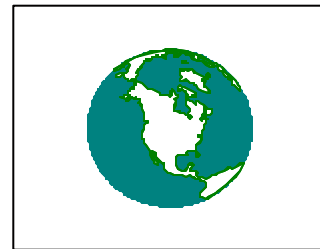


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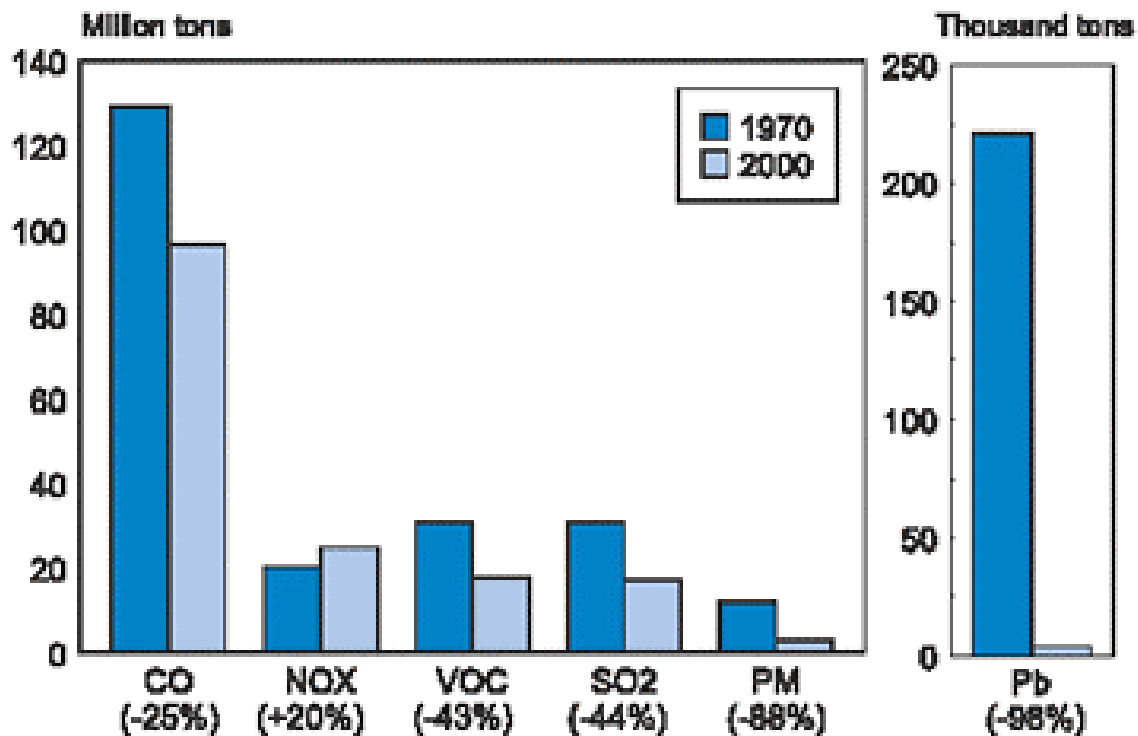


# CAR LINES

Issue 2001-5

October 2001

## Comparison of 1970 and 2000 Emissions



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## EUROPE

### 1. Particulate Filter for Diesel Passenger Cars Passes Durability Test

The Allgemeine Deutsche Automobilclub (ADAC - the German Automobile Club) and the Umweltbundesamt (UBA – the German Federal Environmental Agency) have reported the results of a durability test with a Peugeot 607 Hdi, the first car to be equipped with a particle filter as standard equipment. After 80,000 km on the exhaust emissions test stand, more than 99.9% of the fine soot particles were filtered out. The Peugeot 607 HDi tested emits on average 10,000 times less particles than a comparable vehicle without particle filter. The French car manufacturer PSA brought the Peugeot model to the German market in early 2000. In the meantime the company has brought out further models equipped as standard with this filter system.

“There can be no more excuses. The particle filter also functions over extended periods. The extra costs for the filter in series production are virtually undetectable for the customer. The automobile industry should grasp the opportunity and finally address the health risk of diesel soot from diesel passenger cars by equipping the latest models with particle filters or equally effective technology”, said Prof. Dr. Andreas Troge, president of the UBA.

Even when equipped with a particle filter, the diesel engine retains one flaw compared to gasoline engines according to the UBA. Current models still emit eight to ten times more NO<sub>x</sub>, which contributes to summer smog and related health effects. The federal government is putting pressure on the European Union to ensure that diesel engines are subject to the same NO<sub>x</sub> limits as the gasoline engine in the forthcoming

EURO 5 emissions legislation.

### 2. Rapporteur Proposes Earlier Introduction of Near Zero Sulfur Fuel

Mrs. Heidi Hautala has proposed several amendments to the Commission proposal (COM (2001) 241) for a Directive to amend Directive 98/70/EC on the quality of petrol and diesel fuels. The main items are:

- Advancement of the 2011 date to 2008 and the review date advanced from 2006 to 2005.
- Extension of the Directive to cover fuel used in non-road mobile machinery from 2008 (also at 10 PPM) with the date to be confirmed, along with road diesel, in the review in 2005.
- Deletion of the provision in Directive 98/70 to allow member states to seek a delay of 2 years until 1 January 2007 on the establishment of a maximum sulfur specification of 50 PPM.

The proposal was discussed in the Industry committee and has been endorsed. with the addition of an amendment introduced by MEP Bernd Lange to bring forward the date by which the fuels must be introduced from 2005 to 2003.

The full Environment Committee is expected to vote on the proposal and the amendments on November 6<sup>th</sup>.

### 3. Mayflower Unveils "Revolutionary" Engine

British engineering group Mayflower Corporation has reportedly developed a new engine that it said could increase fuel efficiency by at least 40 percent and decrease emissions by 50 percent. The engine, the result of an 11-year research program, could be used in everything from buses to lawnmowers

and be in production within five years, Mayflower said.

"The Mayflower e3 Variable Motion Engine...represents a quantum leap in the design and development of the internal combustion engine," said the company, which owns a 33 percent stake in the technology rights.

The technology works by allowing the engine to change its capacity, becoming larger when more power is needed and smaller and more economical when it is not, Mayflower said.

This could lead to a high-powered vehicle that could adjust automatically to an economical family car when the need arose, the company said in a statement.

The engine employs a simple change in the design, changing the piston motion from circular to elliptical, and will not cost any more to make, Chief Executive John Simpson told reporters at a news conference.

With more than 160 million internal combustion engines produced each year, the potential market for the invention was huge, Mayflower said.

Mayflower has already taken out worldwide patents on the design, but have not yet hooked up with manufacturers to produce the engines on a commercial scale, although Simpson said the firm had already been approached by "a number" of interested parties.

Mayflower, better known as a bus and truck manufacturer, has the option to increase its stake in the technology to 51 percent in the next five years, it said. Inventor Joe Ehrlich owns the rest of the rights.

#### **4. UK Proposes Revisions To Air Quality Strategy**

The Government and devolved administrations published the Air Quality Strategy for England, Scotland, Wales and Northern Ireland in January 2000<sup>1</sup>. It sets standards and objectives to be achieved for eight key air pollutants between 2003 and 2008. For most of these pollutants, including particles, carbon monoxide and benzene, local authorities are charged with the task of working towards their achievement in a cost effective way. The Strategy explains that it will be kept under regular review to take account of the latest information on the health effects of air pollution and technical and policy developments.

Air quality is getting better. The number of days of moderate or higher air pollution in urban areas in 2000 was the lowest since the present statistical series began in 1993. The Figures below show the trends in levels of air pollution in recent years. Pollution will, in all probability, continue to fall. Vehicle emissions in particular will reduce further as new vehicles and fuels become cleaner, and more polluting older vehicles fall out of the vehicle parc. But more needs to be done if the UK is to reduce the impact that air pollution has on public health and to meet its national objectives and limits set under European legislation. This is particularly so for particles, which the latest health evidence shows, are likely to have significant long-term effects on health: probably many times more severe than the short-term effects on which policy has previously concentrated.

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<sup>1</sup> The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Working Together for Clean Air. January 2000. Cm 4548, SE 2003/3 and NIA 7.

Figure 1: Days when air pollution is moderate or higher: 1987-2000

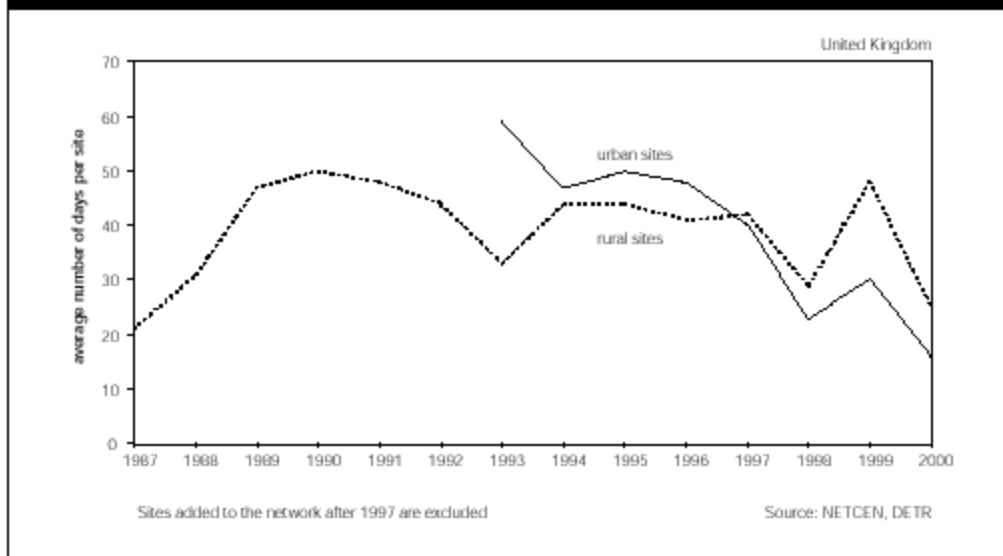
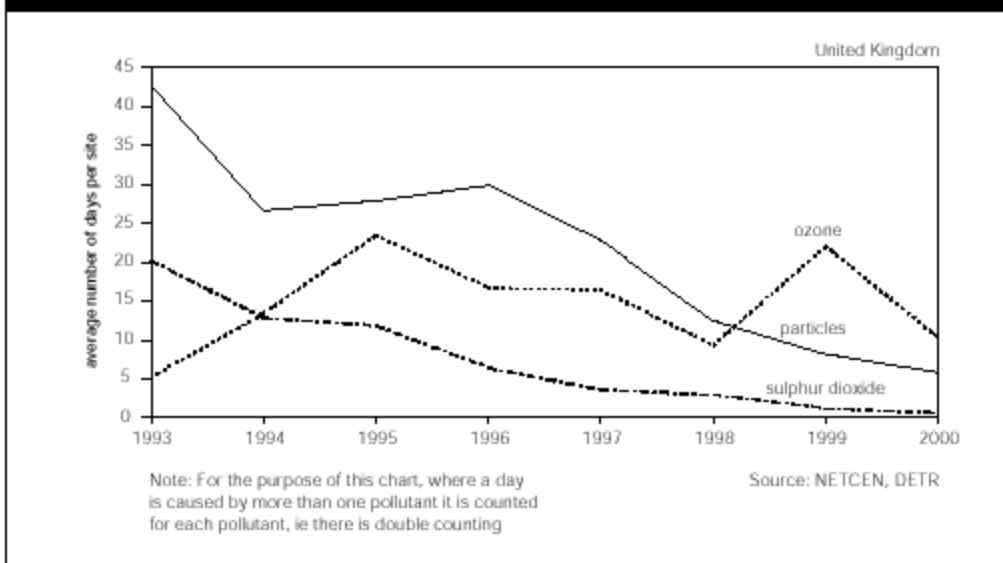


Figure 2: Number of days of moderate or higher air pollution at urban sites caused by ozone, particles and sulphur dioxide



The Government's and the devolved administrations approach to the new objectives will remain that of the existing Strategy's. For those objectives included in regulations for the purposes of local air quality management, each local authority will be required to work towards the achievement of the objectives in their area. No new national

measures are proposed in this document, although where they can be shown to be cost effective, the Government and the devolved administrations may bring them forward for consultation at a later date. Work shows that even using national measures, to which the government makes no commitment, the implied cost

per added life year, which they would produce, is in no way excessive.

### (a) Proposals

The objectives for particles (PM<sub>10</sub>) included in the 2000 Strategy are a 24-hour mean of 50µg/m<sup>3</sup> not to be exceeded more than 35 times per year and an annual mean of 40µg/m<sup>3</sup>, both to be achieved by the end of 2004. These are derived from the EU stage 1 limit values in the first Air Quality Daughter Directive<sup>2</sup>. These replaced the original objective for particles included in the 1997 Strategy. This original objective was set on the basis of the limited knowledge at the time and it became clear during the 1998 review of the Strategy from our better understanding of the sources and types of particles that it would not be achievable, at least in the short-term.

The 2000 Strategy explains that the new objective was seen as a staging post rather than a final outcome. The Strategy goes on to say that the Government and the devolved administrations are concerned to set sights beyond the immediate need to comply with the stage 1 limit values in the EU Directive in view of the importance of the health effects of particles, and the inclusion in the Directive of the considerably more stringent, but currently only indicative, stage 2 limit values for 2010.

The consultation document sets out proposals to strengthen substantially the Air Quality Strategy objectives for particles by supplementing the present objectives with **new provisional objectives of –**

- for all parts of the UK, except London and Scotland, a 24-hour mean of 50µg/m<sup>3</sup> not to be exceeded more than 7 times per year and an annual mean of 20µg/m<sup>3</sup>, both to be achieved by the end of 2010;
- for London, a 24-hour mean of 50µg/m<sup>3</sup> not to be exceeded more than 10-14 times per year and an annual mean of 23-25µg/m<sup>3</sup>, both to be achieved by the end of 2010;
- for Scotland, a 24-hour mean of 50µg/m<sup>3</sup> not to be exceeded more than 7 times per year and an annual mean of 18µg/m<sup>3</sup>, both to be achieved by the end of 2010.

It is proposed the Mayor and London authorities should work towards a target of 20µg/m<sup>3</sup> after 2010, with the aim of achieving it by 2015 where cost effective and proportionate local action can be identified.

It proposes strengthening the national objective for benzene by supplementing it with an objective derived from the long-term policy aim of 3.25µg/m<sup>3</sup> as a running annual mean recommended by EPAQS. The objective for benzene included in the 2000 Strategy is 16µg/m<sup>3</sup> as a running annual mean to be achieved by 2003. This is derived from the EPAQS recommended standard. The second Air Quality Daughter Directive<sup>3</sup>, which sets limit values for benzene and carbon monoxide, was adopted in 2000. This sets a limit value for benzene of 5µg/m<sup>3</sup> as an annual mean to be achieved by 2010. **In their 1994 report EPAQS recommended that exposure to benzene should be**

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<sup>2</sup> Council Directive 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air.

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<sup>3</sup> Council Directive 2000/69/EC of 16 November 2000 relating to limit values for benzene and carbon monoxide in ambient air

kept as low as practicable and recommended a long-term policy target of  $3.25\mu\text{g}/\text{m}^3$  as a running annual mean. It is proposed to set this as the objective to be achieved by the end of 2010. In achieving this level, the UK will inevitably meet the EU limit value.

It contains proposals for strengthening the Strategy's national objective for carbon monoxide by replacing it with an objective derived from the recently agreed EU limit value. The objective for carbon monoxide included in the 2000 Strategy is  $11.6\text{mg}/\text{m}^3$  as a running 8-hour mean to be achieved by 2003. This is derived from the EPAQS recommended standard. **The second Air Quality Daughter Directive sets a limit value for carbon monoxide of  $10\text{mg}/\text{m}^3$  as a maximum daily 8-hour mean to be achieved by 2005. It is proposed to set a new objective of achieving the EU limit value by the end of 2003.**

It also sets out proposals for setting an objective for the first time for polycyclic aromatic hydrocarbons (PAH). **In its 1999 report, EPAQS proposed taking benzo[a]pyrene (B[a]P) as a marker for the total mixture of PAH and recommended an air quality standard for PAH of  $0.25\text{ng}/\text{m}^3$  B[a]P as an annual average. It is proposed to set a provisional objective of achieving this standard by the end of 2010.**

#### (b) Comments Invited

The Department for Environment, Food and Rural Affairs (DEFRA), the Scottish Executive, the National Assembly for Wales and the Department of the Environment Northern Ireland invite comments on the proposals by Wednesday 12 December 2001.

Comments are invited on each of the proposals in this consultation document.

Comments would be particularly welcome on –

- the overall package of proposals for objectives for particles, including the proposal to set separate objectives for London;
- the level at which it would be appropriate to set an annual mean objective for particles for London for 2010;
- the proposal that London should work towards a provisional  $20\mu\text{g}/\text{m}^3$  annual mean objective after 2010, with the aim of achieving it by 2015 where cost effective and proportionate local action can be identified. No firm date will be set now for when this objective should be achieved across all London;
- the annual mean objective for particles proposed for Scotland for 2010;
- whether Wales should adopt a more stringent annual mean objective for particles as proposed for Scotland; and
- the proposal not to incorporate the particles objectives in regulations for the purposes of local air quality management in England for the time being.

#### 5. EU Looks To Ease Traffic Gridlock

Europe must increase road safety, boost rail traffic and invest in new technologies to avoid a traffic nightmare over the next 10 years, the European Commission said in a newly released policy paper. As the flip side to growing prosperity, the European Union faces a massive increase in demand for transport - 25 percent more passenger traffic with 10 years and almost 40 percent more freight, the Commission warned in its strategy paper. Unchecked, the result would be more pollution, congestion and accidents and a continued increase in road transport at the expense of most

other modes, the EU executive said.

The policy paper on improving all aspects of transport, "European transport policy for 2010: time to decide" will feed into discussions between transport and environment ministers from the 15-nation bloc in their upcoming meeting in Brussels.

Among its some 60-policy recommendations is a plan to radically alter the way transport infrastructure is funded.

The Commission will propose a law next year that would lead to distance-based fees for road use, rather than flat rates such as an annual tax. Such plans would initially be aimed at truckers rather than private motorists, EU officials said. The law would also allow money from these road-use charges to be ploughed into the railways, currently not allowed under EU rules.

The strategy envisages extra funding to freight railways, coastal shipping and "intermodal" facilities, which allow freight to be switched quickly from road to rail or water.

## **6. German RWE Encouraging CNG**

German utility RWE's gas unit said it planned to establish a supply company for natural gas-driven cars by the end of the year to take advantage of the latest use of the low-pollutant fuel. Speaking on the sidelines of the International Auto Show (IAA) in Frankfurt, Uwe Mania, RWE Gas key account manager of regional supply companies, said the new auto technology offered the utility a key business opportunity.

"Traffic in Germany uses 570 billion kilowatt hours of fuel a year. If we got just 10 percent of that market with natural gas, that would be really good for business for us," Mania said. "In view

of that, we are planning a cooperation, a new company, with (gas suppliers) Ruhrgas, Thyssengas, BEB, Bayerngas, Heingas and others, which should be agreed by the end of the year," he added.

Germany has 12,000 natural gas cars, which contrasts with Italy that has 350,000, Mania said, adding that the market was growing with the country's climate protection program. That program aims to reduce greenhouse gases, chiefly carbon dioxide, by 21 percent on 1990 levels by 2010.

RWE Gas' E=Motion project, started last year, offers natural gas buyers 2,000 kilos of the fuel for use in a natural gas car free until the end of December. "That is equivalent to around 2,500 marks, which is half the additional cost of buying a natural gas car instead of a conventionally-fuelled vehicle," Mania said, adding that the firm would probably repeat the scheme next year.

RWE has deals with petrol station owners BP, Shell, and Aral - a unit of RWE's rival utility E.ON, which RWE plans to take over - which provide the gas supplier with free sites for gas tanks. In return, the filling station owner takes 4-6 pfennigs/kilo from the retail price, Mania said. RWE has 14 filling station supply agreements with municipal utilities and 10 stations it supplies directly.

All the stations are in Northern Westphalia, but the new company, combining the coverage of the various regional gas suppliers involved, will provide nationwide supply.

A mock BP filling station at the auto show listed prices for petrol and natural gas at, respectively, 1.97 marks/liter and 1.3 marks/kilo. "If BP's natural gas costs 1.3 marks a kilo, which is equivalent to 1.05 marks per liter, that is a 92 pfennig



saving compared with its price for petrol," he said.

General Motor's German unit Adam Opel AG's Zafira CNG (compressed natural gas) vehicle can travel 100 kilometers on 5.9 kilos of gas, he added. Natural gas tanks are stored either in the boot of a car or under the vehicle. A natural gas tank with a pressure of around 200 bars can carry up to 23 kilos of compressed natural gas and a CNG vehicle can travel 350 km on 19 kilos of gas.

That contrasts with petrol cars, which can cover 500 km on 8-10 liters of fuel, Mania said.

## **7. German Car Makers Push CNG Vehicles**

Executives from oil company Deutsche BP and car maker Adam Opel AG showed their strong support for natural gas-driven cars at the International Auto Show (IAA) in Frankfurt, demonstrating the new technology to German Environment Minister Juergen Trittin.

"What is the Environment Minister doing at a car show," Trittin asked, adding, "Because cars are the biggest polluters." Trittin said the government had established a prerequisite for the support of natural gas cars by extending the 75 percent discount in the mineral oil tax for the fuel type to 2009. The government has also invested over eight million marks in a scheme to introduce 1,000 natural gas-driven taxis in Berlin.

Hans Demant, Opel's managing board member, presented the Zafira 1.6 CNG (compressed natural gas) car, which launched in the summer. Opel, a unit of General Motors, expects a market volume of 10,000 Zafira cars a year in the medium term and has provided five vehicles for the government's 1,000 environmental taxis scheme so far.

A key advantage of the Zafira is low fuel costs - the car pays itself off after 1.5 years compared to a diesel car and after 2.5 years compared to a petrol car, using 20,000 km/year as a basis for the example, Demant said. The Zafira, which for a seven-seater model costs 41,170 marks, has a 14 liter petrol tank.

"This increases the reach of the car to around 500 kilometers and keeps the tax advantages of a gas-only car," Demant said, adding that success was dependent on an increase in petrol stations with natural gas pumps.

Peter Knoedel, vice chairman of Deutsche BP, which has 1,000 petrol stations in Germany, said the firm had 40 projects with gas suppliers under way to provide sites for natural gas tanks.

German gas and water association (BGW) President and head of German utility RWE Gas Manfred Scholle said the promotion of the use of natural gas cars plays a significant role in the agreed reduction of greenhouse gases.

Other natural gas cars on show included the VW Golf Variant 2.0 I Erdgas, the Multitpla-Fiat Bipower ELX, the Ford Focus-Turnier and the Volvo S8 Bi-Fuel.

## **8. Fuel Cell Technology Seen To Be Promising**

The development of fuel cell technology to produce electricity may be clouded by poor short-term financial performance but investors still see a promising future for the nascent industry. "We believe there's a huge growth potential for the technology. The fuel cell car will progressively replace the internal combustion engine," Robin Bachelor, senior fund manager at Merrill Lynch Investment Managers in London, said at the Grove fuel cell conference held

recently in London.

The fuel cell technology, which converts hydrogen into electricity through an electro-chemical process, has wide-ranging applications from electric car engine to stationary power generation units. In contrast to combustion, it has potentially zero greenhouse gases emissions. Strong environmental pressures to cut carbon dioxide (CO<sub>2</sub>) emissions, liberalization of energy markets and recent technological advances from companies are said to be the main factors behind the industry's growth potential.

"There is not one market and one fuel cell technology," said John Dean, global coordinator for energy technology research at UBS Warburg. "There are many different markets and product applications that can benefit if the technology delivers its promises."

Many observers believe stationary power generation, whereby a fuel cell power generator can be installed on-site, will be the first sector to take off commercially. German utility, RWE, has plans to launch small-scale Combined Heat and Power (CHP) systems for residential and commercial use by the end of 2004. Such system would use natural gas as primary fuel, converted into hydrogen through a reformer.

Other fuel cell manufacturers, such as Canadian fuel cell maker Ballard Power Systems, are working on stationary and portable power generation units.

The investment community has started to get involved in the sector in the past year and although stock market confidence is poor at the moment, the confidence in the technology is still there, investors say. "It's no longer a question of if the technology will work, it's a question of when it will work, because of what it has to offer," said

UBS Warburg's Dean.

In the short term however, the market has not reacted favorably to the energy technology sector. Since its October launch, the Merrill Lynch New Energy Technology Fund has seen its net asset value drop by 46.9 percent, and its share price decline by 45.5 percent (as measured on August 31). The fund, which has \$200 million invested mainly in listed company and companies planning a public offering, is made up 46 percent of renewables, 26 percent of so-called auto and on-site generation which include fuel cell companies, 20 percent of other energy technologies and six percent of energy storage.

"We want to be a long-term investor," said Merrill Lynch's Bachelor.

In spite of the market gloom, companies continue to make progress in new fuel cell technologies. Car manufacturer, General Motors announced at the meeting the launch of a new fuel cell stack for car engines, claiming that it packs 60 percent more power than any of its competitors.

GM said it expected to start mass-producing a fuel cell car by the end of the decade.

Its competitor Ballard, one of the first companies to have developed fuel cell systems, is working on its third generation fuel cell system for cars, the Mk 900, which is used in the NeCar 5 fuel cell car developed by Daimler Chrysler.

UK privately-owned fuel cell company, Zetek, which has developed a different type of fuel cell system, has already built a prototype London taxi and a prototype fuel cell van for the City of Westminster municipal council.

Unlike other fuel cell cars, they run

directly on hydrogen and do not need a reformer on-board. But no wider commercialization is seen yet.

At EU level, the European Commission has also launched its own program to support fuel cell projects with a 90 million euros budget in the 1998-2002 program.

The car developed by GM will use gasoline as primary fuel, which will be transformed into hydrogen through a reformer. The technology used by GM is the so-called PEM (Proton Membrane Exchange) fuel cell. The stack will generate 1.75 kilowatts of power per liter of gasoline and have a continuous power output of 102 kilowatts (equivalent to 134 horsepower).

"We believe gasoline is the bridging strategy to a hydrogen vehicle," Matthew Fronk, a senior executive at the company told the conference. He added GM believed in the long-term a hydrogen powered vehicle was the "most elegant" solution, as the technology has zero carbon dioxide emissions. In contrast fuel cell systems using gasoline as primary fuel would cut CO<sub>2</sub> emissions by only half. But he said gasoline had the main advantage of being readily available through the existing petrol station infrastructure.

Distributing hydrogen would require new supply infrastructure estimated to cost \$1 million per filling station.

Other techniques being considered by other car manufacturers include the transformation of liquid methanol into hydrogen through a reformer.

## **9. BMW Expected To Buy Toyota Engines**

German luxury carmaker BMW has reached a basic agreement with Toyota Motor Corp to buy up to 30,000 diesel

engines a year from Japan's biggest automaker, the Yomiuri Shimbun newspaper has reported. BMW board member Burkhard Goeschel was quoted as telling the newspaper the formal signing of the deal was expected by the end of October. The engines would be used in 30 percent of BMW's Mini cars, which went on sale in Europe in July, the newspaper said.

A Toyota spokeswoman would not confirm the report, saying only that the companies were discussing technical cooperation.

Toyota said in January that it would build a new low-emission diesel engine in Japan for its popular Yaris subcompact model being sold in Europe, and would introduce it to the European market through exports of Japanese-made Yaris from the end of 2001. Toyota also said in January that from 2003 it would start assembling 30,000 to 40,000 diesel engines a year in its French plant and roll-out European-made diesel-powered Yaris cars.

The newspaper said Toyota would supply BMW with diesel engines from the French plant, offering a chance to reap a quick return on its investment in European diesel engine production.

Demand for diesel-powered cars has been rising in Europe as diesel engines emit less carbon dioxide than gasoline engines but Japanese automakers have been slow to focus on the eco-friendly vehicles, hurting their already limited sales in Europe.

Toyota, the world's third largest automaker, holds less than a four percent share of the European market, but has been making a bid to jack up its share through greater emphasis on diesel cars, local production, and tie-ups with European automakers. In July, it

entered into an agreement with PSA Peugeot Citroen to jointly develop and produce cheap compact cars for the European market from 2005.

The Yomiuri said BMW was also interested in the possible purchase of other diesel engines from Peugeot, which are being developed by the French company for the small cars to be produced jointly with Toyota.

#### **10. Dutch CO<sub>2</sub> Output Rises In 2000**

The Netherlands' carbon dioxide emissions rose by one percent in 2000, driven by higher energy use, and are likely to continue increasing, a Dutch government research body said. Since 1990, carbon dioxide output has risen by eight percent, while overall greenhouse gas emissions have climbed three percent, according to the State Institute for Health and Environment.

Under the Kyoto Protocol, the Netherlands would have to cut its carbon dioxide output by six percent from 1990 levels by the 2008-2012 period. Kyoto calls for industrialized states to cut carbon dioxide by an average of 5.2 percent in the same period.

Heat-trapping greenhouse gases produced by the burning of fossil fuels are blamed by most scientists for contributing to global warming. A UN scientific body has predicted warmer temperatures in the coming decades will sharply alter weather patterns and boost sea levels, threatening millions of people in low-lying and coastal lands.

Broad strokes of the Kyoto pact were agreed in July in Bonn, and states are scheduled to begin a new round of talks in Morocco at the end of October to hammer out final details.

In order for the Kyoto pact to take legal effect, 55 countries representing at least 55 percent of the emissions from industrialized states must ratify the pact. None have so far done so. Passage of the treaty was dealt a blow when the U.S., the world's largest emitter, rejected it earlier this year.

### **NORTH AMERICA**

#### **11. US Senate Panel OKs Bill To Relax Oxygenated Fuel Requirement**

The U.S. Senate Environment Committee has approved legislation that bans the use of MTBE in gasoline within four years and allows states to opt out of a the federal program that requires polluted areas to use reformulated gasoline with oxygenated fuel additives. Under the legislation, sponsored by Republican Sen. Bob Smith of New Hampshire, states could also stop using corn-based ethanol, but clean air standards would be preserved, as states would still have to sell gasoline with low pollutants.

The American Petroleum Institute supported the bill's passage, saying it would help refiners reduce the different types of gasoline they need to produce to meet pollution requirements and ensure the country has adequate fuel supplies. By contrast, the Oxygenated Fuels Association warned the legislation would result in more pollution because MTBE cuts nitrogen oxide emissions from gasoline by 4 to 7 percent.

The bill now goes to the Senate floor, where it faces strong opposition from lawmakers from farm states that grow corn used to make ethanol.

Contention flared during the markup of the bill, S. 950, among ethanol, oil and environmental interests, but Committee Chairman Sen. Jim Jeffords (I-Vt.) held the disputes at bay by saying they could

be better considered when and if the bill reaches the Senate floor. Explaining the rationale in moving the bill to the full Senate at such a fast pace, Senator Bob Smith (R-N.H.) indicated Senate Majority Leader Tom Daschle (D-S.D.), an advocate of renewable fuels, must play a role in any compromise efforts.

Addressing the issue of groundwater contamination caused by MTBE, S. 950 authorizes \$200 million in grants to states for the Environmental Protection Agency's Leaking Underground Storage Tank Trust Fund. The bill also authorizes \$200 million over the next five years to boost compliance with the EPA's leaking underground storage tank program.

Senators. James Inhofe (R-Ohio), George Voinovich (R-Ohio), Christopher Bond (R-Mo.) and Michael Crapo (R-Idaho) dissented during the voice vote. In explaining his objections at the markup, Inhofe said his legislation, S. 947, cosponsored by Sen. Dianne Feinstein (D-Calif.), would allow a state to opt out of the RFG oxygenate requirement without banning MTBE. Inhofe's concerns echo those circulated by the oil industry. For example, Inhofe said S. 950 would lead to dirtier air, further fuel balkanization and an unstable petroleum supply that would further crimp U.S. national security, more so in the wake of this month's terrorist attacks. Inhofe pointed to an Energy Department estimate that said removing MTBE would shrink gasoline blend stocks by about 300,000 to 400,000 barrels a day. He also said a provision in S. 950 that removes the one-pound vapor pressure waiver for gasoline blended with ethanol would encourage states to create additional boutique fuel requirements to offset increases in toxic pollutants, creating another 80,000 to 100,000 barrel a day shortfall.

"This is not the time to be doing this," Inhofe said of S. 950's MTBE ban.

Smith, however, said his bill is in line with the Bush administration's efforts to decrease the number of boutique fuels across the country, pointing to additional funds that would help states transition from MTBE to other additives. The White House called for an EPA report on the nation's balkanized fuel supply this spring, and the analysis, originally expected to be in Congress' hands this month, will now make it to Capitol Hill by mid-October, according to EPA.

Voinovich broached the ethanol industry's concerns during Tuesday's markup when he said S. 950 provides no incentives to Midwestern corn growers, further pointing out how this year's bill differs from S. 2692, a bill Smith moved out of the Environment Committee last year that included an alternative fuels program allowing for growth in ethanol while also allowing for competition from other sectors such as fuel cells.

Prior to the attacks of September 11, Senate Energy and Natural Resources Committee Chairman Jeff Bingaman (D-N.M.) said he wanted to move legislation this summer that would streamline the nation's gasoline supplies. Should the issue now make it to the floor, Daschle is sure to press his own legislation, S. 670, which bans MTBE while promoting ethanol. But even the Senate leader's efforts may not be enough. S. 2692, which included Daschle-like language last year, did not make any headway when it hit the Senate floor during the 106th Congress.

The House of Representatives rejected similar legislation earlier this summer.

The federal government had earlier turned down a request from California to sell reformulated gasoline that is not

blended with additives like ethanol or MTBE. California and several other states have decided to stop using MTBE because the fuel additive contaminates drinking water supplies when it leaks from storage tanks. California also does not want to use ethanol, because it believes the fuel additive causes higher evaporative HC emissions.

California is also worried its gasoline prices would rise at the pump because ethanol is costly to ship from Midwest refineries. An additional 600 million gallons of ethanol will be needed to meet California's demand for clean gasoline.

## **12. US Rule-Making Process to Be Tightened**

The White House Office of Management and Budget has advised federal agencies that it will emphasize "science-based" procedures -- including cost-benefit analyses -- in evaluating proposed regulations. John D. Graham, administrator of the Office of Information and Regulatory Affairs, said OIRA will review all "significant" regulations for strict compliance with a host of requirements and guidelines, including risk assessments, peer review and analyses of the rules' impact on state, local and Indian governments, on energy supplies and on small businesses.

The policy is a significant departure from that of the Clinton administration, which emphasized agency expertise in rule-making, and could signal a return to the OIRA activism of the Reagan administration.

"Our goal is to improve the regulatory process, adopting cost-effective rules when they are needed, modify existing rules to make them more effective and/or less costly, and rescind outmoded rules," Graham said in a

news release.

Environmental and consumer watchdog groups took aim at the new procedures, saying they focus on costs to industry, while ignoring benefits to public health and the environment.

Agencies are currently required to prepare an "impact analysis" on rules that are likely to have an effect on the economy of \$100 million or more, or "adversely affect in a material way the economy . . . productivity, competition, jobs, the environment, public health." Graham said he would send back those rules that lack an adequate cost-benefit analysis and reasonable alternatives. Graham, who founded the Harvard Center for Risk Analysis, sparked controversy during his confirmation hearing for his approach to regulation, which determines whether a rule is worthwhile from an economic point of view and in the context of other risks.

"Federal regulations can provide cost-effective solutions to many problems," Graham said in a Sept. 20 memo to the Presidents' Management Council, made up of officials from more than 20 federal departments and agencies. "If not properly developed, regulations can lead to an enormous burden on the economy."

## **13. Los Angeles Set To Become Nation's Smoggiest Once More**

The Los Angeles metro region is once again projected to be the nation's smoggiest region, replacing Houston as the area with the most days of unhealthy ozone levels. This year 35 days with unhealthy ozone levels were recorded in Los Angeles, as opposed to 26 days in Houston. The official smog season will not end until early November, so officials believe those numbers may rise.

The smog in the four-county region of Los Angeles, Orange, Riverside and San Bernardino counties is caused primarily by tailpipe exhaust coupled with wind patterns and the high inland mountains, which essentially trap the bad air. However, some environmentalists claim that the state's power crisis played a role, as power plants operated longer than normal hours during the summer.

Both Los Angeles and Houston actually experienced fewer unhealthy ozone days this year compared to last year, reflecting the long-term progress made in reducing unhealthy emissions.

#### **14. U.S. EPA Proposes Emission Standards for Nonroad Engines**

On September 14, 2001, the U.S. Environmental Protection Agency proposed NO<sub>x</sub>, HC, and CO emission standards for several types of currently unregulated spark-ignition (SI) nonroad engines and vehicles. The vehicles and engines covered include:

**Large Industrial Spark-Ignition Engines** – SI nonroad engines rated over 25 horsepower (19kW) used in commercial and industrial applications, including forklift, electric generators, airport ground vehicles, and a variety of other construction, farm, and industrial equipment.

**Recreational Off-Road Vehicles** – SI nonroad engines used in off-road motorcycles, all-terrain-vehicles (ATVs), and snowmobiles.

**Diesel Marine Engines** – Diesel engines rated at or above 50 horsepower (37kW) used in recreational boats.

"If left unregulated, pollution from these sources will continue to increase, becoming a larger part of the overall

mobile source pollution," EPA Administrator Christine Todd Whitman said in statement. "This action will not only protect public health, but will help to restore the view of our nation's treasured scenic parks and wilderness areas," she added.

The variety of engines and vehicles covered by the EPA plan account for roughly 13 percent of mobile source hydrocarbon emissions. The new limits would cut the vehicles' carbon monoxide emissions up to 56 percent and nitrogen oxides up to nearly 80 percent, the EPA said. Environmental groups have long sought stricter standards for the more than 1.6 million snowmobiles used by Americans for winter recreation. The machines are permitted in more than two dozen national parks, including Yellowstone National Park and Voyageurs National Park. Some green groups contend that one hour on a single snowmobile emits roughly as much hydrocarbon pollution as driving a car for a year. They also say that snowmobiles used near the Old Faithful geyser create more pollution in a weekend than a year's worth of automobile traffic through the park.

The EPA began preparing a proposal to limit emissions of snowmobiles several years ago after Congress ordered it to study the pollution produced by engines of all kinds. The agency faced a court-ordered deadline of September 14, 2001 to issue a proposed rule.

The EPA plan for snowmobiles would require a 30 percent cut in emissions by 2006 and by 50 percent by 2010. Manufacturers of snowmobiles had sought a lengthy phase-in period for new curbs on emissions, saying time was needed to develop cleaner engines.

The stricter emission limits proposed by the EPA include the following:

- Snowmobiles will have to cut hydrocarbon and carbon monoxide emissions by 30 percent in 2006 and by 50 percent in 2010.
- Heavy, non-road machinery engines will adopt a standard in 2004 already set by California several years ago. The standard will be further tightened in 2008.
- Recreational boats' diesel engines will adopt the same standards already applied to commercial marine engines, with two years of extra time for manufacturers to adapt emissions control technology.
- Off-road motorcycles and all-terrain vehicles will be "encouraged" to switch from two-stroke engines to four-stroke engines in 2006. In addition, all-terrain vehicles would also need to meet a stricter limit beginning in 2009.

proposal to restrict emissions for motorcycles used on highways and gasoline-power pleasure boats within the next few months.

EPA estimates the costs of compliance will range from \$50 to \$200 for snowmobiles, less than \$100 for ATVs, and about \$600 for marine diesel engines and large SI engines.

#### a. Large Industrial SI Engines

As shown in Table 1, EPA is proposing a two-phase program for this category of engines. The 2004 standards are based on the California standards adopted in 1998. The 2007 standards more accurately reflect the in-use deterioration of emission controls, include a transient duty cycle and associated emission standards, as well as establish a field test requirement, diagnostic requirements, and measures to reduce evaporative emissions from gasoline-powered SI engines >25 hp.

The EPA also said it planned to issue a

**Table 1.  
Proposed Emission Standards for Large SI Engines (g/kW-hr)**

Model Year	Testing Type	Emission Standards		Alternate Emission Standards	
		HC+NOx	CO	HC+NOx	CO
2004-2006	Duty-cycle testing	4.0	50.0	-	-
2007 and later	Duty-cycle testing	4.0	2.5	1.3	25.0
	Field testing	<b>5.6</b>	4.0	1.8	50.0

EPA expects that the 2004 standards will be met by employing basic automotive emission control technologies – electronic fuel systems with three-way catalytic converters. To meet the 2007 standards, EPA notes that fuel system technologies and catalyst technology can be further optimized. EPA also proposed more stringent voluntary “Blue Sky” standards

based on the early introduction of engines that meet either the Phase 1 or Phase 2 mandatory standards.

#### b. Recreational Vehicles and Engines

As shown in Table 2 below, EPA is proposing different standards for snowmobiles, ATVs, and off-road



motorcycles.

**Table 2.  
Recreational Vehicle Exhaust Emission Standards**

Vehicle	Model Year	Emission Standards		Phase-In
		HC (g/kW-hr)	CO (g/kW-hr)	
Snowmobiles	2006	100	275	100%
	2010	75	200	100%
		HC+NOx (g/km)	CO (g/km)	
Off-highway motorcycles	2006	2.0*	25.0*	50%
	2007 and later	2.0*	25.0*	100%
ATVs	2006	2.0*	25.0*	50%
	2007 and 2008	2.0*	25.0*	100%
	2009	1.0*	25.0*	50%
	2010 and later	1.0*	25.0*	100%

**Off-Highway Motorcycles and ATVs** – Approximately 55% of the non-competition off-road motorcycles (competition off-road motorcycles are exempt) and 80% of all ATVs sold in the U.S. are powered by 4-stroke engines. EPA’s proposed 2006 standards for off-highway motorcycles and ATVs are based on 4-stroke engine technology with some low-level modifications to the fuel system calibrations. For the ATV 2009 standards, EPA expects vehicle manufacturers to use 4-stroke engines with air injection on many models, but EPA notes they may also choose to use a combination of several possible emission control technologies, including base-engine modifications, improved fuel-system calibrations, electronic fuel injection, and catalyst technology.

EPA declined to propose applying the tighter 2009 ATV standards to off-highway motorcycles citing the complexity and cost of electronic fuel injection and manufacturers and end-users concern over possible leg burns from catalysts. EPA also maintained that catalysts and secondary air have the potential to adversely affect engine performance.

**Snowmobiles** – EPA is proposing only HC and CO standards for snowmobiles. EPA declined to propose NOx standards because snowmobiles are operated in the winter when ozone (formed by NOx and HC emissions) is not a concern. EPA did not propose PM standards because of the cost of measuring PM emissions as part of the certification test and because HC controls will simultaneously limit PM. EPA expects manufacturers to meet the 2006 standards by applying 2-stroke engine modifications, cleaner carburetion, and/or direct or semi-direct injection. To meet the 2010 standards, EPA anticipates manufacturers will employ direct fuel injection systems or convert to 4-stroke engines.

**Voluntary Low-Emission Standards** – EPA is proposing voluntary low emission standards for snowmobiles (149 g/hp-hr for CO and 56 g/hp-hr for HC through 2009 and 89 g/hp-hr for CO and 34 g/hp-hr for HC thereafter). For ATVs and off-highway motorcycles, the voluntary standards would be 1.3 gpm for HC+NOx and 24.3 gpm for CO. EPA would promote product labeling and allow manufacturers to generate emission credits.

**c. Recreational Marine Diesel Engines**

The proposed standards are shown below in Table 3. EPA expects manufacturers to employ the same emission control strategies that are

expected for land-based nonroad diesel engines and commercial marine diesel engines, primarily focused on engine modifications.

**Table 3.  
Proposed Recreational Marine Diesel Emission Limits and Implementation Dates**

Subcategory	Implementation Date	HC+NOx (g/kW-hr)	PM (g/kW-hr)	CO (g/kW-hr)
power $\geq$ 37 kW 0.5 < disp < 0.9	2007	7.5	0.40	5.0
0.9 < disp < 1.2	2006	7.2	0.30	5.0
1.2 < disp < 2.5	2006	7.2	0.20	5.0
2.5 $\leq$ disp	2009	7.2	0.20	5.0

**15. US EPA Says It Won't Reconsider The Diesel Sulfur Rule**

The U.S. Environmental Protection Agency has denied three petitions asking that the agency reconsider its rule that requires U.S. diesel fuel contain less sulfur and trucks and buses to burn fuel more cleanly. The petitions had been submitted by the American Petroleum Institute, American Trucking Association and Mack Trucks/Volvo Powertrain.

EPA said it denied the requests "based on a review of arguments" presented by the petitioners. "EPA did not commit procedural errors, we provided fair notice to the public throughout the rulemaking process, and the final rule is a logical outgrowth of the proposal."

The rule sets emission standards for heavy-duty trucks and buses beginning in 2007, and also requires refineries to begin making diesel with a lower sulfur content by mid-2006. The oil industry has warned the EPA rule could eventually raise the price of diesel fuel

by almost 11 cents a gallon and reduce U.S. diesel supplies by up to 320,000 barrels per day. The rule requires a 95 percent cut in sulfur in diesel fuel and also requires vehicle manufacturers to make cleaner burning diesel engines for heavy-duty trucks and buses by reducing soot and smog emissions from the engines by more than 90 percent.

Claiming to fear a future shortage in truck fuel supplies, a coalition of petroleum industry trade groups has asked the U.S. Court of Appeals for the D.C. Circuit to order EPA to revise the rule. The groups challenging the EPA rule include: the American Petroleum Institute, National Petrochemical and Refiners Association, Society of Independent Gasoline Marketers of America and the National Association of Convenience Stores.

In their petition to the Court of Appeals, the groups said the EPA violated federal law by failing to analyze the financial impact of the rule on small gasoline marketers and distributors, which would

have to build storage tanks to hold the new diesel fuel during a phase-in period. They also argue the EPA overstepped its legal authority by expecting refiners to use new pollution-control technology still on the drawing board to produce the low-sulfur fuel.

Oral arguments have been scheduled in the case for next Feb. 26.

## **16. EPA Nominee Schregardus Bows Out**

Facing considerable congressional scrutiny, President Bush's nominee to lead the Environmental Protection Agency's enforcement office withdrew from further consideration. The decision by Donald Schregardus marks a victory for the dozen environmental groups that lobbied aggressively to keep the former director of the Ohio EPA from becoming the federal EPA's assistant administrator in the office of enforcement and compliance.

In a three-paragraph letter to Bush, Schregardus defended his tenure as Ohio EPA director from 1991 to 1999 but said he still no longer wanted the job. "It is clear to me...that my nomination will not be considered by the U.S. Senate in a timely manner," he wrote.

Schregardus' nomination had come under fire from environmental groups ever since it was announced in late June. Most recently, Senate Environment and Public Works Committee Chairman Jim Jeffords (I-Vt.) changed positions and said he would take a closer look at Schregardus' record in light of the release of a federal audit of Ohio's pollution record that showed the state needs to clean up several of its air programs. Jeffords had originally approved Schregardus' nomination, even holding a brief hearing on the selection and offering it up for a

full committee vote. While 12 lawmakers gave the green light during that vote, four Democrats did not. And just prior to the August recess on Capitol Hill, Sen. Barbara Boxer (D-Calif.) cited environmentalists' concerns and effectively put a hold on floor debate and a final Schregardus vote.

Over the break, Sen. Charles Schumer (D-N.Y.) also said he would block Schregardus' nomination until the Bush administration more clearly spelled out its policy plans for air pollution. Schregardus' confirmation hit another snag when, under a Senate parliamentary rule, all choices that hadn't been approved by the upper chamber prior to the recess were sent back to the White House to be resubmitted because Congress had been out of session for more than 30 days. When the White House returned Schregardus' nomination to the environment committee this time, however, Jeffords said the selection would be more closely scrutinized.

There are a host of reasons why environmental groups and some lawmakers opposed Schregardus. For one, they said they were upset with how he handled a whistleblower case involving an Ohio EPA employee investigating high leukemia rates in students and residents attending two high schools in Marion County. The schools were built on the site of a former World War II Army dump. Green groups also pointed to Schregardus' opposition to the Clean Air Act's New Source Review permitting program, the highly controversial law aimed at ensuring power plant owners sign off with air authorities before making major repairs or modifications. Northeastern state officials consider NSR violations in the Midwest, notably in Ohio, to be a prime source of their air pollution.

Perhaps the biggest hurdle arose earlier

this month when the U.S. EPA released its preliminary audit of several federal pollution programs carried out by the Ohio EPA. The report, instigated by a petition from four Ohio environmental groups, examined state efforts over a five-year period both during and after Schregardus' tenure. The audit found that Ohio officials must clean up their air quality efforts or face federal intervention when it comes to implementation of specific programs within CAA. But in his letter to Bush, Schregardus stood by his record in Ohio from 1991 to 1999 and said the environment there is cleaner and its regulatory programs are stronger.

EPA Administrator Christie Whitman, in a prepared statement, said she had "great disappointment" in having to accept Schregardus' decision. "Don's nomination was one made with careful consideration," she said. "It is a loss to both the administration and the country that his skills and extensive background with environmental issues will not be leading our efforts in enforcement."

### **17. Study Suggests Soot Particle Size and Content Seem to Count**

As the Environmental Protection Agency moves to tighten restrictions on tiny particles of air pollution, new research shows that it may need to put even more stringent limits on soot from some industrial sources. For a decade, the agency has become steadily more concerned about risks posed by the smallest particles, which can infiltrate deep into the lungs. Agency scientists have now found that size is not the only problem; the ingredients in some particles are worse than the ingredients in others.

In an unusual test of the toxicity of particles filtered from the same spots at different times, agency scientists found that substances collected near a Utah

steel mill when it was running were more harmful to the lungs of volunteers than material captured when the plant was dormant. The experiment bolsters earlier statistical studies of patterns of illness and pollution in the late 1980's near the mill, 40 miles south of Salt Lake City, agency officials said. Industry groups had long challenged the statistical analyses, which helped persuade the Environmental Protection Agency to tighten soot restrictions in the 1990's.

But, agency officials said, the experiment also points to the need for a closer look at particles from other sources, like truck exhaust, to ensure that rules are tightened only where the threat is clearest.

"These are the first baby steps toward recognizing there are potential differences in effects and source management," a senior agency scientist said.

The research looked at the health effects of extracts of the particles, not the particles themselves, so it confirmed in humans what laboratory tests had long implied: the health threat posed by tiny particles was not just in their size but also in their chemical composition. The study was published in a recent issue of *The American Journal of Respiratory and Critical Care Medicine*.

As the agency moves in the next year to apply tighter standards, including the first rules limiting the emission of particles less than 2.5 microns, the new study could help justify cracking down on the most hazardous types of emissions, agency scientists said. The issue has provoked one of the most intense battles over pollution regulations in recent decades.

"In the auto industry, they're saying, 'Why me? Why not power plants?' " said

Dr. Robert B. Devlin, an author of the study and the director of research on soot at the agency's National Health and Environmental Effects Research Laboratory in Research Triangle Park, N.C.

By examining the health effects of particles from different sources, Dr. Devlin said, the agency is starting to answer that question. "We don't want to regulate everything inappropriately, things that may not be responsible for producing pollution that causes the adverse health effects," he said.

In a separate editorial in the journal, which is published by the American Thoracic Society, the experiment was described as "strikingly innovative" by Dr. William S. Beckett, a professor of environmental medicine at the University of Rochester medical school.

Other studies by the same research team on particles from the air near the mill point to certain metals as the source of harm. The metals, including zinc, iron and copper, appear to form highly reactive molecules, called free radicals that can damage lung tissue, Dr. Devlin said. These studies have been described at medical meetings but have not yet been published.

The agency first published tighter standards for soot in 1997, but the states do not have to begin meeting them until next year, and it will take more than a decade to put them all into effect. A final draft of the agency's recent review of the science pointing to soot's danger to health is scheduled to be published before the rules are put into effect.

The Bush administration has not indicated whether it will alter the standards from those set under President Bill Clinton, although this year Christie Whitman, the E.P.A.

administrator, strongly endorsed a related rule requiring sharp cuts in soot from diesel engines.

At every step, the tighter soot rules have been challenged by industry groups, which have criticized the underlying science. The critics contend that the high costs of capturing fine soot would outweigh any benefit. One persistent skeptic, Dr. Robert F. Phalen, the director of the Air Pollution Health Effects Laboratory at the University of California at Irvine, said of the new work, "This particular finding is exciting and represents a step forward in the way to do studies." But he went on to say that there was no way to know whether the inflammation seen in the volunteers' lungs was related to the illnesses around the mill.

But agency officials and many environmental toxicologists said the evidence of risk, including the results of the new study, was clearer than ever. The agency has found dozens of studies generally concluding that more than 50,000 people die prematurely each year because of illnesses caused by exposure to soot.

The area around the Utah steel mill was the site of an influential study in the late 1980's. The mill was the major source of pollution in the valley, but its current owner, the Geneva Steel Corporation, says it has cut emissions of fine particles 55 percent below 1989 levels. In that earlier study, researchers from Brigham Young University looked at air quality and health in the hazy, mountain-rimmed valley and found that hospital admissions and the rates for asthma and other respiratory troubles dropped substantially in 1987, when the mill shut down because of a labor dispute. Illness rates rose again after the mill reopened the next year.

Industry groups contended that the

pattern could have been caused by coincidental dips and peaks of viral illness. But several environmental health experts not connected to the research said the new study bolstered the original statistical findings.

In the experiment, agency scientists infused parts of the lungs of 24 adult volunteers with watery extracts of the filtered substances. They saw much more inflammation and signs of tissue damage in those exposed to the industrial pollution collected when the mill was running. Only one-thirtieth of one lung in each person was exposed to the material, and there were no lingering effects, the researchers said.

The experiment was somewhat akin to taking the volunteers back in time and across the continent and having them breathe Utah air for four or five days, Dr. Devlin said. In many toxicology studies, he said, "someone might say, 'Where is the connection between what you're doing in the lab and the real world?' Here we've taken great pains to get coherence. This helps us believe both the epidemiology and the toxicology because both support each other."

Dr. Koenig emphasized that the study, despite its merits, still looked at only one kind of particle from one industrial operation.

She said that in other places, where trucks or power plants were the main sources of soot, it still might be that the small size of a particle was the most important threat. She added that much recent research pointed to the tiniest specks — those measured in tenths of a micron — as possibly posing the biggest hazard.

More work must be done, she said. "From the regulatory point of view, we are still left with the problem of what do we need to stop doing?" she said. "What

do we need to control to make the air less toxic to people?"

## **18. NAS Reviews Recently Released CAFE Report**

The U.S. government's lead scientific advisory body has said it will reconsider a politically sensitive report on automobile fuel efficiency after automakers objected that scientists had overestimated their ability to improve gas mileage. The National Academy of Sciences' report, released in July, was a key factor in the national debate over whether stricter mileage standards should be mandated to save millions of barrels of petroleum.

The science group said it would hold a hearing on Oct. 5 to consider automakers' objections to the report.

The report concluded U.S. automakers could increase the fuel efficiency of gas-guzzling sport utility vehicles, pickup trucks and cars by 16 to 47 percent over the next 10 to 15 years.

If the automakers' arguments are valid, the prestigious independent science group could take the rare step of retracting its report and launch a new investigation, an academy spokeswoman said.

"Some of the automakers felt the methodology used in the report to estimate fuel economy was overestimated," she said.

The July report addressed so-called Corporate Average Fuel Economy (CAFE) standards, adopted by Congress in 1975 after the Arab oil embargo. They require passenger cars to get an average 27.5 miles per gallon and light trucks to get 20.7 mpg.

The report by the independent science panel stopped short of calling for

specific increases in the CAFE rules, but said automakers should use technology to raise fuel efficiency and cut emissions of greenhouse gases.

The Bush administration, which favors opening more U.S. land to oil and gas drilling, said it would rely on the report in deciding whether to push for higher vehicle fuel-economy standards.

Led by the Alliance of Automobile Manufacturers, auto companies complained the report double-counts the effects of available mileage-reducing technologies. That in turn inflates the target figure for the National Academy of Sciences' calculated reductions. After hearing initial arguments from the Alliance of Automobile Manufacturers, the science panel "felt that there may be some changes to be made based on their arguments," the spokeswoman said.

But, she added, "We're not saying (the auto industry) is right."

The tight deadline the U.S. Congress gave the academy to produce the politically loaded report detracted from the scientific validity of its findings, some members of the report committee said. The report was commissioned in February with a July 30 deadline, which caused scientists to use "simplified ways to estimate fuel economy because of the time pressure," said John Johnson, a panel member and engineering professor at Michigan Technology University.

Another member of the panel said the report's findings are valid. "It was unduly rushed, but I don't think it caused serious errors in the area of technology potential," said David Greene, a scientist at the Oak Ridge National Laboratory.

## **19. Mexico City Prepares Next Steps To Clean Air**

The air quality in Mexico City - with 19 million people and 3.5 million vehicles - has gradually improved in recent years. And the city is planning to get tougher, cracking down on trucks that have skirted the strict rules imposed on cars and lowering the bar for declaring pollution emergencies. The Metropolitan Environmental Commission, an agency drawn from different levels of government for one of the biggest cities in the world, plans to unveil this month a new 10-year air quality plan, replacing a 5-year program that expired in 2000.

Mexico City Environment Secretary Claudia Sheinbaum said the aim of the 2001-10 plan is to bring down stubbornly high levels of ozone and fine particulate air pollution, by toughening standards and calling more pollution emergencies. When pollution alerts are called, higher-emission cars are banned from the roads, which over the long term motivates people to get cleaner vehicles.

"We still are not doing as well as we could. We still have very high levels of ozone. Ninety percent of days we are higher than international standards for ozone levels," said Sheinbaum, a university researcher on energy issues.

Other key elements of the plan are to retire old trucks, limit cargo circulation hours, use more natural gas in public buses, give taxi drivers incentives to buy newer cars, make fuel efficiency standards stricter, and introduce hybrid gas-electric cars and buses when the proper fuel is available.

Sheinbaum said the new rules have been delayed because of difficulties coordinating the government of the federal district of Mexico City proper, the Mexico State government that

administers the sprawling working-class neighborhoods that ring the city, and the national government, but that all agree tougher measures are needed.

Pollution here is so thick the World Resources Institute in 1999 named Mexico City as the unhealthiest in the world for small children due to combined high levels of various pollutants measured from 1993-95. Emissions from vehicles cause some 70 percent of pollution in the urban area, which spans 1,500 square miles (4,000 square km).

A string of measures adopted in the early 1990s and intensified under the 1995-2000 Air Quality Program took aim at curbing car emissions, including rules that keep older and more-polluting cars off the street one day a week, introduction of catalytic converters and lower sulfur levels in gasoline. The good news is the measures have brought down levels of lead, sulfur dioxide, carbon monoxide and nitrogen dioxide to lower than international safety norms almost every day. The clearer air in recent years is also due to favorable weather conditions including fewer thermal inversion layers and winds that have kept pollution from being trapped in this valley 7,350 feet (2240 meters) above sea level.

The bad news is ozone and levels of total suspended particulates are still way too high. Fine particle pollution levels exceed international safety levels some 13 percent of days, Sheinbaum said.

The problem is that while ozone and fine particle pollution levels in Mexico City hover well above what is considered dangerous by international standards, they are still below the emergency levels established here 6 years ago. When the city declares pollution emergencies, cars that have been designated high polluting must stay off the road in higher numbers, gas stations can be shut down

to reduce the fumes that come off fuel pumps. Some factories can also be closed down.

Right now alarms go into effect when ozone levels are 2.4 times international norms for safe levels. For 20 months, since January 2000, ozone levels have not reached extreme levels and there has not been an air pollution emergency in the city. In 1993 there were 12, and in 1999 there were three. Without emergencies people get complacent and there is less incentive for them to buy newer, lower polluting cars or to install catalytic converters, officials said.

"We will lower the levels. We can't stick at the point where we were five years ago. We have to move down to the international standard. In the end you want the emergencies to help people's health," said Cristina Ortuno, chief of data analysis for the automatic network of air quality monitoring in the metro area.

She said the 32-station network will begin next year to measure particles smaller than 2.5 microns. The current system measures those less than 10 microns, but health experts agree the very smallest particles cause the most damage.

While cities such as Los Angeles and Tokyo have managed to improve air quality with better technology in vehicles, that has been tougher in less-affluent Mexico City, where 1.2 million cars are more than 16 years old, and emit on average 80 times more pollutants than new models, Sheinbaum said. But even more problematic than cars are the lumbering, exhaust-spewing trucks hauling bags of cement or bricks and choking up major thoroughfares in rush hour.

One of the most important elements of the new plan are "pretty strict" new



regulations for trucks, limiting the hours they can circulate and load and unload, she said.

Every six months cars registered in Mexico City have to go through a smog check and those that pollute more are kept off the roads one day a week. But a similar smog check program for trucks exists only on paper. No one enforces it, Sheinbaum said.

Sheinbaum said the stricter rules would probably force some older trucks off the streets altogether, and the city's economic development office would try to promote easy loans for truck owners to get newer vehicles.

## **20. California Officials Discount Ethanol Industry Report**

California energy officials and refinery sources dismissed an ethanol proponents' report that refiners' costs in switching from MTBE to ethanol were modest and that preparations were on schedule to meet a 2003 deadline.

"It's disingenuous," said William L. Rukeyser, Assistant Secretary of the California Environmental Protection Agency (Cal/EPA), of the study, which analyzed California refiners' plans for switching from the gasoline oxygenate MTBE (methyl tertiary-butyl ether) to ethanol using plans submitted in compliance with the state's Environmental Quality Act.

The report was sent to California Governor Gray Davis by the Renewable Fuels Association and National Corn Growers Association. "The report demonstrates that the investments necessary to accommodate ethanol in California have largely been made and that there will be no significant infrastructure costs associated with using ethanol in CBG3," said Bob Dinneen, president of the RFA.

Among his objections, Cal/EPA's Rukeyser pointed to the report's statement: "At this time, northern district refiners have made no plans public that detail major refinery modifications required to meet CBG3 rules. Thus, it is assumed that these refiners have the capability to replace MTBE with a mixture of ethanol oxygenated and non-oxygenated gasoline."

"There's no basis in fact," he said. "In fact, Gov. Davis has not yet decided on California's future in phasing out MTBE. Cal/EPA will report to the governor at the end of September on the range of options associated with a MTBE phase-out."

In 1999, Davis ordered a ban by 2003 on MTBE because it pollutes ground water. The order suggests that the state will be reliant on ethanol to meet federal standards for clean-burning gasoline.

A report released in August by the California Energy Commission showed the state's ethanol use would rise to between 660 million and 950 million gallons per year in 2003, from its current 100 million to 150 million gallons. The CEC report, which was based on a survey of 84 ethanol companies, also noted the state's ethanol production capacity of 2.2 billion gallons per year would grow to 3 billion gallons by 2003, 4 billion gallons by 2004, and 4.4 billion by 2006.

## **21. ARB Passes New Diesel Engine Standards**

California has announced new, tougher exhaust standards for the diesel engines that power big-rig trucks, trash trucks, delivery vans and other large vehicles. The new standards take effect starting with the 2007 model year.

By 2010, ARB staff calculates, the 2007

standards will reduce 50 tons-per-day (TPD) in smog-forming emissions and 3 TPD of cancer-causing particulate matter (PM) statewide. ARB's new standards mirror U.S. Environmental Protection Agency diesel engine standards, also scheduled to go into effect in 2007. They provide a backstop for California (and perhaps other states) should EPA end up relaxing its requirements.

Compared to standards already set for 2004, the standards adopted today will bring a 90 percent reduction in smog-forming nitrogen oxide (NOx) emissions and a 90 percent reduction in PM emissions.

Aftertreatment devices to reduce harmful air emissions in exhaust first appeared on gasoline-powered cars and light truck engines since the mid-1970s. However, as stringent regulations cut harmful air emissions from gasoline engines by more than 95 percent, emissions from new large diesel engines came under increasing scrutiny because they lack aftertreatment devices.

## **22. EPA Issues Boutique Fuels Report**

EPA has released its report on the state and local "boutique" clean fuel programs called for by the President's National Energy Policy report issued May 17, 2001. The Agency's report identifies several regulatory changes that can be made in the near term that could help to moderate gasoline price spikes during future transition periods when fuel producers switch from winter to summer grade cleaner-burning gasoline. During the transition period in both 2000 and 2001, gasoline prices rose sharply, particularly in the Midwest.

In conducting its study of boutique fuels, EPA analyzed the air quality benefits of

the clean fuels programs and assessed the impact of these fuels on the production and distribution system. EPA's report identifies two major issues related to boutique fuels. The first is the need for greater flexibility in the process by which fuel marketers make the transition from winter to summer grade reformulated gasoline (RFG). The second is the growing number of state and local boutique fuels programs and the challenges that this growth may present to the gasoline distribution system.

The Agency's report to the President specifically outlines the actions that EPA will take in the near-term to provide for a more orderly transition from winter-to-summer grade RFG every spring. In summary, EPA will:

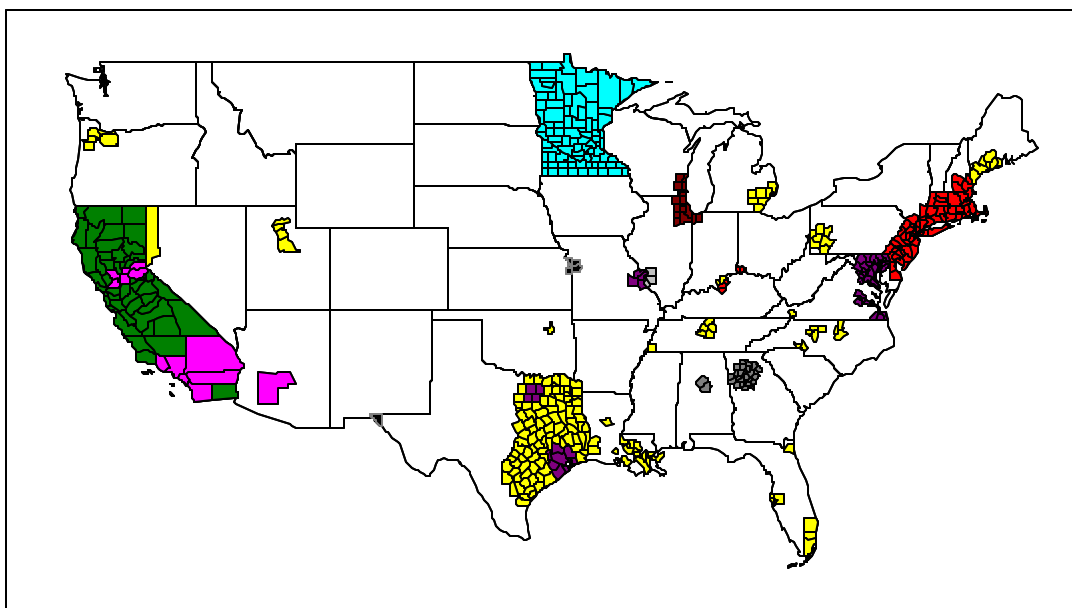
- a. Propose new regulations to ensure that terminals are able to transition from winter to summer grade fuels more gradually. This approach could help to avoid the temporary fuel shortages that, in the past, have been associated with localized spikes in gasoline prices.
- b. Allow fuel producers more flexibility in meeting fuel specifications than they currently have for their initial transition to summer fuel.
- c. Allow certain fuels types to be reclassified as RFG, thus making it easier to address localized issues that arise when there is an unexpected disruption in the distribution system.
- d. Propose to simplify

certain RFG accounting and reporting requirements.

The second issue identified by the Agency is the growing number of state and local governments that have adopted their own fuel programs that are different from the federal RFG program. Despite the number of state and local fuel programs, EPA has found that the current gasoline production and distribution system is able to provide adequate quantities of boutique fuels, as

long as there are no disruptions in the supply chain. If there is a disruption, such as a pipeline break or refinery fire, it can be difficult to provide gasoline supplies because of constraints created by these boutique fuel requirements. In addition, fuel providers are concerned that recently enacted state laws that ban the use of MTBE in future years may proliferate the number of boutique fuels and present new challenges to this country's fuel production and distribution system.

### Current Summer U.S. Gasoline Requirements



- Legend:**
- Northern RFG
    - Southern RFG
    - CA CBG
    - Fed/CA RFG
  - 7.0 RVP, 150ppm S
    - 7.0 RVP
    - 7.2 RVP
    - 7.8 RVP
  - Oxy Fuel/Ethanol Mandate
    - Northern RFG w/Ethanol
    - Conventional

In response to this second issue, EPA

staff has prepared the White Paper that

explores a number of possible approaches for addressing the issue in the longer term. EPA conducted a preliminary analysis of four fuel program options, the choices being a three-fuel option, a two-fuel option, a 49-state Federal fuel, and California fuel available nationwide. The paper also discusses options for a regional fuel program, a case assuming State MTBE bans do not go into effect, and an option assuming no oxygenate or renewable fuels mandate. The guiding principles for EPA's analyses are: 1) improve the fungibility and movement of gasoline across the country; 2) maintain or improve emission performance for each area of the country currently covered by Federal, State, or local fuel programs; 3) maintain or improve the ability of fuel producers to produce sufficient gasoline to meet demand, and 4) minimize the net cost when considering both production and distribution. This paper discusses the potential impact of each option on each of these principals. In appropriate cases where the option included a removal of the oxygen mandate in RFG, EPA included an alternative requirement for a national renewable fuels program. Additionally, given the importance of air toxics control to the states, EPA evaluated conventional gasolines in the appropriate options both with and without a 0.95 volume percent benzene averaging standard. It is important to note that options in this white paper would require legislative action in order to implement and that more analysis is needed on these options before any such action could occur.

The Agency will publish a notice in the Federal Register announcing the availability of the White Paper and requesting public review and comment. The comment period will end 45 days after publication in the Federal Register.

### **23. EPA Releases Latest Air Quality**

## **Trends Report**

Air quality in the United States continued to show steady improvement through the year 2000, according to EPA's recently released annual summary of air quality trends. The report, entitled "Latest Findings on National Air Quality: 2000 Status and Trends," shows the following air quality trends from 1991-2000 for the six major air pollutants regulated by EPA under the Clean Air Act:

- Lead concentrations decreased 50 percent,
- Carbon monoxide concentrations decreased 41 percent,
- Sulfur dioxide concentrations decreased 37 percent,
- Particulate matter concentrations decreased 19 percent,
- Nitrogen dioxide concentrations decreased 11 percent, and
- Smog (one-hour concentrations) decreased 10 percent.

### Other Highlights of the Report Are:

- Since 1970, aggregate emissions of six principal pollutants tracked nationally have been cut 29 percent. During that same time period, U.S. Gross Domestic Product increased 158 percent, energy consumption increased 45 percent, and vehicle miles traveled have increased 143 percent.
- National air quality levels measured at thousands of monitoring stations across the country have shown improvements over the past 20 years for all six principal pollutants.
- Despite this progress, over 160 million tons of pollution are emitted into the air each year in the United States, and approximately 121 million people live in areas where monitored air was unhealthy because of high levels of the six principal air pollutants.
- EPA is increasingly focusing its efforts on tracking and controlling two of these

pollutants: ground-level ozone and fine particles, key components of smog and haze.

- Of the six tracked pollutants, progress has been slowest for ground - level ozone. In the southern and north central regions of the United States, ozone levels have actually worsened in the past 10 years. Similarly, over the last 10 years, the average ozone levels in 29 of the US national parks increased over 4 percent. Much of this ozone trend is due to increased emissions of nitrogen oxides (NOx), a family of chemicals that can spread ozone hundreds of miles downwind. Between 1970 and 2000, NOx emissions in the United States have increased almost 20 percent (and 3 percent increase in the last 10 years). The majority of this increase is attributed to growth in emissions from non-road engines (like construction and recreation equipment), diesel vehicles, and power plants. Emissions of NOx also contribute to acid rain, haze, particulate matter, and damage to water bodies, like the Chesapeake Bay.

- EPA, states, and tribes have only recently begun to measure fine particles (known as PM<sub>2.5</sub>) in the air on a broad national basis. EPA will require three years worth of air quality monitoring data before determining whether areas meet the health-based standards for PM<sub>2.5</sub>. However, based on up to two years of data available in most of the country, many areas across the Southeast, Midwest, and Mid-Atlantic regions, and California may have air quality that is unhealthy due to fine particles.

- Sulfates formed primarily from SO<sub>2</sub> emissions from coal-fired power plants are the dominant source of fine particles in the eastern United States. SO<sub>2</sub> emissions also contribute to the formation of acid rain. EPA's market-based emissions trading program to reduce acid rain has reduced these air pollutants from 16 million tons in 1990 to 11.2 million tons in 2000. One of the

many benefits resulting from this reduction is that visibility has improved in the eastern United States. However, measurements show that visibility for the best days in the eastern United States is about the same as the worst days in the West.

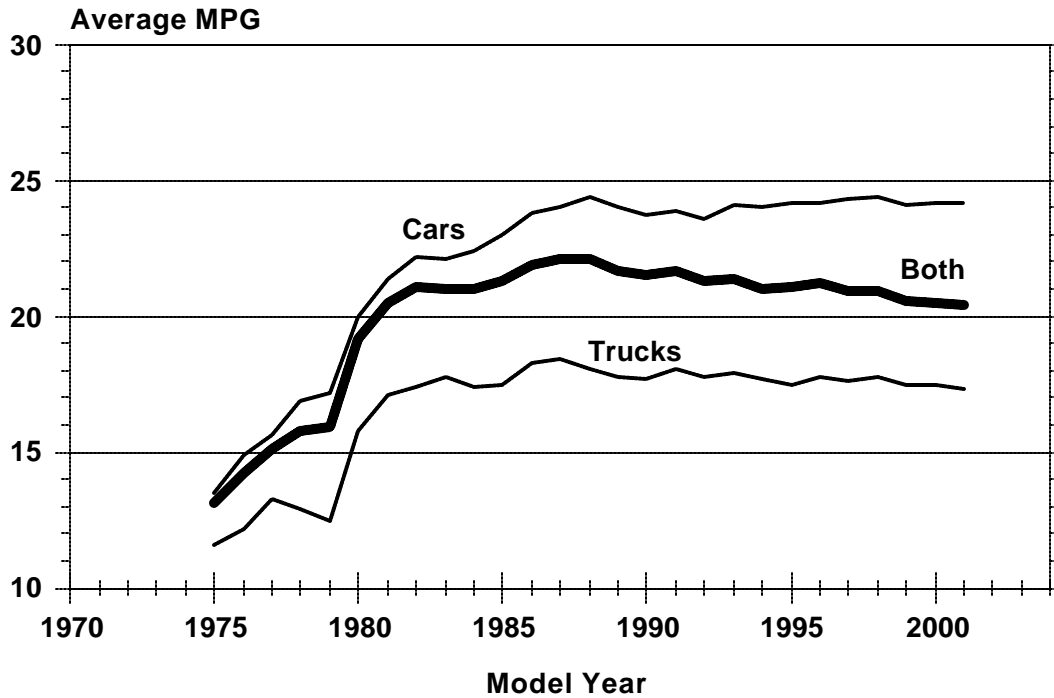
- Improvements are being made in the fight to protect the stratospheric ozone layer. Most recent measurements showed that concentrations of the ozone depleting substance, methyl chloroform, have started to fall, indicating that emissions have been greatly reduced. Concentrations in the upper atmosphere of other ozone depleting substances, like chlorofluorocarbons, are also beginning to decrease.

- EPA continues to work closely with thousands of companies and other organizations to voluntarily reduce greenhouse gases associated with global climate change. In 2000 alone, EPA's voluntary programs reduced greenhouse gas emissions by 57 million metric tons of carbon equivalent (equal to removing 40 million cars from the road). By investing in products that use energy more efficiently, consumers and businesses have reduced energy consumption by some 75 billion kilowatt hours and saved more than \$5 billion on their 2000 energy bills.

## **24. Fuel Economy Decline Continues in US**

EPA has announced the 27th annual Miles Per Gallon estimates for 2002 passenger vehicles. This report summarizes key fuel economy and technology usage trends related to model year 1975 through 2001 light vehicles sold in the United States. Light vehicles are those vehicles that EPA and the U.S. Department of Transportation (DOT) classify as cars or light-duty trucks (sport utility vehicles, vans, and pickup trucks with less than 8,500 pounds gross vehicle weight ratings).

## Fuel Economy by Model Year



Average new light-vehicle fuel economy continues to decline. Since peaking at 22.1 mpg in 1987 and 1988, average light-vehicle fuel economy has declined nearly eight percent to 20.4 mpg and for 2001 is lower than it has been at any time since 1980. The primary reasons for this decline are the increasing market share of less efficient light trucks, increased vehicle weight, and increased vehicle performance.

The government's annual ranking of the 12 best and worst vehicles for fuel efficiency include the following:

For the third year in a row, the hybrid-electric Honda Insight is ranked as the most fuel-efficient car at 61 miles per gallon (mpg) for city driving and 68 mpg on the highway. The report notes that by choosing the most fuel-efficient car in a particular vehicle class, one could save more than \$1,500 in fuel costs and prevent the release of roughly 15 tons of greenhouse gas pollution over the lifetime of the vehicle.

## BEST MILEAGE

Name	MPG
Honda Insight	64
Toyota Prius*	48
Volkswagen Jetta Wagon	45
Volkswagen Jetta	45
Volkswagen Golf	45
Volkswagen New Beetle	45
Honda Civic HX	39
Toyota Echo	37
Toyota Corolla	36
Honda Civic	36
Chevrolet Prizm	35
Mitsubishi Mirage	35

\* Automatic transmission.

## WORST MILEAGE

Name	MPG
Lamborghini L-147	10
Ferrari 360	13
Bentley Azure*	13
Bentley Continental SC*	13
Bentley Continental T*	13
Rolls Royce Corniche*	13
Bentley Continental R*	13
Bentley Arnage*	13
Bentley Arnage LWB*	13
Ford F150*	13
Dodge Dakota*	13
Dodge Ram 1500*	13

If auto manufacturers increased fuel economy by as little as 3 miles per gallon, consumers would save as much as \$25 billion a year in fuel costs, the EPA said. That modest increase in fuel efficiency would also reduce 140 million metric tons of carbon dioxide emissions per year and cut the United States' reliance on foreign oil by 1 million barrels of oil each day, it said. The nation consumes about 20 million barrels of petroleum every day, with more than half imported.

At the same time, the National Academy of Sciences held a special hearing to hear automakers' complaints about a July report on how the industry could make vehicles more fuel-efficient. The science panel concluded in its report that Detroit could increase the mileage of gas-guzzling sport utility vehicles, pick-up trucks and cars by 16 to 47 percent over the next 10 to 15 years. The report stopped short of calling for specific increases in fuel efficiency. The Alliance of Automobile Manufacturers said the report overestimated its members' ability to improve gas mileage. In response, the Academy has announced that it is planning to undertake another study to determine the automobile industry's ability to

improve the fuel efficiency of sport-utility vehicles (SUVs) and minivans. The academy said that the new study could be completed by as early as November.

Congress adopted the nation's current Corporate Average Fuel Economy (CAFE) standards in 1975 after the Arab oil embargo. The standards require passenger cars to get an average 27.5 mpg and light trucks to get 20.7 mpg. At that time, light trucks were allowed to get lower mileage because mostly farmers and small businesses used them. Now, as illustrated in the figure above, sport utility vehicles and other light trucks account for half of all U.S. vehicle sales.

In August, the U.S. House rejected a plan to require automakers to raise the fuel efficiency of all light trucks. The House approved a broad national energy package that would allow drilling in the Arctic National Wildlife Refuge and boost supplies of natural gas, electricity and coal. The Democratic-controlled Senate, which has yet to finish writing its energy bill, is expected to order the Transportation Department to find ways to hold overall fuel consumption by vehicles at a set level rather than specifying mileage standards for automakers. But a fight is brewing in the Senate over a

Republican-backed plan to open the Arctic refuge to drilling, which many Democrats oppose.

In conjunction with the fuel economy report, EPA also released 2002 model year emission data on its "Green Vehicle Guide" web site, an on-line tool that gives information about the environmental performance of cars and light trucks. The guide rates vehicles according to their environmental performance and includes both emission and fuel economy information.

## **25. Ford, EPA In Deal For New Hybrid Engine Design**

Ford Motor Co. announced that it has signed an exclusive agreement with the U.S. Environmental Protection Agency to develop a new kind of high-mileage "hybrid" engine for trucks and sport utility vehicles. Many automakers have been developing so-called hybrid cars and trucks that marry a gasoline engine with an electric motor and battery pack. The electric motor acts as both a booster and an energy recovery device, increasing fuel economy by reducing the workload of the gasoline engine.

Instead of electric batteries, the Ford-EPA system uses a pressurized liquid to store energy. Hydraulic motors and pumps recover energy from the engine and brakes, and then use the pressure from the tanks to help power the vehicle.

Ford spokesman Jon Harmon said the system was still in the laboratory, but could offer some advantages over electric hybrids. The tanks needed to store pressurized liquid may be lighter and cheaper than hybrid batteries and possibly more efficient. In addition, the hydraulic system produces more torque, or twisting power, than other hybrids - an important consideration for trucks that require high-torque engines.

The terms of the agreement were not disclosed. Ford has an exclusive right to the technology and said it hopes to put a pilot fleet of vehicles with the system on the road by the end of the decade.

Only Toyota Motor Corp. and Honda Motor Co. Ltd. currently sell small numbers of hybrid cars in the United States. Ford, General Motors Corp. and the Chrysler side of DaimlerChrysler AG all have plans to sell limited numbers of hybrid trucks or SUVs by 2003.

The potential cost advantages are that hydraulic components have been understood and built and used for decades (though not optimized for personal vehicle applications) and use hardware and components made from cheap materials with assembly methods that are straightforward, e.g., a hydraulic storage tank (called an accumulator, basically like a natural gas storage tank) is a lot less expensive than the batteries needed to provide the same power. You also don't need the "power electronics" that an electric hybrid needs. Bottom line, EPA engineers think a hydraulic hybrid has the potential to be just a little more expensive than a conventional vehicle, while current electric hybrids are much more expensive.

The power advantage is simply that a hydraulic system has extremely high specific power (a lot of power can be absorbed from the brakes in a short period of time, a lot of power can be transmitted to the wheels for acceleration in a short period of time), much higher than batteries (ultra capacitors are also better than batteries). On the other hand, batteries have much higher specific energy than either hydraulics or ultra capacitors. What this means is that a hydraulic system can store and deliver high amounts of power for only a short period of time, while batteries can deliver much less power but for a much



longer time. This means that a hydraulic system may well be better for optimizing fuel economy, while a battery system is a lot better for "zero-emissions, engine off" operation.

## **26. Fuel Cell Study Recommends Initial Use of Hydrogen in California**

Fuel cell vehicles can be commercially viable in California, North America's largest auto market, but a focused development effort and government help are needed to get them on the road, according to a new study that has just been released<sup>4</sup>. The study, prepared for the California Fuel Cell Partnership, is one of the first detailed examinations of the hurdles faced by a technology that is sometimes hailed as a replacement for the internal combustion engine.

Car designers still faces obstacles, such as creating adequate fuel processing equipment on the vehicles, but if progress continues "all other challenges to (fuel cell vehicle) commercialization can be overcome," according to the study.

Fuel cells produce electricity from hydrogen by using a chemical reaction, but developers are at odds over what fuels the cars will reformulate to get the hydrogen. Alternatives range from special gasolines to methanol and ethanol. The study said commercialization will come faster if developers agree the first cars on the market will use compressed hydrogen, and allow time to develop the equipment needed to reformulate hydrogen from liquid fuels.

"Automakers, fuel providers and government of all level must co-operate

to develop an adequate public demand for FCV (fuel cell vehicles)," according to the study.

Automakers have forecast their first fuel cell vehicles would reach consumers between 2003 and 2005, but researchers warn it could take several years to reach a commercialization target of 2 to 5 percent of all vehicles sold in California. California is seen as the first major market for fuel cell cars because the state's air pollution problems have forced it to push the automobile makers into developing alternatives to the petroleum-burning internal combustion engine.

The fuel cell is considered a green technology because the only direct by-products of the process are heat and water, but the study cautions the vehicles are not "zero emission" because the fuel reformulating equipment creates pollutants.

The study said that while promoters of fuel cell vehicles must increase public awareness of the technology's environmental benefits, they cannot depend on that public support to make the cars a quick commercial success.

"FCV environmental benefits need to be presented as a pathway to long-term future societal benefits rather than early major improvements," according to the study, which noted some of the benefits may take decades to realize.

Government and industry must also recognize the potential non-transportation benefits of fuel cell vehicles, such as their ability to supply electricity to homes when not being driven, the researchers said.

A major obstacle to use of fuel cells in vehicles is the lack of fuelling infrastructure. Even the gasoline eyed by some designers as a source of the

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<sup>4</sup> "Bringing Fuel Cell Vehicles to Market: Scenarios and Challenges with Fuel Alternatives", Bevilacqua Knight, Inc., October 2001

fuel cells' hydrogen is different from the gasoline now sold, and would require service stations to undergo expensive retrofits.

The study warns government may have to assume some of the financial risk in building the fuelling infrastructure. That would avoid a Catch-22 situation with energy firms leery of investing in infrastructure until fuel cell cars are on the road, but with cars unable to be sold until a fuelling infrastructure is in place. Among the suggestions offered by the researchers is that the U.S. federal and state governments could create a public corporation "to build, operate, and eventually sell the FCV fuel delivery infrastructure."

The study did not directly compare the economics of the different fuel types, but the researchers suggested ethanol faced the biggest marketing problems - due largely to the lack of adequate production capacity. The researchers did not recommend a preferred fuel type, in part, because the California Fuel Cell Partnership includes private sector members that are promoting competing fuel technologies.

The first cars will likely be those aimed at corporate fleets, but the study said automakers must quickly introduce a wider variety of products such as sport utility vehicles to interest consumers.

### **27. Four-pollutant Bill Under Discussion**

Kicking off the session in front of some 100 stakeholders on Oct. 4, Senator Jim Jeffords (I-Vt.), chairman of the Environment and Public Works Committee, reaffirmed his long-held position that he will move legislation out of his committee this year to regulate power plant emissions of nitrogen oxides (NOx), sulfur dioxide (SO2), mercury and the greenhouse gas

carbon dioxide (CO2). It remains unclear what fate Jeffords' bill, S. 556, will see when it comes before the full Congress. Last month's terrorist attacks, coupled with White House concerns over dealing with climate change, appear to have moved the issue down on the legislative priority scale. The Bush administration's three-pollutant proposal, originally expected later this month from the Environmental Protection Agency appears to have stalled. It is expected to avoid CO2 regulations while calling for strict cuts on NOx, SO2 and mercury. Also in the plan is the elimination of several Clean Air Act programs that EPA has said would be taken care of with its three-pollutant cuts. Several industry groups have also introduced their own multi-pollutant proposals, suggesting a range of emission cuts and relief plans that fall below the Jeffords bill.

The closed-door talks were aimed at bringing together stakeholders representing a range of environmental, industry and state interests. From the Bush administration were officials from the White House Council on Environmental Quality, EPA and Energy Department, agencies that are reported to disagree among one another over how to handle the multi-pollutant issue.

### **28. EPA Approves Houston Smog Plan**

The U.S. EPA has approved a five-year plan to clean the air in Houston, Texas, calling it one of the best air pollution reduction measures ever drafted. The package of pollution-control measures, crafted by a coalition of businesses, environmentalists, community leaders and state regulators, is expected to cut nitrogen oxide emissions by 75 percent and volatile organic compounds by 40 percent by 2007. Those goals will be achieved by reducing highway speed limits to 55 miles per hour, imposing

stricter tailpipe emissions tests on motorists and banning gasoline-powered lawn equipment during morning hours in the summer. The plan also requires major industrial sources in the eight-county Houston region to reduce nitrogen oxide emissions by an average of 90 percent.

The plan, submitted to EPA by the Texas Natural Resource Conservation Commission last December, is intended to bring the region into compliance with Clean Air Act regulations. Houston and Los Angeles have alternated in recent years as the nation's most polluted cities, based on the number of days that ozone levels exceed federal standards. This year the title seems to have returned to Los Angeles, with 37 days of dangerous ozone versus 30 for Houston. In 2000, Houston had 44 unsafe days, versus 40 for Los Angeles.

### **29. Diesel Retrofit Status in the US**

The US EPA is working closely with approximately two dozen cities across the US regarding the development and implementation of diesel retrofit programs. Their goal is to get commitments for the retrofit of 100,000 vehicles by the end of this year. At present, approximately 61,000 commitments are in hand; EPA estimates that 6,000 to 10,000 vehicles are retrofitted already. The City of New York is considering adding all its school buses to the existing transit bus retrofit program and if it does so EPA feels it will have a chance of achieving its goal of 100,000 by years end.

All of the current PM filter retrofit programs use fuel with 30 PPM sulfur or less; most use fuel with 15 PPM or less.

One of the programs under development is in Seattle, Washington. Presently they have commitments to retrofit the transit buses, school buses

and Boeing, one of the largest private fleets in the area, for a total of about 5000 vehicles. They are in discussion with other companies and are considering expanding the geographical scope of the program to places as far away as Tacoma. If successful, the program could from to as many as 14,000 vehicles.

Typical cost of individual retrofits range from about \$6,000 to \$10,000 per vehicle, but Seattle hopes that they can lower this somewhat by expanding the competition to systems which have not yet been verified by EPA but which have high promise.

## **ASIA-PACIFIC**

### **30. Delhi Court Gives More Time For CNG Buses**

The Indian Supreme Court has announced that the deadline for converting all buses to CNG could be extended yet again till October 18. By then both the Delhi and Central governments are required to submit their schedule of implementation to the Court. Until then diesel with 500 ppm sulphur can continue as an interim measure but the Court told the state government to pay special attention to checking of adulteration. The Court did not agree to the strategy that its advisory group, EPCA, had suggested of penalizing the bus operators for running diesel buses on the ground that the operators cannot be held responsible if CNG supply is still inadequate in the city.

The Court has been under intense pressure. Earlier, three-wheelers have been given the option of using four-stroke low benzene gasoline but most are expected to opt for CNG for economic reasons. Diesel taxis are also allowed so long as they comply with Euro II standards but the Court remains

relatively firm on the bus order. At the same time, the government is strongly united in opposition to the order.

The situation was tense in Delhi as more than four million people braced themselves for the possibility that the Supreme Court at the end of the month could have banished from the roads thousands of diesel buses they ride daily. More than two years ago, the court — India's main catalyst of environmental reform — ordered authorities to replace Delhi's entire diesel fleet with 10,000 buses that run on cleaner compressed natural gas but the government has simply not done it. The deadline is September 30th.

The problem is acute and the World Health Organization estimates that as many as 100,000 Indians die each year because of air pollution.

Over the last decade, Delhi has made strides in reducing auto emissions through a switch to unleaded gasoline and the introduction of catalysts on new cars, among other steps, and there are modest signs that Delhi's air is somewhat cleaner. But Delhi still has among the highest levels of particulate pollution in the world.

For months, the shortage of compressed natural gas led to an explosion of snaking lines of bus and rickshaw drivers waiting 8, 10, even 12 hours to fill their tanks. In recent days, lines have eased as stations developed a coupon system for rationing gas and the government forbade the sale of compressed natural gas to privately owned cars, but the shortage remains.

### **31. Developments in China**

Dongfeng Automobile Co. displayed more than 10 new series of products for 2001 on September 19 at its headquarters in Xiangfan, Hubei

Province. These included the Dongfeng Cummins series diesel engines, the Dongfeng Plum Blossom series castings, the Dongfeng Dorica and Prince light trucks, the Dongfeng Flying Fox touring van, and the Dongfeng Xintianyou, the company's first pickup model. The Xintianyu has a Isuzu body and is powered by a Toyota 4Y, an optional EQ491 EFI gasoline engine or an Isuzu 4JBI diesel engine, all meeting the Euro I emission standard. The maximum speed and fuel efficiency of the model, which comes in standard, basic and luxury, are 130 km per hour and 9 liters per 100 km, respectively. Zhu Fengshou, the new general manager of the company, presided at the ceremony

Dongfeng-Honda Automotive Parts Co., Ltd., a joint venture between Dongfeng Motor Corp. and Honda of Japan, recently began building a new production facility in the Dongfeng Motor City of the Dayawan Development Zone in Huizhou, Guangdong Province. The 72,000 square meter production facility will be complete by next year with annual production capacity of 240,000 engines.

The Ruifeng multi purpose vehicle (MPV), made via a cooperation between Jianghuai Automobile Co., Ltd. in Hefei of Anhui Province and Hyundai of Korea, will be introduced to the Beijing, Shanghai, Guangzhou, Shenzhen and Hefei markets at the end of this month. The localization rate of the Ruifeng will surpass 40 percent next year and once it reaches 50 percent, its price will be no more than ¥200,000, according to Zuo Yan'an, Chairman of Jianghuai.

The Hafei Group plans to launch an all new MPV model that costs between ¥50,000 to ¥60,000 next year, according to Lu Gongwei, Vice President of the Group. The new model, which is 3.5 meter long and seats five, is jointly

developed by Pinafarina of Italy, which had also helped develop Hafei's Songhuajiang Zhongyi minivan. Hafei's other model, the Saima, based on a new model introduced by Mitsubishi earlier this year, will be introduced to the market next year. It is equipped with a 1.3 liter Dong'an Mitsubishi engine that has a maximum power of 62 kW. The fuel efficiency of the Saima is about 4.5 liters per 100 km, and its price tag is about ¥80,000.

China produced 54,300 units and 589,200 units of trucks in August and first eight months of the year, down 16.76 percent and up 7.52 percent respectively from the same periods of last year, according to the State Bureau of Statistics.

### **32. India May Scrap Old Vehicles**

The Indian government has asked an automobile industry body to draw up a plan for retiring older vehicles in a bid to reduce pollution and improve road safety. "The ministry (of heavy industries and public enterprises), asked SIAM to work on a proposal on a National Policy on Vehicle Retirement," R. Seshasayee, the newly appointed president of the Society of Indian Automobile Manufacturers (SIAM) told a news conference.

He said the government was being pushed to consider taking older vehicle off Indian roads following several judgments by India's Supreme Court to impose more stringent vehicle emission norms and improve air quality.

Seshasayee who is also managing director of India's second-largest commercial vehicle maker, Ashok Leyland Ltd, said a SIAM study in five Indian cities had shown that retiring vehicles older than 15 years would reduce the pollution load by almost 60 percent in these cities. An estimated 60

percent of India's commercial vehicle fleet was older than 10 years, he said.

But any such policy would need to be graduated so that the owners of trucks, buses, taxis and autos, did not face any hardships, he added. The plan also must build in incentives for owners of older vehicles to switch to newer vehicles and should not have the effect of reducing tax revenues for governments, he said.

Seshasayee also said SIAM would also oppose further reductions in tariffs on automobiles and components unless the government improved the domestic manufacturing environment. He listed India's inflexible labor laws, a multiplicity of taxes and poor infrastructure like roads and power as impeding the international competitiveness of Indian companies.

### **33. Tokyo Approves DPFs and Converters**

The Tokyo municipal government has approved six diesel particulate filters and nine diesel oxidation catalysts for mandatory installation by October 2003 on diesel powered trucks and buses.

The DPFs designated are two models developed by Comotech Co. of Saitama, Japan; three Johnson Matthey models imported by Mitsui & Co.; and a model produced by Engelhard and imported by Nabco Co.

Isuzu Motor, Toyota, Hino Motor, Nissan Diesel and Mitsubishi Motors produce the oxidation catalysts approved.

### **34. Bangkok Air Quality Improving**

Although the battle is far from over, Bangkok is breathing noticeably easier these days. Hard targets have been set and hit for reducing different pollutant levels and although the pace has been

incremental, providing the time for both industry and individuals to adjust, Bangkok has achieved quantifiably cleaner air in the city.

The first step was to get the lead out of the air and by 1996 all petrol sold legally in Thailand was unleaded fuel. A recent survey by the Ministry of Science, Technology and Environment found the blood-lead level of schoolchildren and traffic policemen has fallen by half since 1993.

Next, vehicle manufacturers have adopted European emission standards for cars exported to and produced in Thailand. Even tighter standards are required for motorcycles, which account for 43% of the vehicles and 40% of the particulate matter in Bangkok's air. The main culprits are two-stroke motorcycles -- in 1993, 98% of the motorcycles sold in Thailand were of the two-stroke variety, notorious for their white-smoke emissions. This year 90% of new motorcycles sold in Bangkok will be cleaner, more fuel-efficient, four-stroke models; by 2002, two-stroke motorcycles won't be available in Thailand's showrooms.

Those that made the switch quickest have profited most. Japan's fast-changing Honda has grabbed market share from slower-moving rivals Kawasaki and Suzuki with its four-stroke Honda dream model. Meanwhile, when the economic crisis hit domestic car sales, manufacturers were able to send their surpluses to still-booming markets in Europe and the United States.

Last year the BMA planted over 400,000 trees in the city while another 400,000 are set to take root in 2001. Since 1993, Bangkok's open green space has more than doubled to 1,377 acres. That's a vast improvement from the early 1990s, when the World Health Organization had Bangkok near the bottom of the

charts in terms of park space per urban resident.

Still, the fight is a work in progress. Polluting two-stroke motorcycles still represent 80% of the bikes on Bangkok's streets and contribute nearly 50% of the particulates in the air. In the main, that's because decentralized annual emissions inspections are subject to corruption and fraud. A recent informal survey conducted by a researcher at Bangkok's Chulalongkorn University found that 50% of privately run inspection stations gave motorcycles a clean bill of health without even measuring emissions.

Poorly maintained public and private buses, many running on used engines dating to the 1970s, continue to blacken the air. Because powerful politicians have interests in some of the privately run buses, very few seem to get stopped by inspectors, even though they spew 40% of the particulate matter in the air.

### **35. Daihatsu Develops Hybrid Minivehicle**

Daihatsu Motor Co Ltd has announced that it has developed Japan's first hybrid minivehicle but would need to cut manufacturing costs before it could be marketed in Japan. Daihatsu is Japan's second-biggest maker of minivehicles, which receive preferential tax treatment in the country.

It has developed the hybrid car, based on its Atray minivehicle, powered by a 660cc gasoline engine and an electric motor.

Toyota Motor owns 51.1 percent in Daihatsu.

The Nihon Keizai Shimbun daily reported that Daihatsu was expected to start selling the hybrid minivehicles as

early as 2003.

### **36. Motor Vehicle Pollution Control in Singapore**

A wide range of measures has been adopted in Singapore to control air pollution from motor vehicles. These include:

- Adoption of Stringent Engine Emission Standards
- Adoption of Fuel Quality Standards
- Periodic mandatory Inspection of vehicle emissions by vehicle inspection centres
- Enforcement against smoky vehicles by Pollution Control Department

Currently, owners of vehicles caught emitting black smoke with opacity of more than 50 HSU are fined \$150, \$300 and \$500 for the first, second and subsequent offence respectively within a window period of 2 years.

With effect from 1 Jan 2001, all petrol & diesel-driven vehicles must comply with the exhaust emission standard as specified in the European Directive 96/69/EC for light duty vehicles with maximum laden weight (MLW) of 3,500 kg or less and 91/542/EEC Stage II for heavy vehicles with MLW of more than 3,500 kg before these vehicles can be registered for use in Singapore.

For motorcycles/scooters, the current emission standard adopted is the US 40 CFR 86.410-80 Emission Standard.

With effect from 1 Aug 2000, all off-road diesel engines have been required to comply with either Japan, US or EU off-road diesel exhaust emission standards. Any equipment or machinery that is equipped with diesel engines as the main or auxiliary prime mover and not registered with the LTA for use on public

roads is required to have a permit prior to the import of such equipment. The application form is to be submitted to PCD one month prior to the import of the equipment.

For in-service vehicles, all vehicles are subject to mandatory inspections periodically. During such inspections, emissions from the vehicles are tested to ensure that they comply with the prescribed standard. The schedule of mandatory inspection and emission limits for in-service vehicles are listed as follows: -

#### **(c) Petrol-driven vehicles:**

Schedule: Every two years (< 10 yr old)  
Every year (> 10 yr old)  
CO - 6% by vol (registered on or before 1986)  
CO - 4.5% by vol (registered after 86)  
CO - 3.5% by vol (registered after Jul 92)

#### **(d) Diesel-driven vehicles:**

Schedule: Commercial Vehicles. : Every year (<10 yr old)  
Every 6 months (>10 yr old)  
Passenger carrying vehicles. : Every 6 months  
Smoke Opacity Limit: 50 HSU

#### **(e) Motorcycles/scooters:**

Schedule: every year (after 3 years from registration date)  
CO limit - 4.5% by vol

Alternative technology 'green' vehicles are clean-energy vehicles that use energy sources other than petroleum such as compressed natural gas (CNG), electricity, methanol, hydrogen, or solar energy. The variety of new vehicle

technologies being experimented on include electric and hybrid vehicles, gas turbines, fuel cells, ultra-light materials, compressed air and engines running on natural gas, alcohol or biofuels. These vehicles offer the advantages of reduced emissions of CO<sub>2</sub> and other exhaust gases. Many clean-energy vehicles have been developed and some are already in operation, but they still present certain problems such as short traveling ranges and high operational costs. For this reason, they are at present used only for a limited number of applications and within limited areas. In order to increase their use, it will be necessary to resolve the various technical issues still outstanding and to build the fuel-supply stations and other infrastructural elements they require.

In order to encourage their use, a tax incentive program has been in place for hybrid and electric vehicles. Purchasers of these vehicles receive rebates equal to 20% of the Open Market Value (OMV) of the vehicle. In addition they are each eligible for a road tax rebate – 10% for hybrid cars and 20% for electric cars. When these rebates were introduced on November 10, 2000, the government said they were meant to trim the price differential between environmentally friendly vehicles and conventional ones.

The Ministry of the Environment (ENV) and the Ministry of Communications and Information Technology (MCIT) recently announced an expansion of the program and that the green vehicle rebates will be extended to natural gas vehicles. Owners of natural gas buses and passenger cars (including taxis) will be able to enjoy the following rebates with immediate effect:

- Rebate equivalent to 5% and 20% of the vehicle's Open Market Value (OMV) for buses

and passenger cars (including taxis) respectively that can be used to offset the fees and taxes payable at registration;

- Road tax rebate of 20% .

The above rebates will be in place until 31 Dec 2003. ENV and MCIT will then review if the rebates are still relevant.

## GENERAL

### 37. Air Pollution Poses Risk to Diabetics

A study of hospital admissions in Cook County, Illinois has identified a new group of people, diabetics, who are especially vulnerable to air pollution. Researchers found that when microscopic soot pollution goes up, there is a 2 percent increase in admissions for heart disease among diabetics. By comparison, there was a less than 1 percent increase in heart disease admissions among non-diabetics.

The study by researchers from the Harvard School of Public Health is published in the American Journal of Respiratory and Critical Care Medicine. Prior studies have shown that children, the elderly and people with heart and lung diseases are more susceptible than the general population to air pollution.

Harvard researchers picked Cook County because it is the most populous county in the United States with daily monitoring of particulates. They looked at what effect fluctuating particulate levels had on the number of Medicare patients admitted to hospitals for heart and lung diseases. Diabetics were no more likely than other people to be admitted for lung disease on days when particulate levels were high. But they were more than twice as likely to be admitted for heart disease when there was an increase of 10 micrograms of



particulates per cubic meter of air. Particulate levels in Chicago usually range from 25 to 150 micrograms per cubic meter.

An estimated 16 million people in the United States have diabetes, but 5 million don't know it, the American Diabetes Association said. Diabetics are at increased risk for heart attacks, strokes and other health problems.

### **38. Fuel Cell Buses to Hit the Road in Six Polluted Cities**

Six of the world's smoggiest cities are to benefit from the introduction of fuel cell powered buses. The five-year, \$60 million program announced by the Global Environment Facility will provide 46 buses powered by fuel cells for Mexico City, Sao Paulo, Cairo, New Delhi, Shanghai, and Beijing.

The mega cities listed in the announcement need all the help they can get when it comes to pollution. Mexico City has the unenviable reputation of being the world's most polluted city, partly because it must cope with the transport demands of its 20 million residents. However, the Chinese Environmental Bureau admitted last year that the capital Beijing sees pollution levels that exceed even Mexico City's during the winter because of the widespread burning of coal.

The GEF program will help the fuel-cell bus industry to gain experience in developing countries where it hopes to reach commercial viability by 2010. According to the GEF, an additional \$80 million for the project will come from recipient governments and the private sector.

The program targets the world's largest markets for urban transit buses. Developing countries account for 70 percent of the global demand for buses,

according to some estimates. "By focusing on these six cities in different regions, we hope to maximize exposure to the technology and accelerate both the transfer and commercialization of this technology in developing countries," said Richard Hosier, the UNDP-GEF principal technical adviser for climate change.