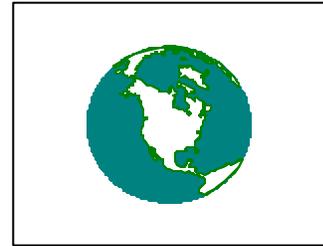


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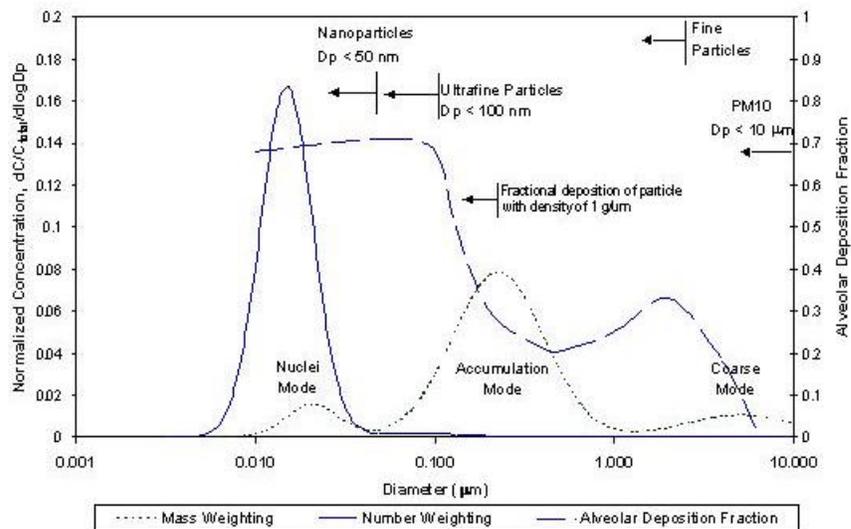


# CAR LINES

Issue 2002 - 1

February , 2002

Typical engine exhaust mass and number weighted size distributions shown with alveolar deposition



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## **EUROPE**

### **1. German CO2 Emissions Up 1.5% in 2001**

Germany's carbon dioxide (CO<sub>2</sub>) emissions rose by 1.5 percent in 2001 due to the operation of new brown coal plants in the former East German states and the increased use of heating oil by homeowners, according to an environmental lobby group. Bonn-based Germanwatch said the decision to build the new coal plants by the previous government, as part of its policy to restructure the region after the country's reunification in 1989, was now impacting on the climate protection goals of the present government.

Work began on building the brown coal plants in the early 1990s and was completed by 2000. The plants have thus been in operation for a full year.

Germany targets a 25-percent cut in its CO<sub>2</sub> emissions on 1990 levels by 2005, but that target is also threatened by greater use of brown coal in western Germany, as utilities plan increased dependence on the climate-damaging fuel. Essen-based utility RWE's Rhinebraun subsidiary has yet to decide whether it will open up the Garzweiler coal mine, west of Cologne, which will provide the firm with a source of the fuel for up to 40 years.

The rise in emissions is also due to a 16-percent increase in the use of heating oil in 2001, which corresponds to around 15 million tons of coal equivalent. That was due to relatively cold temperatures in the early part of 2001 and to the fact homeowners took advantage of the fall in oil prices in the second half of the year to fill up oil reservoirs in their heating units.

But there had been a positive development in the traffic sector thanks to the impact on oil and diesel consumption of the country's eco-tax - a national levy on energy use - and from increased oil prices in early 2001. Traffic decreased last year by five percent on 1999 levels in terms of kilometers driven, while petrol and diesel consumption fell respectively by 2.8 and one percent, Germanwatch said.

### **2. EU Will Attempt To Regulate Emissions From Ships**

The European Commission (EC) has issued a discussion paper titled "A Community Strategy On Air Pollution From Seagoing Ships", intended to inform the development of a European strategy on air pollution from seagoing ships. Emissions from ocean going ships are currently not regulated in the EU.

Air pollutant emissions from seagoing ships do not stop at national boundaries. Some disperse to the land, particularly coastal areas, causing environmental problems that affect human health, ecosystems and the built environment. Emissions of sulphur dioxide and nitrogen oxides are particularly significant, causing acidification and eutrophication and leading to the formation of ground-

level ozone and particulate matter.

EU Member States have already achieved a great deal to reduce land-based emissions of these pollutants, for example through the recent directives 2001/80 on Large Combustion Plants and 2001/81 on National Emissions Ceilings (NEC). But for the most part, seagoing ships are exempted from existing EU air quality legislation, including the NEC directive, and to date, marine heavy fuel oils not been subject to EU environmental legislation.

The result is that seagoing ships' contribution to EU emissions is rising. Preliminary projections suggest it is quite possible that by 2010, ship emissions of sulphur dioxide could have reached three quarters of land emissions. For nitrogen oxides, the figure is probably nearer 60%.

The Commission has recently let a new study contract to quantify ship emissions more precisely, based on year 2000 ship movements, and including in-port emissions for the first time.

What is already clear is that for sulphur oxide, the cost of reducing emissions from seagoing ships is now considerably lower than further abatement measures in other sectors. The cost of limiting the sulphur content of marine bunkers in the North Sea and the Baltic Sea to 1.5% (as required under Annex VI of the International Maritime Organization's MARPOL Convention) has been estimated at about \*87m per year; while equivalent emissions reductions from land-based sources would cost about \*1150m.

2010 ship emissions are projected from existing inventories for the North Sea & English Channel, the Mediterranean Sea & Black Sea, the North East Atlantic and the Baltic Sea on the basis of a 1.5% per annum growth scenario. 2010 land-based emissions are the NEC targets for the EU-15.

The Commission recognizes that in an ideal world, international solutions are preferable where possible because of the global nature of shipping. For this reason the Commission is keen to promote an early ratification of the air pollution Annex VI of the IMO's MARPOL Convention. However, the standards set in MARPOL Annex VI are not very stringent, and it is not clear when the Annex will enter into force.

The Commission also recognizes that on many environmental criteria, shipping performs well relative to other forms of transport. For this reason the Commission want to continue to promote shipping and move the carriage of more goods from land to sea. But it is nonetheless important to examine the environmental impact of ship emissions and propose measures where necessary to bring shipping into line with other land-based sectors and transport modes.

Work on the strategy is being informed by two studies, which have been

produced recently for the Commission:

- \* 2000 study by BMT Murray Fenton Edon Liddiard Vince Ltd on the implications of an EU system to reduce ship emissions of SO<sub>2</sub> and NO<sub>x</sub> (henceforth the "BMT study")
- \* 2001 study by AEA Technology on measures to reduce emissions of VOCs during loading and unloading of ships in the EU (henceforth "the AEA study").

The strategy will also be informed by a new study to quantify ship emissions in EU waters, already mentioned. This study will quantify ship emissions of SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub> and hydrocarbons in the North Sea, Irish Sea, English Channel, Baltic Sea, Black Sea and Mediterranean, on the basis of year 2000 ship movements. It will also quantify in-port emissions of these pollutants plus particulate matter, as well as carrying out a market survey of marine distillates and investigating the feasibility of ships storing and using multiple grades of marine distillates.

Separately, the Commission will be commissioning advice on the costs to the oil industry of providing more low-sulphur marine fuels in future, and likely price premium for these fuels.

The results of both of these studies will inform the drafting of the Communication and any parallel proposal to amend directive 1999/32.

The strategy is being proposed at this stage to respond to requirements in three separate directives for the Commission to consider measures to reduce air pollutant emissions from the maritime sector. These are:

**Directive 2001/81 on National Emission Ceilings**, which commits the Commission to report to the EP and Council by the end of 2002 on the extent to which emissions from international maritime traffic contribute to acidification, eutrophication and the formation of ground-level ozone within the Community.

**Directive 1999/32 on the Sulphur Content of Liquid Fuels**, which already sets sulphur limits for marine distillate oil used in Community territorial waters, but commits the Commission to "consider which measures could be taken to reduce the contribution to acidification of the combustion of marine fuels other than distillates, and, if appropriate, make a proposal".

**Directive 1994/63 on Stage 1 VOC Vapor Recovery**, which invites the Commission to look at extending the directive's scope to address volatile organic compounds, emitted during the loading and unloading of ships.

The principal pollutants covered by the strategy will therefore be sulphur oxides, nitrogen oxides and volatile organic compounds. The strategy will also consider

particulates and greenhouse gases.

The format of the strategy will be a Commission Communication. It is likely to be accompanied or followed by a proposal for a directive to modify Directive 1999/32 on the sulphur content of liquid fuels. Any modifying proposal would primarily amend provisions on the sulphur content of marine fuel, potentially extending its scope to heavy fuel oils, though it would also be used to introduce consequential amendments on large combustion plants (LCPs), to be compatible with the new directive 2001/80 on air emissions limits from LCPs. The Commission would aim to publish both the Communication and any modifying proposal in the summer.

The Communication is not a legislative instrument and will not be subject to political agreement with the European Parliament and Council, although the Commission hopes that both will both endorse its conclusions. In drafting the Communication the Commission will take into account comments received orally, and in writing, in response to this paper. The deadline for such comments is 15 February 2002.

A proposal to modify Directive 1999/32 would be a legislative instrument, subject to codecision with the European Parliament and Council. To advise us in drafting an amending proposal, the Commission would hope to convene the first meeting of the statutory advisory committee provided for under Article 9 of the directive. This committee will be composed of the Member States representatives and chaired by the Commission. In drafting any proposal, the Commission will also take into account comments received orally, and in writing, in response to this paper. The deadline for such comments is the same as for the Communication - 15 February 2002.

### **3. Tropical Air Thins European Ozone Layer By 30%**

Ozone over Europe was around a third thinner than normal during the first week of February, with regular depletion in the layer that protects people from harmful radiation becoming more frequent, scientists said last week.

Ozone coverage, measured in Dobson units, dropped to about 250 units at the end of January, from a normal level of 380-400, research by the German aerospace center DLR showed. DLR found streams of low-ozone tropical air pushed up from the equatorial regions and spread over southern Spain, France and Germany, increasing harmful ultraviolet rays (UV) by 20-30 percent, the European Space Agency (ESA) said on its website.

An ozone hole is coverage below 200 Dobson units, with such low densities measured over Europe on 30 November 1999 and 8 November 2001, the ESA said.

Scientists said the air streams were a natural weather phenomenon and more

common in winter, but that man-made climate change might be affecting such patterns. The tropical streams also brought unusually warm weather to central Europe.

Ozone can be depleted by chemicals such as chlorofluorocarbons (CFCs), previously used in refrigerators, as well as crop fumigant methyl bromide, of which around 70,000 tons is used each year, mostly in developing countries.

#### **4. Three Volvo Models Pose Electromagnetic Risk**

Three models made by Volvo Car Corp, known for its safety-conscious luxury sedans, have electromagnetic fields up to 80 times higher than levels considered safe, according to a new study. The test conducted by Swedish magazine Vi bilagare showed that Volvo's V70, S60 and S80 models subjected the driver to magnetic fields of up to 12-18 microtesla, while it said levels above 0.2 microtesla are considered possibly harmful.

A microtesla is a unit measuring magnetic field strength. A normal level in Swedish apartments is 0.1 microtesla, but at the workplace the level may be twice that due to electronic appliances such as computers, the magazine said.

The study conducted by the magazine tested a total of 14 cars including models from Ford, Volkswagen, BMW, Mercedes Benz, Saab, Renault and Toyota.

The three Volvo models fared worst in the study, which measured exposure of several body parts to the electromagnetic fields in each of the cars' seats. The highest microtesla levels were measured on the drivers' left foot area.

Clearly lower levels were measured in Volvo's S40 model.

Volvo said the magnetic fields in its cars were well below the recommended level set by the European Union, which mainly concentrates on the exposure of the head and body to the fields.

Volvo was concerned at the possible impact on sales of the report - the top story in Sweden's two main tabloids - and planned an information campaign to allay customers' fears.

There was no scientific proof that such electromagnetic fields may be the cause of illnesses such as cancer, the spokesman said.

The three models tested have strong electromagnetic fields because in each of them the engine is located in the back of the car with a power cable running to the front.

More than half a million S60, S80 and V70 models have been sold worldwide.

Volvo cars are considered a potential engine for growth for Ford, the world's second-largest automaker, at a time when the entire industry has been hit by the global downturn.

Sweden's AB Volvo sold the car business to Ford in 1999, and now mainly makes trucks.

## **NORTH AMERICA**

### **5. U.S. Ends PNGV Program; Looks to Fuel Cells**

The Bush administration is walking away from a \$1.5 billion eight-year government-subsidized project to develop high-mileage vehicles, replacing it with a plan that the Energy Department and the auto industry have devised to develop hydrogen-based fuel cells to power the cars of the future. The new effort, announced at the Detroit Auto Show by Energy Secretary Spencer Abraham, ostensibly aims at the eventual replacement of the internal combustion engine.

The original program, begun in 1993, aimed to develop affordable cars that got 80 miles to a gallon of gasoline (or gasoline equivalent). Vice President Al Gore, its most vocal backer in the Clinton administration, likened the project, known as the Partnership for a New Generation of Vehicles, to the Apollo space program in its technological complexity. In addition to about \$1.5 billion in government subsidies, the Big Three automakers - General Motors, Ford Motor and DaimlerChrysler - together spent about \$1 billion a year on related technologies.

The carmakers all developed prototype vehicles that got at least 70 miles a gallon, and the project nurtured advances in aerodynamics and lighter composite materials now used in auto manufacturing. But none of the Big Three came close to commercial production of an 80-mile-a-gallon car. The average fuel economy of cars and trucks for sale in the United States has, meanwhile, steadily dropped, so that this year's fleet with its growing proportion of sport utility vehicles gets the worst gas mileage in 21 years, according to the government.

The new program, called Freedom Car, will not require the automakers to produce a fuel cell powered vehicle, according to the Energy Department. Energy experts expressed concern yesterday that without such clear targets, it too would do little to alleviate the country's growing dependence on oil.

Abraham did not offer any immediate goals for the program or reveal its funding level, saying that number would be released when President Bush submits his budget in a few weeks; the program it replaces was to receive \$127 million in federal funds this year.

Although gasoline prices are now low, the conflict in Afghanistan has thrown a spotlight once more on America's enormous appetite for fuel and has renewed

calls for reducing American dependence on foreign oil. The United States, with only 5 percent of the world's population, consumes 25 percent of its oil, mostly in the form of gasoline.

The auto industry has steadily resisted government-mandated increases in fuel economy, with some carmakers arguing that such requirements would divert investment from fuel-cell research. Government standards, unchanged for more than a decade, require each automaker's cars to average 27.5 miles a gallon and light trucks including pickups, minivans and sport utility vehicles to average 20.7 miles a gallon.

A big hurdle for the widespread adoption of fuel cell vehicles is the need for an infrastructure to make hydrogen more available. David Garman, assistant U.S. secretary for energy efficiency, said 30 percent to 40 percent of U.S. gas stations, or 52,000 to 70,000 locations, would have to offer hydrogen to make fuel cell vehicles viable.

The Bush administration proposed last year to slash the PNGV program's \$141 million research budget within the Energy Department by \$40 million, but Congress restored most of the funding.

## **6. EPA Proposes Non Conformance Penalties For 2004 Standards**

Following up on a commitment made to assure compliance by cheating companies which signed a Consent Agreement to introduce 2004 standards early, EPA has just proposed that nonconformance penalties (NCPs) be made available for the 2004 and later model year non-methane hydrocarbons and nitrogen oxides (NMHC+NO<sub>x</sub>) standard for heavy-duty diesel engines and vehicles. In general, the availability of NCPs allows a manufacturer of heavy-duty engines (HDEs) or heavy-duty vehicles (HDVs) (which include heavy light-duty trucks) whose engines or vehicles fail to conform with certain applicable emission standards, but do not exceed a designated upper limit, to be issued a certificate of conformity upon payment of a monetary penalty. The proposed upper limit associated with the 2004 emission standard for NMHC+NO<sub>x</sub> is 4.5 grams per brake-horsepower-hour for light and medium heavy-duty engines and urban buses, and 6.0 grams per brake-horsepower-hour for heavy heavy-duty engines.

Section 206(g) of the Clean Air Act (the Act), requires EPA to issue a certificate of conformity for HDEs or HDVs which exceed a federal emissions standard, but do not exceed an upper limit associated with that standard, if the manufacturer pays an NCP established by rulemaking. Congress adopted section 206(g) in the Clean Air Act Amendments of 1977 as a response to perceived problems with technology-forcing heavy-duty emissions standards. If strict standards were maintained, then some manufacturers, "technological laggards," might be unable to comply initially and would be forced out of the marketplace. NCPs were intended to remedy this potential problem. The laggards would have a temporary alternative that would permit them to sell their engines or vehicles by payment of

a penalty. At the same time, conforming manufacturers would not suffer an economic disadvantage compared to nonconforming manufacturers, because the NCP would be based, in part, on money saved by the technological laggard and its customer from the nonconforming engine or vehicle.

Section 206(g)(3) requires that NCPs:

- Account for the degree of emission nonconformity;
- Increase periodically to provide incentives for nonconforming manufacturers to achieve the emission standards; and
- Remove the competitive disadvantage to conforming manufacturers.

Section 206(g) authorizes EPA to require testing of production vehicles or engines in order to determine the emission level on which the penalty is based. If the emission level of a vehicle or engine exceeds an upper limit of nonconformity established by EPA through regulation, the vehicle or engine would not qualify for an NCP under section 206(g) and no certificate of conformity could be issued to the manufacturer. If the emission level is below the upper limit but above the standard, that emission level becomes the “compliance level,” which is also the benchmark for warranty and recall liability; the manufacturer who elects to pay the NCP is liable for vehicles or engines that exceed the compliance level in-use, unless, for the case of HLDTs, the compliance level is below the in-use standard. The manufacturer does not have in-use warranty or recall liability for emissions levels above the standard but below the compliance level.

#### **a. Consent Agreement**

On October 22, 1998, the Department of Justice and the Environmental Protection Agency announced settlements with seven major manufacturers of diesel engines that represent a majority of the diesel engine market. The settlements resolved claims that they installed computer software on heavy-duty diesel engines that turned off the engine emission control system during highway driving in violation of the CAA’s prohibition on defeat devices. The Court entered the settlements on July 1, 1999. These consent decrees with the Federal Government contained a number of provisions applying to heavy-duty on-road, and in some cases, nonroad engines. Specific to the engines that would be addressed by the proposed 2004 NCPs, the decrees permit the continued use of non-complying engines for a period of time (although emissions are capped by limits associated with new supplemental test procedures). Other elements of these consent decrees include a program under which the consent decree manufacturers are required to invest considerable resources to evaluate instrumentation and methodologies for on-road testing. Because the Consent Decrees refer to NCPs for the 2004 model year, if published, promulgation of this rule would have an impact on the penalties determined under the Consent Decrees.

#### **b. Non-conformance Penalties for 2004 and Later Heavy-Duty Engines and Heavy-Duty Vehicles**

*i. Emission Standards for Which NCPs are Not Proposed*

**1. Heavy-Duty Gasoline Standards**

In a final rule published on October 6, 2000, EPA established more stringent emission standards for all heavy-duty gasoline (or “Otto-cycle”) vehicles and engines. These standards took two forms: a chassis-based set for complete vehicles under 14,000 pounds GVWR (the chassis-based program), and an engine-based set for all other Otto-cycle heavy-duty engines (the engine-based program). Each of the two programs has an associated averaging, banking, and trading (ABT) program. The new standards generally take effect starting with the 2005 model year, but manufacturers are provided with two additional options for early compliance, each of which provides additional flexibility relative to the 2005 model year compliance option.

EPA has considered the potential need for NCPs to be provided for the new standards applicable to Otto-cycle heavy-duty engines and vehicles, and has concluded at this time that NCPs are not required for any of these standards.

**2. 2004 Tier 2 Medium-duty Passenger Vehicles & Heavy Light-duty Trucks**

In December 1999, EPA promulgated a new set of emission control requirements for heavy-duty vehicles with a GVWR between 6,001 and 10,000 lbs. These requirements were implemented as part of EPA’s Tier 2 vehicle emission control program. Beginning in 2004, heavy light-duty trucks (HLDTs) and medium-duty passenger vehicles (MDPVs) are combined in an averaging set which must meet a fleet average NO<sub>x</sub> emission standard of 0.20 g/mi. The program phases in at 25/50/75/100% of each years sales over the period 2004-2007. Those not included in this fleet average must meet the current standards. This is referred to as the interim program. Beginning in 2008, the fleet must average 50% at 0.20 g/mi NO<sub>x</sub> and the remaining 50% at 0.07 g/mi NO<sub>x</sub> on average. And, by 2009 the fleet must average 0.07 g./mi NO<sub>x</sub>. This is referred to as the Tier 2 program. This fleet average includes all covered vehicles without regard to fuel-type or combustion cycle. To be considered as part of the average, vehicle families must certify to NO<sub>x</sub>, NMOG, CO, HCHO, and PM standards in one of a number of the emission “bins.” There are 11 bins available for the interim program and eight for the Tier 2 program. In order for a family to qualify for the program it need only be able to certify in the top bin of each program.

EPA believes that NCPs are not necessary for either the interim or Tier 2 programs applicable to HLDTs and MDPVs. While the standard will be more difficult to meet, it does not involve “substantial work” as defined in the regulation and discussed above, nor does EPA expect there to be a “technological laggard.” The technology needed to meet these standards is well understood now, and, as discussed in the rulemaking, there are already a number of vehicle families capable of meeting the requirements. To enable this technology further, EPA has promulgated fuel quality requirements for gasoline and diesel fuel aimed at

substantially reducing sulfur content and thus enabling highly efficient aftertreatment technology.

Beyond that, these programs are constructed with a phase-in, which means that there is ample opportunity for technological development with the potentially more difficult vehicle configurations deferrable until the final year of each program's phase-in. Furthermore, the programs are based on fleet average standards independent of fuel or combustion cycle and do not limit emission standards to the fleet average. In order to be certified, a vehicle family need only qualify in one of the emission bins. For the interim and Tier 2 programs there are three bins above the average. Generally, the top bin in the interim program was constructed such that current technology vehicles could qualify. The top bin of the Tier 2 program was set at the fleet average value of the interim program.

The program also includes a number of flexibilities designed to enhance compliance. These include a provision to allow the generation of credits through early banking, manufacturer-developed alternative phase-in schedules, deficit carry forward for the fleet average, and a number of technology phase-in flexibilities such as in-use standards and alternative certification test-cycles.

### **c. Penalty Rates**

#### *ii. Parameters*

EPA is specifying the NCP formula for each standard using the following parameters:  $COC_{50}$ ,  $COC_{90}$ ,  $MC_{50}$ ,  $F$ , and  $UL$ . The NCP formula is the same as that promulgated in the Phase I rule. As was done in previous NCP rules, costs include additional manufacturer costs and additional owner costs, but do not include certification costs because both complying and non-complying manufacturers must incur certification costs.  $COC_{50}$  is an estimate of the industry-wide average incremental cost per engine (references to engines are intended to include vehicles as well) associated with meeting the standard for which an NCP is offered, compared with meeting the upper limit. More precisely, the values of  $COC_{50}$  presented here are estimates of the sales weighted mean incremental cost.

$COC_{90}$  is EPA's best estimate of the 90th percentile incremental cost per-engine associated with meeting the standard for which an NCP is offered, compared with meeting the associated upper limit.  $MC_{50}$  is an estimate of the industry-wide average marginal cost of compliance per unit of reduced pollutant associated with the least cost effective emission control technology installed to meet the new standard.  $MC_{50}$  is measured in dollars per g/bhp-hr for HDEs.  $F$  is a factor used to derive  $MC_{90}$ , the 90th percentile marginal cost of compliance with the NCP standard for engines in the NCP category.  $MC_{90}$  defines the slope of the penalty rate curve near the standard and is equal to  $MC_{50}$  multiplied by  $F$ .  $UL$  is the upper limit above which no engine may be certified.  $UL$  is specified for each of the four service classes for which NCPs are being proposed.

All costs are presented in 2001 dollars. Because we are trying to account for cost differences at the point of sale, all costs were converted to net present value (NPV) for calendar year 2004 using a discount rate of 7.0 percent.

*iii. Upper Limit*

The upper limit is the emission level established by regulation above which NCPs are not available and a heavy-duty engine cannot be certified or introduced into commerce. The regulatory approach adopted under the NCP rules sets the Upper Limit (UL) at the prior emission standard when a prior emission standard exists and that standard is changed and becomes more stringent.

In this case, the new standard is a limit on the combination of NOx+NMHC, while the prior regulatory standards are separate limits, one for NOx and one for total HC. For a large portion of the industry, there are also emissions limits set under the judicial Consent Decrees, many of which vary from the regulatory standards, in particular for the heavy-heavy service class. Of the three possible ULs for heavy heavy-duty engines, EPA believes that 6.0 NOx+NMHC is most consistent with the policy approach previously adopted and therefore the cost calculation in this proposal is based on this as the UL.

*iv. Parameter Values*

EPA has proposed that the values in Table 1 (in 2001 dollars) be used in the NCP formula for the 2004 and later model year NMHC+NOx standard of 2.5 g/bhp-hr for diesel heavy-duty engines and diesel urban bus engines at full useful life.

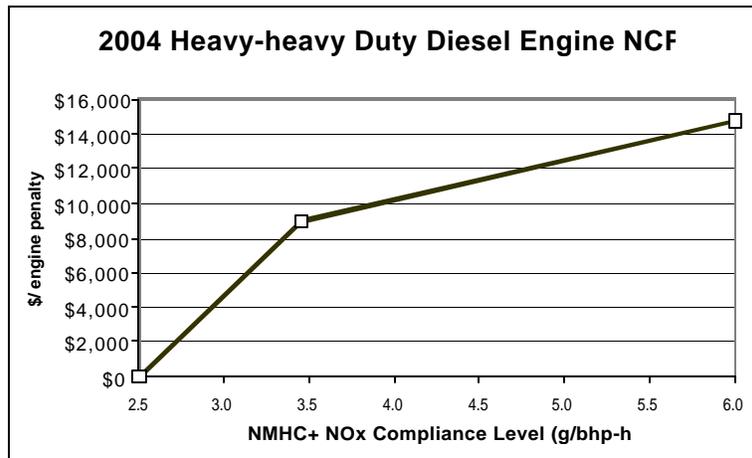
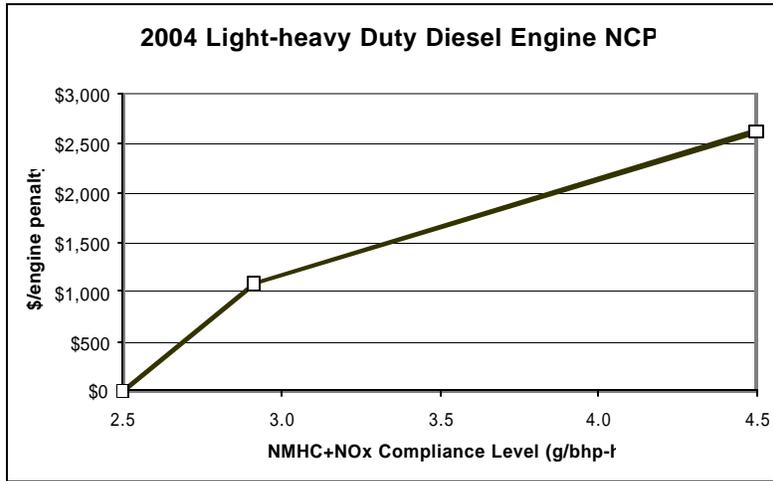
Table 1: Proposed NCP Calculation Parameters

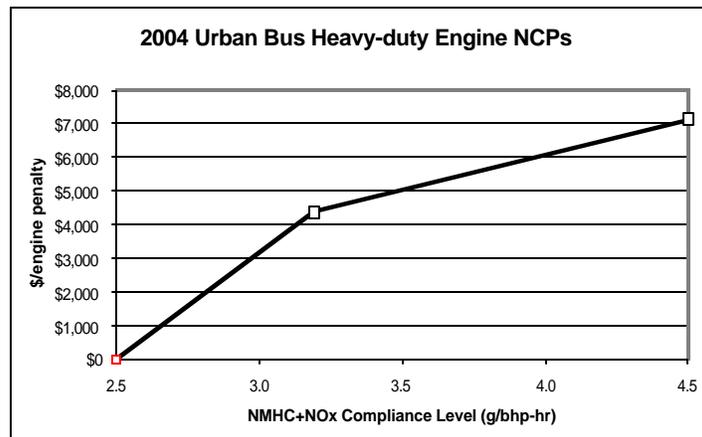
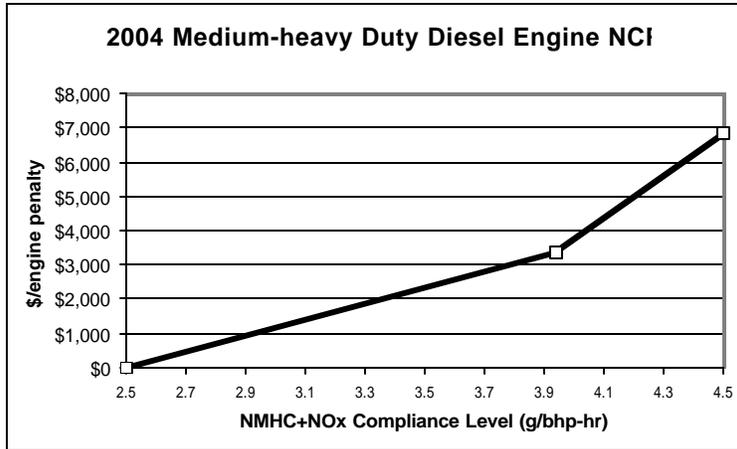
<b>Parameter</b>	<b>Light Heavy-Duty Diesel Engines</b>	<b>Medium Heavy-Duty Diesel Engines</b>	<b>Heavy Heavy-Duty Diesel Engines</b>	<b>Urban Bus Engines</b>
COC <sub>50</sub>	\$1,080	\$3,360	\$8,940	\$4,400
COC <sub>90</sub>	\$2,610	\$6,870	\$14,790	\$7,120
MC <sub>50</sub>	\$2,000 per gram per brake-horsepower-hour	\$1,800 per gram per brake-horsepower-hour	\$ 7,200 per gram per brake-horsepower-hour	\$ 4,900 per gram per brake-horsepower-hour
F	1.3	1.3	1.3	1.3
UL	4.5 g/bhp-hr	4.5 g/bhp-hr	6.0 g/bhp-hr	4.5 g/bhp-hr

*v. Penalty Curves*

The calculation parameters listed in Table 1 are used to calculate the penalty rates for each heavy-duty service class. These parameters are used in the

penalty rate formulas, which are defined in the existing NCP regulations. Using the parameters in Table 1, and the equations in the regulations, EPA has plotted penalty rates versus compliance levels for each service class in Figures 1-4 below. These penalty curves are for the first year of use of the NCPs, that is, the annual adjustment factors specified in the regulations have been set equal to one.





*vi. Implications*

Press reports indicate that Caterpillar Inc. may be fined by the U.S. government as much as \$10,000 per diesel engine made after October 2002 because the largest maker of heavy-duty truck engines will miss the new emission-standards deadline. According to the reports, Caterpillar has lobbied to delay enforcement of the 1998 court settlement having broken with competitors in urging a federal court to intervene to "avoid a crisis in the trucking industry and United States economy."

Caterpillar will have to pay the penalties because it will miss the October deadline agreed to by it and other manufacturers by nine to 12 months in order to market a new engine that will be quieter and less polluting than the one used by its competitors. Cummins Engine Co., and Volvo Truck Co., and Detroit Diesel Co., are opposed to any delay, saying their new engines can meet the deadline.

The issue goes back to 1998, when the Clinton administration brought charges

against Caterpillar, Cummins, Navistar International Transportation Corp., Renault Vehicules Industriels, PSA-owned Mack Trucks, Inc., and Volvo Motor Corp. They were charged with selling more than 1 million engines that emitted three times the legal limit of nitrogen oxide. Under the largest-ever settlement for violations of the nation's clean air laws, the companies agreed to pay more than \$1 billion and meet tightened 2004 emissions standards starting in October 2002. The new standards required engines with 40 percent less nitrogen oxide emissions, which create smog that causes lung diseases, asthma and premature death.

To meet that target, companies started a technology war. Cummins and other companies are using "exhaust gas recirculation," or EGR, which reduces emissions by allowing a portion of the exhaust gas to be reused. In March 2001, Caterpillar surprised federal regulators when it announced it would abandon that approach, instead proposing different technology at a later date. Caterpillar says it's "Advanced Combustion Emissions Reduction Technology," or ACERT, will produce less noise and pollutants than EGR, which it says would violate emissions standards in hot weather.

## **7. US Senator Goes After Leaky Underground Tanks**

Republican Sen. Lincoln Chafee of Rhode Island has introduced a new Senate bill intended to help prevent underground tanks storing gasoline and fuel additives like MTBE from leaking into drinking water supplies, and would also provide money to clean up contaminated sites.

The legislation would require more inspections of tanks, better training for tank operators and provide more cleanup money. Congress passed legislation in 1984 requiring underground storage tanks to meet new federal requirements for leak detection and prevention. Gas station owners and fuel terminal operators were given 10 years beginning in 1988 to upgrade, replace or close tanks that did not meet the new safety requirements. However, the General Accounting Office issued a report earlier in 2001 that found only 89 percent of tanks met federal equipment standards and only 71 percent of storage tanks were operated and maintained properly.

Chafee's legislation requires inspection of all tanks every two years and provides \$200 million to clean up sites contaminated by MTBE.

## **8. Pollution Linked With Birth Defects**

Women exposed to air pollution during pregnancy are more likely to give birth to children with heart defects, researchers reported in a new study, published in the American Journal of Epidemiology. The team, at the University of California Los Angeles (UCLA) School of Public Health and the California Birth Defects Monitoring Program, said the two pollutants they measured were carbon monoxide and ozone - produced by the city's well-known traffic jams.

Beate Ritz, an epidemiologist who headed the study, said that, "The greater a woman's exposure to one of these two pollutants in the critical second month of pregnancy, the greater the chance that her child would have one of these serious cardiac birth defects".

Ritz's team compared air pollution monitoring data from the Environmental Protection Agency with information from the California Birth Defects Monitoring Program - a statewide database on birth defects. They looked at 9,000 babies born from 1987 to 1993. Pregnant women who were exposed to the highest levels of ozone and carbon monoxide because their homes were close to busy freeways were three times as likely to have a child with certain heart defects as women breathing the cleanest air.

The defects they found were specific - conotruncal heart defects, pulmonary artery/valve defects and aortic artery/valve defects, which can require open-heart surgery to save the baby. No other birth defects were linked with the pollution.

The researchers said it was not certain carbon monoxide and ozone were directly causing the defects. They could be a "marker" - something associated with the real cause.

Ritz said fine particles might be to blame. "We did a small study that showed ultrafine particles correlate extremely well with carbon monoxide," she said.

## **9. Bush Relaxes Another Rule – This Time For Contractors**

The Bush Administration will no longer consider a business' record of environmental, tax or labor abuses when handing out federal contracts, overturning a rule put in place on former president Bill Clinton's last day in office. The move means government officials will not have to take into account a company's history when awarding billions of dollars' worth of federal business.

The "blacklisting" rule, widely opposed by business groups, was put into place on Jan. 19 by then-President Clinton, a Democrat, after years of development. President Bush suspended the rule in April while his administration reviewed it. The Final decision revokes the rule permanently.

The rule stated that businesses must have a satisfactory record of integrity and business ethics and must comply with environmental, tax, labor, antitrust and consumer-protection laws in order to win federal contracts valued over \$100,000. The Federal Acquisition Regulatory Council, which oversees government contracts, said contracting officials could use the rule to make arbitrary decisions.

Existing laws already require contractors to have a solid record of integrity and ethics and government officials already have the authority to make judgment calls, the council said in a notice in the Federal Register.

The U.S. Chamber of Commerce praised the move, saying the rule would have subjected businesses to more paperwork and left them vulnerable to rumors or smear campaigns.

The AFL-CIO, an organization of labor unions, issued a strongly worded statement condemning the move. "It is hypocritical for the Bush Administration, a strong proponent of individual responsibility in the area of law enforcement, to look the other way when corporate contractors violate laws enacted to protect the public," the statement said.

Businesses that took in \$38 billion in federal contracts were cited with more than 5,000 violations of health in safety laws in one year, according to a congressional study cited by the AFL-CIO.

This represents only the latest in a series of environmental policies enacted during the Clinton administration that President Bush modified or abandoned in the months following the Sept. 11 tragedy.

For instance, in November, the Army Corps of Engineers reversed a policy that prohibited a net loss of wetlands. In October, the Interior Department revised land protections for national monuments, permitting power line construction and recreational vehicle access. The department later revised Clinton-era rules that would have given DOI managers discretion to veto mining permits that had been approved by the Bureau of Land Management. And last month, DOI pushed back a planned phase-out of snowmobiles in the Grand Tetons and Yellowstone national parks that had been planned for next winter.

Critics say the Bush administration is using the current national crisis to push policies that would otherwise not be accepted. "There is a secret war against the environment, which has been waged over the last four months," said Rep. Edward J. Markey (D-Mass.). "It has allowed the fulfillment of the wildest dreams of many anti-environmentalist industries that would have caused political storms in any other period."

## **10. White House Energy Plan Way Behind Schedule**

The U.S. Congress adjourned in 2001 without passing key parts of the Bush administration's energy plan, but the White House has also fallen short in implementing the changes it called for in a new national energy policy.

A special White House task force headed by Vice President Dick Cheney unveiled back in May the administration's energy plan with much fanfare and controversy. Of the 105 recommendations in the plan, the White House and various government agencies under the administration's control could implement 85 of them, while the other 20 recommendations needed congressional approval.

The administration has implemented 20 of the recommendations it has authority over and the other 65 proposals are "well under way," said White House spokeswoman Clair Buchan. Even though the administration has implemented only one in four of the energy plan's recommendations it was responsible for, Buchan said the White House was, "very pleased with the progress that we're making on the administration front." The White House has said the country's energy problems, including declining oil production, were many years in the making and cannot be solved overnight.

Among the parts of the energy plan implemented by administration was a presidential directive ordering federal agencies to use less energy and expanding the "Energy Star" program that puts consumer labels on energy saving appliances to include ceiling fans, Buchan said.

She said the administration was disappointed it was not able to look sooner at higher fuel requirements for cars and sports utility vehicles, as called for under the energy plan. Congress lifted in December its multi-year prohibition on raising mileage standards. Still, the Transportation Department has said it could not significantly increase fuel efficiency requirements for vehicles until the 2005 model year.

Separately, allowing drilling in the Arctic National Wildlife Refuge, a key part of the White House plan to boost domestic energy supplies, has so far failed to win approval from Congress. The Republican-led House of Representatives passed a broad energy bill in August that adopted much of the White House plan, including opening the Arctic refuge to oil firms. But the Democratic-controlled Senate will wait to take up an energy bill in late January after its holiday recess and the legislation keeps the refuge closed to drilling.

While Congress has not implemented much of the White House energy plan, a review of the proposed policy changes shows the administration has also had some hits and misses.

The Energy Department met a key goal of addressing California's electricity problems, as called for under the plan, by reaching a \$300 million deal with energy companies to remove a major bottleneck in the state's electric transmission system. But the department failed to write a comprehensive electricity deregulation bill and present it to Congress that would promote competition and ensure reliability of the nation's grid.

The Environmental Protection Agency long ago missed a 90-day deadline to determine whether rules should be eased that require power plants and oil refineries to install pollution equipment. EPA says the report, which was due in August, will be released soon. EPA has also failed to propose legislation to establish an emission trading credits and other market-based programs to reduce sulfur dioxide, nitrogen oxides and mercury from power plants, although the

agency is still working on that plan.

At the Interior Department, the agency did its part to increase renewable energy supplies like wind and solar by holding a conference on the issue in late November. But the department will not make recommendations to the White House until sometime during the first half of 2002 on how to boost renewable energy use.

### **11. Federal Government Challenged Over Clean Fuel Vehicle Purchases**

Three environmental groups have filed a lawsuit charging that the federal government has violated a 1992 law mandating that 75 percent of new government vehicles operate on alternative fuels. The Sierra Club, the Center for Biological Diversity and the Bluewater Network allege that 18 federal agencies have failed to meet the 75 percent standard, mandated as part of the 1992 Energy Policy Act. The groups estimate that less than 20 percent of the federal government's fleet consists of alternative-fuel vehicles.

### **12. EPA Receives Commitments for 70,000 Diesel Retrofits in 2001; Slightly Short of Goal**

EPA has received commitments for 70,229 diesel retrofits and fuel quality upgrades in 2001 under its Voluntary Diesel Retrofit Program, not quite meeting its target of 100,000 units. About 56 percent of the retrofits involved the installation of diesel particulate filters and use of low sulfur diesel fuel (LSDF). Approximately 24 percent of the "retrofits" involved implementation of LSDF without installation of a retrofit technology. NOx retrofits constituted less than one percent of all retrofit commitments.

### **13. As Expected, N.Y. Delays ZEV Requirement**

The administration of New York Gov. George Pataki (R) has postponed for two years a requirement that cars producing no air pollution constitute a small percentage of new car sales in the state.

In 1999, Pataki announced that starting this year, New York would follow California's zero-emissions vehicle requirement, a rule that says ZEVs must constitute 2 percent of automakers' overall sales in the state. But last year, California changed its rules, forcing New York officials to modify their own rules or abandon the program. The officials said they could not legally change the rules so close to the introduction of electric cars.

Meanwhile, the Pataki administration adopted a plan to encourage car companies to sell more low-emissions "hybrid" vehicles over the next few years. New York's regulation allows automakers to choose between adopting the California plan starting with the 2005 model year, or an alternative plan for

production of low-emissions vehicles this year with a later introduction of electric cars.

#### **14. California Assembly OKs Global Warming Auto Emissions Legislation**

California, a pioneer in pushing air pollution control and fuel-efficiency technologies, moved to the vanguard of the debate on global warming by pursuing reductions in new vehicles' carbon dioxide emissions.

The proposed regulation, which would be developed by the state Air Resources Board during the next two years and could go into effect in 2005, passed the Assembly 42-24 and is not expected to encounter major opposition in the Senate or from Gov. Gray Davis.

A coalition of business interests spearheaded by the auto industry lobbied hard to kill the bill, which they said would give regulators open-ended authority to issue new emission standards that would hamper the auto industry and do little to prevent global warming.

The legislation does not specify emissions targets to meet but simply directs the state to come up with the maximum feasible reduction, and manufacturers worry that will translate into impractical mandates for greater fuel efficiency or more vehicles powered by batteries or alternative fuel.

Opponents to the measure also argued that carbon dioxide, unlike other air pollutants, does not directly hurt public health and the policy question of how to limit or prevent global warming should be handled on a national or international scale.

But environmentalists, who made the bill one of their top legislative priorities for the year, praised the Assembly's vote and said California could spur other states and eventually the federal government to limit carbon dioxide emissions and other greenhouse gas pollution.

Assemblywoman Fran Pavley, who authored the bill, said something must be done to slow global warming. The increasing temperatures endanger the 1,100 miles of California's coastline and the state's water supply because much of it relies on snow pack, she said.

The Golden State has 22.6 million cars and light trucks that generate 142 million tons of carbon dioxide in one year, according to a draft of a California Energy Commission report currently being prepared.

To assuage the opposing auto industry and others, Pavley said she would amend her bill while it's under consideration in the Senate to include specific standards for lowering carbon dioxide emissions. She also said she's likely to expand the bill to cover all greenhouse gases.

## **15. Air Quality Advisory Committee Meeting**

The California Air Quality Advisory Committee (AQAC) met on January 23 and 24, 2002, to consider the ARB staff recommendations for PM10, PM2.5 and sulfate standards. This committee is composed of experts in a number of fields related to the health effects of air pollution and was appointed by the President of the University of California. Staff from ARB and OEHHA summarized staff report entitled "Review of the California Ambient Air Quality Standards for Particulate Matter and Sulfates—Report to the Air Quality Advisory Committee," which was released November 30, 2001. As part of its review, the AQAC provided staff with comments and identified weaknesses in the staff report that need to be revised. The major conclusion from the meeting was that, overall, the PM report was well written and researched. However, the document must address the lack of a recommendation for a 24-hour PM 2.5 standard.

OEHHA and ARB staffs are currently addressing this issue along with other revisions based on AQAC and public comments.

The meeting was attended by the public, environmental organizations, private industry, and air district personnel. Approximately 12 individuals representing a variety of interests addressed the committee during the public comment period on the second day of the meeting.

## **16. Ozone Air Pollution Found To Cause Asthma**

Children who play sports in areas with high levels of air pollution are three to four times more likely to develop asthma than other youngsters, according to a new study just published in the *Lancet* medical journal.<sup>1</sup> The study by researchers at the Keck School of Medicine at the University of Southern California showed that ozone can contribute to asthma - the most chronic disease in children.

"This research suggests that contrary to conventional wisdom, ozone is involved in the causation of asthma," Rob McConnell, an associate professor of preventive medicine at the university, said in a statement.

Reducing levels of ozone is the ideal solution, but McConnell said limiting prolonged outdoor activity of children when air pollution levels are high could

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<sup>1</sup>"Asthma in exercising children exposed to ozone: a cohort study",

Department of Preventive Medicine, University of Southern California School of Medicine, Los Angeles, CA, USA (R McConnell MD, K Berhane PhD, F Gilliland MD, T Islam MS, W J Gauderman PhD, E Avol MS, Prof J M Peters MD); National Institute of Environmental Health Sciences, Research Triangle Park, NC, USA (S J London MD); and California Air Resources Board, Sacramento, CA, USA (H G Margolis MS), *Lancet* 2002; 359: 386-91

help. The study involved about 3,500 children ranging in age from nine to 16 who had no history of asthma. The researchers questioned the youngsters about what sports they played and monitored levels of air pollution in their communities. The communities were then divided into low and high pollution areas. After five years, 265 children were diagnosed with asthma. Overall, the sporty children were more likely to develop the disease. In communities with high levels of pollution, the risk increased with the number of sports the children played.

In communities with high ozone concentrations, the relative risk of developing asthma in children playing three or more sports was 3.3 (95% CI 1.9-5.8), compared with children playing no sports. Sports had no effect in areas of low ozone concentration (0.8, 0.4-1.6). Time spent outside was associated with a higher incidence of asthma in areas of high ozone (1.4, 1.0-2.1), but not in areas of low ozone. Exposure to pollutants other than ozone did not alter the effect of team sports.

"Somewhat to our surprise, in low-ozone communities we found no increased risk of asthma in children who played team sports," said McConnell.

The researchers believe that active youngsters in highly polluted communities are taking higher doses of ozone into their lungs because they breathe rapidly and deeply.

### **17. EPA Says More Fines Collected Under Bush Than Clinton**

The Bush administration has announced that it collected more money in pollution fines in fiscal 2001 than the Clinton administration did in the previous year. The Environmental Protection Administration said it obtained \$196 million in civil and criminal fines for air, water and soil pollution cases in fiscal 2001, up from \$176 million in the previous year.

EPA Administrator Christine Todd Whitman said in a statement that the agency's enforcement cases also forced companies to agree to spend a record \$4.3 billion in pollution controls and clean-up measures during fiscal 2001. The previous year, the EPA negotiated settlements for \$2.5 billion with companies.

### **18. Bush Gives Slight Nudge To Renewable Energy in Budget**

President Bush has proposed a 2.7 percent increase in the Energy Department's discretionary spending for the 2003 spending year and the administration calls for significant tax incentives to encourage energy efficiency and use of renewable resources. The Energy Department would get \$21.92 billion in under the president's new budget, up \$582.2 million from current levels.

The Energy Department's oil and natural gas research programs were slashed, while renewable energy and efficiency programs received a slight funding boost.

The president's new budget is in sharp contrast to last year, when environmentalists accused the administration of gutting renewable programs, some by up to 50 percent, in favor of research on traditional fossil energy. Congress eventually restored most of the money.

For the 2003 spending year that begins on Oct. 1, the administration proposed cutting fossil research programs by 16 percent, or \$93 million, to \$494.2 million. But several specific programs take a much bigger hit. Natural gas technology research would be cut 50 percent to \$22.6 million. Oil technology research would drop 37 percent to \$35.4 million.

By contrast, the department's programs for renewable energy and energy efficiency would see a \$10.1 million increase, or 1 percent boost, to \$1.312 billion.

Grants to help 123,000 low-income families weatherize their homes to save energy would increase 20 percent, or \$47.1 million, to \$277.1 million.

The administration's budget includes several new energy tax incentives and extensions of existing ones that would total \$9.5 billion over 10 years. Specific proposals would:

- \* Extend and modify the tax credit for producing electricity from renewable sources, such as wind and biomass (\$1.9 billion cost)
- \* Provide a tax credit for residential solar energy systems (\$75 million)
- \* Provide a new tax credit for the purchase of certain hybrid and fuel cell vehicles (see below) (\$3 billion)
- \* Provide a tax credit for energy produced from landfill gas (\$1.1 billion)
- \* Provide a tax credit for investment in combined heat and power (\$1.2 billion)

Most of the Energy Department's proposed budget increase would go for its weapons programs, which account for almost half of department spending.

The Energy Department is responsible for maintaining the nation's nuclear weapons stockpile and carrying out related weapons research. Reflecting heightened security concerns following the Sept 11 terror attacks on American soil, the department's nuclear security programs would see a 5.7 percent increase in funding, or \$433.2 million boost, to \$8.04 billion.

The budget includes \$800 million for a new reserve to speed clean up at several government nuclear waste sites.

Congress will have an opportunity to change the administration's proposed 2003 budget.

Consumers who buy gasoline-electric hybrid vehicles in the next seven years would get up to \$4,000 in tax credits under President Bush's proposed budget,

while buyers of fuel-cell vehicles could get up to \$8,000.

The proposals come just as the Bush administration, Congress, automakers and environmentalists are wrestling over how federal fuel economy standards should be revamped or raised. U.S. automakers have been ardent supporters of such tax credits, saying that consumers would otherwise be reluctant to pay for the higher costs of designing and building environmentally friendly models.

But environmentalists note that the tax proposal would not reduce fuel use if it gives automakers room under federal fuel efficiency standards to crank up production of gas-thirsty sport utility vehicles and pickups.

In its fiscal 2003 budget recommendations to Congress, the Bush administration said the credits would vary based on the vehicle's fuel efficiency. For hybrids, the credit would depend on the share of the vehicle's power generated by the electric motor and by the improvement in city fuel economy ratings over a similar 2000 model year vehicle.

For fuel cell vehicles, the minimum credit would be \$4,000, with the maximum \$8,000 credit available if the vehicle improved on a 2000 model year vehicle city fuel economy by 300 percent. Both credits would cover purchases between Dec. 31, 2000 and Jan. 1, 2008.

So far, only two hybrid cars are available in the United States: Toyota Motor Corp.'s Prius sedan and Honda Motor Co. Ltd.'s two-seat Insight. Both are sold in limited numbers.

Honda will begin selling a hybrid version of its Civic sedan later this spring. Ford Motor Co. has committed to selling a hybrid version of its Escape SUV in 2003, while General Motors Corp. has said it will offer a hybrid pickup truck in 2004.

The Chrysler arm of DaimlerChrysler AG has also said it will offer a hybrid vehicle in 2003, but has scrapped plans to use its system on a Dodge Durango SUV.

### **19. Bush Proposes Significant Cut To EPA Budget**

The Bush administration has proposed reducing the Environmental Protection Agency's (EPA) budget by about 4 percent to \$7.7 billion in fiscal 2003, but pledged no cuts in enforcement of Clean Air Act provisions. President George W. Bush, who has been criticized by green groups for rolling back some environmental programs during the past year, asked Congress to approve an EPA budget that is \$300 million less than what lawmakers set for fiscal 2002.

The biggest cut would come in EPA spending on clean water initiatives, dropping by \$524 million to \$3.215 billion. Many of those programs were inserted by lawmakers to benefit their districts during previous budgets and do not reflect the

agency's actual priorities, EPA Administrator Christine Todd Whitman said at a press conference.

Spending on drinking water-related projects would remain at \$850 million, according to the White House budget request.

Whitman pledged no cuts in EPA enforcement activities, which have been closely watched by both industry and green groups. Green groups interpreted the budget document differently. EPA in its budget request indicated it will cut the equivalent of about 112 full-time employees from its budgeted hours for enforcement activities.

The Bush budget proposal would have the EPA spend \$598 million on clean air programs in 2003, up \$4.6 million from 2002.

Jeffords this week pledged a fight to restore EPA's budget to prior levels. "Now is the time to increase our investment in the environment not decrease it," he said.

The EPA budget proposal would increase spending on its Superfund cleanup program by \$4 million to \$1.293 billion, and allocate an additional \$123 million to Brownfields cleanup of old and abandoned industrial sites. The Superfund cleans up contaminated sites and removes toxic substances. EPA wants to bring its site cleanup total to 884 in 2003, out of the target list of 1,479 sites.

The budget blueprint will be fleshed out in April with specific details for all federal spending programs. After that, Congress will spend months debating and rewriting budgets for all federal agencies for fiscal 2003, which begins on Oct 1.

## **20. US Gas Guzzlers Top "Meanest Vehicles" List**

Detroit Big Three automakers produce the biggest gas-guzzlers on this year's list of "Meanest Vehicles for the Environment," which is compiled by The American Council for an Energy-Efficient Economy, a Washington-based environmental watchdog group. But offerings from luxury car maker Mercedes-Benz, a German unit of German-American DaimlerChrysler AG, Lexus, the upscale division of Toyota Motor Co., and sports car maker Lamborghini also appear on the "dirty dozen" list.

Compiled since 1998, the list names 12 cars and trucks that are considered the biggest offenders to the environment in their model year. It is based on a variety of factors including poor fuel efficiency, the size and exact makeup of a vehicle's smog-forming tailpipe emissions and their impact on public health and the environment.

General Motors Corp., the world's largest automaker, produces three of the five vehicles deemed most unfriendly to the environment in the 2002 model year, all of which are full-sized sport utility vehicles with automatic transmissions and four-

wheel or all-wheel drive. SUVs from Ford Motor Co. and Chrysler make up the rest of the top five, and U.S. automakers produced nine of the 12 most ignominious vehicles overall, according to the ACEEE.

Lamborghini's L-147 Murcielago sports car took sixth place, however, followed in the No. 8 spot by the Mercedes-Benz G500, a muscle-bound SUV that went on sale in the United States last year.

Toyota, meanwhile, figured in 10th place thanks to its Land Cruiser and Lexus LX 470 - sister SUVs that are among the oldest and thirstiest vehicles the stable of cars and trucks from Japan's top automaker.

Japanese automakers, incidentally, produce all but one of the 12 cars and trucks included on the ACEEE's list of "Greenest Vehicles of 2002."

## **21. Debate Begins On Senate Energy Bill, CAFÉ Increase**

The U.S. Senate opened debate to overhaul national energy policy and promote conservation and boost domestic production of oil, natural gas, coal and nuclear power. Debate in the Democrat-led chamber was expected to continue into March due to sharp divisions between Republicans and Democrats over drilling in Alaska and fuel standards for sport utility vehicles.

A final Senate bill will have to be reconciled with the Republican-controlled House's version, passed last year.

The following lists some of the key issues in the Senate Democrats' proposed legislation:

### **AUTOS AND SUVs**

- Requires mileage of at least 26.3 miles per gallon for sport utility vehicles, mini-vans and light trucks by 2010, up from current 20.7 mpg.
- Requires mileage of at least 33.2 miles per gallon for passenger cars by 2010, up from current 27.5 mpg.
- Creates vehicle credit trading system that would let automakers meet stricter mileage rules by buying and selling credits for fuel efficiency standards.
- Creates a "green label" to give consumers information about fuel consumption and greenhouse gas emissions over the life of the vehicle.
- Holds \$10 million competition for developing a hybrid electric powertrain for SUVs to cut fuel consumption by 50 percent.

### **OIL AND GAS**

- Orders Energy, Interior, Commerce and Treasury Departments to recommend changes in federal and state tax and royalty policies to help producers when prices decline.

- Endorses construction of a natural gas pipeline from Alaska's North Slope to the lower 48 states with government loan guarantees for 80 percent of its cost.
- Create interagency task force to expedite approvals for natural gas pipeline projects.
- Sets target of increasing U.S. oil and gas reserves by 14 percent by 2020.

## ELECTRICITY

- Repeals Public Utility Holding Company Act of 1935, designed to curb utility monopoly abuses, and replaces it with greater state and federal authority to obtain company records.
- Gives Federal Energy Regulatory Commission (FERC) authority to grant and revoke utilities' wholesale marketing rights if firm holds unfair market power.
- Declares Tennessee Valley Authority and other federal power marketers eligible to market wholesale electricity.
- Speeds up FERC rulings on wholesale power refund requests, such as the \$9 billion sought by California for its power crisis last year.
- Orders FERC to create new electronic energy market monitoring system for greater electricity market transparency.
- Sets inter-agency task force comprised of FERC, Department of Justice and Federal Trade Commission to rule on electricity market competition, and report to Congress.
- Requires utilities to provide real-time pricing information to help consumers measure electricity usage.
- Requires federal government to buy more renewable energy from wind, solar, biomass and landfill gases, setting a target of 7.5 percent by 2010.

## MISC

- Boosts annual funding to \$3.4 billion for helping poor families pay heating bills.
- Funds research to develop biomass power systems that are cost-competitive with conventional electric utilities by 2010.
- Sets target of cutting energy use by 25 percent by 2010 for wood, mining, chemical, glass, iron industries.
- Creates U.S. climate change strategy board with 22 members nominated by the National Academy of Sciences and confirmed by the Senate.
- Requires government to estimate annual greenhouse gas emissions from federally owned or operated sources.
- Creates national greenhouse gas database for Energy Department to record and verify annual emissions by companies that produce more than 10,000 tons annually.

Senate Commerce Committee chairman Ernest Hollings and panel member John Kerry, both Democrats, are pushing for higher fuel requirements. Their plan is tougher than the one offered by Republican Sen. John McCain of Arizona. McCain also wants to close the SUV loophole, but would give automakers three

more years to reach a U.S. fleet average of 36 mpg.

The Corporate Average Fuel Economy (CAFE) standards first enacted by Congress in the mid-1970s currently require passenger cars to average 27.5 mpg. Sport utility vehicles, along with mini-vans and other vehicles in the "light truck" category, need only get 20.7 mpg.

The Democratic plan would slowly increase the fuel efficiency of both cars and light trucks. The standards would rise to 33.2 mpg for cars and 26.2 mpg for light trucks by 2010, and then jump to 38.3 mpg for cars and 32 mpg for light trucks by 2013.

The legislation would combine the passenger car and light truck categories beginning with the 2010 model year. However, heavy-duty pickup trucks would not be included.

Light trucks were allowed to have lower mileage when Congress passed the CAFE law in the mid-1970s because farmers and small businesses used them at the time. Now, SUVs and other light trucks account for half of U.S. vehicle sales.

Sen. Kerry said raising the fuel standard as called for under the Democratic plan would save 2.6 million barrels of gasoline a day by 2020.

Gasoline demand accounts for 45 percent of the 19.8 million barrels of oil that is consumed daily in the American market. Half of that oil is imported.

The Republican-led House last autumn approved a broad energy bill to encourage more domestic production of oil, natural gas, coal and nuclear power with \$34 billion in tax breaks, incentives and credits.

## **22. Bush Releases Climate Change, Pollution Reduction Plans**

President George W. Bush has proposed a voluntary plan for companies to reduce greenhouse gas emissions and other harmful pollutants from power plants and other industrial sources.

Details of the plan are as follows:

### **SULFUR DIOXIDE**

Cuts sulfur dioxide to 4.5 million tons in 2010 and 3 million tons in 2018 versus current emissions of 11 million tons, a 73 percent cut by 2018.

### **NITROGEN OXIDES**

Reduces nitrogen oxides to 2.1 million tons in 2008 and 1.7 million tons in 2018 versus 5 million tons currently, a 66 percent cut by 2018.

## MERCURY

Cuts mercury emissions to a cap of 26 tons in 2010 and 15 tons in 2018 versus 48 tons currently, an eventual 69 percent cut.

## CARBON DIOXIDE

Does not include mandatory cuts in carbon dioxide.

Proposes voluntary carbon dioxide emission growth cuts of 18 percent over next 10 years, linked to growth in U.S. gross domestic product; sets goal to lower emissions from 183 metric tons per million dollars in GDP growth in 2002 to 151 tons per million dollars in GDP growth in 2012.

## MISC

- \* Improves existing voluntary registry of greenhouse gases for better measurement accuracy, reliability and verifiability.

- \* Directs Energy Department to improve methods for companies that comply with voluntary emission reduction plan; allows firms that comply to transfer emission credits to later programs

- \* Pledges to review progress in 2012 and take additional measures if goals are unmet, including market-based program and additional voluntary measures.

- \* Provides \$4.5 billion in tax incentives in 2003 budget to encourage voluntary installation of energy efficiency technology like wind and solar generation.

Bush, whose decision to ditch the Kyoto treaty soon after taking office drew international scorn, announced the new environmental initiatives just three days before setting off for Asia for talks with Japanese and Chinese leaders, major players in the climate change debate.

(Japanese Prime Minister Junichiro Koizumi did not embrace President Bush's global warming proposal when they met, and instead called on the president for tougher restrictions more congruous with those detailed in the Kyoto Protocol.

Koizumi said he and other Kyoto Protocol supporters considered the need to balance economic concerns and environmental protection when designing the protocol in 1997. But Bush's substitute plan ties environmental controls to economic growth, giving U.S. businesses more flexibility in reducing emissions than the Kyoto Protocol.

Koizumi: "Japan welcomes the positive proposal on global environment issues, and we appreciate the stance shown by the United States to contribute on that front. And we'll expect greater efforts in that respect." Bush limited his discussion about environmental issues during his two days in Japan. When a reporter tried

to ask Koizumi whether "the world's environment would have been better off if America had signed on to Kyoto," Bush answered, "The ... question is moot." )

According to the White House, Bush's global climate change plan calls for cutting so-called "greenhouse gas intensity" - the ratio of emissions to U.S. gross domestic product (GDP) growth - by 18 percent over the next 10 years. The White House said Bush's goal was to lower the rate of emissions from an estimated 183 metric tons per million dollars of GDP in 2002, to 151 metric tons per million dollars of GDP in 2012. The White House called this "a path to slow, stop and then, as the science justifies, reverse" emission growth. Administration officials said these cuts would be comparable to those set in the Kyoto treaty, which Bush said would devastate the economy and put millions out of work.

But these cuts would depend on cooperation from companies, as well as on economic growth, both of which are uncertain.

To pay for these and other climate change-related initiatives, the White House said Bush's budget for fiscal 2003 would dedicate \$4.5 billion, a \$700 million increase. The budget includes the first year of funding for a five-year, \$4.6 billion tax credit program for renewable energy sources.

But critics said Bush's approach would not solve the problem of global warming and, by linking emissions to economic growth, was tantamount to proposing continuous increases in U.S. emissions of heat-trapping gases.

According to the Sierra Club, emissions under the Bush plan would grow to 36 percent more than Kyoto levels by 2010 and 50 percent more than Kyoto target levels by 2020. And should the U.S. economy falter, the Sierra Club said, global warming protections would be dumped.

Bush will also take a market-based approach in his "Clear Skies" plan to cut power plant emissions of nitrogen oxides, sulfur dioxide and mercury, proposing a "cap-and-trade" system rather than mandatory enforcement actions.

Under Bush's plan, deadlines would be set for power plants to reach emission targets for the three pollutants, which have been linked to health problems and acid rain. It would require each facility to have a permit for each ton of pollution emitted. These would be tradable, allowing companies to buy and sell them to each other to ensure that the government's emission targets are met. The goal is to make it profitable to not pollute. The White House said Bush's approach would save as much as \$1 billion annually.

U.S. EPA Administrator Christie Whitman rejected environmentalists' criticisms of the administration proposal to cut power plant pollution, calling the president's proposal "the most aggressive initiative to cut air pollution in a generation."

At a seminar sponsored by the American Enterprise Institute and the Brookings Institution, Whitman said the administration's proposal would lower costs to industry and streamline regulations used to eliminate tons of chemicals that cause smog and acid rain and contaminate waterways with mercury.

Since the White House announced the plan, environmentalists have argued that power plants will have to cut less pollution under Bush's plan than under a series of regulations under the Clean Air Act.

At a briefing for the Edison Electric Institute last September, the EPA said nitrogen oxide could be cut 75 percent to 1.25 million tons over the next decade under existing Clean Air Act rules. Bush's market-based approach would cap nitrogen oxide at 1.7 million tons by 2018.

The EPA said that sulfur dioxide could be reduced to 2 million tons under an EPA rule that requires reduction of soot and microscopic particles. The president's plan calls for a sulfur cap of 3 million tons by 2018.

As recently as December, the EPA estimated that mercury would be cut to 5.5 tons, if the best available technology were used under planned regulations. Bush's plan would reduce mercury emissions to 15 tons by 2018.

Senior EPA officials said the numbers being used by environmental groups were inaccurate. "They do not reflect realistic projections," said EPA spokesman Joe Martyak. Most recent EPA projections estimated that over the next decade, under the current regulations, nitrogen oxide would be cut to 4 million tons, sulfur dioxide to 9.1 million tons and mercury to 43 tons.

Jeffrey Holmstead, head of the EPA's air office, said Tuesday the numbers from the September briefing were not intended as a projection of where the United States would stand under existing clean air rules.

### **23. GM Pushes Suppliers to Fight Fuel-Economy Legislation**

In a sign of the intensifying battle over fuel-economy requirements, General Motors Corp. is urging its suppliers to ask their senators to oppose any tightening in the rules, the Wall Street Journal reported. In a Feb. 4 letter to suppliers, GM asks them to register opposition to tougher corporate average fuel-economy rules with their senators and includes a suggested form letter and a request for copies, the Journal said.

Environmentalists criticized the letter as an example of GM trying to force political support out of companies that depend financially on the automaker, the Journal said.

A GM spokesman told the Journal that GM has been urging its dealers and employees to urge their senators to vote against tighter standards, but denied

that the letter to suppliers amounts to an attempt to strong-arm political support out of companies that depend on GM's business.

## **24. Study Assigns Bright Future to Gas and Diesel Vehicles**

According to a study entitled *Future Powertrain Technologies: 2008 to 2020* from DRI-WEFA and Arthur D. Little, consumers will continue to favor sport-utility vehicles (SUVs) and light trucks as gasoline and diesel engine technology becomes more advanced. While there is currently a trend toward developing less-polluting fuels, the study concludes that fossil fuels will be widely used until 2020. The study also looked into emissions regulation scenarios and technical barriers that could hold up technological developments such as hybrid electric and fuel cell vehicles.

According to the study, despite intense public and private efforts to develop alternative fuels, fuel cells and other new sources of motive power for passenger cars and light trucks, advanced forms of fossil-fueled spark ignition, and diesel engines combined with advanced automatic transmissions will dominate the market through 2020. However, these advanced descendants of today's reciprocating engines will differ significantly from current designs, and there will be several forms of hybrid vehicles as well. These are the overriding conclusions of an intensive study of the next generation of powertrain technologies to be developed and produced in Western Europe, Japan, and North America through 2020.

Three plausible, internally consistent alternative scenarios of emissions regulations, fuel efficiency or carbon dioxide requirements, crude oil price, and economic outlooks were developed. For each scenario, the mix of powertrain technologies required to meet the regulations in each region was forecast. The technical barriers to the commercialization of advanced spark ignition, diesel engines, hybrid, and fuel-cell vehicles, as well as the various forms of advanced transmissions, were identified and assessed. These assessments determined if and when each technology could be a cost-effective solution to meet the ever-more stringent requirements of each of the three scenarios.

Market share forecasts indicate that the most likely scenario can be met with a mix of conventional spark ignition, advanced spark ignition, gasoline direct injection, and evolving diesel engine technologies. Due to differing requirements in each region and the characteristics of their vehicle fleet, the mix of technologies varies markedly from one region to the next, even in the most likely baseline scenario. In some scenarios, the diesel is expected to be outlawed due to the health effects of particulates. The impact of this on the market shares of the various segments of light vehicles is determined and found to be untenable in Europe, indicating that regulators may ultimately have to trade-off clean air for mobility.

Market Shares of Power Unit Technologies, Baseline Scenario, 2020:

51% - Conventional Spark Ignited  
13% - Advanced, Downsized Spark Ignited  
24% - Diesel  
10% - Direct Injected Gasoline

The study breaks this forecast down by region and scenario and defines the expected ramp-up of the key component technologies that make up each of the power unit technologies. Market shares of boost devices, valve actuation systems, numbers of cylinders, etc. are derived, and overall performance trends and characteristics are discussed, as is the likely contribution of vehicle weight reduction.

Hybrid powertrains are treated in a similar manner, with regional breakouts by scenario. Different levels of hybridization are defined, as they impact the ability to meet fuel efficiency or carbon dioxide requirements differently.

Market Shares of Drivetrain Technologies, Baseline Scenario, 2020:

32% - Conventional  
57% - Micro-Hybrid  
7% - Mild-Hybrid  
4% - Full Hybrid

Likewise, the study has found that the market share of various engine and drivetrain technologies is highly sensitive to the application of 42-volt electrical systems. These have the potential to manage and reduce parasitic losses in powertrain-related vehicle systems. The difference that electronic management of parasitic loads can make in the market shares of diesel engines, for example, is astounding.

## **ASIA- PACIFIC REGION**

### **25. China Green Diesel Initiative Claims Some Success**

Local government policymakers in several Chinese cities, under pressure to clean up vehicle emissions, began targeting and in some cases outlawing diesel vehicles in early 2000. Technology-specific regulations were adopted by the governments of Beijing; Dalian, Liaoning Province; Qingdao, Shandong Province; Shanghai; and Xiamen, Fujian Province. Further, the authorities announced the changes in the regulations with little or no prior notice, and in some instances even retroactively.

To counter this, some foreign companies in China have joined together to express their concerns to the Chinese government. The Green Diesel Initiative, a coalition of nine foreign engine and auto manufacturers from three different countries - Robert Bosch GmbH, Caterpillar Inc., Cummins Inc., DaimlerChrysler, Dana Corp., Isuzu Motors Ltd., Scania Truck, Volvo Truck, and Valvoline Co. - formed in 2000 to educate the government on technical issues, to advocate for

the revision of the antidiesel regulations, and to help China establish effective future vehicle-emissions regulations.

The Green Diesel Initiative grew out of the China Auto Forum, a more general, loose group of about 20 foreign auto firms that meets monthly for breakfast discussions. While the auto forum is informal and lacks funding or officers, each member company of the initiative provides substantial funding (over \$40,000 per company during the first year), and the group has elected two chairs.

The Green Diesel Initiative developed the general goal for its first year of educating key officials and decision makers across China about the benefits of modern, clean diesels. Its second year has focused more on one-on-one meetings with specific, higher-level decision makers.

The initiative's approach combines media-directed efforts, technical seminars, and high-level meetings with the Chinese government. Members of representative companies play an active role in the coalition under the coordination of Automotive Resources Asia Ltd. (ARA). ARA facilitates meetings, proposes and leads marketing communications initiatives, tracks local regulatory proposals, and coordinates with the initiative's co-chairs to lead decision making among the members, among other activities.

The initiative distributed three editions of its newsletter to more than 5,000 industry and government-related contacts in 2000, and launched a website. The group organized four technical seminars in major cities for 500 PRC government, technical institute, and media participants. Press releases and interviews resulted in more than 500 published articles.

Members of the Green Diesel Initiative believe that these efforts were instrumental in speeding up local governments' alteration of their diesel policies in 2000. At the central level, an amendment to the Air Pollution Prevention and Control Law now requires local governments to obtain State Council approval before issuing their own emissions regulations. At the local level, the Shanghai Municipal Government rescinded its proposed diesel-discriminatory regulations while the Beijing Municipal Government began to discuss the option of clean diesels. The Guangzhou, Guangdong Province, government has also begun developing plans to introduce high-quality diesel engines.

In the second year, Scania Truck and Valvoline joined the initiative, as did the China Society of Automotive Engineers. In October 2001 the group conducted a benchmarking visit to Germany. The initiative targeted top government officials from four Chinese cities known for their awareness of environmental issues - Beijing, Dalian, Qingdao, and Xiamen - and invited them to meet with their German counterparts to discuss common concerns about environmental economics, clean air, and regulatory drafting and enforcement.

## **26. China Using Ethanol To Supplement Oil**

China is launching its first fuel ethanol plant in an innovative plan aimed at simultaneously bolstering security of energy supplies and improving farm incomes. Officials are acutely aware that China's known oil and gas reserves are running out. Domestic coal and hydropower are widely used for electricity generation. China produces about 163 million tons of crude oil a year, or 70 percent of its national needs, importing another 70 million tons, mainly from the Middle East.

Construction began last month on the 600,000 tons a year plant in Jilin in the northeast. The plant is being set up by Jilin Tianhe Co Ltd, collaboration between China National Petroleum Corp (CNPC), Jilin Grain Group - the largest government-established corn trader in the province - and trading conglomerate China Resources Corp. In the heart of China's corn growing region, the plant will consume 1.92 million tons of corn a year. Output will be used by CNPC or its subsidiary PetroChina Company Ltd and blended with gasoline or diesel fuel for vehicles.

The government is encouraging use of fuel ethanol by including trial fuel ethanol production in the Tenth Five-Year Plan (2001-2005).

Feasibility studies for two other fuel ethanol plants, one near Hefei, the capital of Anhui province, and another in Nanning, the capital of Guangxi in southern China, are ongoing. The Guangxi plant, which is still in the planning stage, is currently considering producing fuel from cassava and is studying Thailand's experience with the feedstock.

## **27. Australian Scientists Warn About New Car Interiors**

Australian scientists have warned that the reassuring smell of a new car actually contains high levels of toxic air emissions, which can make drivers ill. A study by Australia's main scientific body, the Commonwealth Scientific and Industrial Research Organization (CSIRO), found high levels of toxic emissions in cars for up to six months and longer after they leave the showroom. The toxic emissions include Benzene, a cancer-causing toxin; Acetone, a mucosal irritant; Ethylbenzene, a systemic toxic agent; and Xylene isomers, a fetal development toxic agent.

The two-year study of three new cars found anecdotal evidence that drivers were becoming ill when they drove their new cars.

- A lawyer reported being ill with headaches, lung irritation and swellings for several days after collecting a new car and driving it for only 10 minutes. When he swapped his new car for an 18-month-old car he no longer felt ill.
- A public servant felt ill when driving a new government car for the first six months, a chemically sensitized person felt "spaced out" when driving any new car and a salesman who regularly updated his car became lethargic

- on long trips.
- The study found two new Australian-made cars had very high levels of volatile organic compounds, up to 64,000 micrograms per cubic meter, three to 10 weeks after manufacture.
  - A control group of people exposed to half this amount reported within minutes feeling discomfort, drowsiness, fatigue and confusion, eye and ear and nose irritation and headaches.

The toxic air emission levels decrease 60 percent in the first month but were still well above the Australian recommended health level of 500 micrograms per cubic meter, said the CSIRO.

A third car in the study was imported to Australia, but four months after manufacture it contained high levels of toxic air emissions, recording 2,000 micrograms per cubic meter.

## **28. China Bans Cars With Freon Air Conditioners**

China has banned the production and import of passenger cars with air conditioners using Freon in a move to join international efforts to protect the ozone layer, the official Shanghai Television announced. Government departments including the State Bureau of Environmental Protection and the Ministry of Foreign Trade and Economic Cooperation (MOFTEC) recently issued a bulletin to announce the ban, it said.

From January 1, 2002, all passenger cars made in China have stopped installing air-conditioners using Freon, Shanghai Television said. Freon is the trademarked name for any of the family of chemicals containing fluorine.

MOFTEC also stopped issuing licenses for imported cars with air conditioners and compressors using Freon. Importers of passenger cars have to offer documents proving they did not use it in air conditioners, Shanghai Television said.

## **29. India Continues To Debate Cleaner Fuels and Vehicles**

### **d. Emission Standards**

The Ministry of Road Transport and Highways of the Government of India has notified more stringent Bharat Stage II (equivalent to Euro II) emission standards for commercial vehicles such as buses, vans and trucks. Vehicles manufactured after 31<sup>st</sup> October 2001 to be sold in the four metro cities of Delhi, Mumbai, Kolkata and Chennai have to meet the new standards. Last year the Government had enforced Euro II equivalent standards for passenger cars for these cities.

As almost all commercial vehicles in these cities are powered by diesel engines, the government controlled oil industry has been asked to make arrangements to

supply diesel fuel with a maximum sulfur content of 0.05 % which is considered essential for compliance to the Euro II standards.

An Inter-Ministerial Task Force<sup>2</sup> constituted by the Government has recommended the introduction of progressively stricter emission standards and corresponding fuel quality in the country in a phased manner. The recommended road map calls for

- Introduction of Bharat stage II standards in three additional large cities (Bangalore and Hyderabad in the south and Ahmedabad in the west) by 2003 (thus covering a total of seven cities), and the whole country by 2005. This is to go with the oil industry making available petrol and diesel both with a maximum sulfur content of 500 ppm.
- Introduction of Bharat stage III (Euro III) in these seven large cities in 2005 along with the availability of petrol with a maximum sulfur content of 150 ppm (and 42 per cent maximum aromatic content) gasoline and diesel fuel with a maximum sulfur content of 350 ppm.<sup>3</sup>
- Introduction of more stringent standards for 2 and 3 wheeled vehicles from the year 2005. These limits represent a 25% reduction over the current (2000) standards, which are considered among the most stringent in the world.

Vehicle type	Emission limits, g/km		
	CO	HC+NOx	PM
Petrol 2 wheelers	1.5	1.5	-
Petrol 2 wheelers	2.25	2.0	-
Diesel 2 and 3 wheelers	1.0	0.85	0.11

- The Ministry of Road Transport & Highways is currently finalizing the testing procedures and other procedures, to be eventually notified under the Motor Vehicles Rules.
- The Task Force has also recommended a progressive reduction in the Benzene content of petrol. Delhi and Mumbai already receive petrol with a maximum Benzene content of 1%. The Task Force has asked this limit to be achieved in the remaining five large cities from 2005. For the rest of the country, the Benzene limit is to be brought down from the current 5% to 3%.
- The Task Force has noted that making fuels of the required quality available would require huge investments in the refinery sector – approximately US \$ 3.5 billion for Euro II and US \$ 7.2 billion for Euro III

<sup>2</sup> Committee on Auto Fuel Policy set up by the Ministry of Petroleum and Natural Gas under the chairmanship R. A. Mashelkar, Director General of the Council of Scientific and Industrial Research.

<sup>3</sup> The committee has recommended analysis of investment and distribution logistics issues for reducing sulphur content in both gasoline and diesel to 50-ppm max and aromatic in gasoline to 35 per cent max. But no time frame has been given for this feasibility study.

fuels. While the investment may vary from refinery to refinery, it is observed that some of the refineries, particularly those using outdated technologies, may not be able to afford the investment and may even face a risk of closure. India has 17 refineries with an annual capacity of 114 million tons.

It is quite remarkable that the Committees' recommendations even dilute the road map that the Society for Indian Automobile Manufacturers had presented in 2000 that committed to meeting Euro III and Euro IV emissions standards for passenger cars in 2004 and 2007 respectively and Euro IV for commercial vehicles in 2008, so long as the appropriate fuels were provided.<sup>4</sup> The Petroleum minister is rushing to the Supreme Court with this report as a 'Policy document approved by the Cabinet' to plead that it is now the policy of the government to only set emissions standards which allow mixed technology and therefore the Court should not insist on single fuel CNG mode for buses in Delhi. The entire move seems targeted at pre-empting the next Court deadline of January 31, 2002. So the essential message of the committee is -- maintain status quo, continue with Euro II diesel technology, and don't insist on CNG in Delhi. Any possibility of implementing Euro IV emissions standards in the next 10 years anywhere in the country has not even been discussed in the report.

#### **e. Petroleum sector reforms**

The Indian Government is working out plans to give effect to its commitment to dismantle the 'Administered Pricing Mechanism (APM)' that presently governs the largely state owned oil industry. Since March 1998, the Government has undertaken reforms in this sector and has partially decontrolled both upstream and downstream segments. Four products namely, petrol, diesel, kerosene and LPG that continue to be under the APM are to be completely de-controlled from April 1, 2002. Of these, kerosene and LPG are given a subsidy that comes from

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<sup>4</sup> Earlier, the Society of Indian Automobile Manufacturers (SIAM) submitted to the Government a road map for progressive reduction in emissions.

-Bharat Stage II compliant four wheeled non-commercial vehicles, light commercial vehicles and city buses in nine principal cities within six months of notification if fuel with 0.05% sulphur is made available.

-Passenger cars meeting Euro III equivalent standards from 1<sup>st</sup> April 2004 and Euro IV equivalent standards from 2007. This would be subject to availability of petrol with a maximum sulphur content of 150 ppm and diesel with a maximum sulphur content of 350 ppm.

-For commercial vehicles, SIAM has offered to comply with Bharat Stage II standards from 1<sup>st</sup> April 2003 for the whole country subject to availability of diesel with 0.05% sulphur. It has proposed to skip the Euro III stage and go directly to Euro IV stage by 2008 provided diesel with a maximum of 50 ppm sulphur is available.

-For two wheelers, SIAM has proposed emission standards of 1.5 g/km for CO and 1.5 g/km for HC+NOx from 2005 (a 25% reduction from the current 2000 standards). It has suggested targets of 1.25 g/km for both of the pollutants in 2009 but wants a review of these standards in 2005. Similar levels of reduction are proposed for three wheelers.

higher prices of other products like petrol and jet fuel.

In the post APM scenario, the prices are expected to be governed by market forces and subject to volatility of international crude prices. The latter is an important consideration as nearly 70% of crude requirement in the country is met through imports. The Government is expected to choose a 'soft landing' option of phased dismantling that will give time to the consumers to get used to price volatility. Besides, due to social and political considerations, the Government may not wish to do away with the subsidies on kerosene and LPG - both fuels of mass consumption – and adopt a phased elimination lasting over a five-year period.

Experts feel that the reform package will not lead to any major changes in the prices of petrol and diesel. The Government is expected to levy a heavy excise or surcharge on petrol to retain its current high price, which is not in proportion to its refining cost. The price of diesel, as a result of an earlier reform, is close to international price parity and is likely to remain untouched. Over a period of time, however, the prices of all the products would be governed entirely by market forces. This is likely to bring down the large differential between petrol and diesel prices, which, in turn, could bring about a shift in the demand patterns for vehicle types. For instance, the commercial vehicle segment, which is almost entirely diesel driven, may see the entry of petrol engine vehicles.

#### **f. Supreme Court orders**

The Indian Supreme Court has given a further extension of time until 31<sup>st</sup> January 2002 to implement its various orders for phasing out old buses and introducing CNG buses in Delhi. The Court gave this order "in the interest of the commuting public", on the 18<sup>th</sup> October – the date on which the previous extension expired. Referring to the affidavits filed by the Government of India and the gas supplying company, the Court observed, "it transpires that there is no shortage of CNG *per se*. The difficulty appears to be in the manner of allocating enough gas to meet transport requirements of Delhi on priority basis".

In a subsequent order on the 6<sup>th</sup> December, the Court ordered that those goods vehicles that operate on inter-state routes and do not comply with Delhi's stricter Euro II standards be prohibited from passing through the city.

Going beyond the vehicular pollution issues, the Supreme Court has ordered the governments to prohibit smoking at all public places throughout the country. It has also asked the concerned governments to strictly enforce the existing rule requiring the front seat passengers of motor vehicles to wear seat belts.

#### **g. Mumbai High Court**

The Mumbai (formerly Bombay) High Court has been hearing a Public Interest Litigation filed by a local NGO, "Smoke Affected Residents" asking for stringent

measures to reduce vehicular air pollution in this commercial capital of India. Acting upon the recommendations of the committee appointed by it, the Court has recently ordered that commercial vehicles beyond certain ages be prohibited from plying in the city unless converted to CNG or LPG.

- From January 1, 2002, all taxis and three wheelers over the age of 10 years
- From January 1, 2003, all taxis and three wheelers over the age of 8 years and all other transport vehicles, except buses, over the age of 15 years
- From January 1, 2004, all transport vehicles, except buses, older than 8 years

The practical feasibility of implementing these orders seems to be doubtful since the number of CNG filling stations in Mumbai is only around 25 (compared to over 70 in Delhi). Though LPG has now been allowed by the Government to be used as a motor fuel, and the oil industry has plans to install around 200 filling stations in the country, presently there are hardly any filling stations in the city.

#### **h. Ethanol**

A pilot project using petrol blended with 5% ethanol has recently been concluded in two selected regions located in the states of Maharashtra and Uttar Pradesh – the country's largest producers of sugar cane and sugar. The Ministry of Petroleum and Natural Gas, which sponsored the project, considers it as successful barring a few problems of early corrosion of carburetor parts on some two wheelers. The Ministry now proposes to introduce the 5% blend in some regions on a regular basis and undertake a pilot project with a 10% blend. Many issues regarding production, supply and prices of anhydrous ethanol will need to be resolved before the regular introduction can start.

### **30. Japan Bets On Fuel Cells For Toys**

As portable electronic devices become lighter, smaller and more power hungry, calls for more powerful and longer-lasting batteries increase. Japanese electronics firms have developed prototypes for fuel-cell batteries to power the smallest of electronic devices for longer - and only need refueling not recharging.

Toshiba hopes to make a fuel-cell battery that turns methanol directly into electricity and could be available to the public within two years. Sony Corp, the world's biggest electronics group, is developing a fuel-cell battery that uses carbon molecules to allow it to function at extreme temperatures.

Japan's largest maker of mobile handsets, NEC Corp, is collaborating with two Japan government research bodies to develop a fuel-cell battery that runs on methanol and uses nanotechnology. Nanotechnology involves making or manipulating substances at minute levels of only a few nanometers - or billionths of a meter. NEC says the invention's energy capacity will be 10 times that of a

regular lithium battery, allowing people to use a current-generation mobile phone for a month without recharging, or work on a laptop computer for a full day. NEC Laboratories predicts high-speed third-generation (3G) cell phones, which require a lot of power to transmit data, may be one of the biggest beneficiaries of fuel-cell technology.

Japan's largest mobile operator, NTT DoCoMo Inc, launched the world's first 3G mobile service in October, offering face-to-face communication. But a battery that allows only 100 minutes of continuous talk or 70 minutes of video-conferencing shackles users of the service.

NEC said that because of the liquid fuel, the shape of NEC's battery could be flexible, making it easier to fit into compact devices. Also, with methanol costing about 40 to 50 yen (31 to 39 cents) per liter, the cost of making the battery could be lowered to about the same price as a lithium battery. It is estimated that lithium batteries are used in 80 percent of all laptops and 50 percent of cell phones in the world.

A researcher at the Nomura Research Institute says that although fuel-cell batteries are being developed for cars and homes, they are better suited for portable devices, such as laptops and camcorders. There are some obstacles needed to be overcome before fuel batteries will see everyday use, however. For one, methanol is a regulated drug in Japan and law changes would be needed to make the substance widely available.

### **31. New Australian Fuel Standards Go Into Effect.**

New fuel standards went into effect in Australia starting on 1 January 2002.

#### **i. Fuel standard for petrol**

Petrol that contains a substance mentioned in the following table must not contain more than the amount mentioned for the substance and the grade of petrol from the date mentioned for the substance.

<b>Item</b>	<b>Substance</b>	<b>Grade</b>	<b>Amount</b>	<b>Date</b>
1	Sulfur	ULP, LRP	500 mg/kg	1 January 2002
2	Sulfur	PULP	150 mg/kg	1 January 2002
3	Sulfur	All grades	150 mg/kg	1 January 2005
4	Benzene	All grades	1% volume by volume	1 January 2006
5	Lead	All grades	0.005 g/L	1 January 2002

Item	Substance	Grade	Amount	Date
6	Oxygen	All grades (other than petrol containing ethanol)	2.7% mass by mass	1 January 2002
7	Phosphorus	ULP, PULP	0.0013 g/L	1 January 2002
8	DIPE (Di-isopropyl ether, CAS no. 108-20-3)	All grades	1% volume by volume	1 January 2002
9	MTBE (Methyl tert- butyl ether, CAS no. 1634-04-4)	All grades	1% volume by volume	1 January 2004
10	TBA (Tertiary butyl alcohol, CAS no. 75-65-0)	All grades	0.5% volume by volume	1 January 2002

From 1 January 2005, petrol must have a maximum final boiling point of 210°C.

Petrol must have a minimum research octane number:

- (a) for ULP — of 91; and
- (b) for PULP — of 95; and
- (c) for LRP — of 96.

The olefin content of petrol must be not more than:

- (a) from 1 January 2004:
  - (i) 20% volume by volume; and
  - (ii) 18% volume by volume pool average over 6 months; and
- (b) from 1 January 2005 — 18% by volume.

The aromatic content of petrol must be not more than:

- (a) from 1 January 2002:
  - (i) 48% volume by volume; and
  - (ii) 45% volume by volume pool average over 6 months; and
- (b) from 1 January 2005:
  - (i) 45% volume by volume; and
  - (ii) 42% volume by volume pool average over 6 months.

In this clause:

**CAS no.**, for a substance, means the Chemicals Abstracts Service Registry number for the substance.

**LRP** means lead replacement petrol.

**Petrol** does not include:

- (a) avgas supplied for use in aircraft; or
- (b) petrol supplied for use solely for motor racing at a racing event, or on a racetrack, approved or recognised by any of the following organisations:
  - (i) Confederation of Australian Motor Sport;
  - (ii) National Association of Speedway Racing;
  - (iii) Australian National Drag Racing Association;
  - (iv) Australian Karting Association;
  - (v) Motorcycling Australia.

**Pool average**, for olefin or aromatic content of a grade of petrol, means the average amount of olefins or aromatics in all batches of petrol of that grade manufactured in Australia or imported by a supplier in each 6 months starting on 1 January 2002.

**PULP** means premium unleaded petrol.

**ULP** means unleaded petrol.

#### j. Fuel standard for diesel

Diesel that contains a substance mentioned in the following table must not contain more than the amount mentioned for the substance from the date mentioned for the substance.

Item	Substance	Amount	Date
1	Sulfur	500 mg/kg	31 December 2002
2	Sulfur	50 mg/kg	1 January 2006
3	Ash and suspended solids	100 mg/kg	1 January 2002
4	PAH (Polycyclic aromatic hydrocarbons)	11% mass by mass	1 January 2006

The distillation temperature at which 95% of diesel has been recovered must occur:

- (a) from 1 January 2002 — below 371°C; and
- (b) from 1 January 2006 — below 361°C.

The cetane index of diesel must be at least 46.

The density of diesel must be at least 820 kg/m<sup>3</sup> and not more than:

- (a) from 1 January 2002 — 860 kg/m<sup>3</sup>; and
- (b) from 1 January 2006 — 850 kg/m<sup>3</sup>.

The viscosity of diesel must be at least 2.0 cSt, and not more than 4.5 cSt, at 40°C.

### **32. Car Prices In China Fall In Response To WTO Accession**

Both Shanghai-GM and Shanghai-Volkswagen reduced the price of their new cars in response to the price dive of Tianjin Auto Industry Corp.'s Xiali models on January 12. The price of the 2.5-liter Buick sedan was reduced by ¥30,000, from ¥288,000 (\$34,700) to ¥258,000 (\$31,085). The price of the compact Buick Sail (Opel Corsa) was down by ¥6,000-10,000, with its standard model priced now at ¥92,800, lower than TAIC's standard Xiali 2000/Century Square (¥97,000). The prices of Shanghai-VW's Santana, Santana 2000 and Passat B5 came down by \$6,000-16,000.

By the end of January 14, three days after Tianjin Auto Industry Corp. reduced the prices of its Xiali models, more than 2,300 units were sold across the country, realizing a total sales of more than ¥100 million.

The prices of seven variations of the Pride made by Yueda-Kia Automobile Co., Ltd. were reduced by at least ¥8,000 each starting on January 16. According to the company announcement, customers who purchase the Pride models between January 16 and February 10 will enjoy an average price reduction of ¥8,030. The two-compartment extended model now sells for only ¥59,800, down by ¥8,200.

Chang'an Suzuki Automobile Co., Ltd. announced an across-the-board price cut of 19 variations of its Alto and Swift models on January 18, by as much as ¥20,000. The cheapest Alto now sells for only ¥35,800 while that of the Swift for only ¥72,800.

The price of the Alto QCJ7080B made by Qinchuan Automobile Co., Ltd. based in Xi'an was reduced to ¥34,800 from ¥44,800 starting from January 25, breaking the record of ¥35,800 set just a few days earlier by a similar model made by Chang'an Auto. In addition, prices of two models of the Qinchuan Flyer, the QCJ7081DD equipped with an imported engine and the QCJ7081D equipped with a domestic engine, were also reduced from ¥58,000 and ¥49,600 to ¥52,000 and ¥43,600, respectively.

The Accord made by Guangzhou-Honda Automobile Co., Ltd. won the "Most Liked Family Car by Citizens of Shanghai in 2001" based on a poll conducted by the *Jiefang Daily* during last December's Shanghai Motor Show.

### **33. Tighter Diesel Fuel Specs Go Into Effect in China**

Effective January 1, 2002, China enforced lower 0.2 percent maximum sulphur content in domestic diesel output, a cut from an previous 0.5 percent. Industry sources said that state refiners - Sinopec and Petrochina - had already prepared for the environmental fuel move by building more desulphurisers.

Top refiner Sinopec may need to fine tune crude supplies at some subsidiary

plants rather than hike sweet crude imports, said a Beijing-based Sinopec official. "Some plants without desulphurisers will have to shift to more sweet crude, but this will be adjusted among plants," he said.

Such major coastal plants like Qilu in Shandong province, Jinling in Jiangsu, Zhenhai in Zhejiang and Maoming in Guangdong already have sufficient desulphuriser capacities.

The 158,000-bpd Guangzhou Petrochemical Corp is one of the few plants with plans to switch more to sweeter crudes. "Our plan is to swap about one million tons a year of Iranian crude for Oman," said a company official based in city of Guangzhou. Oman and Iran both produces sour grades, but Iranian grades have a higher sulphur composition.

Sinopec, with some 2.67 million bpd crude run capacity, imports 50 to 60 percent of what it processes. The remainder of the recipe was Chinese domestic crudes, most of which contain below 0.5 percent sulphur. Of the imports, over half are high sulphur grades from the Middle East.

According to custom figures, low sulphur barrels from Sudan and Angola took up a combined 14.5 percent of China's total imports of 60.26 million tons in 2001.

China's other main refiner Petrochina, which mostly processes sweet domestic crudes, would have no problem meeting the new specifications, the officials said.

The recent influx of North Sea crudes into China was more likely a short-term price-driven move, traders said. The Brent/Dubai spread which Asian buyers look at to consider moving the Atlantic Basin crudes into Asia, have been crunched to about \$1.00 a barrel from more normal \$1.50 levels in recent weeks as OPEC producers supply cuts bite in. OPEC, which groups mainly Middle East sour crude sellers, has reduced supply by 1.5 million barrels per day (bpd) from January 1.

Coupled with a lack of regional supplies and aggressive selling, more than usual North Sea crudes have migrated east.

#### **34. Japan CO2 Emissions Up 1.1% in 2001**

Japan's emissions of carbon dioxide (CO2) due to energy consumption in the fiscal year ended March 2001 rose by 1.1 percent from a year earlier to about 1.16 billion tons, the Trade Ministry said.

An official with the Ministry of Economy, Trade and Industry (METI) said that it was the second consecutive year-on-year rise. He attributed the rise in the latest data to expanded energy consumption in both the private and industrial sectors.

At a United Nations climate conference in December 1997, Japan pledged to cut

emissions of six greenhouse gases, including CO<sub>2</sub>, by six percent by the 2008-2012 period from 1990 levels. The METI official said that CO<sub>2</sub> emissions in 2000/2001 were 10.1% higher than in 1990/1991.

In Japan, about 90 percent of CO<sub>2</sub> emissions derive from energy consumption.