)(4)(C), the Administrator may approve a revision of a State implementation plan that excludes an area from a waiver provided under subsection (h)(4) if—*

(A) the State demonstrates that the increases in volatile organic compound emissions resulting from the waiver significantly interfere with attainment or maintenance of the national ambient air quality standard for ozone; and

(B) the Administrator determines that the exclusion is reasonable and practicable.

[(10)] (11) DEFINITIONS.—For purposes of this subsection—

(A) BASELINE VEHICLES.—The term “baseline vehicles” mean representative model year 1990 vehicles.

(B) BASELINE GASOLINE.—

(i) SUMMERTIME.—The term “baseline gasoline” means in the case of gasoline sold during the high ozone period (as defined by the Administrator) a gasoline which meets the following specifications:

BASELINE GASOLINE FUEL PROPERTIES	
API Gravity	57.4
Sulfur, ppm	339
Benzene, %	1.53
RVP, psi	8.7
Octane, R+M/2	87.3
IBP, F	91
10%, F	128
50%, F	218
90%, F	330
End Point, F	415
Aromatics, %	32.0
Olefins, %	9.2
Saturates, %	58.8

(ii) WINTERTIME.—The Administrator shall establish the specifications of “baseline gasoline” for gasoline sold at times other than the high ozone period (as defined by the Administrator). Such specifications shall be the specifications of 1990 industry average gasoline sold during such period.

(C) TOXIC AIR POLLUTANTS.—The term “toxic air pollutants” means the aggregate emissions of the following:

- Benzene
- 1,3 Butadiene
- Polycyclic organic matter (POM)
- Acetaldehyde
- Formaldehyde.

(D) COVERED AREA.—The 9 ozone nonattainment areas having a 1980 population in excess of 250,000 and having the highest ozone design value during the period 1987 through 1989 shall be “covered areas” for purposes of this subsection. Effective one year after the reclassification of any ozone nonattainment area as a Severe ozone nonattainment area under section 181(b), such Severe area shall also be a “covered area” for purposes of this subsection.

(E) REFORMULATED GASOLINE.—The term “reformulated gasoline” means any gasoline which is certified by the Administrator under this section as complying with this subsection.

(F) CONVENTIONAL GASOLINE.—The term “conventional gasoline” means any gasoline which does not meet specifications set by a certification under this subsection.

* * * * *

(o) CLEAN ALTERNATIVE FUEL PROGRAM.—

(1) DEFINITIONS.—In this subsection:

(A) BIN 1 VEHICLE.—The term “bin 1 vehicle” means—
 (i) a light-duty motor vehicle that does not exceed the standards for bin no. 1 specified in table S04-1 of section 86.1811-04 of title 40, Code of Federal Regula-

tions (published at 65 Fed. Reg. 6855 on February 10, 2000); and

(ii) a heavy-duty motor vehicle that does not exceed standards equivalent to the standards described in clause (i), as determined by the Administrator by regulation.

(B) **BIN 2 VEHICLE.**—The term “bin 2 vehicle” means—

(i) a light-duty motor vehicle that does not exceed the standards for bin no. 2 specified in table S04–1 of section 86.1811–04 of title 40, Code of Federal Regulations (published at 65 Fed. Reg. 6855 on February 10, 2000); and

(ii) a heavy-duty motor vehicle that emits not more than 50 percent of the allowable emissions of air pollutants under the most stringent standards applicable to heavy-duty motor vehicles, as determined by the Administrator by regulation.

(C) **BIOMASS ETHANOL.**—The term “biomass ethanol” means ethanol derived from any lignocellulosic or hemicellulosic matter that is available on a renewable or recurring basis, including—

(i) dedicated energy crops and trees;

(ii) wood and wood residues;

(iii) plants;

(iv) grasses;

(v) agricultural commodities and residues;

(vi) fibers;

(vii) animal wastes and other waste materials; and

(viii) municipal solid waste.

(D) **CLEAN ALTERNATIVE FUEL.**—The term “clean alternative fuel” means—

(i) renewable fuel;

(ii) credit for motor vehicle fuel used to operate a bin 1 vehicle, as generated under paragraph (5)(A)(ii); and

(iii) credit for motor vehicle fuel used to operate a bin 2 vehicle, as generated under paragraph (5)(A)(ii).

(E) **RENEWABLE FUEL.**—

(i) **IN GENERAL.**—The term “renewable fuel” means motor vehicle fuel that—

(I)(aa) is produced from grain, starch, oilseeds, or other biomass; or

(bb) is natural gas produced from a biogas source, including a landfill, sewage waste treatment plant, feedlot, or other place where decaying organic material is found; and

(II) is used to replace or reduce the quantity of fossil fuel present in a fuel mixture used to operate a motor vehicle.

(ii) **INCLUSION.**—The term “renewable fuel” includes biomass ethanol.

(2) **CLEAN ALTERNATIVE FUEL PROGRAM.**—

(A) **CLEAN ALTERNATIVE FUEL REQUIREMENTS.**—The motor vehicle fuel sold or introduced into commerce in the

United States in calendar year 2008 or any calendar year thereafter by a refiner, blender, or importer shall, on a 6-month average basis, be comprised of a quantity of clean alternative fuel, measured in gasoline-equivalent gallons (as determined by the Secretary of Energy), that is not less than the applicable percentage by volume for the 6-month period.

(B) *APPLICABLE PERCENTAGE.*—For the purposes of subparagraph (A), the applicable percentage for a 6-month period of a calendar year shall be determined in accordance with the following table:

<i>Calendar year:</i>	<i>Applicable percentage of clean alternative fuel:</i>
2008	1.2
2009	1.3
2010	1.4
2011 and thereafter	1.5.

(3) *TRANSITION PROGRAM.*—

(A) *RENEWABLE FUEL REQUIREMENTS.*—

(i) *IN GENERAL.*—Subject to subparagraph (B), all motor vehicle fuel sold or introduced into commerce in the United States in any of calendar years 2002 through 2007 by a refiner, blender, or importer shall contain, on a 6-month average basis, a quantity of renewable fuel, measured in gasoline-equivalent gallons (as determined by the Secretary of Energy), that is not less than the applicable percentage by volume for the 6-month period.

(ii) *APPLICABLE PERCENTAGE.*—For the purposes of clause (i), the applicable percentage for a 6-month period of a calendar year shall be determined in accordance with the following table:

<i>Calendar year:</i>	<i>Applicable percentage of renewable fuel:</i>
2002	0.6
2003	0.7
2004	0.8
2005	0.9
2006	1.0
2007	1.1.

(B) *CREDIT FOR MOTOR VEHICLE FUEL USED TO OPERATE BIN 1 VEHICLES OR BIN 2 VEHICLES.*—Credit for motor vehicle fuel used to operate bin 1 vehicles or bin 2 vehicles, as generated under paragraph (5)(A)(ii), may be used to meet not more than 10 percent of the renewable fuel requirement under subparagraph (A).

(4) *BIOMASS ETHANOL.*—For the purposes of paragraphs (2) and (3), 1 gallon of biomass ethanol shall be considered to be the equivalent of 1.5 gallons of renewable fuel.

(5) *CREDIT PROGRAM.*—

(A) *IN GENERAL.*—The regulations promulgated to carry out this subsection shall provide for the generation of an appropriate amount of credits by—

(i) a person that refines, blends, or imports motor vehicle fuel that contains, on a 6-month average basis, a quantity of clean alternative fuel or renewable fuel that is greater than the quantity required for that 6-month period under paragraph (2) or (3), respectively; and

(ii) a person that manufactures bin 1 vehicles or bin 2 vehicles.

(B) *CALCULATION OF CREDITS.*—In determining the appropriate amount of credits generated by a vehicle manufacturer under subparagraph (A)(ii), the Administrator, in consultation with the Secretary of Energy, shall give priority to the extent to which bin 1 vehicles or bin 2 vehicles, as compared to vehicles that are not bin 1 vehicles or bin 2 vehicles but are similar in size, weight, and other appropriate factors—

(i) use innovative or advanced technology;

(ii) result in less petroleum consumption; and

(iii) are efficient in their use of petroleum or other form of energy.

(C) *USE OF CREDITS.*—

(i) *IN GENERAL.*—A person that generates credits under subparagraph (A) may use the credits, or transfer all or a portion of the credits to another person, for the purpose of complying with paragraph (2) or (3).

(ii) *USE OF VEHICLE MANUFACTURER CREDITS TO PROVIDE NON-FEDERAL CONTRIBUTIONS UNDER OTHER LAW.*—Credits generated under subparagraph (A)(ii) and transferred to a person, nonprofit entity, or local government may be used to provide any portion of—

(I) the non-Federal share required for an alternative fuel project under section 149(e)(4) of title 23, United States Code; or

(II) a voluntary supply commitment under section 505 of the Energy Policy Act of 1992 (42 U.S.C. 13255).

(D) *EXPIRATION OF CREDITS.*—A credit generated under this paragraph shall expire 1 year after the date on which the credit was generated.

(6) *WAIVERS.*—

(A) *IN GENERAL.*—The Administrator, in consultation with the Secretary of Agriculture and the Secretary of Energy, may waive the requirements of paragraph (2) or (3) in whole or in part on petition by a State or States by reducing the national quantity of clean alternative fuel required under this subsection—

(i) based on a determination by the Administrator, after public notice and opportunity for comment, that implementation of the requirements would severely harm the economy or environment of a State, a region, or the United States; or

(ii) based on a determination by the Administrator, after public notice and opportunity for comment, that

there is an inadequate domestic supply or distribution capacity to meet the requirements.

(B) *PETITIONS FOR WAIVERS.—The Administrator, in consultation with the Secretary of Agriculture and the Secretary of Energy—*

(i) shall approve or deny a State petition for a waiver of the requirements of paragraph (2) or (3) within 180 days after the date on which the petition is received; but

(ii) may extend that period for up to 60 additional days to provide for public notice and opportunity for comment and for consideration of the comments submitted.

(C) *TERMINATION OF WAIVERS.—A waiver granted under subparagraph (A) shall terminate after 1 year, but may be renewed by the Administrator after consultation with the Secretary of Agriculture and the Secretary of Energy.*

(D) *OXYGEN CONTENT WAIVERS.—The grant or denial of a waiver under subsection (k)(2)(B) shall not affect the requirements of this subsection.*

(7) *SMALL REFINERS.—The Administrator may provide an exemption from the requirements of paragraph (2) or (3), in whole or in part, for small refiners (as defined by the Administrator).*

(8) *REGULATIONS.—Not later than 270 days after the date of enactment of this paragraph, the Administrator shall promulgate regulations to carry out this subsection.*

(p) *ANALYSES OF MOTOR VEHICLE FUEL CHANGES AND ADDITIONAL PERFORMANCE REQUIREMENTS.—*

(1) ANTI-BACKSLIDING ANALYSIS AND REGULATIONS.—

(A) ANALYSIS.—

(i) DRAFT ANALYSIS.—Not later than 4 years after the date of enactment of this subsection, the Administrator shall publish for public comment a draft analysis of the changes in emissions of air pollutants and air quality due to the use of motor vehicle fuel and fuel additives resulting from implementation of the amendments made by the Federal Reformulated Fuels Act of 2000.

(ii) FINAL ANALYSIS.—After providing a reasonable opportunity for comment but not later than 5 years after the date of enactment of this subsection, the Administrator shall publish the analysis in final form.

(B) ADDITIONAL PERFORMANCE REQUIREMENTS.—

(i) PROPOSED REGULATIONS.—Not later than 6 years after the date of enactment of this subsection, the Administrator shall publish proposed regulations establishing performance requirements that are adequate, at a minimum, to ensure that, as compared with emissions due to the use of motor vehicle fuel and fuel additives during the period of 1998 through 2000, emissions due to the use of motor vehicle fuel and fuel additives will not—

(I) be significantly greater on a per-gallon average basis in any region; or

(II) cause air quality to be significantly worse in any region.

(ii) *FINAL REGULATIONS.*—After providing a reasonable opportunity for comment but not later than 7 years after the date of enactment of this subsection, the Administrator shall promulgate the regulations in final form.

(iii) *DEADLINE FOR COMPLIANCE.*—The regulations shall require compliance as expeditiously as practicable, taking into account costs and lead time necessary to ensure the availability of a reliable and adequate motor vehicle fuel supply.

(2) *MOBILE SOURCE TITLE ANALYSIS AND REGULATIONS.*—

(A) *ANALYSIS.*—

(i) *DRAFT ANALYSIS.*—Not later than 7 years after the date of enactment of this subsection, the Administrator shall publish for public comment a draft analysis of the effects of motor vehicle fuel and fuel additives on public health and the environment, including the changes in fuel and fuel additives resulting from implementation of the Federal Reformulated Fuels Act of 2000.

(ii) *FINAL ANALYSIS.*—After providing a reasonable opportunity for comment but not later than 8 years after the date of enactment of this subsection, the Administrator shall publish the analysis in final form.

(B) *ADDITIONAL PERFORMANCE REQUIREMENTS.*—

(i) *PROPOSED REGULATIONS.*—Not later than 9 years after the date of enactment of this subsection, the Administrator shall publish proposed regulations establishing performance requirements for motor vehicle fuel and fuel additives, the use of motor vehicle fuel and fuel additives, and motor vehicles that are necessary—

(I) to ensure adequate protection of public health and the environment; and

(II) to achieve specific reductions in the use of compounds or associated emission products that pose the greatest risk to human health.

(ii) *FINAL REGULATIONS.*—After providing a reasonable opportunity for comment but not later than 10 years after the date of enactment of this subsection, the Administrator shall promulgate the regulations in final form.

(iii) *DEADLINE FOR COMPLIANCE.*—The regulations shall require compliance as expeditiously as practicable, taking into account costs and lead time necessary to ensure the availability of a reliable and adequate motor vehicle fuel supply.

(3) *LIFE CYCLE ANALYSIS.*—In conducting the analyses under paragraphs (1) and (2), the Administrator shall take into account the effects of motor vehicle fuel and fuel additives on

public health and the environment over the entire life cycle of the production, distribution, and use of motor vehicle fuel and fuel additives evaluated in the analyses.

(4) EMISSIONS MODEL.—For the purposes of this subsection, as soon as the necessary data are available, the Administrator shall develop and finalize an emissions model that reasonably reflects the effects of fuel characteristics or components on emissions from vehicles in the motor vehicle fleet during calendar year 2005.

[(o)] (q) FUEL AND FUEL ADDITIVE IMPORTERS AND IMPORTATION.—For the purposes of this section, the term “manufacturer” includes an importer and the term “manufacture” includes importation.

[42 U.S.C. 7545]

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SOLID WASTE DISPOSAL ACT¹

[As Amended Through P.L. 106–55, August 17, 1999]

SEC. 1001. This title (hereinafter in this title referred to as “this Act”), together with the following table of contents, may be cited as the “Solid Waste Disposal Act”:

Subtitle A—General Provisions

Sec. 1001. * * *

* * * * *

[Sec. 9010. Authorization of appropriations.]

Sec. 9010. Release prevention and compliance.

Sec. 9011. Authorization of appropriations.

* * * * *

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RELEASE DETECTION, PREVENTION, AND CORRECTION REGULATIONS

SEC. 9003. (a) REGULATIONS.—The Administrator, after notice and opportunity for public comment, and at least three months before the effective dates specified in subsection (f), shall promulgate release detection, prevention, and correction regulations applicable to all owners and operators of underground storage tanks, as may be necessary to protect human health and the environment.

(b) DISTINCTIONS IN REGULATIONS.—In promulgating regulations under this section, the Administrator may distinguish between types, classes, and ages of underground storage tanks. In making such distinctions, the Administrator may take into consideration factors, including, but not limited to: location of the tanks, soil and climate conditions, uses of the tanks, history of maintenance, age of the tanks, current industry recommended practices, national consensus codes, hydrogeology, water table, size of the tanks, quantity of regulated substances periodically deposited in or dispensed from the tank, the technical capability of the owners and

¹The Solid Waste Disposal Act (42 U.S.C. 6901–6992k) consists of title II of Public Law 89–272 and the amendments made by subsequent enactments. This Act is popularly referred to as the Resource Conservation and Recovery Act, after the short title of the law that amended the Solid Waste Disposal Act in its entirety in 1976 (P.L. 94–580).

operators, and the compatibility of the regulated substance and the materials of which the tank is fabricated.

(c) REQUIREMENTS.—The regulations promulgated pursuant to this section shall include, but need not be limited to, the following requirements respecting all underground storage tanks—

(1) requirements for maintaining a leak detection system, an inventory control system together with tank testing, or a comparable system or method designed to identify releases in a manner consistent with the protection of human health and the environment;

(2) requirements for maintaining records of any monitoring or leak detection system or inventory control system or tank testing or comparable system;

(3) requirements for reporting of releases and corrective action taken in response to a release from an underground storage tank;

(4) requirements for taking corrective action in response to a release from an underground storage tank;

(5) requirements for the closure of tanks to prevent future releases of regulated substances into the environment; and

(6) requirements for maintaining evidence for financial responsibility for taking corrective action and compensating third parties for bodily injury and property damage caused by sudden and nonsudden accidental releases arising from operating an underground storage tank.

(d) FINANCIAL RESPONSIBILITY.—(1) Financial responsibility required by this subsection may be established in accordance with regulations promulgated by the Administrator by any one, or any combination, of the following: insurance, guarantee, surety bond, letter of credit, qualification as a self-insurer. In promulgating requirements under this subsection, the Administrator is authorized to specify policy or other contractual terms, conditions, or defenses which are necessary or are unacceptable in establishing such evidence of financial responsibility in order to effectuate the purposes of this subtitle or any other method satisfactory to the Administrator.

(2) In any case where the owner or operator is in bankruptcy, reorganization, or arrangement pursuant to the Federal Bankruptcy Code or where with reasonable diligence jurisdiction in any State court of the Federal Courts cannot be obtained over an owner or operator likely to be solvent at the time of judgment, any claim arising from conduct for which evidence of financial responsibility must be provided under this subsection may be asserted directly against the guarantor providing such evidence of financial responsibility. In the case of any action pursuant to this paragraph such guarantor shall be entitled to invoke all rights and defenses which would have been available to the owner or operator if any action had been brought against the owner or operator by the claimant and which would have been available to the guarantor if an action had been brought against the guarantor by the owner or operator.

(3) The total liability of any guarantor shall be limited to the aggregate amount which the guarantor has provided as evidence of financial responsibility to the owner or operator under this section. Nothing in this subsection shall be construed to limit any other

State or Federal statutory, contractual or common law liability of a guarantor to its owner or operator including, but not limited to, the liability of such guarantor for bad faith either in negotiating or in failing to negotiate the settlement of any claim. Nothing in this subsection shall be construed to diminish the liability of any person under section 107 or 111 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 or other applicable law.

(4) For the purpose of this subsection, the term “guarantor” means any person, other than the owner or operator, who provides evidence of financial responsibility for an owner or operator under this subsection.

(5)(A) The Administrator, in promulgating financial responsibility regulations under this section, may establish an amount of coverage for particular classes or categories of underground storage tanks containing petroleum which shall satisfy such regulations and which shall not be less than \$1,000,000 for each occurrence with an appropriate aggregate requirement.

(B) The Administrator may set amounts lower than the amounts required by subparagraph (A) of this paragraph for underground storage tanks containing petroleum which are at facilities not engaged in petroleum production, refining, or marketing and which are not used to handle substantial quantities of petroleum.

(C) In establishing classes and categories for purposes of this paragraph, the Administrator may consider the following factors:

(i) The size, type, location, storage, and handling capacity of underground storage tanks in the class or category and the volume of petroleum handled by such tanks.

(ii) The likelihood of release and the potential extent of damage from any release from underground storage tanks in the class or category.

(iii) The economic impact of the limits on the owners and operators of each such class or category, particularly relating to the small business segment of the petroleum marketing industry.

(iv) The availability of methods of financial responsibility in amounts greater than the amount established by this paragraph.

(v) Such other factors as the Administrator deems pertinent.

(D) The Administrator may suspend enforcement of the financial responsibility requirements for a particular class or category of underground storage tanks or in a particular State, if the Administrator makes a determination that methods of financial responsibility satisfying the requirements of this subsection are not generally available for underground storage tanks in that class or category; and—

(i) steps are being taken to form a risk retention group for such class of tanks; or

(ii) such State is taking steps to establish a fund pursuant to section 9004(c)(1) of this Act to be submitted as evidence of financial responsibility.

A suspension by the Administrator pursuant to this paragraph shall extend for a period not to exceed 180 days. A determination

to suspend may be made with respect to the same class or category or for the same State at the end of such period, but only if substantial progress has been made in establishing a risk retention group, or the owners or operators in the class or category demonstrate, and the Administrator finds, that the formation of such a group is not possible and that the State is unable or unwilling to establish such a fund pursuant to clause (ii).

(e) NEW TANK PERFORMANCE STANDARDS.—The Administrator shall, not later than three months prior to the effective date specified in subsection (f), issue performance standards for underground storage tanks brought into use on or after the effective date of such standards. The performance standards for new underground storage tanks shall include, but need not be limited to, design, construction, installation, release detection, and compatibility standards.

(f) EFFECTIVE DATES.—(1) Regulations issued pursuant to subsection¹ (c) and (d) of this section, and standards issued pursuant to subsection (e) of this section, for underground storage tanks containing regulated substances defined in section 9001(2)(B) (petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure) shall be effective not later than thirty months after the date of enactment of the Hazardous and Solid Waste Amendments of 1984.

(2) Standards issued pursuant to subsection (e) of this section (entitled “New Tank Performance Standards”) for underground storage tanks containing regulated substances defined in section 9001(2)(A) shall be effective not later than thirty-six months after the date of enactment of the Hazardous and Solid Waste Amendments of 1984.

(3) Regulations issued pursuant to subsection (c) of this section (entitled “Requirements”) and standards issued pursuant to subsection (d) of this section (entitled “Financial Responsibility”) for underground storage tanks containing regulated substances defined in section 9001(2)(A) shall be effective not later than forty-eight months after the date of enactment of the Hazardous and Solid Waste Amendments of 1984.

(g) INTERIM PROHIBITION.—(1) Until the effective date of the standards promulgated by the Administrator under subsection (e) and after one hundred and eighty days after the date of the enactment of the Hazardous and Solid Waste Amendments of 1984, no person may install an underground storage tank for the purpose of storing regulated substances unless such tank (whether of single or double wall construction)—

(A) will prevent releases due to corrosion or structural failure for the operational life of the tank;

(B) is cathodically protected against corrosion, constructed of noncorrosive material, steel clad with a noncorrosive material, or designed in a manner to prevent the release or threatened release of any stored substance; and

(C) the material used in the construction or lining of the tank is compatible with the substance to be stored.

¹ So in law. Probably should be “subsections”.

(2) Notwithstanding paragraph (1), if soil tests conducted in accordance with ASTM Standard G57-78, or another standard approved by the Administrator, show that soil resistivity in an installation location is 12,000 ohm/cm or more (unless a more stringent standard is prescribed by the Administrator by rule), a storage tank without corrosion protection may be installed in that location during the period referred to in paragraph (1).

(h) EPA RESPONSE PROGRAM FOR PETROLEUM.—

(1) BEFORE REGULATIONS.—Before the effective date of regulations under subsection (c), the Administrator (or a State pursuant to paragraph (7)) is authorized to—

(A) require the owner or operator of an underground storage tank to undertake corrective action with respect to any release of petroleum when the Administrator (or the State) determines that such corrective action will be done properly and promptly by the owner or operator of the underground storage tank from which the release occurs; or

(B) undertake corrective action with respect to any release of petroleum into the environment from an underground storage tank if such action is necessary, in the judgment of the Administrator (or the State), to protect human health and the environment.

The corrective action undertaken or required by this paragraph shall be such as may be necessary to protect human health and the environment. The Administrator shall use funds in the Leaking Underground Storage Tank Trust Fund for payment of costs incurred for corrective action under subparagraph (B), enforcement action under subparagraph (A), and cost recovery under paragraph (6) of this subsection. Subject to the priority requirements of paragraph (3), the Administrator (or the State) shall give priority in undertaking such actions under subparagraph (B) to cases where the Administrator (or the State) cannot identify a solvent owner or operator of the tank who will undertake action properly.

(2) AFTER REGULATIONS.—Following the effective date of regulations under subsection (c), all actions or orders of the Administrator (or a State pursuant to paragraph (7)) described in paragraph (1) of this subsection shall be in conformity with such regulations. Following such effective date, the Administrator (or the State) may undertake corrective action with respect to any release of petroleum into the environment from an underground storage tank only if such action is necessary, in the judgment of the Administrator (or the State), to protect human health and the environment and one or more of the following situations exists:

(A) No person can be found, within 90 days or such shorter period as may be necessary to protect human health and the environment, who is—

(i) an owner or operator of the tank concerned,

(ii) subject to such corrective action regulations,

and

(iii) capable of carrying out such corrective action properly.

(B) A situation exists which requires prompt action by the Administrator (or the State) under this paragraph to protect human health and the environment.

(C) Corrective action costs at a facility exceed the amount of coverage required by the Administrator pursuant to the provisions of subsections (c) and (d)(5) of this section and, considering the class or category of underground storage tank from which the release occurred, expenditures from the Leaking Underground Storage Tank Trust Fund are necessary to assure an effective corrective action.

(D) The owner or operator of the tank has failed or refused to comply with an order of the Administrator under this subsection or section 9006 or with the order of a State under this subsection to comply with the corrective action regulations.

(3) PRIORITY OF CORRECTIVE ACTIONS.—The Administrator (or a State pursuant to paragraph (7)) shall give priority in undertaking corrective actions under this subsection, and in issuing orders requiring owners or operators to undertake such actions, to releases of petroleum from underground storage tanks which pose the greatest threat to human health and the environment.

(4) CORRECTIVE ACTION ORDERS.—The Administrator is authorized to issue orders to the owner or operator of an underground storage tank to carry out subparagraph (A) of paragraph (1) or to carry out regulations issued under subsection (c)(4). A State acting pursuant to paragraph (7) of this subsection is authorized to carry out subparagraph (A) of paragraph (1) only until the State's program is approved by the Administrator under section 9004 of this subtitle. Such orders shall be issued and enforced in the same manner and subject to the same requirements as orders under section 9006.

(5) ALLOWABLE CORRECTIVE ACTIONS.—The corrective actions undertaken by the Administrator (or a State pursuant to paragraph (7)) under paragraph (1) or (2) may include temporary or permanent relocation of residents and alternative household water supplies. In connection with the performance of any corrective action under paragraph (1) or (2), the Administrator may undertake an exposure assessment as defined in paragraph (10) of this subsection or provide for such an assessment in a cooperative agreement with a State pursuant to paragraph (7) of this subsection. The costs of any such assessment may be treated as corrective action for purposes of paragraph (6), relating to cost recovery.

(6) RECOVERY OF COSTS.—

(A) IN GENERAL.—Whenever costs have been incurred by the Administrator, or by a State pursuant to paragraph (7), for undertaking corrective action or enforcement action with respect to the release of petroleum from an underground storage tank, the owner or operator of such tank shall be liable to the Administrator or the State for such costs. The liability under this paragraph shall be construed

to be the standard of liability which obtains under section 311 of the Federal Water Pollution Control Act.

(B) RECOVERY.—In determining the equities for seeking the recovery of costs under subparagraph (A), the Administrator (or a State pursuant to paragraph (7) of this subsection) may consider the amount of financial responsibility required to be maintained under subsections (c) and (d)(5) of this section and the factors considered in establishing such amount under subsection (d)(5).

(C) EFFECT ON LIABILITY.—

(i) NO TRANSFERS OF LIABILITY.—No indemnification, hold harmless, or similar agreement or conveyance shall be effective to transfer from the owner or operator of any underground storage tank or from any person who may be liable for a release or threat of release under this subsection, to any other person the liability imposed under this subsection. Nothing in this subsection shall bar any agreement to insure, hold harmless, or indemnify a party to such agreement for any liability under this section.

(ii) NO BAR TO CAUSE OF ACTION.—Nothing in this subsection, including the provisions of clause (i) of this subparagraph, shall bar a cause of action that an owner or operator or any other person subject to liability under this section, or a guarantor, has or would have, by reason of subrogation or otherwise against any person.

(D) FACILITY.—For purposes of this paragraph, the term “facility” means, with respect to any owner or operator, all underground storage tanks used for the storage of petroleum which are owned or operated by such owner or operator and located on a single parcel of property (or on any contiguous or adjacent property).

(7) STATE AUTHORITIES.—

(A) GENERAL.—A State may exercise the authorities in [paragraphs (1) and (2) of this subsection] *paragraphs (1), (2), and (12)*, subject to the terms and conditions of paragraphs (3), (5), (9), (10), and (11), and including the authorities of paragraphs (4), (6), and (8) of this subsection *and subsection 9010(a)* if—

(i) the Administrator determines that the State has the capabilities to carry out effective corrective actions and enforcement activities; and

(ii) the Administrator enters into a cooperative agreement with the State setting out the actions to be undertaken by the State.

The Administrator may provide funds from the Leaking Underground Storage Tank Trust Fund for the reasonable costs of the State’s actions under the cooperative agreement.

(B) COST SHARE.—Following the effective date of the regulations under subsection (c) of this section, the State shall pay 10 per centum of the cost of corrective actions undertaken either by the Administrator or by the State

under a cooperative agreement, except that the Administrator may take corrective action at a facility where immediate action is necessary to respond to an imminent and substantial endangerment to human health or the environment if the State fails to pay the cost share.

(8) EMERGENCY PROCUREMENT POWERS.—Notwithstanding any other provision of law, the Administrator may authorize the use of such emergency procurement powers as he deems necessary.

(9) DEFINITION OF OWNER OR OPERATOR.—

(A) IN GENERAL.—As used in this subtitle, the terms “owner” and “operator” do not include a person that, without participating in the management of an underground storage tank and otherwise not engaged in petroleum production, refining, or marketing, holds indicia of ownership primarily to protect the person’s security interest.

(B) SECURITY INTEREST HOLDERS.—The provisions regarding holders of security interests in subparagraphs (E) through (G) of section 101(20) and the provisions regarding fiduciaries at section 107(n) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 shall apply in determining a person’s liability as an owner or operator of an underground storage tank for the purposes of this subtitle.

(C) EFFECT ON RULE.—Nothing in subparagraph (B) shall be construed as modifying or affecting the final rule issued by the Administrator on September 7, 1995 (60 Fed. Reg. 46,692), or as limiting the authority of the Administrator to amend the final rule, in accordance with applicable law. The final rule in effect on the date of enactment of this subparagraph shall prevail over any inconsistent provision regarding holders of security interests in subparagraphs (E) through (G) of section 101(20) or any inconsistent provision regarding fiduciaries in section 107(n) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. Any amendment to the final rule shall be consistent with the provisions regarding holders of security interests in subparagraphs (E) through (G) of section 101(20) and the provisions regarding fiduciaries in section 107(n) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. This subparagraph does not preclude judicial review of any amendment of the final rule made after the date of enactment of this subparagraph.

(10) DEFINITION OF EXPOSURE ASSESSMENT.—As used in this subsection, the term “exposure assessment” means an assessment to determine the extent of exposure of, or potential for exposure of, individuals to petroleum from a release from an underground storage tank based on such factors as the nature and extent of contamination and the existence of or potential for pathways of human exposure (including ground or surface water contamination, air emissions, and food chain contamination), the size of the community within the likely pathways of exposure, and the comparison of expected human expo-

sure levels to the short-term and long-term health effects associated with identified contaminants and any available recommended exposure or tolerance limits for such contaminants. Such assessment shall not delay corrective action to abate immediate hazards or reduce exposure.

(11) FACILITIES WITHOUT FINANCIAL RESPONSIBILITY.—At any facility where the owner or operator has failed to maintain evidence of financial responsibility in amounts at least equal to the amounts established by subsection (d)(5)(A) of this section (or a lesser amount if such amount is applicable to such facility as a result of subsection (d)(5)(B) of this section) for whatever reason the Administrator shall expend no monies from the Leaking Underground Storage Tank Trust Fund to clean up releases at such facility pursuant to the provisions of paragraph (1) or (2) of this subsection. At such facilities the Administrator shall use the authorities provided in subparagraph (A) of paragraph (1) and paragraph (4) of this subsection and section 9006 of this subtitle to order corrective action to clean up such releases. States acting pursuant to paragraph (7) of this subsection shall use the authorities provided in subparagraph (A) of paragraph (1) and paragraph (4) of this subsection to order corrective action to clean up such releases. Notwithstanding the provisions of this paragraph, the Administrator may use monies from the fund to take the corrective actions authorized by paragraph (5) of this subsection to protect human health at such facilities and shall seek full recovery of the costs of all such actions pursuant to the provisions of paragraph (6)(A) of this subsection and without consideration of the factors in paragraph (6)(B) of this subsection. Nothing in this paragraph shall prevent the Administrator (or a State pursuant to paragraph (7) of this subsection) from taking corrective action at a facility where there is no solvent owner or operator or where immediate action is necessary to respond to an imminent and substantial endangerment of human health or the environment.

(12) REMEDIATION OF MTBE CONTAMINATION.—

(A) IN GENERAL.—*The Administrator and the States may use funds made available under section 9011(1) to carry out corrective actions with respect to a release of methyl tertiary butyl ether that presents a threat to human health, welfare, or the environment.*

(B) APPLICABLE AUTHORITY.—*Subparagraph (A) shall be carried out—*

(i) in accordance with paragraph (2); and

(ii) in the case of a State, in accordance with a cooperative agreement entered into by the Administrator and the State under paragraph (7).

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AUTHORIZATION OF APPROPRIATIONS

【SEC. 9010. For authorization of appropriations to carry out this subtitle, see section 2007(g).】

SEC. 9010. RELEASE PREVENTION AND COMPLIANCE.

Funds made available under section 9011(2) from the Leaking Underground Storage Tank Trust Fund may be used for conducting inspections, or for issuing orders or bringing actions under this subtitle—

(1) by a State (pursuant to section 9003(h)(7)) acting under—

(A) a program approved under section 9004; or

(B) State requirements regulating underground storage tanks that are similar or identical to this subtitle; and

(2) by the Administrator, acting under this subtitle or a State program approved under section 9004.

SEC. 9011. AUTHORIZATION OF APPROPRIATIONS.

In addition to amounts made available under section 2007(f), there are authorized to be appropriated from the Leaking Underground Storage Tank Trust Fund—

(1) to carry out section 9003(h)(12), \$200,000,000 for fiscal year 2001, to remain available until expended; and

(2) to carry out section 9010—

(A) \$50,000,000 for fiscal year 2001; and

(B) \$30,000,000 for each of fiscal years 2002 through 2006.

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