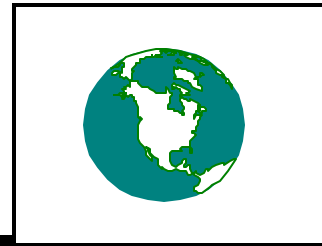


Michael P. Walsh
3105 N. Dinwiddie Street
Arlington, Virginia 22207
USA
Phone: (703) 241 1297 Fax: (703) 241 1418
E-Mail mpwalsh@igc.apc.org

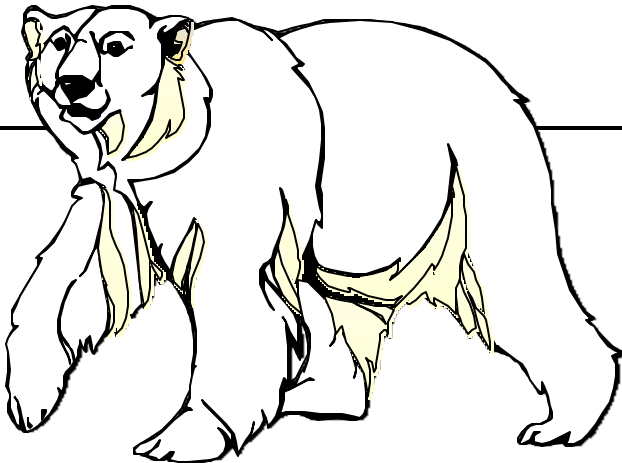


CAR LINES

Issue 99-6



December 1999



***Season's Greetings to All and Best Wishes
For An Environmentally Friendly Millennium!***

1.	European Parliament Approves Heavy Duty Truck and Bus Common Position	-1
2.	Germany Pushes The EU Toward Lower Sulfur Fuels	-2
3.	EU Allows Member States to Apply Tighter Green Laws	-3
4.	Norway Opens Electric Car Plant	-4
5.	Statoil, Methanex To Study Methanol As Car Fuel	-4
6.	Finland Trying To Reignite The EU Energy Tax Debate	-5
7.	France Protests EU Plans For Weekend Truck Traffic	-5
8.	EU Retreats on Aircraft Noise Law	-6
9.	EU Poised To Give Five States One-year Fuel Derogation	-6
10.	Georgia To Go Unleaded	-7
11.	EU Candidates Seek Extra Time To Comply With Environmental Laws	-7
12.	Sweden's Retrofit Program Continues On Track	-7
13.	EPA Proposes Strategy to Reduce Emissions from Heavy Duty Vehicles	-12
14.	ARB Pushing For Even Greater Diesel Control	-14
15.	ARCO Diesel Fleet Demonstration Program May Lead To Cleaner Bus, Truck, and Car Emissions	-15
16.	EPA Issues New Report On Light-Duty Automotive Technology and Fuel Economy Trends Through 1999	-17
17.	Honda Leads EPA Fuel Economy Ratings	-19
18.	Mazda Fined By U.S. EPA	-20
19.	California Wary of Ethanol Use To Replace MTBE	-20
20.	U.S. Utilities, EPA Negotiate Coal Plant Dispute	-21
21.	Smog Blamed For 53,000 Hospital Visits Each Summer	-22
22.	GM Intends to Build More Efficient, Cleaner Powertrains	-22
23.	Environmentalists, Labor Unions Form New Alliance	-23
24.	Senator Chafee Dies Suddenly; Smith To Become New Chairman	-24
25.	Major Air Toxics Study in Los Angeles Finds Vehicles Dominate Cancer Risk	-24
26.	US Court Refuses to Reconsider Air Pollution Ruling	-26
27.	US Senate Bill Would Let States Out of MTBE Program	-27
28.	Two Automakers Meet SULEV Standards for Gasoline Cars	-27
29.	ARB Updates Motor Vehicle Emissions Inventory	-28
30.	California Governor Won't Appeal Smog Impact Fee Ruling	-29
31.	EPA Report Says Benefits of Clean Air Act Outweigh Cost by Four to One	-29
32.	Maine Prepares to Sponsor Incentives for Green Cars	-30
33.	Sierra Club Sponsors Ad Campaign Against George W. Bush	-30
34.	CASAC Agrees Diesel PM Probably Carcinogenic; Still Rejects EPA Report	-31
35.	Tier 2 Decision Seems Close	-31
36.	ARB Bans MTBE And Modifies Rules For Cleaner Burning Gasoline	-31
37.	Ford Resigns From Anti-Kyoto Climate Change Group	-33
38.	Hong Kong To Tackle Diesel Pollution	-33
39.	HK Firm Unveils Electric Bus	-34
40.	Hong Kong Lower Sulphur Diesel Plans Raise Protest	-34
41.	Australia Moving To Eliminate Lead: Perth Leads the Way	-35
42.	India To Introduce Low Sulfur Fuel	-38
43.	India Court Pushes Emission Rules For Scooters	-38
44.	Recent Developments in China	-38
45.	Shell Likely To Be The First to Sell Natural Gas in China	-42
46.	Australia Decides on New Emissions Standards	-42
47.	India Continues Progress Toward EU Standards	-44
48.	Taiwan Continues To Make Progress	-45
49.	Tokyo Continues To Push No Diesel Campaign	-47
50.	India and the UK Agree To Work On Sustainable Transport	-51
51.	Egypt Battles Serious Smog Alert	-51
52.	Tehran Air Pollution Reaches Alarming Levels	-51
53.	Tough Emission Laws Cut Platinum Catalyst Sales	-52
54.	Gulf Stream Shifts Course But No New Ice Age Seen	-53
55.	Antarctic Ozone Hole Smaller This Year	-53
56.	Experts Recommend Better Approach to Global Warming	-54

EUROPE

1. European Parliament Approves Heavy Duty Truck and Bus Common Position

The European Parliament has approved new rules to limit emissions from trucks and buses, paving the way for a final European Union accord before the end of the year.

The assembly voted to approve standards agreed earlier this year by EU environment ministers. It rejected proposals to tighten the standards still further, which should allow ministers to rubber stamp the deal in December without the need for further negotiations.

The rules set mandatory limits on emissions carbon monoxide, hydrocarbons, nitrogen oxides, and particulate and smoke from diesel engines used in trucks and buses. Restrictions will also apply to vehicles using natural gas or liquified petroleum gas (LPG). Ministers have already taken on board many amendments put forward by the parliament in its first reading, including tighter standards, improved testing methods, the compulsory fitting of heavy goods vehicles with on-board measurement systems and permission for individual states to introduce tax incentives to encourage the early introduction of the least polluting engines.

The European Parliament failed to support with the necessary 313 votes any of the latest amendments approved recently by the Environment Committee.

The key issues were the removal of the 2002 Commission review of the progress of technology to meet a 2.0 g/kWh NOx standard and bringing in that standard earlier than 2008.

The final package is expected to require the mandatory fitment of particulate traps in 2005 and DeNOx or SCR catalysts in 2008. Key elements include the following:

- < 2000 (Euro 3) - as the Commission originally proposed (see tables below) for an overall 30% reduction from current levels but with the derogation for small high speed diesel engines extended from a cylinder swept volume of 0.70 liters to 0.75 liters.
- < 2005 (Euro 4) - mandatory CO, HC and NOX limits that can probably be achieved by engine improvements but mandatory particulate limits that reflect the need for particulate traps. All engines are to be tested on **both** the steady state and transient cycles except gas engines which are only tested on the ETC cycle. This means a 50% reduction in CO, HC and NOX and an 80% reduction in PM from current limit values.
- < The German delegation made a proposal that was eventually supported by all Member States for a further stage in 2008 with a NOX standard of 2.0 g/kWh on both cycles (reflecting the need for DENOX or SCR catalysts). This is a 70% reduction in NOX from current limit values. At the insistence of the Commission and several other Member States, the Commission has to report by the end of 2002 and "consider the available technology with a view to confirming the mandatory NOX standard for 2008 in a report to the Council and the Parliament, accompanied, if necessary, by appropriate proposals."
- < The limit values for Enhanced Environmentally Friendly Vehicles (EEV's) are 2.0 g/kWh NOX and 0.02 g/kWh PM on both cycles. These

standards should serve as the basis for voluntary purchases of urban vehicles such as

buses.

Limit Values for Diesel Engines on ESC and ELR Tests
(Conventional Engines +/- oxidation catalyst)

Date of Implementation	CO	HC	NOX	PM	Smoke
	Grams/Kilowatt-Hr (g/kWh)				m ⁻¹
2000/01	2.1	0.66	5.0	0.10 0.13 (a)	0.8
2005/06	1.5	0.46	3.5	0.02	0.5
2008/09	1.5	0.46	2.0	0.02	0.5

Limit Values for Diesel and Gas Engines on ETC Test
(Diesel Engines with Advanced Aftertreatment including PM Traps and DENOX catalysts)

Date of Implementation	CO	NMHC	Methane (b)	NOX	PM (c)
	Grams/Kilowatt-Hr (g/kWh)				
2000/01	5.45	0.78	1.6	5.0	0.16 0.21
2005/06	4.0	0.55	1.1	3.5	0.03
2008/09	4.0	0.55	1.1	2.0	0.03

(a) = For engines having a swept volume of less than 0.75 dm³ per cylinder and a rated power speed of more than 3000 min⁻¹

(b) = For natural gas engines only

(c) = For diesel engines only

2. Germany Pushes The EU Toward Lower Sulfur Fuels

The German government has submitted a memorandum to the EU in support of an amendment to Directive 98/70/EC on the quality of petrol and diesel fuels. A fundamental element of this is a further reduction of the sulphur content of a fuel. According to Germany, in order to fully exploit the potential for reducing pollution and CO₂,

the introduction of sulphur-free fuels (sulphur content less than 10 ppm for petrol and diesel fuels) should be planned for 1 October 2007 in the up-coming update of Directive 98/70/EC, i.e. beyond 2005 as currently provided for in the Directive.

In the view of Germany, sulphur-free fuels are needed to create the optimal framework conditions for the introduction of innovative engine technology onto the market. Modern diesel engines with new exhaust emission

control technology and direct injection petrol engines belong to such innovative technology and they necessitate a further reduction of the sulphur content for the following reasons:

- **diesel engines** offer particular potential for reducing fuel consumption. The effectiveness of the catalytic converters in diesel engines is hindered by the low temperatures of the exhaust gases. A sulphur content of 10 ppm compared to 50 ppm increases the performance and durability of oxidizing catalytic converters, DeNox catalytic converters and particulate filters and therefore decreases fuel consumption. There are also lower particulate emissions (due to lower sulphate emissions) with oxidizing catalytic converters. For certain continuously regenerating particulate filters, a sulphur content of 10 ppm is required for the simple reason that otherwise the sulphate particles alone (without any soot) would overstep the future particulate value of 0.02 g/kWh.

- **The lean-burn petrol engine** with direct fuel injection makes possible a 15% decrease in fuel consumption in comparison to conventional petrol engines. In this way, this concept can make a valuable contribution to the reduction of CO₂ emission aimed for in the transport sector. To be able to comply with the future severe emissions limit values, the use of NO_x accumulator catalytic converters is necessary. Even low levels of sulphur in fuel lead to a deterioration in the accumulation capacity of this catalytic converter and make shorter regeneration intervals necessary, which causes an increase in fuel consumption. A reduction of the fuel sulphur content from 50 ppm to 10 ppm lowers the frequency of the regeneration intervals, thus increasing consumption, to around 1/10. Furthermore, a reduction of the sulphur content from 50 ppm to 10 ppm increases the long-term stability of three-way catalytic converters.

The German government therefore called upon the Commission to submit the proposal for an update of Directive 98/70/EC before the end of this year as called for in the Directive, and with it to take up the introduction of sulphur-free diesel and petrol fuels. These should be available at least to a certain extent before 2005, and from 1 October 2007, only sulphur-free fuels should be sold within the EU. Furthermore, the German government asked the Commission to investigate a further lowering of the limit values for passenger cars and light goods vehicles with diesel engines.

The German government attaches extreme importance to the early introduction of low-sulphur and sulphur-free fuels. The German government therefore decided on August 25, 1999 on the fiscal promotion of the early introduction of fuels (diesel and petrol) with a low sulphur content. To allow the petroleum industry a period of grace to convert their refineries, the promotion of low-sulphur fuels (diesel and petrol with a maximum sulphur content of 50 ppm) will enter into force on 1 November 2001. As a further step, the German government has also decided on the fiscal promotion of sulphur-free fuels (diesel and petrol with a maximum sulphur content of 10 ppm) from 1 January 2003. The German government will notify the EU of the legislative proposal in accordance with Article 8 (4) of the Directive on the structures of excise duties.

3. EU Allows Member States to Apply Tighter Green Laws

The European Commission said it had for the first time used new powers it gained in May to permit individual European Union member states to maintain higher environmental standards than the EU norm.

The EU's executive said it would allow Denmark, the Netherlands, Germany and Sweden to keep in place tougher limitations on

the use of the wood preservative creosote than is the standard in other EU states. It gave the Dutch similar clearance to restrict the use of the chemical pentachlorophenol.

The EU's Treaty of Amsterdam, which came into force in May, enshrined the right for EU governments to go further than EU law if they could justify tighter restrictions on health or environmental grounds. The final decision lies with the Commission, which must decide if the health arguments outweigh potential damage to the working of the EU's borderless internal market.

If the Commission does not make a decision within six months of a request from a national government, the national rules cannot be challenged.

The Commission said the national rules in the four countries in question "can be considered justified on grounds of major need of protection of health."

It said it was now considering proposing that EU-wide legislation be brought up to the "same high standard of protection" as in the Netherlands, Germany, Sweden and Denmark.

4. Norway Opens Electric Car Plant

Norway opened its first car production plant for the tiny Think City electric motor vehicle, which has found backing from Ford Motor Co. Think Nordic AS plans to make around 5,000 cars a year by 2002 at the factory employing around 90 workers in the rural community at Aurskog east of Oslo.

"With the help from Ford, Think has a chance to reach the global market," said Think founder and vice chairman Jan Otto Ringdal.

Norway's King Harald opened the factory.

Ford Chief Executive Jacques Nasser said Think City was a serious commitment for his company. Nasser said Think Nordic would target the Nordic and continental Europe markets first and extend into North America in around two years.

Unlike neighboring Sweden, home to the Saab and Volvo auto concerns, Norway has never before gone into full-scale car production, despite two attempts in 1956 and 1996.

Pivco, predecessor to Think Nordic, went bankrupt after the launch of the City Bee electric car in 1996. It was saved when Ford bought a 51 percent stake in the group earlier this year.

Think is a three-door, two-passenger electric vehicle weighing 2,072 pounds (940 kg). It is almost 10 feet (three meters) long and has a cruising speed of 90 kilometers per hour. Each vehicle costs 199,000 crowns (\$25,126) including battery.

5. Statoil, Methanex To Study Methanol As Car Fuel

Norwegian state-owned energy firm Statoil and Canada's Methanex Corp. sealed a five-year collaboration to introduce methanol as an alternative and environmentally-friendly fuel for vehicles. The companies said they planned to set up a European pilot program by 2002 to demonstrate how methanol, which is made from natural gas, can be used to power fuel cells.

The program will include all aspects of supply, distribution and marketing of the methanol, a basic building block chemical normally used in products such as recyclable plastics, reconstituted wood products and as an additive to cleaner burning gasoline.

"Our agreement comes at a time when auto

manufacturers are becoming more and more vocal in their support for methanol as the fuel of choice for fuel cell vehicles," Methanex Chief Executive and President Pierre Choquette said in a statement.

Fuel cells convert hydrogen into electricity through an electrochemical reaction, but transporting and storing pure hydrogen poses major safety problems. Conventional hydrogen fuel cells are currently prohibitively expensive - at about 10 times the cost of a conventional engine in their view, a factor which has pushed car makers into searching for alternative feedstocks such as methanol.

"With methanol as fuel, the world could benefit immediately from the fuel-cell car's environmental properties rather than having to wait until pure hydrogen is available on a global basis," said Statoil's Sjur Haugen, head of business development for Industry & Trading's methanol division.

6. Finland Trying To Reignite The EU Energy Tax Debate

The European Union's Finnish presidency tried yesterday to inject new life into plans for harmonized EU energy taxes, asking its EU partners to answer a series of questions on their attitudes to the proposal.

The new paper follows indications at an earlier meeting of EU finance ministers that Spain, the most vociferous opponent of the plans, was prepared to show flexibility.

"The aim of this note is not to present solutions to the problems involved but to obtain the position and opinion of member states in order to at a later date be able to present a suggestion for a solution," said the paper. The paper mainly concerns the sort of cases in which exemptions from such taxes could be granted and to what extent

governments could vary tax rates depending on the energy user.

EU governments have proved unable to break the deadlock over energy taxation in the face of implacable opposition from Spain, supported by others, such as Ireland, Greece and Portugal.

The EU's executive Commission put forward plans in March 1997 to increase minimum taxes on motor and heating fuels and extend minimum tax rates across the bloc to electricity, coal and gas. It said higher energy taxes would allow governments to reduce taxation on labor and reduce emissions of gases widely believed to cause global warming.

Spain has so far argued the plan would discriminate against it and damage European competitiveness. But following a meeting between German Finance Minister Hans Eichel and Spanish Economy Minister Rodrigo Rato, officials said there were indications Spain might be willing to move on the issue.

Finland, which holds the EU's six-month rotating presidency, is keen to bring the different sides closer together before finance ministers meet next on November 29.

In July, the Netherlands suggested that a smaller group of countries could go ahead and harmonize energy taxes if not all member states could be persuaded to take part in the plan.

7. France Protests EU Plans For Weekend Truck Traffic

France, which has kept trucks off the road at weekends for safety reasons for 25 years, vowed yesterday to oppose European Union plans that would crimp the ban. A draft EU directive proposes that trucks be allowed to

travel between midnight and 7 a.m. on weekends.

In a bid to reduce a high traffic casualty rate, France has, since 1974, banned trucks from the roads between 10 p.m. on Saturday and 10 p.m. on Sunday. Six other EU countries - Austria, Germany, Italy, Luxembourg, Portugal and Spain - have followed suit with similar legislation.

8. EU Retreats on Aircraft Noise Law

The European Union has indicated that it will delay or amend a controversial law to limit aircraft noise to avert another transatlantic trade war. Transport ministers gave the European Commission the green light to revamp the legislation after receiving assurances from Washington that it was prepared to work towards international noise standards by September 2001 at the latest.

"It was considered that new international standards should replace existing Community legislation in this field," said a statement agreed by ministers, meeting in Luxembourg. They invited the Commission, the EU's executive, to bring forward amended legislation, "in order to facilitate the process of achieving new international standards on aircraft noise."

This is the second time the 15-member EU has retreated from a confrontation after intense pressure from the United States, which says the law restricting the use of older aircraft fitted with noise mufflers, or "hush kits," discriminates against U.S. companies.

Washington says the law, supposed to take effect in May 2000, discriminates against U.S. companies and has cost industry more than \$2 billion even before entering into force, by lowering the value of older aircraft.

In April, the EU agreed to delay the ban for a year following intensive lobbying from the Clinton administration.

The latest move comes after the European Commission received a letter from the U.S. administration saying it was prepared to work towards the adoption of international noise standards by September 2001.

"We want to assure you of the unequivocal commitment of the United States to work cooperatively with the Community and other partners to achieve a new, more stringent noise standard in ICAO as soon as possible and, in any event, by September 2001," said the letter, signed by Commerce Secretary William Daley and Transportation Secretary Rodney Slater.

The EU law, designed to cut noise pollution around congested European airports, is supposed to prevent the use from April 2002 of hush kitted aircraft from outside the EU that are not currently operating in the bloc.

The EU went ahead with unilateral legislation when talks in ICAO (the International Civil Aviation Organization) on the next generation of quiet aircraft ground to a halt.

The U.S. Congress is still considering a retaliatory law that would ban flights to the United States by the Franco-British Concorde and Washington has also hinted at action in the World Trade Organization.

Last month, U.S. Under Secretary of Commerce David Aaron presented a paper prepared by several U.S. companies - including Nordam, Pratt & Whitney, a unit of United Technologies, and BF Goodrich - alleging they had already lost \$2.1 billion in sales and reduced fleet value.

9. EU Poised To Give Five States

One-year Fuel Derogation

Five European Union states will be allowed to delay for one year EU laws banning lead in petrol and cutting the sulphur content of fuels under new plans from the European Commission, officials said. The EU's executive will reject demands from Spain, Greece, Italy, Portugal and France for longer exemptions from the rules agreed under the so-called Auto-Oil program, but will give the five one year's grace to bring their refineries into line with tough new environmental standards. Under Auto-Oil, all 15 EU states are supposed to outlaw leaded petrol from next month. The laws also stipulate that the sulphur content of petrol should fall to 150 parts per million in 2000 and 50 ppm in 2005. Sulphur in diesel must fall to 350 ppm in 2000 and 50 ppm five years later.

Italy requested permission to delay the leaded petrol ban until 2003, while Greece and Spain asked for two years longer, as did France for its overseas territories Guadeloupe, Martinique, French Guiana and Reunion. Portugal and Reunion both want until 2003 to put the new sulphur specifications for both petrol and diesel into operation.

The Auto-Oil legislation gave governments the chance to ask for temporary exemptions from the rules on the grounds that their car fleets were largely made up of older vehicles using leaded petrol or that they could not guarantee sufficient refinery capacity by 2000 to produce enough lower-sulphur fuel.

10. Georgia To Go Unleaded

The government of Georgia has just enacted a law banning leaded gasoline effective 1 January 2000.

11. EU Candidates Seek Extra Time To Comply With Environmental Laws

Six front-running candidates for membership of the European Union have asked the EU for extra time after they join the bloc early next century to put in place the EU's stringent environmental laws. Foreign ministers from Poland, the Czech Republic, Hungary, Slovenia, Estonia and Cyprus told the 15-member EU they will need to spend several years and billions of dollars to come into line with thousands of pages of EU environmental law. The six, which have been negotiating EU membership terms since March 1998, used the opening of talks on environmental issues to request special "transition periods" after they accede to the EU before adopting the full body of EU environmental law. This would exempt them from the usual requirement for new members to implement all EU legislation before joining.

Six others candidates have also been identified for future accession - Slovakia, Lithuania, Latvia, Romania, Bulgaria and Malta - and environmental stringency will likely be an issue in these countries as well.

EU regulations on waste, drinking water, nitrates, and the recycling of packaging materials as well as fuel standards are likely to cause candidates the greatest problems according to the EU.

12. Sweden's Retrofit Program Continues On Track

The retrofit program for off road vehicles and engines in Sweden's major cities continues. According to the Motortestcenter, the following devices have been approved to date.

<i>Manufacturer</i>	<i>Engine group code</i>	<i>C a t a l y t i c converter</i> <i>Identification</i>	<i>Catalytic conv. & particulate filter</i> <i>Identification</i>	<i>Min-, max- Engine power (kW)</i>	<i>Diesel-engines - Petrol-engines</i>
UNIKAT AB	AX 230	AX230	-	5 - 23	D
UNIKAT AB	AX 230 / V4		AX230/V4	5 - 27	D
UNIKAT AB	AX 240	AX240	-	15 - 40	D
UNIKAT AB	AX 240 / V 4	-	AX240/V4	10 - 40	D
UNIKAT AB	AX 260	AX260	-	35 - 70	D
UNIKAT AB	AX 260 / V 9	-	AX240/V9	35 - 70	D
UNIKAT AB	AX 270	AX270	-	50 - 103	D
UNIKAT AB	AX 270 / S 9	-	AX270/S9	40 - 95	D
UNIKAT AB	AX 270 / V 10	-	AX270/V10	40 - 90	D
UNIKAT AB	AX 280	AX280	-	65 - 155	D
UNIKAT AB	AX 280 / V 12	-	AX280/V12	45 - 110	D
UNIKAT AB	AX 290	AX290	-	150 - 220	D
UNIKAT AB	AX 290 / V 18	-	AX290/V18	65 - 185	D
UNIKAT AB	AX 300	AX 300		200 - 260	D
UNIKAT AB	AX 310	AX 310		240 - 300	D
UNIKAT AB	AX 320	AX 320		280 - 370	D
UNIKAT AB	AX 340	AX 340		350 - 440	D
UNIKAT AB	AX 360	AX 360		400 - 560	D
UNIKAT AB	AX 260/S 5		AX260/S5	35 - 70	D
UNIKAT AB	AX 260/K 5		AX260/K5	35 - 70	D
UNIKAT AB	AX 270/K 9		AX270/K9	40 - 95	D

UNIKAT AB	AX 290/K 18		AX290/K18	65 – 185	D
APE Industri	F80R/10A6		Cat.= 10A6- RD08-ID Filter = F80R	45 – 100	D
APE Industri	F P M 11 / D C 8 D FQ		Cat . = DC8 Filter = FPM11	-45	D
APE Industri	F P M 15 / D C 8 D FQ		Cat. = DC8 Filter = FPM15	- 65	D
APE Industri	2 F P M 11 / D C 8 DFQ		Cat. = DC8 2 Filters = FPM11	- 90	D
APE Industri	2 F P M 15 / D C 8 DFQ		Cat. = DC8 2 Filters = FPM15	- 130	D
APE Industri	2FPM11/10A6		Cat. = 10A6 2 Filters = FPM11	- 90	D
APE Industri	F P M 11 / D C 6 D FQ		Cat = DC6DFQ 2 Filters = FPM11	- 45	D
APE Industri	DC6DFQ	DC6		- 65	D
D C L International Inc.	1557		1557	45 – 80	D
D C L International Inc.	10A6	10A6-RD09-ID		45 – 100	D
Clean Air Systems Inc	D I C A B - FC135W	-	FC135	50 – 330	D
Clean Air Systems Inc	DICAB-CD800	CD800??		130 - 200	D
Eminox Ltd	ENA-C98-010		ENA-C98-010	37 – 75	D
Eminox Ltd	ENA-C98-020		ENA-C98-020	60 – 110	D
Eminox Ltd	ENA-C98-030		ENA-C98-030	90 – 160	D
Eminox Ltd	ENA-C98-040		ENA-C98-040	150 – 210	D
Eminox Ltd	ENA-C98-050		ENA-C98-050	211 – 300	D
Eminox Ltd	ENA-E98-030	ENA-E98-030		46 - 90	D

Eminox Ltd	ENA-E98-040	ENA-E98-040		91 - 160	D
Eminox Ltd	ENA-E98-010	ENA-E98-010		- 25	D
Eminox Ltd	ENA-E98-020	ENA-E98-020		26 - 45	D
Finn Katalyt OY	T1	Id. "T1"		2 - 10	P
Finn Katalyt OY	T4	Id. "T4"		10 - 21	P
D i e s e l Cleaning AB	D I C A B - CD400SW	Id. "CD400SW"		20 - 65	D
D i e s e l Cleaning AB	D I C A B - CD600SW	Id. "CD600SW"		30 - 100	D
D i e s e l Cleaning AB	D I C A B - CD800SW	Id. "CD800SW"		45 - 170	D
D i e s e l Cleaning AB	D I C A B - CD1200SW	Id. "CD1200SW"		90 - 260	D
D i e s e l Cleaning AB	D I C A B - CD1500SW	Id. "CD1500SW"		125 - 310	D
D i e s e l Cleaning AB	D I C A B - FC034W		Id. "FC034W"	0 - 50	D
D i e s e l Cleaning AB	D I C A B - FC060W		Id. "FC060W"	25 - 140	D
D i e s e l Cleaning AB	D I C A B - FC108W		Id. "FC108W"	35 - 230	D
D i e s e l Cleaning AB	D I C A B - FC135W		Id. "FC135W"	50 - 330	D
D i e s e l Cleaning AB	D I C A B - CD2000SW	Id. "CD2000SW"		200 - 425	D
D i e s e l Cleaning AB	D I C A B - CD075SW	Id. "CD075SW"		- 12	D
D i e s e l Cleaning AB	D I C A B - CD150SW	Id. "CD150SW"		3-25	D
D i e s e l Cleaning AB	D I C A B - CD250SW	Id. "CD250SW"		10 - 40	D
K e m i r a Metalkat OY	80956	Id. "80956"		- 5,5	P
K e m i r a Metalkat OY	80610	Id. "80610"		- 10	P
K e m i r a	80717	Id. "80727"		- 20	P

Metalkat OY					
K e m i r a Metalkat OY	KED 70	Id. "KED 70"		45 - 80	D
K e m i r a Metalkat OY	KED 50	Id. "KED 50"		- 37	D
K e m i r a Metalkat OY	KED 30	Id. "KED 30"		- 8	D
K e m i r a Metalkat OY	KED 40	Id. "KED 40"		- 15	D
N e t t Technologies Inc.	Nett DH-312	Id. "DH-312"		- 150	D

APPROVED AFTERTREATMENT DEVICES - Environmental Zones

Manufacturer	Engine group-code	Category A Component identification	Category B Component identification	Max-engine power (kW)
Unikat AB	AZ 90 – V 18		Catalytic converter id. "AZ 90" Particlefilter id. "V 18" Cleaning device id. "705002"	- 185
Unikat AB	AZ 90	Catalytic converter id.: Alt. 1 "AZ 90" (model with original silencer). Alt. 2 "AZ 90 L" (model with a built in silencer in series with the converter).		- 220
Unikat AB	U 170	Pellets type of cat. converter id.: "U 170"		- 200
Eminox Ltd	EMZ-B96-20		Id. "EMZ-B96-20; Godkännande nr A 423/95"	90 – 160
Eminox Ltd	EMZ-B96-30		Id. "EMZ-B96-30; Godkännande nr A 419/95"	150 - 210
Eminox Ltd	EMZ-B96-40		Id. "EMZ-B96-40; Godkännande nr A	211 – 300

			453/95"	
Eminox Ltd	EMZ-B96-50		Id. "EMZ-B96-50; Godkännande nr A 211/96"	280 – 350
Eminox Ltd	EMZ-B96-60		Id. "EMZ-B96-60; Godkännande nr A 212/96"	330 – 450
E n g e l h a r d Corporation	DPXplus Gen2 IV		Id. "Katalysator märkt "PTX 8565" Partikelfilter märkt "DPX 8563"	- 400
E n g e l h a r d Corporation	DPX Gen2 IV		Id. "DPX 8563"	- 400
Diesel Cleaning AB	DICAB-FC060W		Id. "FC060W"	25 – 140
Diesel Cleaning AB	DICAB-FC108W		Id. "FC108W"	35 - 230
Diesel Cleaning AB	DICAB-FC135W		Id. "FC135W"	50 - 330

Key to the success of the Swedish program is ultra low sulfur fuel.

effect starting with the 2004 model year. The second phase could take effect as early as 2007.

NORTH AMERICA

13. EPA Proposes Strategy to Reduce Emissions from Heavy Duty Vehicles

The U.S. Environmental Protection Agency (EPA) has announced a strategy to significantly reduce emissions from on-highway heavy-duty vehicles (vehicles with a gross vehicle weight rating greater than 8,500 pounds), including diesel and gasoline engines used in large commercial trucks, large versions of full-size pickup trucks, passenger vans, and the largest sport utility vehicles. Vehicles weighing up to 8,500 pounds would be covered under the tailpipe emission standards that EPA proposed in May, commonly known as Tier 2 standards. The first phase of the strategy to reduce emissions from heavy-duty trucks would take

A. Highlights of Proposed Rule—The First Phase of the Strategy

EPA is proposing new emission standards that will significantly reduce emissions from heavy-duty vehicles. These new standards are part of a two-phase strategy to reduce emissions from heavy-duty trucks and the largest passenger vans and sport utility vehicles (SUVs). The proposed standards are just the first phase of this strategy and would require gasoline trucks to be 78 percent cleaner and diesel trucks to be 50 percent cleaner than today's models. A reduction in particulate matter of about 55,000 tons per year would also be achieved.

In order to ensure the best operation of these vehicles and their pollution control systems,

the proposal includes several actions regarding new emission limits and improved testing procedures. For example, for vehicles weighing between 8,500 and 14,000 pounds (gross vehicle weight), EPA is proposing to require on-board diagnostics systems to help identify any possible failure of components of the emission control system.

of nitrogen (NOx) and hydrocarbon (HC) standards for gasoline and diesel vehicles with a gross vehicle weight above 8,500 pounds. The current NOx standard for both diesel and gasoline vehicles is 4.0 grams per brake horsepower hour (g/bhp-hr). The current HC standard for diesel is 1.3 g/bhp-hr and for gasoline is 1.1 g/bhp-hr.

The following tables list the proposed oxides

Diesel Vehicles

Gross Vehicle Weight	Combined Standard NOx and HC
8,500 pounds and above	2.4 g/bhp-hr

Gasoline Vehicles

Gross Vehicle Weight	NOx	HC
8,500 - 10,000 pounds	0.9 grams per mile	0.28 grams per mile
10,001 - 14,000 pounds	1.0 grams per mile	0.33 grams per mile
14,001 pounds and above	1.0 g/bhp-hr (combined NOx and HC)	

B. Costs of Program

The significant environmental benefits of this program would come at an average projected long-term cost increase of less than \$400 per vehicle for heavy-duty diesel engines and less than \$300 per vehicle for heavy-duty gasoline vehicles and engines.

the end of the year. EPA hopes that the NPRM can be published in March and are committed to doing everything possible to have it finalized before the end of next year. The proposal will also likely include a technology review in about 2003.

C. The Second Phase

EPA appears to be on track for the Rulemaking to adopt substantial tightening of the heavy duty engine standards after 2004. They are drafting a rule that will propose standards in the range of 0.01 grams/bhp-hr PM to be fully implemented in 2007 and 0.2 NOx to be phased in starting in 2007; diesel fuel sulfur levels may be capped at 15 ppm in 2007. Documents should begin to be sent to the Office of Management and Budget before

D. Health and Environmental Benefits

Without significant new controls on motor vehicle emissions, millions of Americans will continue to breathe unhealthy air. The emission reductions from this program would provide much-needed assistance to states facing ozone and particulate matter air pollution problems.

Ozone causes a range of health problems related to breathing, including chest pain, coughing, and shortness of breath. Particulate matter is deposited deep in the lungs and

causes premature death, increased emergency room visits, and increased respiratory symptoms and disease. With both ozone and particulate matter, children and the elderly are most at risk. In addition, ozone, nitrogen oxides, and particulate matter adversely affect the environment in various ways, including crop damage, acid rain, and visibility impairment.

Smog and particulate matter in the United States account for 15,000 premature deaths, 1 million respiratory problems, 400,000 asthma attacks, and thousands of cases of aggravated asthma, especially in children, according to the EPA.

Motor vehicles generate nearly one-third of all emissions of nitrogen oxides and volatile organic compounds - the pollution that causes smog.

E. Background

In a separate action, on May 1, 1999, EPA proposed tighter tailpipe emission standards for cars and light trucks weighing up to 8,500 pounds. Commonly referred to as Tier 2, these standards would take effect beginning in 2004 when manufacturers would start producing passenger cars that are 77 percent cleaner than those on the road today. Light-duty trucks, such as SUVs, which now are subject to standards that are less protective than those for cars, would be as much as 95 percent cleaner under the new standards. EPA's heavy-duty engines proposal will address all vehicles weighing more than 8,500 pounds, and ensure that the heaviest passenger vans and SUVs will also meet Tier 2 standards.

In addition, in late 1998, the Agency signed consent decrees with several of the largest heavy-duty diesel engine manufacturers to address several in-use emission problems.

This proposal contains several new provisions for the heavy-duty diesel engine manufacturers which have arisen because of the issues highlighted by these consent decrees. These provisions include new emission tests and associated limits that are designed to ensure that heavy-duty diesel engines meet emission standards in actual use and over a broad range of operating conditions. In the consent decrees, the manufacturers agreed to introduce cleaner new engines and rebuild older engines to cleaner levels. Under the agreements, the companies will meet emission levels for heavy-duty diesel engines beyond what the law requires by October 2002.

14. ARB Pushing For Even Greater Diesel Control

California Air Resources Board (ARB) Chairman Dr. Alan C. Lloyd has directed his staff to develop a program to reduce emissions from new on- road and off-road diesel engines by 75 percent beginning in 2007.

"Given what we've learned, with dedicated efforts from manufacturers, fuel suppliers, and ARB staff, we can expect near-zero emission diesel within a decade," said Dr. Lloyd.

The ARB is considering a two-pronged approach for cleaner diesel engines. One is a reliance on emerging technology such as traps, filters, catalysts, and electronic engine monitoring to reduce particulate matter (PM) and nitrogen oxides (NOx) in diesel exhaust. The key to making these technologies effective, however, is a reduction in the sulfur content of diesel fuel to 30 parts per million (PPM), from the current permitted levels of around 500 PPM. The existing sulfur levels in diesel fuel poison advanced emission control technologies.

The reduced sulfur diesel, combined with the new technologies for exhaust after-treatment, would cut NOx emissions to 0.5 grams (g) or less and PM to 0.01 gram. Current diesel engine standards call for 4 g NOx and .10 g PM. New standards that will begin in 2004 call for a reduction to 2 g NOx while PM remains at .10 g.

The ARB is also proposing new exhaust standards for urban transit buses. Details of the new bus standards will be presented to the ARB Board at its January meeting. The proposal includes fleet averaging and incentives to accelerate the introduction of zero and near-zero emission technology.

Proposed Emission Levels For Transit Buses (g/bhp-hr)

Year	Conventional Path		Incentive Path	
	NOx	PM	NOx	PM
2000	4.0	0.05	2.0	0.03
2003	2.0	0.05		
2005	0.5	0.01	2.0	0.01
2007			0.5	0.01
2008	0.1	0.0	0.5	0.0
2012			0.1	0.0

One point of focus is reducing air emissions from a variety of so-called "off-road" equipment. The discussion looked at using fuel cells to power fork lifts, small generators and a variety of industrial and specialty equipment while an airline industry representative discussed the feasibility of converting airport ground support equipment from mainly diesel fuel to electricity or other cleaner sources of power.

The discussion also looked at small lawn and garden equipment engines that run on propane rather than gasoline, resulting in significant exhaust emissions reduction. The off-road session concluded with a presentation on a diesel railroad locomotive that was converted to run on natural gas, thereby achieving a 75 percent reduction in NOx emissions.

15. ARCO Diesel Fleet Demonstration Program May Lead To Cleaner Bus, Truck, and Car Emissions

ARCO has launched a fleet demonstration program to confirm that its new EC Diesel fuel can make dramatic reductions in soot emissions from trucks, buses and cars in Southern California.

ARCO, which a decade ago pioneered development of reformulated gasolines that significantly improved California's air quality, will test the new fuel in urban vehicles from seven California fleets over the next year. Over 160 vehicles will participate in the program that will evaluate EC Diesel fuel and new exhaust treatment devices.

Initial testing of EC (Emission Control) Diesel

resulted in up to a 15 percent reduction in particulates (soot) and a five percent reduction in Nitrogen Oxide (NOx) emissions, with no apparent loss in fuel economy. These reductions resulted from comparing EC Diesel against today's California diesel that is considered one of the cleanest diesel fuels in the nation.

Included in the demonstration program will be Los Angeles City refuse and street maintenance trucks, Santa Monica City Big Blue Buses, Ralph's Grocery tractor trailer trucks, Hertz Equipment pickup trucks, San Diego School District school buses, and ARCO gasoline tanker trucks.

"We are confident that our demonstration program will show an immediate and significant reduction in particulates and NOx emissions from diesel engines," said Roger Truitt, president of ARCO Products, the marketing, refining and marine division of ARCO, based in Los Angeles. "In addition, EC Diesel is expected to be a key contributor in reducing toxic emissions from diesel-powered vehicles and equipment."

The demonstration program has been developed and will be run with assistance and guidance from the California Air Resources Board (CARB), the South Coast Air Quality Management District (SCAQMD), the California Energy Commission (CEC), the Department of Energy, and the National Renewable Energy Laboratory. West Virginia University will be performing the majority of the emission testing work. Dynamometers and road tests will be used to evaluate ARCO's new fuel and exhaust treatment devices designed to reduce particulate emissions.

According to CARB, there will be nearly 739,000 diesel-powered vehicles on the road in California by the year 2000. Although these

diesel vehicles represent only two percent of all vehicles on the road statewide, CARB estimates they contribute about 30 percent of the nitrogen oxides and a significant portion of the small particulate matter known as PM10 that comes from on-road vehicles.

EC Diesel will have a higher Cetane rating, with a lower sulfur and aromatics content than diesel used today -- all of which contribute to dramatically lowering emissions while improving performance.

Engine and vehicle manufacturers Cummins, Detroit Diesel, Navistar International and Ford are also playing an integral role in the program, assisting with the overall program design and implementation.

Also, a significant portion of the program is the evaluation of new exhaust emission control devices that can dramatically reduce particulates from diesel exhaust. Emission control manufactures Engelhard and Johnson-Matthey, with support from Corning Incorporated, NGK-Locke, Inc. and Fleetguard/Nelson are participating in the program by supplying passive regenerating particulate filters to the program. These technologies work more effectively with lower sulfur fuel. The use of EC Diesel through these filters should generate very low particulate emissions.

ARCO hopes to make EC Diesel available in California once the demonstration program confirms its initial testing.

"ARCO has once again taken a pioneering step to reduce air pollution and toxic emissions by developing cleaner fuels," said Norma Glover, Vice Chair of the SCAQMD's Governing Board. "The use of reformulated fuels such as EC-Diesel as well as alternative fuels will help ensure continued progress toward meeting clean air standards in the

Southland."

Mike Kenny, CARB's Executive Director said, "We are pleased ARCO is undertaking this project, and look forward to examining how improvements in diesel fuel could be a tool in helping California reduce exposure to diesel particles and help achieve compliance with other air quality standards. We greatly appreciate ARCO's action to once again take the initiative to develop fuel changes that could help improve California's air quality."

"A successful demonstration of the air cleaning capabilities of ARCO's new fuel will go a long way in helping convince fleet managers throughout the state to use this new fuel once it becomes available," said William Keese, chairman of the CEC.

ARCO's Truitt added, "We believe this new fuel will do for diesel what EC-1 and EC-Premium did for gasoline. We see EC Diesel as the next step in our effort to help attain even greater air quality improvements. ARCO is also working with engine and emission controls manufacturers to design new engines, controls and filters that will produce even lower emissions with EC Diesel."

"We also believe this program will show that existing diesel trucks and buses, fitted with catalytic converters and running on EC Diesel, can match or exceed the performance of vehicles powered by alternative fuels," he said.

EC Diesel was developed at ARCO's Engineering & Technology Center in Anaheim, Calif., where a team of engineers and scientists continually seek workable solutions to challenging air quality issues. The EC Diesel used in the demonstration test is produced at ARCO's Los Angeles Refinery in Carson, Calif.

The EC Diesel fuel features sulphur content of less than two parts per million from current CARB diesel levels of 120 parts per million.

16. EPA Issues New Report On Light-Duty Automotive Technology and Fuel Economy Trends Through 1999

The U.S. Environmental Protection Agency's (EPA) report summarizes the key trends related to the fuel economy of light vehicles sold in the United States for model years 1975 through 1999. "Light vehicles" include those vehicles that U.S. EPA and the U.S. Department of Transportation (DOT) classify as cars or light-duty trucks (sport utility vehicles, minivans, and pickup trucks with less than 8,500 pounds gross vehicle weight ratings). The report finds that fuel economy is declining, truck market share is increasing, and fuel economy is being traded for vehicle weight and performance.

A. Importance of Fuel Economy

Since the early 1970s, EPA has issued reports that summarize fuel economy data for new light vehicles. The fuel economy values in this report are laboratory data similar to those that DOT uses for compliance with the corporate average fuel economy standards. These laboratory values, however, are significantly higher than the estimated values used on new car labels and in the Fuel Economy Guide.

Fuel economy continues to be a major area of public and policy interest for several reasons, including:

- (1) Fuel economy is directly related to carbon dioxide emissions, the most prevalent pollutant associated with global warming, and light vehicles

contribute about 20 percent of all U.S. carbon dioxide emissions.

(2) Light vehicles account for approximately 40 percent of all U.S. oil consumption. Crude oil, from which nearly all light vehicle fuels are made, is considered to be a finite natural resource.

(3) Fuel economy is directly related to vehicle fueling cost.

B. Fuel Economy is Declining

The average fuel economy for all model year 1999 light vehicles is 23.8 miles per gallon (MPG). Within this category, average fuel economy is 28.1 MPG for passenger cars and 20.3 MPG for light-duty trucks. **The 1999 fuel economy average is the lowest value since 1980 and is 2.1 MPG less than the peak value of 25.9 MPG achieved in both 1987 and 1988.** Average fuel economy for new light vehicles has dropped 1.0 MPG since 1996.

All of the fleet-wide improvement in new light vehicle fuel economy occurred from the middle 1970s through the late 1980s, but it has been consistently falling since the late 1980s. Viewed separately, the average fuel economy for new cars has been essentially flat over the last 14 years, varying only from 27.6 MPG to 28.6 MPG. Similarly, the average fuel economy for new light trucks has been largely unchanged for the past 19 years, ranging from 20.1 MPG to 21.6 MPG. The increasing market share of light-duty trucks, which have lower average fuel economy than cars, is the primary reason for the decline in fuel economy of the overall new light vehicle fleet.

C. Truck Sales Continue to Increase

Sales of light-duty trucks, which include sport utility vehicles (SUVS), minivans, and pickup trucks, have risen steadily for 20 years and now make up 46 percent of the U.S. market—more than twice their market share as recently as 1983.

Growth in the light-duty truck market has been led recently by the explosive popularity of SUVs, which rose in sales from less than 200,000 in 1975 (less than 2 percent of the overall new light vehicle market) to almost 3 million in 1999 (20 percent of the market). Over the same period, market share for minivans and full-size vans doubled from 5 to 10 percent, and for pickup trucks grew from 13 to 16 percent. Between 1975 and 1999, market share for new passenger cars and wagons has fallen from 81 to 54 percent. Based on lower average fuel economies and projected longer useful lives, EPA estimates that the new light-duty trucks sold in 1999 will consume, over their lifetimes, almost 60 percent of the fuel used by all of the new light vehicles sold in 1999.

D. Fuel Economy is Being Traded for Weight and Performance

More efficient technologies have continued to enter the new light vehicle fleet and are being used to increase light vehicle weight and performance rather than fuel economy. Based on accepted engineering relationships, **if the new 1999 light vehicle fleet had the same average weight and performance as in 1986, it could have achieved 5 MPG higher fuel economy.**

More efficient technologies—such as engines with more valves and more sophisticated fuel injection systems, and transmissions with extra gears—have continued to penetrate the new light vehicle fleet. The trend has clearly been to apply these new technologies to

increase average new vehicle weight, power, and performance while maintaining fuel economy. This is reflected by heavier average vehicle weight (up 20 percent for new light vehicles since 1986), rising average horsepower (up 58 percent for new light vehicles since 1986), and lower 0 to 60 mile-per-hour acceleration time (19 percent faster for new light vehicles since 1986). During this same time, average new light vehicle fuel economy fell by 7 percent.

E. Overall Conclusions

1. Fuel economy of the overall light-duty fleet has declined 2.1 MPG (i.e., about eight percent) since reaching a maximum of 25.9 MPG in 1987 and is now the lowest it has been in nineteen years, although during the past decade fuel economy of both cars and light-duty trucks has been relatively stable.

2. Ton-MPG, for the combined fleet, as a measure of efficiency, has increased each year for the past 20 consecutive years.

3. The share of the market comprised by light trucks has been increasing for over 20 years and now exceeds 45 percent, more than double what it was in 1979. Much of this increase can be attributed to the increase in the sales fractions of mid-size vans and SUVs.

4. On a model year basis, estimated lifetime light-truck fuel consumption has exceeded that of passenger cars for the past five years; for model year 1999, light trucks are projected to consume 59 percent of the total.

5. Both cars and light trucks have traded off fuel economy for increased weight and performance. Since 1986, vehicle inertia

weight for cars and trucks has increased by eleven and nineteen percent, respectively. During the same time period, vehicle performance, as determined from estimated 0 to 60 acceleration time, has also improved. Had model year 1999 cars and light trucks had 13.2 second estimated 0 to 60 time and the same weight as they did in 1986, they would have been able to achieve five MPG more than they did.

6. Using a Best-in-Class methodology, the combined passenger car and light-truck fleet has the potential to attain at least 26.4 MPG -- eleven percent greater than the current value.

17. Honda Leads EPA Fuel Economy Ratings

The new Honda Insight came out on top by a wide margin as the most fuel-efficient car among model year 2000 vehicles, getting up to 70 miles per gallon (mpg) (112 kpg) on the highway, according to a new U.S. government report. The two-seater Honda beat competitors by almost 20 mpg (32 kpg) on the Environmental Protection Agency's (EPA) list of the most fuel-efficient vehicles.

After the Honda Insight, which the EPA said gets 70 mpg (113 kpg) on the highway and 61 mpg (98 kpg) in city driving, the next most fuel-efficient compact vehicle listed was the Volkswagen New Beetle diesel car, which gets 42 mpg (67 kpg) in the city and 49 mpg (79 kpg) on the highway. Also at the top of the EPA list were the Volkswagen Jetta/Golf diesel, and the Audi TT Coupe.

The Mazda 626 scored highest in the mid-size car category, and the most fuel efficient large car was the Toyota Avalon.

The auto industry's least fuel-efficient vehicle, according to the EPA, was the Ferrari 550

Maranello, getting just 8 mpg (13 kpg) in the city and 13 mpg (20 kpg) on the highway. Ferrari's 456 MGT/MGTA came in second among compacts, followed by the BMW 540i and the Aston Martin DB-7 Vantage Volante.

The least efficient mid-size car was the BMW 740il, 740il Sport, with the least efficient large car the BMW 750il, 750 il Protection.

The report is intended to help consumers compare the fuel economy of similarly sized cars and estimate the average yearly fuel cost for any vehicle, EPA officials said.

EPA officials said they also hoped the list would help to increase awareness of the dangers of greenhouse gases in the atmosphere. Every gallon of gasoline used adds 20 pounds (9 kg) of carbon dioxide to the atmosphere, officials said.

The U.S. government has passed a tax on any vehicle whose fuel economy fails to meet certain statutory levels. Drivers who buy the Ferrari, for example, must pay a \$7,700 "gas guzzler" levy.

Among pick-up trucks scoring high on the fuel-efficiency list, the Chevrolet S10 tied with the GMC Sonoma and the Isuzu Hombre, getting 23 mpg to 29 mpg (37 kpg to 46 kpg).

In the minivan division, the Dodge Caravan and Plymouth Voyager received top honors, running 20 mpg to 26 mpg (32 kpg to 42 kpg). The Jeep Cherokee was ranked the most fuel efficient large sport utility vehicle, getting 18 mpg to 24 mpg (29 kpg to 38 kpg).

18. Mazda Fined By U.S. EPA

Mazda Motor Corp's U.S. subsidiary has agreed to pay a \$900,000 penalty and change its reporting system for defective emissions equipment to settle claims it violated federal

clean-air laws, the U.S. Justice Department has announced.

The agreement, filed in federal court in Washington, settled civil claims that Mazda Motor of America failed to promptly report a defect in an emissions control device in its MPV minivans, the company said.

The 226,000 minivans covered by the settlement involved the 1989 through 1994 model years. The vans are equipped with a part that could crack or break, the Justice Department said. When the part fails, gasoline vapors are released at a level that exceeds the fuel-evaporation emissions standard set by the U.S. Environmental Protection Agency.

The Justice Department alleged that Mazda knew of the defect years before it filed a report with the EPA in November 1996. Such reports must be filed within 15 days after learning of the defect.

The Justice Department said Mazda also would extend the warranty on the defective part on all the affected minivans to a total of 11 years, without any mileage limitation. Under the terms of the settlement, Mazda must reimburse any minivan owners if they repaired the part at their own expense.

19. California Wary of Ethanol Use To Replace MTBE

California's top air quality official urged Congress not to force the state to use ethanol to replace a clean burning fuel additive that has contaminated water supplies. Michael Kenny, executive officer of the California Air Resources Board, said Congress instead should eliminate a requirement under the 1990 Clean Air Act Amendments that all "reformulated gasoline" (RFG) contain two percent oxygen.

That would allow California to phase out MTBE (methyl tertiary butyl ether) without boosting gasoline prices - and possibly decreasing them by 1 cent per gallon, Kenny told a Senate Environment and Public Works subcommittee.

Congress is grappling with what to do with MTBE, a fuel additive that has seeped into about 5 to 10 percent of drinking water supplies in parts of United States required to use reformulated gasoline. That includes large portions of California, much of the Northeast and other urban areas with air quality problems.

A. Increased Pump Prices

Maintaining the 2-percent oxygen mandate would force California to use ethanol to replace MTBE, imposing a huge cost on the state, Kenny said. "In just three years, California would need about half of the amount of ethanol as the amount currently produced in the Midwestern states," he said.

The California Energy Commission estimates eliminating MTBE would boost gasoline prices by 6 to 7 cents per gallon if the 2-percent oxygen mandate is kept. The total cost would be about \$840 million, Kenny said.

Although most of the MTBE detections have been below levels of public health concern, even low levels can give water an unpleasant taste and odor.

A Blue Ribbon Panel of experts appointed by the Environmental Protection Agency recommended this summer that the use of MTBE be "substantially reduced." The panel also recommended eliminating the 2-percent oxygen requirement of the Clean Air Act Amendments to give refiners more flexibility in meeting reformulated gasoline.

At the hearing, Dan Greenbaum, president of the Health Effects Institute and chair of the Blue Ribbon Panel, said several alternatives exist for reducing MTBE in reformulated gasoline, including increased use of ethanol, which currently is made mainly from corn. Alkylates, which are made from crude oil, could also be used, Greenbaum said. However, the panel steered clear of making a specific recommendation because "it did not feel it could choose the best of those alternatives," he said.

B. Health Effects Unclear

Jake Garn, a former Republican senator from Utah, told lawmakers there was not enough evidence of negative health effects to justify banning or substantially reducing MTBE use. Garn testified on behalf of Huntsman Corp., a Salt Lake City firm that is one of the largest U.S. manufacturers of MTBE.

Robert Campbell, chief executive officer of Sunoco Inc., a large U.S. refiner also urged Congress to eliminate the 2-percent oxygen mandate. "Even with all our experience in blending ethanol in gasoline in mid-America, I don't know how to accomplish in a real world, practical manner the same result in the Northeast RFG system," he said.

Because ethanol absorbs water, it cannot be transported in pipelines like petroleum products. Ethanol's high vapor pressure, when blended with gasoline, also makes it impractical for use on the East or the West Coast in the summertime because of the potential for increased smog-forming emissions, Campbell said.

20. U.S. Utilities, EPA Negotiate Coal Plant Dispute

Eight major U.S. electric utilities and the Environmental Protection Agency are trying to

settle a dispute over allegations of pollution being spewed into the air from hundreds of ageing, coal-fired power plants.

Northeastern states for years have sought federal controls on Midwestern and Southeastern coal-burning plants, which are blamed for blowing pollution into the Northeast region.

The talks are an outgrowth of an investigation by EPA into possible violations by major coal utilities of the Clean Air Act that could be adding tons of smog to the nation's air. In July, EPA said it suspected utility plant operators expanded generation capacity - and emissions - without seeking new permits required under routine maintenance provisions of the 1990 Clean Air Act.

EPA is nearing a decision on how to proceed with its allegations against the utilities, and whether to permit the plants to take voluntary actions to solve the alleged air pollution abuses. All eight utilities have been warned by EPA they could receive a formal notice of violation.

EPA wants future emissions of sulphur dioxide and nitrogen oxide cut sharply from the coal-fired plants, which are all located east of the Mississippi River.

A possible roadblock for the negotiations was a threat made in September by New York State Attorney General Eliot Spitzer to sue 17 utilities for making repairs without seeking permits for new emissions sources as required by one section of the Clean Air Act.

A separate New York state lawsuit could leave utilities to fight the air pollution charges in court despite the outcome of EPA talks, sources said.

Nitrogen oxide is a prime ingredient in smog.

Power plants that burn coal are major sources of the gas, and when added to sunlight it produces ground level ozone that can cause breathing problems, and other health dangers.

21. Smog Blamed For 53,000 Hospital Visits Each Summer

Smog sends 53,000 people to the hospital each summer and triggers more than 6 million asthma attacks in the eastern United States, according to estimates released by clean air activists.

The national campaign against dirty air is a joint project of the Clean Air Task Force (CATF), the National Environmental Trust and U.S. Public Interest Research Group.

In breaking down the numbers in its report, the groups highlighted the national scope of the problem by noting Texas had 660,000 asthma attacks, New York more than 500,000 and Washington, D.C., 800 hospital admissions due to summer smog.

For years, Northeastern states have sought remedies to cut air pollution drifting into their region from Midwestern and Southern power plants. The U.S. Environmental Protection Agency (EPA) last year told 22 states to cut smog-forming pollution from the plants by around 85 percent below 1990 levels.

A number of Midwestern states in turn sued the government, winning a court ruling to delay implementation of EPA's plan.

Curbing pollution is at the heart of high-level talks between EPA and eight major coal-burning electric utilities (see above).

22. GM Intends to Build More Efficient, Cleaner Powertrains

General Motors has announced it aims to cut emissions and improve fuel efficiency by 15 to 25 percent by 2004 or 2005 in its engine and transmission power trains.

GM, the world's largest automaker, said future power trains are targeted to cut emissions of hydrocarbons by 80 percent, carbon dioxide by 40 percent, and nitrous oxide by 90 percent by 2009 compared to 1998 levels.

"Major advances in fuel economy, performance and reduced emissions will come not only from hardware changes, but from the artful integration of the interfaces between the power train and the entire vehicle system," Arv Mueller, group vice president for GM Power train, said in a statement.

GM said that over the next five years, it will introduce many new engines including 4-cylinder engines, in-line truck engines, V6s, V8s, and several advanced diesel engines worldwide. Over the same time period, several new transmissions will also be introduced including both continuously variable transmissions (CVTs) and also step ratio transmissions with more than four speeds.

GM Power train plans to develop more flexible products that meet a broad range of requirements but also cut costs and speed time to market.

"Flexible architectures give us tremendous economies of scale," said Ned McClurg, vice president and general manager of engineering operations for GM Power train.

GM Power train also said it plans to produce CVTs, which operate automatically over an infinite number of gear ratios, allowing the engine to run at its most efficient speed, for small cars by 2002.

GM Power train also is intensifying its focus on overhead cam engines. During the 2000 model year, GM Power train will build approximately 4 million overhead cam engines and 5 million pushrod engines. However, in five years, the mix will favor overhead cams by a nearly three-to-two margin.

Over the same period, GM Power train also will increase its production of all-aluminum engines by 300 percent to about 3.2 million units.

23. Environmentalists, Labor Unions Form New Alliance

Labor unions and environmental activists announced a new alliance to fight "rogue" corporations and "misguided" international trade pacts like the World Trade Organization (WTO).

The Alliance for Sustainable Jobs and the Environment brings together environmental heavyweights such as the Sierra Club and Friends of the Earth with labor groups including the United Steelworkers of America, Teamsters and the United Brotherhood of Carpenters.

"Jobs versus the environment is a false conflict," said David Brower, the pioneering environmentalist and longtime Sierra Club director who serves as co-chair of the new group. "The real issue is to create jobs for the environment."

With a full-page advertisement in the New York Times, the alliance began looking for allies in what it says is a fight to prevent corporate greed from hurting working families and the natural environment.

The alliance said it had one particular big corporation to thank for bringing it together:

Houston-based MAXXAM Inc., whose Pacific Lumber unit has fought environmentalists over its plans to fell ancient redwood trees and whose Kaiser Aluminum subsidiary has locked 3,000 union workers out of plants in Washington, Ohio and Louisiana.

The alliance, which will be based in Eureka, California, near the towering redwood groves that Pacific Lumber planned to cut down, will also take on global free trade advocates as well as corporate interests. It will spearhead a series of large protests next month at the World Trade Organization (WTO) summit in Seattle, accusing the global trade body of seeking to subvert "U.S. laws protecting clean air standards, endangered species and worker safety as barriers to free trade."

With almost 200 labor and environmental organizations already aboard, the alliance is hoping to serve as a clearinghouse for information and a focal point for joint action, both in lobbying Washington and in protesting on the street.

Brower, who at 87 is one of America's most respected environmental activists, said the alliance was aimed at establishing "new thinking" about how the working world and the natural world interact and interdepend.

"The earth is hurting and we are hurting, too," Brower said. "Denial does not correct it, and that's what we're into now."

24. Senator Chafee Dies Suddenly; Smith To Become New Chairman

Rhode Island Senator John Chafee, a moderate Republican who played a major role in developing the 1990 Clean Air Act Amendments and became a major defender of the law as the Congress moved to the right in recent years, has died suddenly.

Senator Bob Smith, a very conservative member with very low ratings from environmentalists will be the new chair of the Environment and Public Works Committee.

Also, Lincoln Chafee has been appointed to serve out the remainder of his father's term.

25. Major Air Toxics Study in Los Angeles Finds Vehicles Dominate Cancer Risk

The most comprehensive study of urban toxic air pollution ever undertaken shows that motor vehicles and other mobile sources of air pollution are the predominant source of cancer-causing air pollutants in the Southland.

The study confirms that the cancer risk from some air toxics in the Southland has declined by as much as 75% over the last decade. However, it also shows that based upon more extensive monitoring of the variety of toxic compounds in the air, the current cancer risk from toxic air pollution averages about 1,400 in a million in the region.

Air quality scientists expect this risk will decline as pollution control programs progress in the years ahead.

These findings are outlined in a draft final report to be presented to the Governing Board of the South Coast Air Quality Management District known as the Multiple Air Toxics Exposure Study II. AQMD will accept public comment on the draft report for 90 days before publishing a final version.

"Clearly we're on the right path to reducing toxic air pollution and the associated cancer risk in our area," said Barry Wallerstein, AQMD executive officer. "Regulations now on the books will make cars and industries cleaner in the future and assure continued

progress. But the study highlights the need to do more to reduce pollution from mobile and stationary sources."

AQMD found that the risk of cancer from breathing toxic compounds is down substantially throughout the region. For instance, the risk from pollutants monitored continuously in Burbank has declined from about 1,000 in a million in 1990 to 500 in a million today, presuming 70 years of continuous exposure at the monitored levels. Likewise, cancer risk is down by two-thirds from the same pollutants monitored at three sites in both a 1987 study and today's analysis—namely, downtown Los Angeles, Long Beach and Rubidoux in Riverside County. Cancer risk from diesel exhaust was not included in the earlier study.

MATES II included a ground-breaking effort by AQMD to analyze the cancer risk from exposure to diesel particulate, or soot, which the California Air Resources Board in 1998 listed as a carcinogenic air pollutant.

AQMD's MATES II shows that the average cancer risk in the region from carcinogenic air pollutants, excluding diesel particulate, ranges between 300 in a million and almost 600 in a million, with a regional average of 420 in a million. When diesel particulate is included, the cancer risk ranges from about 1,100 in a million to 1,750 in a million, with an average regional risk of about 1,400 in a million. The higher risk levels were found in the urban core areas in central Los Angeles County.

AQMD calculated the cancer risk of diesel particulate based upon a method for estimating diesel particulate in air samples outlined by the state of California and a cancer potency factor determined by the state. Diesel particulate is emitted by diesel-fueled trucks, buses, trains, ships, tugboats, construction equipment, power

generators and stationary engines used throughout the region for tasks such as pumping water.

"While diesel particulate has been in the air, perhaps at even higher levels in the past, our study clearly shows that programs to clean up diesel emissions should be accelerated," said Wallerstein.

AQMD found that diesel soot accounted for 71% of the cancer risk, 1,3 butadiene (a byproduct of incomplete combustion in engines) 8% of the risk, benzene (mostly from motor vehicles) 7%, carbonyls (including formaldehyde and acetaldehydes from both mobile and stationary sources) 3%, and other pollutants (primarily from stationary sources) 11%.

Overall, the study showed that motor vehicles and other mobile sources accounted for about 90% of the cancer risk and industries and other stationary sources the remaining 10%. The study analyzed only cancer risk, though some of the pollutants cause other health problems too.

Based on the preliminary finding that diesel particulate is the primary toxic air pollutant in the region, AQMD is developing a rule, to be considered early next year, to clean up diesel exhaust emitted by fleets of trucks and buses in the region. That rule will be one of many measures outlined in a comprehensive plan to reduce toxic air pollution from both mobile and stationary sources.

Other programs to reduce diesel emissions include AQMD grant programs that cover conversion of diesel equipment to clean fuels.

In MATES II, AQMD monitored more than 30 toxic air pollutants at 24 sites over a one-year period ending last spring. AQMD collected more than 4,500 air samples and together

with the California Air Resources Board performed more than 45,000 separate laboratory analyses of these samples. A similar study known as MATES I was conducted in 1986 and 1987. In each study, AQMD calculated cancer risk assuming 70 years of continuous exposure to monitored levels of pollutants.

Toxic air pollutants consist of a variety of compounds, including metals, minerals, soot and hydrocarbon-based chemicals. These pollutants are heavily controlled, both through regulations aimed at reducing smog, like California's requirement for cleaner burning gasoline, and regulations aimed at specific sources of toxic pollutants, such as chrome plating plants that emit hexavalent chromium.

Health statistics show that one in four people will contract cancer over their lifetime, or 250,000 in a million, from all causes, including diet, genetic factors, lifestyle choices and other forms of environmental contamination, including pesticide residues on food, water contaminants and indoor air pollution. Outdoor toxic air pollution accounts for less than 1% of all these factors.

The monitoring study was accompanied by a computer modeling study in which AQMD estimated the risk of cancer from breathing toxic air pollution throughout the region based on emissions and weather data.

The modeling shows that the highest risk is in the urban areas where there is heavy traffic and high concentrations of population and industry. Monitoring data closely tracked what the modeling shows.

AQMD's Governing Board ordered the study as part of the agency's environmental justice initiatives adopted in late 1997. A panel of scientists from universities, an environmental group, businesses and other government

agencies helped design and guide the study.

The study was aimed at determining the cancer risk from toxic air pollution throughout the area by monitoring toxics continually for one year at 10 monitoring sites.

Another goal was to determine if there were any sites where concentrations of industry were causing a disproportionate cancer burden on surrounding communities. To do so, AQMD monitored toxic pollutants at 14 sites for one month each with three mobile monitors specially designed for the study. Although no such sites were identified, models show that elevated levels can occur very close to facilities emitting toxic pollutants. Monitoring platforms were placed in or near residential areas adjacent to clusters of facilities.

MATES II covered the South Coast Air Basin, which includes all of Orange County and the parts of Los Angeles, Riverside and San Bernardino counties seaward of the mountains. AQMD is the air pollution control agency for this area, plus the Coachella Valley.

26. US Court Refuses to Reconsider Air Pollution Ruling

A divided U.S. Court of Appeals rejected a request by the Environmental Protection Agency to reconsider a ruling that struck down the agency's revised national air pollution standards.

The court denied the EPA's appeal for a rehearing by all 11 judges of a ruling in May that the EPA had overstepped its constitutional authority in adopting the standards two years ago. Of the 11 judges on the appeals court, two did not participate and five voted to rehear the case. But the appeals court requires six votes to review a case.

An appeals court panel, by a 2-1 vote, ruled on May 14 that the section of the clean air law on which the EPA relied in coming up with the air pollution rules amounted to an "unconstitutional delegation of legislative power." The panel sent the case back to the EPA for further consideration of the strict standards for smog-causing ozone and for microscopic particles of soot.

EPA officials said they will recommend that the Justice Department appeal to the Supreme Court.

EPA Administrator Carol Browner expressed disappointment over the decision. "While the appeals process moves forward, we will continue to pursue all available options to secure cleaner air for the American people," she said in a statement.

In a dissent, Judge David Tatel said he did not agree with the panel's conclusion that the clean air law contained an unconstitutional delegation of legislative power.

"Not only did the panel depart from a half century of Supreme Court separation of powers jurisprudence, but in doing so it stripped the (EPA) of much of its ability to implement the Clean Air Act, this nation's primary means of protecting the safety of the air breathed by hundreds of millions of people," he said.

A wide range of business groups, led by the American Trucking Association, sued in challenging the standards. They complained the cost of complying with the rules would be \$45 billion.

27. US Senate Bill Would Let States Out of MTBE Program

Legislation has been introduced in the U.S. Senate to allow states to opt out of the federal

government's cleaner burning gasoline program that requires the use of fuel additives, like MTBE.

MTBE, or methyl tertiary butyl ether, has been found seeping from underground storage tanks into local water supplies.

The additive is used due to the clean air act, which requires reformulated gasoline containing two percent oxygen be sold in cities with high pollution levels because the fuel burns cleaner and vehicle smog emissions are reduced.

Under the legislation, states could notify the EPA they want to opt out of the oxygenate mandate, but all other provisions of the reformulated gasoline program would still apply.

An alternative to MTBE, is ethanol that is made from corn, but is more expensive and could boost gasoline prices by 6 to 7 cents a gallon.

The bill's other co-sponsor is Democratic senator Dianne Feinstein of California, whose governor has ordered MTBE phased out in the state's gasoline over the next few years.

The legislation also authorizes the EPA to study whether voluntary standards are needed to prevent the release of MTBE from underground storage tanks, and then to work with the industry to implement any standards deemed necessary.

28. Two Automakers Meet SULEV Standards for Gasoline Cars

Two automakers, Honda and Nissan, have been authorized to begin selling the cleanest gasoline-powered automobiles ever offered in California, the California Air Resources Board (ARB) has announced.

"This shows that modern technology can move even gasoline-powered vehicles toward our ultimate goal of a zero-emission vehicle fleet," said ARB Chairman Dr. Alan Lloyd. "Tailpipe emissions from these vehicles are eight times cleaner than an Ultra Low Emission Vehicle (ULEV), the cleanest gasoline-powered automobile currently being sold in California," he added.

The two vehicle models, a Honda Accord and a Nissan Sentra, have been certified by the ARB as SULEVs or Super Ultra Low Emission Vehicles. Both vehicles will be available for sale during the 2000 model year.

Of the two cars, the Nissan alone qualifies for partial Zero Emission Vehicle (ZEV) credits because it also has zero fuel evaporative emissions and has adopted the ARB's optional 150,000-mile durability and warranty standards on emission control parts.

The SULEV standard was adopted by ARB in November, 1999 as part of the Low Emission Vehicle II rules that set emission standards for passenger cars and light trucks from 2004 through 2010.

The SULEV is a voluntary tailpipe standard for motor vehicle manufacturers that is one-eighth of the ULEV standard, formerly the tightest standard for internal combustion engines. Honda and Nissan were both able to meet the SULEV standard by using refinements of current emission control technology. A SULEV is more than 99 percent cleaner than uncontrolled models.

29. ARB Updates Motor Vehicle Emissions Inventory

The California Air Resources Board (ARB) has released an updated on-road emissions inventory — an inventory which gives the most accurate picture to date of air emissions

from motor vehicles.

"We are always working to improve our air quality tools. The new inventory gives us an improved tool to use with daily monitoring for cleaning the air," said Executive Officer Michael Kenny. "Long-term trends show that we have been making correct air quality decisions. The proof is continuing improvement in air quality, particularly in Southern California," he added.

This year, the Los Angeles area has had its best air quality since pollution data has been recorded. For instance, the Los Angeles area had 116 stage-one smog alerts in 1978; 77 stage-one alerts in 1988; and 12 stage-one alerts in 1998. There have been no stage-one alerts in the Los Angeles area in 1999.

The ARB has published emission inventories and updates for more than 25 years, however, the refinements in the new inventory, known as Emission Factors 2000 (EMFAC 2000), are the most significant in recent years. Improvements to EMFAC 2000 include new data factors that more accurately match real-world data gathered during monitoring. Major changes to the model include:

Improvements to the EMFAC 2000 model that are based on a wider variety of driving habits and vehicles going through the license registration process and include those that are unregistered. This added about 4.5 million vehicles to the new ARB inventory.

Improved estimates of fuel evaporation emissions, including liquid fuel leaks that were recently identified in up to 5 percent of vehicles.

The inventory of smog-forming nitrogen oxide (NOx) emissions increased by 68 percent, mainly as the result of learning that many

heavy-duty diesel truck engines built between 1988 and 1998 were equipped with devices that increased fuel economy but also increased NOx emissions.

The new EMFAC 2000 model reflects updated statewide inventory amounts of several pollutants. These include 700 tons-per-day (TPD) of hydrocarbons (HC), a 78 percent increase; 1,000 TPD of NOx, a 68 percent increase; and 7,700 TPD of carbon monoxide (CO), a 93 percent increase.

"The new inventory will become part of the existing review and updating process for all ARB programs that use on-road motor vehicle information," Kenny said. "This improved data will allow us to better fight air pollution in the most logical, cost-effective way," he added.

30. California Governor Won't Appeal Smog Impact Fee Ruling

California Gov. Gray Davis announced he would not appeal a court decision requiring the state to refund extra fees for out-of-state car owners, which could cost California some \$750 million. Davis had until November 10 to decide whether to appeal an October state appeals court ruling that found unconstitutional the \$300 smog impact fee charged for registering out-of-state vehicles. The Democratic governor directed the Department of Motor Vehicles and Department of Finance to work with the state legislature on a plan to refund the fees.

The tax, adopted in 1990 at a time when the nation's most populous state was in a deep recession and strapped for cash, has been paid almost exclusively by people who move to California and register their out-of-state vehicles. Some 1.7 million Californians are estimated to have paid the tax and Republican lawmakers have calculated that refunds of the fees plus interest would amount to \$750

million.

Davis, who ordered the Department of Motor Vehicles to quit collecting the fees in October, also said he expected legislation to be passed this year to determine how car owners could apply for the refunds.

The fees were collected in addition to the normal registration costs California drivers had to pay and meant as a penalty for cars from other states that did not meet California's strict smog rules. But the fee did nothing to improve the state's air quality and instead was a way for the state to generate some \$60 million annually for the general fund.

31. EPA Report Says Benefits of Clean Air Act Outweigh Cost by Four to One

The economic value of the public health and environmental benefits that Americans enjoy from the Clean Air Act Amendments of 1990 exceed their costs by a margin of four to one, according to a new EPA study. The report projects that the Clean Air Act Amendments and their associated programs prevent thousands of premature deaths related to air pollution, and millions of asthma attacks as well as a wide range of additional human health and ecological effects.

"This Administration has enacted the most stringent public health and environmental standards ever while creating unprecedented economic growth," said President Bill Clinton. "This report further demonstrates that public health and environmental benefits can be achieved along with economic benefits, and this Administration will continue to work aggressively to protect the air we breathe, the water we drink, and the land on which we live."

Using a sophisticated array of computer models and the latest emissions and cost data, the EPA study shows that in the year 2010 the Amendments of 1990 will prevent 23,000 Americans from dying prematurely, and avert over 1,700,000 incidences of asthma attacks and aggravation of chronic asthma. In addition, in 2010, they will prevent 67,000 incidences of chronic and acute bronchitis, 91,000 occurrences of shortness of breath, 4,100,000 lost work days, and 31,000,000 days in which Americans would have had to restrict activity due to air pollution related illness. Plus, 22,000 respiratory-related hospital admissions would be averted, as well as 42,000 cardiovascular (heart and blood) hospital admissions, and 4,800 emergency room visits for asthma.

The report, the most comprehensive and extensive assessment of the 1990 Clean Air Act Amendments ever conducted, was the subject of extensive peer review during which independent panels of distinguished economists, scientists, and public health experts provided in-depth assessment and advice throughout the study's design, implementation, and documentation.

For those health and ecological benefits which could be quantified and converted to dollar values, EPA's best estimate is that in 2010 the benefits of Clean Air Act programs will total about \$110 billion. This estimate represents the value of avoiding increases in illness and premature death which would have prevailed without the clean air standards and provisions required by the Amendments. By contrast, the detailed cost analysis conducted for this new study indicates that the costs of achieving these health and ecological benefits are likely to be only about \$27 billion, a fraction of the economic value of the benefits.

The report notes that beyond the quantified

human health benefits, there are a wide range of additional human health and environmental benefits which scientists and economists cannot yet quantify and express in dollar terms. These include the control of cancer-causing air toxics as well as benefits to crops and ecosystems of reducing pollutants such as ozone and particulate matter.

The study is the second in a series of EPA cost/benefit Reports to Congress examining the effects of the Clean Air Act on the U.S. economy, public health, and the environment. The first study, a retrospective assessment released in October 1997, found that the benefits of 1970 to 1990 clean air programs greatly exceeded costs.

32. Maine Prepares to Sponsor Incentives for Green Cars

Maine is preparing to become the first state in the nation to promote the sale of environmentally cleaner cars. A bill will be introduced in the legislature in January to offer tax rebates of up to \$3,000 for those who buy "green." The program calls for affixing a blue, white, and green decal labeled "Cleaner Cars for Maine" on the windows of some 65 qualifying models now on the lots of the state's 167 new car dealerships. To be eligible for the sticker, vehicles must get at least 30 mpg and conform to California's air emission regulations, the most stringent in the nation.

33. Sierra Club Sponsors Ad Campaign Against George W. Bush

The Sierra Club has launched a series of advertisements on New Hampshire's television and radio news outlets that criticizing Texas Governor George Bush's record on air pollution. According to the Sierra Club, EPA data indicate Texas has the

nation's highest level of carcinogenic and toxic air emissions and is the third worst state for water pollution.

During the debate among Republican presidential candidates in New Hampshire on December 2, Governor George Bush was asked whether he supports EPA's proposed Tier 2 standards to desulfurize gasoline even though many refiners, some of whom are based in Texas, oppose the standards. In response Bush stated: "I do support cleaner gasoline standards across the country. I -- here's what I believe. I believe we can have economic growth and conservation at the same time, and I know there are some environmental groups out of Washington running ads about me here in New Hampshire. They're polluting my record. I've got a good record as governor. We've reduced toxic emissions overwhelmingly in my state. Industrial emissions are down by 11%. I signed two really good pieces of legislation that are going to remove 250,000 tons of stuff being spewed in the air, which is the equivalent of removing 5.5 million automobiles off our roads. I've got a good record because I know how to set high standards; I know how to bring people together to achieve those standards. [Regarding the Tier 2 standards], if I accept -- I think we ought to look at a national standard for lower sulfide for gasoline, absolutely."

34. CASAC Agrees Diesel PM Probably Carcinogenic; Still Rejects EPA Report

In a majority vote, U.S. EPA's Clean Air Scientific Advisory Committee (CASAC) again rejected the agency's diesel exhaust health effects "draft" report, finding flaws in EPA's analysis. As a result, EPA is supposed to revise and update its report. No deadline for producing a new report has been set, but it's possible that a new draft might be available

next spring.

A key problem for the CASAC panel was EPA's draft terming diesel "highly likely" to be carcinogenic at certain exposure levels, observers at the meeting explain. CASAC panelists said the agency didn't explain what cancer risk guidelines it was using to make such a conclusion.

There were a barrage of mid level attacks during the meeting:

- the move to a new hierarchy for ranking carcinogenicity (highly likely etc) when that hierarchy hasn't been fully accepted yet
- a stretch to go from effects at higher occupational levels to ambient levels
- rats not relevant to humans, evidence suggestive, not highly likely
- meta analysis shows only weak, not highly likely relationship

Further there was a real push by industry to challenge the entire notion of a diesel risk approach and argue instead for diesel being addressed as a part of the PM mix under the NAAQS. "tell me what makes diesel so different than other combustion particles"

To close on the document with changes that reflect the meeting comments, the vote was 6-5 against.

Two members voted in favor of the highly likely conclusion; a majority agreed that diesel particulate is a probable human carcinogen.

35. Tier 2 Decision Seems Close

EPA appears to be on track for issuing the Tier 2, low sulfur gasoline final rule, perhaps as early as next week but in no case later than December 31. It appears to be largely intact with only a few modifications. Most significantly, heavy light trucks, so called

LDT5s with GVW from 8500 to 10000 lbs., will be added to the package (as previously indicated in the heavy duty engine 2004 technology review proposal). Manufacturers will be allowed to do engine testing rather than vehicle testing on these engines prior to 2008 but will have to do vehicle testing after that point.

36. ARB Bans MTBE And Modifies Rules For Cleaner Burning Gasoline

The California Air Resources Board (ARB) has approved a new set of gasoline rules that will ban the additive MTBE while preserving all the air quality benefits obtained from the state's cleaner-burning gasoline program.

"Cleaner-burning gasoline was the single-most effective measure in this decade to improve air quality," said ARB Chairman Dr. Alan Lloyd. "Unfortunately, concern over MTBE in water has overshadowed much of that success. These new rules will eliminate environmental risks posed by MTBE while ensuring the air-quality gains achieved with cleaner-burning gasoline will continue into the next century."

The new rules, known officially as the Phase 3 gasoline regulation, prohibit the formulation of gasoline with MTBE after December 31, 2002. MTBE (methyl tertiary butyl ether) helps gasoline burn more cleanly and has been extensively used in California and many other states since the early 1990s. Like other gasoline components, MTBE poses a threat to groundwater when underground fuel tanks leak, but MTBE is more difficult to remove from water than other components and, in small amounts, renders drinking water unusable. Governor Gray Davis in March determined that MTBE in gasoline poses an unacceptable environmental threat, and he directed ARB to develop a regulation

prohibiting MTBE use, while ensuring current air-quality benefits.

To better enable refiners to cost-effectively produce non-MTBE gasoline, the new regulation changes several ARB cleaner-burning gasoline specifications that have been in effect since 1996. The regulation establishes more stringent standards for two major gasoline pollutants -- sulfur and benzene -- while relaxing two standards for distillation temperatures (which affect how cleanly gasoline burns). The regulation also adds flexibility to Reid Vapor Pressure standard that controls gasoline's tendency to evaporate. The new standards will improve the ability of refiners to make non-MTBE gasoline while ensuring motor vehicle emissions do not increase. These new standards, along with the MTBE prohibition, will take effect on December 31, 2002. Although some non-MTBE gasoline is currently sold in certain parts of California, some refiners will need up to three years to make plant modifications needed to convert their entire production volume to non-MTBE gasoline.

ARB today also approved an assessment that found no significant air-quality impacts are anticipated from the use of ethanol in gasoline. Federal law currently requires gasoline in Southern California and the greater Sacramento area to contain an oxygenated additive such as MTBE or ethanol. If the law remains in effect, gasoline in those areas as well as the San Joaquin Valley would have to contain ethanol beginning in 2003. The Davis Administration has asked the U.S. Environmental Protection Agency to waive the requirement and make the use of ethanol optional throughout California. A decision from U.S. EPA is pending. With the prohibition of MTBE, ethanol use is expected to become commonplace in California even if it were not required.

However, elimination of the requirement would give refiners additional options for making cleaner-burning gasoline and would likely have a positive effect on gasoline prices.

California's cleaner-burning gasoline reduced smog-forming emissions from motor vehicles by more than 15 percent upon its introduction in 1996, equivalent to 3.5 million cars. The benefits from cleaner-burning gasoline continue each year, because the emission-control systems in late-model vehicles are designed to take maximum advantage of cleaner-burning gasoline's properties. New California automobiles are up to 85 percent cleaner than new motor vehicles in 1993.

37. Ford Resigns From Anti-Kyoto Climate Change Group

Ford Motor Co has announced that it is quitting the Global Climate Coalition because the industry-funded lobbying group was standing in the way of the automaker's own efforts to make progress on the environment. Ford is the third major company, after BP Amoco and Royal Dutch/Shell, to recently drop its ties with the coalition, which was founded in 1989 and works with industry supporters in lobbying the U.S. Congress against the Kyoto climate change treaty. A spokesman for Ford said the automaker decided to quit the coalition because it had "become something of an impediment to moving forward on our own environmental agenda." The spokesman noted that Ford continues to oppose the Kyoto treaty, noting it would allow two-thirds of the world to continue greenhouse emissions while forcing cuts for others.

The world's second-largest automaker has been under fire from environmental groups for manufacturing some of the largest sports utility vehicles, like the popular Expedition and

Excursion models. In the meantime, William Ford, Chairman, has taken a very public posture as an environmentalist.

ASIA-PACIFIC REGION

38. Hong Kong To Tackle Diesel Pollution

Hong Kong leader Tung Chee-hwa has unveiled plans to clean up the city in the face of mounting criticism over levels of pollution. Tung said billions of dollars would be spent to build incinerators, sewage treatment plants and other waste disposal systems over the next decade to create a "clean, comfortable and pleasant home" for the city's 6.8 million people.

"Pollution has not only tarnished Hong Kong's image as an international city but also greatly affected our health," he said in his annual, televised policy address. "It is high time we faced up to the problem and do all we can to improve our living environment."

Devoting some 45 minutes of his two and a half hour speech to the environment, he warned of tougher measures to punish owners of dirty, diesel powered vehicles and ban them from city roads in the next few years. He said his administration would put forward legislation this month to "increase the fixed penalty for smoky vehicles to HK\$1,000 (US\$130)" - up from HK\$450).

"We have decided to stop importing diesel taxis after next year... and no diesel taxis will be allowed after 2006," he said, adding that grants would be given to owners to help them switch to the use of a cleaner fuel, liquefied petroleum gas.

Hong Kong's worsening pollution, particularly its air, has drawn increasing concern and strident criticism in recent years.

The government and studies point to the territory's 135,000 diesel-powered vehicles, which make up almost 30 percent of its entire 500,000 vehicle fleet, as the main culprits.

The problem gained more urgency after the powerful business community weighed in with its complaints this year and warned that foreign talents would be scared away if nothing was done.

Sale of leaded gasoline has been completely eliminated since April 1 of 1999. Also, this year, evaporative emissions controls were introduced for all new gasoline fueled cars since July 1.

Diesel fuel sulfur levels were reduced to 0.05% in 1997 and there have been no sales of new diesel passenger cars since standards were tightened in 1998. Euro 2 standards have been phased in since 1997 and starting the end of next year, all new taxis will be LPG.

As of October 1, 1999, all new motorcycles must meet the current US, EU or Japanese standards.

Future plans include implementation of EURO 3 equivalent emissions standards at the same time as the EU and Euro fuel specifications (1% benzene, 0.035% sulfur in diesel fuel) by January 1, 2001. With regard to existing vehicles, pre Euro light duty vehicles will be retrofitted with low cost PM traps and heavy duty pre euro vehicles with oxidation catalysts. Further, all diesel taxis over 7 years old will be banned by 2003 and all diesel taxis will be banned by 2006.

39. HK Firm Unveils Electric Bus

If a Hong Kong company has its way, a legion of dirty, diesel-churning public buses will be replaced by smoke-free electric vans in just

three and a half years.

Unveiling an emission-free electric bus, chief executive officer C P Lo of Vicmax Corp said the environmentally friendly creation, the Vicmax ZEN, would help solve part of Hong Kong's worsening air pollution woes quickly.

Vicmax's new light bus, developed at a cost of HK\$30 million (US\$3.86 million) over two years with borrowed technology from Germany, France, the United States and Malaysia, has arrived as complaints over Hong Kong's bad air multiply.

Quiet and smoke-free, the Vicmax ZEN has a load capacity of 24 people and can reach speeds of up to 90 kmph.

The company submitted to the government its plans in mid-July to install a network of 300 "fast-charging stations" which are fitted with underground plugs, which can charge up to 80 percent of the vehicle's battery capacity in 15 minutes, Lo said.

"It's very suitable for Hong Kong and will not disrupt traffic. It's also suited to Hong Kong's steep terrain," he said.

While the clean van comes with a price tag of HK\$568,800 (US\$73,205), or twice that of its dirty cousin, Lo said low upkeep will level out the initial outlay in the long run.

While the company has yet to secure purchase contracts from more than 200 existing franchisees of public light buses, Lo said response so far has been encouraging.

One giant hurdle, though, would be a government regulation which limits the weight of public light buses to just four tonnes. The Vicmax ZEN weighs seven tonnes.

"The government must change this

regulation...we are hoping for a positive response," Lo said.

40. Hong Kong Lower Sulphur Diesel Plans Raise Protest

Hong Kong's diesel fuel sellers said they will protest the government's plans to lower sulphur content in industrial and marine diesel from 2001. The government had announced in June that it was planning to reduce sulphur content of industrial and marine diesel from the current 0.5 percent to 0.05 percent level.

A spokeswoman from The Hong Kong Environmental Protection Department (EPD) said that the policy was still under consideration and not finalized yet. But industry said that if these plans were carried out, it would spell an end to the booming marine diesel business for much of Hong Kong's oil terminal operators.

The Special Administrative Region has no oil refineries and its diesel is entirely imported through terminal operators centered in Tsingyi Island, from Singapore and South Korea. These operators include subsidiaries of oil majors - the Royal Dutch Shell Group, Mobil Corp, Exxon Corp, Caltex and independent China Resources Petroleum Co (CRC).

Sellers said that the main problems they face with tighter specifications was obtaining enough supply to meet Hong Kong's current marine and industrial diesel demand of three to five million barrels per month.

Sellers said the lower sulphur requirement would also imply higher bunker prices and dampen Hong Kong's competitiveness against other regional ports like Singapore and South Korea. The consumers like fishing boats and bunkers, could easily take their business elsewhere, they said.

Meanwhile, the EPD had also announced in June that it would lower the sulphur content for automotive diesel sold inland from the current 0.05 percent to 0.035 percent.

This was part of its plans to match the Euro III standard for advancing diesel emission engine technology EPD said.

On this front, there was less protest from sellers.

"That is okay, it's incremental change and the demand there is small, so we can meet it," one trader based in Hong Kong said.

The trader estimated that the market was below 500,000 barrels per month.

Originally slated for 2001, the EPD may now bring forward the introduction of the lower sulphur diesel to mid-2000, industry sources said.

41. Australia Moving To Eliminate Lead: Perth Leads the Way

Premier Richard Court has outlined the details of new fuel specification standards designed to make Perth the clean fuel city of Australia. Speaking at the State Liberal Party Conference, Mr Court said under the new regime Western Australia would be the first State in the nation to eliminate lead from all petrol sold and to achieve 'Euro II' standards in diesel fuel. The State would also move quickly towards achieving 'Euro IV' standards for diesel fuel in coming years. He said the new standards would apply from January 1, 2000 and would result in Perth having the cleanest fuel regime in Australia.

The new fuel specifications have been prepared in consultation with oil companies operating in Western Australia, as well as the RAC and the Motor Traders' Association. Mr

Court said as well as removing lead, producers would be required to reduce the level of benzene and methyl tertiary butyl ether (MTBE) in petrol from January 1, 2000.

Traditional leaded fuel, required for older cars and machinery, would be replaced with unleaded fuel containing a special additive. This will ensure that modifications will not be required for cars needing leaded fuel.

Mr Court said Euro II specification would apply for diesel fuel from next year. This will mean that the sulphur level in all diesel fuel sold in the metropolitan area will be significantly reduced. Currently, diesel fuel can contain up to 5,000 parts per million of sulphur however, under the new regime that figure will be reduced to 500 parts per million.

The BP refinery, which is the major supplier in WA, has indicated it will be able to meet these standards by January 1, 2000.

Mr Court said there would be ongoing changes to fuel specifications in WA. "The Government is not going to stop at the levels that will apply from January 1, 2000. Producers will be required to meet further reductions in benzene levels by January 2001 and the Government will be seeking further reductions in sulphur content in diesel fuels in later years," the Premier said.

At the national level, The Prime Ministerial statement, *Safeguarding the Future: Australia's Response to Climate Change* (November 1997) included a commitment to bring forward the phase out of leaded petrol. A similar commitment was made in the context of the Environment Strategy for the Motor Vehicle Industry jointly announced in June 1997 by the Minister for the Environment and the Minister for Resources and Energy.

To facilitate the completed phase out of

leaded petrol, Environment Australia intends to:

- consult widely with industry and community groups,
- identify issues of concern to each of the key stakeholder groups,
- negotiate a "best fit" date to remove leaded petrol from the market, and
- negotiate the instruments (regulations or agreements) which will be used to give effect to the phase out.

A. Background

Lead has been added to petrol since the 1930s as a cost-effective way of increasing the octane number. The lead additive also provides a measure of protection from valve seat wear.

Unleaded petrol was first introduced in 1985 in advance of Australian Design Rule 37 (1986), which mandated the use of unleaded petrol and established strict emission standards for all new petrol driven light vehicles. The vehicle technology required to meet the new standards relied on catalytic converters to reduce emissions of carbon monoxide and hydrocarbons. These converters are contaminated by lead residue from leaded petrol and can only be used with unleaded petrol.

Regular unleaded petrol was provided in addition to "regular" and "super" petrol, both of which contained lead. Regular leaded petrol was phased out by 1987 due to industry requirements and the Government equalized the cost of regular unleaded and "super" leaded petrol. As a large proportion of the vehicles then on Australian roads were Japanese imports, specifically designed to operate on low octane unleaded petrol, a Government campaign was run to encourage drivers to use regular unleaded petrol.

Subsequently, in 1987, premium unleaded petrol (PULP) was made available in certain markets. This provided the higher octane fuel required by some imported vehicles.

B. National Lead Abatement Program

In 1993, the National Health and Medical Research Council (NHMRC) established a goal for the blood lead level in the Australian population. The goal, set at 10 : g/dL of blood, replaced the previous level of 25 : g/dL of blood.

In response to NHMRC recommendations, the Commonwealth initiated the Lead Abatement Program to reduce the Australian population's exposure to environmental lead. Lead from motor vehicle exhaust was then, and still is, the most significant source of lead in urban air.

The Lead Abatement Program commenced in 1993 and achieved a significant reduction in emissions of lead from motor vehicles by:

- reducing the lead content of leaded petrol to 0.2 grams per liter; and
- reducing demand for leaded petrol.

These objectives were supported by a high profile television campaign targeting the drivers of pre 1986 vehicles, and reinforced by a price differential of 2 cents per liter in favor of unleaded petrol. A reduction in the research octane number (RON) of petrol was also made to assist in reducing the lead content.

As further impetus to the reduction of airborne lead levels, lead is one of the six criteria pollutants targeted under the recently agreed national air quality standards - the National Environment Protection Measure for Ambient Air (26 June 1998). The standard set for lead is 0.50µg / m³ (as an annual average) with a goal of no allowable exceedances within 10 years. The previous NHMRC/ANZECC guideline was 1.5µg / m³ (as a 3 month average).

C. Current and future sales

Petrol is currently available from retail outlets in the following forms:

- 91 RON petrol (unleaded),
- 95 RON petrol (premium unleaded (PULP)), and
- leaded 96 RON petrol.

Leaded petrol currently accounts for approximately 28% by volume of total petrol sales, and is continuing to decline steadily. It is estimated that by 2003 it will account for between 6% and 10% of total sales and fall to between 2% and 5% by 2005 (Australian Institute of Petroleum (AIP) Oil and Australia Forecasts 1997 - 2006). PULP currently represents about 2% of the market, but its market share is expected to increase (with the demise of the leaded higher octane alternative) from 2% to between 5% and 10% of the market after the complete phase out. The following table projects outcomes for market sale by volume for the scenario of a 2003 complete phase out.

% Market Sales by Volume

	Currently (1998)	forecast (2003) pre phase out	forecast (2005) post phase out
--	------------------	-------------------------------	--------------------------------

leaded 96 RON petrol	28%	6% - 10%	0%
unleaded 91 RON petrol	69%	88% - 92%	90% - 95%
Premium unleaded 95 RON petrol	3%	2%	5% - 10% (possibly higher depending on the introduction of new vehicle standards)

Source: Based on Australian Institute of Petroleum Forecasts and RMIT Desk Study - Octane Enhancers

42. India To Introduce Low Sulfur Fuel

Indian authorities have decided after a very intense debate that diesel fuel with a maximum of 0.05 % sulfur is a must if euro-2 norms are introduced. Therefore, the fuel will soon be available in Delhi for use in buses and then from April 1, 2000 for all new passenger vehicles when euro-2 norms become operational in Delhi. Indications are that other cities like Bombay etc. will also catch up in 2000. Three refineries i.e Mathura.,Panipat and Reliance will lead to start with. Within two years it is expected throughout the country.

Another war is on for introducing CNG on the existing fleet of buses since the Supreme Court has ordered that all buses more than 8 years old are to run on CNG in Delhi from April 1, 2000. From 2001 expectations are to run the entire fleet on CNG.

43. India Court Pushes Emission Rules For Scooters

India's Supreme Court has also said that emission norms matching European standards were desirable for scooters, motorcycles and autorickshaws in and around the capital to control pollution

The court had in a ruling earlier this year imposed a deadline for cars to meet Euro I and Euro II emission standards in and around Delhi.

"Keeping in view the level of pollution still in the National Capital Region, we have suggested the counsel for the parties that it is desirable to impose Euro I and II norms on two and three-wheelers," a Supreme Court panel of judges said.

The court's comments came during a hearing of arguments by car makers pleading for a modification in the earlier order on the imposition of standards for cars.

The court adjourned the case until November 24.

44. Recent Developments in China

A. Air quality

Air quality monitoring data in Chinese cities are limited, especially in high traffic areas. Based on the available data, however, it is clear that national NO_x air quality standards are currently exceeded across large areas, including but not limited to high traffic areas. Before 1992, the annual average concentration of NO_x in Shanghai was lower

than 0.05 mg/m³, which complies with the Class II air quality standard. But since 1995, the NO_x concentration has been increased slowly, from 0.051 mg/m³ in 1995 to 0.059 mg/m³ in 1997.¹

In Beijing, NO_x concentrations within the Second Ring Road, i.e., the city center, increased from 99 µg/m³ in 1986 to 205 µg/m³ in 1997, more than doubling in a decade. CO and NO_x concentrations on the urban trunk traffic roads and interchanges exceed national environmental quality standards all year round.²

National air quality standards for particulate are also frequently exceeded (probably due primarily to coal and charcoal burning) and recent data indicates that standards for ozone, formed by the photochemical reaction of NO_x and HC, have been exceeded in several places during the last decade.

The most recent air quality data from Beijing illustrates the problem.³

i. Total Suspended Particulate

¹“Strategy for Sustainable Development of Urban Transportation and Environment - for a Metropolis with Coordinating Development of Transportation and Environment toward the 21st Century”, Shanghai Municipal Government, January 10, 1999.

²“Urban Transport and Environment in Beijing”, Beijing Municipal Environment Protection Bureau, Beijing Municipal Public Security and Traffic Administration Bureau, and Beijing Urban Planning, Design and Research Academy, January 15, 1999.

³Information provided by Mr. Yu Xiaoxuan, Deputy Director Beijing Municipal Environmental Protection Bureau, to CCICED meeting on October 23rd, 1999.

Over the past decade, TSP levels in Beijing have typically been about 370 to 380 µg/m³, with 80% of the readings over the standard of 200 µg/m³. It is estimated that about 90 µg/m³ is transported into the city from the North, with about 36% of the remainder due to coal burning (about 28 million tons emitted per year), and the rest primarily flying dust. Vehicles are a relatively minor contributor since only about 6% of the vehicles are diesel fueled.

ii. Sulfur Dioxide

Typical levels are about 120 µg/m³, about twice the annual average standard of 60 µg/m³. About 90% comes from coal burning; typical sulfur levels in coal have been 1% resulting in emissions of approximately 340,000 tons per year. To address this problem, low sulfur coal (0.5%) was introduced about one year ago along with a program to use compressed natural gas for food cooking and water heating. Sulfur emissions this year have dropped by about 20 to 25% as a result of these measures.

iii. Carbon Monoxide

The annual average daily CO standard of 4.0 milligrams per cubic meter has been attained several years in a row although many winter days still exceed 5 to 6 milligrams per cubic meter. About 63% of the CO emissions come from the 1.4 million vehicles in Beijing with the remainder from domestic chimneys. During the last nine months, levels are down by about 11%.

iv. Nitrogen Oxides

Average NO₂ levels in 1998 were 152 µg/m³ (about 100 in Summer and 200 in Winter), about 3 times the standard of 50 µg/m³ with the sources of the approximately 310,000 tons emitted being roughly equally divided

between vehicles and coal burning. Ten years ago, the typical levels were about 80 $\mu\text{g}/\text{m}^3$ so it is clear that this problem has been getting rapidly worse. Since the amount of coal burning has remained stable for many years while the vehicle population has grown from 300,000 vehicles to 1.4 million, Beijing local authorities attribute the increases to vehicular emissions.⁴

B. Contribution From Mobile Sources in Typical Chinese Cities

On average, mobile sources contribute approximately 45-60% of the NO_x emissions and about 85% of the CO emissions in typical cities at present.⁵ Recent data collected in Shanghai, for example, show that in 1996, vehicles emitted 86% of the CO, 56% of the NO_x and 96% of the non methane hydrocarbons (NMHC) of the total air pollution load in the downtown area.⁶

C. Progress To Date

China has begun to move aggressively to address the growing problem of motor vehicle pollution control.

i. Unleaded Gasoline

⁴“Urban Transport and Environment in Beijing”, Beijing Municipal Environment Protection Bureau, Beijing Municipal Public Security and Traffic Administration Bureau, and Beijing Urban Planning, Design and Research Academy, January 15, 1999.

⁵“China’s Strategies for Controlling Motor Vehicle Emissions”, Summary Report, December 1997.

⁶“Strategy for Sustainable Development of Urban Transportation and Environment - for a Metropolis with Coordinating Development of Transportation and Environment toward the 21st Century”, Shanghai Municipal Government, January 10, 1999.

In March of 1997, the decision was made to phase out the production and sale of leaded gasoline across the entire country by July 1, 2000. By July of that year, Beijing had already stopped sales of leaded fuel in the city center and by October the ban had spread to Shanghai and Guangzhou.

ii. New Vehicle Standards

Then in 1998, the State Council decided to introduce the Euro 1, catalyst based emissions standards for all new cars sold in the country as of April 1, 2000. Beijing again took the lead by phasing in the European auto standards as of January 1, 1999, one year ahead of the national schedule. Of the 64,000 new vehicles sold in Beijing since the beginning of the year, 46,000 cars comply with Euro 1 standards; the remaining 18,000 are motorcycles, agricultural tractors and trucks. Shanghai instituted similar requirements in July 1999.

Beijing will implement more stringent exhaust standards (Euro 1) for both HDGE⁷ and HDDE with steady state mode test methods, and to agricultural transport vehicles using the free acceleration smoke test mode. The standards will be put in force by January 1, 2000. Nationally, SEPA is planning to introduce heavy duty standards according to the following schedule.⁸

⁷Since all heavy duty engines in Europe are diesel, the gasoline fueled engine standards will be the US 1982 requirements.

⁸The State Supervision Bureau is in a dispute with SEPA regarding which organization has authority under the new organization to issue new vehicle standards. This organization would delay the introduction of Euro 2 standards until January 2005 (certification) and 2006 (production). It is expected that this dispute will be

	Certification	Production
Euro 1	July 1, 2000	July 1, 2001
Euro 2 ⁹	January 1, 2003	July 1, 2004

iii. Vehicle Retrofit

In early March, 1999, the Environmental Protection Bureau (EPB) of Beijing had a meeting with car manufacturers from all around the country. EPB requires that manufacturers whose products had been sold in Beijing should be responsible for their products' pollution. As a result of the discussions, all 1995-1998 domestically produced cars sold in Beijing must be retrofitted with a vehicle manufacturer developed kit designed to meet the Euro 1 standards. For carbureted cars, this means installing a three-way catalyst, an oxygen sensor, an air injector, and an electronic control unit to manage the air-fuel ratio at a cost of approximately \$375 per vehicle. Approximately 80,000 vehicles have been retrofitted to date in Beijing with estimated emissions reductions averaging about 70%; when completed about 200,000 vehicles will have been retrofitted. Similar programs are going on in other cities.

iv. Fuel Conversions

Orders have been placed for 300 new Cummins CNG engines to be installed in existing buses, replacing diesel engines. No more diesel engines are planned to be purchased with new buses and taxicabs to be

resolved soon.

⁹These requirements would be introduced for cars and heavy duty engines.

CNG or dual fueled (LPG and gasoline). About 15,000 vehicles have been converted to CNG or dual fuel at this time and it is expected that this will exceed 17,000 by the end of the year. Diesel to CNG conversions are estimated to result in about 10 to 20% less NOx, and gasoline to LPG conversions are estimated to result in about 40% less CO and HC. The Beijing Environmental Protection Bureau (BEPB) has also apparently decided to ban the sale of diesel vehicles altogether in Beijing.

v. Other

BEPB is actively pursuing loaded emission testing capability for the I/M program, as are other cities in China. Since the I/M program is the primary enforcement tool for vehicle retrofits and alternative fuel conversions, as well as for the overall maintenance of the vehicle fleet, this is a very high priority activity.

Vehicles which have accumulated more than 500,000 km in use are forced into retirement in Beijing; approximately 58,000 vehicles, mainly taxis, have been scrapped to date.

BEPB is also trying to work with petroleum ministry on further improvements in fuel quality, especially as it pertains to detergents and is working on Stage I vapor controls at service stations. On June 1, 1999, SEPA issued new control standards for motor vehicle gasoline designed to minimize hazardous risks. Limits will be as follows:

- Benzene % v/v #2.5
- Olefins % v/v #35
- Aromatics % v/v #40
- Mn (g/l) #0.018
- Fe (g/l) #0.005
- Cu (g/l) #0.001
- Pb (g/l) #0.013
- P (g/l) #0.0013
- S % m/m #0.08

In addition, detergents which could clean deposits effectively should be added into motor vehicle gasoline. For Olefins, the requirements were implemented in Beijing, Shanghai and Guangzhou as of July 1 and will be mandatory for the entire country after January 1, 2003.

Finally, a pilot program will be set up in 2000 in approximately 30 major cities whereby a 300 to 600 RMB pollution fee will be levied on all vehicles with the funds dispersed to local governments to use as they see fit to clean up pollution.

45. Shell Likely To Be The First to Sell Natural Gas in China

Royal Dutch/Shell is likely to become the first foreign oil company to distribute natural gas in China, a top Chinese industry official has announced.

Shell and China were expected to start a feasibility study of a gas pipeline in north China very soon, paving the way for the oil major to become the first foreign oil company to distribute gas in the under-developed China gas market.

"If we eventually become joint venture partners, Shell will be the first baby in China's gas distribution," said a senior Beijing-based official with China National Petroleum Corp (CNPC).

In September, Shell and CNPC signed a contract to jointly develop the Changbei gas fields in Shannxi province and Inner Mongolia, with proven reserves of 70 billion cubic meters.

The production sharing contract (PSC) allows Shell the opportunity to participate in building a pipeline to supply up to three billion cubic meters of natural gas per year to consumers

in Beijing, Tianjin, Hebei and Shandong.

Joint management of China's gas distribution has to date been closed to foreign companies, but industry sources said hopes were high that Shell would clinch the deal.

Chinese industry policy rules that the local party must retain majority shareholding in a joint venture pipeline project, they said.

"Capital investment and technology (from Shell) is not the whole story we are keen on, we are looking at building a long term strategic partnership with Shell," said the official.

"CNPC is interested in further cooperation with Shell in gas development and downstream utilization projects in other parts of China as well as overseas projects," he said, without giving further details.

Another CNPC official said that once a joint venture pipeline company was set up, it was expected to sign individual supply contracts with local governments.

The integrated project to develop the gas fields, build new pipelines and develop gas market would need an investment of up to \$3 billion, Shell had said earlier.

Field development and pipeline construction was scheduled to start in 2002.

China had lately mapped out an ambitious natural gas plan to boost gas consumption, expected to reach 90 billion cubic meters by 2010, up from 24 billion cubic meters in 1998.

Under the plan, natural gas was expected to account for six percent in the energy mix, up from the current level of around 2.5 percent, industry sources said.

46. Australia Decides on New Emissions Standards

It has been decided that 5 new Australian Design Rules will be required to implement the package of new emission standards.

30/01	Smoke Emission Control for Diesel Vehicles
79/00	Emission Control for Light Vehicles
79/01	Emission Control for Light Vehicles
80/00	Emission Control for Heavy Vehicles
80/01	Emission Control for Heavy Vehicles

The attached table summarizes the application of the new "Euro" standards to the particular vehicle categories. It also identifies the application dates for the new package.

Applicability of New Emissions ADRs to Each Vehicle Category

ADR Categories			Equivalent ECE Category	Applicable New ADR (1),(2),(3),(4)	2002/3 (Diesel Vehicles) (5)	2003/4 (Petrol Vehicles)	2005/6 (Petrol Vehicles)	2006/7 (Diesel Vehicles)
Description	GVM (t)	Category						
Passenger Vehicles								
Cars	Not Applicable	MA	M1	Light Duty	Euro 2	Euro 2 (6)	Euro 3 (6)	Euro 4
Forward Control	Not Applicable	MB	M1	Light Duty	Euro 2	Euro 2 (6)	Euro 3 (6)	Euro 4
Off-road	Not Applicable	MC	M1	Light Duty	Euro 2	Euro 2 (6)	Euro 3 (6)	Euro 4
Buses								
Light	≤ 5	MD	M2 ≤ 3.5	Light Duty	Euro 2	Euro 2 (6)	Euro 3 (6)	Euro 4
			> 3.5 ≤ 5	Heavy Duty	Euro 3 or US 98 (6)	US 96 (7)	US 98 (7)	Euro 4 or US 2004 (6)

Heavy	> 5	ME	M3	H e a v y Duty	<i>Euro 3 or US 98 (6)</i>	<i>US 96 (7)</i>	<i>US 98 (7)</i>	<i>Euro 4 or US 2004 (6)</i>
Goods Vehicles (Trucks)								
Light	≤ 3.5	NA	N1	Light Duty	<i>Euro 2</i>	<i>Euro 2 (6)</i>	<i>Euro 3 (6)</i>	<i>Euro 4</i>
Medium	> 3.5 ≤ 12	NB	N2	H e a v y Duty	<i>Euro 3 or US 98 (6)</i>	<i>US 96 (7)</i>	<i>US 98 (7)</i>	<i>Euro 4 or US 2004 (6)</i>
Heavy	> 12	NC	N3	H e a v y Duty	<i>Euro 3 or US 98 (6)</i>	N o t applicable	N o t applicable	<i>Euro 4 or US 2004 (6)</i>

Notes to Table

1. The introduction of *Euro 2* standards for light duty petrol and light duty diesel vehicles will be via a new ADR 79/00 *Emission Control for Light Vehicles*, which adopts the technical requirements of ECE R83/04.

2. The introduction of *Euro 3* standards for light duty petrol vehicles, and *Euro 4* standards for light duty diesel vehicles, will be via a new ADR 79/01 *Emission Control for Light Vehicles*, which adopts the technical requirements of European Council Directive 98/69/EC. Directive 98/69/EC embodies the *Euro 3* and *Euro 4* requirements for light duty petrol and diesel vehicles, however the ADR will only mandate the *Euro 3* (pre 2005) provisions of 98/69/EC for petrol vehicles, but will allow petrol vehicles optional compliance with *Euro 4* standards.

3. The introduction of *Euro 3* and *Euro 4* standards for medium-heavy duty diesel vehicles (all buses and trucks above 3.5 tonnes GVM) will be via a new ADR 80/00 *Emission Control for Heavy Vehicles*, and ADR 80/01 *Emission Control for Heavy Vehicles*, respectively. These ADRs adopt the technical requirements of the proposed European Council Directive [COM(97)627, as amended by COM(98)776 & COM(99)89] amending European Council Directive

88/77/EEC.

4. These new ADRs (ADRs79/00, 79/01, 80/00, 80/01) will replace the existing ADR37/01 and ADR70/00. The "/00" & "/01" versions represent the 2002-4 and 2005-7 groupings of the new requirements, respectively.

5. A new smoke ADR (ADR30/01) will also apply to all categories of diesel vehicles. The smoke standard will apply from 2002/3 and will adopt UN ECE R24/03 and allow the US 94 smoke standards as an alternative. This new ADR will replace ADR30/00.

6. Nominated standards also apply to vehicles fueled with LPG or NG.

7. UN ECE & EU do not have standards for medium-heavy petrol engines, hence US EPA is adopted in lieu.

47. India Continues Progress Toward EU Standards

Inspired by the orders of the Supreme Court calling for advancing compliance to Euro I and Euro II emission norms for non-commercial vehicles, mainly passenger cars, for the National Capital Region of Delhi, a non-government organization called the "Smoke Affected Residents Forum" filed a

public interest writ petition in the High Court of Mumbai in the month of July 1999 against the Municipal Corporation and other agencies concerned with the control of air pollution in the city. The petitioners have pointed out that the problem of pollution caused by automobiles "are far too serious to be left to the bureaucracy alone" and have prayed to the Court for urgent directions and orders for "relief against auto emissions through curative and preventive steps". Their requests include enforcement of Euro I and II norms, reduction of sulphur content in the fuels, phasing out of aged motor vehicles, rigorous enforcement of the 'Pollution Under Control' (PUC) certification for in-use vehicles etc.

The Court has admitted the petition and has had several hearings. Several parties concerned, namely the oil industry, the automotive industry, the transport authorities, taxi's unions, public bus transport organization (called BEST) have been asked by the Court to give their responses to the petitions.

On September 17th, the Court observed, "considering the seriousness and urgency of the matter, we permit the parties to place on record necessary material within a period of three weeks from today. However, keeping in view the material already available and the import of directions issued by the Supreme Court, though in relation to National Capital Region of Delhi, as interim arrangement, presently, we feel that the following directions

can be immediately issued:-

- (i) No private (non-commercial) vehicle, which does not conform to India 2000 norms, as per Government of India Notification dated 28th August, 1997, shall be registered in Mumbai with effect from 1st January, 2000.
- (ii) No private (non-commercial) vehicle, not conforming to Euro II norms, shall be registered in Mumbai with effect from 1st January 2001."

The automotive industry has already agreed to comply with the above orders.

In the mean time, the Ministry of Surface Transport of the Government of India is due to issue a formal notification giving effect to the Supreme Courts orders for Delhi.

48. Taiwan Continues To Make Progress

Between 1991 and 1998, air pollution and emissions continued to improve in Taiwan as illustrated below. In spite of this, air pollution levels are still considered unacceptable with 5.09% of days considered unhealthy. To improve the situation, air quality improvement targets have been adopted and a series of additional measures are being put in place to reduce emissions. By 2001, it is intended that unhealthy days will be reduced to no more than 3%; by 2006, to no more than 2%; by 2011 to no more than 1.5%.

Emissions Reductions and Air Quality Improvements from 1991 to 1998

PM10	Sox	NOx	HC	CO	Pb	Unhealthy Air Quality Days
25%	28%	4%	14%	41%	53%	69%

The emission standard for third stage of automobiles and light duty trucks went into effect on January 1, 1999 while the third stage for heavy duty vehicles went into effect on July 1 of this year. The third stage for motorcycles went into effect on January 1, 1998 and the significantly tighter 4th stage will be enforced on January 1, 2004. Consideration is being given to a further tightening of heavy duty standards to the US 2004 requirements in

2005.

Significant improvements to fuel quality are also being implemented. For example, as of January 1, 2000, no leaded gasoline will be sold in the country. In addition, a reformulated gasoline will be required by January 1, 2001 which meets the following specifications:

	Parameter	Specification
Gasoline Specification	Benzene	1.0 vol. %, max.
	Sulfur	275 ppmw, max.
	Reid Vapor Pressure	8.9 psi, max.
	Oxygen	2.0 wt%, max
Performance Standard (Based On Complex Model)	VOC + NOx	1,770 mg/km, max.
	Toxics	48.2 mg/km, max.

In addition, the maximum sulfur content in diesel fuel was reduced to 0.05% by weight as of June 1998.

Taiwan has also had an economic incentive program for many years whereby an environmental fee is added to fuel prices and the funds collected are used to stimulate vehicle improvements. Key components are summarized below.

Voluntary scrappage of older trucks and buses by those meeting Stage 3 (US 1994) requirements - each replacement is entitled to a 250,000 new Taiwan dollar (NTD) rebate; to date 3,019 vehicles have qualified at a cost of 718,350 NTD.

Voluntary retrofit of diesel buses with a

trap or a catalyst achieving an 80% smoke reduction - each retrofit is entitled to 180,000 NTD; to date 1,942 vehicles have been retrofitted at a cost of 126,141,188 NTD.

Purchase electric motorcycle - rebates of between 12,000 to 31,000 NTD are available; approximately 10,000 electric motorcycles are expected to be on the road by the end of 1999; approximately 40,000 by the end of 2000; and 80,000 by the end of 2001.

Voluntarily scrap old motorcycle and purchase one meeting Stage 3 standards - rebates of between 2000 to 2500 NTD are available; 57,601 have been scrapped to date at a cost of 115,202 NTD.

Converting taxicabs to LPG - 40,000 to

45,000 NTD rebates are possible; 22,904 taxicabs have been converted to date at a cost of 668,275 NTD.

alternative vehicles, especially gasoline although other options will be considered

Voluntary motorcycle I/M - 80 NTD is available; 12,215,110 have been brought in for inspections to date.

At the present time, fuel taxes are not considered a serious option because the Federal government controls them. However, there is a move toward decentralization and this may lead to a change in the future.

In addition, on a pilot basis, 8 CNG buses are undergoing testing and 2 hybrid diesel/electric buses are planned for future study.

At the urging of the governor, the three major parties in the local assembly will issue a statement shortly in defense of the new diesel campaign.

49. Tokyo Continues To Push No Diesel Campaign

Tokyo Governor Ishihara continues to aggressively pursue the No Diesel campaign. During November he arranged a meeting with all the major diesel vehicle manufacturers to urge them to do more to clean up their diesels. Their responses boiled down to they are doing all that they can until the sulfur level in diesel fuel is lowered. The following day he met with members of the Japanese Diet and urged them to take steps to reduce sulfur in diesel fuel.

At the end of the fiscal year, March 31, 2000, the municipal authorities intend to issue their final proposal. Following this they will host an international seminar next summer in which they hope to invite local officials around the world to discuss diesel problems and potential steps which can be taken at the local level.

They have issued a new Green Paper NO.2, which attempts to dispel several myths regarding the campaign:

The government has issued the second version of its manifesto attacking several myths which have emerged regarding diesels and continuing the momentum begun this summer. In response the vehicle manufacturers through JAMA have issued a bulletin of their own.

Diesel vehicle controls go against the global ecological trend.

The latest diesel vehicles are good for the environment.

Replacing diesel with other types of vehicles will cause fuel prices and other costs to rise.

While maintaining pressure on the national government to do more, Tokyo authorities continue to explore options available at the local level, including:

Immediate Tightening of Diesel Vehicle Controls Is Necessary to Protect the Health of Tokyo Residents

diesel particulate filters

alternative fuels, especially LPG (CNG is considered too expensive)

Tokyo can no longer wait for air pollution problems to be solved. Air pollution due to

NOx has not been reduced, and concerns about the health effects of suspended particulate matter (SPM) are growing as the SPM environmental standard has yet to be achieved almost anywhere in Tokyo.

Implementing Diesel Vehicle Controls and Reducing CO₂ at the Same Time

The "Say No! to Diesel Vehicles" Campaign is receiving some negative as well as positive feedback, such as the fact that diesel vehicle numbers are increasing in Europe and that Tokyo's policy may be going against global ecological trends. The objective of the policy is to improve the environment in Tokyo and to protect the health of those living in the city, as well as to prevent global warming. We are tackling both of these two issues at the same time, and taking the most suitable measures for Tokyo.

In Tokyo, an increase in diesel vehicles is inappropriate, even if they help reduce CO₂.

The "Say No! to Diesel Vehicles" Campaign proposes that gasoline vehicles be used instead of diesel vehicles. This substitution will increase the annual output of CO₂ by slightly more than 90,000 tons at most; since the total CO₂ output in Tokyo is estimated to be 16,270,000 tons, such an increase would account for just 0.6% of the total. Of course, any increase of CO₂ output is undesirable for preventing global warming. However, the total CO₂ output can be and should be decreased through many other programs and measures such as reduction of traffic volume, as well as the effective use of energy and resources. On the other hand, controls on diesel emissions must be tightened to improve the air in Tokyo. Even in Europe where diesel vehicles are on the increase, countries are strengthening their emission controls to

protect the health of their citizens. Tokyo has the worst air pollution in Japan, and this is due to diesel vehicle emissions. Global warming is a critical subject but an increase of diesel vehicles to curtail CO₂ must not be allowed.

Misunderstanding 1: The diesel vehicle control by Tokyo goes against the global ecological trend.

Fact: Due to concerns about health, European countries and the United States are implementing stricter diesel vehicle controls.

Due to high fuel efficiency, however, diesel vehicles are increasing in some European countries in an effort to prevent global warming. Meanwhile, in Europe and the US diesel vehicle emission controls are also being strengthened because of the growing concern about the influences on health.

Germany: Concern about the carcinogenicity of diesel emissions

The German Environment Ministry announced the results of a survey that compared the carcinogenicity of gasoline and diesel vehicle emission gases. The survey showed that the emissions from diesel vehicles were several to several dozen times more carcinogenic than those from gasoline vehicles.

USA: Influence on asthma and other effects

According to announcement by the U.S. Environmental Protection Agency (EPA) in October this year, smog and particulate matter in the United States caused 15,000 premature deaths, 1 million respiratory problems, 400,000 asthma attacks, and thousands of cases of aggravated asthma, especially in children.

EU: Strengthening controls on diesel vehicle emissions

European countries are continuing to strengthen controls on diesel vehicle emissions. In particular, European controls on particulate matter (PM) from heavy-duty trucks, the greatest polluters, are stricter than Japanese controls both at present and in future as follows (unit: g/kWh):

Japan:	0.25 (1998),	0.18 (2003),
		a r o u n d
		0.09(2007)
Europe:	0.15 (1998),	0.10 (2000),
		0.02 (2005)

Introduction of Diesel Particulate Filter (DPF) (in Germany)

In August this year, the German Environment Ministry announced that not only heavy-duty trucks but also light-duty trucks and passenger vehicles should adopt devices that eliminate particulate substances from emission gases to reduce the carcinogenic risk of emissions from diesel vehicles.

Improving the quality of light oil (in North Europe, UK, and Germany)

Light oils as fuel for diesel vehicles contain sulfuric compounds that disturb the normal functioning of diesel particulate filters. European countries are therefore promoting programs to reduce sulfur in light oils. In Europe, the regulated density of sulfur is now 500 ppm but will be lowered to 50 ppm in 2005.

The Cases in Europe

Diesel vehicle numbers are increasing on average in Europe but the policies for diesel

passenger vehicles differ between nations. Among the total vehicle sales in 1998, diesel vehicles accounted for over 50% in Austria and Belgium, over 40% in France and Spain, but over 10% in the UK and Germany, and below 10% in Denmark, Switzerland, and Greece. Regarding taxation, Germany, Denmark and Sweden impose higher taxes on diesel vehicles than on gasoline vehicles.

Misunderstanding 2: Diesel vehicles used to be harmful for the environment, but emissions from the latest diesel vehicles are clean and not very different from gasoline vehicle emissions.

Fact: NOx controls even on the latest diesel vehicles are not as strict as those on gasoline vehicles 20 years ago in Japan.

There is no doubt that diesel vehicle emission controls are stricter than before, both on passenger and freight vehicles, and that diesel vehicles have been improved accordingly. However, there is still a huge difference from gasoline vehicles.

The emission gas control value on diesel vehicles is still 1.6 times less strict than that on gasoline vehicles set 20 years ago, and the difference between the vehicles will become 3.5 times if the new control values are applied from 2002.

The control values depend on vehicle weight. If the next-term control values for gasoline and diesel vehicles are compared, the difference will be 3.5 times in the light vehicle class, 3.8 times in the middle vehicle class, and 2.4 times in the heavy vehicle class.

USA: Same Regulation Standard for Diesel and Gasoline Vehicles

In May this year, President Clinton of the United States proposed a new emission

control to be applied from 2004. In this proposal, diesel and gasoline vehicles of gross weights up to 3.86 tons, such as passenger vehicles and light-duty trucks, will be controlled by the same regulation standard.

This revolutionary control can be traced back to the new environmental standard on particulate matter of 2.5 or smaller determined in July 1997. The conventional environmental standards control particulate matter of 10m or smaller. Recent studies, however, have made it clear that particulate matter of 2.5m or smaller contained mainly in diesel vehicle emissions is even more harmful to health.

Misunderstanding 3: Substituting diesel vehicles with gasoline vehicles will cause fuel prices and other costs to rise, causing economic problems.

If small freight vehicles were replaced where feasible with gasoline vehicles, the courier service charge per package would increase by 4 yen from 740 to 744 yen.

(If all freight vehicles including heavy-duty trucks that are currently not replaceable were replaced with gasoline vehicles, the courier service charge would be 777 yen.)

These trial calculations were made to discuss the economic impact of the proposal for promoting substitution with gasoline vehicles. The transportation industry was selected because it is the most vulnerable to any increase in fuel cost.

Implementing Five Proposals in the "Say No! to Diesel Vehicles" Campaign

Since the "Say No! to Diesel Vehicles" Campaign started at the end of August, many views have been received not only from those in Tokyo but from around the nation; in view of

these opinions, it is essential to implement the following five proposals to protect the health of residents in Tokyo:

Proposal 1: Do not drive, buy, or sell diesel passenger vehicles in Tokyo

Diesel vehicles that do not satisfy the same emission gas controls as gasoline vehicles are not suitable for use in Tokyo.

Proposal 2: Obliging the substitution of replaceable business diesel vehicles with gasoline vehicles

Gasoline and LPG freight vehicles can be used for loads of up to three tons. Recently, the Co-op is actively adopting LPG freight vehicles, thus leading the substitution effort. Of the 390,000 freight vehicles in Tokyo, 180,000 vehicles are for loads below three tons, so a huge number of diesel freight vehicles can be substituted.

Proposal 3: Developing diesel particulate filters (DPF) quickly and requiring them to be mounted on diesel vehicles

For heavy-duty trucks, liquefied natural gas (LNG) and other substitute vehicles are available in the United States but not yet in Japan.

A viable measure for controlling heavy-duty diesel trucks is to mount a DPF. Even in Europe, DPFs will have to be mounted to satisfy the Euro 4 control that is to be enacted in 2005.

Proposal 4: Correcting the tax incentive system that imposes a smaller tax on light oil than on gasoline

The Tokyo Metropolitan Government has requested the Environmental Protection Agency and the Ministry of Home Affairs to review the tax incentive system that favors

light oil.

Proposal 5: More rapid development of vehicles that satisfy the new long-term control on diesel vehicle emissions (planned in 2007) to enable the control to be enacted early

Even if the new strict control is applied from 2007, it will take nearly 10 more years until diesel vehicles that meet the control become widely available. Tokyo cannot wait that long for air pollution to improve!

50. India and the UK Agree To Work On Sustainable Transport

India and Britain have signed an agreement under which the two countries will cooperate to provide India with sustainable transport as well as a cleaner environment.

The package will include a five-point program on transport development including a research project by the Society of Indian Automobile Manufacturers on cutting carbon-dioxide emissions from two-wheelers in New Delhi. The other aspects of the package include a study of the potential effects of climate change in India and identifying a sustainable transport policy.

MIDDLE EAST

51. Egypt Battles Serious Smog Alert

An Egyptian government working group chaired by new Prime Minister Atef Obeid met to debate the problem of the dense, acrid smog which has been choking Cairo for the past two weeks.

Smoke has come from various sources, mainly from burning agricultural waste and the incineration of industrial waste, the group said. Stagnant atmospheric conditions have exacerbated the problem, it added.

Egypt's environment authority will set up an inter-ministerial working group on the subject and draw up a list of factories causing pollution in residential areas. Nadia Makram Obeid, state minister for environmental affairs, ordered the closure of 25 factories in Cairo which burn tires for fuel.

Vehicle emissions, smouldering rubbish and industrial smog make Cairo one of the world's most polluted cities.

52. Tehran Air Pollution Reaches Alarming Levels

Tehran authorities have told children and the elderly to avoid going outside unless necessary because air pollution in the Iranian capital has reached alarming levels, according to state radio.

The Tehran Environmental Protection Department urged children and heart and asthma patients to stay indoors as a thick cloud of smog descended on one of the most polluted cities in the world.

The rise in pollution was attributed partly to a significant increase in the volume of traffic in the city of 10 million people. Last year the government imposed traffic restrictions when several people in Tehran died from the effects of severe pollution, restricting car circulation on the basis of number plates.

Iran decided to close all kindergartens and primary schools in Tehran in early December because of heavy smog, state television reported. It said authorities also imposed restrictions on private cars in the center of the capital city of 10 million people and said 500 extra buses would be put in operation. Vehicles are the main source of air pollution in Tehran.

GENERAL

53. Tough Emission Laws Cut Platinum Catalyst Sales

The use of platinum in catalytic converters is forecast to fall for the third straight year in 1999, as stronger anti-pollution laws push the world's auto makers increasingly toward palladium, precious metals refiners Johnson Matthey has announced.

In its Platinum 1999 Interim Review, Johnson Matthey said substitution to more-efficient palladium will reduce platinum sales to catalyst makers to 1.75 million ounces in 1999 from 1.82 million in 1998 and 1.83 million in 1997.

"Demand for platinum in autocatalysts is forecast to decline by four percent, mostly as a result of a switch to palladium in North America," Ellen Zadoff, North American market research manager for Johnson Matthey, said at a New York presentation of the survey.

"Although European car makers who make gasoline cars are also switching to palladium, sales of diesel vehicles there are very strong and they use platinum catalysts. That is supporting the market for platinum in Europe," Zadoff said.

Emissions laws in the United States, Europe and Japan, which aims much of its production at the giant U.S. market, have grown increasingly stringent. This has boosted demand for palladium by a factor of 15 this decade.

Palladium purchases by the auto industry are seen up 11 percent at 4.89 million ounces, but off from the 30 percent rate seen over the past seven years.

Auto demand for palladium was 4.39 million ounces in 1998 and 3.2 million ounces in 1997, swelling in response to legislation

forcing tighter controls on hydrocarbon emissions. The largest increase has been in North America, where demand is expected to grow by 340,000 ounces to 2.81 million ounces this year, as an increasing proportion of U.S. cars meet National Low Emission Vehicle standards.

In Europe, palladium autocatalyst demand is predicted to rise 140,000 ounces to 1.51 million ounces in 1999. In Japan, auto related offtake will be 20,000 ounces higher at 350,000 ounces, the firm said.

The amount of platinum group metals recycled from autocatalyst scrap is expected to rise modestly. Recovered platinum is expected to be up 25,000 ounces at 430,000 ounces in 1999 and palladium is seen up slightly at 200,000 ounces.

"The rapid growth in the use of palladium in autocatalysts did not begin until 1995. Therefore, the recovery of this metal from catalytic converters removed from scrapped cars will not accelerate for another three-to-four years," the study said.

Johnson Matthey said automakers have been increasingly stockpiling palladium, which suffers from extreme price volatility and from erratic shipments from Russia, which mines 65 percent of the world's supply.

Palladium supply from Russia is expected to fall 800,000 ounces in 1999 to 5.0 million ounces. In platinum, shipments from Russia, the number-two producer after South Africa, are expected to fall to 800,000 ounces from 1.3 million in 1998.

Movements of platinum group metals out of Russia have been stymied by a five percent precious metals export tax imposed earlier this year and by a Russian law passed last December containing a clause that inadvertently prevented the country from

shipping platinum, though not palladium.

Demand for platinum is still seen exceeding supply by more than 10 percent as reduced auto-related buying is offset by surging Chinese jewelry demand and overall strong industrial use.

54. Gulf Stream Shifts Course But No New Ice Age Seen

The Gulf Stream ocean current has changed course in the North Atlantic, but this shift did not necessarily herald a new Ice Age, a Danish oceanographer was quoted as saying.

Stronger westerly winds over the North Atlantic in recent years provided the main factor in an eastward shift in the flow of the current, Erik Buch of the Danish meteorological institute, told *Ingenioeren*, a Danish specialist weekly for the engineering sector.

The change in the course of the current, which now runs closer to Norway, had not altered the volume of warm water carried into the North Atlantic by the Gulf Stream.

He said there were no signs that the climate in northern Europe was becoming colder because of a weaker Gulf Stream. "There is no indication that a new Ice Age is at hand," he added in the interview.

A full circle of the global conveyor belt of currents, of which the Gulf Stream is a part, is estimated by scientists to have a duration of between 500 and 1,000 years.

A phenomenon described by scientists as "the cold heart of the oceans", a huge underwater pump pulling some 30,000 cubic km of cold water to the bottom of the Greenland Sea every year and thus maintaining the Gulf Stream's momentum, stopped in the early 1990s.

Some scientists say this stoppage might weaken the Gulf Stream, causing a new Ice Age in Europe as the flow of warm water into the North Atlantic ceases.

But new research showed that two similar pumps, one in the Arctic Ocean and another in the Labrador Sea, had replaced the now defunct Greenland pump, and the total volume of cold water pulled down to the bottom of the ocean was unchanged, Buch said.

He recently returned from an expedition to the North Atlantic made by a Danish ocean research ship.

The Greenland pump had apparently stopped because of the eastward shift in the course of the Gulf Stream.

Westerly winds over the North Atlantic had strengthened due to bigger differences between low-pressure weather fronts around Iceland and high-pressure areas near the Azores west of Portugal, Buch was quoted as saying.

"But why the difference between the low-and high-pressure fronts has increased is not yet fully understood," he added.

55. Antarctic Ozone Hole Smaller This Year

The ozone hole over Antarctica - the region where Earth-shielding ozone typically gets depleted - is smaller this year than last, NASA recently reported.

"This Antarctic year's ozone depletion area, or ozone hole, is very large, but slightly smaller than that of 1998," said Richard McPeters, one of the scientists who used data from the Total Ozone Mapping Spectrometer aboard NASA's Earth Probe satellite to measure the hole. This year's southern ozone hole covered 9.8 million square miles (25.38 million sq km)

on September 15, according to preliminary satellite data.

The largest hole in the ozone over Antarctica was 10.5 million square miles (27.19 million sq km). It was recorded on September 19, 1998.

Ozone shields life on Earth from the harmful effects of the sun's ultraviolet (UV) radiation. Antarctic ozone losses are caused by chlorine and bromine compounds released by chlorofluorocarbons (CFCs) and halons.

56. Experts Recommend Better Approach to Global Warming

Global warming could be tackled more effectively and more cheaply than at present by controlling emissions of other gases as well as carbon dioxide, American researchers said.

The Kyoto Protocol, the 1997 climate change agreement signed by 84 countries, aims to cut carbon emissions to just over five percent below their 1990 level by 2008-2012.

But a panel of experts from the Massachusetts Institute of Technology (MIT) and the Marine Biological Laboratory at Woods Hole, who conducted the first comprehensive assessment of the effects of the protocol, say the emphasis on CO2 emissions may be increasing the cost of implementing the agreement.

"The main finding (of the assessment) is that including gases other than CO2 emissions from fossil fuels could greatly reduce costs of meeting the protocol," said MIT's Dr John Reilly, the lead author of the report.

"The Kyoto protocol leaves in these other gases but it is up to countries to design the

policies that will bring them under control," he added.

The panel of experts, among them an economist, an ecologist, a climatologist and an atmospheric chemist, believe a multi-gas approach including other gases and forest sinks - repositories of CO2 absorbed from the atmosphere - could reduce the cost of meeting the Kyoto agreement by over 60 percent.

"Many analyses of the Kyoto agreement have been flawed because they haven't looked at these other gases," Reilly said in a telephone interview.

"This is the first paper that has looked at the Kyoto agreement as it was essentially written. Most analyses have only looked at CO2 emissions reduction. The Kyoto agreement includes these other gases, so we examined that."

Their study, published in the science journal *Nature*, also highlights what they say are flaws in the way greenhouse gases are rated, known as their global warming potential (GWP), under the Kyoto Protocol.

The GWP is an index of the different gases and the amount of warming they would cause over about 100 years in the atmosphere.

In their analysis, Reilly and his colleagues found the way the GWP is calculated does not give an accurate rating.

"People really need to re-explore the global warming potential. It is not quite right the way it is and that needs to be investigated more clearly," he added.