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CAR LINES

Issue 99-3 May 1999

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EUROPE

1. Peugeot Announces Decision to Introduce Mass Production Diesel PM Filters

French car maker PSA Peugeot Citroen has unveiled a diesel particulate filter which it said virtually eliminates emissions of these noxious materials, tackling a big impediment to diesel motors.

Chairman Jean-Martin Folz said the patented filter system cuts down particulate to the level emitted by conventional (gasoline fueled) engines, or "almost zero", complying with European norms set for the year 2005. Diesel engines normally emit 20 times more particulate - tiny particles which lodge deep in the lungs which the World Health Organization classifies as probable human carcinogens - than engines running on gasoline.

The system will be fitted onto a 2.2-liter engine which Peugeot is scheduled to start producing early next year. At first it will be available only on a relatively expensive model succeeding the Peugeot 605, its largest sedan, but Peugeot hopes to equip the rest of its diesel range.

Folz said the group invested 400 million francs ($65.60 million) to produce the filter system after cracking a problem which has eluded other car companies - how to burn up the collected particulate to regenerate the filter. The system, which only works on the common-rail type of direct injection diesel motor, includes a chemical additive which lowers the combustion temperature. The filter must be cleaned and the additive replaced every 80,000 km (50,000 miles).

2. Final Decision on EU Requirements For Heavy Duty Vehicles Delayed Until Fall

The Common Position of the Council of Ministers did not get formally submitted to the European Parliament in time for consideration at its April plenary session. Therefore, final action will be delayed until the new Parliament meets this Fall.

3. EU Clears German Ecological Tax Scheme

The European Commission has approved the German government's ecological tax reform, saying it does not break European Union rules on state aid. The Commission had questioned plans to limit the tax hikes for certain energy intensive industries, including agriculture and the railways, but has now decided that the measures are in line with the EU's environmental goals.

"The Commission has decided not to raise any objections...since it sees them as being in line with the Community guidelines on state aid for environmental protection, its past practice in other member states and the environmental policy of the Community," it said in a statement. The scheme will initially be approved for three years. The German government will then reapply for the Commission's approval if it has not completed the second stage of its tax reform by then, the Commission, the EU's executive, said.

Germany increased taxes on petrol, electricity, heating fuel and other energy products on April 1 to improve environmental protection and compensate for a reduction in salary-linked contributions, to fight unemployment. While the changes are broadly in line with the Commission's own thinking on tax reform, acting EU Competition Commissioner Karel van Miert earlier raised concerns that exemptions promised to energy-intensive industries and farmers would give them an

unfair advantage over European rivals and other German firms.

4. ECMT Summarizes Transport Sector Trends 1970-1997

The European Council of the Ministers for Transport (ECMT) has issued a new report which presents an analysis of the transport situation both in Western Europe and in Central and Eastern European countries (CEECs), as well as the Baltic States. For the first time it includes information on five members of the Commonwealth of Independent States (CIS).

The main trends described in this publications are the following:

- In Western Europe, the rate of the economic growth which was primarily driven by investment and exports, increased in 1997. Average growth in GDP in Western European countries in real terms amounted to around 2.7 per cent, markedly higher than, the previous year. The extension and acceleration of the economic recovery which was particularly significant in the industrial sector, has an impact on freight transport markets, in which output in tonne-kilometers rose over 4.6 per cent over the year, compared with growth of less than 1.5 per cent in 1996. All inland modes without exception benefitted from this upswing in the market, although the highest growth rates were registered in the rail sector (+7.9 %) and above all the pipeline sector (+18.3 %) as a result of the partial resumption of the exports of crude oil from Iraq. As regards road and inland waterways transport, they reported a growth of only around 3 per cent. Rising at an average rate of almost 2 per cent, passenger transport again progressed in 1997. This growth rate is higher than that in the previous year but remains well below that observed over the period 1986 to 1992. The overall increase in passenger transport reported in 1997 was divided almost equally between the rail and road sectors with passenger traffic levels by both modes up by around 2 per cent. One of the most noteworthy features to emerge from a review of the passenger transport market is without doubt the sharp increase in activity in the bus and coach sectors following several years of stagnation.

- On the whole, 1997 was a year of strong economic growth in Central and Eastern Europe as well as in the Baltic States but it must be acknowledged that there is a steadily widening gap in development and economic reform between the countries of Central Europe and the Baltic region, on the one hand, and Southern Europe (Albania, Bulgaria, Romania) on the other, the latter ones being confronted in 1997 with a severe economic and financial crisis. Confirming the transport sector's sensitivity to economic cycles, freight transport in the CEECs and the Baltic States showed a growth of 4.6 per cent in 1997, a much higher increase than was recorded in the previous year. Not all modes of transport benefitted equally from this general increase in freight flows. While the volume of road (+12.1 %) and inland waterways (+5.9 %) freight, in tonne-kilometers, rose significantly, the railways again experienced a decline in their freight business (-0.5 %). As regards passenger transport, railway traffic fell by a further 5.1 per cent in 1997, a

total decline of over 52 per cent from the record levels of 1989. Bus and coach transport in passenger-kilometers remained virtually unchanged, up by only 0.2 per cent, and the fact remains that this traffic is still almost 50 per cent down on 1988 figures.

- In the CIS countries, GDP was up by over 1 per cent on average in 1997, thus showing positive growth for the first time since 1989. This improved economic situation made it possible to limit the fall in freight traffic levels to 1.1 per cent, in tonne-kilometers. While rail freight transport, which had declined sharply in previous years, saw its situation stabilize somewhat in 1997, although traffic levels were still down by over 1.3 per cent, road transport increased slightly (+0.7 %). In spite of these results, the available statistics show a fall of 63 per cent in rail freight traffic and of 56 per cent in road freight traffic between 1990 and 1997. In the field of passenger transport, the railways which since 1994 have faced a very rapid decline in passenger traffic, again reported a decrease of nearly 8.1 per cent in 1997. Bus and coach transport in passenger-kilometers was again down by over 7 per cent in 1997, bringing the total decline in traffic recorded by public passenger transport by road since 1990 to almost 50 per cent.

- The data supplied by Western European countries since 1994 paint a somewhat contrasting picture of road safety, depending upon the type of statistical indicator used. 1997 was no exception in this respect and the results reported have once again proved disappointing. Although the number of accidents was much higher than in 1996 (+5.2 %) and resulted in a higher number of people injured, there were fewer deaths but the percentage reduction (-0.4 %) in the number of fatalities is the lowest reported since 1991.

- In Central and Eastern Europe and the Baltic States, after a few years in which it seemed that the situation had stabilized or improved, road safety dramatically deteriorated in 1997. All the indicators were in the red with an increase of 9.1 per cent in the total number of road accidents, 7.4 per cent in the number of casualties and 6.3 per cent in fatalities. In contrast to the CEECs, the data provided by the CIS countries show a steady improvement in road safety since 1991 and this trend was confirmed in 1997. However, this outcome is evidently the result of the economic situation in these countries and of the as yet very limited growth in car traffic because of the low level of car ownership.

5. EU Parliament Pushes Tougher Environment Norms

European governments should be forced to carry out mandatory inspections to ensure environmental laws are being obeyed, a European Parliament committee was told. Caroline Jackson, a British member of the European Parliament, called for proposed guidelines on national environment inspectorates to be toughened into binding legislation. The parliament's environment committee is expected to vote on the plans soon.

"We currently have 80 cases before the European Court of Justice against 11 EU

states for failing to implement environmental legislation," Jackson said. "People say some countries would find it very difficult to set up compulsory inspection procedures, but that's exactly why we need a binding directive," she added.

EU Environment Commissioner Ritt Bjerregaard proposed guidelines for monitoring the application of environmental rules within the 15 EU countries, fearing compulsory standards would be too expensive for some of the bloc's poorer countries.

"One of my major criticisms is that the Commission is more interested in coming up with new proposals rather than making sure that existing rules are being put into practice," Jackson said.

The need for minimum standards will become more crucial when the EU takes in new countries from central and eastern Europe early next century, she said. The applicant countries face great problems bringing their environmental standards up to EU levels.

NORTH AMERICA

6. Tier 2, Low Sulfur Gasoline Proposals Released

On Saturday, May 1, President Clinton announced that the EPA proposals regarding Tier 2 emissions standards for light duty vehicles and low sulfur gasoline were being released for public comment.

a. Tier 2 Proposal

The program EPA is proposing would ultimately require each manufacturer's average NOx emissions over all of its Tier 2 vehicles each model year to meet a NOx standard of 0.07 g/mi. Manufacturers would have the flexibility to certify Tier 2 vehicles to different sets of exhaust standards that EPA refers to as "bins," but would have to choose the bins so that their corporate sales weighted average NOx level for their Tier 2 vehicles was no more than the 0.07 g/mi.

The program takes the corporate averaging concept and other provisions from the California Low Emissions Vehicle (LEV) program and the national NLEV program but changes the focus from NMOG to NOx. The emission standard "bins" used for this average calculation are different in several respects from those of the California LEV II program, yet EPA has designed them to allow harmonization of federal and California vehicle technology. As discussed below, the Tier 2 corporate average NOx level to be met through these requirements ultimately applies to all of a manufacturer's LDVs and LDTs (subject to two different phase-in schedules) regardless of what fuel is used.

The light duty category of motor vehicles includes all vehicles and trucks under 8500 pounds gross vehicle weight rating, or GVWR (i.e., vehicle weight plus rated cargo capacity). Table A shows the various light duty categories. In the discussion below, EPA makes frequent reference to two separate groups of light vehicles: (1) LDV/LLDTs, which include all LDVs and all LDT1s and LDT2s; and (2) HLDTs, which include LDT3s and LDT4s.

Table A
Light Duty Vehicles and Trucks; Category Characteristics

	Characteristics
LDV	A passenger car or passenger car derivative seating 12 passengers or less
Light LDT (LLDT)	Any LDT rated at up through 6,000 lbs GVWR. Includes LDT1 and LDT2
Heavy LDT (HLDT)	Any LDT rated at greater than 6,000 lbs GVWR, but not more than 8,500 lbs GVWR. Includes LDT3 and LDT4

The Tier 2 program would take effect in 2004, with full phase in occurring by 2007 for LDV/LLDTs and 2009 for HLDTs. During the phase-in years of 2004-2008, vehicles not certified to Tier 2 requirements would meet interim requirements that would also employ a bins system, but with less stringent corporate average NOx standards.

i. Tier 2 Emission Standard "Bins"

EPA is proposing seven emission standard bins, each one a set of standards to which manufacturers could certify their vehicles. (Tables B and C. below show all the standards associated with each bin.) Several bins have the same values as the California LEV II program. Further, EPA added three bins that are not a part of the California program to increase the flexibility of the program for manufacturers. EPA believes these extra bins would help provide incentives for manufacturers to produce vehicles with emissions below 0.07 g/mi NOx.

Table B
Tier 2 Light-Duty Full Useful Life (120,000 mile) Exhaust Emission Standards (grams per mile)

Bin Number	NOx	NMOG	CO	HCHO	PM
7	0.2	0.125	4.2	0.018	0.02
6	0.15	0.09	4.2	0.018	0.02
5	0.07	0.09	4.2	0.018	0.01
4	0.07	0.055	2.1	0.011	0.01
3	0.04	0.07	2.1	0.011	0.01
2	0.02	0.01	2.1	0.004	0.01
1	0	0	0	0	0

Table C
Light-Duty Intermediate Useful Life (50,000 mile) Exhaust Emission Standards (grams per mile)

Bin Number	NOx	NMOG	CO	HCHO	PM
7	0.14	0.1	3.4	0.015	----
6	0.11	0.075	3.4	0.015	----
5	0.05	0.075	3.4	0.015	----
4	0.05	0.04	1.7	0.008	----

Under a "bins" approach, a manufacturer may select a set of emission standards (a bin) to comply with, and a test group must meet all standards within that bin.

In addition to the Tier 2 standards described above, EPA is also proposing interim standards derived from the LDV/LDT1 NLEV standards to cover all non-Tier 2 LDVs and LLDTs during the Tier 2 phase-in. EPA is proposing separate interim standards for HLDTs.

The focus on NOx allows NMOG emissions to "float" in that the fleet NMOG emission rate depends on the mix of bins used to meet the NOx standard. However, one can see by examining the bins EPA is proposing, that any combination of vehicles meeting the 0.07 g/mi average NOx standard would have average NMOG levels at or below 0.09 g/mi. In addition, there will be overall improvements in NMOG since Tier 2 incorporates HLDTs, which are not covered by the NLEV program.

ii. Schedules for Implementation

EPA concludes that the Tier 2 standards pose greater technological challenges for larger light duty trucks than for LDVs and smaller trucks. Therefore, it believes that additional lead time is appropriate for HLDTs. HLDTs have historically been subject to the least stringent vehicle-based standards. Also, HLDTs were not subject to the voluntary emission reductions implemented for LDVs, LDT1s and LDT2s in the NLEV program. Consequently EPA has designed separate phase-in programs for the two groups. It would provide HLDTs with extra time before they would need to begin phase-in to the Tier 2 standards and also provide two additional years for them to fully comply. Figure I provides a graphical representation of how the phase-in of the Tier 2 program would work for all vehicles. This figure shows several aspects of the proposed program:

- phase-in/phase-out requirements of the interim programs;
- phase-in requirements of new evaporative standards;
- years that could be included in alternative phase-in schedules;
- years in which manufacturers could bank NOx credits through "early banking"; and
- "boundaries" on averaging sets in the Tier 2 and interim programs.

Figure I

TIER 2 AND INTERIM NON-TIER 2 PHASE-IN AND EXHAUST AVERAGING SETS
(Bold lines around shaded areas indicate averaging sets)

	2001	2002	2003	2004	2005	2006	2007	2008	2009 & later	NOx STD. (g/mi)
LDV/LLDT (INTERIM)	NLEV	NLEV	NLEV	75% max.	50% max.	25% max.				0.30 avg
LDV/LLDT (TIER 2 +evap)	*early banking* [b]	[b]	[b]	25%	50%	75%	100%	100%	100%	0.07 avg
HLDT (TIER 2 +evap)	[b]	[b]	[b]	*early banking* [b]	[b]	[b]	[b]	50%	100%	0.07 avg
HLDT (INTERIM)	TIER 1 [b]	TIER 1 [b]	TIER 1 [b]	25%	50%	75%	100%	50% max.		0.20[a] avg

[a] 0.60 NOx cap applies to balance of vehicles during the 2004-2006 phase-in years
[b] Alternative phase-in provisions permit manufacturers to deviate from the 25/50/75% 2004-2006 and 50% 2008 phase-in requirements and provide credit for phasing in some vehicles during one or more of these model years.

iii. Implementation Schedule for LDVs and LLDTs.

EPA is proposing that the Tier 2 standards take effect beginning with the 2004 model year for light duty vehicles and trucks at or below 6000 pounds GVWR (LDV/LLDTs). EPA is proposing that manufacturers would phase their vehicles into the Tier 2 program beginning with 25 percent of LDV/LLDT sales that year, 50 percent in 2005, 75 percent in 2006, and 100 percent in 2007. Manufacturers would be free to choose which vehicles were phased-in each year. However, in each year during (and after) the phase-in, the manufacturer's average NOx for its Tier 2 vehicles would have to meet the 0.07 g/mi corporate average standard. This phase-in schedule would provide between five and eight years of lead time for the manufacturers to bring all of their LDV/LLDT production into compliance. These vehicles constitute nearly 90 percent of the light duty fleet.

iv. Implementation Schedule for HLDTs.

To provide greater lead time for HLDTs EPA is proposing that the Tier 2 phase-in schedule would start later and end later than that for LDVs and LLDTs. In its proposal 50 percent of each manufacturer's HLDTs would be required to meet Tier 2 standards in 2008, and 100 percent would have to meet Tier 2 standards in 2009. As with the LDV/LLDTs, the Tier 2 HLDTs would have to meet a corporate average NOx standard of 0.07 g/mi. This delayed phase-in schedule would provide manufacturers with nine years of lead time before they would need to bring any HLDTs into compliance with Tier 2 standards.

v. LDVs and LDTs Not Covered by Tier 2

The two groups of vehicles (LDV/LLDTs and HLDTs) will be approaching the Tier 2 standards from quite different emission "backgrounds." LDV/LLDTs will be at NLEV levels, which require NOx emissions of either 0.3 or 0.5g/mi on average, while HLDTs will be at Tier 1 levels facing NOx standards of either 0.98 or 1.53 g/mi, depending on truck size. These Tier 1 NOx levels for HLDTs are very high relative to its 0.07 g/mi Tier 2 NOx average. To address the disparity in emission "backgrounds" while gaining air quality benefits from vehicles during the phase-in period, EPA is proposing separate sets of interim standards for the two vehicle groups during the phase-in period. The provisions described below would apply in 2004 for all LDVs and LDTs not certified to Tier 2 standards.

vi. Interim Standards for LDV/LLDTs.

Beginning with the 2004 model year, all new LDVs and LLDTs not incorporated under the Tier 2 phase-in would be subject to an interim corporate average NOx standard of 0.30 g/mi. This is the nominal LEV NOx emission standard for LDVs and LDT1s under the NLEV program. This interim program would hold LDVs and LLDTs not covered by the Tier 2 standards during the phase-in to NLEV levels and bring about NOx emission reductions from LDT2s . By implementing these interim standards for LDVs and LLDTs EPA hopes to ensure that the accomplishments of the NLEV programs are continued. Because the Tier 2 standards are phased-in beginning in the 2004 model year, the interim standards for LDVs and LLDTs apply to fewer vehicles each year, i.e., they are "phase-out" standards.

vii. Interim Standards for HLDTs.

EPA's interim standards for HLDTs would begin in 2004. The Interim Program for HLDTs would set a corporate average NOx standard of 0.20 g/mi that would be phased in between 2004 and 2007. The interim HLDT standards, like those for LDV/LLDTs would be built around a set of bins (See Tables D and E).

Table D
Full Useful Life (120,000 mile) Interim Exhaust Emission Standards for HLDTs
(grams per mile)

Bin Number	NOx	NMOG	CO	HCHO	PM
5	0.6	0.23	4.2	0.018	0.06
4	0.3	0.18	4.2	0.018	0.06
3	0.2	0.156	4.2	0.018	0.02
2	0.07	0.09	4.2	0.018	0.01
1	0	0	0	0	0

Table E
Intermediate Useful Life (50,000 mile) Interim Exhaust Emission Standards for HLDTs
(grams per mile)

Bin Number	NOx	NMOG	CO	HCHO	PM
5	0.4	0.16	3.4	0.015	-----
4	0.2	0.14	3.4	0.015	-----
3	0.14	0.125	3.4	0.015	-----
2	0.05	0.075	3.4	0.015	-----

The phase-in would be 25 percent in the 2004 model year, 50 percent in 2005, 75 percent in 2006, and 100 percent in 2007. The program would remain in effect through 2008 to cover those HLDTs not yet phased into the Tier 2 standards (a maximum of 50%). Vehicles not subject to the interim corporate average NOx standard during the 2004-2006 phase-in years would be subject to the least stringent bin (Bin 5) so their NOx emissions would be effectively capped at 0.60 g/mi. These vehicles would be excluded from the calculation to determine compliance with the interim 0.20 g/mi average NOx standard.

This proposed approach would allow more time for manufacturers to bring the more difficult HLDTs to Tier 2 levels while achieving real reductions from those HLDTs that may present less of a challenge.

viii. Interim Programs Would Provide Reductions over Previous Standards

As was the case with the primary Tier 2 bin structure, the bin structure for the interim programs would focus on NOx and yet should provide further reductions in NMOG beyond the NLEV program. This is because the interim programs would reduce emissions from LDT2s and HLDTs compared to their previous standards. Without the interim standards, HLDTs could be certified as high as 0.46 g/mi or 0.56 g/mi, the Tier 1 NMHC levels. With the interim standards, however, exhaust NMOG should average approximately 0.09 g/mi for all non-Tier 2 LDV/LLDTs. and 0.25 g/mi or less for HLDTs.

ix. Alternative Approach for Interim Standards.

An alternative flexible approach for reducing the emissions from vehicles and trucks prior to their phase-in to Tier 2 standards would be to employ a declining NOx average, or perhaps separate declining NOx averages for LDV/LLDTs and HLDTs. In this approach, manufacturers would certify vehicles to their choice of bins, but would have to meet an average NOx standard (or standards) that became lower each year. Manufacturers could bank NOx credits in early years of such a program for use in later years when the standard tightened.

x. Generating, Banking, and Trading NOx Credits

As described above, EPA is proposing that manufacturers average the NOx emissions of

their Tier 2 vehicles and comply with a corporate average NOx standard. In addition, EPA is proposing that when a manufacturer's average NOx emissions fall below the corporate average NOx standard, it could generate NOx credits that it could save for later use (banking) or sell to another manufacturer (trading). NOx credits would be available under the Tier 2 standards, the interim standards for LDVs and LLDTs, and the interim standards for HLDTs. These NOx credit provisions would facilitate compliance with the fleet average NOx standards and would be very similar to those currently in place for NMOG emissions under California and federal NLEV regulations.

A manufacturer with an average NOx level for its Tier 2 vehicles in a given model year below the 0.07 gram per mile corporate average standard would generate Tier 2 NOx credits that it could use in a future model year when its average NOx might exceed the 0.07 standard. Manufacturers would calculate their corporate average NOx emissions and then compute credits based on how far below 0.07 g/mi the corporate average fell.

Manufacturers would be free to retain any credits they generate for future use or to trade (sell) those credits to other manufacturers. Credits retained or purchased could be used by manufacturers with corporate average Tier 2 NOx levels above 0.07 g/mi. Manufacturers could certify LDVs and LLDTs to Tier 2 standards as early as the 2001 model year and receive NOx credits for their efforts. They could use credits generated under these "early banking" provisions after the Tier 2 phase-in begins in 2004 (2008 for HLDTs).

Banking and trading of NOx credits under the interim non-Tier 2 standards would be similar, except that a manufacturer would determine its credits based upon the 0.30 or 0.20 gram per mile corporate average NOx standard applicable to vehicles in the interim programs. There would be no provisions for early banking under the interim standards and manufacturers would not be allowed to use interim credits to address the Tier 2 NOx average standard. Interim credits from LDVs/LLDTs and interim credits from HLDTs could not be used interchangeably due to the differences in the interim corporate average NOx standards.

xi. Considerations for a 2004 Technology Review

EPA is seeking comment on whether it should conduct a technology review of the Tier 2 standards in the future. As part of the input received from stakeholders while developing this proposal, the Alliance of Automobile Manufacturers suggested that the proposal include consideration of a technology review, principally designed to assess the status of Tier 2 technology development. Some manufacturers have suggested that the approach of applying the same standard to cars and light-duty trucks presents sufficient challenge as to raise serious uncertainty about compliance for the larger vehicles, even in the 2008 time frame. In addition to the concerns expressed regarding the time frame for implementation of the more stringent standards for HLDTs in 2008, manufacturers have indicated that there are questions of feasibility for introduction of advanced technologies for improved fuel economy, such as lean burn, fuel cell, and hybrid electric technology.

The review could assess the feasibility of the standards relative to the state of technology development for HLDTs. Further, the review could consider gasoline and diesel fuel quality and its impact on the effectiveness of aftertreatment, and whether lower sulfur levels are necessary for HLDTs to meet the Tier 2

standards. EPA may also examine the feasibility of the standards for vehicles using technologies to advance fuel economy. In addition, the review could consider whether additional air quality improvements are necessary and the feasibility of additional reductions of vehicle emissions to achieve such air quality improvements. EPA believes that serious consideration of this concept is warranted and if it determines such a review to be appropriate, the best time to conduct such a review may be in the 2004 time frame, before the final Tier 2 standards go into effect for HLDTs.

EPA could conduct such a review to assess the feasibility, timing and stringency of the standards relative to the state of technology development. In doing so, EPA would determine whether or not there was a need to formally consider a change in the final Tier 2 standards. If such a change were determined to be necessary, EPA would conduct a formal Rulemaking, including conducting public hearings.

As part of the technology review, EPA would seek advice from all appropriate stakeholders and could engage a peer review process. In addition, such a process, if undertaken, could include public notice and opportunity for comment on the review, including the holding of public hearings by EPA. One way to structure the process would include the establishment of an advisory panel under the Clean Air Act Advisory Committee to provide assessment of the state of technology and the feasibility of the standards. The Committee could recommend appropriate action for the Administrator based on their findings. The Administrator would then determine if any changes were needed to adjust the Tier 2 standards for HLDTs, advanced technologies, or the fuel parameters. EPA requests comment on the need for a technology review, scope of the review and on the design of the process and its timing.

xii. Primary Phase-In Schedule

EPA is proposing to phase in the Tier 2 standards for LDVs/LLDTs over a four year period beginning in 2004 and EPA is proposing a delayed two year phase-in beginning in 2008 for HLDTs. These phase-in schedules are shown in Tables E and F. In each year, manufacturers would have to ensure that the specified fraction of their U.S. sales[1] met Tier 2 standards for evaporative emissions and exhaust emissions, including Supplemental Federal Test Procedure (SFTP) standards, as well as the corporate average Tier 2 NOx standard. Manufacturers would have to meet the Tier 2 exhaust requirements (i.e., all the standards of a particular bin plus the SFTP standards) using the same vehicles. Vehicles not covered by the Tier 2 standards during the phase-in years (2004-2008) would have to meet interim standards and the existing evaporative emission as well as the applicable SFTP standards.

Table E
Primary Phase-in Schedule for Sales of Tier 2 LDVs and LLDTs

Model Year	Required Percentage of Light-Duty Vehicles and Light Light-Duty Trucks
2004	25%

[1] For Tier 2 vehicles (and for interim vehicles), the term "U.S. sales" means, for a given model year, those sales in states other than California and any states that have adopted the California program.

2005	50%
2006	75%
2007	100%

Table F
Primary Phase-in Schedule for Sales of Tier 2 HLDTs

Model Year	Required Percentage of Heavy Light-Duty Trucks
2008	50%
2009	100%

xiii. Less Stringent In Use Standards

For the first two years, the in use standards for vehicles in bins 2,3,4 and 5 will be relaxed as shown in Table G, below.

Table G
In Use Standards For Tier 2 Vehicles

Bin	Durability (miles)	NOx	NMOG
5,4	50,000	0.07	n/a
5,4	120,000	0.10	n/a
3	120,000	0.06	n/a
2	120,000	0.03	n/a

xiv. Evaporative Standards

Evaporative standards will be reduced by 50%.

xv. Costs

EPA estimates that the costs will be about $100 for light duty vehicles and light light trucks and $200 for the heavier trucks.

b. Gasoline Sulfur Proposal

EPA is proposing to require substantial reductions in gasoline sulfur levels nationwide. Not only would these standards enable the stringent tailpipe emission standards EPA is proposing for Tier 2 vehicles and ensure that these low emission levels would be realized throughout the life of the vehicle, but they would also help to reduce emissions of pollutants that endanger public health and welfare from vehicles already on the road, including NLEV vehicles. The following sections summarize the proposed requirements for gasoline refiners and importers, special provisions for small refiners, and possible changes to construction permitting requirements that would enable refiners to install gasoline desulfurization technology in a timely manner. EPA also raises the potential need for changes to diesel fuel to enable diesel technologies to meet the proposed Tier 2 standards.

i. Standards for Refiners and Importers

EPA's proposed gasoline sulfur program balances the goal of enabling Tier 2 emission control technologies with the goal of lowering sulfur as early as the refining industry can practically achieve the required levels. To accomplish both of these goals, EPA is proposing a set of standards combined with a sulfur averaging, banking, and trading (ABT) program. This proposed overall program would achieve the desired sulfur levels, on average, beginning in 2004 - the first year Tier 2 vehicles will be sold - while proposing to allow the use of credits towards compliance with refinery average standards indefinitely (within

the limits of per-gallon caps). These requirements would apply to all gasoline sold in the U.S.,[2] based on EPA's belief that emissions must be reduced nationwide to adequately protect public health and the environment and that Tier 2 vehicles operated everywhere in the U.S. require protection from the harmful impacts of gasoline sulfur.

Table H presents the proposed standards for gasoline refiners and importers. The proposal would require all gasoline refiners and importers to produce gasoline that meets an average standard of 30 ppm sulfur at the refinery gate on an annual basis, beginning in 2004. These requirements would apply to all gasoline, reformulated as well as conventional. In 2004 and beyond this standard could be met through the use of credits generated as early as 2000 by refiners who substantially reduce sulfur levels from current (1997-1998) levels, under the provisions of the proposed sulfur ABT program. Hence, the actual average sulfur levels for gasoline in use could be somewhat higher than 30 ppm. However, to ensure that sulfur levels are being reduced significantly (for the benefit of Tier 2 vehicles and to achieve the other emissions benefits of reducing gasoline sulfur), these in-use sulfur levels would be constrained by maximum corporate pool average standards of 120 ppm in 2004 and 90 ppm in 2005. These standards would represent the maximum allowable average sulfur levels for each refiner, measured across all refineries owned and operated by that refiner, rather than at each refinery. In 2006 and beyond, there would be no corporate pool average standard. Every refinery would have to meet the 30 ppm average refinery gate standard, although refiners could use any banked/purchased credits to meet this standard. Thus, in 2006 and beyond, the majority of gasoline would average 30 ppm, although some individual refineries could average slightly more or less.

Table H
Proposed Gasoline Sulfur Standards for Refiners and Importers
(Excluding Small Refiners)

Compliance as of:	January 1, 2004	January 1, 2005	January 1, 2006+
Refinery Average, ppm	30[a]	30[a]	30[a]
Corporate Pool Average, ppm	120	90	not applicable
Per-Gallon Cap, ppm	300[b]	180	80

[a] This standard can be met through the use of credits as long as the applicable corporate pool average and per-gallon caps are not exceeded, as explained in the text.
[b] This initial per-gallon cap standard begins October 1, 2003.

To ensure that, even as average sulfur levels are reduced in 2004-2006, gasoline sulfur levels do not exceed a maximum level that EPA believes is particularly harmful to Tier 2 vehicles, EPA is also proposing "caps" on the sulfur content of every batch of gasoline produced or imported into the country. As shown in Table H, these caps decline over time, ultimately resulting in a per-gallon limit of 80 ppm in 2006 and beyond. Since Tier 2 vehicles would be sold prior to the start of

[2] Gasoline sold in California that meets California's standards would be exempt from meeting the proposed standards, due to EPA's belief that California gasoline already meets or exceeds these requirements.

calendar year 2004, the actual date when the initial sulfur cap standard would take effect at the refinery is October 1, 2003. EPA is also proposing caps on the sulfur content of gasoline sold at the retail level or otherwise distributed downstream of the refinery.

ii. How Did EPA Arrive At the 80 ppm Cap and 30 ppm Average Standards?

EPA believes a 30 ppm averaging standard is important and necessary to enable the emission reductions needed from Tier 2 vehicles. The test data EPA has reviewed show that even very low levels of sulfur have some negative impact on catalyst performance. Most of the data available to EPA were generated through testing with minimum sulfur levels near 30 ppm. EPA has used this data to conclude that sulfur levels need to be reduced, and to assess, as part of EPA's analysis, the technical feasibility of the proposed Tier 2 vehicle standards. The non-linear relationship between sulfur level and emissions impact (the lower the sulfur level, the greater the incremental increase in emissions) suggests that emission reductions would be ensured by sulfur levels at or near 30 ppm. EPA believes that requiring the 30 ppm average standard would be necessary to ensure that vehicles regularly use gasoline containing very low amounts of sulfur, regardless of where the vehicles were driven, what time of year it was, or how gasoline production varied from batch-to-batch in a given refinery.

EPA also believes that an 80 ppm cap standard would be required to provide appropriate insurance for maintaining Tier 2 standards in use and to give automakers an indication of the maximum sulfur levels for which they would need to design their vehicles. The test data EPA has reviewed show that the greatest increase in emissions comes as the sulfur level is increased from the lowest levels (i.e., 30 ppm). At higher sulfur levels (i.e., above 100 ppm), the catalyst performance is impaired to the extent that an additional increase in sulfur content has a smaller additional impact on emissions. Since the factors that influence sulfur sensitivity vary from vehicle to vehicle, different vehicles will experience different impacts from exposure to specific sulfur levels. None of the data that EPA has reviewed indicates that a vehicle can be designed to be completely insensitive to sulfur for all types of emissions. Furthermore, EPA's concern that roughly half of the sulfur impact on the catalyst would be irreversible for Tier 2 vehicles (with other vehicles being negatively affected as well) provides additional arguments for trying to keep the sulfur cap as close to the average as possible. Hence, to ensure that Tier 2 vehicles maintain the designed emission performance over the life of the vehicle, EPA believes a cap on gasoline sulfur levels would be necessary, and that 80 ppm would be the appropriate level for this cap.

Setting a cap also would enhance enforcement of sulfur standards by setting a maximum level of sulfur that could be checked at all points in the gasoline distribution process. A sulfur cap significantly lower than 80 ppm could have the unintended consequence of forcing a sulfur average lower than the 30 ppm standard, increasing the overall costs of the program. The proposed level of 80 ppm sulfur for the cap reflects EPA's balancing of several factors, including the potential air quality benefits, economic impacts, compliance flexibility, and the irreversibility of the effects of gasoline sulfur on vehicle emission controls.

EPA believes that the combination of EPA's proposed gasoline sulfur standards and the proposed Tier 2 standards would be cost-

effective. This judgement about cost-effectiveness reflects what EPA believes would be an appropriate balance between the costs to be borne by the affected industries and the emissions reductions to be gained. Even though few refiners currently produce gasoline at or near these levels, there appear to be no significant obstacles to refiners achieving this level of sulfur control by 2004 (or 2006 if they were to take advantage of the sulfur ABT program). Unless a substantially higher average sulfur standard were set or a substantially smaller fraction of gasoline were affected by EPA's regulations, refiners would have to make a significant investment in technology to desulfurize gasoline. Hence the cost to refiners would not be substantially reduced if EPA selected a less stringent average standard. Furthermore, EPA believes that a lesser reduction in gasoline sulfur levels could require EPA to reduce the stringency of the proposed Tier 2 standards. A higher average sulfur level would require less stringent standards or more vehicle hardware costs; either would reduce the effectiveness of EPA's proposed combined program.

At the same time, EPA recognizes the need to provide some flexibilities to refiners in meeting EPA's proposed standards, to ensure that the program is implemented in an orderly manner, without severe consequences in the initial months (for example, supply shortages or substantial spikes). Hence, EPA has proposed to allow less stringent caps in 2004 and 2005 (through 2007 under the small refiner provisions discussed below) to balance the needs of the technology with the regulatory burden, economic impact, and ability of the refining industry to reduce sulfur levels in this time frame. Given that Tier 2 vehicles would be phased in over several years and that the vast majority of gasoline would be capped at 80 ppm by 2006 (when 75% of new LDV, LDT1, and LDT2 sales would be required to meet the proposed Tier 2 standards), EPA believes that the potential damage to Tier 2 catalysts would be minimized. Furthermore, since the gasoline distribution system is fungible (i.e., gasoline from multiple refiners may be mixed together, and gasoline produced at one company's refinery may be sold at another company's retail station), any gasoline that approached the higher caps in 2004 and 2005 would be highly likely to be diluted by lower sulfur gasoline, further limiting the potential negative impact on Tier 2 vehicles.

EPA has also proposed to permit compliance with the 30 ppm refinery average with the use of credits indefinitely, not just in the years during which the corporate average is reduced, as long as the applicable per-gallon caps are not exceeded.

In light of EPA's technical conclusions about the need for these standards, and EPA's concerns about the irreversibility of the sulfur effect, EPA believes the 30 ppm average/80 ppm cap is the appropriate sulfur level to enable vehicles to meet the proposed Tier 2 standards and to maximize the emissions reductions to be achieved from this program in a cost-effective way.

iii. Should a Near-Zero Gasoline Sulfur Standard Be Considered?

The auto industry, represented by the Alliance of Automobile Manufacturers, have supported a gasoline sulfur control program that would require 30 ppm gasoline in 2004 with a further reduction to "near-zero" levels (less than 5 ppm) by 2007. They believe that near-zero sulfur levels would enable the emission control technology that would ultimately be necessary to meet standards similar to those EPA is proposing today. They also believe that very low sulfur gasoline would significantly increase

the emission reductions of the program as compared to a 30 ppm sulfur program.

EPA is also aware of concerns that advanced emission control and fuel efficient technologies, such as gasoline direct injection engines and automotive fuel cells, may require zero or near-zero sulfur levels to achieve Tier 2 emission levels over their full useful life (or in some cases, even to operate for a significant length of time). At the same time, EPA is aware that there may be technological solutions to these problems that may allow these technologies to operate on gasoline averaging 30 ppm sulfur. For example, it may be possible to regenerate (remove the sulfur from) the emission control technologies used by gasoline direct injection engines on an ongoing basis. Similarly, it may be possible to prevent sulfur from entering a fuel cell through the use of a sulfur "guard" made, for example, of zinc oxide, that might need to be replaced periodically.

EPA believes at this time that EPA's proposed Tier 2 standards could be met with conventional technology if gasoline averaging 30 ppm is available. Nonetheless, for the reasons put forward by the auto industry and others, EPA also believes that it may be desirable in the long term for all gasoline in the U.S. to average substantially below 30 ppm sulfur.

iv. Why Is EPA Proposing Less Stringent Standards for 2004 and 2005?

EPA is proposing to permit corporate average sulfur levels to be somewhat higher than 30 ppm, and maximum sulfur levels to be higher than 80 ppm, under the ABT program in 2004 and 2005. This proposal is meant to provide greater flexibility for refiners to meet EPA's ultimate goal of the 30 ppm standard in an orderly fashion, while limiting the negative environmental consequences. The temporary nature of the ABT program would ensure that any negative consequences for Tier 2 vehicles of these higher sulfur levels (120 ppm average in 2004, 90 ppm in 2005) would be minimal. By the time that the majority of new vehicles sales would be required to meet the Tier 2 standards (2006 and beyond), average sulfur levels in gasoline would meet the 30 ppm annual average standard.

EPA has proposed per-gallon caps of 300 ppm in 2004 and 180 ppm in 2005 at the refinery gate, with slightly higher caps imposed downstream. EPA believes that downstream caps would be necessary to ensure compliance and protect Tier 2 vehicles. At the same time, EPA believes caps at the refinery gate would be necessary to guarantee that the environmental goals of this program were met; the corporate and refinery averages alone wouldn't provide the full emissions reductions and environmental benefits EPA has estimated because, by themselves, they could allow gasoline with high sulfur levels in the system as long as the refiner offset any such high sulfur batches with very low sulfur gasoline. However, there are some arguments for eliminating the per-gallon standard at the refinery gate and simply enforcing a per-gallon cap at the retail level (or some intermediate point downstream). This approach would give refiners and blenders greater flexibility in blending occasional batches of gasoline that exceed the proposed cap standards. These refiners/blenders could sell and transport these high sulfur batches to another party who would blend down the sulfur level to make gasoline meeting the downstream caps. One shortcoming of such an approach (removing the per-gallon cap at the refinery) is that not all gasoline passes through multiple parties before ending up at the retail level; some refiners ship part or all of their production

directly from refinery to retail outlet.

v. Costs

EPA estimates that the overall cost to reduce the sulfur will be less than $0.02 per gallon or approximately $100 over the life of the typical vehicle.

7. Advance Notice on Diesel Sulfur

While not a formal proposal, EPA has requested comments on setting more stringent sulfur limits for diesel fuel. EPA did not suggest a particular limit but cited the vehicle and engine manufacturers' call for a 30 ppm cap in the short term and near zero in the longer term.

8. Court Voids EPA Air Quality Standards

A federal appeals court today set aside new air quality standards issued by the Environmental Protection Agency in 1997, handing the Clinton administration a major environmental defeat.

The three-judge panel, acting on a lawsuit by a number of industry groups, said the EPA in setting the new standards put in place a section of the 1990 Clean Air Act ``so loosely as to render them unconstitutional delegations of legislative power."

The EPA issued a statement saying it will ask the Justice Department to appeal the decision, probably first to the full circuit, and if necessary to the U.S. Supreme Court.

``If the court fails to uphold these protective standards, Congress must ensure that these protections are preserved for the American people," the agency said in a statement.

The decision, with one judge dissenting on a key element, was a major victory for a broad range of industry groups from trucking companies to electric utilities, which had fought the tougher air quality rules as too expensive and ill-conceived.

The regulations, issued in July 1997, imposed much tougher health standards for smog-causing ozone and opened the way for the first time for regulation of microscopic soot. The tighter standards overnight put hundreds of counties in violation of federal air quality standards.

At the time, Vice President Al Gore called the tougher requirements ``the most significant steps in a generation to protect the American people, especially our children, from air pollution."

The opinion was handed down by the U.S. Court of Appeals for the District of Columbia on a lawsuit filed by the American Trucking Associations and a number of other industry groups.

Judges David S. Tatel (appointed by President Clinton), Stephen F. Williams (appointed by President Reagan) and Douglas H. Ginsburg (appointed by President Reagan) wrote separate parts of the opinion, although Tatel filed a dissent on a key portion of the finding that challenged the rules on constitutional grounds.

The rule was one of the most contentious environmental issues facing the EPA.

The regulation dramatically tightened federal air quality requirements for ozone, commonly known as smog, with an aim to provide better protection for children, the elderly and populations with respiratory problems.

It also for the first time required states to

regulate microscopic particles, or soot, down to 2.5 microns, or 28 times smaller than the width of a human hair. States and cities were given until 2003 to comply with the soot standard, but the new ozone requirements went into effect immediately.

The court did not vacate the EPA's ozone and fine-particulate rule altogether, but said the standard ``cannot be enforced'' as it was issued. The judges, however, did nullify the standard for larger particulates that had been in effect previously.

The Clean Air Act requires EPA to promulgate and periodically revise national ambient air quality standards ("NAAQS") for each air pollutant identified by the agency as meeting certain statutory criteria. For each pollutant, EPA sets a "primary standard"--a concentration level "requisite to protect the public health" with an "adequate margin of safety"--and a "secondary standard"--a level "requisite to protect the public welfare."

In July 1997 EPA issued final rules revising the primary and secondary NAAQS for particulate matter ("PM") and ozone. Numerous petitions for review have been filed for each rule.

In Part I the Court found that the construction of the Clean Air Act on which EPA relied in promulgating the NAAQS at issue effects an unconstitutional delegation of legislative power. The Court remanded the cases for EPA to develop a construction of the act that satisfies this constitutional requirement.

In Part II the Court rejects the following claims: that s 109(d) of the Act allows EPA to consider costs; that EPA should have considered the environmental damage likely to result from the NAAQS' financial impact on the Abandoned Mine Reclamation Fund; that the NAAQS revisions violated the National Environmental Policy Act ("NEPA"), Unfunded Mandates Reform Act ("UMRA"), and Regulatory Flexibility Act ("RFA").

In Part III the Court decided two ozone-specific statutory issues, holding that the 1990 revisions to the Clean Air Act limit EPA's ability to enforce new ozone NAAQS and that EPA cannot ignore the possible health benefits of ozone.

Finally, in Part IV the Court resolved various challenges to the PM NAAQS. The Court agreed with petitioners that EPA's choice of PM10 as the indicator for coarse particulate matter was arbitrary and capricious; the Court rejected petitioners' claims that EPA must treat PM2.5 as a "new pollutant," that EPA must identify a biological mechanism explaining PM's harmful effects, and that the Clean Air Act requires secondary NAAQS to be set at levels that eliminate all adverse visibility effects.

The remaining issues cannot be resolved until such time as EPA may develop a constitutional construction of the act (and, if appropriate, modify the disputed NAAQS in accordance with that construction).

9. Global Carbon Emissions Projected To Ease As Economies Slow

U.S. government forecasters said global carbon emissions from energy sources would ease by the year 2010 as economic growth in areas such as Eastern Europe slowed.

In the just released report, the U.S. Energy Information Administration (EIA) said lower projections for economic growth could actually reduce the amount, as well as the cost, of carbon emission cuts specified in the Kyoto Protocol world climate-change treaty negotiated in 1997.

The Kyoto pact, which is still to be finalized, contains a framework agreement calling for industrialized nations to cut heat-trapping emissions by an average of 5.2 percent below 1990 levels in the years 2008 to 2012.
While emissions per person in China and India are expected to triple over the projection period of 1990 to 2010, the U.S. and Canadian per capita emissions levels, while being the highest over the period, were expected to flatten after the year 2000.

EIA, which is the statistical arm of the U.S. Department of Energy, said Eastern European countries and the former Soviet states in the year 2010 are likely to be even further below the 1990 carbon emissions levels projected last year.

Delays in the recovery of the Russian economy caused estimates for emissions in Eastern Europe, former Soviet zone to drop 13 percent from last year's forecast.

Under the plan, a country can buy the unused portion of another nation's emission limits to technically lower its own levels.

"As a result these countries (with lower emissions levels) will have more potential emissions credits that could be sold to other Kyoto Protocol signatories whose emissions are projected to rise substantially over 1990 levels," the EIA said in a statement on the report.

"With lower emissions expected, these countries will have at least 374 million metric tons of carbon emission credits available in 2010, compared to 196 million metric tons in last year's analysis," EIA said.

If industrialized nations that have agreed to carbon emission caps can purchase these credits, the level of trading alone would allow their carbon emission levels to rise by an average of 7 percent over 1990 levels and still meet the treaty's average emissions targets, EIA said.

Scientific evidence is mounting that the buildup of carbon gases in the atmosphere from burning fossil fuels is trapping heat, changing the global climate with potentially devastating results.

In 2010, worldwide carbon emissions are projected to be 4 percent lower than in last year's International Energy Outlook. But that still leaves emissions 39 percent above 1990 levels.

The United States signed the Kyoto treaty last November, but President Bill Clinton has not submitted the agreement to the Senate for ratification.

Republican opponents of Kyoto, as well as a number of industrial state and farm-belt Democrats, believe the U.S. economy would suffer disproportionately if targets are met causing job losses, higher energy costs and stagnated growth.

The White House, led by Vice President Al Gore, says global warming is a potential serious threat to the environment and people's health. They say that by taking action now, the world can stave off disaster, and the U.S. can take economic advantage by investing in new technologies and practices.

10. U.S. EPA Funds New Air Monitors in FY 2000

The U.S. Environmental Protection Agency fiscal 2000 budget would reimburse states the cost of installing a new $100 million PM air monitoring system, the agency has announced. The move pleased congressional Republican critics, who had charged the agency with reneging on a promise made to

the states to pay for a nationwide network of 1,500 clean air monitors which detect pollution better than current controls.

In a running feud with the agency, House Commerce Committee Chairman Thomas Bliley had demanded that EPA Administrator Carol Browner restore $13.7 million in the fiscal 2000 budget previously diverted from state and local air programs to pay for the new particulate matter, or PM monitors.

“After some shifting in its position, I am pleased that EPA will now keep its promise it made to states. It's important that states can rely on promises EPA makes,” said Bliley, a Virginia Republican.

By EPA's estimate, $13.7 million was diverted from budgets for state programs in fiscal years 1998 and 1999 to pay for initial installation of the PM monitors. The $100 million price covers the several years it will take to complete the program.

In a memo to Bliley, the agency said the new monitor network was vital to ensuring the public health.

“We are pleased to report to you that the fiscal 2000 budget request President Clinton sent to the Congress includes the funding necessary to complete the network, as well as the funding necessary for states to operate and maintain the network,” said Robert Perciasepe, EPA assistant administrator.

Last November, Bliley and a group of four other lawmakers, three Republicans and two Democrats, accused the agency of dipping into separate federal funds for state clean air programs, potentially harming public health initiatives.

More recently, the National Governors' Association and the Environmental Council of the States also sent letters to the EPA seeking a refund of the $13.7 million EPA had diverted.

EPA is installing the particulate-matter system in about 400 locations nationwide. There are three types of the new equipment, but all measure air pollution to a greater degree than current equipment, the agency has said.

EPA says the new monitors are crucial since they permit scientists to better track air pollutants, and, thus, be in a better position to track and combat air pollution.

ASIA-PACIFIC

11. Developments in China

a. New Production Vehicles

Beijing will implement more stringent exhaust standards (Euro 1) to both HDGE and HDDE with steady state mode test methods, and to agricultural transport vehicles using the free acceleration mode. The standards will be put in force by June 1 this year.

b. In-use vehicles

In early March, 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' retrofit using better technology such as: dual fuel, adding air to carburetor by electronic control plus TWC. The scope of the cars needed to be retrofitted will be the total cars registered between Jan.1,1995 and Des.31,1998. The work must be finished before the end of this year.

Further, the government of Beijing has a plan to retrofit 14000 taxies using dual fuel (LPG-gasoline). Among them, 10,000 taxies

should be finished before the middle of September, and the remainder by the end of this year. And the government also requires the taxi companies which have more than 300 taxies to build their own LPG refueling station. And some public buses will also changed to use dual fuel. The government wants to change the diesel buses in downtown (inside the second circle road) into
gasoline buses, because some national leaders consider the diesel engine to be the worst pollutant source.

12. Mitsubishi Considering Sales of GDI Technology

Mitsubishi Motors Corp. has announced that it is in talks with various companies about making its gasoline-direct-injection (GDI) clean-engine technology available to them. The Japanese newspaper Asahi Shimbun reported that Mitsubishi is considering selling its technology to General Motors Corp. and Ford Motor Co. of the U.S.

In January, Mitsubishi said it had signed an agreement with PSA Peugeot Citroen to sell its GDI engine technology to the French automaker.

Mitsubishi is the first automaker to commercialize GDI engine technology.

13. Honda Launches New Low Pollution Sports Car in Japan

Honda Motor Co has announced the launch in Japan of a new two-seater convertible sports car, the S2000, which aims to compete with roadsters from German rivals like BMW and Mercedes-Benz . The S2000 is powered by a 2,000cc in-line four cylinder 250 horsepower double-overhead-cam engine and features a six-speed manual transmission.

The S2000 is also equipped with VTEC (variable valve timing and lift electronic control) engine technology, which Honda said delivers high power with low emissions. The engine reduces emissions of carbon monoxide, hydrocarbons and nitrogen oxides to levels more than 50 percent below new Japanese emission standards set for 2000, Honda said.

The car will be priced at 3.38 million yen and Honda said it hopes to sell 500 per month in Japan. The BMW Z3 roadster starts at 3.52 million yen in Japan and the Mercedes-Benz SLK is priced at 4.9 million yen.

Honda also plans to start marketing the S2000 in the United States, Europe and Asia in the autumn, a Honda spokesman said. Honda plans to sell 6,000 of the vehicles annually in the United States, 3,000 in Europe and 1,000 in Asia and Oceania, he said.

14. India Supreme Court Tightens Rules in Delhi

The Indian Supreme Court has issued a new order in response to a report submitted by the Environmental Pollution Control Authority for National Capital region on banning diesel private vehicles.

The Supreme Court's order gives following directions :

1. All private (non-commercial) vehicles which confirm to EURO II norms may be registered in the NCR without any restriction.

2. All private (non-commercial) vehicles shall confirm to EURO I norm by 1st June, 1999. All private (non-commercial) vehicles shall confirm to EURO II norms by 1st April, 2000. Vehicles may in the meanwhile be registered in the manner indicated below :

3. With effect from 1st May, 1999, 250 diesel

driven vehicles per month and 1250 petrol driven vehicles per month may be registered on first - come - first-served basis in the NCR till 1st April, 2000 only if they confirm to EURO I norms. (This is only about one-third of the typical monthly sales of 4000 to 5000.) From 1st April, 2000 no vehicle shall be registered unless it conforms to EURO II norms.

LATIN AMERICA

15. Brazil Extends Test Program For Alcohol/diesel mix

Brazil's government has authorized a pilot project for one of its state capitals to use a pollution-busting diesel fuel containing alcohol distilled from sugar cane in its buses, a spokeswoman said.

The project would begin later this month in Curitiba, the capital of Brazil's southern state of Parana, and run for half a year, said the representative of the government's Department of Sugar and Alcohol.

A meeting of the government's Interministerial Council on Sugar and Alcohol (Cima) has approved a diesel mix using 3 percent anhydrous alcohol, which is already added to all gasoline sold in Brazil at a rate of 24 percent.

If the experiment is judged a success, the government has said it could be extended to other states in Brazil, helping local governments in their fight to reduce air pollution - a leading cause of sickness in major urban areas.

Trials of the alcohol/diesel mix first began late last year at bus depots in Curitiba and Riberao Preto, a town located in a major cane-growing area in northern Sao Paulo state. The trials followed preliminary tests on another experimental mix containing 10 percent hydrous alcohol, which showed a minimum loss of engine pick-up and significant reductions in carbon monoxide, particle and soot emissions.

The alcohol/diesel mix, which government and industry bodies hope will be clean and commercially viable, also should have the side benefit of stimulating flagging demand for alcohol and cutting Brazil's bill for diesel imports.

Analysts say the 3 percent mix would initially mean an extra alcohol demand of some 600,000 cubic meters.

The Cima meeting also ratified a decision taken earlier in February for state oil firm Petrobras to buy 300 million liters of surplus hydrous alcohol held by producers in Brazil's main cane-growing area, the center-south.
At the start of last month, the government said it would conduct a review of the hydrous sector's surplus stocks and buy that quantity if it was found to be less than 400 million liters.

Demand has been fading for years for hydrous alcohol, an alternative fuel also known as ethanol, that was used in about 90 percent of cars purchased in Brazil in the 1980s. The ebbing demand has led to oversupply and a hefty stock surplus. These days, fewer than 1 percent of new cars in Brazil run on hydrous alcohol.

Price controls on both alcohol sectors, along with all financial support from the government, have now been removed.

GENERAL

16. Recent Fuel Cell Developments

a. Californian Initiates Fuel Cell Venture

The California fuel cell partnership - involving energy firms, car makers and the state of California - plans to put about 50 fuel cell vehicles on the road between 2000 and 2003 to evaluate the technology for using gasoline as a source of hydrogen as well as to look into the best fuel infrastructure for the vehicles. Fuel cell vehicles run on hydrogen which is converted into electricity. They can give the same performance as traditional internal combustion engines, only with fewer harmful emissions and little noise.

The partnership includes car makers DaimlerChrysler AG and Ford Motor Co , and oil companies Atlantic Richfield Co and Texaco Inc.

The Royal Dutch/Shell Group will also collaborate in the venture to test fuel cell-powered vehicles under real day-to-day driving conditions. Shell said in a statement it believed its Catalytic Partial Oxidization (CPO) technology, which can convert liquid fuels into a hydrogen-rich gas, would contribute to the partnership. The Anglo/Dutch group said the collaboration reflects its "continuing commitment to contribute to sustainable mobility".

b. SoCalGas Plans To Sell Home Fuel Cells by 2001

Southern California Gas Co (SoCal Gas), a unit of Sempra Energy , has announced that it will invest in a residential fuel cell developer that plans to market home-sized power generators in 2001. The utility, which is the largest natural gas distributor in the U.S., said it will invest $7.5 million in Plug Power, a privately held company based in Latham, NY.

Fuel cells use hydrogen-based fuels, like natural gas, to generate power electrochemically without combustion, producing only heat and water as byproducts. The systems recycle heat, which is often treated as a waste product in traditional power plants, to provide heating and hot water for the home. Fuel cell technology, first developed by the space program, has only recently become commercially feasible due to advances in materials and design.

Other investors in Plug Power include DTE Energy Co. , the parent of Detroit Edison, Michigan's largest electric utility; Mechanical Technology Inc., an early developer of fuel cell technologies, and General Electric Co.

Since last June, Plug Power has operated the world's first fuel cell-powered home with a system designed to provide the average-sized house with its total electricity needs, according to SoCalGas.

Initial market launch of the 7-kilowatt system is planned for 2001, with distribution planned in the U.S. and overseas with General Electric, through GE Fuel Cell Systems.